

# **FINANCIAL LIBERALISATION AND INTERNATIONAL REMITTANCES IN SUB-SAHARAN AFRICA: A PANEL DATA ANALYSIS**

by

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Co-Promoter: Professor Meshach J. Aziakpono

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## **DECLARATION**

By submitting this dissertation, I, Deodat Emilson Adenutsi, declare that the entirety of the work contained therein is my own original work, that I am the authorship owner thereof (unless to the extent explicitly otherwise stated), and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

**Deodat Emilson Adenutsi**

December 2014

## ABSTRACT

*This study analyses the implications of financial liberalisation programme for international remittance inflows with regard to the macroeconomic determinants and also the implications of remittances for economic growth and development in sub-Saharan Africa (SSA) between 1980 and 2009. The methodological approach to the analytical framework of this study is based on the hypothesis that financial liberalisation causes higher inflows of international migrant remittances through official channels to augment the scarce domestic financial resources, and to stimulate economic growth for sustainable development in capital-constrained SSA.*

*Prior to the macroeconometric analyses, the study addressed definitional and measurement issues on international remittances and financial liberalisation, and provided an overview of the macroeconomic policy environment in post-independent SSA, as well as the magnitude and the trends in remittances received by SSA relative to other developing economies. First, the system Generalised Method of Moment (GMM) for dynamic panel-data estimation was used to determine the macroeconomic factors responsible for the changing trends in remittance inflows. Then an inquiry into the impact and causal effects of financial liberalisation on international remittance inflows in SSA following the static panel-data modelling and panel Granger non-causality estimation procedures was undertaken. Following this, the system GMM was further employed to examine the impact of remittances on long-run economic growth, and the effects of remittance inflows on economic development in SSA. Essentially, the economic development indicators considered in this study are poverty, income inequality, labour market outcomes, human capital development, and financial development.*

*It is revealed in this study that the most appropriate measure of international migrant remittances is the sum of “workers’ remittances” and “compensation of employees” excluding “migrant transfers”. Using remittances per capita, which the study found to be the best proxy for remittances per migrant rather than the commonly used remittances as a percentage of GDP, it is shown that SSA is the least recipient of official migrant remittances in the world, with no SSA country receiving remittances worth US\$1 per day. This study further establishes that the macroeconomic factors that influence remittance inflows in SSA have varying rather than static impact in response to changing macroeconomic policy environment. Also, macroeconomic factors have different influences on attracting remittances from abroad in relation to migrant duration status – permanent or temporary. Although financial liberalisation Granger-causes*

*international remittances, not sufficient evidence exists that a significant proportion of the official remittances received in SSA passes through the banking system. Besides, the extent to which financial liberalisation can Granger-cause and/or positively impact on international remittance inflows in SSA is directly and ultimately conditional to the macroeconomic fundamentals of the remittance-receiving SSA country.*

*It was also found out that generally, international migrant remittances propel higher economic growth in SSA, with greater impact on SSA countries with relatively higher growth rates. International remittance inflows have significant positive developmental impact, with no sufficient evidence of moral hazard effects. Overall, international remittances contribute to reducing poverty and unemployment but not necessarily income inequality and, at worse, remittances have no significant impact on labour productivity and participation in SSA. Higher remittance inflows promote human welfare, educational attainment, life expectancy, and financial development in SSA. With the exception of educational attainment, the developmental effects of remittances vary across countries, depending upon the level of economic development.*

**KEYWORDS:**

Financial Liberalisation, Financial Development, International Remittances, Economic Growth, Economic Development, Migrants, Panel Data Analysis, Developing Countries, System GMM, Panel Fixed Effects, Panel Random Effects, sub-Saharan Africa

## DEDICATION

I dedicate this work to the following:

The memory of my mom, **Mrs Salome Ama-Dapaah Adenutsi** (1942-2002)  
*for giving me everything I need to become who Jehovah wants me to become.*

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Nonetheless, I should be held solely responsible for any error or omission that remains in this dissertation.

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## ACRONYMS AND ABBREVIATIONS

|               |  |
|---------------|--|
| A-B test      | Arellano-Bond test statistic   |
| AAF-SAP       | African Alternative Framework to Structural Adjustment Programme for Socioeconomic Recovery and Transformation |
| ADI           | African Development Indicators   |
| AfDB          | African Development Bank   |
| AFRODAD       | African Forum and Network on Debt and Development  |
| AIC           | Akaike Information Criterion   |
| AID           | Foreign Aid  |
| APPER         | Africa's Priority Programme for Economic Recovery  |
| AR            | Autoregressive   |
| AU            | African Union (formerly known as Organisation for African Unity)   |
| B-P stat      | Breusch-Pagan test statistic   |
| BKS           | Banking Supervision  |
| BoP(S)        | Balance of Payments (Statistics)   |
| BT            | Breitung <i>t</i> -statistic   |
| CfA           | Commission for Africa  |
| COMP(PC)      | Compensation of Employees ( <i>per capita</i> )  |
| Cor_          | Correlation Index  |
| CPI           | Consumer Price Index   |
| DCRR          | Directed Credit, Reserve Requirement and Aggregate Credit Ceilings   |
| EAP           | East Asia and the Pacific  |
| EBC           | Entry Barriers or pro-Competition  |
| ECA           | Europe and Central Asia  |
| <i>e.g.</i>   | <i>exempli gratia</i> (= for example)  |
| EG2S          | Engle-Granger 2-Step   |
| ERP           | Economic Recovery Programme  |
| <i>et al.</i> | <i>et alii</i> (= and other people)  |
| <i>etc.</i>   | <i>et cetera</i> (= and other similar things)  |
| FDI           | Foreign Direct Investment  |
| FDV           | Financial Development  |
| FE            | Fixed Effects  |
| FLB(I)        | Financial Liberalisation (Index)   |

|             |   |
|-------------|---|
| GDF         | Global Development Finance  |
| GDP         | Gross Domestic Product  |
| G(F)CF      | Gross (Fixed) Capital Formation                                     |
| GGFCE       | General Government Final Consumption Expenditure                    |
| GLS         | Generalised Least Squares   |
| GMM         | Generalised Method of Moment  |
| GXP         | Government Expenditure  |
| H           | Hypothesis  |
| HCA         | Human Capital Accumulation  |
| HDR         | Human Development Report  |
| HFCE        | Household Final Consumption Expenditure                             |
| HHC         | Hadri Heteroskedasticity Conditional z-statistic                    |
| HIPC        | Heavily Indebted Poor Countries                                     |
| HIV/AIDS    | Human Immune-Deficiency Virus / Acquired Immune Deficiency Syndrome |
| <i>ibid</i> | <i>ibidem</i> (= in the same place)                                 |
| IBRD        | International Bank for Reconstruction and Development               |
| ICF         | International Capital Flows   |
| ICRG        | International Country Risk Guide                                    |
| IDA         | International Development Association                               |
| <i>i.e.</i> | <i>id est</i> (= that is)   |
| IFS         | International Financial Statistics                                  |
| IMF         | International Monetary Fund   |
| INF         | Inflation   |
| INS         | Institutional Quality   |
| INV         | Investment  |
| IOM         | International Organisation for Migration                            |
| IPS         | Im, Pesaran and Shin  |
| IRC         | Interest Rate Control   |
| IV          | Instrumental Variable   |
| JUCR        | Johansen Unrestricted Cointegration Rank                            |
| KPSS        | Kwiatkowski-Phillips-Schmidt-Shin                                   |
| LAC         | Latin America and Caribbean   |
| LDCs        | Less Developed Countries  |
| LIBOR       | London Interbank Offered Rate                                       |

|                  |   |
|------------------|---|
| LLC              | Levin, Lin and Chu  |
| LM               | Lagrange Multiplier   |
| $\ln$            | Natural Logarithm   |
| Log              | Logarithm   |
| LSDV             | Least Squares Dummy Variable                                      |
| M                | Imports   |
| $M_2$            | Money plus Quasi Money (or Broad Money)                           |
| $M_2/\text{GDP}$ | Broad Money-GDP ratio   |
| MDG              | Millennium Development Goal                                       |
| MDV              | Medium-Dummy Variable   |
| MNA              | Middle East and North Africa                                      |
| MoF              | Ministry of Finance   |
| MRem             | Migrant Remittances   |
| MRF-2011         | Migration and Remittances Factbook 2011                           |
| MRPC             | Migrant Remittances <i>per capita</i> (also represented by REMPC) |
| MRPM             | Migrant Remittances per Migrant                                   |
| MT               | Migrant Transfers   |
| MTOs             | Money Transfer Operators  |
| NELM             | New Economics of Labour Migration                                 |
| NEPAD            | New Partnership for Africa's Development                          |
| NGO(s)           | Non-Governmental Organisation(s)                                  |
| NPISHs           | Non-Profit Institutions Serving Households                        |
| OAU              | Organisation for African Unity (now called the African Union)     |
| Obs              | Observations  |
| ODA              | Official Development Assistance                                   |
| OECD             | Organisation for Economic Co-operation and Development            |
| OLS              | Ordinary Least Squares  |
| <i>op. cit.</i>  | <i>opposite citation</i>  |
| OPN              | Openness to Trade   |
| P-P              | Phillips-Perron   |
| PCA              | Principal Component Analysis                                      |
| PGARCH           | Panel Generalised Autoregressive Conditional Heteroskedasticity   |
| PPP              | Purchasing Power Parity   |
| PRGF             | Poverty Reduction and Growth Facility                             |

|             |  |
|-------------|--|
| PRS         | Poverty Reduction Strategy                           |
| PSC         | Bank Credit to Private Sector                        |
| PVZ         | Privatisation  |
| R&D         | Research and Development                             |
| RE          | Random Effects                                       |
| REER        | Real Effective Exchange Rate                         |
| REMGDP      | Migrant Remittances as ratio to GDP                  |
| REMPG       | Migrant Remittances <i>per Capita</i> (same as MRPC) |
| RIR         | Real Deposit Interest Rate                           |
| RXR         | Real Exchange Rate                                   |
| SADC        | Southern African Development Community               |
| SALs        | Structural Adjustment Loans                          |
| SAP         | Structural Adjustment Programme                      |
| SAS         | South Asia   |
| SIC         | Schwarz Information Criterion                        |
| SMEs        | Small and Medium Scale Enterprises                   |
| SMK         | Stock Market Development                             |
| SOEs        | State-Owned Enterprises                              |
| SSA         | Sub-Saharan Africa                                   |
| Sys-GMM     | System GMM   |
| 2SLS        | Two-Stage Least Squares                              |
| TFP         | Total Factor Productivity                            |
| ToT         | Terms of Trade                                       |
| UK          | United Kingdom                                       |
| UN          | United Nations                                       |
| US(A)       | United States of America                             |
| US\$        | US Dollars   |
| VAT         | Valued Added Tax                                     |
| <i>viz.</i> | <i>dated</i> (= namely)                              |
| WB          | The World Bank                                       |
| WDI         | World Development Indicators                         |
| WEO         | World Economic Outlook                               |
| WREM(PC)    | Workers' Remittances ( <i>per capita</i> )           |
| X           | Exports  |

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## **CHAPTER ONE**

### **GENERAL INTRODUCTION**

#### **1.0 INTRODUCTION**

This chapter provides a broad insight into the nucleus and the outline of this dissertation. In particular, the background of the study, the research problem, the research questions, the motivation for the study and the research objectives are discussed. The chapter also presents the research hypotheses, the scope of the study, as well as the structure of the dissertation.

#### **1.1 BACKGROUND**

The search for rapid growth and sustainable development for the underdeveloped economies, particularly sub-Saharan Africa (SSA), has been continuing for a long time. This has led to the adoption of economic reform policies such as the liberalisation of the financial sector in an apparent recognition of the widely held view that the financial sector can play a crucial role in accelerated economic growth and sustainable development. For instance, as far back as the 1870s, Bagehot (1873) recognised and consequently emphasised the critical role of the financial sector in resource mobilisation to finance economic growth and development. Later, a new generation of prominent economists, notably Schumpeter (1912), Cameron (1967), McKinnon (1973) and Shaw (1973), re-emphasised the relevance of the financial sector in propelling economic growth and development.

These policy prescriptions, notwithstanding, many governments in developing countries, have until recently, at one time or another, intervened in the smooth development process of their respective domestic financial markets through the imposition of various forms of restrictions and control measures that limited the scope, pace and operations of financial institutions. These actions subsequently crowded-out private sector initiatives and investment as financial institutions under state control directed credit in favour of government projects and public sector institutions.

Meanwhile, Cameron (1967), McKinnon (1973) and Shaw (1973) maintain that the benefits accruing from a well-functioning and properly developed financial system can be enormous. First, through an efficient financial intermediation process, lenders and borrowers are easily

brought together, which reduces transaction and search costs. Second, financial institutions provide relevant services to their clients and thereby helping reduce information costs, provide risk management services and reduce risks involved in financial transactions in general. Third, financial institutions create liquidity in an economy by converting short-term borrowings into medium- and long-term financial assets by way of lending and other forms of business finance. Fourth, the intermediaries bring the benefits of asset diversification to the economy. Fifth, financial institutions mobilise savings from atomised individuals for investment, thereby solving the problem of indivisibility in financial transactions. Above all, through a well-functioning financial system, mobilised savings are invested in the most productive projects. This investment creates opportunities for full employment of factors of production to propel rapid economic growth and development.

Essentially, the numerous merits of financial intermediation can translate into economy-wide benefits (Levine, 1993; 1997), which influence governments to adopt financial liberalisation programmes in economies where the financial sector is considered underdeveloped. These programmes which comprise a series of policy reforms are designed mainly to increase the process of financial resource mobilisation from domestic and foreign sources channelled through the formal financial sector; improve the efficiency of financial intermediation; and enhance the effectiveness of monetary policy.

Based on these expectations, many developing countries, including those in SSA, embarked upon the implementation of policies of financial liberalisation as a component of the Structural Adjustment Programme (SAP) under varying financial structures and different macroeconomic fundamentals. For instance, at the commencement of the reforms within the West African sub-region, Nigeria already had relatively more advanced financial institutions and assets than Ghana, Sierra Leone and the Gambia. Generally, however, the financial reform programmes were initiated in these countries as a response to macroeconomic imbalance and financial distress.

Through the removal of the elements of financial repression, particularly controlled interest rates, financial sector reform is expected to lead to higher nominal and real interest rates, which are, in turn, expected to serve as incentives for financial resource mobilisation and efficient credit allocation. This is the supposition of the liberalist hypothesis (McKinnon, 1973; Shaw, 1973). A higher real deposit rate encourages economic agents to substitute consumption for

savings (the substitution effect). In addition, higher interest-income on savings enables savers to achieve their saving targets with lower stock of savings (the wealth or income effect). The two effects operate in opposite directions and the net outcome depends on which one dominates the other. The underlying reasoning of the McKinnon-Shaw doctrine is that the substitution effect outweighs the wealth effect. Accordingly, financial savings will further be boosted by a shift in the savers' wealth portfolios from non-financial assets to financial assets (asset substitution effect).

Contrary to the McKinnon-Shaw premise, the increased real interest rate may not necessarily lead to improved domestic financial resource mobilisation. In very low-income countries like those in SSA, for instance, the level of income could be so low that households spend a very high proportion of their earnings on basic needs<sup>1</sup>. Under this circumstance, even with high real deposit rates, very little or no proportion of income can be saved. It must also be emphasised that in Less Developed Countries (LDCs), subsistence economic activities are vibrant and quite pre-dominant in rural communities. These rural economies which form the largest sector in LDCs have the highest population of illiterate peasant farmers and petty traders who still engage in barter trading since household incomes are more in kind than in cash. This implies that the McKinnon-Shaw proposition is probably not entirely relevant to developing economies. A study of this proposition by Ogaki *et al.* (1996) shows that a 100 per cent rise in real deposit rate leads to a 66.7 per cent rise in savings in high-income countries, but to only 10 per cent rise in very low-income countries in the long run. This "basic needs" explanation and even the tendency of dissaving in LDCs and, for that matter SSA, could be the likely explanation for the insensitivity of financial savings to real deposit interest rates in many African countries<sup>2</sup>.

In this era of globalisation, macroeconomic policies and programmes for all countries, including those in SSA, have, since the 1980s, invariably and as a matter of necessity, become more liberal and market oriented. This has enhanced the global mobility of factors of production in general and capital in particular. For instance, remittances have become topical in international finance and development economics as the rate and volume of cross-border asset transfers have been increasing exponentially since the 1980s. In 1995, migrant remittances to developing countries totalled US\$57.8 billion and this soared up to US\$96.5 billion in 2001 (World Bank, 2006a). In 2005, the World Bank estimated that migrant remittances to

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<sup>1</sup> When households' incomes are at subsistence level, their marginal propensity to consume is equal to one.

<sup>2</sup> See Oshikoya (1992) for the case of Kenya.

developing countries totalled more than US\$167 billion, but the actual amount could be 50 per cent higher or more, while others put the figure at US\$298 billion. In 2006, the World Bank (WB) reported that official remittances increased to US\$206 billion. Thus, the growth of remittances has now exceeded private capital flows or foreign direct investment (FDI) and official development assistance (ODA) to developing countries. Besides, remittances are a reliable source of foreign capital and the least volatile source of foreign exchange since the 1990s and now account for a third of global finance (World Bank, 2006a).

In spite of the consistent growing trend in international remittances, the implications of remittances for an underdeveloped economy appear rather ambiguous. Thus, while it is true that increased remittances to developing countries could lead to rapid economic growth, macroeconomic stability, and improved livelihoods, it is also possible that continuous colossal remittance inflows could result in increasing brain drain, dollarisation, inflation, over-reliance and abandonment of the pursuit of pro-growth economic policies, and moral hazards where recipients heavily depend on these transfers, thereby reducing supply of labour<sup>3</sup>. Increased remittance inflows to developing countries could also lead to real exchange rate appreciation and less international competitiveness, culminating in what has been referred to as the 'Dutch Disease'. Altogether, these costs of high international remittance inflows could possibly retard the economic growth and economic development process of underdeveloped economies.

The reasons for the adverse effects of remittance inflows are not far-fetched. Among the prominent features of underdeveloped economies are high population growth rates resulting in excess labour supply, high unemployment rates, low *per capita* incomes, widespread poverty and rural-urban migration (Lewis, 1954; Todaro and Smith, 2002). According to Lewis (1954), rural economies are subsistent in nature with low productivity and low industrialisation, and a high desire among the active population to move to industrialised economies where it is presumed that there are ready jobs with relatively higher incomes. Therefore, it is conceivable that in a globalised world, once migrants abroad continue to remit home consistently, those at home who are earning relatively abysmal incomes will yearn to join the exodus wagon leading to brain drain in underdeveloped economies. Besides, since developing countries have less developed financial markets which are not strongly integrated into the global financial system, there is a higher tendency among migrants from the developing world to remit home through

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<sup>3</sup> Some recipients of regular remittances may become over-dependent and choose to be voluntarily unemployed or underemployed especially in developing SSA countries where working conditions are poor and real wages are unattractively low.

unofficial routes<sup>4</sup>. As foreign currency denominated financial remittances continue to flow into developing countries which generally have difficulty in stabilising their national currencies, the existing desire for holding foreign currencies is likely to rise, culminating in *de facto* dollarisation. In fact, all over the world, there appears to be a correlation between remittance inflows and financial dollarisation as is evident in Latin America and the Caribbean (LAC) countries as well as in East Asia and the Pacific (EAP) countries which are the leading recipients of migrant remittances (see Adenutsi and Yartey, 2007). Unofficial dollarisation is a recipe for inflation as monetary authorities will find it difficult to determine the actual volume of total money supply in the economy correctly<sup>5</sup>. Arguably, if nationals of developing countries continue to seek and secure more lucrative jobs abroad and remit home to support family members left behind, the pressure on governments of underdeveloped economies to create jobs and even to industrialise will reduce considerably. This is a more likely event in developing countries where governments receive significant revenue during episodes of higher inflation in the form of seigniorage (Adenutsi, 2008).

Thus, though the role of international remittances in an economy has remained theoretically controversial, in recent times, some development economists, including Stahl and Arnold (1986), and Massey *et al.* (1998), seem to agree that generally, at least, there are good reasons to believe that remittances can play a critical role in economic growth and the development process by aiding beneficiary developing countries in poverty alleviation and minimising balance of payments problems. It is also widely acknowledged that remittances constitute an invaluable resource for consumption and employment creation through business finance in many developing countries (Taylor, 1992; Brown, 1994; Adams, 1998).

## 1.2 THE RESEARCH PROBLEM

An estimated 175 million people worldwide, implying one in every 35 and approximately three per cent of the total world population, had settled in countries other than their native countries by the beginning of the 21<sup>st</sup> century (United Nations, 2002). With the advent of globalisation and the increasing development gap between the industrialised world and developing countries, the number of international migrants is estimated to increase by roughly 2.5 per cent per annum (IOM, 2010). Without doubt, international migration has offered an opportunity for developing

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<sup>4</sup> World Bank (2005) estimates that the recorded remittances received by developing countries are just about 50 per cent of the actual volume received.

<sup>5</sup> Adenutsi (2008) found that from official sources alone, foreign currencies form more than a third of total monetary aggregates in developing countries whilst economic openness causes dollarisation and inflation in Ghana.

countries to consider ways of benefiting from their nationals living and working abroad through the implementation of monetary policies and the adoption of pro-growth strategies to attract optimal remittances to finance their development projects rather than over-emphasizing the perceived negative effects. In today's world of globalisation and international competition, the significant role of remittances in propelling the development agenda of SSA<sup>6</sup> and other developing economies has become even more crucial and the need to offer incentives to attract such transfers into local savings and investment funds has become more inevitable.

Currently, SSA receives not more than seven per cent of global remittances. This is by far the smallest share to developing economies and less than half of the amount received by India alone, whilst the EAP receives nearly 30 per cent with South Asia (SAS) receiving 24 per cent of global remittances in 2009<sup>7</sup>. Similarly, the remaining developing economies comprising Europe and Central Asia (ECA), LAC, and the Middle East and North Africa (MNA) received about 42 per cent (or an average of 14 per cent) global remittances in 2009. Even across Africa, SSA significantly lags behind. The questions that arise then are: Why is SSA alone lagging behind in attracting international remittances to augment its scanty domestic resources? In what ways can SSA enhance international remittance inflows and thereby maximise these remittances from the large pool of their citizens living abroad that could serve as a compensation for losing their skills to the advanced countries? How do remittance inflows impact on the economic growth and development in SSA?

The problem is that, notwithstanding the emerging interest and extensive work on both remittances and economic growth and development in underdeveloped economies<sup>8</sup>, the links between the role of financial sector policies in mobilising and managing international remittances for economic growth and development in SSA as a sub-region remains underexplored. Hence, in the case of SSA, as a sub-region, as at now, very little is known about the underlying factors of remittance inflows, the linkages between remittances and financial liberalisation, and the implications of remittance inflows for economic growth and development in a liberalised financial environment. Thus, the fact remains that countries within SSA are generally poor but they remain a major 'net exporter of labour' into the industrialised countries, yet SSA has been the least recipient of remittances over the years. Can this be

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<sup>6</sup> SSA in particular is still in dire need of colossal resources to finance its development agenda. See estimates of the sub-region's critical resource gap in Table A1.1 in the Appendix.

<sup>7</sup> Author based on World Bank (2011a; 2011b). See Figure A3.2 in Chapter Three for evidence.

<sup>8</sup> See Chami *et al.* (2005), Giuliano and Ruiz-Arranz (2009) and Adenutsi (2010).

attributed to the underdevelopment and non-competitive nature of the financial market? Or is it a case that SSA does not, in fact, receive the least international migrant remittances if remittances were appropriately defined? And, has the adoption of financial liberalisation programme three decades ago led to higher inflows of international remittances through official channels to be transmitted through the banking system? In order to provide some useful information relevant to the understanding of the linkages among financial sector reform programmes, international remittances, and economic growth and development in developing countries, this study explores the linkages between financial liberalisation and international remittance inflows, and the implications of remittances for economic growth and development for developing countries with special reference to SSA.

### **1.3 THE RESEARCH QUESTIONS**

Therefore, the broad and pertinent questions explored in this study with reference to SSA include:

- i. Does the SSA economy broadly demonstrate any significant improvement in economic development since the adoption of economic reform programmes in the 1980s? And what has been the trend in international remittance inflows since the pursuit of financial liberalisation in the 1980s?
- ii. What are the macroeconomic determinants of international remittance inflows to SSA under liberalised financial regime?
- iii. Does the implementation of financial liberalisation have any impact or causal effect on international remittance inflows? If so, which specific policies under financial liberalisation programme have been the most important in this regard?
- iv. Do international remittances impact on long-run growth under liberalised financial regime? And has this impact changed over time in response to the cyclical behaviour of remittance inflows?
- v. To what extent do international remittance inflows promote economic development?

### **1.4 THE RESEARCH OBJECTIVES**

In response to the above research questions, the objectives are to explore the macroeconomic factors that explain the changing levels of remittance flows to SSA and to examine the implications of international remittances for the financial liberalisation and economic growth and development in SSA empirically. More specifically, on the one hand, this study seeks to find the

empirical nexus between international remittance inflows and financial liberalisation, as well as the impact of remittances on growth and development in SSA. On another hand, this study seeks to propose the best measure for international remittances, and to explore how the changing macroeconomic policy environment affects remittance inflows into SSA.

The specific objectives of this study include the following:

- i. to verify whether or not, the macroeconomic environment of SSA has changed significantly with the pursuit of financial liberalisation programmes, and if it does, whether this change has any correlation with international migrant remittance inflows;
- ii. to identify the macroeconomic factors that explain variations in international remittance flows to SSA under liberalised financial regime;
- iii. to trace the causal effect and examine the impact of financial liberalisation on international remittance inflows in SSA;
- iv. to evaluate the impact of international remittance inflows on economic growth in SSA; and,
- v. to determine the developmental-impact of international remittance inflows in SSA.

### **1.5 MOTIVATION FOR THE STUDY**

There is a need to examine the implications of international remittances for policies and developments within the financial sector, economic growth and economic development in SSA empirically. This is essential because, currently, there is no apparent reason to expect a paradigm shift in economic policy design in favour of an inward-looking approach imbedded in a socialist doctrine. This is the result of the collapse of communist states. Also, there appears to be no reversibility from globalisation of economies, given the vast merits of economic openness over the states in autarky equilibrium positions. Clearly, if these expectations are upheld, then, given the wide development gap between the North and the South, in the interim, governments in SSA, and indeed, their counterparts in other less developed regions of the world, can do very little to prevent their active population from migrating to industrialised economies where higher remuneration and better conditions of work are envisaged. Evidently, remittance flows to developing countries, including SSA, in the form of migrant transfers have been rising consistently in recent years. The steady and appreciable increases in remittances are likely to have a strong positive correlation with the exodus of both skilled (professionals) and unskilled labour from developing countries to the industrialised world.

As the volume of remittance inflows continues to be high and growing exponentially, broad money supply will continue to rise in SSA due to the likely increases in foreign currencies in circulation. The role of the financial sector in enhancing the mobilisation of remittances through official transfer channels has become even more crucial. Growth in money supply has obvious consequences for inflation, interest rates, and exchange rates as demand for foreign goods increases in import-dependent countries like those of SSA. Also, the international reserve component of the balance sheets of Central Banks will be enriched with the upsurge of official remittance inflows. This notwithstanding, the SSA sub-region has been traditionally known for its deficiency in formulating and implementing effective pro-growth macroeconomic policies over the years, which has resulted in a somewhat vicious cycle of perpetual economic instability, stagnation and underdevelopment. Therefore, as a result of these imperatives, it is important to investigate the causes, macroeconomic determinants, and the implications of increasing inflows of remittances for growth and development under the liberalised financial environment in SSA. Broadly speaking, there is motivation to explore the causal effects of financial liberalisation in attracting international remittances through the banking system of SSA as well as to examine the determinants and implications of remittances for economic growth and development in SSA.

## **1.6 SPECIFIC MOTIVATIONS AND THE RESEARCH HYPOTHESES**

Consistent with the afore-stated objectives, the set of hypotheses (**H**) that are fundamental to guiding the focus of this study, with reference to SSA, includes the following:

### *1.6.1 Macroeconomic Determinants of International Remittances in SSA*

Various empirical studies (see Table A4.1 in Chapter Four) have shown that macroeconomic factors in native (or home) countries and resident (or host) countries of migrants play crucial roles in determining international remittances. To verify this, within the context of SSA, the following central hypotheses were tested:

**H<sub>1</sub>**: Macroeconomic factors are not determinants of international remittance inflows.

**H<sub>2</sub>**: Macroeconomic determinants do not have the same influence on attracting remittances from permanent migrants (workers' remittances) and remittances from temporary migrants (compensation of employees).

### *1.6.2 Financial Liberalisation and International Remittance Inflows*

Essentially, financial liberalisation is implemented to deepen and widen the financial market and also to make the financial market more open and competitive towards accelerated financial development for economic growth. With these developments, it is expected that the domestic financial market should become attractive to the private sector as far as resource mobilisation is concerned since improved efficiency and reduced operational costs lead to cheaper financial services. Also, under competitive financial market environment, banks are expected to become more innovative in designing products and services for different segments of their target customers including international migrants. This study, therefore, examines the impact and causal effects of financial liberalisation on international remittance inflows in SSA as specified in **H<sub>3</sub>** and **H<sub>4</sub>**.

**H<sub>3</sub>**: There is no causal relationship between financial liberalisation and international remittance inflows.

**H<sub>4</sub>**: Financial liberalisation does not impact on international remittance inflows.

### *1.6.3 The Long-Run Growth and Developmental-Impact of International Remittances in SSA*

Both theoretically and empirically, the controversy over the developmental-impact of international migrant remittances has remained unresolved as evident in the conclusions drawn by various scholars (see Tables A6.6 and A7.1 in Chapters Six and Seven respectively). To contribute to this debate, hypotheses **H<sub>5</sub>-H<sub>14</sub>** were tested with respect to SSA:

**H<sub>5</sub>**: International remittance inflows do not affect economic growth.

**H<sub>6</sub>**: International remittance inflows do not impact on poverty.

**H<sub>7</sub>**: International remittance inflows do not influence income inequality.

**H<sub>8</sub>**: International remittance inflows have no impact on unemployment.

**H<sub>9</sub>**: International remittance inflows do not affect labour participation.

**H<sub>10</sub>**: International remittance inflows do not influence labour productivity.

**H<sub>11</sub>**: International remittance inflows have no effect on human welfare.

**H<sub>12</sub>**: International remittance inflows have no impact on educational attainment.

**H<sub>13</sub>**: International remittance inflows do not impact on life expectancy.

**H<sub>14</sub>**: International remittance inflows have no relationship with financial development.

## 1.7 SCOPE

The study period of this dissertation is restricted to 1980-2009. This is because financial liberalisation programmes in SSA were essentially initiated in the 1980s. Although officially reported data on some of the relevant variables are available up to 2011 for 27 of the 36 sampled countries at the time of this study, the researcher was more interested in fairly representing the sub-region with a higher number of countries as much as possible. This is one of the primary underlying motivations for restricting the study to 2009 for 36 sampled countries. Another justification for restricting the upper limit time coverage of this study to the year 2009 is not only to provide for consistent decade-by-decade analysis but also to allow for a consistent econometric approach for testing the stability of the varying estimated coefficients across the three decades. Furthermore, because some of the variables used as indicators of economic development, notably measures of poverty and income inequality are reported in a five-year interval by the World Bank, stretching the study period beyond 2009 to say 2011 will imply using different study periods in the various chapters of this study. Finally, extending the study period beyond the year 2009 will require collecting new survey data on at least seven components of financial liberalisation identified by Abiad *et al.* (2010). Financial constraint and the slow response rate from the various central banks and stock exchanges of the sampled SSA countries will affect the timely completion of this study, hence the decision to restrict the upper study period to the year 2009.

Thus, based strictly on availability of balanced panel data (see Table A1.2), this study is generally limited to only 36 SSA countries. Countries included in the broad panel are Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Comoros, Congo Republic, Côte d'Ivoire, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo and Uganda.

## 1.8 STRUCTURE OF THE DISSERTATION

This dissertation comprises eight chapters. The outline of presentation of the remaining seven chapters is as follows:

### **Chapter Two:** *Conceptual Framework and Measurement Issues*

This chapter was undertaken to achieve the specific objective (i) and in response to research question (i). In particular, the concepts of financial liberalisation and international remittances

were explained with measurement issues discussed and justified.

**Chapter Three:** *Macroeconomic Environment and External Capital Flows to SSA (1960-2009)*

To begin with, an attempt was made to provide a detailed insight into the trends in macroeconomic performance of SSA and the flow of external capital to the sub-region since 1960. This was meant to provide a visual impression on trends in key macroeconomic performance indicators under the three main policy environments, viz. the pre-reforms era, the reforms era, and the post-reforms era in post-independence SSA. This chapter addresses research question (ii) and specific objective (ii).

**Chapter Four:** *Macroeconomic Determinants of International Remittance Flows to SSA*

In order to address research question (iii), achieve specific objective (iii), and evaluate  $H_1$  and  $H_2$ , the system Generalised Method of Moment (sys-GMM) procedure for estimating dynamic panel-data models was employed to determine the macroeconomic factors that affect international remittances at the aggregated and the disaggregated levels.

**Chapter Five:** *The Impact and Causal Effects of International Remittances on Financial Liberalisation in SSA*

In line with specific objective (iv), research question (iv), and hypotheses  $H_3$  and  $H_4$ , following the Granger panel analytical framework, the empirical causal relationship between financial liberalisation and international remittances was investigated. The static panel estimation approach for single equations was further employed to evaluate the impact of financial liberalisation on international remittance inflows in SSA.

**Chapter Six:** *Impact of International Remittances on Economic Growth in SSA*

To respond to question (v), achieve specific objective (v) and evaluate  $H_5$ , the system GMM estimation procedure was followed to examine the long-run impact of international remittance inflows on economic growth in SSA from 1980 to 2009.

**Chapter Seven:** *The Development-Impact of International Remittances on SSA*

The dynamic panel model, following system GMM estimation technique, was followed to examine the hypotheses  $H_6$ – $H_{14}$  and in response to research question (vi) and specific objective (vi). In effect, the impact of international remittance inflows on indicators of poverty, income inequality, labour market outcomes, human development, and financial development

were explored in this chapter.

### **Chapter Eight: Summary, Conclusions and Recommendations**

As the final chapter concluding the dissertation as a whole, a summary of the major findings, the conclusions drawn in connection with the research questions, objectives and hypotheses, policy recommendations, and the suggestions for relevant areas for future research are outlined in this chapter.

#### **1.9 CHAPTER SUMMARY AND CONCLUSIONS**

This chapter provided the general introduction to the study by presenting a wide-ranging outlook and the motivation for this study. In particular, in the background of the study, issues concerning the pattern of macroeconomic policies and management during the post-independence era, and the circumstances leading to the adoption of financial liberalisation across SSA in the 1980s were discussed. It also provided information that helps to explain what the picture looks like with regard to the changing trends in international capital flows, the possible causes and the likely reasons behind this new development. Following the background information, the research problem was formulated and the relevant research questions identified were raised. The central motivation for this study is the need for an empirical understanding of why although SSA has been a consistent leading 'net exporter of labour' over the years, it has steadily remained the region receiving the least international remittances which are non-debt external funds critically required to address the numerous socioeconomic problems confronting the sub-region since post-independence. Based on the research problem, the research questions and the motivation for the study, the research objectives were specified. The general objective, from which this study takes its stimulus, was to identify the macroeconomic factors that explain variations in migrant remittances to SSA and to examine, empirically, the linkages between international remittances and financial liberalisation; and the determinants and impact of remittances on the economic growth and development in SSA.

Other essential subjects related to the specific motivation behind each aspect of the research problem tackled, the hypotheses guiding the research, the scope of the study, as well as the structure of the dissertation were also addressed in this chapter. The stage has now been set for the study to proceed to Chapter Two, which is devoted to addressing issues related to the definition and measurement of international remittances and financial liberalisation.

## APPENDIX 1

**Table A1.1:** Estimates of Additional Critical Financial Resources for SSA

| Author(s)                      | Estimated Amount Required Yearly | Comments/Method of Estimation/Justification  |
|--------------------------------|----------------------------------|--|
| Zedillo <i>et al.</i> (2001)   | US\$50 billion                   | Developing countries in general  |
| Devarajan <i>et al.</i> (2002) | US\$40-60 billion                | Used two estimation methods. One approach estimated the MDGs resource needs by computing the required economic growth rates of countries, and then the investment required to achieve these. The other method separately estimated the costs of achieving individual goals. Both estimates exclude certain costs, notably those of the complementary infrastructure needed to support the required rates of growth and investment. |
| Funke and Nsouli (2003)        | US\$64 billion                   | Equivalent to 12 per cent of Africa's GDP.   |
| CfA (2005)                     | US\$37.5 billion                 | Required to finance public expenditure until 2010. A third of this amount is expected to come from domestic sources whilst the remaining two-thirds US\$25 billion comes from foreign aid.   |
| Gupta, Powell and Yang (2006)  | US\$38-46 billion                | US\$14-18 billion required for 2006-2008 whilst US\$24-28 billion is required by 2015 to finance infrastructural improvement and human development.  |

**Source:** Author's compilation

**Table A1.2:** Target Population and the Sample

| Country       | Sampled? If NO, why not?                                 | Country      | Sampled? If NO, why not?             |
|---------------|--|--------------|--------------------------------------|
| Angola        | NO; data not available except for 1996, 2008             | Madagascar   | YES                                  |
| Benin         | YES  | Malawi       | YES                                  |
| Botswana      | YES  | Mali         | YES                                  |
| Burkina Faso  | YES  | Mauritania   | YES                                  |
| Burundi       | NO; data not available prior to 2004                     | Mauritius    | YES                                  |
| Cameroon      | YES  | Mayotte      | NO; data not available for 1994-2009 |
| Cape Verde    | YES  | Mozambique   | YES                                  |
| CAR           | NO; data not available except for 1990 -1993             | Namibia      | YES                                  |
| Chad          | NO; data not available for 1994-2009                     | Niger        | YES                                  |
| Comoros       | YES  | Nigeria      | YES                                  |
| Congo, DR     | NO; data not reported for any of the years               | Rwanda       | YES                                  |
| Congo Rep     | YES  | ST&P         | YES                                  |
| Côte d'Ivoire | YES  | Senegal      | YES                                  |
| Eq. Guinea    | NO; data not available except for 1992 & 1997            | Seychelles   | YES                                  |
| Eritrea       | NO; data not available prior to 1998 & 2001 <sup>9</sup> | Sierra Leone | YES                                  |
| Ethiopia      | YES  | Somalia      | NO; data not available for 1985-2009 |
| Gabon         | YES  | South Africa | YES                                  |
| Gambia        | YES  | Sudan        | YES                                  |
| Ghana         | YES  | Swaziland    | YES                                  |
| Guinea        | YES  | Tanzania     | YES                                  |
| G-Bissau      | YES  | Togo         | YES                                  |
| Kenya         | YES  | Uganda       | YES                                  |
| Lesotho       | YES  | Zambia       | NO; data not available prior to 2003 |
| Liberia       | NO; data not available prior to 2004                     | Zimbabwe     | NO; data not available for 1995-2009 |

**Source:** Author. **Notes:** CAR, Eq. Guinea, G-Bissau and ST&P represent Central African Republic, Equatorial Guinea, Guinea-Bissau, and São Tomé & Príncipe respectively. Data availability here is restricted to remittances.

## CHAPTER TWO

### CONCEPTUAL FRAMEWORK AND MEASUREMENT ISSUES

#### 2.0 INTRODUCTION

This chapter discusses the main concepts used in this study. The concepts of international remittances and financial liberalisation have, thus, been elucidated and rationalised from a theoretical and practical viewpoint within the purview of this study. Therefore, the general motivation for this chapter is to define and review existing alternative measures as well as to justify and outline the procedure used in computing the selected indicator of international remittances and financial liberalisation in sub-Saharan Africa (SSA). This is imperative because what is incorrectly defined can only be correctly measured by coincidence. The chapter also presents the procedure for computing the selected index of financial liberalisation and justifies why this indicator was selected among the existing alternatives. The remaining part of this chapter is structured as follows: Section 2.1 presents the definition and issues on the empirical measurement of international remittances. This is followed by the working definition and measurement of the concept of financial liberalisation in Section 2.2. Then, the summary and conclusions of this chapter are presented in Section 2.3.

#### 2.1 INTERNATIONAL REMITTANCES

##### 2.1.1 Concept Definition

There are different definitions of international remittances but the following definition makes the relevant points: migrant-related assets transferred across international borders from the migrant's country of residence, usually to his/her native or adopted country of citizenship. Some definitions of international remittances which have been advanced in contemporary studies are:

- i. Kapur (2004: 1) defines remittances broadly as financial resource flows arising from the cross-border movement of nationals of a country. In the narrowest sense, remittances as "unrequited transfers refer primarily to money sent by migrants to family and friends on whom there are no claims by the sender unlike other financial flows such as debt or equity flows".
- ii. "Remittances are person-to-person flows (from migrants to their friends and families), well targeted to the needs of the recipients, who are often poor. Such remittances do not typically suffer from the governance problems that may be associated with official

aid flows” (Ratha and Mohapatra, 2007: 1).

From the definitions provided above, it is understandable that international remittances can be defined from a narrow or a broad viewpoint<sup>9</sup>. From a narrow perspective, international remittances are typically monetary transfers from international migrants to their countries of origin or nationality where their families or other relatives are residing. The key features of the narrow definition of international remittances are that: (i) remittances are generally monetary transfers; (ii) remittances are from a migrant (the relatively wealthier resident outside his/her home country) to a non-migrant (the relatively poorer relative/associate resident in his/her native country); (iii) remittances are aimed at solving or managing a specific known problem; and (iv) remittances are often in small amounts but with some exhibits of regularity and stability in flow. It is this narrow definition that is referred to as “international migrant remittances” in this study because the concept is directly related to individual migrants and the remittances are expected to be highly dependent upon the personal earnings of migrants relative to the average earnings of the target recipient. International migrant remittances, in this context, also include non-monetary transfers of small but valuable goods from a migrant to his/her family, friends or other relatives in his/her home country.

With regard to the broader definition, international remittances are financial flows mainly occasioned by migration, from a person (the migrant) or an international benevolent organisation (such as the migrant association of a particular ethnic group) to persons and/or social institutions (such as orphanages, refugees, or the physically challenged) in poorer countries<sup>10</sup>. Thus, international remittances should be seen to include the narrow definition plus other non-debt transfers in the form of money or materials sent by migrants (either as individuals or as a group) and organisations (often specialised non-governmental organisations (NGOs) serving households notably migrant associations) to individuals or charitable social institutions in poorer nations. The distinction between Official Development Assistance (ODA) and the type of international remittances sent by humanitarian NGOs is that, unlike the former, the latter is essentially unofficial, relatively small in value, more regular and stable in flow, directed specifically at the target beneficiary, and does not require any technical and

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<sup>9</sup> The current standardised definition of remittances in the Appendix 5 of IMF's *Balance of Payments and International Investment Position Manual*, 6<sup>th</sup> Edition, is household income from foreign economies arising mainly from temporary or permanent movement of people to those economies. Measurement in accordance with this new definition is yet to be formally reported in the IMF's *BoPS* or WB's *WDI*.

<sup>10</sup> International remittances may also flow to countries that may not be necessarily poor but hit by civil war or natural disasters.

managerial costs or 'conditionalities'. As Ghosh (2006: 14) puts it, "... their characteristics, *modus operandi*, and role sharply differ, defying facile comparison. Remittances are private transfers, ODA flows, which are transactions between governments, are not".

### 2.1.2 Measurement of International Remittances

The measurement of international remittances has consistently posed a great challenge to economists since the recognition of its importance as an essential source of external finance about two and a half decades ago (Adams and Page, 2005; Ghosh, 1997; 2006). The main reasons for the difficulty of measuring international remittances are that:

- i. remittance inflows to developing countries are underreported, as a colossal amount is believed to be channelled through the informal sector;<sup>11,12</sup>
- ii. international remittances are undercounted because in many developing countries it is not mandatory to report "small" remittances (Gupta, Pattillo and Wagh, 2009: 3);
- iii. illegal migration is high among natives of developing countries whilst data on migration in general suffer from worse problems than even data on remittances;
- iv. even if data on migration were adequately and correctly reported, accurate data on skills of migrants, type of employment and skills-related migrant employment, and the changing residential status of migrants are non-existent across countries and over regular time intervals;
- v. some countries report all forms of remittances as workers' remittances, thus ignoring the standard reporting system requiring categorisation according to migrant status;
- vi. migrants from poor countries are not likely to find remitting home through the formal channel convenient and appealing due to high illiteracy rates and illegal status;
- vii. migrants find it less costly and probably more appropriate to use the informal transmission channels than the officially approved routes;<sup>13</sup>

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<sup>11</sup> For instance, the World Bank (2006a) estimates that, globally, at least 50 per cent of remittances are transferred through informal channels. Freund and Spatafora (2005) estimate that remittances through informal channels are relatively higher in SSA, ranging between 45 and 65 per cent of formal flows as against the range of 5-20 per cent in Latin America.

<sup>12</sup> It is important to state that this problem of data omission or underestimation in developing countries is not peculiar to migrant remittances alone. In fact, Schneider and Enste (2000) report that GDP values for developing countries are underestimated by between 25-75 per cent due to the neglect of the rather large informal sector dominated by a series of interrelated unreported subsistent activities. This exactly equates the magnitude of underestimation of officially reported migrant remittances in developing countries as noted by Freund and Spatafora (2005).

<sup>13</sup> This is especially due to the underdevelopment of the financial system in SSA and other developing economies.

- viii. some countries only collate data from banks and overlook remittances through money transfer operators (MTOs), post offices, and credit unions (de Luna Martinez, 2005); and,
- ix. as noted by the World Bank (2006a), statisticians in some countries adopt a fuzzy approach for the reporting system whereby the estimated number of emigrants is multiplied by the average remittance inflows.

The World Bank, IMF and the UN, like many others, including Shelburne and Palacin (2007: 6), confirm that obtaining data on remittances is extremely difficult because many migrants are illegal, and with many others being “poorly educated and unskilled ...with limited knowledge of the local language or customs,” and/or for the avoidance of tax, patronise unofficial financial channels which are not reported. Apart from this, the definition of the various components of remittances is either misunderstood by national institutions responsible for compiling the data or they are ambiguous and lack specificity<sup>14</sup>. The main issue is that the concepts of “residency” and “migration status” upon which the definitions and the distinctions are generally based are difficult if not impossible to measure in various countries. For instance, if a resident household member leaves the country where his/her household is residing and returns to his/her household after a limited time period of less than one year (i.e. not exceeding 12 months), the individual continues to be a resident of his/her home country even if he/she undertakes frequent journeys outside his/her ‘native’ economic territory. Similarly, a person who leaves his/her ‘native’ country with the intention of living in another country for a year or more ceases to be a resident of his/her native country and is considered a resident of the new economy (with a few exceptions, notably students, medical patients, diplomats, military personnel, and international volunteers). Moreover, IMF’s *Balance of Payments Guide* (1993) does not specify any explicit definition for international migrants.

Furthermore, transfers are recorded in the BoP as contra-entries to the provision of a resource such as grants and gifts, in cash or in kind, without a *quid pro quo*. Depending on the nature of the intended use of the ‘transferred resource’, transfers are recorded as current transfers in the

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<sup>14</sup> To address this problem the World Bank, IMF and the UN have been organising a series of collaborative technical meetings on measuring remittances in recent years since the Heads of G-8 in 2004 emphasised the need for measuring remittances accurately. The latest is the *International Technical Meeting on Measuring Remittances* held in Washington, DC on June 11-12, 2009. The World Bank and the UN had previously organised international meetings, seminars and working group discussions on the issue of measurement and statistics on remittances in 2005, 2006, 2007 and 2008. See Box A2.1 in the Appendix for the summary of consensus reached so far on improved measurement of remittances.

current account or as capital transfers in the capital account section of the capital and financial account. As noted by Reinke (2007), “workers’ remittances” and “migrants’ transfers” are transfers, whereas “compensation of employees” records remuneration for labour. “Workers’ remittances” involve a current transfer between residents of different countries, whilst “migrants’ transfers” relate to the capital account changes caused by the change of residence of a household at the time this relocation/resettlement takes place. “Depending on their specific interest, data users can decide which of these components best represents their notion on remittances” (Reinke, 2007: 3).

As a consequence of this state of no uniformity, international remittances have been measured in many empirical studies from broad and narrow perspectives in various dimensions by various scholars (see Table 2.1 below). These measurements of remittances are: (i) workers’ remittances; (ii) the sum of compensation of employees, workers’ remittances and migrants’ transfers; (iii) the sum of compensation of employees and migrants’ transfers; (iv) the total of migrants’ transfers plus an additional category in the *BoPS*, namely ‘other current transfers’; and (v) compensation of employees, workers’ remittances, migrants’ transfers, and other current transfers. It is essential to stress that the IMF reports remittances under four different sections in its *BoPS* (see, for example, IMF, 2011a). IMF defines compensations of employees as the gross earnings of workers residing abroad for less than 12 months, including the value of in-kind benefits (under the current account subcategory, “income”). Workers’ remittances are the value of monetary transfers sent home from workers residing abroad for more than one year (under the current account subcategory, “current transfers”). Migrants’ transfers represent the net wealth of migrants who move from their country of employment to another, often their native country (under the capital account subcategory, “capital transfers”). More technically, migrants’ transfers are contra-entries to the flow of goods and changes in financial items that arise from the migration of individuals from one economy to another. ‘Other current transfers’ is the component that covers transfers in cash or in kind between individuals, between non-official organisations such as migrant associations and between an individual and a non-official organisation. Such transfers include gifts, inheritances, alimony and other support remittances, non-contractual pensions from NGOs, compensation for damages, and so on recorded under ‘other private transfers’. This component also includes non-contractual pensions from foreign governments recorded under ‘other official unrequited transfers’. Official fund transfers from foreign governments and enterprises, in the form of donations, aid, sponsorships for education and cultural exchange programmes including scholarships, which directly or indirectly benefit

households are types of the 'other unrequited transfers' recorded in the *BoPS* (IMF, 1993; 1995).

Notwithstanding the identification of international remittances noted above, most researchers do not take the 'other current transfers' component into account in empirical studies, probably because they consider it to be less migrant-related. It is for this reason that many researchers including Harrison (2003), and Adams and Page (2005), and subsequent debates treated remittances as certain transactions initiated by persons living or working outside their native countries and directly related to economic participation of a migrant. It, thus, follows that the main components of the remittances that have received attention in empirical studies are compensation of employees, workers' remittances and migrants' transfers as shown in Table 2.1.

**Table 2.1:** Examples of Measures of Remittances in Recent Empirical Studies

| Author(s)                       | Research Problem Investigated  | Measurement of Remittances  |
|---------------------------------|--|---|
| Kapur (2004)                    | The economic and political effects of remittances  | Migrant transfers plus compensation of employees  |
| Abdel-Rahman (2006)             | Determinants of Foreign Worker Remittances in the Kingdom of Saudi Arabia  | Workers' remittances  |
| Niimi and Özden (2006)          | Migration and Remittances: Causes and Linkages   | Workers' remittances, compensation of employees plus migrants' remittances                                |
| Vargas-Silva and Huang (2006)   | Macroeconomic Determinants of Workers' Remittances: Host vs. Home Country's Economic Conditions                                    | Private remittances plus other current transfers  |
| Shelburne and Palacin (2007)    | Remittances in the CIS: Their Economic Implications and a New Estimation Procedure   | Sum of workers' compensation, workers' remittances, and migrants' transfers.                              |
| Adenutsi and Ahoritor (2008)    | Remittances, Exchange Rate and Monetary Policy in Ghana  | Workers' remittances plus compensation of employees.  |
| Ahoritor and Adenutsi (2009)    | The Impact of Remittances on Economic Growth in Small-Open Developing Economies  | Sum of workers' remittances, compensation of employees, migrants' transfers plus other current transfers. |
| Giuliano and Ruiz-Arranz (2009) | Remittances, Financial Development and Growth  | Workers' remittances, compensation of employees, and migrants' transfers                                  |
| Gupta, Pattillo & Wagh (2009)   | Impact of Remittances on Poverty and Financial Development in SSA  | Sum of workers' remittances, compensation of employees plus migrants' transfers.                          |
| Adenutsi (2010a)                | Long-Run Macroeconomic Impact of International Migrant Remittances on Human Development in Low-Income Countries: Evidence from SSA | Workers' remittances and migrants' transfers.   |
| Barajas <i>et al.</i> (2010)    | The impact of the global economic crisis on African GDP via the remittance channel during 2009-2010.                               | Workers' remittances.   |
| Singh <i>et al.</i> (2010)      | Determinants and Macroeconomic Impact of Remittances in sub-Saharan Africa   | Workers' remittances, compensation of employees plus migrants' transfers or only other current transfers. |

**Source:** Author's compilation

Given the above, this study recognises that international remittances are measurable from two main perspectives - the narrow and the broad. Of these two, this study used the narrow measure as a proxy for international remittances. In the narrow sense, international remittances emphasise remittances from migrants only, which are measured in this study as the sum of compensation of employees and workers' remittances. This is because these are the two most consistently reported components of remittances across countries. Also, based on IMF's *BoPS*, the World Bank concentrates on reporting only these two components in its *World Development Indicators (WDI)*, *Migration and Remittances Factbook*, and *Global Development Finance (GDF)*. Furthermore, Shelburne and Palacin (2007) like many other scholars, point out that generally these two components form at least 75 per cent of total remittances received by every country. Shelburne and Palacin (2007:5) observe that "workers' remittances are by far the largest component accounting for well over one-half of the total remittances; compensation of employees accounts for approximately another third while migrants' transfers are relatively small".

Additionally, given that these two components (compensation of employees and workers' remittances) directly relate to migrants' current earnings and are reported in the current account section of the *BoPS* under income and current transfers categories respectively, unlike the remaining two components (migrants' transfers and other current transfers) there is a justification for homogeneity in the measurement of remittances in this context. Again, by definition, compensation of employees and workers' remittances are more regular in flow than the remaining two components (migrants' transfers and other current transfers). For example, migrants' transfers are earned and, hence, recorded only when a migrant changes his/her country of residence. It is possible migrant resettlement in another foreign country may not occur frequently, and even in many cases, relocation may never occur in the life of a migrant who has attained permanent residence status, and if the migrant decides never to return home.

Remittances sent by international benevolent organisations recorded under 'other current transfers' may be occasioned by famine, wars, natural disasters, and when a migrant association decides to support a particular project at home. Usually, these are events that are not permanent and do not induce regularity in the flow of remittances from these benevolent institutions. Finally, if the perception that many migrants from poor countries are illegal is anything to go by, then the issue of permanent residency should be considered as immaterial in

categorising remittance flows to developing countries, particularly those in SSA. Thus, the sum of workers' remittances and compensation of employees should be seen as a more direct measure of migrant remittance flows to a typical developing economy in SSA. This definition is the most representative of the newly adopted component in the measurement of international remittances called 'personal remittances' in the 2009 edition of the IMF's *International Transactions in Remittances: Guide for Compilers and Users* as well as the 6<sup>th</sup> edition of IMF's *Balance of Payments and International Investment Position Manual* (refer to Box A2.1 in the Appendix for details).

The broad measure of international remittances is the sum of all the four components *viz.* compensation of employees, workers' remittances, migrant's transfers plus other current transfers, thus taking into account the total cross-border capital inflows, directly or indirectly, linked to international migration. In connection with the implications of remittance inflows for financial dollarisation and price fluctuation, total remittances should be seen as more relevant and appropriate for policy design if data is available. The reason being that, unlike migrant remittances (the narrow measure), total remittance inflows are more representative of the actual addition to currency in circulation if they are immediately spent on domestically produced goods and services, culminating in a rise in money supply in the remittance-receiving country. Likewise, if international remittances are spent on imported consumables as found in many survey studies (for example, Tongamo, 1987; Dennis, 2003), the threat to exchange rate stability and monetary policy effectiveness is obvious in an import-dependent region like SSA, which also has an unfavourable history of high inflation (see Chapter 3). As international remittances are denominated in foreign currencies, continuous inflows of these funds into a region with 'softer' domestic currencies could trigger dollarisation, when households prefer to hold the 'harder' foreign currencies. This is likely to be more pervasive in SSA where, due to the high rates of inflation, real deposit interest rates have either been low or negative.

It is true that measuring remittances in its broadest sense will help reduce the magnitude of underestimating errors associated with recorded migrant remittances received in SSA, as it is widely believed that migrants from these poor countries often use unapproved/unofficial channels to remit due to illiteracy or underdevelopment and low integration of the financial markets of their native countries into the international financial system. Besides, it is likely that due to their status as illegal migrants, most migrants from developing countries and, indeed SSA, cannot conveniently remit home via the officially approved money transfer routes and

hence could be inclined to remit under disguise through native associations abroad, religious or other benevolent organisations, or by sending easily tradable small-value gift items such as cell phones, laptop computers, wristwatches, healthcare products, and clothing. Meanwhile, it is difficult to track and quantify these informal remittances as the informal routes of remitting which include hand-carried cash and portable valuables are complex whilst the process is evolutionary. The broad definition is the most comprehensive and representative of the definitions of the newly adopted component in the measurement of total international remittances designated 'total remittances and transfers to non-profit institutions serving households (NPISHs)' in the 2009 edition of the IMF's *International Transactions in Remittances: Guide for Compilers and Users* as well as the 6<sup>th</sup> edition of IMF's *Balance of Payments and International Investment Position Manual*<sup>15</sup> (refer to Box A2.1 in the Appendix for details).

Despite the expected merits of measuring international remittances in the broadest sense, the main challenge that confronts analysts when using 'total international remittances' rather than the narrow definition (i.e. international migrant remittances) is the absence of consistently reported data on 'migrants' transfers' and 'other current transfers' in most developing countries due to a number of reasons, some of which were mentioned earlier under this very sub-section. Indeed, reported data on migrants' transfers and other current transfers is relatively scarce in comparison with data on workers' remittances and compensation of employees. For example, *GDF, WDI, Migration and Remittance Factbook*, and the e-database of the UN report remittance data on workers' remittances and compensation of employees only, apparently because, generally, workers' remittances and compensation of employees constitute about three-quarters of the total remittances received in migrant-home countries. Another drawback of using total international remittances is that, by their very nature, the two additional components – migrant transfers and other current transfers – are less regular in flow compared to workers' remittances and compensation of employees, which are invariably earnings remitted by permanent and temporary migrants. Therefore, in analysing the motives behind the flow of remittances involving interpersonal transfers from permanent and temporary international migrants, it is the narrow definition that should be seen as the more appropriate. In fact, it is this narrow definition of measuring international remittances that is used throughout the empirical analysis of this study.

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<sup>15</sup> For full references, refer to IMF (2009a) and IMF (2009b) respectively.

## 2.2 FINANCIAL LIBERALISATION

### 2.2.1 Concept Definition

In separate works, McKinnon (1973) and Shaw (1973) provide the prominent theoretical framework in support of financial liberalisation<sup>16</sup>. The McKinnon-Shaw financial liberalisation theory suggests that the level of financial intermediation should be closely related to the prevailing level of real interest rates, because the level of real interest rate when held below the normal competitive levels, indicates the level of financial repression (De Gregorio and Guidotti, 1995). Financial repression, especially under inflationary conditions, stimulates demand for physical wealth and encourages capital flight (Fry, 1995). According to the McKinnon-Shaw hypothesis, a positive real interest rate stimulates financial savings and intermediation, thereby increasing the supply of credit to the private sector, which in turn, stimulates investment and economic growth (Fry, 1995). Thus, positive real interest rates that are consistent with the equilibrium interest rates make the allocation of *investible* funds more efficient, thereby providing positive implications for economic growth. Financial liberalisation is, therefore, a possible policy response involving a package of measures intended to remove and/or reform any undesirable state-imposed constraints on the free mechanism of the financial markets (Arestis, 2005).

The financial liberalisation thesis was criticised by Neostructuralists notably Taylor (1983), van Wijnbergen (1982; 1983a; 1983b), Bufile (1984), and Kohsaka (1984) on the grounds that the absolute operation of a market-based financial system is most unlikely to propel growth in Less Developed Countries (LDCs). In the opinion of the Neostructuralists, the role of the informal financial institutions is crucial in financial resource mobilisation and allocation in LDCs. First and foremost, this is as a result of the low level of incomes and fragmentation of the financial system. Secondly, information asymmetry is a common feature of the financial sector in developing countries and, thirdly, because in the formal financial sector, where the banking sector dominates, the bulk of mandatory reserve requirements forms an important leakage in the circular flow of funds during the process of financial intermediation. These reasons underscore the importance of curb financial markets in the mobilisation of household saving and credit extension (Fry, 1995). The Neostructuralists conclude that, practically, for developing countries in particular, the pursuit of financial liberalisation is likely to inhibit the rate of economic growth due to credit constraints because higher real interest rates increase costs of

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<sup>16</sup> Earlier to this, Bagehot (1873), Schumpeter (1912), Gurley and Shaw (1955; 1960), and Goldsmith (1969) questioned the wisdom behind the pursuit of repressive financial policies.

production, reduce real wages, and cause stagflation (van Wijnbergen, 1982; Taylor, 1983). In fact, Stiglitz (1994) was very emphatic in suggesting that government intervention in the financial market will not only make financial markets function better but will also improve the performance of an economy.

The Neostructuralists' scepticism of financial liberalisation notwithstanding, it is quite clear that the controversy between the contrasting schools of thought is not much up to this point other than, perhaps, with regard to the degree and pace with which liberalisation should be pursued. For instance, as pointed out by the advocates for financial liberalisation, the process still recommends a gradual approach (Edwards, 1989; McKinnon, 1991) and makes room for "adequate banking supervision, aiming to ensure that banks have a well-diversified loan portfolio, macroeconomic stability, which refers to low and stable inflation and a sustainable fiscal deficit, and the sequencing of financial reforms" (Arestis, 2005: 7). Indeed, as evident in the composite *de jure* indices constructed by various authors<sup>17</sup>, the implementation of financial reform policies has been gradual although the sequencing of the process differs across countries. The concept of financial liberalisation as used in this study is, thus, based on the McKinnon-Shaw theory.

Accordingly, within the framework of the McKinnon-Shaw financial liberalisation theory, this study defines financial liberalisation as the process of eliminating repressive elements of financial regulations and policies to rational limits, which should enable financial institutions to operate more efficiently based on market signals at home and abroad thereby enhancing the free flow of financial resources. This definition seems adequate to capture the multidimensional nature of the financial liberalisation process, which Kaminsky and Schmukler (2003) suggest consists of the deregulation of the domestic financial sector, the foreign sector capital account, and the stock market<sup>18</sup>. Financial repression originates from government policies of direct imposition and indirect interventions in the financial market which ultimately results in restrictive tendencies and unfair practices commonly associated with imperfect competition within the financial sector (Fry, 1995). Beim and Calomiris (2001) observe that over the years, researchers have identified six main ways through which governments often repress their

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<sup>17</sup> See for example Kaminsky and Schmukler (2003), Abiad and Mody (2005), Shrestha and Chowdhury (2006), McDonald and Schumacher (2007) and Abiad *et al.* (2008, 2010).

<sup>18</sup> Similarly, Beim and Calomiris (2001: 119) define financial liberalisation as "some combination of the following six kinds of constraint relaxation: elimination of interest controls, lowering of bank reserve requirements, reduction of government interference in banks' lending decisions, privatisation of nationalised banks, introduction of foreign bank competition, and facilitation and encouragement of capital inflows".

financial system. These are: (i) by imposing ceilings on interest rates paid by banks for deposits; (ii) by imposing high reserves requirements on banks; (iii) by lending to industry and/or directing bank credit; (iv) by owning and/or micromanaging banks, leaving them with little autonomy; (v) by restricting entry into the financial market, especially by foreigners; and (vi) by restricting capital inflows and outflows across international borders (Beim and Calomiris, 2001: 47).

This clearly suggests that financial repression is the opposite of financial liberalisation. In other words, if an economy is proven to have a high level of financial repression, this directly implies the economy in question has a lowly-liberalised financial system, and *vice versa*. In effect, the indicators of financial repression invariably measure financial liberalisation on the same scale but at opposite ends of the scale.

### **2.2.2 Measurement of Financial Liberalisation**

Beim and Calomiris (2001) identify six measures of financial liberalisation. The definition and measurement of each of these indicators are summarised in Table 2.2. Each of these measures falls into the category of what Gemech and Struthers (2003) describe as policy outcome measures of financial liberalisation, because they are not capable of capturing the liberalisation process itself. In early empirical studies, these indicators (see Table 2.2), were used to proxy the degree of financial liberalisation (Gemech and Struthers, 2003).

Over the last two decades, however, these outcome-based measures (also known as *de facto* or *ex post* measures) have been used to evaluate the developments rather than the actual process of the liberalisation of the financial sector in many empirical studies including, *inter alia*, those by Greenwood and Jovanovic (1990), King and Levine (1993a; 1993b), Hermes (1994), Demetriades and Hussein (1996), Lynch (1996), Arestis and Demetriades (1997), Levine (1997), Kar and Pentecost (2000), Levine *et al.* (2000), and Ang and McKibbin (2007). Unless these indicators are integrated into one composite index, each of the indicators is used to measure a specific aspect of financial sector reforms (Williamson and Mahar, 1998; Bandiera *et al.*, 2000; Laeven, 2003; Abiad and Mody, 2005; Shrestha and Chowdhury, 2006). For example, earlier works prior to these recent attempts at developing a comprehensive index of financial sector reforms which merely used *ex post* measures<sup>19</sup> are those of Abe *et al.* (1977),

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<sup>19</sup> Some of the financial reforms policy outcome indicators which were widely used in the past include nominal interest rates, real interest rates, interest rate spread, proportion of bank credit to the private sector, and liquidity ratio (i.e.  $M_2/GDP$ ).

Cho (1986; 1988), Gupta (1984), Snowden (1987), Ahmed (1988), Morisset (1991), Arestis and Demetriades (1992; 1993), Roubini and Sala-i-Martin (1992), Bayoumi (1993), AfDB (1994), and Loayza *et al.* (2000).

**Table 2.2:** Measures of Financial Repression / Liberalisation

| Indicator         | Description of Indicator   | Application of Indicator in measuring FLB   |
|-------------------|--|---|
| Reserve ratio     | Bank reserves as a ratio of money plus quasi-money ( $M_2$ ) less currency held outside of banks.  | Higher reserve ratio limits banks ability to create money and hence an indication of financial repression.  |
| Real rates        | Nominal annual interest on bank deposits ( $i$ ) adjusted for the realised annual rate of inflation ( $\pi$ ): $r = (1 + i) / (1 + \pi) - 1$ . | Negative real interest rates means the financial sector is repressed due to interest rate controls, whilst positive real interest rates suggests liberalised financial sector via deregulation of interest rates.   |
| Liquidity         | Short-term liquid liabilities ( $M_3$ if available, else $M_2$ ) as a ratio of GDP.  | Higher liquidity or monetisation shows the real size of the financial sector and the extent to which money functions as a means of payment for essential services and a store of value. The higher the liquidity ratio the less repressed the financial sector.   |
| Private borrowing | Claims on private sector as a ratio of total domestic credit.  | Higher private sector credit allocation indicates financial liberalisation since credit to government and state-owned enterprises are often directed and, hence uncompetitive.  |
| Bank lending      | Deposit bank assets as a ratio of bank assets plus central bank assets.  | A financial sector is less repressive if this ratio is high because commercial banks, for mobilising more private sector savings than the Central Bank, are expected to extend more credit than the Central Bank in financing profitable private sector projects. |
| Market value      | Aggregate stock market capitalisation as a ratio of GDP.   | Higher market capitalisation ratio symbolises improved financial liberalisation <i>via</i> vibrant equity market, improved investors' access to correct market information, and superior management of investment funds.  |

**Source:** Author based on Beim and Calomiris (2001: 66)

In more recent years, various attempts have been made to develop a comprehensive index for measuring the actual dimensions and pace of financial liberalisation processes, such that, invariably, the *ex post* measures aforementioned are used essentially to measure the degree of financial development. The need for a multi-dimensional financial liberalisation index became increasingly imperative because financial liberalisation is a process involving a wide range of policy initiatives alongside institutional and structural reforms. These policy actions and reforms cover the licensing and restructuring of institutions; the development of the appropriate legal, information and liquidity infrastructure; the operational arrangement for markets; and the design of instruments (World Bank, 2005). Following this, Williamson and Mahar (1998), Gelbard and Leite (1999), Bandiera *et al.* (2000), Kaminsky and Schmukler (2003), Abiad and Mody (2005), Bekaert *et al.* (2005), Shrestha and Chowdhury (2006), McDonald and Schumacher (2007) and Abiad *et al.* (2008; 2010), made rigorous attempts towards the development of a more representative and realistic financial liberalisation index. Of these, the indices developed by

Bandiera *et al.* (2000), Abiad and Mody (2005) and Abiad *et al.* (2008; 2010) appear to have enjoyed the most patronage from researchers in recent years as shown in Shrestha (2005), Shrestha and Chwodhury (2006), Ang and Warwick (2007), Ang (2010), and Ang and Sen (2011). Table 2.3 presents a summary of some of the popular existing indices of financial liberalisation developed in recent years<sup>20</sup>.

**Table 2.3: Components and Coverage of Existing Indices of Financial Liberalisation**

| <b>Author(s), Year</b>         | <b>Components / Dimensions of Index, (Coverage)</b>   |
|--------------------------------|---|
| Williamson and Mahar (1998)    | Credit controls; interest rate controls; entry barriers; regulation of bank operations; bank privatisation; restrictions on international capital flows <b>(6 variables; 34 countries)</b>  |
| Bandiera <i>et al.</i> (2000)  | Interest regulation, reserve requirements, direct credit, bank ownership (moves toward privatisation), liberalisation of securities markets, prudential regulation, and international financial liberalisation <b>(6 variables; 8 countries)</b>  |
| Kaminsky and Schumkler (2003)  | Capital account liberalisation (capital mobility), domestic financial sector liberalisation (regulations on interest rates, credit allocation and foreign currency deposits), stock market liberalisation (evolution of regulations on acquisition of shares in the domestic stock market by foreigners, repatriation of capital, interests and dividends) <b>(3 variables; 28 countries)</b> |
| Laeven (2003)                  | Credit controls, interest rate controls, entry barriers, operational restrictions, bank privatisation, capital account restrictions <b>(6 variables; 13 countries)</b>  |
| Abiad and Mody (2005)          | Credit controls, interest rate controls, entry barriers, operational restrictions, bank privatisation, restrictions on international financial transactions <b>(6 variables; 35 countries)</b>  |
| Shrestha and Chowdhury (2006)  | Interest rate deregulation, removal of entry barriers, reduction in reserve requirements, easing in credit controls, stock market reform, privatisation of state-owned banks, external account liberalisation <b>(8 variables, 1 country; Nepal)</b>  |
| McDonald and Schumacher (2007) | Interest rate liberalisation, number of years real lending and real deposit rates have been positive, the existence of a significant informal sector and directed credit allocation <b>(4 variables; 37 countries)</b>  |
| Abiad <i>et al.</i> (2010)     | Credit controls, aggregate credit ceilings and reserve requirements; interest rate controls; entry barriers in the banking sector; state ownership of the banking sector; financial account restrictions; prudential regulations and supervision of the banking sector; securities market policy <b>(7 variables; 91 countries)</b>   |

**Source:** *Author's compilation*

However, Abiad *et al.* (2008) criticise the preceding financial liberalisation indices developed prior to the launch of their index in 2008. According to Abiad *et al.* (2008), these pre-2008 existing indices are basically *de jure* measures based on subjective coding and poorly captured the intensity of the factual liberalisation process. Therefore, drawing lessons from Williamson and Mahar (1998), Kaminsky and Schumkler (2003), and Abiad and Mody (2005), Abiad *et al.* (2008; 2010) developed the most recent index which captures seven dimensions<sup>21</sup> of the financial sector reforms (Table 2.3).<sup>22</sup> This new index is likely to enjoy popularity in its application in empirical studies because, apart from being the most recently developed index

<sup>20</sup> Only indices constructed from more than one dimension of financial reforms are reported. Accordingly, Behaert *et al.* (2005) is excluded.

<sup>21</sup> It is, however, important to emphasise that Abiad *et al.* (2008) which is the earlier version of Abiad *et al.* (2010) attempted the construction of an eight dimensional index by separating directed credit and reserve requirements from aggregate credit ceilings.

<sup>22</sup> For details on how this index was constructed see Section 2.2.2.1.

for financial liberalisation, the new index provides an adequate coverage of the essential dynamics in the financial policy environment (Ang, 2010). Besides, the policy variables used in the computation of this new index are more explicit, easy to measure and quite common in most countries.

With the exception of Kaminsky and Schmukler (2003), Abiad and Mody (2005), and Abiad *et al.* (2010)<sup>23</sup>, all known efforts at computing a unified index for financial liberalisation, for example, the attempts by Williamson and Mahar (1998), Bandiera *et al.* (2000), Laeven (2003), Shrestha and Chowdhury (2006) and McDonald and Schumacher (2007) assigned arbitrary scores ranging between zero (for fully repressed) and one (for fully liberalised); such that 0.25 or 0.33, 0.50, and 0.66 or 0.75 were assigned to capture partial and gradual deregulation of each dimension of the financial sector policy reforms. Using Principal Components Analysis (PCA), the weight of each of the components of the policy reform variables was derived. The principal component selected is that which accounts for the highest percentage of the total variance of the system variables. Mathematically, the computation of financial liberalisation index (FLBI) as determined by these pre-2008 authors can generally be expressed as:

$$FLBI_t = w_1FLP_{1,t} + w_2FLP_{2,t} + w_3FLP_{3,t} + \dots + w_nFLP_{n,t} \quad (2.1)$$

where  $FLBI_t$  is the index of financial liberalisation at time  $t$ ,  $w$  is the weight of a specific component of financial liberalisation policy ( $FLP$ ) given by the respective eigenvector of the selected principal component, with  $n$  denoting the number of the reforms components/dimensions included in the computation of the index. The index for each individual reforms policy component is obtained when the arbitrary scores initially assigned to  $FLP_1, FLP_2, \dots, FLP_n$  are multiplied with their respective weights ( $w_i$ ) obtained from the PCA. For each year ( $t$ ),  $FLBI$  is derived through a horizontal summation of the calculated values for the number of the policy-specific reforms components ( $n$ ) covered by the specific author.

The approach adopted by Kaminsky and Schmukler (2003), Abiad and Mody (2005), and Abiad *et al.* (2010) is comparable to the above, except that these authors, rather than assigning

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<sup>23</sup> All these authors computed FLB using Principal Components Analysis (PCA), but did not assign equal arbitrary scores to the components. Kaminsky and Schmukler (2003) assigned more weight to capital account liberalisation whilst Abiad and Mody (2005) emphasize reforms in the domestic financial sector, and apart from that PCA also used simple sum, sum of squares and sum of square roots. Abiad and Mody (2005) found that the correlations among the various series obtained from different methods were highly comparable, mostly above 95 per cent with none below 90 per cent.

arbitrary scores used discrete scores along the different dimensions of the financial policy reforms identified. The scores for each category of the financial policy reform process are then combined in a graded index that is normalised between zero and one (Abiad and Mody, 2005; Abiad *et al.* 2010). Of these indices, Abiad *et al.* (2010) is the most comprehensive having recognised the improved multifaceted nature of the financial reform process and hence recorded financial policy changes along seven key dimensions instead of the four dimensions used by Kaminsky and Schmukler (2003) and the six by Abiad and Mody (2005).

### 2.2.2.1 Computation of the Empirical Financial Liberalisation Index (FLBI)

This study relied on the index constructed by Abiad *et al.* (2010) on financial sector reforms not only because it is the most comprehensive among the three approaches that followed a discrete coding system, but also because an improved set of coding rules were used to minimise the degree of discretion in assigning scores (see Box A2.2 in the Appendix). Additionally, Abiad *et al.* (2010: 286) following Abiad and Mody (2005) allow room for reversibility in the financial reforms process such that “the imposition of capital controls or interest rate controls are recorded as shifts from a higher to lower score”, which contributes to making this index “a much more precise determination of the magnitude and timing of various events in the financial liberalisation process”.

As suggested by Abiad *et al.* (2010), a raw score was first assigned to each of the seven dimensions on the specific scales outlined in Box A2.2. Next, each raw score was normalised between zero and three according to the rule specified in Box A2.2. Along each of the seven dimensions identified, therefore, a country was assigned a final score on a graded scale from zero (for full repression) to three (for full liberalisation). Since the maximum score a country can obtain for a particular year, which represents full liberalisation in all seven dimensions, is 21 (which is obtained when the optimal normalised score for fully liberalised (3) is multiplied by the number of dimensions covered, (7)), the actual normalised score for any particular year is expressed as a ratio of 21. Accordingly, the index of financial liberalisation (FLBI) was computed using Equation 2.1 which adequately represents the approach adopted by Abiad *et al.* (2010).

$$FLBI_t = \frac{\sum_{i=1}^n d_{i,t}}{\sum_{i=1}^n D_i} \quad (2.1)$$

where  $n$  is the number of measurement dimensions (in this case  $n=7$ );  $d_i$  is the partial normalised score assigned to each specific component of financial reforms in year  $t$  such that

$0 \leq \sum_{i=1}^n d_{i,t} \leq 21$ , whilst  $D_i$  is the full normalisation score upon which  $d_i$  was assigned for each

of the components of financial reforms, so that  $\sum_{i=1}^n D_i = 21$  since  $D = 3$ . For example, if for a

particular year (say 2000) a country (say X) scored 1.5, 3, 2, 0, 1, 3, and 3 respectively (after normalisation)<sup>24</sup> on each of the seven dimensions/components of financial reforms, then  $FLBI_t$

for this country in year 2000 is determined as follows:

$$FLBI_{2000}^X = \frac{13.5}{21} = 0.6428571. \quad (2.2)$$

This result shows that the financial market of country X is partially liberalised as at year 2000 since the computed index exceeds the standard average score of 0.50 and the maximum FLBI score any country can obtain in a particular year to represent full liberalisation of its financial market is one.

### 2.3 CHAPTER SUMMARY AND CONCLUSIONS

This chapter defined the concepts of international remittances and financial liberalisation which are the running concepts of this study. The definition of these concepts made explicit the distinction between financial liberalisation and financial development. Whilst financial liberalisation is *de jure*, and hence concerned with the actual policy reforms process of the financial sector, financial development is essentially *de facto*, and thus concerned with the outcome of the implementation of financial sector policy reforms. This chapter also discussed existing alternative approaches and indicators of measuring international remittances and financial liberalisation. Based on the underlying theories of each of these concepts, the objectives informing this study, practicality and applicability, a specific indicator (or index) for each concept was chosen with justifiable explanations. As is conventional in economics and, indeed social sciences, there is no single measure of any of the core concepts of this study that can be fully exonerated from theoretical criticisms and empirical limitations. As much as

<sup>24</sup> A final normalisation score of 0.75, 1.50, 1.75, 2.50, 2.75 is possible only in the case of credit controls, aggregate credit ceilings and reserve requirements because this dimension was originally treated as two separate dimensions (directed credit and reserve requirements; and aggregate credit ceilings) in Abiad *et al.* (2008), therefore, the application of the respective  $\frac{3}{4}$  and  $\frac{1}{4}$  sum weights and a deviation sum can result in a final code that may not necessarily be exactly 0, 1, 2, or 3 on the 3-0 scale.

possible, however, reasonable explanations were assigned for the measurement of each adopted indicator or index, which goes a long way to show that, taking into account the usual problem of data constraint in developing countries, the specific measure of each concept is the best applicable measure as per the scope and objectives of this study.

Therefore, throughout the remaining part of this dissertation, unless otherwise stated, international (or migrant) remittances refer to the sum of “compensation of employees” and “workers’ remittances”. Financial liberalisation is measured as the normalised index embracing seven dimensional variables *viz.* credit controls, reserve requirements and aggregate credit ceilings, interest rate control, banking sector entry requirement, international capital flows control, privatisation of banks, banking sector supervision and regulation, and stock market development, which according to Abiad *et al.* (2010) reflect the essential components of financial reforms. With the running concepts of this dissertation now defined and measured within the context of this study, the stage is now set for an overview of the macroeconomy of post-independent SSA. For the most recent years, *viz.* 2006-2009 for which data is not available from Abiad *et al.* (2010), the author used the same sources of information to compute the financial liberalisation indices for the sampled countries.

## APPENDIX 2

## Box A2.1: Summary of New Measurement and Definition of Remittances\*

| Measurement of Concepts:   |                               |                                      |                 |                             |                             |
|--|-------------------------------|--------------------------------------|-----------------|-----------------------------|-----------------------------|
| $Total\ remittances\ and\ transfers\ to\ NPISHs \equiv PRem + TRem + V + VI$   |                               |                                      |                 |                             |                             |
| $Total\ Remittances\ (TRem) \equiv PRem + IV$  |                               |                                      |                 |                             |                             |
| $Personal\ Remittances\ (PRem) \equiv I + II + III$  |                               |                                      |                 |                             |                             |
| I  | II                            | III                                  | IV              | V                           | VI                          |
| Personal transfers   | Net compensation of employees | Capital transfers between households | Social benefits | Current transfers to NPISHs | Capital transfers to NPISHs |
| Definition of Core Concepts:   |                               |                                      |                 |                             |                             |
| <p><b>A: Personal Remittances:</b> This is defined as current and capital transfers (in cash and in kind) between resident individuals and non-resident households, plus net compensation of employees earned by persons working in economies where they are not resident. In other words, personal remittances include all household-to-household transfers and net compensation of non-resident workers.</p>   |                               |                                      |                 |                             |                             |
| <p><b>B: Total Remittances:</b> This includes all household incomes earned from working abroad. Thus, personal remittances plus social benefits. Intuitively, total remittances include income from individuals working abroad on temporary basis, earnings of individuals residing abroad, and social benefits earned for working abroad.</p>   |                               |                                      |                 |                             |                             |
| <p><b>C: Total Remittances and Transfers to Non-Profit Institutions Serving Households (NPISHs):</b> This is to include the total remittances plus the sum of current and capital transfers to Non-Profit Institutions Serving Households (NPISHs).</p>  |                               |                                      |                 |                             |                             |
| Definition of Sub-Concepts:  |                               |                                      |                 |                             |                             |
| <p><b>I: Personal transfers</b> (which now replace workers' remittances in <i>BoPS</i>) is defined to include all current transfers in cash or in kind between resident households and non-resident households. Unlike workers' remittances, the new concept is based neither on employment nor migration status and thus resolves inconsistencies associated with measuring the previous concept which was linked strictly to residential status.</p> |                               |                                      |                 |                             |                             |
| <p><b>II: Net compensation of employees</b> is to include gross compensation of employees less taxes, social security contributions, and travel and passengers transportation related to short-term employment and paid to resident entities in economies where they are not resident. It, thus, signifies "take-home compensation".</p>   |                               |                                      |                 |                             |                             |
| <p><b>III: Capital transfers between households</b> are the "non-current" transfers in cash or in kind between resident and non-resident households.</p>   |                               |                                      |                 |                             |                             |
| <p><b>IV: Social benefits</b> are the benefits payable under social security and pension funds.</p>  |                               |                                      |                 |                             |                             |
| <p><b>V: Current transfers to NPISHs</b> constitute all current transfers from governments and enterprises (in cash or in kind) to NPISHs from any sector of the sending economy which directly or indirectly benefit households in another economy (i.e. the receiving economy).</p>  |                               |                                      |                 |                             |                             |
| <p><b>VI: Capital Transfers to NPISHs</b> include all current transfers from governments and enterprises (in cash or in kind) to NPISHs from any sector of the sending economy which directly or indirectly benefit households in another economy (i.e. the receiving economy). It may include private and official donations, aid, sponsorships for education and cultural festivities (including scholarships).</p>                                  |                               |                                      |                 |                             |                             |
| <p><b>NOTE:</b> Migrant transfers have been removed from the BoP Framework as the concept of migrant has been abolished since the concepts of personal transfers and remittances are based on the concept of residence rather than migration status. This is consistent with the use of residence criteria elsewhere in the BoP and national accounts frameworks.</p>  |                               |                                      |                 |                             |                             |

**Source:** IMF (2009) *Balance of Payments and Investment Position Manual, 6<sup>th</sup> Edition (BPM6)*

*Effective implementation date is unknown but the new reporting system is likely to be formally used in reporting 2010 data as the new Remittances Compilation Guide and the programme aimed at improving Central Bank reporting were launched during the International Technical Meeting on Measuring Remittances in June 2009.*

**Box A2.2: Coding Rules for the Financial Liberalisation Index (FLB)**

To construct an index of financial liberalisation, codes were assigned along the seven dimensions below. Each dimension has various sub-dimensions. Based on the score for each sub-dimension, each dimension receives a 'raw score.' The explanations for each sub-dimension below indicate how to assign the raw score.

After a 'raw score' is assigned, it is normalized to a 0-3 scale. The normalization is done on the basis of the classifications listed below for each dimension. That is, fully liberalised = 3; partially liberalised = 2; partially repressed = 1; fully repressed = 0.

The final scores are used to compute an aggregate index for each country/year by assigning equal weight to each dimension. For example, if the 'raw score' on credit controls and reserve requirements totals 4 (by assigning a code of 2 for liberal reserve requirements, 1 for lack of directed credit and 1 for lack of subsidised directed credit), this is equivalent to the definition of Fully Liberalised. So, the normalisation would assign a score of 3 on the 0-3 scale.

**I. Credit Controls and Reserve Requirements:**

1) *Are reserve requirements restrictive?*

- Coded as 0 if reserve requirement is more than 20 per cent.
- Coded as 1 if reserve requirements are reduced to 10–20 per cent or complicated regulations to set reserve requirements are simplified as a step toward reducing reserve requirements
- Coded as 2 if reserve requirements are less than 10 per cent.

2) *Are there minimum amounts of credit that must be channelled to certain sectors?*

- Coded as 0 if credit allocations are determined by the central bank or if mandatory credit allocations to certain sectors exist.
- Coded as 1 if mandatory credit allocations to certain sectors are eliminated or do not exist.

3) *Are there any credits supplied to certain sectors at subsidised rates?*

- Coded as 0 when banks have to supply credits at subsidised rates to certain sectors.
- Coded as 1 when the mandatory requirement of credit allocation at subsidised rates is eliminated or banks do not have to supply credits at subsidised rates.

These three questions' scores are summed and coded as follows:

**Fully Liberalised** = [4], **Largely Liberalised** = [3], **Partially Repressed** = [1,2], **Fully Repressed**= [0]

4) *Are there any aggregate credit ceilings?*

- Coded as 0 if ceilings on expansion of bank credit are in place. This includes bank-specific credit ceilings imposed by the central bank.
- Coded as 1 if no restrictions exist on the expansion of bank credit.

The final sub-index is a weighted average of the sum of the first three categories (with a weight of  $\frac{3}{4}$ ), and of the last category (with a weight of  $\frac{1}{4}$ ).

**II. Interest Rate Liberalisation**

Deposit rates and lending rates are separately considered in coding this measure in order to look at the type of regulations for each set of rates. They are coded as being government set or subject to a binding ceiling (code=0), fluctuating within a band (code=1) or freely floating (code=2). The coding is based on the following description:

**FL**=4 [2, 2]

**Fully Liberalised** if both deposit interest rates and lending interest rates are determined at market rates.

**LL** = 3 [2, 1]

**Largely Liberalised** when either deposit rates or lending rates are freed but the other rates are subject to band or only a part of interest rates are determined at market rates.

**PR**= 2/1 [2, 0] [1, 1] [1, 0]

**Partially Repressed** when either deposit rates or lending rates are freed but the other interest rates are set by government or subject to ceiling/floor; or both deposit rates and lending rates are subject to band or partially liberalised; or either deposit rates or lending rates are subject to band or partially liberalized.

FR= 0 [0, 0] **Fully Repressed** when both deposit rates and lending rates are set by the government or subject to ceiling/floor.

| Coding Matrix for Interest Rate Liberalisation |               |    |    |
|--|---------------|----|----|
| Lending Rates                                  | Deposit Rates |    |    |
|  | 0             | 1  | 2  |
| 0  | FR            | PR | PR |
| 1  | PR            | PR | LL |
| 2  | PR            | LL | FL |

### III. Banking Sector Entry

The following sub-measures were considered:

1) *To what extent does the government allow foreign banks to enter a domestic market?*

This question is coded to examine whether a country allows the entry of foreign banks into a domestic market; whether branching restrictions of foreign banks are eased; and to what degree the equity ownership of domestic banks by non-residents is allowed.

- Coded as 0 when no entry of foreign banks is allowed; or tight restrictions on the opening of new foreign banks are in place.
- Coded as 1 when foreign bank entry is allowed, but non-residents must hold less than 50 per cent of the equity share.
- Coded as 2 when the majority of shares or equity ownership of domestic banks by non-residents is allowed; or equal treatment is ensured for both foreign banks and domestic banks; or an unlimited number of branching is allowed foreign banks.

Three questions look at policies to enhance competition in the domestic banking market.

2) *Does the government allow the entry of new domestic banks?*

- Coded as 0 when the entry of new domestic banks is not allowed or strictly regulated.
- Coded as 1 when the entry of new domestic banks or other financial institutions is allowed into the domestic market.

3) *Are there restrictions on branching? (0/1)*

- Coded as 0 when branching restrictions are in place.
- Coded as 1 when there are no branching restrictions or if restrictions are eased.

4) *Does the government allow banks to engage in a wide range of activities? (0/1)*

- Coded as 0 when the range of activities that banks can take consists of only banking activities.
- Coded as 1 when banks are allowed to become universal banks.

The dimension of entry barriers is coded by adding the scores of these three questions.

**Fully Liberalised= 4 or 5, Largely Liberalised= 3, Partially Repressed= 1 or 2, Fully Repressed = 0**

### IV. Capital Account Transactions

1) *Is the exchange rate system unified? (0/1)*

- Coded as 0 when a special exchange rate regime for either capital or current account transactions exists.
- Coded as 1 when the exchange rate system is unified.

2) *Does a country set restrictions on capital inflow? (0/1)*

- Coded as 0 when significant restrictions exist on capital inflows.
- Coded as 1 when banks are allowed to borrow from abroad freely without restrictions and there are no tight restrictions on other capital inflows.

3) *Does a country set restrictions on capital outflow? (0/1)*

- Coded as 0 when restrictions exist on capital outflows.
- Coded as 1 when capital outflows are allowed to flow freely or with minimal approval restrictions.

By adding these three items,

**Fully Liberalised** = [3], **Largely Liberalised** = [2], **Partially Repressed** = [1], **Fully Repressed**= [0]

## V. Privatisation

Privatisation of banks is coded as follows:

- **FL: Fully Liberalised** if no state banks exist or state-owned banks do not make up a significant portion of banks and/or if the percentage of public bank assets is less than 10 per cent.
- **LL: Largely Liberalised** if most banks are privately owned and/or the percentage of public bank assets is from 10 per cent to 25 per cent.
- **PR: Partially Repressed** if many banks are privately owned but major banks are still state-owned and/or the percentage of public bank assets is 25–50 per cent.
- **FR: Fully Repressed** if major banks are all state owned banks and/or the percentage of public bank assets is from 50 per cent to 100 per cent.

## VI. Securities Markets

1) *Has a country taken measures to develop securities markets?*

- Coded as 0 if a securities market does not exist.
- Coded as 1 when a securities market is starting to form with the introduction of auctioning of T-bills or the establishment of a security commission.
- Coded as 2 when further measures have been taken to develop securities markets (tax exemptions, introduction of medium and long-term government bonds in order to build the benchmark of a yield curve, policies to develop corporate bond and equity markets, or the introduction of a primary dealer system to develop government security markets).
- Coded as 3 when further policy measures have been taken to develop derivative markets or to broaden the institutional investor base by deregulating portfolio investments and pension funds, or completing the full deregulation of stock exchanges.

2) *Is a country's equity market open to foreign investors?*

- Coded as 0 if no foreign equity ownership is allowed.
- Coded as 1 when foreign equity ownership is allowed but there is less than 50 per cent foreign ownership.
- Coded as 2 when a majority equity share of foreign ownership is allowed.

By adding these two sub-dimensions,

**Fully Liberalised** = [4 or 5], **Largely Liberalised** = [3], **Partially Repressed** = [1, 2], and **Fully Repressed** = [0]

**\*\*NOTE\*\*** If information on the second sub-dimension was not available (as is the case with some low- income countries), the measure was coded using information on securities market development. If information on securities markets only was considered, a 0-3 scale was assigned based on the score on securities markets.

## VII. Banking Sector Supervision

1) *Has a country adopted a capital adequacy ratio based on the Basle standard? (0/1)*

- Coded as 0 if the Basle risk-weighted capital adequacy ratio is not implemented. Date of implementation is important, in terms of passing legislation to enforce the Basle requirement of 8 per cent capital adequacy ratio.
- Coded as 1 when Basle capital adequacy ratio is in force. (Note: If the large majority of banks meet the prudential requirement of an 8 per cent risk-weighted capital adequacy ratio, but this is not a mandatory ratio as in Basle, the measure is still classified as 1). Prior to 1993, when the Basle regulations were not in place internationally, this measure takes the value of 0.

2) *Is the banking supervisory agency independent from executives' influence? (0/1/2)*

A banking supervisory agency's independence is ensured when the banking supervisory agency can resolve banks' problems without delays. Delays are often caused by the lack of autonomy of the banking supervisory agency, which is caused by political interference. For example, when the banking supervisory agency has to obtain approval from different agencies such as the Minister of Finance (MoF) in revoking or suspending licenses of banks or liquidating banks' assets, or when the ultimate jurisdiction of the banking supervisory agency is the MoF, this often causes delays in resolving banking problems. In addition to the independence from political interference, the banking

supervisory agency also has to be given enough power to resolve banks' problems promptly<sup>25</sup>.

- Coded as 0 when the banking supervisory agency does not have an adequate legal framework to intervene promptly in banks' activities; and/or when there is lack of a legal framework for the independence of the supervisory agency such as the appointment and removal of the head of the banking supervisory agency; or if the ultimate jurisdiction of the banking supervision is under the MoF; or when a frequent turnover of the head of the supervisory agency is experienced.
- Coded as 1 when the objective of the supervisory agency is clearly defined and an adequate legal framework to resolve banking problems is provided (the revocation and the suspension of authorisation of banks, liquidation of banks, and the removal of banks' executives etc.) but potential problems remain concerning the independence of the banking supervisory agency (for example, when the MoF intervenes in the banking supervision (in such a case that) or when the board of the banking supervisory agency is chaired by the MoF, although the fixed term of the board is ensured by law); or when, although clear legal objectives and legal independence are observed, the adequate legal framework for resolving problems is not well articulated.
- Coded as 2 when a legal framework for the objectives and the resolution of troubled banks is set up and if the banking supervisory agency is legally independent from the executive branch and actually not interfered with by the executive branch.

3) *Does a banking supervisory agency conduct effective supervisions through on-site and off-site examinations?* (0/1/2)

Conducting on-site and off-site examinations of banks is an important way to monitor banks' balance sheets.

- Coded as 0 when a country has no legal framework and practices of on-site and off-site examinations are not provided or when no on-site and off-site examinations are conducted.
- Coded as 1 when the legal framework of on-site and off-site examinations is set up and the banking supervision agency has conducted examinations but in an ineffective or insufficient manner.
- Coded as 2 when the banking supervisory agency conducts effective and sophisticated examinations.

4) *Does a country's banking supervisory agency cover all financial institutions without exception?* (0/1)

If some kinds of banks are not exclusively supervised by the banking supervisory agency or if offshore intermediaries of banks are excluded from the supervision, the effectiveness of the banking supervision is seriously undermined.

- Coded as 1 when all banks are under supervision by supervisory agencies without exception.
- Coded as 0 if some kinds of financial institutions are not supervised by the banking supervisory or are excluded from banking supervisory agency oversight.

Enhancement of banking supervision over the banking sector is coded by summing up these four dimensions, which are assigned a degree of reform as follows:

**Highly Regulated = [6], Largely Regulated = [4-5], Less Regulated = [2-3], Not Regulated = [0-1]**

**Source:** *Abiad et al. (2008; 2010)*

<sup>25</sup> According to Omori (2004: 13), "Quintyn and Taylor (2002) categorise the independence of banking supervisory agencies into four: regulatory independence, supervisory independence, institutional independence, and budgetary independence. In this dataset, independence is measured by combining institutional independence and supervisory independence. In the case of central bank independence, a legal framework of a central bank developed for countries and/or the frequency of turnover of the governor of the central bank for developing countries are the often used indicators. However, as discussed above, since the banking supervisory agency is not necessarily vested in the central bank, legal documents for banking supervision are less available, and obtaining the information for counting the frequency of the turnover of the head of the banking supervisory agency is much more difficult. In this vein, we basically relied on experts or researchers' evaluation in coding the independence of the banking supervisory agency. Lora (1997) also created the indicators based on subjective judgement of the quality of banking supervision."

## CHAPTER THREE

### MACROECONOMIC ENVIRONMENT AND EXTERNAL CAPITAL FLOWS TO SUB-SAHARAN AFRICA (1960-2009)\*

#### 3.0 INTRODUCTION

This chapter examines the general policy environment and macroeconomic performance of post-independent SSA vis-à-vis the inflows of external financial resources to the sub-region. The policy environment and performance of the financial sector as well as the foreign sector in the sub-region are discussed to determine whether the various economic policies and reforms implemented by the sub-region have had any significant impact on macroeconomic performance and external capital flows. The focus of this chapter is on the period 1960-2009, and this is based, essentially, on relevance and data availability. Rather than adopting a rigorous econometric analytical framework, a set of simple descriptive statistical measures *viz.* arithmetic mean, correlation coefficients and trend analyses are used to provide an insight into the historical antecedents of the sub-region from a macroeconomic perspective. In doing this, the chapter reviews the post-colonial political economy of SSA, and does a series of contextual analyses of the macroeconomic performance and policy environment of SSA under the pre-reforms era (1960-1979), the reforms era (1980-1989), and the post-reforms era (1990-2009). Following this, the chapter discusses macroeconomic performance and foreign capital flows to SSA, and the trends and dynamics of remittance flows to SSA from a global perspective. The chapter also outlines the stylised facts of migrant remittance flows to SSA, and the policy imperatives of remittance inflows and macroeconomic policy stance for the sub-region.

#### 3.1 BACKGROUND

Notwithstanding the Darfur crisis, which has been ongoing since February 2003, the Somalia civil war, the Chad civil war and the hardly settled border and territorial dispute between Nigeria and Cameroon over the right of ownership of the Bakassi Peninsula, largely, the political economy of modern SSA appears to be relatively stable since post-independence. Today, virtually every SSA country has what can be described as a multi-party democratically elected president. Again, collectively, countries within the SSA sub-region now visibly frown on military

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\* A paper from this Chapter titled, "Macroeconomic Environment and Remittances in Post-Independent Sub-Saharan Africa: Magnitudes, Trends and Stylised Facts," was presented at IMF Staff Seminar, February 16, 2011, Washington, DC, USA. This paper has been published in *Journal of Studies in Economics and Econometrics*, 36(2): 1-22.

take-overs, dictatorship, and the use of constitutionally unapproved means to assume political leadership. More than ever before, the African Union (AU) and the international community, especially western trade and donor partners<sup>26</sup> now act very swiftly to sanction governments and leaders that violate human rights, adopt extremist discrimination practices, and exploit undemocratic means to assume political leadership in countries within the sub-region. For instance, unprecedented in the history of the Economic Community of West African States (ECOWAS), the sub-regional body acted very swiftly to review the political and security situation in Côte d'Ivoire after the declaration of certified second round Presidential election results on November 28, 2010. Subsequently, ECOWAS issued a statement within ten days after the elections to denounce the incumbent President, Mr. Laurent Gbagbo, and asked him to concede defeat without delay. This is expected to continue to create the propitious environment for some consistency in the formulation and implementation of pro-growth and sustainable development policies under adopted national economic development programmes towards the socioeconomic progress of the sub-region.

The strides being made in improving good governance and building stronger state institutions provide a stable political environment necessary for creating the ideal investment atmosphere required for the mobilisation of critical resources in SSA. Apart from the encouraging developments on the political landscape of the sub-region, various macroeconomic policy reform programmes have been adopted and implemented by SSA countries since political independence in the 1960s. Each of these programmes was, among other things, centred on mobilising domestic and external resources crucial to the socioeconomic development agenda of the sub-region since SSA has been identified as the region most lacking critical resources (Devarajan *et al.*, 2002; Gupta, Powell and Yang, 2006). And as the sub-region is identified as one of the leading net exporters of skilled and unskilled labour to the industrialised world (Migration Policy Institute, 2006), the question that has remained unanswered is: Has the implementation of various macroeconomic policies led to higher inflows of migrant remittances during the post-independence era? In other words, are remittance inflows from SSA migrants from abroad responsive to the changing macroeconomic policy environment? In order to find the appropriate response to this question, this chapter seeks to explore the relationship between the changing inflows of migrant remittances and the various macroeconomic policies

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<sup>26</sup> This refers essentially to those from Europe, the US and Canada. In recent years, however, China has emerged as the leading trading partner and investor in SSA. Chinese companies invested US\$ 1 billion in Africa in 2007 (Politzer, 2008).

implemented by SSA as a sub-region since independence. In doing so, rather than adopting a rigorous macroeconometric analytical approach, this chapter uses a set of simple descriptive statistics to provide insight into the performance of the sub-region in attracting remittances during the post-independence era. A more rigorous econometric analysis of the determinants of international migrant remittances under changing macroeconomic policy environment is reserved for Chapter Four.

### **3.2 A CONTEXTUAL ANALYSIS OF POLICY ENVIRONMENT AND MACROECONOMIC PERFORMANCE OF SSA (1960-2009)**

Generally, the macroeconomy of SSA has not witnessed any significant and consistent improvement since independence<sup>27</sup>, even though there was a major policy paradigm shift across the length and breadth of the sub-region in the 1980s. The major policy reform the sub-region underwent after independence has been the IMF/WB-led Economic Recovery Programme (ERP) that embodied the Structural Adjustment Programme (SAP). Although there has been some marginal progress in financial sector development and export growth, SSA still lags behind in development, about fifty years after independence, with no significant gains in terms of poverty reduction, food security, technological advancement and industrialisation, production capacity and high productivity. From a macroeconomic perspective, these elements of (under)development crop up from the structures of production, consumption, external trade, technology, employment as well as the economic system and socio-political configuration of an economy. It is, therefore, impossible to offer any functional understanding, remedies or policy recommendations aimed at addressing these entrenched problems of SSA without a thorough structural analysis of the political economy of the sub-region. Therefore, this chapter presents structural analyses of SSA which broadly take into account a critical examination of the enabling and disabling internal and external macroeconomic factors which prevailed during the period 1960-2009 under three main regimes – the pre-reforms, the reforms, and the post-reforms regimes.

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<sup>27</sup> In recent years (i.e. between 2000-2009), however, available data show improvements in key macroeconomic indicators such as real GDP *per capita*, and rate of inflation comparable to what was attained in the 1960s and the 1970s (see, for instance, Table 3.1).

### 3.2.1 The Pre-Reforms Era (1960-1979)

Many SSA countries, including *inter alia* Botswana, Democratic Republic of Congo, Ghana, Kenya, Nigeria, Senegal, South Africa, and Uganda, were bequeathed reasonable international reserves and social infrastructure in the form of schools, hospitals, and road networks concentrated in the urban centres at the time of their political independence, albeit with poor transport systems, unreliable energy supplies and high levels of illiteracy, poverty, and malnutrition, especially in the rural communities which constituted at least two-thirds of their economies. The economy of SSA was largely subsistence and agrarian with low industrialisation at the time of independence. The key structural features of the economy of SSA at the time of independence can be described as including:

- i. over-dependency on the primary sector with raw agricultural products and exhaustible natural resources<sup>28</sup> dominating exports;
- ii. a predominantly subsistence economy in production and domestic trade, and hence a large informal sector;
- iii. a fragmented economy that neglected the large rural economy, the informal sector and, indeed, the private sector which was virtually crowded out by the public sector, hence entrepreneurial spirit was not fostered.
- iv. an absence of strong regional trade among SSA countries;
- v. low production capacity that relied on high labour-intensive and non-scientific or out-dated production techniques; and
- vi. low technological and infrastructural base, and absence of a strong institutional capacity.

Nevertheless, given the enthusiastic interest and commitment of the indigenous people in taking over the political leadership and in managing their own affairs, there was high optimism that independent SSA countries would quickly transform the structure of their economies and attain higher-income status, once the available resources were put to optimal use. Unfortunately, within the era under consideration (1960-1979), most of the economic policies adopted by governments within the sub-region were restrictive with over-emphasis on exports of raw primary products rather than commitment to value-addition and industrialisation. Most of the industries inherited from the colonial masters were used mainly to produce import-

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<sup>28</sup> These include minerals like timber, gold, bauxite, manganese, diamond, iron ore, and uranium.

substituting consumer goods.

With economic policies being largely socialist in content, the state played a leading role in investment and industrialisation which by the mid 1970s, had rapidly eroded all the reserves inherited, especially as most of the heavy investments were not made prudently<sup>29</sup>. Thus, it can be argued that, to a very large extent, bad governance and lack of vision and leadership qualities resulting in *ad hoc* implementation of economic policies, mismanagement and corrupt practices, together with political instability, drought, conflicts, and lack of adequate resources to address the numerous socioeconomic problems facing the sub-region, led to stagnated growth and underdevelopment of the sub-region. Many scholars and institutions, including Sachs and Warner (1997) and AFRODAD (2007), blame the economic woes of the sub-region on external factors such as declining prices of primary products, decreasing net inflows of official and private financial resources, global recessions and oil price shocks of the 1970s and early-1980s, and policy prescriptions by international financial institutions (mainly the IMF and the World Bank). However, this assertion can be challenged insofar as good vision and other quality leadership skills can play a decisive role in negotiations, the choice of a development strategy, and the timing and sequencing of policy implementation. For example, according to Sahn *et al.* (1994), consensus on the causes of the abysmal performance of post-independence Africa does not only end with external factors such as the collapse of commercial lending to developing countries and worldwide economic recession, but also with the fact that the implementation of economic policies was misguided. By the late 1970s, the IMF in partnership with the World Bank concluded that the source of economic problems confronting developing countries and, indeed, SSA is basically lack of structural transformation and, hence, they advocated extensive economic reforms in these economies.

### **3.2.2 The Reforms Era (1980-1989)**

By the end of the 1970s, it was evident that SSA could no longer rely on inward-looking economic policies and industrialisation strategies, which were vulnerable to external shocks, to resolve the deep-seated impediments to economic growth and prosperity and, subsequently, put the sub-region on a sustainable path to reverse its worsening economic fortunes. Thus, two decades after the political independence of SSA, its economic performance was worse and

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<sup>29</sup> In Ghana, for example, Nkrumah (the First President of the Republic) established about 200 state-owned industries without taking into account the regular supply of raw materials required to feed these 'state-protected industries'. As a result, many of these state monopolies never functioned whilst a majority of the remaining state-owned industries operated below full capacity but with large full-time workers on the state payroll.

characterised with declining *per capita* growth, galloping inflation, a worsening balance of payments, a debilitating debt burden, and rising unsustainable fiscal deficits, unemployment, poverty and deprivation (see Figure 3.1 and Tables 3.1 and 3.2). It became apparent that SSA needed to adjust its economy to eliminate structural imbalances and react appropriately to external shocks. In response, during the 1980s, many SSA countries accepted and pursued the IMF/WB-recommended economic policy reforms towards stabilisation and structural transformation under a policy package known as the Economic Recovery Programme and Structural Adjustment Programme (ERP/SAP)<sup>30</sup>. Essentially, economic reforms connote economic openness and market fundamentalism for macroeconomic stability through policies of privatisation, deregulation and liberalisation as prescribed by Bretton Woods Institutions, notably the IMF and the World Bank, in the late 1970s. The broad sets of policy recommendations by these institutions can be summarised as:

- i. austerity and fiscal policy discipline;
- ii. redirection of policy spending from subsidies (especially indiscriminate subsidies) toward broad-based provision of key pro-growth, pro-poor services like primary education, primary healthcare and infrastructural investment;
- iii. tax reforms via broadening the tax base and adopting moderate marginal tax rates;
- iv. interest rates that are positive but moderate in real terms and freely determined by the financial market forces;
- v. competitive exchange rates;
- vi. privatisation or divestiture of state-owned enterprises;
- vii. trade liberalisation with special emphasis on elimination of quantitative restrictions (licensing, etc.); any trade protection to be provided by low and relatively uniform tariffs;
- viii. financial sector reforms to include the establishment or revitalisation of domestic capital markets and the liberalisation of inward foreign direct investment;
- ix. deregulation to include abolition of regulations that impede market entry or restrict competition, except for those justified on safety, environment and consumer protection grounds, and the prudent oversight of financial institutions; and
- x. legal security for property rights.

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<sup>30</sup> According to OAU (1985), more than 30 African countries adopted ERP/SAP as of 1988 with support from the IMF and the World Bank.

It is essential to point out that although both the IMF and the World Bank often lend to economically depressed and developing countries, these loans are packaged to address different problems confronting the beneficiary countries<sup>31</sup>. For instance, while the IMF mainly lends to countries suffering from BoP problems and hence cannot repay their accumulated external debts, the World Bank extends loans to enable countries, (mainly LDCs) to finance specific development projects. Accordingly, traditional IMF Structural Adjustment Loans (SALs) are due to be repaid within 30 and 48 months and are mainly directed at the temporary fixing of problems that confront a country in crisis of an apparently perpetual macroeconomic imbalance. The World Bank's SALs, however, are a longer-term credit package of loans and grants to countries to finance critical development projects. In this regard, the World Bank is functionally structured into two: the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). Whereas IBRD focuses on middle-income and credit-worthy poor countries, IDA focuses on the lowest and least credit-worthy countries. Therefore, in the 1980s, most SSA countries contracted IMF/WB SALs to tackle various economic problems concurrently.

The pursuit of ERP/SAP generally involved the implementation of stringent economic policies and measures of demand management towards rationalising the overall expenditure pattern in order to restore financial stability, fiscal balance and external equilibrium. These policies were implemented through reliance on market forces and private sector-led growth. In effect, the pursuit of ERP/SAP signified a radical departure from all previous socialist-oriented policies adopted by the sub-region. By and large, the implementation of ERP/SAP resulted in the abandonment of state controls and restrictions on prices, imports, and exchange rates. Broadly, the various policy measures under the reforms programme were pursued in varying degrees of implementation. Whilst countries like Benin, Ethiopia, Ghana and Malawi tried to follow the prescriptions of the ERP/SAP strictly, others like Kenya, Nigeria and Zimbabwe initiated a number of complementary policies and programmes such as national employment programmes, urban mass transit programmes, relief packages for public sector workers, and food, road and rural infrastructural programmes alongside the ERP/SAP.

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<sup>31</sup> Aside the IMF and the World Bank as the main sources of institutional loans to developing countries, many of these countries also rely on bilateral loans which can take the form of overdrafts, term loans and revolving credit facility. Another form of credit available to developing countries is syndicated loans which are provided by a group of lenders to developing countries.

The outcome of the ERP/SAP has, however, not shown which of these forms of implementation is more successful. For instance, the major gains of ERP/SAP across the sub-region can be noted as increased access of the private sector to foreign exchange and markets, export diversification leading to the emergence of non-traditional commodities, increased international trade openness, and improved access to financial services. Other achievements include restructuring of public enterprises and freeing of prices. Despite these gains, the macroeconomy failed to recover fully from the declining trend as reflected in real income *per capita* growth, domestic savings and investment, basically because output *per capita* growth failed to keep pace with population growth (see Table 3.1). Also, until quite recently, there were no reversals in the rising trend of external debt accumulation and the rate of inflation. These suggest that the formulation of various specific macroeconomic policies and their implementation under the broad ERP/SAP programme were erratic, as most SSA governments lacked full commitment to the underlying principles and short-term objectives of ERP/SAP. For instance, in many SSA countries including Gambia, Ghana, Kenya, Senegal and Tanzania, governments kept on subsidising some non-essentials and at the same time continued with increased spending on non-productive activities in breach of the ideals of ERP/SAP in order to gain political popularity. This has led to structural imbalances, macroeconomic instability and economic retardation that still persist and abound among virtually all countries which adopted the ERP/SAP in SSA.

Thus, by the mid-1980s, SSA countries were blaming the orthodox ERP/SAP for the poor economic performance of the sub-region. According to these countries, the classical policy instruments of credit control, tight money supply, flexible exchange rate and interest rate adjustments, fiscal discipline and tax reforms, and trade liberalisation, by their very design, had no human face to bring about the desired impact on their economies. Besides, the 'conditionalities' of these IMF SALs in particular had made it difficult for the countries within the sub-region to attain the desired self-sufficiency and economic independence. Therefore, by 1986, with support from the UN, governments from the sub-region, through the OAU, had designed three complementary/alternative SAP versions<sup>32</sup> for selective implementation across SSA.

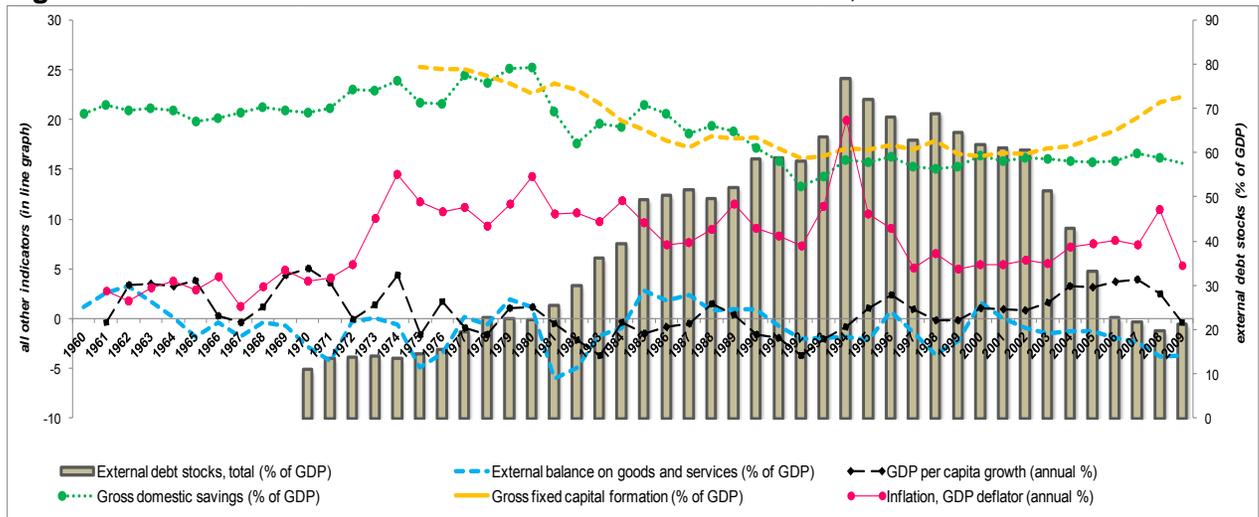
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<sup>32</sup> This includes UN-led United Nations Programme of African Economic Recovery and Development (UN-PAAERD) for 1986-1990 and the UN-led African Alternative Framework to Structural Adjustment Programmes for Socioeconomic Recovery and Transformation (AAF-SAP) for 1989/1990. See Table A3.2 in the Appendix for details on the two key alternative programmes, namely UN-PAAERD and AAF-SAP.

### 3.2.3 The Post-Reforms Era (1990-2009)

As shown in Figure 3.1 and Tables 3.1 and 3.2 below, the various policy reforms initiated by SSA countries did not achieve much in the 1980s. The failure of the orthodox IMF/WB-led ERP/SAP<sup>33</sup> and other modified supportive SSA versions<sup>34</sup> to address the key problems confronting the sub-region meant that other purposive and positive actions were required to break the structural bottlenecks and imbalances to position the economy of SSA towards sustainable growth and to protect it against economic shocks.

**Figure 3.1:** Trends in Selected Macroeconomic Indicators in SSA, 1960-2009



**Source:** Author based on WDI and GDF (April 2011). **Note:** The starting point of gross fixed capital formation and external debt stock are 1970 and 1975 respectively because regional data for earlier years were non-existent.

By and large, these modified ERP/SAP programmes and supportive frameworks designed to guide economic policy implementation and to break the shackles of underdevelopment have not achieved the desired results. The extent of the lack of success of these policy initiatives can be easily measured by the number of SSA countries that were forced into adopting the HIPC Initiative at the beginning of this new millennium. By adopting the HIPC Initiative, the countries have accepted the fact that they are poor and cannot manage their debts sustainably, and hence need international support to address critical socioeconomic problems under a Poverty Reduction Strategy (PRS) within the context of IMF’s Poverty Reduction and Growth Facility

<sup>33</sup> See Dollar and Svensson (2000) for evidence and reasons on why SAP was less successful in low-income and African countries. Van de Walle and Johnston (1996) and Knight and Santaella (1997) also provide other possible reasons for the failure of ERP/SAP in most developing countries.

<sup>34</sup> These are UN-PAAERD and AAF-SAP.

(PRGF)<sup>35</sup>. Thus, at present, SSA still remains the poorest region in the world and requires the most resources to provide essential social amenities and to achieve the Millennium Development Goals (MDGs).<sup>36</sup>

In Figure 3.1, it is shown that SSA has not made much economic progress since independence in the 1960s. For instance, as a proportion of GDP, gross fixed capital formation and external balance on goods and services are lower today than at the time of independence (see also Table 3.1). Similarly, GDP *per capita* growth is lower in the 2000s than in the 1960s just like gross domestic savings as a percentage of GDP, although showing a consistent upward trend since the mid-1990s, and still lags behind the level attained in the mid-1970s.

Inflation, which averaged about three per cent in the 1990s, increased to an average of seven per cent in the 2000s. In a similar fashion, external debt stock as a percentage of GDP increased from about 15 per cent during the pre-reforms era to a high of over 70 per cent in the 1990s before debt cancellation and other reliefs under HIPC initiatives reduced it to about 22 per cent between 2006 and 2009.

### 3.2.4 Macroeconomic Performance and Policy Environment in SSA

Table 3.1 summarises the key macroeconomic performance indicators of SSA since independence.

A key feature of the sub-region is that it is apparently trapped in a low-income equilibrium level as its annual population growth rate consistently exceeds its annual GDP *per capita* growth rate. In fact, even though the average annual population growth rate today is similar to what it was at the time of independence, average yearly GDP *per capita* growth rate today is lower than the rate attained in the 1960s. During the reforms era and in the first decade of the post-reforms era, average growth in *per capita* income was negative whereas population growth was 2.81 per cent for the reforms era reaching an all-time high of 2.91 per cent in the 1980s. The undesirable consequences for the higher dependency, unemployment, underemployment, net savings and investment are obvious and unambiguous.

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<sup>35</sup> See Table A3.1 in the Appendix for the list of SSA countries that adopted the HIPC Initiative as of June 30, 2010 and Table A3.2 in the Appendix for details on HIPC Initiative as an economic development strategy.

<sup>36</sup> Refer to Table A1.1 in Chapter 1, Brossard and Gacougnolle (2001), AfDB (2002), Mingat *et al.* (2002), World Bank (2002) and World Bank (2003) for details on estimated resources required by SSA to meet MDGs and see Box A3.1 for the list of MDGs.

**Table 3.1: Macroeconomic Performance and Policy Environment in SSA, 1960-2009**

| Key Macroeconomic Indicators             | Pre-Reforms Era |         |         | Reforms | Post-Reforms Era |         |         | Overall Period |
|--|-----------------|---------|---------|---------|------------------|---------|---------|----------------|
|  | 1960-69         | 1970-79 | 1960-79 | 1980-89 | 1990-99          | 2000-09 | 1990-09 | 1960-2009      |
| GDP (constant 2000 US\$ billions)        | 120.64          | 190.97  | 155.81  | 243.36  | 293.83           | 422.66  | 358.25  | 254.29         |
| GDP growth (annual %)                    | 4.64            | 4.07    | 4.34    | 2.17    | 2.02             | 4.54    | 3.28    | 3.46           |
| GDP per capita (constant 2000 US\$)      | 469.57          | 573.66  | 521.62  | 552.17  | 504.61           | 558.08  | 531.35  | 531.62         |
| GDP per capita growth (annual %)         | 2.06            | 1.26    | 1.64    | -0.72   | -0.67            | 1.97    | 0.65    | 0.75           |
| External balance (% of GDP)              | 0.35            | -1.51   | -0.58   | -0.37   | -1.43            | -1.41   | -1.42   | -0.87          |
| External debt stocks, total (% of GDP)   | -               | 15.64   | 15.64   | 39.72   | 65.22            | 39.56   | 52.39   | 40.03          |
| Gross fixed capital formation (% of GDP) | -               | 18.83   | 18.83   | 18.33   | 17.16            | 16.87   | 17.02   | 17.80          |
| Gross domestic savings (% of GDP)        | 19.40           | 28.87   | 24.13   | 22.23   | 14.48            | 23.50   | 18.99   | 21.70          |
| Inflation (annual %)                     | 3.06            | 9.18    | 6.28    | 10.68   | 10.00            | 7.03    | 8.51    | 8.09           |
| Population growth (annual %)             | 2.53            | 2.78    | 2.66    | 2.91    | 2.71             | 2.52    | 2.62    | 2.69           |

**Source:** Author's computations from WDI (April 2011). **Note:** GGFCE and GFCF denote general government final consumption expenditure and gross fixed capital formation respectively.

Again, on the average, annual GDP growth rate, external balance and domestic investment are lower today than at the time of political independence. Annual average inflation is also higher today than it was in the 1960s. These bear testimony to the fact that the economic fortunes of the sub-region are worse today than 50 years ago, with lower aspirations for greater prospects in the future. This surely is enough incentive for the active labour force to seek greener pastures outside the sub-region, and this has actually been the case in recent years.

As far as the foreign sector is concerned, it can be argued that the sub-region chalked some remarkable successes, even though the ultimate indicator, the international trade balance, is still low and negative compared to what was recorded in the 1960s as shown in Table 3.2. For example, as evident in Table 3.2, on the average, the current account balance turned positive for the first time in the 2000s.

**Table 3.2: International Trade Performance and Policy Environment in SSA, 1960-2009**

| External Sector Policy Indicators               | Pre-Reforms Era |         |         | Reforms | Post-Reforms Era |         |         | Overall Period |
|---|-----------------|---------|---------|---------|------------------|---------|---------|----------------|
|   | 1960-69         | 1970-79 | 1960-79 | 1980-89 | 1990-99          | 2000-09 | 1990-09 | 1960-2009      |
| Current account balance (% of GDP)              | -0.09           | -1.56   | -0.82   | -2.31   | -2.13            | 0.85    | -0.64   | -1.05          |
| Exports of goods and services (% of GDP)        | -               | 26.86   | 26.86   | 23.79   | 26.67            | 34.16   | 30.42   | 28.08          |
| Exports of goods and services (annual % growth) | -               | 20.18   | 20.18   | 1.68    | 4.23             | 13.42   | 8.82    | 7.30           |
| Exports of goods (% of GDP)                     | -               | 23.90   | 23.90   | 20.94   | 22.52            | 29.42   | 25.97   | 24.26          |
| Imports of goods (% of GDP)                     | -               | 21.36   | 21.36   | 18.76   | 20.82            | 24.58   | 22.70   | 21.38          |
| Import cover (goods exports/goods imports)      | -               | 1.12    | 1.12    | 1.13    | 1.09             | 1.20    | 1.14    | 1.14           |
| International trade balance (% of GDP)          | 0.35            | -1.29   | -1.22   | -0.97   | -1.80            | -0.23   | -1.02   | -1.06          |
| Openness to international trade (%)*            | -               | 55.01   | 55.01   | 48.54   | 55.14            | 68.56   | 61.85   | 57.20          |

**Source:** Author's computation based on WDI (April 2011). \*Exports plus imports of goods and services as % of GDP

In addition, despite the fact that growth in exports and imports of goods as a percentage of GDP can be described as virtually stagnant since political independence, foreign trade policy indicators, notably import cover (measured as value of exports as a ratio of imports of goods) and international trade openness have assumed affirmative and encouraging trends in recent years. More specifically, as evident in Table 3.2, import cover of 1.20 for the 2000s averaging 1.14 for the post-reforms era is a slight improvement over the pre-reforms average of 1.12. In a similar fashion, the degree of international trade openness which stood at 55.01 per cent during the pre-reforms era, improved significantly to 68.56 per cent in the 2000s and averaged 61.85 per cent for the post-reforms period.

An overview of the performance of the financial sector has shown that, arguably, monetary policy instruments have not succeeded in reducing financial risk as interest rate spread increased from six per cent during the pre-reforms era to 11.76 per cent in the 2000s averaging 10.98 per cent for the post-reforms era (Table 3.3).

**Table 3.3:** Financial Sector Performance and Monetary Policy Environment in SSA, 1960-2009

| Monetary and Financial Sector Indicators      | Pre-Reforms Era |         |         | Reforms | Post-Reforms Era |         |         | Overall Period |
|---|-----------------|---------|---------|---------|------------------|---------|---------|----------------|
|   | 1960-69         | 1970-79 | 1960-79 | 1980-89 | 1990-99          | 2000-09 | 1990-09 | 1960-2009      |
| Bank liquid reserves to bank assets ratio (%) | 4.72            | 5.00    | 4.90    | 9.50    | 13.79            | 14.03   | 13.91   | 9.82           |
| Domestic credit by banks (% of GDP)           | 39.32           | 41.64   | 40.87   | 56.49   | 75.48            | 84.09   | 79.79   | 61.64          |
| Domestic credit to private sector (% of GDP)  | 28.75           | 28.82   | 28.79   | 36.69   | 53.88            | 59.50   | 56.69   | 42.95          |
| Interest rate spread (%)                      | -               | 6.00    | 6.00    | 6.59    | 10.35            | 11.76   | 10.98   | 8.65           |
| Listed domestic companies, (end of period)    | -               | -       | -       | -       | 1,139.00         | 991.00  | 991.00  | 991.00         |
| Market capitalization (% of GDP)              | -               | -       | -       | -       | 100.51           | 103.94  | 102.23  | 102.23         |
| Money and quasi money ( $M_2$ ) as % of GDP   | 42.29           | 29.26   | 32.99   | 32.71   | 32.80            | 35.45   | 34.12   | 33.44          |
| Stocks traded, total value (% of GDP)         | -               | -       | -       | -       | 17.19            | 38.77   | 28.81   | 28.81          |
| Stocks traded, turnover ratio (%)             | -               | -       | -       | -       | 17.53            | 28.56   | 24.55   | 24.55          |

**Source:** Author's computations from WDI and GDF (April 2011)

Financial depth, measured as broad money ( $M_2$ ) as a percentage of GDP, also declined considerably from an average of 42.29 per cent in the 1960s with a pre-reforms average of 32.99 per cent to 35.45 per cent in the 2000s with a post-reforms average of 34.12 per cent. When using this indicator, it is difficult to conclude that a significant amount of money still circulates outside the banking system which points to low public confidence in the banking system and the extent to which the economy is under-banked. The reason is that broad money includes currency in circulation and demand deposits; and it is expected that as a financial

system develops, quasi money should increase as financial institutions mobilise more excess funds, thereby reducing the currency in circulation. Unfortunately, data on narrow money ( $M_1$ ) is not available on a regional basis.

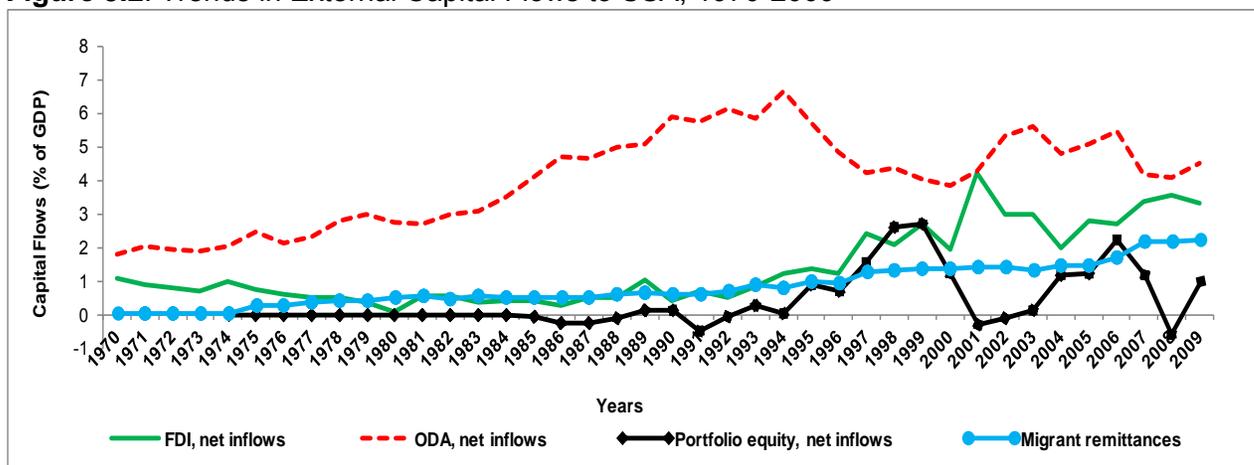
However, a lot was achieved as liquid reserves to bank assets increased sharply from 4.90 per cent in the pre-reforms era to 9.50 per cent during the reforms, and to 13.91 per cent during the post-reforms era. Similarly, as a ratio of GDP, domestic credit by the banking sector increased from 40.87 per cent to 79.79 per cent on the average during the same period. Also worth noting, more importantly, is the upshot in domestic credit to the private sector as a ratio of GDP. This ratio increased from 28.79 per cent during the pre-reforms era to as much as 36.69 per cent during the reforms era, further rising to 56.69 per cent for the post-reforms era, as shown in Table 3.3.

### 3.3 EXTERNAL CAPITAL FLOWS TO SSA (1960-2009)

#### 3.3.1 Composition and Trends in External Capital Flows to SSA: A Global Outlook

Conventionally, besides contractual loans, capital flows to SSA and other developing economies are a composition of FDI, ODA, and portfolio equity. In recent years, however, remittances have emerged as a complementary source of external capital for developing countries. Figure A3.1 in the Appendix depicts the trends in external capital flows to the various developing economies of the world. Figure 3.2 shows the trends in external capital flows to SSA since 1970.

**Figure 3.2:** Trends in External Capital Flows to SSA, 1970-2009



Source: Author's estimation based on WDI and GDF (April 2011)

Clearly, external capital flows to SSA were generally low during the pre-reforms era. From the reforms era in the 1980s and onwards, there have been somewhat consistent low upward trends in external capital flows to the sub-region even though these trends, except for migrant remittances, have been fluctuating widely. On the average, the lowest external capital inflow is portfolio equity, whereas, consistently, ODA has been the highest inflow to the sub-region since independence. As depicted in Figure 3.2, the sub-region has not been successful in attracting external capital inflows in a consistent manner, except probably for migrant remittances. Arguably, the apparent consistency in the inflows of migrant remittances could be attributed to the continuously growing poverty in the sub-region and the development gap between SSA and the industrialised world<sup>37</sup>. The persistently high rates of unemployment and underemployment, features of developing countries, have led to these poor SSA countries being trapped in low-income equilibrium, with no reversibility in sight. The ever-increasing income gap has become a recipe for emigration and subsequent inflows of remittances in SSA. In this case, driven by altruism, migrants from SSA are compelled to continue to remit home, mainly for consumption purposes, for so long as the economic conditions at home do not improve<sup>38</sup>. Miotti *et al.* (2010: 17) observe that given the severity of poverty within the sub-region, SSA migrants, unlike migrants from other countries in the developing world, are compelled to “send money for current expenditures rather than for investment purposes”.

Under this circumstance, international migrants from the sub-region are compelled to remit to their families back home for altruistic motives and not in response to successful implementation of economic policies by governments. As evident from various survey studies from different parts of the world, migrant remittances are mainly used for consumption (Tongamo, 1987; Loomis, 1990; Hayes, 1993; Clark, 2004; Miotti *et al.* 2010), and most migrants from poor countries are under social obligation to remit home (Morauta, 1985; Tongamo, 1987; Boyd, 1990; Brown and Poirine, 2005). It should, however, be emphasised that as to whether a migrant will patronise the formal financial market in remitting home or use the unofficial money transfer channels is largely dependent upon the degree of financial efficiency, an aspect of financial development which incorporates the cost of financial service delivery including the cost of international money transfers. Unofficial money transfer channels are private and often

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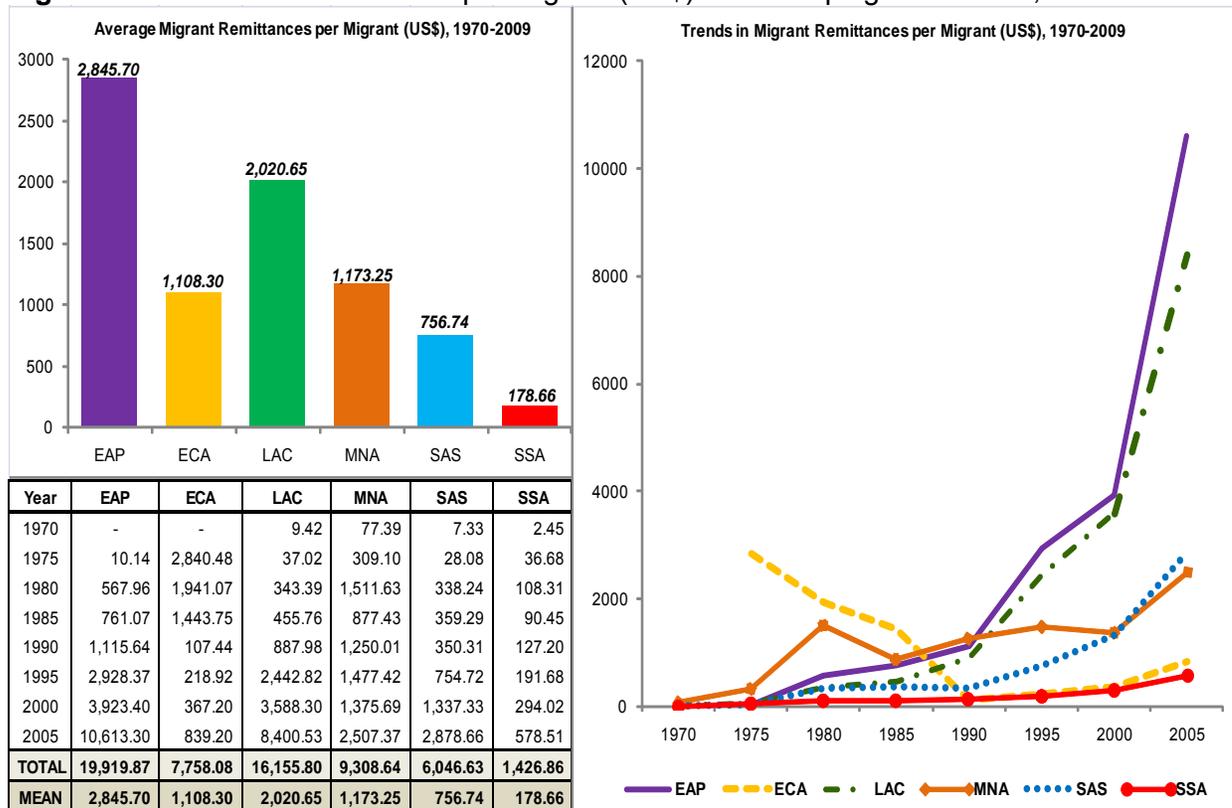
<sup>37</sup> It is important to emphasise that although emigration of skilled labour from poorer regions to the industrialised world often leads to higher remittance inflows in migrant-home countries, it is only migrant-home countries with efficient institutions and financial markets that are more likely to record relatively higher remittances through official channels. Therefore, the fact that SSA is poorer than LAC and SAS, but the former receives less officially reported remittances should not be seen as counter-intuitive.

<sup>38</sup> See van Dalen *et al.* (2005) for empirical evidence from Egypt and Turkey.

unorganised money transfer channels to target recipients in developing countries. These channels may include funds sent by the migrant when travelling home through fellow international migrants such as friends, relatives or drivers travelling home, and a network of private individuals in a system commonly called the *hawala* or *hundi*. Also, easy access for migrants to offshore banking services and online banking and the availability of innovative international financial products, which are all aspects of financial system development noted in Chapter Two, can be instrumental in attracting remittances through the formal financial sector.

Figure 3.3 reconfirms the information in Figure 3.2 that, generally, there has been a positive growth trend in remittances received in SSA and other developing economies, when measured as a ratio of international migrant stock. This trend is also consistent with what has been revealed in Figure A3.1 as well as Figure A3.2 in the Appendix. With the exception of ECA which recorded a sharp drop in remittance flows between 1970 and 1990, virtually all the developing regions, including SSA, witnessed a consistent positive growth trend in migrant remittances per migrant (Figure 3.3).

**Figure 3.3: Remittances Received per Migrant (US\$) in Developing Economies, 1970-2009\***



**Source:** Author based on WDI and GDF (April 2011) \*Computation based on 5-year data point intervals for which data is available on total international migration stock reported in WDI by the World Bank.

Although SSA receives the least remittances per migrant, both in total amount and in terms of growth since 1970, the sub-region, like many other developing economies, has witnessed a positive growth trend since the post-reforms era. What is clear from Figure 3.3 above is that, on the average, international migrants have been increasing the amount they send home over time. This may be due to the ever-increasing income gap between the industrialised countries where migrants are resident and the developing countries, where migrants are natives. Another possible reason is that developing countries which are the main 'exporters of migrants', have not been able to improve upon the livelihood of their citizens, hence the compelling need for migrants to keep increasing remittances in support of their families left behind to enable them access basic human needs such as food, clothing and healthcare.

Between the years 2000 and 2005, there has been about a 100 per cent rise in remittances per migrant to SSA and, indeed, to other developing economies. A possible explanation is that the US and many advanced countries strengthened regulations and clampdowns on unofficial international fund transfers following the September-11 Al Qaeda attacks (Gupta, 2005). Thus, unlike in the past, migrants are now obliged to transfer funds home using official channels. It is also likely that more migrants from SSA might now be more interested in returning home. Several studies, including those of Merkle and Zimmermann (1992), Brown (1997), Gubert (2002), and Cai (2003) found that migrant intention to return home (or future migration plans) has a strong positive impact on the probability of remitting and the amount of funds transferred by migrants. The magnitude and trends in external capital flows to SSA appear quite different from those in other developing economies of the world, as shown in Figure A3.1 in the Appendix. For instance, as shown in Figure A3.1, migrant remittances are either the highest (as is the case for MNA and SAS) or the second-highest (as is the case for EAP, ECA and LAC) external capital inflows, but in the case of SSA alone, migrant remittance inflows are only slightly higher than portfolio equity inflows. Again, in SSA, ODA has remained consistently the highest type of external capital inflows, but for all other developing economies, ODA has either been the lowest (as is the case for EAP and LAC) or the second lowest (as is the case for ECA, MNA and SAS). Since the inflows of FDI are generally driven by profit motives whereas ODA are mainly linked to humanitarianism of the donor country or institution, the fact that SSA constantly receives ODA as the highest form of external capital inflows is a signal that the sub-region has not been able to implement the appropriate economic policies to pull quality external resources to advance its sustainable growth and development.

It is also of interest to note that migrant remittances have been the most consistently growing external capital flows to developing economies in the world whilst ODA and portfolio equity have been the most volatile, as shown in Figure A3.1. In addition to its high volatility, generally, ODA to developing economies has been declining. This is an indication that it will be prudent for developing countries, particularly those in SSA, to put policy measures in place to facilitate an improved mobilisation of non-aid investment-related external capital to finance their development projects, as well as to enable them to address their numerous underdevelopment problems on a permanent basis. Evidently, migrant remittances are the least sensitive to shocks, given the high and relatively smooth pattern of inflows to SSA and other developing economies. Another important observation is that, whereas there seems to be a somewhat general positive correlation between FDI and migrant remittance inflows to developing economies, in contrast, there seems to be a negative relationship between migrant remittance inflows and ODA across the developing world. Thus, developing economies that attract higher migrant remittances also attract higher FDI but relatively lower ODA, and *vice versa*. For instance, while being the sub-region that receives the least remittances, SSA also receives the least FDI but the most ODA, whereas the opposite scenario commonly holds for the other developing economies (see Figure A3.1).

According to the altruistic theory, given the net income of a migrant, remittances should negatively correlate with the income level of target recipients (Lucas and Stark, 1985; Rapoport and Docquire, 2006). Indeed, some macro-level studies, notably those by Bougha-Hagbe (2004), Cartagena (2004), Gupta (2005), Mishra (2005), and World Bank (2006b) as well as Giuliano and Ruiz-Arranz (2009) for countries with less developed financial systems, conclude that remittances are countercyclical in recipient countries. Contrary to this highly held view of remittance counter-cyclicality, it has been revealed that migrant remittance inflows generally correlate positively with real GDP *per capita*, growth in real *per capita* GDP, real GDP growth and even real GDP per person employed in developing economies<sup>39</sup> as shown in Adenutsi *et al.* (2012). Other empirical studies which found that remittances are largely pro-cyclical in the recipient countries include studies by the IMF (2005a), Lueth and Ruiz-Arranz (2007a), and Sayan (2006).

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<sup>39</sup> This does not necessarily imply the popularly held view has been invalidated since correlation does not necessarily mean causation.

**Table 3.4:**  
Correlation between Remittances and Selected Macroeconomic Indicators, 1990-2009

|  | EAP    |        | ECA    |        | LAC    |        | MNA    |        | SAS    |        | SSA    |        |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|  | MRPC   | MRem   |
| Current account balance (% of GDP)             | 0.727  | 0.721  | 0.008  | 0.007  | 0.721  | 0.717  | 0.152  | 0.219  | 0.079  | 0.071  | 0.451  | 0.457  |
| FDI, net inflows (% of GDP)                    | -0.185 | -0.189 | 0.932  | 0.931  | 0.280  | 0.269  | 0.874  | 0.899  | 0.946  | 0.944  | 0.653  | 0.653  |
| GDP (constant 2000 US\$)                       | 0.986  | 0.984  | 0.881  | 0.881  | 0.961  | 0.962  | 0.840  | 0.917  | 0.971  | 0.968  | 0.954  | 0.956  |
| GDP growth (annual %)                          | 0.197  | 0.196  | 0.389  | 0.387  | 0.193  | 0.184  | 0.128  | 0.124  | 0.428  | 0.418  | 0.489  | 0.475  |
| GDP per capita (constant 2000 US\$)            | 0.985  | 0.983  | 0.868  | 0.868  | 0.940  | 0.944  | 0.855  | 0.927  | 0.886  | 0.879  | 0.953  | 0.955  |
| GDP per capita growth (annual %)               | 0.296  | 0.294  | 0.384  | 0.381  | 0.287  | 0.278  | 0.231  | 0.249  | 0.408  | 0.399  | 0.512  | 0.498  |
| GDP per person employed (constant 1990 PPP \$) | 0.141  | 0.145  | 0.859  | 0.860  | 0.842  | 0.847  | 0.864  | 0.905  | 0.975  | 0.973  | 0.960  | 0.964  |
| Exports of goods (% of GDP)                    | 0.889  | 0.884  | 0.438  | 0.437  | 0.874  | 0.864  | -      | -      | 0.951  | 0.949  | 0.850  | 0.846  |
| Imports of goods (% of GDP)                    | 0.760  | 0.755  | 0.479  | 0.478  | 0.805  | 0.794  | 0.206  | 0.071  | 0.954  | 0.956  | 0.740  | 0.729  |
| Gross fixed capital formation (% of GDP)       | 0.801  | 0.800  | 0.285  | 0.288  | 0.068  | 0.081  | 0.442  | 0.458  | 0.922  | 0.922  | 0.540  | 0.542  |
| Gross domestic savings (% of GDP)              | 0.940  | 0.940  | -0.018 | -0.017 | 0.738  | 0.736  | 0.813  | 0.848  | 0.785  | 0.782  | 0.867  | 0.867  |
| HFCE (% GDP)                                   | -0.985 | -0.984 | -0.037 | -0.038 | -0.856 | -0.851 | -0.805 | -0.822 | -0.859 | -0.853 | -0.927 | -0.929 |
| Inflation, GDP deflator (annual %)             | -0.223 | -0.220 | -0.386 | -0.385 | -0.522 | -0.512 | 0.096  | -0.016 | -0.295 | -0.284 | -0.247 | -0.245 |
| Portfolio equity, net inflows (% of GDP)       | 0.429  | 0.424  | 0.243  | 0.240  | -0.171 | -0.162 | 0.004  | 0.029  | 0.199  | 0.196  | 0.095  | 0.078  |

**Source:** Author's computation based on BoPS and WDI (April 2011). **Notes:** HFCE denotes household final consumption expenditure. MRPC and MRem represent migrant remittances per capita and total migrant remittances received respectively.

It can also be noted that migrant remittances are more strongly and positively correlated with gross domestic savings and investment rather than what is popularly believed, namely that remittances are purely for consumption purposes and driven by altruism. If, indeed, remittances are spent on consumption in developing countries, they are more likely spent on imported consumer goods as found by Tongamo (1987) rather than on domestically produced goods. This is because, as revealed in Table 3.4, there is a strong negative correlation between migrant remittances and household final consumption expenditure (HFCE) as they correlated positively and robustly with the import of goods in developing countries. This is one of the most consistent results across all the developing economies in the world. One should, however, be cautious in concluding that remittances are likely to be used for imports, since the correlation between the former and exports is also strong and positive for the developing economies. What seems clear from the foregoing is that migrant remittance inflows are likely to be highly associated with economic openness, given the high positive correlation coefficients of imports and exports as a proportion of GDP. However, although SSA has higher trade openness than ECA, the latter receives more remittances. In addition, there is no basis to conclude that remittances are a substitute for exports in developing countries.

It is also observed that remittance inflows are positively associated with improved current balance in migrant exporting developing countries. The correlation between migrant

remittances received and portfolio equity is low and generally insignificant (with none attaining 0.45). Conversely, the correlation between FDI and remittances is positive and robust for developing economies, except for EAP where the relationship is negative but low. Further evidence on the negative correlation between remittances and domestically produced consumables in developing countries can be ascribed to the strong positive relationship between remittances and gross fixed capital formation (a proxy for domestic investment) as well as remittances domestic savings. For SSA, the correlation between remittances and savings is 0.87 whilst that between remittances and investment is 0.54. One intriguing result obtained in Table 3.4 is that, in SSA, just as is the case in all other developing regions, remittance inflows are negatively correlated with the rate of inflation. This implies either that migrant remittances contribute to reducing inflation in recipient countries or that price stability is a *sine qua non* for migrant remittance inflows to developing countries. Finally, taking the correlation coefficients into account, it can be concluded that there is no significant difference between the volume of migrant remittance inflows and migrant remittances received *per capita*, in the context of macroeconomic implications.

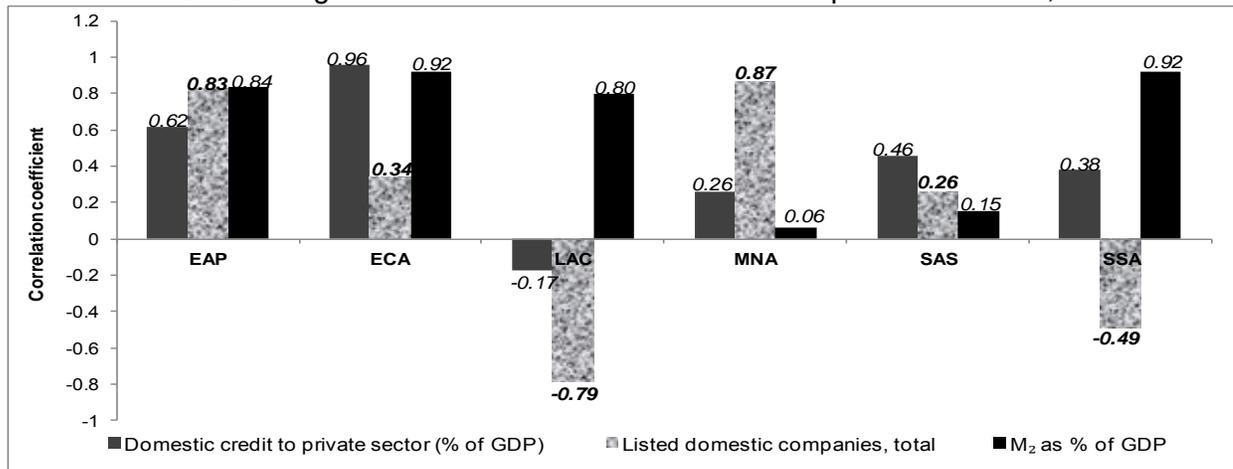
With regard to the relationship between the volume of migrant remittances received and the degree of financial development, it can generally be argued that there is positive correlation between the two in SSA, when bank-based indicators of financial sector development are used (see Figure 3.4). Although these indicators might not be the best measures of financial development (see Kar and Pentecost, 2000; World Bank, 2005), these are the only indicators for which SSA regional data is consistently available over the past two decades.

The amount of migrant remittances received in SSA positively correlates with the proportion of bank credit to the private sector in GDP and broad money as a ratio of GDP, as is the case for all the other developing regions except LAC. The positive correlation between remittances and financial depth could imply that, in SSA, official remittance inflows are likely to be deposited at banks. This reaffirms the strong positive correlation between remittances received and domestic savings in developing countries, as shown in Adenutsi *et al.* (2012). There is, however, no clear-cut pattern of the magnitude of the correlation between remittances and financial depth, which could be due to the variations in the relative magnitude of money to quasi money across the various regions under consideration. For instance, with a coefficient of 0.92, SSA and ECA are the regions with the most financial depth, followed by EAP (0.84) and LAC (0.80). However, with regard to attracting migrant remittances, LAC and EAP are the

highest recipients whilst ECA and SSA received the least (see Figure A3.2 Panel A and Figure A3.3 in the Appendix).

**Figure 3.4:**

Correlation between Migrant Remittances and Financial Development Indicators, 1990-2009\*



Source: Author based on WDI (April 2011). \*Period chosen based on consistent data availability across regions

A contrasting revelation is that, unlike in the case of other developing regions, the correlation between migrant remittances received and the number of listed firms is negative for SSA (the region that received the least remittances) and LAC (the region that received the most). Probably, in SSA and LAC, some of the firms which were listed at the establishment of the stock markets in the 1990s under-performed and were eventually delisted. Thus, the number of listed firms has been declining over time amidst increasing remittance inflows throughout the post-reforms era. Although, there is a higher correlation between remittances received and bank-based financial sector development indicators in SSA than in LAC, MNA and SAS, each of these regions receives higher remittances than SSA in absolute, *per capita*, and per migrant terms (see Figure A3.2 Panels A and B, and Figure A3.3 in the Appendix). In fact, even as a proportion to GDP, SSA only managed to occupy the third spot, behind MNA and SAS. Likewise, ECA recorded the highest correlation between remittances and bank-based financial sector indicators, and was the least recipient of remittances as a ratio of GDP and in terms of actual volume of remittances received; this sub-region struggled to outperform only SSA.

### 3.3.2 The Dynamics of Remittances and the Macroeconomic Environment in SSA

From a macroeconomic perspective, there seems to be sufficient evidence for three stylised facts regarding the flow of migrant remittances to developing countries: (i) geographically

smaller countries are more likely to attract relatively higher migrant remittances probably because, as a result of their small size, there is stronger social cohesion and ties; (ii) small island countries such as Cape Verde, Comoros, Mauritius and Seychelles tend to attract higher official remittances, probably, because, unlike non-island and landlocked countries, it is difficult to remit through unofficial remittance service providers such as bus drivers and traders; and, (iii) although poorer countries are more likely to attract higher remittances because harsh economic conditions at home (e.g. high unemployment, poor working conditions, low wages) are a recipe for higher emigration<sup>40</sup>, remittance flows through official channels to these low-income countries are not automatic, but dependent on some macroeconomic fundamentals.

For instance, as shown in Table 3.5, in terms of real GDP *per capita*, Seychelles, Mauritius, Botswana, Swaziland and Cape Verde can be described as relatively rich within the sub-region. Yet, in relative terms, these countries were the leading recipients of migrant remittances in SSA after Lesotho between 1980 and 2009. Similarly, the remaining countries in the top 10 remittance-recipient category such as Senegal, Comoros, Lesotho, Gambia, Lesotho and Sudan are by far less poor than Niger, Sierra Leone, Ghana, Rwanda, Ethiopia and Malawi, classified among the 10 least remittance-recipients, as depicted in Table 3.5. Thus, considering real GDP *per capita*, it is observed that the very poorest countries in the sub-region (Ethiopia, Malawi, Niger and Sierra Leone) are among the countries that receive the least remittances, as shown in Table 3.5. Guinea-Bissau, Liberia, Uganda and Togo, however, managed to defy the odds and are among the leading 10 remittance-receiving countries within the sub-region in recent years, when measured relative to GDP or population size (see Table 3.5).

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<sup>40</sup> There is a consensus in the migration and remittance literature that it is actual or perceived income gap (or differences in quality of life) that underlie the South-North migration leading to southwards remittance flows (Beijer, 1970; Lipton 1980; Clarke and Wallsten, 2003; 2004; Kapur, 2004; Yang, 2005; de Haas, 2007; UN, 2010).

**Table 3.5:**  
Comparative Analysis of Top-10 and Bottom-10 Migrant Remittance *per capita* Recipients in SSA

|  | Top-10 Migrant Remittance-Dependent Countries in SSA, 1980-2009 |          |           |           |            |          |          |          |          |          |          | Mean   | Cor_ |
|--|---|----------|-----------|-----------|------------|----------|----------|----------|----------|----------|----------|--------|------|
|  | Lesotho   | C-Verde  | Mauritius | Swaziland | Seychelles | Botswana | Senegal  | Sudan    | Comoros  | Gambia   |          |        |      |
| Migrant remittances <i>per capita</i> (US\$)   | 202.042   | 183.365  | 97.235    | 81.747    | 58.405     | 44.198   | 32.834   | 19.116   | 18.972   | 18.254   | 75.62    | 1.000  |      |
| Bank liquid reserves to bank assets ratio (%)  | 0.08  | 0.31     | 0.04      | 0.07      | 0.16       | 0.57     | -        | 0.22     | 0.80     | -        | 0.22     | -0.461 |      |
| Broad money (% of GDP)                         | 37.69   | 57.07    | 67.64     | 24.25     | 60.23      | 27.49    | 24.80    | 16.97    | 21.48    | 29.86    | 36.75    | 0.514  |      |
| Domestic credit to private sector (% of GDP)   | 14.93   | 32.08    | 47.30     | 18.58     | 18.98      | 13.73    | 24.21    | 7.31     | 12.24    | 15.07    | 20.44    | 0.384  |      |
| FDI, net inflows (% of GDP)                    | 7.70  | 4.41     | 1.14      | 3.90      | 9.32       | 3.44     | 0.98     | 2.28     | 0.64     | 4.06     | 3.79     | 0.455  |      |
| GDP <i>per capita</i> (constant 2000 US\$)     | 347.59  | 1,072.30 | 3,110.32  | 1,213.09  | 6,116.13   | 2,654.25 | 498.06   | 336.69   | 387.07   | 321.79   | 1,605.73 | -0.031 |      |
| GDP PPP <i>per capita</i> (constant 2005 US\$) | 999.77  | 1,977.75 | 7,374.04  | 3,545.54  | 14,721.73  | 7,895.60 | 1,539.00 | 1,300.26 | 1,131.72 | 1,147.73 | 4,163.31 | -0.091 |      |
| Goods exports (% of GDP)                       | 26.90   | 5.92     | 37.63     | 62.06     | 20.35      | 46.82    | 17.89    | 8.35     | 10.08    | 29.16    | 26.52    | -0.006 |      |
| Goods imports (% of GDP)                       | 112.14  | 43.39    | 45.59     | 70.81     | 56.58      | 37.54    | 26.95    | 11.24    | 21.95    | 45.06    | 47.13    | 0.723  |      |
| Gross fixed capital formation (% of GDP)       | 45.20   | 30.86    | 23.75     | 19.71     | 26.41      | 26.96    | 21.10    | 13.92    | 16.56    | 19.63    | 24.41    | 0.856  |      |
| HFCE <i>per capita</i> (constant 2000 US\$)    | 409.75  | 1,073.98 | 1,961.61  | 953.28    | 3,918.43   | 958.12   | 383.40   | 290.04   | 349.67   | 251.90   | 1,055.02 | 0.074  |      |
| Inflation, consumer prices (annual %)          | 11.20   | 4.78     | 8.24      | 10.81     | 5.17       | 10.11    | 4.48     | 41.76    | 3.31     | 9.85     | 10.97    | -0.226 |      |
| Gross domestic savings (% of GDP)              | -44.40  | -3.79    | 21.29     | 5.03      | 19.71      | 36.86    | 6.20     | 10.71    | -6.81    | 7.56     | 5.24     | -0.607 |      |
| Real deposit interest rate (%)                 | 1.94  | -2.68    | 1.84      | -2.33     | 2.24       | -0.86    | 0.40     | -28.07   | -0.14    | 3.23     | -2.44    | 0.244  |      |
| Real lending interest rate (%)                 | 4.66  | 7.64     | 10.21     | 4.86      | 7.22       | 3.81     | 9.97     | -        | 6.19     | 14.19    | 6.87     | -0.332 |      |
| Tax revenue (% of GDP)                         | 45.69   | 22.31    | 18.61     | 25.45     | 28.04      | 22.26    | 15.25    | 6.29     | -        | 18.20    | 20.21    | 0.720  |      |

|  | Bottom-10 Migrant Remittance-Dependent Countries in SSA, 1980-2009 |        |         |          |        |          |          |            |          |        | Mean     | Cor_   |
|--|--|--------|---------|----------|--------|----------|----------|------------|----------|--------|----------|--------|
|  | Mauritania   | Niger  | S-Leone | Congo    | Rwanda | Ghana    | Ethiopia | Madagascar | Tanzania | Malawi |          |        |
| Migrant remittances <i>per capita</i> (US\$)   | 2.500  | 2.364  | 2.245   | 2.014    | 1.688  | 1.653    | 0.904    | 0.694      | 0.179    | 0.087  | 1.43     | 1.000  |
| Bank liquid reserves to bank assets ratio (%)  | 9.40   | 18.49  | 40.62   | 19.96    | 13.19  | 26.49    | 25.09    | 16.61      | 8.92     | 28.37  | 20.71    | 0.078  |
| Broad money (% of GDP)                         | 14.13  | 14.20  | 16.52   | 16.02    | 14.85  | 18.70    | 28.79    | 18.43      | 20.45    | 17.60  | 17.97    | -0.547 |
| Domestic credit to private sector (% of GDP)   | 16.93  | 10.39  | 4.32    | 11.39    | 8.11   | 7.65     | 15.06    | 13.33      | 9.00     | 6.53   | 10.27    | 0.117  |
| FDI, net inflows (% of GDP)                    | 4.20   | 1.25   | 0.57    | 6.59     | 0.68   | 1.57     | 2.01     | 1.86       | 2.25     | 1.17   | 2.21     | 0.242  |
| GDP <i>per capita</i> (constant 2000 US\$)     | 424.96   | 188.78 | 236.44  | 1,136.80 | 248.12 | 247.66   | 135.27   | 267.16     | 327.95   | 148.34 | 336.15   | 0.302  |
| GDP PPP <i>per capita</i> (constant 2005 US\$) | 1,610.38   | 684.55 | 653.61  | 3,454.06 | 765.47 | 1,017.28 | 572.23   | 956.57     | 834.22   | 637.46 | 1,118.58 | 0.338  |
| Goods exports (% of GDP)                       | 37.75  | 16.82  | 12.79   | 59.29    | 5.53   | 21.20    | 4.96     | 13.67      | 10.46    | 22.51  | 20.50    | 0.375  |
| Goods imports (% of GDP)                       | 37.38  | 19.89  | 21.04   | 25.56    | 16.04  | 29.48    | 14.66    | 17.67      | 22.31    | 22.08  | 22.61    | 0.407  |
| Gross fixed capital formation (% of GDP)       | 22.14  | 12.20  | 10.28   | 26.98    | 15.69  | 16.93    | 18.36    | 15.99      | 21.78    | 16.49  | 17.68    | -0.107 |
| HFCE <i>per capita</i> (constant 2000 US\$)    | 341.37   | 137.35 | 151.74  | 299.03   | 187.83 | 218.87   | 110.45   | 226.60     | 240.46   | 112.71 | 202.64   | 0.327  |
| Inflation, consumer prices (annual %)          | 6.51   | 3.67   | 11.91   | 4.64     | 7.06   | 31.45    | 7.85     | 15.47      | 19.99    | 20.83  | 12.94    | -0.513 |
| Gross domestic savings (% of GDP)              | 2.14   | 5.22   | 3.43    | 36.34    | 0.65   | 6.05     | 8.58     | 5.44       | 8.30     | 7.18   | 8.33     | 0.048  |
| Real deposit interest rate (%)                 | 0.37   | 1.21   | -23.81  | 4.84     | 3.87   | -14.18   | -2.60    | 0.61       | -13.17   | -3.47  | -4.63    | 0.066  |
| Real lending interest rate (%)                 | 8.56   | 11.68  | -1.113  | 10.49    | 8.22   | -16.46   | 2.11     | 14.54      | 3.78     | 7.93   | 4.97     | -0.050 |
| Tax revenue (% of GDP)                         | -  | 10.71  | 9.83    | 9.26     | 9.03   | 15.22    | 8.70     | 10.54      | -        | -      | 7.33     | 0.066  |

**Source:** Author's estimation mainly based on MRF-2011, BoPS, WDI, and GDF (April 2011). **Note:** Averages were computed for each country for only the years from 1980-2009 for which data was available. .

Broadly, the top-10 remittance-receiving SSA countries are those with relatively higher tax revenue, exports and imports of goods, FDI, investment ratio, financial deepening ( $M_2/GDP$ ), bank credit to private sector ratio and real interest rate, but lower rate of inflation and domestic savings. These leading remittance-recipients in *per capita* terms also have relatively higher household consumption expenditure, real deposit interest rate, real GDP *per capita*, and real GDP *per capita* at purchasing power parity (PPP). However, taking a cursory look at country-specific features, it is observed that, with the exception of Sudan, the top-10 remittance-recipients in *per capita* terms are those with a stronger fiscal policy stance in terms of tax

revenue mobilisation. Furthermore, countries which are successful in attracting higher remittances in *per capita* terms are those with more developed financial systems when proxied by  $M_2/GDP$  and credit to the private sector (Table 3.5). This is also true for countries that lead in attracting remittances in actual volumes and, even in terms of GDP (see Figure A3.4 in the Appendix). It should also be noted that Ethiopia, Malawi, Niger, and Sierra Leone can be described as the very poorest in the sub-region in terms of real *per capita* GDP (Table 3.5). These countries also attracted very low migrant remittances as well as FDI during the post-reforms era, 1980-2009 (Table 3.5). It can be argued that the success in implementing sound macroeconomic policies, to a reasonable extent, may be necessary to attract international migrant remittances through official channels. Alternatively, remittances could be important in determining the success of macroeconomic policy implementation in remittance-recipients in SSA.

For both top-10 and bottom-10 SSA remittance-recipients in Table 3.5, migrant remittances *per capita* positively correlates with private sector credit, FDI, goods imports, tax revenue, real deposit interest rate and HFCE, whilst for the rate of inflation and real lending interest rate, the correlation is negative. With the exception of HFCE and inflation, in each of these cases, the correlation is stronger for the top-10 than the for bottom-10 recipient countries. The conspicuous differences, however, are that, whereas migrant remittances *per capita* positively correlates with real GDP *per capita*, regarding real GDP PPP *per capita*, export of goods, gross domestic savings, and bank liquid reserve to bank assets ratio among the lowest 10 remittance-recipients, the correlation is negative for the top 10 remittance-recipients (Table 3.5). Also, whereas there is a fairly strong positive correlation between remittances *per capita*, and gross fixed capital formation and broad money to GDP ratio in the top 10 remittance-recipient countries, in the case of the bottom 10 remittance-recipients, the respective correlation coefficients are negative.

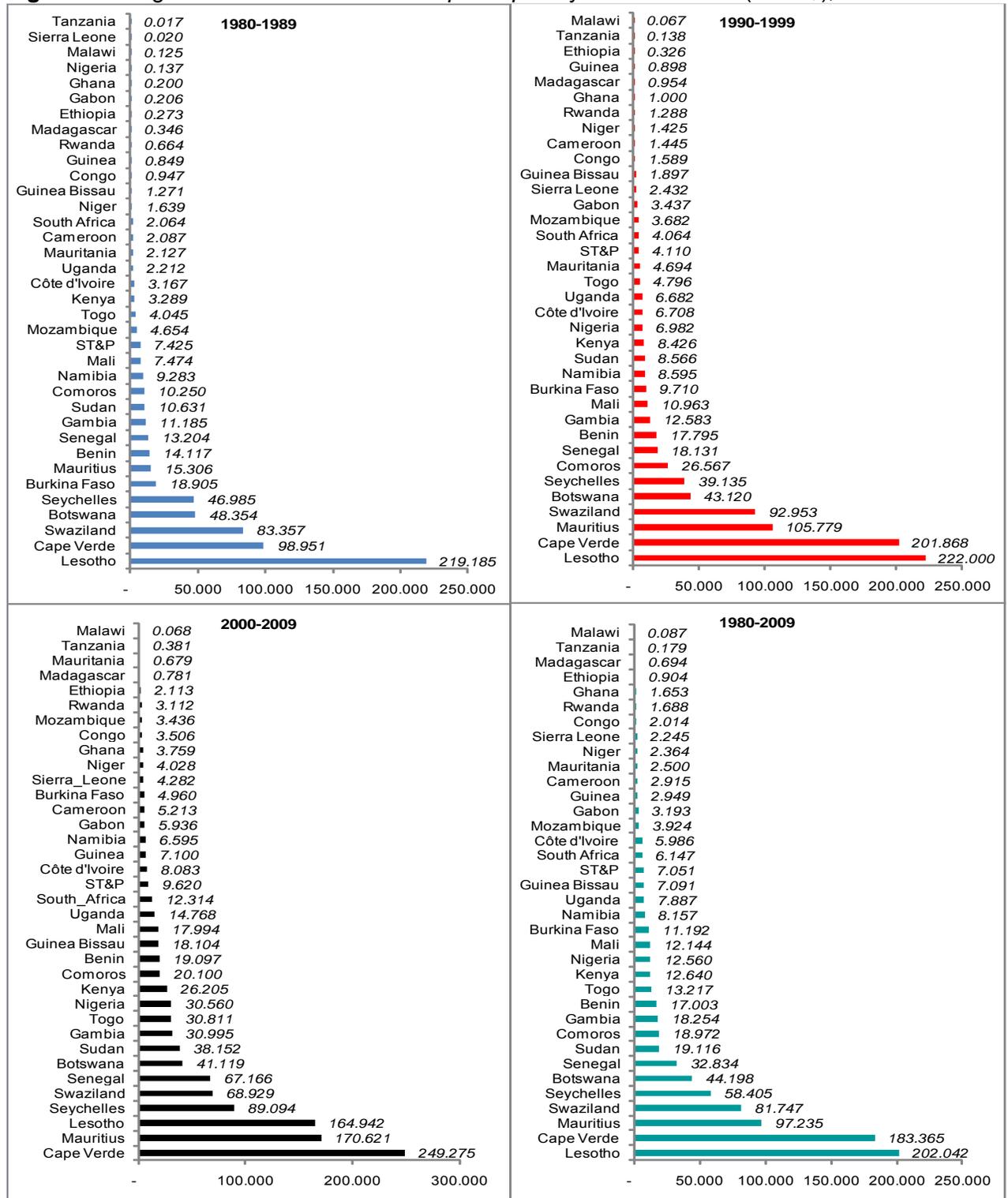
With a coefficient in excess of 99 per cent (see Figure A3.3), there is a near perfect positive correlation between migrant remittances received *per capita* and remittances per migrant received in SSA and, indeed, for all other developing regions excluding ECA. For these other developing regions, the correlation coefficients range between 97 per cent for MNA and 100 per cent for EAP and LAC. In the case of ECA, a correlation coefficient of -37 per cent (see Figure A3.3) signifies a relatively low negative relationship between migrant remittances *per capita* and remittances per migrant. Consequently, for the entire developing world, remittances

*per capita* and remittances per migrant are strongly positively correlated. Therefore, in the absence of regular annual data on migrant stock, generally, migrant remittances *per capita* should be seen as a perfect proxy for remittances per migrant because it is statistically evident that the evolution of remittances *per capita* could be used to proxy the evolution of remittances per migrant. In other words, Figure 3.5 is seen as providing good insight into the dynamics of remittances sent by SSA migrants to their native countries over the past three decades, 1980-2009.

SSA as a sub-region has remained the least recipient of migrant remittances in the world, when measured in actual volume of inflows or as a ratio of population or migrant (Figure A3.2). Comparing SSA to other developing regions, it is quite apparent that the rate of growth in total migrant remittance inflows as well as migrant remittances received by the sub-region relative to population size or migrant stock is relatively slow (Figure A3.2 Panels A2 and B). On the basis of individual SSA countries, however, (Table A3.3), it is evident that the trend in migrant remittances received by the sub-region increased steadily and fairly robustly during the post-reforms era as shown in Figure 3.5.

For the individual countries within the sub-region, the number of SSA countries that received an annual minimum of US\$1 in migrant remittances *per capita* increased from 25 in the 1980s to 31 in the 1990s and to 32 in the 2000s (Figure 3.5). In the 2000s, none of the 32 SSA countries referred to above received less than US\$2 in migrant remittances *per capita* (Figure 3.5). For the period 1980-2009, 32 of the sampled 36 countries received at least US\$1 in migrant remittances *per capita* on annual basis. In *per capita* terms, Lesotho (US\$202.04), Cape Verde (US\$183.36), Mauritius (US\$97.24), Swaziland (US\$81.75), Seychelles (US\$58.40), Botswana (US\$44.20), and Senegal (US\$32.83) are SSA countries that consistently received the highest inflows of migrant remittances between 1980 and 2009 (Figure 3.5). Nevertheless, during the most recent decade, (2000-2009), Cape Verde (US\$249.28) and Mauritius (US\$170.62) displaced Lesotho (US\$164.94) as the traditional leading recipient of migrant remittances in *per capita* terms (Figure 3.5). Burkina Faso and Benin which ranked among the top 10 recipients of remittances *per capita* during the 1980s and 1990s were dislodged by Gambia and Togo in the 2000s (Figure 3.5).

**Figure 3.5: Migrant Remittances Received *per capita* by SSA Countries (in US\$), 1980-2009**



**Source:** Author based on MRF-2011, BoPS, WDI, and GDF (April 2011) and estimates from country-specific desks of IMF and WB. **Note:** Only the 36 sampled countries are included due to data constraint.

A similar trend is discernible when the number of SSA countries that received at least one per cent of remittances as a ratio of GDP is considered. From 15 countries in the 1980s, the number of countries rose to 18 in the 1990s before reaching 22 in the 2000s, based on the 36 sampled countries for which consistent data are available over the past three decades<sup>41</sup> (Figure A3.4). For the overall period, more than 50 per cent of the sampled countries, specifically 19 of the 36 sampled countries, received migrant remittances worth, at least, one per cent of their GDP (Figure A3.4). Furthermore, as shown in Figure A3.5, although only 17 SSA countries received an annual average of at least US\$12 million, representing a minimum monthly average of US\$1 million in the 1980s, as many as 25 and 29 out of the 36 sampled SSA countries received this minimum amount of remittances in the 1990s and 2000s respectively. Overall, more than two-thirds, (specifically 25) of the sampled countries, received migrant remittances representing not less than one per cent of GDP between 1980 and 2009 (Figure A3.4). Additionally, on the average, the amount of international migrant remittances received by each of the sampled SSA countries has been increasing over time, whether in absolute or relative terms (Table A3.3).

Whereas Botswana, just like Burkina Faso, Mozambique, and Namibia, recorded a consistent decline in remittances *per capita* over the past three decades (Table A3.3), Nigeria defied the odds as the only country ranked among the bottom 10 recipients in the 1980s to occupy a position among the top 10 in the 2000s (Figure 3.5). By this feat, Nigeria has not only managed effectively to escape from the bottom 10 in *per capita* terms, but to progress from the 19<sup>th</sup> in the 1980s to the first position since the 1990s as the largest recipient of actual volume of remittances received (Figure A3.5). The situation at the opposite end of the migrant remittance *per capita* ladder can be described as less competitive as six countries (Malawi, Tanzania, Madagascar, Ethiopia, Rwanda and Ghana) never moved out of the bottom 10 category throughout the past three decades (see Figure 3.5).

Regarding migrant remittances as a percentage of GDP, just as in terms of remittances *per capita*, Lesotho (54.52 per cent), Cape Verde (15.98 per cent) and Swaziland (6.93 per cent) maintained the top-three positions in the SSA for the period, 1980-2009, although Gambia

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<sup>41</sup> Despite this encouraging trend, however, the overall average of remittance/GDP percentage for the 36 sample countries declined consistently between 1980 and 2009 due to the consistent fall in remittance/GDP ratios in some leading recipients notably Botswana, Burkina Faso, Lesotho, and Swaziland. This might be due to a higher rate of growth in GDP relative to migrant remittances as with the exception Burkina Faso, none of these countries recorded consistent decline in actual volume of remittances received during the period under review (see Table A3.3).

dislodged Swaziland from the third spot in the 2000s. Here again, seven countries (Malawi, Tanzania, Gabon, South Africa, Congo Republic, Madagascar, and Ghana) firmly remained within the bottom 10 remittance-recipients relative to GDP over the past three decades, 1980-2009. However, Nigeria, which was ranked among the least 10 recipients, moved from the 33<sup>rd</sup> position with a remittances/GDP per cent of 0.03 in the 1980s to the 15<sup>th</sup> with a remarkable 3.42 per cent in the 2000s (Figure A3.4). Other countries that made significant and consistent progress on the migrant remittance-GDP ladder are Guinea-Bissau which moved from 19<sup>th</sup> position with 0.77 per cent to 6<sup>th</sup> with 5.28 per cent, Kenya (17<sup>th</sup>, 0.91 per cent) to (9<sup>th</sup>, 4.58 per cent), Senegal (10<sup>th</sup>, 2.29 per cent) to (5<sup>th</sup>, 8.43 per cent), and Togo (14<sup>th</sup>, 1.30 per cent) to (4<sup>th</sup>, 8.52 per cent) from the 1980s to the 2000s. In contrast, Botswana (6<sup>th</sup>, 4.05 per cent) to (26<sup>th</sup>, 0.75 per cent); Burkina Faso (4<sup>th</sup>, 7.39 per cent) to (19<sup>th</sup>, 1.42 per cent); and Swaziland (3<sup>rd</sup>, 10.82 per cent) to (12<sup>th</sup>, 3.61 per cent) experienced the most significant and consistent retrogression on the remittance-GDP ladder (Figure A3.5).

As far as actual volume of migrant remittances received is concerned, based on 1980-2009 average in millions of US dollars, Nigeria (1,758.48), Sudan (675.97), Kenya (418.95), Lesotho (341.67), Senegal (339.28), South Africa (269.19), Uganda (201.06), Mali (126.52), Mauritius (115.33), and Benin (103.05) are the largest recipients in SSA. At the opposite end of this same ladder, Malawi (0.84), São Tomé and Príncipe (0.92), Gabon (4.03), Seychelles (4.50), Mauritania (5.22), Congo Republic (6.09), Tanzania (6.54), Comoros (9.57), Madagascar (9.72), and Guinea-Bissau (10.18) each receiving an average migrant remittances of less than US\$100 million per annum, are the least recipients between 1980 and 2009. Thus, in actual volume, Nigeria is the largest migrant remittance recipient in the sub-region with South Africa being the 6<sup>th</sup> largest recipient, yet Nigeria is ranked 14<sup>th</sup>(17<sup>th</sup>) and South Africa as 21<sup>st</sup>(33<sup>rd</sup>) in relative terms of population and GDP respectively. Equivalently, although Gambia, Comoros and Seychelles are ranked 23<sup>rd</sup>, 29<sup>th</sup> and 33<sup>rd</sup> largest recipients of remittances in absolute terms, these countries are ranked 10<sup>th</sup>, 9<sup>th</sup> and 5<sup>th</sup> respectively in *per capita* terms with Gambia and Comoros occupying the 4<sup>th</sup> and 8<sup>th</sup> positions on the remittance-GDP ladder. This implies that large and populous countries such as Nigeria and South Africa are likely to receive more migrant remittances in absolute terms whilst smaller and less populous countries like Comoros and Seychelles are more likely to be counted among the high remittance-recipients in relative terms. Notwithstanding this observation, there are reasons to believe that there may be certain conditions, policies and strategies that might be essential to attracting migrant remittances, as some geographically small countries with relatively low population size are among the largest

remittance recipients in absolute terms. These countries include Lesotho (4<sup>th</sup>), Senegal (5<sup>th</sup>), Mauritius (9<sup>th</sup>), Benin (10<sup>th</sup>), Cape Verde (13<sup>th</sup>), Swaziland (14<sup>th</sup>) and Togo (15<sup>th</sup>). In contrast, some geographically large countries such as Mauritania (32<sup>nd</sup>), Tanzania (30<sup>th</sup>) and Madagascar (28<sup>th</sup>), with relatively large population size, attracted relatively low migrant remittances over the past 30 years (Figure A3.5).

For the 36 sampled SSA countries, migrant remittances received in absolute terms increased steadily over the past three decades. From a low of US\$40.24 million in the 1980s, migrant remittances increased by over 100 per cent to US\$87.36 million and by more than 350 per cent to reach US\$307.23 million in the 1990s and 2000s respectively (Table A3.3). Consistent with this increasing trend, the 36 sampled SSA countries, migrant remittances *per capita* also witnessed a steady rise since the 1980s. Between 1980 and 1989, the average migrant remittances received by these sampled countries were US\$17.92 per annum. This figure increased to US\$24.58 in the 1990s and to a further US\$32.89 in the 2000s. This increasing trend might be due to the fact that the growth in migrant remittances received was faster than the population growth rate of the sub-region during the period under review. Another possible reason attributable to this consistent positive growth trend in officially reported remittances received in SSA is the pursuit of increasing financial liberalisation policies by the sampled SSA countries over the past three decades.

Another important point worth noting is the fact that leading migrant remittance-recipient countries (in actual volumes) such as Nigeria, Sudan, Kenya, South Africa, and Uganda, are also countries with relatively very high GDP, an explanation for the reason why none of these countries is listed among the top 10 migrant remittance-recipient countries when measured as a percentage of GDP (see Figure A3.4). For example, out of the US\$156,536.76 million migrant remittances received by the 36 sampled SSA countries between 1980 and 2009, Nigeria, the highest recipient with a total of US\$52,754.25 million controlled more than one-third, specifically 33.70 per cent whilst the second-highest recipient, Sudan, received US\$20,279.10 million in total (accounting for 12.95 per cent). Thus, Sudan, together with Nigeria, received nearly half, specifically 46.66 per cent of the total amount received by the sampled 36 SSA countries. Kenya, the third-highest recipient, received a total of US\$12,568.59 million, representing 8.03 per cent of the entire 36 sampled countries; hence, together with Nigeria and Sudan, these three countries alone received more than 50 per cent, specifically, 54.68 per cent of the total amount received by the group of 36 sampled countries. Therefore, as these three countries are

not ranked among the top 10 migrant remittance-GDP recipients in the sub-region, given the relatively large size of the respective economies, the sample average of the remittance-GDP was depressingly affected as manifested in Figure A3.4.

### **3.4 THE STYLISTED FACTS OF MIGRANT REMITTANCE FLOWS TO SSA**

Based on the evidence from the above expositions, the under-listed are presented as constituting the stylised facts of international migrant remittance flows to SSA:

- i. There has been a fairly strong positive trend in international migrant remittance inflows in SSA since the implementation of financial liberalisation in the 1980s.
- ii. SSA is the least recipient of migrant remittances when measured in terms of absolute values and relative to population size and international migration stock.
- iii. In terms of remittance inflows as a percentage of GDP, SSA is the third highest recipient after SAS and MNA in recent years. Although in absolute volumes and in terms of population size and international migrant stock, SSA has consistently been the least recipient of migrant remittances, yet the sub-region emerged as the third highest recipient of remittances as a percentage of GDP, this goes to show that in relative terms, SSA has been recording a lower rate of GDP growth than the rate of growth in migrant remittance inflows, in contrast to what pertains in other developing economies.
- iv. The correlation between migrant remittance inflows *per capita* and (migrant) remittances per migrant in SSA is positive and more than 99 per cent. Accordingly, remittances *per capita* can be an excellent proxy for remittances per migrant in SSA when the underlying evolution of each of these measures is taken into account.
- v. SSA is the only sub-region in the world today that receives more ODA than migrant remittances.
- vi. As revealed by the changing trend in remittance inflows as a percentage of GDP in Figure A3.1, SSA is the sub-region with the most sluggish but resilient growth rate in remittance inflows.

- vii. Of all external capital flows to SSA, migrant remittances are the least volatile as is the case in all other developing economies (see Figure A3.1).
- viii. Officially reported migrant remittances to SSA, in both absolute and relative terms, stagnated throughout the pre-reforms era but with the inception of the reforms and, especially, during the post-reforms era, migrant remittance inflows to SSA have been growing at a faster rate.
- ix. On the average, richer SSA countries (when measured in terms of real *per capita* GDP) are the recipients of higher official migrant remittances *per capita*. However, the correlation between remittances and GDP *per capita* varies between the top 10 remittance-recipients (negative but approximately zero) and the bottom 10 remittance-recipients (positive).
- x. In SSA, countries that lead in attracting higher migrant remittances (when measured in relative terms) also lead in attracting higher FDI as a ratio of GDP; and these are countries with a higher real GDP *per capita*, investment/GDP ratio and a lower rate of inflation. This again points to the fact that macroeconomic performance and migrant remittance inflows are positively related within the sub-region.
- xi. Fiscal policy effectiveness seems to be crucial to attracting migrant remittance inflows as tax revenue/GDP ratio positively correlates with migrant remittances received with stronger correlation for the top 10 remittance recipients, which also have a higher tax revenue/GDP ratio.
- xii. On the average, higher official migrant remittances are received in SSA countries with relatively more developed bank-based financial market indicators compared to other countries within the sub-region with relatively underdeveloped financial markets (Table 3.5). At this point, however, it may not be absolutely correct to conclude that financial development directly impacts on official remittance inflows and *vice versa* since, in the compilation of the remittance data, non-bank remittance service providers particularly MTOs, which are the main agents in most SSA countries and other developing countries, are recognised as formal money transfer service providers.

### **3.5 REMITTANCES AND MACROECONOMIC POLICY IMPERATIVES IN SSA**

There is the need for economic policy re-orientation directed at attracting higher remittances from abroad rather than over-relying on other volatile and unpredictable external capital especially ODA, the inflows of which are largely exogenous to domestic economic policy design in recipient economies. Without doubt, the under-listed policy initiatives could be relevant to attracting international migrant remittances to SSA:

- i. Remittances received in excess of present consumption could be used for investment purposes rather than spent on imported consumer goods. This will result in accelerated economic growth since investment is an injection whereas imports are leakages.
- ii. Governments of SSA countries could establish special international relations with foreign industrialised countries recognised as the main destinations of their migrants, so that through an agreed framework (similar to what pertains under double taxation agreements among nations), migrants could remit home without paying transfer fees and any other charges more than once. For instance, it should be possible for a migrant working abroad to remit home regularly towards the payment of his/her social security and pension funds without paying fees for this purpose.
- iii. Implementation of macroeconomic policies aimed at stabilising the domestic prices and currency in SSA to motivate migrants to remit home more regularly. With stabilised domestic price and currency in SSA countries, it becomes easier for migrants to plan, predict and regularise the amount of money to remit home.
- iv. Financial institutions could develop innovative financial products and incentive packages aimed at enticing migrants abroad to remit home using approved routes more regularly and conveniently at reduced cost. This can only be done sustainably when the domestic financial market is open to competition and integrated at the domestic and the international levels.
- v. Domestic banks could either directly go off-shore and open more branches in major migrant 'host' countries or collaborate with foreign banks in these migrant 'host' countries so as to strategically increase banking convenience and access, thereby motivating SSA migrants to remit home more regularly and at reduced costs using

official channels.

- vi. A stable macroeconomic environment with some consistency in positive real growth is a signal of good economic fortunes in the future. Migrants who were compelled to seek greener pastures abroad because they lost hope in the domestic economy are likely to reconsider returning home in the future if there are better economic prospects. Such migrants are less likely to spend significant proportions of their earnings in their host countries, but rather remit more funds to their native countries towards investment projects such as financing entrepreneurial ventures. Under this circumstance, improved macroeconomic management could serve as a catalyst for receiving higher remittances through official routes.
- vii. It is crucial for SSA to develop the appropriate policy framework for attracting remittances through the formal transfer channels since continuous and colossal inflows of foreign currencies through unapproved routes, which represent additional currencies outside the banking system, could endanger currency stability and pose challenges for effective macroeconomic management in the long run. This could have adverse effects on economic growth and development prospects of the sub-region in the long run.

### **3.6 CHAPTER SUMMARY AND CONCLUSIONS**

From a macroeconomic viewpoint, it is found that, generally, not much has been achieved by the sub-region in terms of real *per capita* income growth, investment and resource mobilisation, although some marginal gains have been made in recent years. Indeed, except in terms of financial market development and international trade, there is no strong evidence that the macroeconomic conditions of SSA have improved since the implementation of economic reform policies in the 1980s. Thus, by and large, the unfavourable structural features of SSA which existed at the time of independence are still prevalent today and there is no basis for any strong argument that the standard of living today in SSA is an improvement on what prevailed at the time of political independence in the 1960s.

Overall, FDI has remained the highest external capital inflows in developing economies, but faces a strong challenge from migrant remittances which have been growing more consistently in all developing economies. In other developing economies where FDI is not the leading

source of external capital inflow, migrant remittances have overtaken FDI in recent years. However, in SSA alone, the leading capital inflow has been ODA with remittances being the smallest in relative *per capita* and per migrant terms as well as in absolute volume. The relatively high performance of SSA by emerging as the third-highest recipient of migrant remittances in the world, when measured as a percentage to GDP, can be described as ironical and misleading. This might be due to the fact that SSA, as a sub-region, has witnessed a relatively slower rate of GDP growth than other developing economies like LAC and SAS during the period under consideration. Portfolio equity flows have remained the least form of capital inflows to developing economies as a whole. Across developing economies, portfolio equity, FDI and ODA inflows are highly volatile but, whereas FDI exhibits an upward trend, ODA and portfolio equity have been exhibiting a negative or a stagnated trend in recent years. This makes migrant remittances the least volatile form of external capital in SSA in particular and in other developing economies as a whole.

It has been observed that migrant remittances received by SSA as a sub-region have been rising in both relative and absolute terms, but SSA still remains the least recipient of migrant remittances with the lowest rate of growth. Besides, the dependency of the sub-region on migrant remittances received is still very low with only five countries (Lesotho, Cape Verde, Swaziland and Gambia) receiving more than five per cent of GDP. About 50 per cent of SSA countries (17 out of the 36 sampled) received less than one per cent of GDP in migrant remittances between 1980 and 2009 with a general improvement from 21 countries in the 1980s to 14 countries in the 2000s. It is also quite encouraging to observe that the number of SSA countries receiving at least five per cent migrant remittances relative to GDP increased from four in the 1980s and five in the 1990s to seven in the 2000s. Even though the growth trend in migrant remittances *per capita* in SSA has been positive throughout the past 30 years, no SSA country earns up to US\$1 a day. This is evident from the fact that even the highest migrant remittance *per capita* recipients, Lesotho (US\$219.19 in the 1980s and US\$222.00 in the 1990s), and Cape Verde (US\$249.88 in the 2000s), received less than US\$365.25 per annum, an equivalent of US\$1 per day.

Perhaps, the most fascinating conclusion that can be drawn from this chapter is that, five countries, *viz.* Nigeria, Kenya, South Africa, Uganda, and Mauritius, which are classified by the IMF as having emerging or frontier financial markets, have 'coincidentally' dominated the list of the top 10 migrant remittance recipients (in actual amounts through official channels) in recent

years. Even relative to population and GDP, the 13 SSA countries with emerging and frontier financial markets still dominate as the leading recipients of official remittance. For instance, six and five of these 13 SSA countries are listed among the top 10 recipients of remittances as a ratio of population and GDP respectively. Virtually, all the countries ranked as least remittances recipients are those with highly underdeveloped financial markets. The role of the financial sector in attracting migrant remittances into the sub-region could be explored from various facets such as analysing the sub-region as a bloc or a comparative analyses between various cohorts in relation to financial market environment, together with other unique homogenous macroeconomic policy environment, which have been varying over time since the adoption of financial liberalisation programme in the 1980s.

## APPENDIX 3

**Table A3.1:** HIPC Status and Date of Political Independence of SSA Countries\*

| Country                               | Date of Independence | Country                          | Date of Independence                      |
|---------------------------------------|----------------------|----------------------------------|---|
| Angola                                | November 11, 1975    | Madagascar <sup>+</sup>          | June 26, 1960                             |
| Benin <sup>+</sup>                    | August 1, 1960       | Malawi <sup>+</sup>              | July 6, 1964                              |
| Botswana                              | September 30, 1966   | Mali <sup>+</sup>                | June 20, 1960                             |
| Burkina Faso <sup>+</sup>             | August 5, 1960       | Mauritania <sup>+</sup>          | November 28, 1960                         |
| Burundi <sup>+</sup>                  | July 1, 1962         | Mauritius                        | March 12, 1968                            |
| Cameroon <sup>+</sup>                 | January 1, 1960      | Mayotte                          | <i>Territorial collectivity of France</i> |
| Cape Verde                            | July 5, 1975         | Mozambique <sup>+</sup>          | June 25, 1975                             |
| Central African Republic <sup>+</sup> | August 13, 1960      | Namibia                          | March 12, 1990                            |
| Chad <sup>+</sup>                     | August 11, 1960      | Niger <sup>+</sup>               | August 3, 1960                            |
| Comoros <sup>+</sup>                  | July 6, 1975         | Nigeria                          | October 1, 1960                           |
| Congo, DR <sup>+</sup>                | June 30, 1960        | Rwanda <sup>+</sup>              | July 1, 1962                              |
| Congo, Republic <sup>+</sup>          | August 15, 1960      | São Tomé & Príncipe <sup>+</sup> | July 12, 1975                             |
| Côte d'Ivoire <sup>+</sup>            | August 7, 1960       | Senegal <sup>+</sup>             | April 4, 1960                             |
| Equatorial Guinea                     | October 12, 1968     | Seychelles                       | June 29, 1976                             |
| Eritrea <sup>+</sup>                  | May 24, 1993         | Sierra Leone <sup>+</sup>        | April 27, 1961                            |
| Ethiopia <sup>+</sup>                 | 4th Century, BC      | Somalia <sup>+</sup>             | July 1, 1960                              |
| Gabon                                 | August 17, 1960      | South Africa                     | May 31, 1961                              |
| Gambia, The <sup>+</sup>              | February 18, 1965    | Sudan <sup>+</sup>               | January 1, 1956                           |
| Ghana <sup>+</sup>                    | March 6, 1957        | Swaziland                        | September 6, 1968                         |
| Guinea <sup>+</sup>                   | October 2, 1958      | Tanzania <sup>+</sup>            | December 9, 1961                          |
| Guinea-Bissau <sup>+</sup>            | September 24, 1973   | Togo <sup>+</sup>                | April 27, 1960                            |
| Kenya                                 | December 12, 1963    | Uganda <sup>+</sup>              | October 9, 1962                           |
| Lesotho                               | October 4, 1966      | Zambia <sup>+</sup>              | October 24, 1964                          |
| Liberia <sup>+</sup>                  | July 26, 1847        | Zimbabwe                         | April 18, 1980                            |

Source: [http://en.wikipedia.org/wiki/Decolonization\\_of\\_Africa](http://en.wikipedia.org/wiki/Decolonization_of_Africa). (Date posted/accessed: unknown/June 28, 2010).

<sup>+</sup> HIPC countries (33 out of 48 countries as at June 30, 2010). See <http://go.worldbank.org/4IMVXTQ090>.

\*Republic of South Sudan which was not part of the population from which the sampled was selected attained its political autonomy and independence on July 09, 2011.

**Table A3.2:** Summary of Major Economic Policies Pursued in SSA since Post-Independence, 1960-2009

| <b>I: Inward-Looking Socialist Economic Policy (1960-1979)</b>  |   |  |  |   |
|---|---|--|--|---|
| <i>Compelling Issues</i>  | <i>Key Policy Objectives</i>  | <i>Key Policy Instruments</i>  | <i>Number/ List of Countries</i>   | <i>Main Policy Outcome</i>  |
| <ul style="list-style-type: none"> <li>• Policy inherited from colonial masters</li> <li>• Underdeveloped private sector</li> <li>• Lack of adequate private capital and absence of entrepreneurial class</li> <li>• Openness and excessive dependence on imports and external factor inputs</li> <li>• Excessive dependency on exports of primary products with limited capacity for export expansion</li> </ul> | <ul style="list-style-type: none"> <li>• Provide critical social infrastructure</li> <li>• Provide basic essential needs of life and simple farm inputs through subsidies</li> <li>• Promote import substitution industrialisation</li> <li>• Create jobs especially within the public sector</li> <li>• Provide finance for key sectors of the economy</li> </ul>  | <ul style="list-style-type: none"> <li>• Government spending (infrastructural-based expansionary fiscal)</li> <li>• Exchange rate (pegging / fixed regime)</li> <li>• Money supply</li> <li>• Credit control</li> </ul>  | <ul style="list-style-type: none"> <li>• All independent states of the sub-region as at 1979</li> </ul>  | <ul style="list-style-type: none"> <li>• Excessive protection of State-Owned Enterprises (SOEs) which resulted in losses arising from production and managerial inefficiencies.</li> <li>• Excessive government spending resulting in high inflation and depletion of international reserves</li> <li>• Fixed exchange rate regime led to currency overvaluation and lack of international competitiveness in exports of primary products</li> <li>• High and unsustainable external debts, and hence absence of internal and external financial balances</li> <li>• High financial repression with low access of private sector to credit</li> </ul>   |
| <b>II: Economic Recovery Programme / Structural Adjustment Programme (ERP/SAP) (1980-1989)</b>  |   |  |  |   |
| <i>Compelling Issues</i>  | <i>Key Policy Objectives</i>  | <i>Key Policy Instruments</i>  | <i>Number/ List of Countries</i>   | <i>Main Policy Outcome</i>  |
| <ul style="list-style-type: none"> <li>• Huge and unsustainable deficits in current accounts of BoP</li> <li>• Imbalances between government revenue and expenditure resulting in huge deficits being financed through printing of money</li> <li>• Financial repression</li> </ul>   | <ul style="list-style-type: none"> <li>• Reduce the size of public sector and improve upon its management</li> <li>• Eliminate price distortions</li> <li>• Promote economic liberalisation with emphasis on trade and the financial sector</li> <li>• Promote deregulation and price mechanism to minimise the role of the state in resource allocation</li> <li>• Promote domestic savings and investment in the public and private sectors</li> <li>• Increase tax revenue by broadening the tax base</li> <li>• Increase the efficiency of</li> </ul> | <ul style="list-style-type: none"> <li>• Money supply and public sector credit controls</li> <li>• Fiscal discipline to reduce government spending and deficit finance</li> <li>• Privatisation of SOEs</li> <li>• Exchange rate reforms and liberalisation</li> <li>• Interest rate reforms and liberalisation</li> <li>• Deregulation of credit control</li> </ul> | <ul style="list-style-type: none"> <li>• Benin, Burkina Faso, Burundi, Central African Rep, Comoros, Congo Republic, Congo DR, Côte d'Ivoire, Equatorial Guinea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Zambia, Zimbabwe</li> </ul> | <ul style="list-style-type: none"> <li>• Some temporary improvements in macroeconomic stability were achieved but these were inadequate and below the desired levels</li> <li>• External sector dependency still prominent and many countries had limited capacity to expand exports, decreases in investment rate, and wider budget and BoP deficits</li> <li>• Social issues ignored as governments reduced spending on provision of social services especially public healthcare, education, size of public sector and parastatals with adverse consequences for improvements in poverty, starvation, unemployment, and malnutrition had not witnessed marked improvements, and even worsened in some countries like Liberia, Nigeria, Rwanda and Tanzania.</li> </ul> |

| the financial system   |  |   |  |  |
|--|--|---|--|--|
| <b>III: African Alternative Framework to Structural Adjustment Programmes for Socioeconomic Recovery and Transformation (AAF-SAP)<sup>42</sup>, 1989-99</b>  |  |   |  |  |
| <i>Compelling Issues</i>   | <i>Key Policy Objectives</i>   | <i>Key Policy Instruments</i>   | <i>Number/ List of Countries</i>   | <i>Main Policy Outcome</i>   |
| <ul style="list-style-type: none"> <li>• Absence of holistic macroeconomic framework and policy measures and directions that takes into account the dynamic interrelationships existing among the key elements of the adjustment with transformation process. Thus, to address the missing dichotomy between structural adjustment and sustainable development.</li> <li>• Other adjustment programmes ignored or marginalised the people.</li> <li>• No justification for orthodox SAP as privatisation failed in most countries mainly due to inefficiency, and absence of robust private sector.</li> </ul> | <ul style="list-style-type: none"> <li>• Improve human resource capacity through higher incomes, motivation and empowerment as well as equitable distribution of income</li> <li>• Adjust the pattern of public expenditure to satisfy the essential needs of citizens</li> <li>• Strengthen scientific and technological base to enhance production and diversification</li> <li>• Provide institutional support for adjustment with transformation towards less import dependency and improved debt servicing and management</li> <li>• Establish a pragmatic balance between public and private sectors of the economy</li> </ul> | <ul style="list-style-type: none"> <li>• Multiple exchange rates system in a rationalised manner and/or creating and streamlining such a system for the purposes of resource transfers, resource mobilisation and reversal of capital flight and ensuring availability of essential imports</li> <li>• Land reforms for better access and entitlement to land for productive use</li> <li>• Greater mass participation in governance (decision-making and implementation of government programmes)</li> <li>• Trade reforms with differential export subsidies and encouragement of barter trade to boost sub-regional trade</li> <li>• Allocation of increasing share of foreign exchange for imports of vital inputs for agriculture and manufacturing</li> <li>• Bilateral and multilateral trade agreements on primary commodities</li> <li>• Supervised food production credit systems in rural areas</li> </ul> | <ul style="list-style-type: none"> <li>• All SSA countries except those like South Africa which were under sanctions / interdictions from global community including the UN and OAU as at that time</li> </ul> | <ul style="list-style-type: none"> <li>• Under democratic governance, some gains were made in reducing expenditure on military and defence in favour of providing essential services to the citizens, but these were still inadequate.</li> <li>• Governments continued to privatise key state enterprises and seek foreign partnership in managing strategic SOEs due to lack of finance</li> <li>• With high external debts accumulated and increasing social demand, governments did not succeed in integrating the marginalised into adjustment programmes</li> <li>• Private sector contributed positively to exports of non-traditional commodities, but these enterprises lacked adequate resources to meet high foreign demand.</li> </ul> |

<sup>42</sup> This is not a universal economic model, but a special framework applicable with selective emphasis according to the peculiar characteristics of the country in question and the circumstances under which the country finds itself, as AAF-SAP is meant to be used for designing specific country programmes, selecting appropriate policy instruments and measures as well as adopting the relevant implementation strategy. Also, as a human-centred framework, AAF-SAP is based on the assumption of full democratisation of all aspects of economic and social activities and in all stages from decision making to implementation. This framework again requires intensified international co-operation in the formulation, implementation and monitoring of national programmes for adjustments with transformation.

| <ul style="list-style-type: none"> <li>• A danger of foreign capital dominance over domestic ownership under privatisation</li> </ul>  |  | <ul style="list-style-type: none"> <li>• where collaterals are scarce</li> <li>• Support for cottage industries with emphasis on indigenous technology</li> </ul>   |   |   |
|--|--|---|---|---|
| VI: Heavily Indebted Poor Countries (HIPC) Initiative <sup>43</sup> / Millennium Development Programme (1999/2000 - 2015)  |  |   |   |   |
| Compelling Issues  | Key Policy Objectives  | Key Policy Instruments  | Number/ List of Participating Countries   | Main Policy Outcome   |
| <ul style="list-style-type: none"> <li>• Debt burden of LDCs became unsustainable</li> <li>• External debt servicing prevents poor countries from addressing critical social issues such as poverty.</li> <li>• Economic constraints forcing poor / SAP countries to reduce conservation allocation, and use up natural resources leading to environmental degradation, especially in the form of deforestation and soil overuse</li> <li>• Debt-trapped SSA forced to cut back on imports and increase exports, but LDCs suffer low export prices whilst industrialised economies suffer fewer market distortions.</li> </ul> | <ul style="list-style-type: none"> <li>• Bail countries out of unsustainable debt and focus on building policy and institutional foundation for sustainable development and poverty reduction</li> <li>• Greater emphasis on more effective social policies like investing in human capital (education and health) for long term growth</li> <li>• Increased emphasis on ownership, transparency and broad-based participation</li> <li>• Since 2001, achieve MDGs by the year 2015</li> </ul> | <ul style="list-style-type: none"> <li>• Fiscal policy (prudent development-driven spending)</li> <li>• Public sector reforms towards higher transparency and accountability by public office holders</li> <li>• Democratic governance and collective participation in decision-making as well as policy implementation of issues that directly affect the ordinary man</li> <li>• Strategic trade and international relations</li> <li>• Adopting non-debt and anti-inflationary approach to financing development programmes</li> </ul> | <ul style="list-style-type: none"> <li>• 33 countries as of June 30, 2010 (see Table A2.1 above) but all SSA countries have consented to work towards achieving the MDGs</li> </ul> | <ul style="list-style-type: none"> <li>• Increasing investment in essential social infrastructure like schools and healthcare centres</li> <li>• External debts reduced temporarily as some countries have started accumulating debts after reaching the HIPC decision point.</li> <li>• Improvements in access to essential social services. For example, many HIPC countries have now introduced a free immunisation programme for children, abolished user fees for primary education, and cash-and-carry healthcare delivery system.</li> <li>• Improved consultation process in designing Poverty Reduction Strategies has helped to increase the potential of the poor to influence national resource allocation</li> <li>• Many of the early beneficiaries of debt relief and enhanced aid have consistently sustained annual growth rates over 5 per cent.</li> <li>• There are fears that majority of SSA countries will miss MDGs by 2015 (see Carceles <i>et al.</i>, 2001; Bruns <i>et al.</i>, 2003; UNDP, 2003; White and Black, 2004; Fay <i>et al.</i>, 2005).</li> </ul> |

Source: Author's compilation based on various sources

<sup>43</sup> A country is defined as HIPC if its net present value of debt is above 150 per cent of exports or above 250 per cent of total government revenue.

**Table A3.3: Remittances Received by Sampled SSA Countries, 1980-2009 (period averages)**

|                       | Migrant Remittances Received (US\$m) |              |               |                 | Migrant Remittances per capita (US\$) |              |              |               | Migrant Remittances as % of GDP |             |             |              |
|-----------------------|--------------------------------------|--------------|---------------|-----------------|---------------------------------------|--------------|--------------|---------------|---------------------------------|-------------|-------------|--------------|
|                       | 1980-89                              | 1990-99      | 2000-09       | 1980-2009       | 1980-89                               | 1990-99      | 2000-09      | 1980-2009     | 1980-89                         | 1990-99     | 2000-09     | 1980-2009    |
| Benin                 | 57.57                                | 97.83        | 153.74        | <b>103.05</b>   | 14.12                                 | 17.80        | 19.10        | <b>17.00</b>  | 4.32                            | 5.06        | 3.45        | <b>4.27</b>  |
| Botswana              | 54.11                                | 64.19        | 76.43         | <b>64.91</b>    | 48.35                                 | 43.12        | 41.12        | <b>44.20</b>  | 4.05                            | 1.47        | 0.75        | <b>2.09</b>  |
| Burkina Faso          | 145.07                               | 94.82        | 68.17         | <b>102.69</b>   | 18.90                                 | 9.71         | 4.96         | <b>11.19</b>  | 7.39                            | 3.72        | 1.42        | <b>4.18</b>  |
| Cameroon              | 21.36                                | 20.21        | 94.89         | <b>45.48</b>    | 2.09                                  | 1.45         | 5.21         | <b>2.92</b>   | 0.25                            | 0.19        | 0.54        | <b>0.33</b>  |
| Cape_Verde            | 31.39                                | 79.49        | 118.82        | <b>76.57</b>    | 98.95                                 | 201.87       | 249.28       | <b>183.36</b> | 17.17                           | 18.02       | 12.67       | <b>15.96</b> |
| Comoros               | 4.02                                 | 12.75        | 11.93         | <b>9.57</b>     | 10.25                                 | 26.57        | 20.10        | <b>18.97</b>  | 2.58                            | 5.54        | 3.62        | <b>3.92</b>  |
| Congo, Rep            | 1.96                                 | 4.43         | 11.89         | <b>6.09</b>     | 0.95                                  | 1.59         | 3.51         | <b>2.01</b>   | 0.09                            | 0.19        | 0.23        | <b>0.17</b>  |
| Côte d'Ivoire         | 32.48                                | 101.80       | 155.52        | <b>96.60</b>    | 3.17                                  | 6.71         | 8.08         | <b>5.99</b>   | 0.38                            | 0.91        | 0.99        | <b>0.76</b>  |
| Ethiopia              | 10.95                                | 18.66        | 163.65        | <b>64.42</b>    | 0.27                                  | 0.33         | 2.11         | <b>0.90</b>   | 0.12                            | 0.22        | 1.00        | <b>0.45</b>  |
| Gabon                 | 0.16                                 | 3.77         | 8.16          | <b>4.03</b>     | 0.21                                  | 3.44         | 5.94         | <b>3.19</b>   | 0.00                            | 0.08        | 0.10        | <b>0.06</b>  |
| Gambia                | 8.60                                 | 13.10        | 48.29         | <b>23.33</b>    | 11.18                                 | 12.58        | 31.00        | <b>18.25</b>  | 3.75                            | 3.58        | 9.24        | <b>5.52</b>  |
| Ghana                 | 2.65                                 | 17.62        | 83.17         | <b>34.48</b>    | 0.20                                  | 1.00         | 3.76         | <b>1.65</b>   | 0.06                            | 0.26        | 0.68        | <b>0.33</b>  |
| Guinea                | 4.94                                 | 6.04         | 66.67         | <b>25.89</b>    | 0.85                                  | 0.90         | 7.10         | <b>2.95</b>   | 0.21                            | 0.20        | 1.92        | <b>0.77</b>  |
| Guinea Bissau         | 1.17                                 | 2.25         | 27.11         | <b>10.18</b>    | 1.27                                  | 1.90         | 18.10        | <b>7.09</b>   | 0.77                            | 0.96        | 5.27        | <b>2.33</b>  |
| Kenya                 | 63.89                                | 235.16       | 957.81        | <b>418.95</b>   | 3.29                                  | 8.43         | 26.20        | <b>12.64</b>  | 0.91                            | 2.27        | 4.58        | <b>2.59</b>  |
| Lesotho               | 317.12                               | 378.83       | 329.06        | <b>341.67</b>   | 219.18                                | 222.00       | 164.94       | <b>202.04</b> | 81.55                           | 53.29       | 28.73       | <b>54.52</b> |
| Madagascar            | 3.53                                 | 12.29        | 13.35         | <b>9.72</b>     | 0.35                                  | 0.95         | 0.78         | <b>0.69</b>   | 0.13                            | 0.38        | 0.26        | <b>0.25</b>  |
| Malawi                | 0.92                                 | 0.69         | 0.92          | <b>0.84</b>     | 0.13                                  | 0.07         | 0.07         | <b>0.09</b>   | 0.07                            | 0.04        | 0.03        | <b>0.05</b>  |
| Mali                  | 58.82                                | 103.06       | 217.69        | <b>126.52</b>   | 7.47                                  | 10.96        | 17.99        | <b>12.14</b>  | 3.61                            | 4.20        | 3.84        | <b>3.88</b>  |
| Mauritania            | 3.72                                 | 9.95         | 1.99          | <b>5.22</b>     | 2.13                                  | 4.69         | 0.68         | <b>2.50</b>   | 0.44                            | 0.76        | 0.12        | <b>0.44</b>  |
| Mauritius             | 15.67                                | 119.50       | 210.82        | <b>115.33</b>   | 15.31                                 | 105.78       | 170.62       | <b>97.24</b>  | 1.03                            | 3.12        | 3.47        | <b>2.54</b>  |
| Mozambique            | 60.53                                | 56.64        | 72.11         | <b>63.09</b>    | 4.65                                  | 3.68         | 3.44         | <b>3.92</b>   | 1.99                            | 2.15        | 1.12        | <b>1.76</b>  |
| Namibia               | 10.91                                | 13.63        | 13.24         | <b>12.59</b>    | 9.28                                  | 8.59         | 6.59         | <b>8.16</b>   | 0.59                            | 0.45        | 0.22        | <b>0.42</b>  |
| Niger                 | 11.19                                | 13.08        | 54.72         | <b>26.33</b>    | 1.64                                  | 1.43         | 4.03         | <b>2.36</b>   | 0.56                            | 0.65        | 1.52        | <b>0.91</b>  |
| Nigeria               | 11.10                                | 799.10       | 4,465.23      | <b>1,758.48</b> | 0.14                                  | 6.98         | 30.56        | <b>12.56</b>  | 0.03                            | 2.59        | 3.42        | <b>2.01</b>  |
| Rwanda                | 4.00                                 | 7.62         | 29.48         | <b>13.70</b>    | 0.66                                  | 1.29         | 3.11         | <b>1.69</b>   | 0.24                            | 0.57        | 0.88        | <b>0.56</b>  |
| São Tomé & Príncipe   | 0.74                                 | 0.53         | 1.48          | <b>0.92</b>     | 7.42                                  | 4.11         | 9.62         | <b>7.05</b>   | 0.82                            | 0.42        | 1.18        | <b>0.81</b>  |
| Senegal               | 86.08                                | 154.46       | 777.32        | <b>339.28</b>   | 13.20                                 | 18.13        | 67.17        | <b>32.83</b>  | 2.29                            | 2.99        | 8.43        | <b>4.57</b>  |
| Seychelles            | 3.17                                 | 2.79         | 7.54          | <b>4.50</b>     | 46.98                                 | 39.13        | 89.09        | <b>58.40</b>  | 1.63                            | 0.69        | 0.90        | <b>1.07</b>  |
| Sierra Leone          | 0.07                                 | 9.81         | 22.04         | <b>10.64</b>    | 0.02                                  | 2.43         | 4.28         | <b>2.24</b>   | 0.01                            | 1.25        | 1.68        | <b>0.98</b>  |
| South Africa          | 63.05                                | 160.79       | 583.74        | <b>269.19</b>   | 2.06                                  | 4.06         | 12.31        | <b>6.15</b>   | 0.07                            | 0.12        | 0.27        | <b>0.15</b>  |
| Sudan                 | 248.46                               | 275.24       | 1,504.21      | <b>675.97</b>   | 10.63                                 | 8.57         | 38.15        | <b>19.12</b>  | 2.26                            | 2.52        | 5.22        | <b>3.33</b>  |
| Swaziland             | 60.42                                | 88.23        | 78.01         | <b>75.55</b>    | 83.36                                 | 92.95        | 68.93        | <b>81.75</b>  | 10.82                           | 6.36        | 3.61        | <b>6.93</b>  |
| Tanzania              | 0.38                                 | 4.33         | 14.90         | <b>6.54</b>     | 0.02                                  | 0.14         | 0.38         | <b>0.18</b>   | 0.01                            | 0.06        | 0.11        | <b>0.06</b>  |
| Togo                  | 13.76                                | 21.12        | 188.66        | <b>74.51</b>    | 4.04                                  | 4.80         | 30.81        | <b>13.22</b>  | 1.30                            | 1.44        | 8.52        | <b>3.76</b>  |
| Uganda                | 34.57                                | 140.99       | 427.62        | <b>201.06</b>   | 2.21                                  | 6.68         | 14.77        | <b>7.89</b>   | 0.88                            | 2.94        | 4.62        | <b>2.81</b>  |
| <b>Sample Average</b> | <b>40.24</b>                         | <b>87.36</b> | <b>307.23</b> | <b>144.94</b>   | <b>17.92</b>                          | <b>24.58</b> | <b>32.89</b> | <b>25.13</b>  | <b>4.23</b>                     | <b>3.60</b> | <b>3.46</b> | <b>3.77</b>  |

**Source:** Author's computation base on MRF-2011, BoPS, WDI and GDF (April 2011) and estimates from country-specific desks of IMF and WB. **Note:** Due to lack of consistent data, only the 36 sampled countries are listed.

### **Box A3.1: The Millennium Development Goals (MDGs)**

**Preamble:** MDGs are eight international development goals commonly accepted as a framework for measuring the pace of socioeconomic development progress by the World Bank, UN, IMF and other credible international organisations since its unanimous adoption in September 2000. These goals, with 21 targets and a series of measurable indicators for each target, are to be achieved by 2015.

#### **MDG 1: Eradicate Extreme Poverty and Hunger**

*Target 1A:* Halve the proportion of people living on less than US\$1 a day

*Target 1B:* Achieve decent employment for women, men, and young people

*Target 1C:* Halve the proportion of people suffering from hunger

#### **MDG 2: Achieve Universal Primary Education**

*Target 2A:* By 2015, all children can complete a full course of primary schooling, girls and boys

#### **MDG 3: Promote Gender Equality and Empower Women**

*Target 3A:* Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015

#### **MDG 4: Reduce Child Mortality Rate**

*Target 4A:* Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

#### **MDG 5: Improve Maternal Health**

*Target 5A:* Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

*Target 5B:* Achieve, by 2015, universal access to reproductive health

#### **MDG 6: Combat HIV/AIDS, Malaria, and Other Diseases**

*Target 6A:* Have halted by 2015 and begun to reverse the spread of HIV/AIDS

*Target 6B:* Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it

*Target 6C:* Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

#### **MDG 7: Ensure Environmental Sustainability**

*Target 7A:* Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources

*Target 7B:* Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

*Target 7C:* Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

*Target 7D:* By 2020, to have achieved a significant improvement in the lives of at least 100 million slum-dwellers

#### **MDG 8: Develop a Global Partnership for Development**

*Target 8A:* Develop further an open, rule-based, predictable, non-discriminatory trading and financial system

*Target 8B:* Address the special needs of the Least Developed Countries (LDCs)

*Target 8C:* Address the special needs of landlocked developing countries and small island developing states

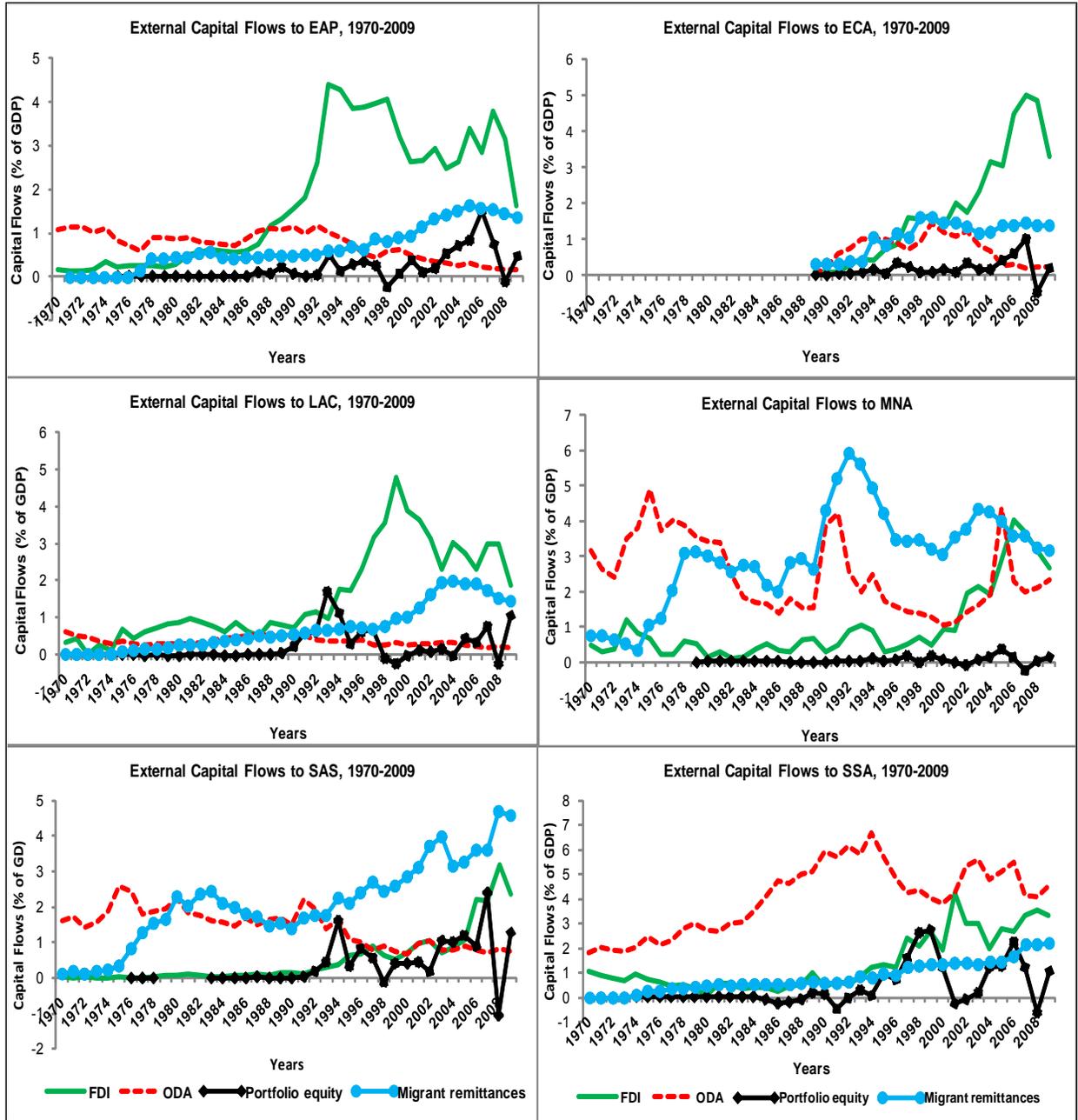
*Target 8D:* Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term

*Target 8E:* In co-operation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries

*Target 8F:* In co-operation with the private sector, make available the benefits of new technologies, especially information and communications

**Source:** *UN MDGs website, retrieved 30 June, 2010.*

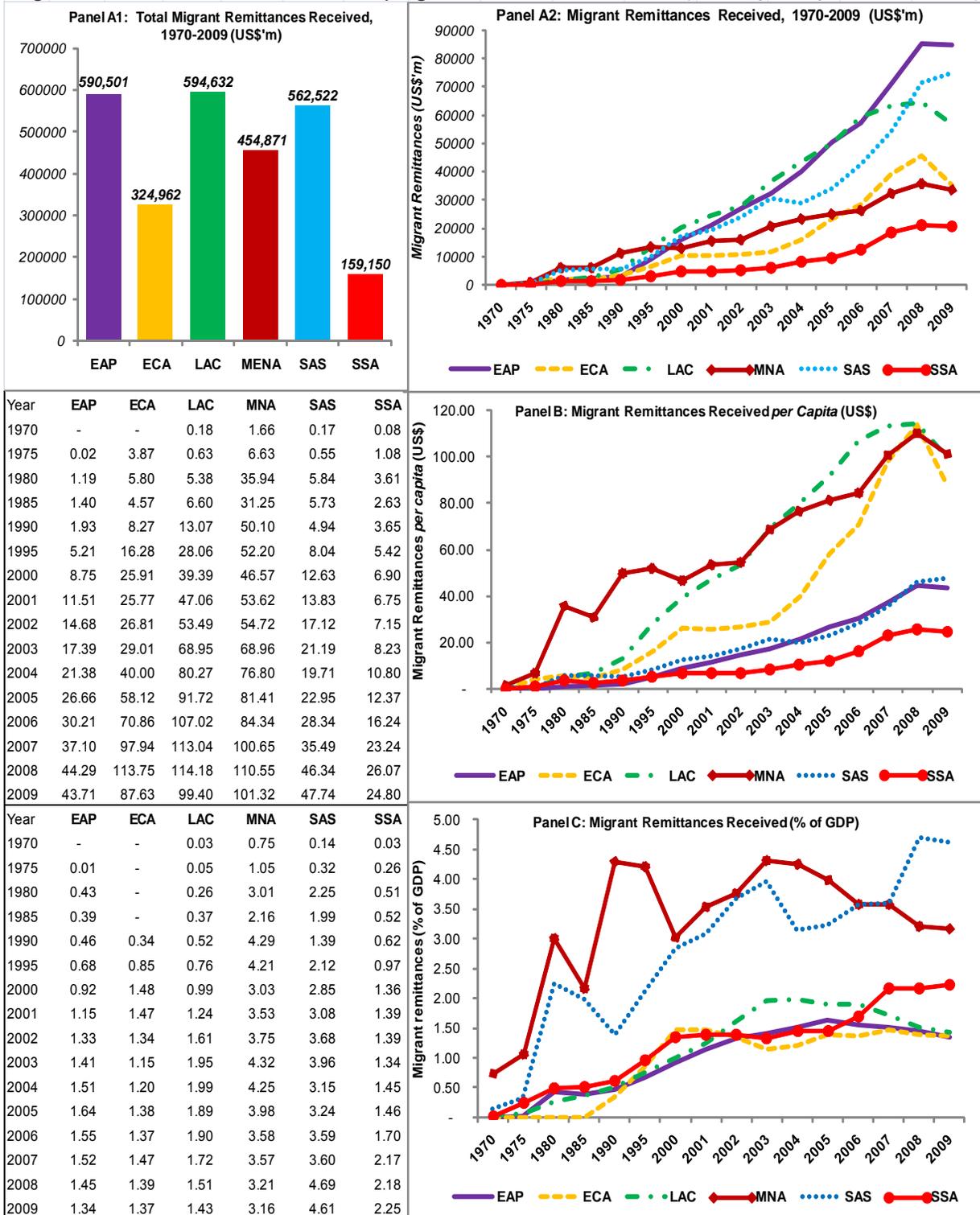
**Figure A3.1: Trends in External Capital Flows to Developing Economies, 1970-2009**



Source: Author based on BoPS as reported by the World Bank in WDI and GDF (April 2011)

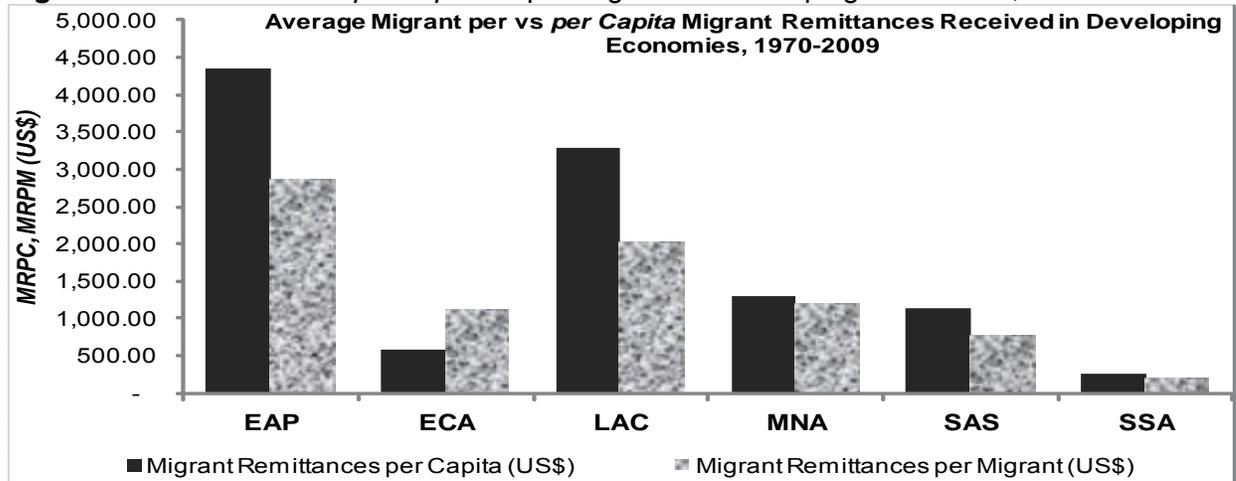
**Figure A3.2:**

Migrant Remittance Flows to Developing Economies, 1970-2009 (actual, *per capita* & % of GDP)



Source: Author's estimations based on data WDI and GDF (April 2011)

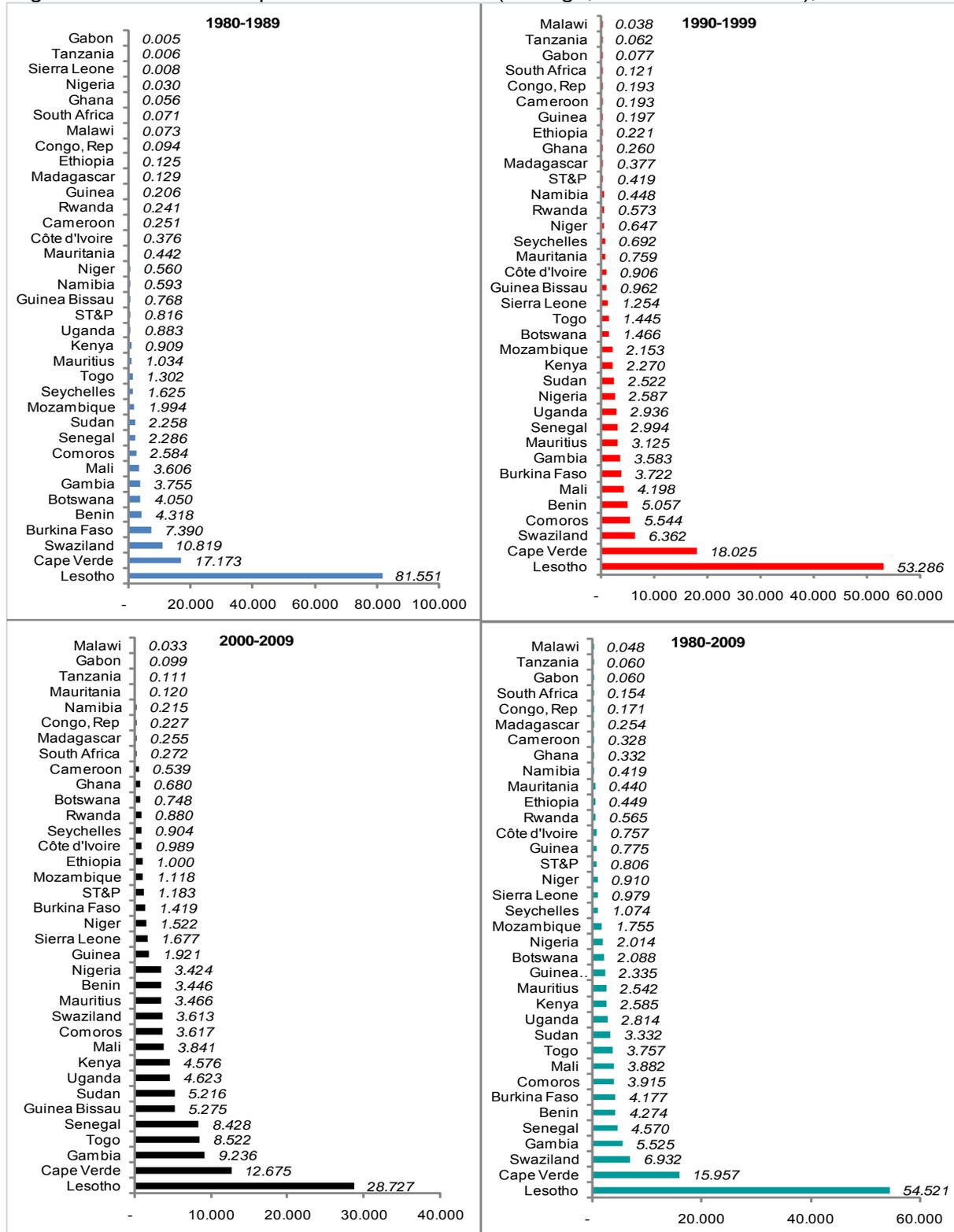
**Figure A3.3: Remittances *per capita* vs per Migrant in Developing Economies, 1970-2009**



|  | EAP            | ECA             | LAC            | MNA            | SAS            | SSA            |
|--|----------------|-----------------|----------------|----------------|----------------|----------------|
| Migrant Remittances <i>per Capita</i> (US\$) | 5,794.13       | 771.57          | 4,113.08       | 1,633.43       | 1,431.86       | 310.72         |
| Migrant Remittances per Migrant (US\$)       | 2,845.70       | 1,108.30        | 2,020.65       | 1,173.25       | 756.74         | 178.66         |
| <b>Correlation_MRPC,MRPM</b>                 | <b>0.99672</b> | <b>-0.37250</b> | <b>0.99938</b> | <b>0.96681</b> | <b>0.98672</b> | <b>0.99144</b> |

**Source:** Author based on WDI and GDF (April 2011). **Note:** 5-year data ranging 1970, 1975, ..., 2005 was used as data on total international migration stock was not reported on annual basis by the World Bank in its WDI. MRPC represents migrant remittances per capita whilst MRPM denotes (migrant) remittances per migrant.

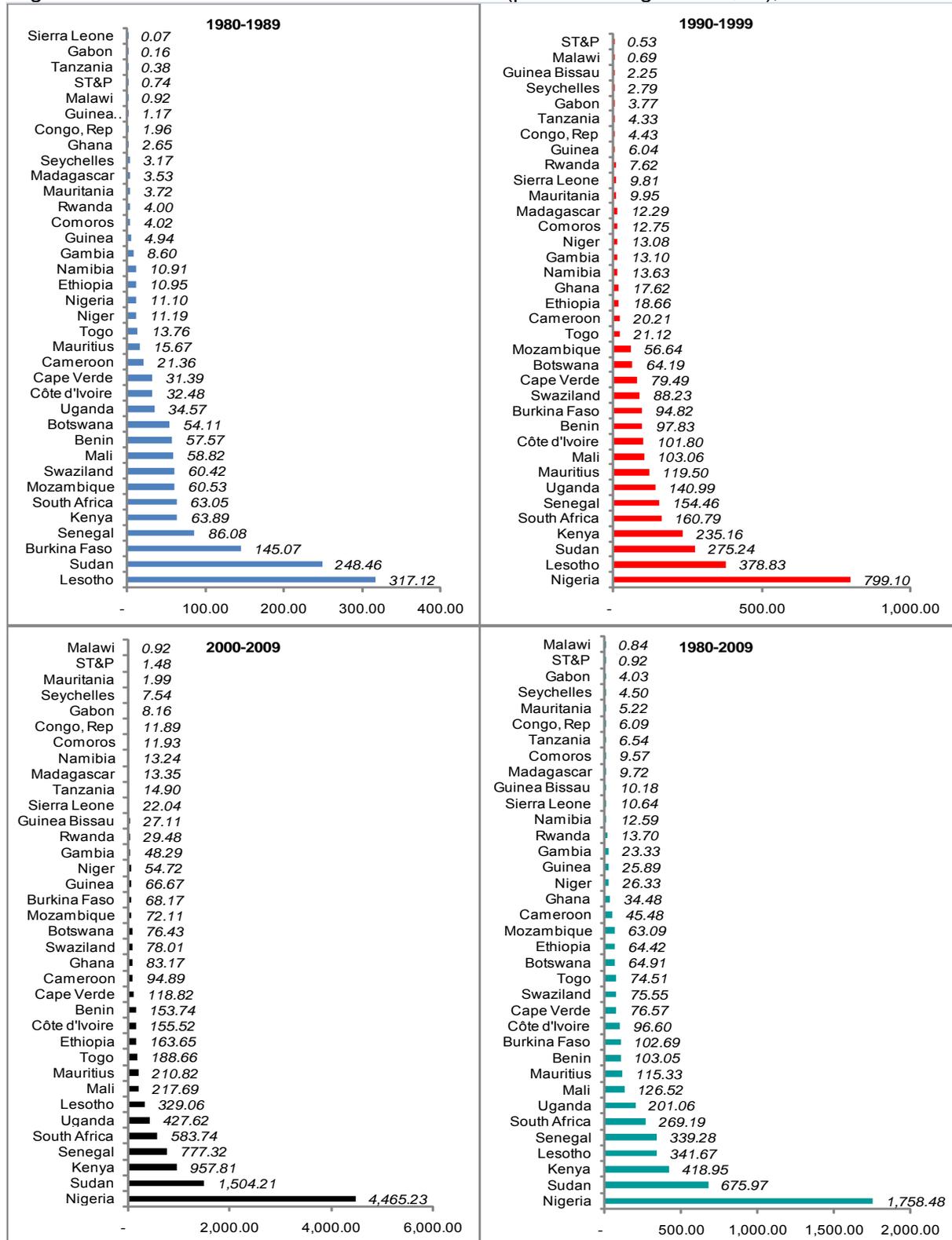
**Figure A3.4:**  
Migrant Remittance-Recipient Countries in SSA (average, based on % of GDP), 1980-2009



**Source:** Author's estimation from MRF-2011, BoPS, WDI, and GDF (April 2011) and estimates from country-specific desks of IMF and World Bank. **Note:** Only the 36 sampled countries are included due to data constraint.

**Figure A3.5:**

Migrant Remittances Received in SSA Countries (period average in US\$m), 1980-2009



**Source:** Author's estimation from MRF-2011, BoPS, WDI, and GDF (April 2010) and estimates from country-specific desks of IMF and World Bank. **Note:** Only the 36 sampled countries are included due to data constraint.

## CHAPTER FOUR

### MACROECONOMIC DETERMINANTS OF INTERNATIONAL REMITTANCES IN SUB-SAHARAN AFRICA<sup>\*,\*</sup>

#### 4.0 INTRODUCTION

This chapter aims at identifying the core macroeconomic factors responsible for explaining the changing levels of international migrant remittances received by sub-Saharan Africa (SSA) countries since the implementation of financial liberalisation programme in the 1980s. A set of annual panel data on 36 SSA countries, covering 1980-2009, was used in a system Generalised Method of Moments (GMM), following Blundell and Bond (1998) dynamic panel data estimation technique. In order to provide a more detailed insight into the possible dynamics of the varying impact of macroeconomic variables that explain the inflow of remittances in SSA, decade-based (1980-89, 1990-99 and 2000-09), as well as an overall study period 1980-2009, estimations were carried out. Furthermore, efforts were made to explore the determinants of migrant remittances at the disaggregated level - *workers' remittances* and *compensation of employees*. This chapter proceeds with a background discussion to motivate the study and to outline its objectives. This is followed by selected stylised facts in Section 4.2. In Section 4.3, a review of the theoretical and empirical literature is presented, whilst Section 4.4 presents the theoretical framework. Section 4.5 formulates the empirical model and the methodology adopted in analysing the data. A presentation and discussion of the empirical results can be found in Section 4.6, whilst Section 4.7 concludes the chapter with policy implications.

#### 4.1 BACKGROUND

Over the past two to three decades in particular, international migration from low-income countries to high-income countries has been rising steadily. From a low 75 million international

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\* Papers based on this chapter were presented at African Economic Research Consortium (AERC) bi-annual conferences (May/June 2010; November/December 2010; May/June 2011) at Mombasa and Nairobi, Kenya. Also, at IMF Staff Seminar (March 2, 2011), Washington, DC, USA; and Economic Society of South Africa (ESSA) bi-annual conference, September 5-7, 2011, Cape Town, South Africa.

\* A paper based on this chapter, entitled "Macroeconomic Determinants of Remittances in Sub-Saharan Africa," has been accepted for publication as a chapter in *The Macroeconomics of Africa's Recent Growth* edited by Shanta Devarajan and Ibi Ajayi. Also published from this chapter are: "The Changing Impact of Macroeconomic Environment on Remittance Inflows in Sub-Saharan Africa," *Journal of Academic Research in Economics* (2011), 3(2): 136-167. "Macroeconomic Determinants of Workers' Remittances and Compensation of Employees in Sub-Saharan Africa," *Journal of Developing Areas*, 48(1): 337-360.

migrant stock in 1965, the figure gradually rose to 120 million in 1990, and to more than 176 million in the year 2000, before attaining a high of 191 million and 214 million<sup>44</sup> in 2005 and 2010 respectively (IOM, 2010; UN, 2010). There is no compelling reason to expect a reversal trend in international migration in this era of increasing globalisation and widening income-gap between low income migrant-home countries and high income migrant-host countries<sup>45</sup>. Indeed, in various Human Development Reports since 2005, the United Nations (UN) attributes this trend of migration, involving both skilled and unskilled labour from developing countries to the industrialised world, to low living standards and poor working conditions in developing countries. In the case of sub-Saharan Africa (SSA), the Migration Policy Institute (2006) reports that more than 20 per cent of tertiary graduates from the sub-region compared to less than 10 per cent of their counterparts from the Middle East and North Africa (MNA) were working in the industrialised countries as at the end of 2006. During this same period, Angola, Guinea-Bissau and Mozambique had at least 50 per cent of their tertiary graduates working in advanced countries. According to UN (2009), Europe, with 32.6 per cent of international migrant stock, leads as the main host of emigrants, followed by Asia (28.6 per cent), North America (23.4 per cent), Africa (9 per cent), Oceania (2.8 per cent) and Latin America (2.4 per cent).

Although migrant-home countries may suffer from brain drain, these low-income countries have been benefiting directly and quite instantaneously from their citizens who migrate abroad through the receipt of remittances. This could be the most obvious reason why developing countries are the main destination of migrant remittances with the industrialised world maintaining their status as the main source of remittances<sup>46</sup>. Parallel to the recent upsurge of cross-border migration, international remittances received by developing countries have been rising rapidly and incessantly since the 1980s. The significant and consistent growth trend in remittance flows in recent years obviously has important implications for economic growth and development in the recipient countries. For instance, some macro-level studies have shown that official remittance inflows promote long-run growth (Faini, 2003; Ahoritor and Adenutsi, 2009; Adenutsi, 2011) and socioeconomic development (Özden and Schiff, 2005; Adenutsi,

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<sup>44</sup> According to UN (2010), the stock of international migrants represents more than three per cent of the world's population in 2010. 128 million persons, being 60 per cent of international migrant stock, were residing in industrialised countries of which 74 million representing 57.8 per cent were nationals from developing countries.

<sup>45</sup> High search frictions in the labour market due to low value addition in production (de-industrialisation) in the developing world are the most obvious explanations for the low wages and poor living standards in this part of the world.

<sup>46</sup> Developing countries receive at least 75 per cent of reported migrant remittances. In 2009, developing countries alone received as much as US\$ 316 billion out of the world's total of US\$ 414 billion, representing 76.3 per cent even though the amount they received in 2009 fell by about six per cent of the amount they received in 2008 (Author's computation based on World Bank's *WDI*, April 2011).

2010a, 2010b). Also, it has been proven that, in the long run, remittances foster price and currency stability or appreciation (Katseli and Glytsos, 1986; Adenutsi and Ahorator, 2008), and reduce poverty but do not necessarily improve income inequality (Adams and Page, 2005; Azam and Gubert, 2005; Adams, 2006; Ratha and Mohapatra, 2007; Nguyen, 2008). Remittances also create employment in recipient countries through increased investment and productivity (El-Sakka and McNabb, 1999; Ratha, 2003; IMF, 2005). In effect, in recent years, remittances have emerged as an important source of external development finance and a mitigating factor for economic imbalances and financial instability, particularly in underdeveloped countries, including those in SSA (Ratha, 2003; IMF, 2005; World Bank, 2006a).

Furthermore, in some developing countries such as India, Mexico, Philippines, and Lesotho, remittances have far exceeded other international capital flows in the form of Official Development Assistance (ODA) and Foreign Direct Investment (FDI) in recent years<sup>47</sup>. Accordingly, remittances have become a crucial source of foreign exchange in most developing countries. Consistent with the trend in international migration, official migrant remittances received by developing countries reached US\$116 billion in 2003 representing more than 1.5 per cent of their gross domestic product (GDP). In 2004, migrant remittances of US\$126 billion became the second most important source of foreign exchange earnings to developing countries (World Bank, 2006a,b). This was the year in which FDI to developing countries stood at US\$165 billion with gross ODA amounting to US\$79 billion (World Bank, 2006a). Recorded migrant remittances received by developing countries rose to US\$194.2 billion in 2005, reaching an all-time high of US\$336 billion in 2008 before plummeting slightly to US\$316 billion in 2009, in response to the global financial crisis of 2007-2009 (World Bank, 2010). Yet, the relative importance of migrant remittances over other capital inflows in developing countries, with respect to the size, growth rate and stability, remains unchanged over the past four decades as the decline in 2009 is only the second after the first was recorded in 1985.

Even though remittances received by developing countries have more than doubled during the last decade in terms of absolute volume, Africa experienced only a marginal rise. For instance, official migrant remittances to Africa amounted to US\$9 billion (out of which SSA received \$1.86 billion) in 1990; and by 2003, migrant remittance flows to Africa had reached US\$14

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<sup>47</sup> Migrant remittances are the second largest form of non-debt capital inflows in developing countries. In the Middle East and North Africa (MNA) just as in South Asia (SAS), migrant remittances are now the leading source of external capital (see Figure 3A.1 in Chapter Three).

billion (out of which SSA received \$5.96 billion)<sup>48</sup>. During this period, Egypt and Morocco were the largest recipients of remittances in Africa with Northern Africa as a sub-region receiving over 60 per cent of the total remittance flows to the continent. The rising trend in official migrant remittance flows to SSA continued, reaching US\$10 billion in 2005; attaining an all-time high of US\$21.6 billion in 2008 before dropping slightly to US\$ 20.7 billion in 2009 following the global financial crisis which led to 2007-2009 economic recession that hit the industrialised world. Despite this positive growth trend SSA remains the least recipient of migrant remittances, receiving only five per cent of global remittances compared to East Asia and the Pacific (20.7 per cent), South Asia (18 per cent), LAC (13.7 per cent), Europe and Central Asia (11.0 per cent) and MNA (7.7 per cent). In fact, as at the end of 2009, SSA as a sub-region received far less official remittances (US\$20.74 billion) than any of the world's top-three migrant remittance-recipient countries - India (US\$49.26 billion), China (US\$47.55 billion) and Mexico (US\$22.16 billion)<sup>49</sup>. It is acknowledged that the officially reported value of migrant remittances received by developing countries is far lower than the actual amount received which is estimated to be at least 50 per cent higher than the officially reported amount (World Bank, 2006a,b). Freund and Spatafora (2005) posit that SSA receives the highest informal remittances, representing 45-65 per cent of what is officially reported, unlike 5-20 per cent in the case of Latin America. The adverse repercussions of the increasing flow of migrant remittances to SSA, and the developing world as a whole, through informal channels cannot be underestimated. These include money laundering, sponsorship of anti-government groups for self-centred interest, financing terrorist activities, creation or expansion of existing informal financial markets such as the 'underground' foreign exchange market, *de facto* dollarisation, and arbitrary growth in money supply in remittance-receiving countries. Ultimately, the continuous inflows of remittances through the informal channels can undermine the economic and political stability of the remittance-receiving countries and, at the same time, threaten the peace and security of the world.

Certainly, several factors, ranging from micro to macro, might have accounted for the relatively low receipt of official migrant remittances (or high receipt of informal remittances) by SSA. This chapter explores the factors that inhibit the optimal inflows of migrant remittances through official channels to SSA as a sub-region from a macroeconomic perspective. The fundamental question is: What role can macroeconomic factors play under liberalised financial market

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<sup>48</sup> Author's calculation based on World Bank's *WDI* (April, 2011)

<sup>49</sup> Author's compilation from World Bank (2011b) Remittance Database

regime in attracting official migrant remittances to SSA? The interrelated pertinent research questions with regard to SSA are:

- i. What macroeconomic factors explain variations in official migrant remittance inflows?
- ii. Are there any time variations in the impact of these macroeconomic factors on official migrant remittance inflows over the past three decades?
- iii. Do macroeconomic factors impact differently on migrant remittances and *workers' remittance* inflows?
- iv. To what extent do macroeconomic factors explain variations in the inflow of *compensation of employees*?

In response to the above research questions, this study attempts to explain broadly the macroeconomic factors behind migrant remittance flows to SSA. It seeks to find the long-run macroeconomic determinants of remittance flows to SSA. More specifically, with respect to SSA, the study seeks to:

- i. determine the impact of macroeconomic factors on official migrant remittance inflows;
- ii. examine if the impact of the macroeconomic factors identified in (i) vary on migrant remittances inflows over time;
- iii. verify if macroeconomic factors have any unique impact on *workers' remittances*; and,
- iv. explore the influence of macroeconomic factors on *compensation of employees* inflows.

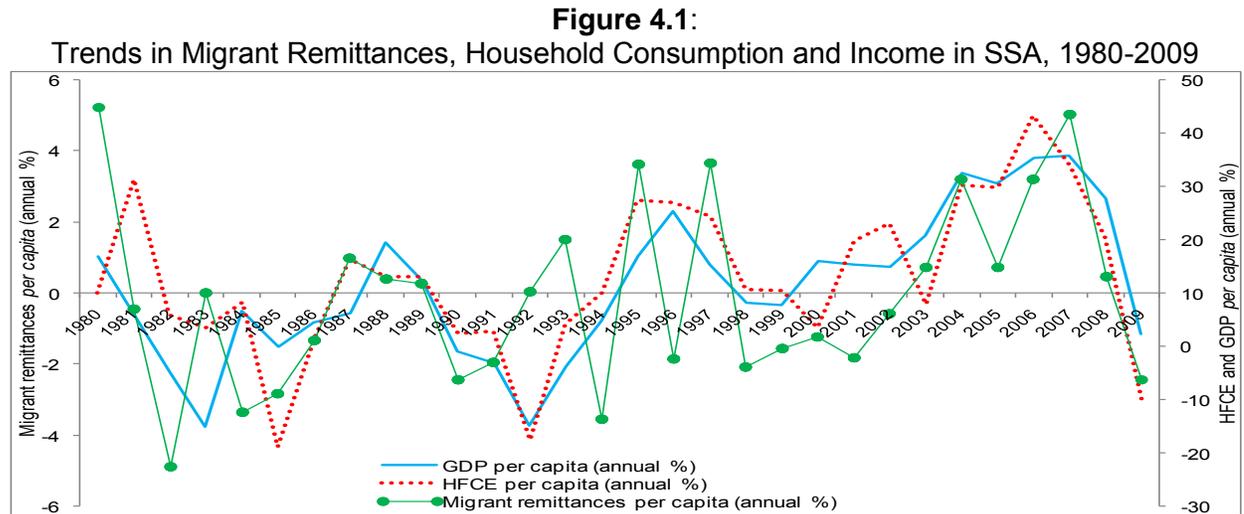
Based on the empirical findings, appropriate policy recommendations are made to guide macroeconomic policy formulation towards attracting a higher inflow of official migrant remittances in SSA. As far as the sub-region is concerned, this study is novel in the measurement of migrant remittances and in providing an insight into the time-dependent changing role of macroeconomic factors affecting migrant remittances over the past three decades. Also of unparalleled contribution is the fact that this study identifies the macroeconomic factors that explain migrant remittances at the disaggregated levels.

#### **4.2 SELECTED STYLISED FACTS ON REMITTANCE FLOWS TO SSA**

This section presents some stylised facts on the cyclical behaviour and the composition of migrant remittance inflows, as well as the destination of SSA migrants outside the sub-region.

#### 4.2.1: The Cyclical Behaviour of Remittance Flows to SSA, 1980-2009

In line with the altruistic theory, migrant remittance inflows are expected to be countercyclical; pro-cyclical in conformity with the self-interest motive, and acyclical in manifestation of the mixed motive (or tempered self-interest) in the recipient countries.



Source: Author based on WDI (April 2011).

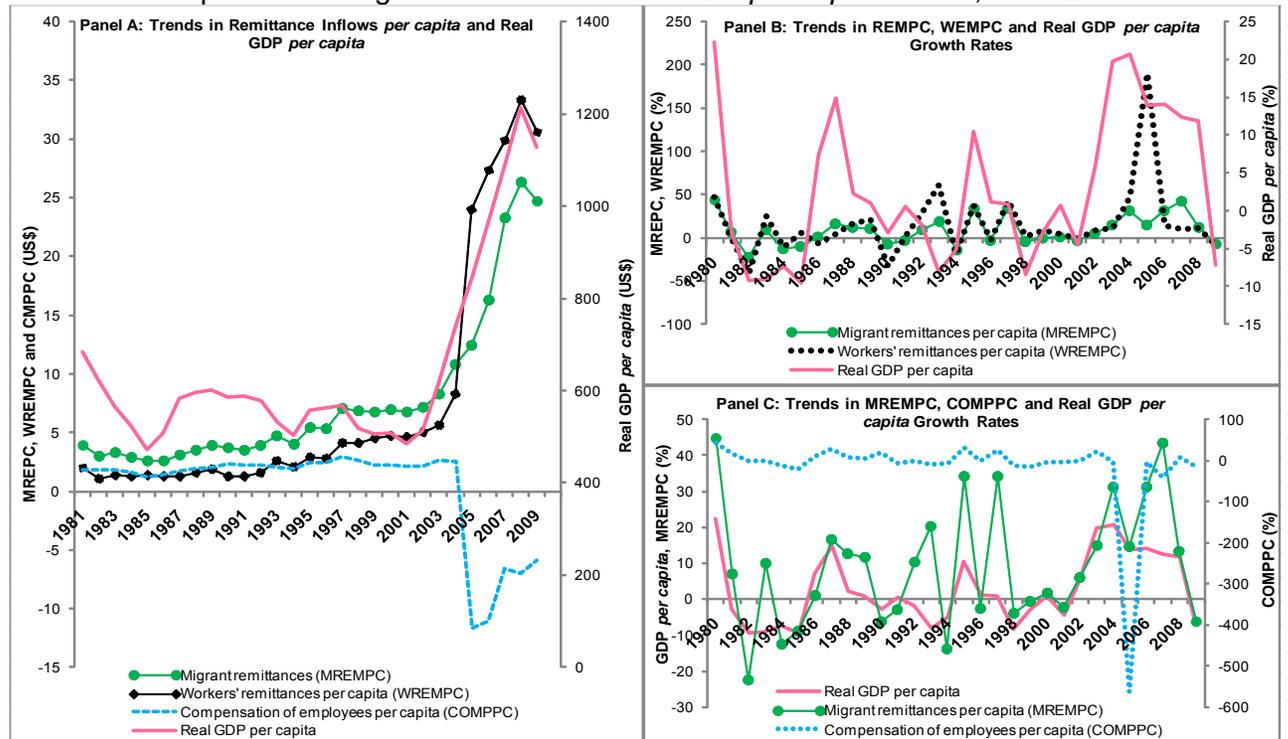
Note: HFCE denotes household final consumption expenditure

Figure 4.1 shows the trends in migrant remittances received, household consumption and income in SSA between 1980 and 2009. With reference to Figure 4.1, there is fairly strong evidence of pro-cyclicity in the growth of migrant remittances *per capita* and GDP *per capita* in SSA in the 1980s and in the 2000s. In the 1990s, there appears to be countercyclicity in the inflow of migrant remittances *per capita* as against GDP *per capita* growth in SSA. This trend is notwithstanding the fact that over the past three decades, migrant remittances (both in actual volumes and *per capita* terms) to the sampled 36 SSA countries have been increasing consistently taking into account the group mean for each decade as shown in Table A3.3 in Chapter Three.

The trends in the annual growth in household final consumption expenditure *per capita* and migrant remittances *per capita* confirm the pro-cyclicity in the flow of remittances to SSA in the 1980s and in the 2000s. The pro-cyclicity in the flow of migrant remittances in relation to household final consumption expenditure can be attributed to altruistic motive driving remittances. Therefore, with reference to the trends in *per capita* income growth and migrant remittances *per capita* growth, it can be argued that migrant remittances received by SSA are generally pro-cyclical during ‘good times’ (i.e. the 1980s and the 2000s). Furthermore, as

revealed in Figure 4.1, in terms of growth in migrant remittances *per capita*, the flow of migrant remittances to SSA cannot be described as unwavering but rather as erratic, especially in the 1990s. This suggests that in understanding the cyclical behaviour of migrant remittance inflows the use of the growth rate in the flow of remittances *per capita* rather than the popularly used absolute volume (as in Figure 4.2 Panel A) or relative to nominal GDP should be seen as more appropriate (cf. Chami *et al.*, 2005; Gupta, 2005; Lueth and Ruiz-Arranz, 2007a).

**Figure 4.2:**  
Trends in Components of Migrant Remittances and GDP *per capita* in SSA, 1980-2009



Source: Author based on WDI (April 2011)

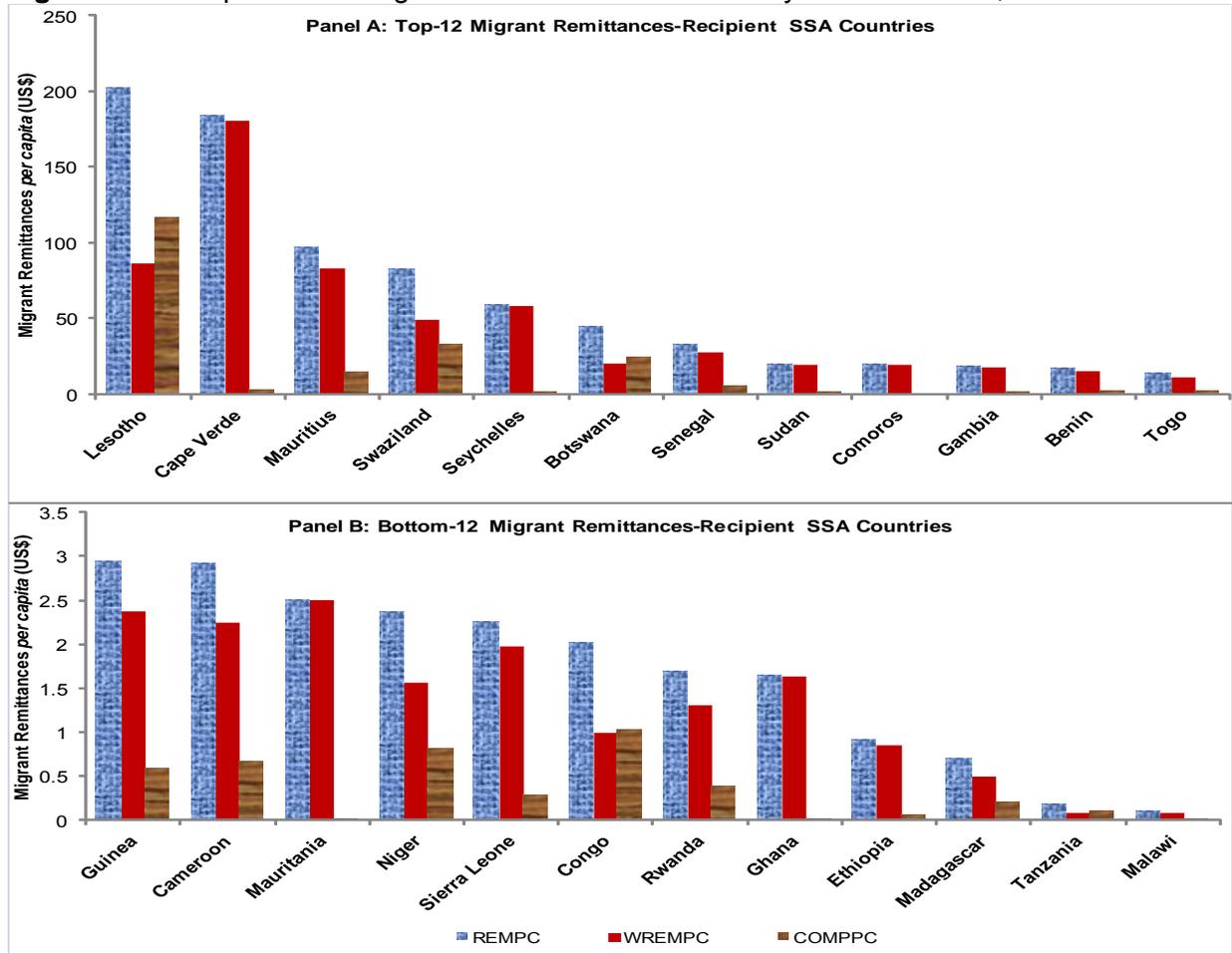
Figure 4.2 presents the cyclical behaviour of migrant remittance inflows *per capita* (MREMPC), as well as the components of MREMPC – the inflows of workers’ remittances *per capita* (WREMPC) and compensation of employees *per capita* (COMPPC) in SSA between 1980 and 2009. Figure 4.2 Panel A, reveals that the actual values of *per capita* migrant remittances and workers’ remittances received in SSA are highly pro-cyclical with respect to real GDP *per capita* over the past three decades. During this same period, actual values of COMPPC were acyclical to real GDP *per capita* prior to the year 2005. Beyond 2005, however, COMPPC became countercyclical relative to real GDP *per capita* (Panel A).

Figure 4.2 Panel B shows that between 1980 and 2009 the trend in the annual growth rate of *per capita* workers' remittances received in SSA was pro-cyclical in the 1980s and 2000s but countercyclical in the 1990s. Coincidentally, it was in the 1990s that SSA as a sub-region recorded its worst macroeconomic performance as reflected in reduced real GDP *per capita*, domestic savings, higher external imbalance and debt stock (see Table 3.1). It can be seen that the inflows of workers' remittances and migrant remittances follow a similar growth trend, understandably because the former constitutes a significant component of the latter. In other words, the cyclical behaviour of migrant remittance inflows is dependent upon the growth trend of workers' remittances which is the dominant component of migrant remittances. From Figure 4.2 Panel C, it is apparent that the annual growth in compensation of employees received *per capita* (COMPPC) has been acyclical to the growth in real GDP *per capita* in SSA since 1980. Whilst this trend analysis cannot be interpreted as akin to or underscored by causal effects, two main conclusions are possible from the observations based on Figure 4.2. Either, (i) remittances from 'permanent' migrants are positively responsive to macroeconomic conditions at home, whilst remittances from 'temporary' migrants are irresponsive to home-country macroeconomic conditions; or (ii) workers' remittances can contribute more positively to home-country macroeconomic performance whilst the impact of compensation of employees on macroeconomic performance in SSA is relatively less important, given that workers' remittances form an integral part of migrant remittance inflows in SSA (see Figure 4.3).

#### **4.2.2 The Composition of Migrant Remittances Received in SSA, 1980-2009**

Figure 4.3 shows the composition and the degree of dependency on migrant remittances in the 36 SSA countries sampled for the empirical analysis. Figure 4.3 Panel A reveals that, with the exception of Cape Verde, countries in the southern part of the sub-region *viz.* Lesotho, Mauritius, Swaziland, Seychelles and Botswana, dominate the top-six migrant remittance-recipient countries. The remaining top-12 migrant remittance-recipients (Cape Verde, Senegal, Sudan, Gambia, Benin and Togo) are predominantly West African countries. Comoros is the only country from the eastern part of the sub-region listed among the top-12 remittance-recipients. Also, although the majority of the top-12 leading remittance-recipient countries are small in geographical size, Botswana and Sudan are relatively large.

**Figure 4.3: Composition of Migrant Remittances Received by SSA Countries, 1980-2009**



**Source:** Author based mainly on WDI (April 2011). **Note:** Only the 36 sampled countries included.

The geographical background of the bottom-third of migrant remittance-recipient countries is quite heterogeneous. All the same, West African countries dominate with five countries (Guinea, Mauritania, Niger, Sierra Leone and Ghana) in this bottom 12 category. Central and Eastern Africa are represented by four countries (Cameroon, Congo, Rwanda and Ethiopia) with Southern Africa having three countries (Madagascar, Tanzania and Malawi) among countries which received the least migrant remittances. Again, Panel B is dominated by countries with relatively large geographical size such as Cameroon, Mauritania, Niger, Congo, Madagascar and Tanzania. Despite this, Guinea, Sierra Leone, Rwanda and Malawi, with relatively small geographical size are also included in this category of countries which receive the least migrant remittances.

With the exception of Congo Republic, only countries in the southern part of the sub-region (Lesotho, Botswana and Tanzania) depend more on compensation of employees than how they depend on workers' remittances. This implies that relatively high frequency of temporary or circular migration is likely to be more common among countries in the southern part than elsewhere in the sub-region. It is likely that unlike the nationals of other countries in the sub-region the nationals of these Southern African countries might find it relatively easier, cheaper and more convenient to migrate temporarily to neighbouring South Africa, the country that can be described as industrialised, at least, by the standard of the sub-region.

In terms of income status, there is no distinctive pattern of dominance in either category as relatively high-income countries such as Cameroon, Congo and Ghana are listed among the least migrant remittance recipients just as other high-income countries like Seychelles, Cape Verde, Mauritius and Botswana are listed among the high migrant remittance recipients. Thus, migrant remittances flow to both high-income and low-income SSA countries; and the inflow of remittances does not depend necessarily on the geographical size or location of the country. This implies that some macroeconomic fundamentals and policies could be responsible for the changing and unequal flow of migrant remittances received by the various SSA countries.

#### **4.2.3 Migratory Patterns in SSA: Main Destinations and Sources of Remittances**

Theoretical as well as empirical literature suggests the inclusion of both home-country and the host-country factors in identifying the macroeconomic factors that explain migrant remittances received by developing countries (see Section 4.4 and Table A4.1 in the Appendix). As reported in Table A4.1, most empirical works on macroeconomic determinants of remittances tend to use the USA as the migrant-host country. Some authors including Elbadawi and Rocha (1992), Lianos (1997), Bouhga-Hagbe (2004), Akkoyunlu and Kholodilin (2006) and Akkoyunlu (2010) made attempts at using countries other than the USA as the migrant-host nations in macro-level country-specific studies with focus on bilateral remittances. In the case of SSA countries, however, the majority of their migrants, at least 70 per cent, migrate to reside in other SSA countries as shown in Table A4.3 in the Appendix.<sup>50</sup> This makes the pattern of migration among citizens of SSA unique compared to the rest of the world. Notwithstanding the fact that SSA still serves as the main host of its 'own migrants', the most important source of international remittances to the various SSA countries is the SSA migrants residing in countries

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<sup>50</sup> This confirms earlier estimate by Ratha and Shaw (2007). For Africa as a whole, Barajas *et al.* (2010) observe that more than 50 per cent of African migrants reside in Africa.

outside the sub-region (Ratha and Shaw, 2007; Bollard *et al.*, 2010). Table 4.1 presents a list of the 36 sampled SSA countries and the main host of their citizens residing outside Africa.

**Table 4.1:** Host Countries of SSA Migrants Resident outside SSA

| Country Code | Country Name         | Non-SSA Host-Country           | Country Code | Country Name               | Non-SSA Host-Country           |
|--------------|----------------------|--------------------------------|--------------|----------------------------|--------------------------------|
| 1            | Benin (BEN)          | France (FRA)                   | 19           | Mali (MLI)                 | France (FRA)                   |
| 2            | Botswana (BSW)       | Great Britain (GBR)            | 20           | Mauritania (MRT)           | France (FRA)                   |
| 3            | Burkina Faso (BFA)   | Pakistan (PAK)                 | 21           | Mauritius (MRS)            | France (FRA)                   |
| 4            | Cameroon (CAM)       | France (FRA)                   | 22           | Mozambique (MZQ)           | Portugal (POR)                 |
| 5            | Cape Verde (CPV)     | Portugal (POR)                 | 23           | Namibia (NAM)              | Great Britain (GBR)            |
| 6            | Comoros (COM)        | France (FRA)                   | 24           | Niger (NGR)                | Germany (GER)                  |
| 7            | Congo Republic (CON) | France (FRA)                   | 25           | Nigeria (NIG)              | United States of America (USA) |
| 8            | Côte d'Ivoire (CIV)  | France (FRA)                   | 26           | Rwanda (RWA)               | Belgium (BEL)                  |
| 9            | Ethiopia (ETH)       | United States of America (USA) | 27           | São Tomé & Príncipe (ST&P) | Portugal (POR)                 |
| 10           | Gabon (GAB)          | France (FRA)                   | 28           | Senegal (SEN)              | France (FRA)                   |
| 11           | Gambia (GAM)         | Spain (ESP)                    | 29           | Seychelles (SEY)           | Great Britain (GBR)            |
| 12           | Ghana (GHA)          | United States of America (USA) | 30           | Sierra Leone (SLE)         | United States of America (USA) |
| 13           | Guinea (GUI)         | Great Britain (GBR)            | 31           | South Africa (RSA)         | Great Britain (GBR)            |
| 14           | Guinea-Bissau (GBS)  | Portugal (POR)                 | 32           | Sudan (SUD)                | Saudi Arabia (SAU)             |
| 15           | Kenya (KEN)          | Great Britain (GBR)            | 33           | Swaziland (SWZ)            | Great Britain (GBR)            |
| 16           | Lesotho (LSO)        | Germany (GER)                  | 34           | Tanzania (TNZ)             | Great Britain (GBR)            |
| 17           | Madagascar (MAD)     | France (FRA)                   | 35           | Togo (TOG)                 | France (FRA)                   |
| 18           | Malawi (MLI)         | Great Britain (GBR)            | 36           | Uganda (UGA)               | Great Britain (GBR)            |

**Source:** Author based on Parson *et al.* (2007).

A key feature in the pattern of SSA international migration as shown in Table 4.1 is that most of its citizens outside the sub-region reside in Europe rather than in the Americas. It is also logical to think that factors such as distance or travelling cost, geopolitical history or former colonial relationship, lingual Franca and religious affinities underlie the choice of destination of SSA international migrants. For instance, international migrants from Francophone SSA countries such as Benin, Cameroon, Comoros, Congo, Côte d'Ivoire, Mauritania and Senegal are hosted by France with which they have a common language. These SSA countries were also colonised by France in the past. The same trend is easily visible in the case of migrants from Portuguese speaking SSA countries (Cape Verde, Mozambique, São Tomé and Príncipe, and Guinea-Bissau) and migrants from English speaking SSA countries such as Kenya, Botswana, Malawi, Namibia, South Africa and Uganda. On religious affinities, SSA migrants from Muslim-dominated countries such as Burkina Faso, Benin, Niger and Sudan are mostly resident in countries like Jordan, Pakistan and Saudi Arabia with which these SSA countries have a common dominant religion. Evidence of proximity can be traced to Australia as an important host country where many international migrants from southern SSA countries, notably Botswana, Mauritius and Seychelles are resident (see Table A4.3).

From Table 4.1, France (12), Great Britain (10), United States of America (4), Portugal (4) and Germany (2) lead as the first-choice host of SSA migrants outside the sub-region. This implies that Europe leads as the main host of SSA international migrants<sup>51</sup>. Clearly, using the USA as the main host of SSA migrants in an empirical study cannot be considered as appropriate. Nevertheless, when the first three leading hosts of SSA international migrants are taken into account as presented in Table A4.3, the USA emerges strongly as one of the leading hosts. In fact, the USA hosts migrants from 24 SSA countries and ranks second only after Germany (27) and is followed by France (17), Great Britain (16) and Portugal (3). From this perspective using USA as the main host of international migrants from SSA could be considered a fairly good proxy. This is because in this context, with 24, USA leads Germany in number of SSA migrants that chooses the former as the first (or the most preferred) destination outside the continent.

Some important conclusions can be drawn from the stylised facts. First, the changing macroeconomic policy environment in SSA is likely to impact on remittances received by the sub-region in view of the fact that the cyclicity in the flow of migrant remittances were found to vary over time – pro-cyclical in the 1980s and the 2000s but countercyclical in the 1990s. It is for this reason that this chapter seeks to investigate, among other issues, the impact of changing macroeconomic policy environment on remittance inflows in SSA by undertaking a decade-by-decade analysis. Second, whereas just like migrant remittances, workers' remittances were largely pro-cyclical in the 1980s and in the 2000s but countercyclical in the 1990s, compensation of employees received in SSA were acyclical, hence less responsive to the changing macroeconomic policy environment of SSA. This study took this observation into account by analysing the determinants of migrant remittances at the aggregated and disaggregated levels. Third, contrary to popular perception, some SSA countries, mainly SADC countries other than South Africa, receive more compensation of employees than workers' remittances. This study did not probe this unique characteristic of SADC countries because as explained earlier, there is the likelihood that proximity to a 'big brother' industrialised country (in this particular case, South Africa) could explain this phenomenon, requiring the inclusion of physical distance (a non-macroeconomic variable) into the model as in (Lueth and Ruiz-Arranz, 2007b). Finally, because the facts clearly show that it is Europe and not the USA that leads as the host of SSA migrants, it is the leading non-SSA migrant-host country of each sampled SSA country rather than the USA that was used as the migrant-host country in this study.

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<sup>51</sup> Sander and Maimbo (2003), and Barajas *et al.* (2010) also identify Europe rather than North America as the main host of African migrants.

### 4.3 LITERATURE REVIEW

The literature reviewed in this chapter covers the microeconomic foundation underlying the flow of migrant remittances which discusses the reason why migrants remit, the uses of migrant remittances, and the characteristics of potential remitters and potential recipients of remittances. Also covered are the theories regarding remittance flows from a macroeconomic perspective and the empirical studies on macroeconomic determinants of remittance inflows.

#### 4.3.1 The Microeconomic Foundation and Theoretical Underpinnings of Remittances

##### 4.3.1.1 Motivations to Remit and Uses of Migrant Remittances

Cross-border remittances are usually small value non-debt-creating monetary transfers from income-earning migrants or benevolent organisations resident abroad and sent to family members, other close associates, or social welfare institutions resident in native countries directed at meeting a specific need. These flows are called *migrant remittances* if they strictly involve interpersonal transfers from an international migrant to his/her close relation(s) resident in his/her native country. In other words, international migrant remittances exclude the transfer of funds from institutions to persons or social institutions in less privileged and vulnerable economic environment. This study is centred on migrant remittance flows as they directly relate to migration of labour, an important resource for which the SSA sub-region is well endowed.

From a microeconomic viewpoint, it can be observed that the motivation for a migrant to remit part of his/her earnings to his/her native country is, either directly or indirectly, influenced by the end use of remittances. For instance, in order to thoroughly understand the motives behind migrant remittance inflows as well as the magnitude, regularity and volatility of these flows to SSA it is essential to be acquainted with how remittances are used within the sub-region. Although, admittedly, the uses of remittances can only be studied appropriately and comprehensively at the micro level (which is outside the scope of this study), a review of the available survey studies on the uses of remittances could offer some important insights into the understanding of the dynamics and trends in migrant remittance flows at the macro level.

Rapoport and Docquier (2006) identify altruism, exchange, strategic behaviour, co-insurance, inheritance, investment and mixed factors as the motives behind migrant remittance flows at the microeconomic level. This was after the debate on motivations to remit was initiated by Lucas and Stark (1985) who identified pure altruism, pure self-interest and tempered altruism

(or enlightened self-interest) as the microeconomic determinants of remittances using evidence from Botswana. Becker (1974) argues that altruism is the most fundamental reason for remitting. The altruistic motive of remittances is driven by natural love and concern for improving the living standards of the other family members and close associates left behind in the migrant's home country. In this case, a migrant derives positive utility from sending funds home to improve upon the distressing economic condition of the target recipients (often close relatives and friends) in his/her home country knowing very well that these recipients are in a less advantageous economic environment. It is expected that a rise in migrant income, a negative economic shock in the home country, a decrease in the real disposable income of the target recipients and the migrant's intention to return to his/her home country after some time should positively impact on remittance flows driven by altruism. From a migrant's perspective, however, the number of international migrants in a target household should inversely relate the regularity and the size of the remittances per migrant received by a household over time.

The pure self-interest theory of remittances as proposed by Lucas and Stark (1985) generates three critical motives from the perspective of the remitting migrant. These are inheritance, assets accumulation and intention to return home at a future date. Thus, under the theory of pure self-interest, a migrant's motivation to remit is driven essentially by the migrant's intention to return home after some time and, hence, the need to save at home in advance as well as to earn respect among his/her family and close associates; and the aspiration to inherit a family property like land, chieftaincy reign, and even sometimes to galvanise support for a political position upon return. De la Brière *et al.* (2002) find evidence for this proposition in Dominican Sierra. With regard to the intention to return home in the future, the migrant can then use a member of his/her family or a close associate as a trustworthy supervisor and well-informed agent who will monitor his/her children and spouse left behind as well as capital-intensive investment projects such as construction of an apartment, commercial farming and other entrepreneurial initiatives (Bernheim *et al.* 1985; Cox, 1987). Cox and Stark (1994) note that, in a three-generational setting, a migrant may be motivated to remit to his/her parents as a demonstration to his/her children how he/she (the migrant) should also be taken care of in old age by them (the children). For this demonstrative effect to be effective under this circumstance, the migrant makes sure the transfers of funds (i.e. remittances) are visible to his/her children and even, in some cases, to his/her grandchildren. The net earnings of the migrant and the intention to return home after some time rather than the negative economic shocks at home and the number of emigrants in a household are the contributing factors that

are expected to have a significant positive impact on remittances. Also, the stability and growth prospects of a migrant's home country as reflected in good democratic and accountable governance, low inflation, higher *per capita* income and improved access to bank credit by the private sector can positively influence a migrant's return and, hence, higher inflow of self-interest driven remittances.

Tempered altruism (or enlightened self-interest) is the mixed motive of migrant remittances representing the less extreme cases of pure altruism or pure self-interest (Lucas and Stark, 1985). This motive of remittances is informed by an implicit contractual framework of mutual benefit from international migration which involves the migrant and his/her family resident in his/her country of origin. The implicit contractual agreements would normally include co-insurance, loan repayment, exchange for services and strategic behaviour (Bernheim, *et al.* 1985; Poirine, 1997). For instance, a household may agree to mobilise funds to finance the initial cost of migration of a family member to a country where the probability of job acquisition and earning higher real wages is relatively high. The migrant is expected to remit part of his/her income to the household left behind to offset the debt acquired in sponsoring his/her trip, and thereafter, remittances are expected to continue to flow especially during periods of negative economic shocks. A migrant could also enter into an agreement with his/her family to be sponsored abroad so that in return, he/she will pay the airfare of an agreed number of economically active family members to travel abroad for greener pastures. Besides, both parties (the migrant and his/her family) might agree to invest the remittances received by the household into an agreed investment project that could be mutually beneficial to both parties. The investment project could serve as a hedge against uncertain future misfortunes such as ill-health and deportation of the migrant and negative shocks at home or in the country of residence of the migrant. Furthermore, in economies where the extended family systems and social ties are strong migrants may be compelled to remit home regularly as a compensation for the loss of his/her personal services to his/her family and community.

It should be obvious from the foregoing that the uses of international migrant remittances at the microeconomic level can be many and varied over time. Besides, the use to which remittances are put can be influenced by the gender of the recipient (Russell, *et al.* 1990). In addition, the educational status, marital status, family size, age, level and regularity of income, and the type of employment of the recipient are some other obvious personal characteristics that can influence the uses of remittances. Aside these personal features, the season, the value of the

amount received and the frequency of the flow of remittances could influence the use to which these funds are put. It is very likely that for whichever underlying motive remittances are sent, in most average homes, consumption and loan repayment towards improved living standards will lead the uses of remittances at the initial stages. Over time, the uses of remittances in a typical household are expected to switch in favour of investment in education and entrepreneurial ventures. As Gupta (2005: 4) puts it, evidence from different parts of the world shows that “remittances are mostly used for consumption and for investment in land and property”. Connell (1980) and Ahlburg (1991) posit that remittances are used primarily for consumption rather than for financing investment projects because of the barriers and inconveniences attached to private investment in most developing countries. An overriding conclusion from survey studies conducted by Morauta (1985) and Boyd (1990) in New Papua Guinea, Tongamoa (1987) for Tonga, Cox and Jimenez (1992) for Peru, and Ilahi and Jafarey (1999) for Pakistan supports the view of Poirine (1997), and Brown and Poirine (2005) that most migrants are under social obligation to remit home and that these remittances are firstly used to settle family debts incurred in financing their trips and/or education.

Of all the consumption purposes of using migrant remittances clearly driven by altruism, available evidence shows that food and other general living expenses constitute the largest proportion of the uses to which remittances are put. For example, cross-sectional studies conducted by Tongamoa (1987) in Tonga, Georges (1990) and Pessar and Grasmuck (1991) in Dominican Republic, Loomis (1990) in Cook Islands, Hayes (1993) in New Papua Guinea, Rensel (1993) in Fiji, Durand *et al.* (1996a,b) in Mexico, Dennis (2003), and Clark (2004) in Tuvalu and Kiribati, and Miotti *et al.* (2010) in Africa, find that between 67 and 88 per cent of remittances received are spent instantaneously on basic needs especially food items. Regarding the rural southern districts of Zimbabwe, Maphosa (2005) finds that 98.8 per cent of remittance-receiving families spend these funds primarily on food. Also, Pendleton *et al.* (2006) find that household consumption represents 93 per cent of migrant remittance usage by recipient households in the Southern African Development Community (SADC). Generally, the food items comprise imported tinned and processed foods, beverages and tobacco (Tongamoa, 1987; Dennis, 2003). Usually, the non-food consumables on which migrant remittances are spent in developing countries include healthcare services, clothes, telephones, household electronic appliances such as television sets, sound and video systems, simple tools and equipment, and housing and construction materials (Shankman, 1976; Loomis, 1990; James, 1991; Scott, 2003).

Investment in human capital, housing and business ventures also benefit from migrant remittance usage (Özden and Schiff, 2005). In Tuvalu and Kiribati, for instance, Borovnik (2003) and Clark (2004) find that education appears to be the second most important reason for remitting after food. The usage of remittances in human capital accumulation can take many forms namely finance of schooling, vocational training, and emigration. Özden and Schiff (2005) observe a similar trend in the use of foreign remittances in SSA. Brown (1995) observes that 75 per cent of Samoan migrants and 33 per cent of Tongan migrants have had their airfares paid by a family member who migrated earlier. Shankman (1976) finds that in Western Samoa, remittances were seldom used for capital investment projects because emigration was regarded as a more lucrative investment than capital investment in businesses and other entrepreneurial initiatives. In contrast, Walker and Brown (1995), and Muliaina (2001) find out that in Tonga and Samoa, a significant proportion of remittances are used for investment in farm inputs and simple tools and business establishments (see also Georges, 1990; Pessar and Grasmuck, 1991; Brown and Connell, 1993; Faeamani, 1995; Taylor, 1996). In a study on Mali, Findley and Sow (1998) also substantiated this finding by noting that remittances are not only used for consumption purposes but also for investment into mechanisation in agriculture. Similarly, Gubert (2000) observes that migrant remittance-receiving households in the Kayes region of Mali do not only have higher income *per capita* but also these households use more mechanised farming techniques and sophisticated farm implements than their counterparts who have no family member resident abroad. Ahmed (2000) reveals that Somaliland remittance-receiving households use these funds mainly for financing productive activities even in periods of harsh economic and political conditions. Similarly, for Zambia, Chilivumbu (1985) observes that remittances are largely used to finance agricultural inputs. In the case of southern rural districts in Zimbabwe, Maphosa (2005) discovers that migrant remittances in excess of immediate consumption are also used to purchase agricultural farm inputs.

If remittances are meant for small and medium-scale capital investment projects they are likely to be initially saved until the target working capital is obtained. James (1991) and Borovnik (2003) observe that young families in Tonga save a portion of remittances received towards future use. In LAC, a small proportion of remittances in excess of basic subsistence needs is used for investment and business initiatives, as found by Gorges (1990) and Pessar and Grasmuck (1991) for the Dominican Republic, and Durand *et al.* (1996a,b) for Mexico. McCormick and Wahba (2001) observe that literate returnees to Egypt have a higher probability

of using their savings from abroad to become entrepreneurs, while a longer stay abroad has no influence on a returnee migrant's chances of becoming an entrepreneur. Miotti *et al.* (2010) point out that the general motivation to remit for investment purposes other than owning a house in a native country is a major concern for uneducated migrants and those who have stayed in France the longest. In contrast migrants from SSA "send money for current expenditures rather than for investment" (Miotti *et al.*, 2010: 17). This finding confirms the conclusion by Mophosa (2005) on Zimbabwe and Pendleton *et al.* (2006) from a survey report on SADC that, apart from consumption, remittances are used for financing transportation, fuel, utilities, education and medical services by recipient households.

International migrants also remit to native communities and religious bodies and leaders according to Shankman (1976), Brown (1995) and Scott (2003), whilst Walker and Brown (1995) claim that remittance-recipient households sometimes spend these funds (often only in excess of consumption) on payment of marriage expenses, funerals and other social, cultural and religious ceremonies. For SSA, Diatta and Mbow (1999) indicate that besides household consumption, remittances were used to finance development projects in migrant's home communities in Senegal. Gubert (2002) explains that household members<sup>52</sup> who fall ill during the year are the most significant reason why Malian migrants remit and migrant remittances to Mali increase at once when a family member dies. On the average, one death and one sick family member induce an increase in migrant remittances by 124 per cent (*ibid*).

Given the above scenarios, there are no clear-cut uses of migrant remittances across recipient families in the developing world. The implication is that there is no universal answer to the question as to whether remittances are spent on 'productive' or 'unproductive' activities. For instance, even though consumption remains the most important use of remittances in many remittance-recipient homes as the evidence shows, the microeconomic impact of remittances on welfare is obviously positive as far as household access to basic essential needs of life are concerned. At the macroeconomic level, however, the composition of the consumption basket (whether or not, remittances are spent on imported or locally produced consumables) is critical to economic growth and stability.

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<sup>52</sup> The number of relatives and the severity of the sickness should influence the regularity and magnitude of remittance flows.

#### 4.3.1.2 Potential Remitters and Sources of Remittances to SSA

At the household level, there are a litany of factors directly relating to a migrant, including net average income, educational status, economic status of the family at home, number of closely related emigrants in a family, marital status, and job security. Other factors are gender, age, the desire to return home in the future, duration of stay, and the strength of social ties between the migrant and the potential recipients. These can affect not only the willingness and the ability to remit, but also the amount and the regularity of the flow of remittances. Additional factors that can influence the willingness and the ability as well as the magnitude and the regularity of remittance flows are migrant co-habitation with spouse, children and parents, number of younger siblings at home, motive for migration, future supportive expectations from family and migrant's legal status in host country. Durand *et al.* (1996a,b) identify labour market experience in the host country, homeownership status, access to capital, duration of trip and cost of migration as other factors that can play an important role in this respect.

Migrants on regular income and those with an accumulated stock of wealth are easily the most likely to remit home since remittances are a portion of a migrant's earnings transferred to meet a specific purpose in his/her native country. In this regard, a migrant with no accumulated wealth and who is a full-time student and, therefore, does not engage in any income-generating activity cannot be seen as a reliable potential remitter at the contemporary time. This is consistent with the definition of migrant remittances discussed in Chapter Two. However, there is no theoretical consensus on the question as to whether the regularity in the flow of migrant remittances is dependent upon the income level of the migrant even if the taxonomy provided by Wahba (1991)<sup>53</sup> is taken into account. The reason is that where altruism strongly dominates as the motive for remitting a migrant may keep remitting home irrespective of the level of his/her disposable income, even though under this circumstance income level is likely to be positively related to the amount of funds remitted. Blom and Henriksen (2008) find out that in Norway, Somali immigrants are by far the most regular remitters although they are in a weaker financial condition than other immigrants.

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<sup>53</sup> In this taxonomy, Wahba (1991) argues that: (i) the maximum transferrable income of a migrant at any given time is the excess income available to a migrant after meeting his/her basic needs in the host country; (ii) fixed remittances are the minimum funds a migrant is required to transfer to enable his/her family back home to meet the basic needs and other contractual obligations; (iii) discretionary remittances are transfers in excess of fixed remittances, which together with fixed remittances represent the level of actual remittances. Discretionary remittances vary according to financial risks and rewards on savings and investment in home and host countries; and (iv) saved remittances are the difference between potential remittances and the amount remitted during a given period.

Probably, the most important factor that influences the decision of migrants to remit is related to marital status and number of children left behind in migrants' home country. For instance, it should be very easy to find that married migrants whose spouses and children are living with them abroad are less likely to remit home than their counterparts who leave their spouses and children in their home countries. The reason is simple and straightforward: migrants who are motivated to remit home in support of their spouses, children and parents will remit larger amounts and more regularly when these direct dependants are staying behind. And as can be expected these migrants will be less inclined to remit more and more regularly when their spouses, children and parents who were previously staying behind now unite with them in the host country. Also, all other things being equal, migrants who stay with their spouses, children and parents abroad are less likely to remit and to remit larger amounts on regular basis, because such migrants often spend a higher proportion of their disposable incomes on essential basic necessities of life, with very little left over for savings and remittance-related investment.

There is evidence that remittances tend to decrease in value with duration of migrant stay (Lucas and Stark, 1985). In the case of Germany, migrants who intend to stay abroad longer remit less Merkle and Zimmermann (1992). Similarly, among the migrants from Pacific Islands, those who intend to return home remit more (Brown, 1997) in consistency with the observation by Glytsos (1997) that Greek temporary migrants remit more than Greek permanent migrants.

If the conclusion drawn from the various studies that remittances per migrant decrease over time is anything to go by, then the less educated migrants are more likely remit than the more educated migrants, notwithstanding the finding by Rodriguez and Horton (1995) that the level of education of migrants has no effect on the amount of migrant remittances. This is because various research reports by Borjas (1989), Knerr (1994), and Reagan and Olsen (2000) suggest that, generally, the higher the level of education of a migrant, the higher the duration of stay abroad. Earlier reports by Johnson and Whitelaw (1974), and Rempel and Lobdell (1978), however, suggest that remittances tend to increase with the level of formal education and skills of migrants (cf. Faini, 2006b).

In Somalia, Lindley (2007: 12) found that women are better remitters, especially in terms of reliability and consistency than men, to the extent that, "...it is better to have one daughter abroad than ten sons", notwithstanding that the empirical evidence shows that Somali men resident abroad remit higher amounts than their women do. Thus, on the average, in Somali

communities, men who remit home, remit higher amounts, but there is a higher probability that a Somali female migrant will remit home more than what her male counterpart will. This finding supports the observation by Ponsel (2001) on South Africa that women migrants remit larger proportions of their net earnings although men generally remit larger amounts than women. Exceptions to this finding can be found in studies by Crăciun (2006) and Osaki (2003) in the case of Moldova and Thailand respectively.

Bollard, McKenzie and Morton (2010), in a survey study involving a sample of 12,875 SSA and North African migrants in nine Organisation for Economic Co-operation and Development (OECD) countries conclude that:

- i. African migrants remit twice more (an average of US\$1,263) than migrants from other developing countries (an average of US\$668), with migrants from poorer African countries more likely to remit than those from richer African countries.<sup>54</sup>
- ii. Among migrants with spouses left behind at home, male migrants are more likely to remit and actually remit more (an average of 42 per cent) than female migrants (with an average of 26 per cent probability to remit). Men with spouses left behind remit an average of US\$3,879 per annum more than their female counterparts.
- iii. Migrants with higher education remit more than migrants with less education. This pattern is stronger among African migrants compared with non-African migrants. Bollard, McKenzie, Morton and Rapoport (2009) found a similar result. This finding could, however, be explained by the fact that migrants with a higher level of education are more likely to find jobs and earn higher incomes. Notwithstanding this, it must be borne in mind that most migrants from developing countries seldom find jobs that are directly related to their level of education in the industrialised countries where these migrants are hosted.
- iv. In relative terms, high income earners remit more than low income earners, but this relationship is quite flat over middle ranges of income and steeper at the tails of the distribution frequency. On the average, an increase in a migrant's income by 10 per cent is associated with an additional US\$110 remitted per annum.
- v. There is no strong evidence that remittances decrease with time spent abroad in relation to the policy debate as to whether or not the episode of temporary or permanent

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<sup>54</sup> Given that this finding clearly contradicts the facts presented in Chapter Three that SSA is the least recipient of migrant remittances in *per capita* and in absolute terms, it is possible either that most Africa migrants remit via unofficial channels, or that there are relatively fewer African migrants in OECD countries (as shown in Table A4.3), or that African migrants in non-OECD countries do not remit regularly.

migration impacts on remittance inflows to migrant-home countries. It was observed that the likelihood to remit and the amount remitted increased over the first five years to ten years of migration. The likelihood to remit begins to fall only after 20 years, but at this stage the total amount remitted does not fall since migrants with longer years of stay abroad, remit more on the few occasions that they do remit.

- vi. Out of the over 12,000 respondents, only a third remit, and with those who remit sending an average of US\$2,638 annually (with a medium of US\$1,088), “an amount far exceeding SSA’s *per capita* GNI of US\$1,082” (*op. cit.* 2010: 5).
- vii. Only a few migrants remit amounts worth US\$5,000 or more per annum. This is five per cent to SSA and nine per cent to North Africa. The majority of African migrants remit US\$500 or less in a year.
- viii. Migrants with excellent legal status are approximately 12 per cent more likely to remit than those with illegal status. “This may reflect differences in access to formal financial institutions such as banks, between legal and illegal migrants” (*ibid.* 2010: 17). This finding is consistent with the finding of Konica and Filer (2005) on Albanian emigrants who remit less if they do not have the appropriate documents.

Ratha and Shaw (2007) observe that international migration in SSA occurs predominantly within the sub-region, but the major source of remittance flows to the sub-region are industrialised countries outside the sub-region. Various World Bank reports on remittances corroborate this fact by noting that about 75 per cent of all remittances received in SSA are sent from the USA and Western Europe. Major migrant-host countries in Western Europe are former colonial powers such as Great Britain, France, Netherlands, Portugal and Spain as well as Germany (see Table 4.1). The obvious reasons are that these countries have the largest economies in Europe, common language, or close historical and political ties with most SSA countries. Bollard, McKenzie and Morton (2010) also identify OECD countries as the main source of remittances received by developing countries.

#### 4.3.1.3 Potential Receivers of Migrant Remittances

Frontline potential recipients of migrant remittances are low-income households<sup>55</sup> with an economically active adult nuclear family member resident and working in a foreign high-income country. Other potential recipients of migrant remittances are low-income communities and

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<sup>55</sup> Itzigsohn (1995) in comparative analysis of four countries finds that household income had a positive effect on remittances received in Guatemala, negative effect in the Dominican Republic but no effect in Haiti and Jamaica.

countries with a relatively large segment of their active adult citizens working in a relatively developed country. Among these households and communities, those that practise communal inheritance and give prestigious awards or respectable social titles to their members/citizens are more likely to receive higher remittances than those that do not. Moreover, in a typical household with a migrant abroad, spouses, children of school going age, economically inactive parents, and younger siblings are, in descending order of importance, the most likely to receive the highest and most regular remittances. Lucas and Stark (1985) report evidence for this hypothesis in Botswana where male migrants who are prospective heirs, competitively remit home in order to receive favour, respect and inheritance from their family and community back home. This suggests the value of assets such as land, plantation and animals owned by a household or a community is a positive determinant of migrant remittance inflows. Similarly, in societies where assumption of a chieftaincy reign is directly linked to donations and exhibits of wealth and generosity, migrants are more likely to remit, remit larger amounts and remit regularly. Osili (2007), however, argues that the relationship between household assets and remittances received may not necessarily be direct or simple as it is possible that the current assets owned by remittance-receiving households might be financed by previous remittances received.

Notwithstanding the above it must be pointed out that although 'migrant-exporting' households/communities are the main recipients of migrant remittances, whether driven by altruism or otherwise, the amount and the regularity in the flow of remittances received is highly contingent on the social ties between the remittance-sending migrant and the target recipient as well as the economic conditions at home. Conceivably, social ties between a migrant and his/her target recipients of remittances can be positively influenced by the premium the migrant places on the type of family and/or social support the migrant received prior to his/her migration. Lucas and Stark (1985) and Pleitez-Chavez (2004) upon studying the pattern of remittance inflows in Botswana and El Salvador respectively, conclude that negative income shocks in native countries significantly increased remittances received from relatives abroad. However, Lozano-Ascencio (1993) concludes from a study on Mexican migrants in the USA that remittances often decrease after the first or second generation of migrants, so that the stability in the flow of remittances is mainly sustained by a new generation of migrants.

Although, social ties between a migrant and his/her family at home is the nucleus of altruism, to a very large extent, migrants who remit for self-interest motives are also indirectly influenced by

social ties. For example, the stronger the social tie between a migrant and his/her family at home, all other factors being equal, the more likely the migrant will be willing to return home in the future. Naturally, migrants who plan to return home in the future are those who will be more concerned about economic opportunities at home and consequently, more motivated to initiate income-generating projects in their home countries, hence more likely to remit regularly.

#### **4.3.2 Theoretical Review of Macroeconomic Determinants of Remittances**

There are no distinctive macroeconomic theories underlying the flow of remittances. Macroeconomic models on the determination of remittances are, thus, based directly on the microeconomic theories of altruism and self-interest. Russell (1986a,b), Elbadawi and Rocha (1992), Lianos (1997), Bouhga-Hagbe (2004), Vargas-Silva and Huang (2006), and Coulibaly (2009) argue from the theoretical viewpoint that macroeconomic factors can play an influential role in the determination of international remittance flows. From the perspective of altruism at the macro level, remittances are higher when negative shocks associated with higher rates of underemployment and unemployment occur in the migrant's native country as the desperate macroeconomic conditions compel active labour to travel abroad in search of greener pastures<sup>56</sup>. In this context of pure altruism, lower growth in real income (or economic recession), higher rate of inflation, bad governance and weak institutions, exchange rate instability and limited access to private sector credit in migrant-home countries stimulate a higher inflow of migrant remittances (Wahba, 1991; Rapoport and Docquier, 2006; Vargas-Silva and Huang, 2006; Coulibaly 2009).

Generally, the level of economic activities in the migrant's resident country is important because improved economic conditions in the host country boost the ability of migrants to increase their employment and earnings prospects, which puts them in a better position to be able to remit more. For example, a migrant who is willing to remit for whichever purpose, but was unable to remit in the past because he/she was unemployed should have a higher propensity to remit once he/she is gainfully employed. Specifically, however, pure altruistic theory and pure self-interest investment theory predict different impacts of relative improvements in host-country income level on remittances received in migrant-home countries. According to the theory of altruism, when the real income of the migrant-host country improves

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<sup>56</sup> This is in line with the Lewis (1954) theory of excess supply of labour, resulting in high unemployment and low wages in underdeveloped economies, which forces the nationals of these underdeveloped economies to migrate to the industrialised world where there is a higher prospect of being engaged in relatively higher income jobs.

relative to that of his/her home country, the migrant is motivated to remit more because he/she sees his/her family back home as being worse off (Lucas and Stark, 1985; Rapoport and Docquier, 2006; Vargas-Silva, 2006). Thus, host-country income positively determines remittance inflows in the migrant-home country. In contrast, self-interest investment theory contends that as the real income level of the migrant-host country improves relative to that of the migrant-home country worsening the North-South income gap, migrants remit less because with improved income conditions abroad, it is more lucrative to invest in the host country than at home (Lucas and Stark, 1985; Vargas-Silva, 2006; Coulibaly, 2009). Also, conceivably because the incentive to return home in the future reduces as the economic conditions in migrant-host country improve relative to the migrant-home country conditions, there is a higher tendency that remittances from permanent migrants may fall. However, because this widening income gap encourages further South-North migration the newly arrived migrants who often have stronger social ties with their families back home during the initial stages of migration are likely to keep the tempo of remittances active.

In accordance with the altruistic theory, remittances received in migrant-home countries fall when, in real terms, the income level of developing countries improves to narrow the income gap between the migrant-home country and the migrant-host country (Lucas and Stark, 1985; Rapoport and Docquier, 2006; Vargas-Silva and Huang, 2006). The decline in remittances in response to a relatively improved economic condition of the target recipients is underscored by a reduction in the pressure on migrants to remit home to lessen income constraints faced by their direct dependants. The altruistic theorists, thus, argue that during periods of economic recession, as the real income level of the home country declines, migrants are compelled to increase remittances in a bid to mitigate the adverse effects of the negative economic shocks at home (Swamy, 1981; Brown, 1997, Vargas-Silva and Huang, 2006; Coulibaly 2009). With regard to home-country economic conditions and self-interest theory of remittances, the microeconomic theory can be transformed and directly related into a portfolio choice theory at the macro level. The portfolio choice theory implies that as economic conditions in migrant-home countries improve relative to the rest of the world, more remittances are received in the home country through higher savings and investment by migrants (Russell, 1986a,b; Wahba, 1991; Coulibaly, 2009). Higher real average income growth in the migrant-home country signals improved economic conditions and bigger potential markets which are required for increased private investment and the emergence of a vibrant entrepreneurial society. Consequently, self-

interest investment-oriented migrants tend to remit more for business or investment purposes when the potential market size in their home countries expands.

Return on financial assets having accounted for inflation is usually proxied by real deposit interest rates (Elbadawi and Rocha, 1992). According to the self-interest theory of remittances, increases in the real return on investment and savings in a migrant-home country relative to the migrant-host country induce higher inflows of investment-driven remittances in the migrant-home country (Schiopu and Siegfried, 2006; Vargas-Silva and Huang, 2006; Coulibaly, 2009). This is because if, for example, real deposit interest rates are relatively more attractive in migrant-home countries than migrant-host countries, non-altruistic migrants (especially those with an intention of returning home in the future) may increase their marginal propensities to save and invest at home in a bid to augment their expected lifetime utility at home. Therefore, a migrant-home country that creates a stable macroeconomic environment and an unrestricted opportunity for earning a higher return on domestic financial assets relative to the rest of the world can attract higher inflows of remittances, most likely through the formal financial system when, for example, the expected returns on portfolio assets in the home-country equity market become relatively more attractive. The pure altruistic theory of remittances does not predict any relationship between remittance inflows and real deposit interest rate<sup>57</sup> in the migrant-home country suggesting that remittances may flow to migrant-home countries irrespective of the level of deposit interest rate.

Real exchange rate can have an ambiguous effect on remittance inflows depending upon whether or not it is a fixed amount in the home-country denominated currency or host-country denominated currency that is remitted by a migrant, irrespective of the underlying motive for remitting. On the one hand, real exchange rate can positively influence remittance inflows as depreciation of the home-country currency against the host-country currency raises the purchasing power of the foreign currencies remitted, thereby making remittances more economically valuable in the home country as far as locally produced goods and services are concerned. An altruistic-oriented migrant who remits an equivalent fixed amount of local

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<sup>57</sup> Altruistic theory seems more concerned with real lending rates which are considered as the cost of borrowing funds in the migrant-home country. The lower the cost of borrowing from financial institutions, the lower the expected amount of remittances received and *vice versa*, as altruistic migrants become less worried about the cost of living and constraints to financing entrepreneurial ventures at home. Because data on lending rates in most of the sampled SSA countries are at best incomplete; and consistent with most previous studies (see Table A4.1) and with the Vargas-Silva and Huang (2006) theoretical framework adopted by this study, only real deposit interest rates were used in the empirical analysis.

currency to his/her dependants<sup>58</sup>, can under this circumstance, decide to remit less in terms of host-country currency but which in the eyes of the ordinary recipients represents the same amount in nominal terms. Indeed, where these remittances are spent on domestically produced goods, the purchasing power of the amount received remains unchanged when inflation and all other related factors remain constant. However, in an import-dependent migrant-sending country or where the purpose of remittances is to purchase some essential necessities such as imported medication, under the same conditions, an altruistic migrant may be compelled to remit more foreign currency to enable recipients of remittances to fulfil the “life-smoothing” purpose behind the sending of the remittances.

Likewise, migrants who remit for non-altruistic motives may either respond positively or negatively to changes in real exchange rate depending upon their level of financial literacy and their specific objective of remitting. For example, a rational migrant with a reasonable level of financial literacy who remits an equivalent local currency fixed amount for the payment of wages and rent at home will hedge by remitting more<sup>59</sup> to cover a reasonable given period of time when real exchange rate of the home-country currency depreciates against the currency of his/her host country. *Ceteris paribus*, when the home-country currency depreciates, migrants who remit for the purposes of investment in locally denominated financial assets will have a higher incentive for sending more remittances for investment purposes (say the purchase of land or listed shares), but as domestic currency appreciates, the incentive for investment at home, say the purchase of stocks, falls. Here, non-altruistic migrants see remittances as more profitable at home due to home-country currency depreciation. Under the same circumstances, a migrant who does not have the capacity to hedge will remit less when his/her home-country currency depreciates against his/her host-country currency as less foreign currency may now be required to meet the same fixed expenditure budget denominated in the home-country currency. The migrant, in this case, will have to remit more in the event of real exchange rate appreciation in order to meet the same expenditure budget in his/her home country. Investment-oriented migrants who consider stronger domestic currency as improvement in macroeconomic conditions at home and, hence, have higher confidence in the economy of the home country may be inclined to remit more when the home-country currency appreciates, and

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<sup>58</sup> Equivalent local currency denominated fixed value remittances can be easily applicable in situations where migrants remit to their non-working spouses and children who attend school at home.

<sup>59</sup> Here, although the total amount remitted might appear higher even in the foreign currency, in actual fact, the migrant has remitted less in terms of the host-country currency, if the normal average value of remittances per transaction were to be taken into consideration.

as the domestic currency depreciates, the amount of foreign currency denominated remittances are reduced. Finally, Gupta (2005) argues that, in general, there is a high tendency for officially channelled remittances to increase when home-country currency depreciates in developing countries where dual exchange rate exists, as depreciation of the home-country currency raises the official rate to comparable levels with the black market rate, or even raises migrants' expectations of a future appreciation.

The impact of home-country rate of inflation on remittances received is not straightforward and it is dependent upon which of the main motives behind remittance inflows dominates the other. Generally, higher inflation is analogous to harsh and unstable macroeconomic conditions in a country, therefore, given the rate of unemployment, the incentive for international migration increases. Increased migrant stock, all other factors remaining equal, increases total migrant remittances received from abroad as revealed by Elbadawi and Rocha (1992), Liano (1997), and Freund and Spatafora (2005) *inter alia*. Besides, the altruistic motive of remittances predicts that remittances meant to lessen constraints to consumption and general living expenses of recipients will increase when the cost of living soars in the migrant's home country (Lucas and Stark, 1985; Rapoport and Docquier, 2006). As the rate of inflation in the migrant's home country falls, the altruistic theory predicts a decline in the amount of remittances received because migrants now regard the economic condition of target recipients as less deplorable. According to the self-interest investment theory, higher rates of inflation and higher price uncertainty are deterrent to remittance inflows as migrants anticipate a lower rate of return on investment alongside higher investment risk under inflationary conditions at home (Schiopu and Siegfried, 2006). Nevertheless, this will depend upon the prevailing price level and the rate of inflation as a moderate rate of inflation at manageable levels in SSA could signal the opportunity for making higher profits at home, which subsequently induces investment-oriented SSA migrants to remit more. Therefore, where altruism dominates self-interest investment motive, a positive effect of inflation on remittances received is expected because higher inflation erodes the purchasing power of the target recipients. Be that as it may, where investment motive dominates, inflation is expected to impact negatively on remittance inflows because of higher investment risk at home. In the very long run, however, it is expected that lower rates of inflation should impact positively on remittance inflows as migrants who remit for purely altruistic motives become more investment-oriented at home due to improved macroeconomic conditions and, hence, reallocate remittances in favour of investment at home even as altruistic remittances fall.

According to the theory of altruism, when there is restricted private sector access to quality credit in migrant-home countries, migrant remittances increase to ameliorate liquidity constraints in the migrant-home country (Schrooten, 2005; Giuliano and Ruiz-Arranz, 2009). Altruistic theory, thus, predicts that when private sector access to competitive credit improves in migrant-home countries, remittances received decline not only because the pressure on migrants to remit to offset limited access to credit reduces, but also because the motivation for international migration in search of working capital to finance business falls. In contrast, the self-interest investment theory envisages higher inflows of remittances when there is less restricted private sector access to credit and working capital in migrant-home countries. This is because reduction in liquidity constraint is regarded as an improved development of the financial sector which is required for private sector participation in economic activities at home.

Russell (1986a,b) and Funkhouser (1995) argue that political risk factors in migrant-home countries can determine the inflow of migrant remittances. The impact of political risk in a home country on remittances received is dependent upon the motive behind the remittances. Whilst it may be positive or zero when remittances are driven by altruism, the impact of political risk is expected to be negative when the underlying motive is self-interest. Thus, institutional quality which embodies democratic governance and geopolitical conditions of the migrant-home country is expected to have an ambiguous effect on international remittance inflows. Going by the theory of altruism, remittances, in the short run, are expected to respond negatively to higher quality home-country institutions for two main reasons: (i) poor institutions and bad governance at home encourage higher international emigration, hence higher remittance inflows, as is the case in Somalia; and, (ii) when institutions become weaker, more remittances are expected to be received as international migrants become more sympathetic towards their relatives at home. In the long run, quality institutions at home can impact negatively on remittances received when more migrants (most likely temporary migrants) return home in response to improved political conditions in the home country. Furthermore, the self-interest investment theory of remittances, predicts a positive effect of institutional quality on remittance inflows because financial assets such as bank deposits, stocks and real estate are adversely affected by the risks associated with investment return and geopolitics. For example, a rise in political risk and uncertainty in a migrant-home country which adversely affects its credit rating and economic stability also deters the inflow of investment-seeking remittances as migrants

become pessimistic about investment security at home. In this respect, quality institutions in the country enhance higher remittance inflows.

The McKinnon (1973) and Shaw (1973) theory of financial liberalisation postulates that deregulation and abandonment of repressive financial policies breed competition and efficiency in the financial market, thereby enabling financial institutions to pay attractive returns on deposits. Through the pursuit of financial liberalisation policies, therefore, financial institutions are encouraged to develop cost-saving strategies and innovative products for resource mobilisation from domestic and external sources. Consistent with the McKinnon-Shaw theory, Alberola and Salvado (2006), Ghosh (2006), Suki (2007) and Singer (2010) assert that the implementation of restrictive economic policies such as exchange rate restrictions in migrant-home countries do not attract a higher inflow of international remittances. Conversely, a liberalised financial sector and improved financial development in migrant-home countries are imperative if a country is to attract higher remittances from its migrants through official channels.

It is, however, important to stress that, at the macro level, migrant remittances are often driven by mixed motives in so far as the altruistic and self-interest theories are not mutually exclusive. Furthermore, altruism underlies all kinds of remittances. This might be the main reason why in macro-level studies on the determinants of remittance inflows (see Table A4.1) analysts do not often attribute their findings strictly to the validity of any particular remittance theory.

#### **4.3.3 Empirical Review of Macroeconomic Determinants of Remittances**

The motivation for providing empirical evidence has increased since Lucas and Stark (1985) formally initiated<sup>60</sup> the debate on the determinants of remittances. Though the motives behind remitting might differ across time, households and countries, it is generally believed that improvement in migrant income and negative shocks in the migrant-home country have a direct relationship with remittances. For instance, with respect to home-country's economic performance many studies, including those of El-Sakka and McNabb (1999), de la Brière *et al.* (2002), Bouhga-Hagbe (2006), Yang and Choi (2007), and Singh *et al.* (2010) provide evidence on the countercyclical property of remittances. In sharp contrast, Aydaş *et al.* (2004) and Higgins *et al.* (2004) conclude that remittances exhibit pro-cyclical behaviour as they tend to

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<sup>60</sup> Prior to the contribution of Lucas and Stark in 1985, Johnson and Whitelaw (1974) argued that the incentive behind migrant remittances is income disparity between the resident countries of migrants and their home countries.

rise with improvements in *per capita* income and the growth rate of remittance-receiving economies. Sayan (2006) also observes that in most cases remittances tend to be acyclical or pro-cyclical.

Russell (1986a), and Chipeta and Kachaka (2005) reveal that the decision to remit depends on different factors over the business cycle rather than on the altruistic motive of smoothing consumption of recipients. In particular, Chipeta and Kachaka (2005) reaffirm an earlier observation by Russell (1986a,b) and Russell *et al.* (1990) that, from a macroeconomic perspective, the inflow of remittances depends on deposit interest rate differentials of the home country and the main host country of migrants, the rate of inflation, political atmosphere, the level of economic activity in the host country and the exchange rate in the home country.

El-Sakka and McNabb (1999), in an attempt to explain remittances received by Egypt, included real income levels of the sending and receiving countries, interest rate differentials, rate of inflation in Egypt, and the black market premium for foreign exchange as regressors in a single equation following the Ordinary Least Squares (OLS) procedure. The empirical results show that whereas remittances increase with the Egyptian rate of inflation and income abroad, they decline with the black market premium. Bouhga-Hagbe (2004) analyses workers' remittance flows to Morocco using cointegrating and error-correction models. Bouhga-Hagbe finds that, consistent with the altruistic theory, remittance inflows are, in the long run, positively correlated with wage levels in the source country proxied by wage levels in France whilst they negatively correlate with real GDP growth in Morocco.

Empirical literature suggests that the number of migrant workers outside the home country<sup>61</sup>, differences in wage rates at home and abroad, economic condition in the migrant-native country, exchange rate fluctuations, interest rates, political risk, facilities or mechanisms of international money transfer and the economic conditions in the country of residence influence remittance flows (see Table A4.1). With respect to official flow of remittances, the level of financial development as reflected in the cost of funds transfer, existence or absence of dual exchange rate, and the availability of financial infrastructure and innovative products in migrant-home countries are also important (Orozco, 2002; 2003; Ratha, 2003; Gupta, 2005; Terry and

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<sup>61</sup> Freund and Spatafora (2005) find that a 100 per cent rise in migrant stock causes a 75 per cent rise in remittance inflows, but Elbadawi and Rocha (1992), and Aydaş *et al.* (2004) observe that the importance of migrant stock in determining remittance inflows declines over time as a result of ageing labour force.

Wilson, 2005). For instance, Hadjimichael *et al.* (1998) and Pinto *et al.* (2000) conclude from various empirical studies that financial development and economic growth in migrant-home countries are crucial positive determinants of remittance inflows. With particular reference to financial infrastructure, Wahba (1991) concludes that financial institutions play a crucial role in attracting higher remittances through the formal money transfer channels. And as found by Orozco (2002), and Freund and Spatafora (2005), migrant-home countries that have relatively developed financial systems as reflected in reduced transaction costs on remittances, attract more remittances because the propensity to remit increases at lower money transfer cost.

Jadhav (2003) analyses the determinants of workers' remittance inflows in India using a log-linear regression specification involving oil prices as an indicator for level of economic activities in the Middle East and the Gulf region considered as the hosts of Indian migrants, US GDP as proxy for economic activities for non-oil India migrant hosts, interest rate differentials measured as the difference between nominal domestic interest rate and LIBOR, and exchange rate depreciation as explanatory variables. The estimated results show that whereas interest rate differentials do not affect remittance flows to India, the level of economic activities in both categories of migrant-host countries and exchange rate depreciation positively impact on remittance flows to India. In a similar fashion, Gupta (2005), in an attempt to analyse a more complete model to unearth the determinants of remittances in India, included trend, number of migrants, changes in country rating, and return on domestic stock market. The findings lend strong support for altruism as the main determinant of remittances. It was found out that migrant stock, migrant earnings, economic environment in migrant resident country, and Indian drought dummy variable each has positive impact on the cyclical component of remittances in India. Gupta (2005) did not find a statistically significant impact of political uncertainty, interest rates, and exchange rate depreciation on the flow of remittances to India.

Elbadawi and Rocha (1992) and Aydaş *et al.* (2004) find that migrant stock loses its importance as a determinant of remittances over time due to the ageing of the labour force. Therefore, in relative terms, it is not countries with the largest Diaspora population that attract the most remittances, but rather the countries where migrants are more sensitive to the economic conditions at home (as is the case for small island countries such as Cape Verde, Comoros and Cook Islands *inter alia*) and developing countries that are closer to industrialised countries (as is the case for Lesotho and Mexico) that attract more remittances (see also Buch *et al.*, 2002 for details). Possible reasons that can be attributed to these findings are closer family ties

between migrants and the family back home due to proximity resulting in frequent home visits by migrants, and the generally small geographical size of island countries.

From a more general perspective, World Bank (2006a) underscores the fact that government policies clearly affect remittance inflows. The World Bank (2006a: 93) concludes that “in the remittance-receiving countries, these policies include tax exemptions for remittance income; improved access to banking services by recipients; incentives to attract investments by the Diaspora; access to foreign exchange or lower duties on imports; support for the projects of migrant associations; and help for migrants in accessing financial systems. In the remittance-source countries, they include policies affecting access to banks, access to foreign exchange, support to migrant groups, types of immigration regimes, and co-operation with receiving countries”.

In summary, empirical results from various macroeconomic studies<sup>62</sup> on remittance inflows reveal that at the initial stage of migration, remittances are likely to be: (i) countercyclical in so far as they increase during economic downturns in recipient countries; (ii) driven more by an altruistic motive than by an investment motive; (iii) stimulated by life-sustaining motives, for which reason they are more for transactions motive (consumption) than for investment motive; and (iv) relatively insensitive to interest rate differentials between home and abroad. At the later stages of migration when the self-interest investment motive is more likely to emerge stronger than altruism, remittances flow pro-cyclically; or acyclically, because altruism and self-interest are of equal importance to the remitting migrant. Other macro variables that have been of empirical relevance to remittance flows to developing countries include the rate of inflation as a measure of financial instability in the home country, private sector access to bank credit, and exchange rates.

#### **4.4 THEORETICAL FRAMEWORK**

Using a two-period scenario, Vargas-Silva and Huang (2006) analyse the flow of remittances to developing countries under the assumptions that period one represents an initial stage of international migration of an individual, typically from a less developed country (the migrant-home country) to a more developed country (the migrant-host country). During this period, the individual (the migrant) does not migrate with his/her direct dependants (family). Thus, the economically active migrant resides in a relatively industrialised country where he/she is

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<sup>62</sup> See Table A4.1 in the Appendix for the review of other empirical studies on the determinants of remittances.

engaged in an income-generating economic activity whilst his/her dependants continue to live in his/her low-income native (home) country. In this context, the utility of the migrant depends on his/her personal consumption in the host country ( $C_f$ ) and the consumption of his/her family ( $C_h$ ) living in his/her native country. Accordingly, Vargas-Silva and Huang (2006) specify that the utility function of the migrant in the initial period of migration is given as  $U(C_f, C_h)$  with  $U_1 > 0$ ,  $U_{11} < 0$ ,  $U_2 > 0$ ,  $U_{22} < 0$ ; and under the assumption that utility is additively separable<sup>63</sup>. The consumption expenditure of the migrant's household living in his/her home country is dependent upon the income and remittances received ( $\phi r$ ) with  $\phi$  which is the cost of transferring funds from the host country to the home country being of the form,  $\phi \leq 1$ . This implies that although a migrant remits  $r$  amount of money only a fraction of this amount  $\phi r$  is received by his/her family.

The income received by the migrant's household living at home is made up of two components and given as  $Y_h + \gamma Y_h$  with  $\gamma$  capturing the relationship between the economic conditions in the migrant's native country and the average income earned by his/her family living at home.  $Y_h$  is the fraction of the household income that is not susceptible to changes in the macroeconomic conditions of the home country, whilst  $\gamma Y_h$  is that part of the household income that is predisposed to changes in the macroeconomic environment of the home country. It is assumed that  $\gamma \geq 0$  which implies that an improvement in the economic conditions of the home country is generally associated with an improvement in the household's (the family left behind's) income, even though the magnitude of  $\gamma$  may differ across households. The consumption of the migrant's household living at home is given by  $C_h((Y_h + \gamma Y_h), \phi r)$ . This consumption function is additively separable with  $C_{h_1} > 0$ ,  $C_{h_2} > 0$ ,  $C_{h_{11}} < 0$  and  $C_{h_{22}} < 0$ . Likewise, the income of the migrant is in the form  $y_f + \eta Y_f$  such that  $\eta$  reflects the relationship between the economic conditions in the host country and the income the migrant earns in the host country. Here again,  $y_f$  is that portion of the migrant's disposable income in the initial stages of migration that is not susceptible to varying macroeconomic conditions of the host country. Similarly,  $\eta Y_f$  is the portion of household income that is susceptible to changes in the economic condition of

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<sup>63</sup> In this case  $U_1$  is the derivative of utility with respect to home-country consumption.

the host country ( $Y_f$ ). The income constraint of the migrant during this first or initial period of migration can, thus be given as  $y_f + \eta Y_f = C_f + r + s$ , in which case  $\eta \geq 0$  with  $r$  being the proportion of the migrant's disposable income which he/she remits home, whilst  $s$  represents the fraction of migrant's income saved in the home country.

During the second period (i.e. at the later stages) of migration, the migrant's household migrates to a foreign industrialised country, often joining the migrant in his/her host country<sup>64</sup>. If this assumption holds, then the migrant's optimisation problem is given as follows:

$$Max U(C_f, C_h) + \psi V(C_z) \quad (4.1)$$

$$\{C, r, s\}$$

subject to

$$y_f + \eta Y_f = C_f + r + s \quad (4.2)$$

and

$$C_z = y_z + \eta Y_z + (1+i)s \quad (4.3)$$

where  $V(C_z)$  denotes the utility from second-period consumption so that  $V_1 > 0$  and  $V_{11} < 0$ ,  $\psi$  is a discount factor,  $i$  is the interest rate (intuitively the deposit interest rate) of the home country, with  $y_z$  and  $Y_z$  having similar interpretations as  $y_f$  and  $Y_f$  but for the second period. By finding the first-order conditions of this problem, Vargas-Silva and Huang (2006) obtained Equations (4.4) and (4.5) below:

$$U_1 = \psi V_1 (1+i) \quad (4.4)$$

$$\phi U_2 C_{h,r} = \psi V_1 (1+i) \quad (4.5)$$

From Equations (4.4) and (4.5), it is possible to derive  $r$  with respect to host-country income ( $Y_f$ ) as shown in Equation (4.6) below:

$$\frac{\partial r}{\partial Y_f} = \frac{\eta \psi U_{11} V_{11} (1+i)^2}{D} \geq 0 \quad (4.6)$$

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<sup>64</sup> According to Vargas-Silva and Huang (2006: 86), "similar results can be obtained assuming that, in the second period, the emigrant returns to the home country and joins the household".

where  $D$ , the determinant of the matrix of the second derivatives, is  $D = U_{11}\psi V_{11}(1+i)^2 + \phi^2\psi V_{11}(1+i)^2 [U_{22}C_{h_r} + U_2C_{h_{rr}}] + U_{11}\phi^2((C_{h_r})^2U_{22} + C_{h_{rr}}U_2) > 0$  for a maximum (Vargas-Silva and Huang, 2006). The central implication of Equation (4.6) is that an improvement in the economic conditions of the host country positively affects remittance flows from the migrant-host country to the migrant-home country. This is so because an increase in  $Y$  implies improvements in economic conditions in the migrant-host country which enables a migrant to send more money home as  $\eta \geq 0$ ; given that households spend their incomes on normal goods. In Equation (4.7), it is also shown that an improvement in the economic conditions of the migrant-home country is associated with a decrease in remittance inflows in the remittance-receiving (migrant's home) country.

$$\frac{\partial r}{\partial Y_h} = (-) \left[ \frac{\phi\gamma U_{22} C_{h_r} C_{h_{yh}} [U_{11} + \psi V_{11}(1+i)^2]}{D} \right] \leq 0 \quad (4.7)$$

Impliedly, Equation (4.7) is non-positive when a migrant is remitting for altruistic purposes. Under this assumption, the migrant remits less funds to his/her family in the home country because the target household is better off,  $\gamma \geq 0$ . To conclude, Vargas-Silva and Huang (2006) prove that changes in remittances as a result of changes in the rate of interest in the host country could have two contrasting effects for which reason the sign of Equation (4.8) is indeterminate unless further assumptions are made.

$$\frac{\partial r}{\partial i} = \left[ \frac{-\psi U_{11} [V_1 + V_{11}(1+i)s]}{D} \right] </> 0 \quad (4.8)$$

Thus, from Equation (4.8), it is evident that, on the one hand, if there is a higher real rate of interest on deposits in the host country a rational migrant who is driven by a self-interest investment motive, will reduce the amount of funds remitted to his/her home country and increase his/her savings in the host country. On the other hand, if the real deposit interest rate in the host country increases, a migrant can now consume more in the future and since remittances form part of the consumption basket of the consumer, funds remitted home during the second period may increase.

However, a typical non-altruistic migrant from a developing country is more likely to react more to changes in real interest rate in his/her home country than in the host country. The logical reasoning being that the average price level in a migrant-host country often tends to be lower and more stable than what pertains in the migrant's home country (a typical SSA country), which makes real deposit interest rates lower and more erratic at home than abroad. Apart from this, migrants under implicit social contract would still be compelled to remit under duress irrespective of changes in the returns on financial assets in their respective host countries. With a higher real deposit interest rate at home, migrants with the intention of returning home after some time may be motivated to remit through the formal financial system in which banks and stock markets are prominent. Real interest rates on deposits at home are an indication of improved financial sector development through competition and risk diversification. In other words, commercial banks in the migrant-home country are likely to mobilise more private funds in the form of remittances from migrants living abroad if real deposit interest rates are positive and attractive. Accordingly, in an attempt to respond to what macroeconomic policy SSA countries must implement to attract higher inflows of migrant remittances through the official channels, the role of the domestic financial sector and, for that matter, the level of real deposit interest rate in the home countries should be more imperative. This is why with the same level of interest rates in France (the leading host nation of SSA migrants) some SSA countries (Benin, Comoros, Mauritius, Senegal and Togo) receive more official remittances than other SSA countries (Congo, Madagascar, Mauritania, and Niger) in *per capita* terms (see Figure 3.5).

Again, it is imprudent to assume that a rational pure self-interest investment-driven migrant, in taking investment decisions in this globalised world, will restrict such decisions to his/her home country conditions in comparison with the prevailing and/or anticipated conditions in his/her host country only, and completely ignore the relevant investment conditions of the rest of the world. Therefore, the key modification made in this study to the Vargas-Silva and Huang (2006) theoretical framework is to, rather than emphasising the real interest rate differential between the migrant-host country and the migrant-home country, the migrant-host country real interest rate is held constant whilst attention is given to the real deposit interest of the migrant-home country. This is imperative because in devising an effective policy strategy for attracting higher migrant remittances through the formal transfer channels to the sub-region, policy makers in potential remittance-receiving SSA countries can influence only the domestic factors such as

interest rates, bearing in mind the exogenous prevailing and expected global economic conditions.

#### 4.5 EMPIRICAL MODEL, METHODOLOGICAL APPROACH AND DATA ISSUES

This section presents the empirical model, methodology and data issues under in sub-sections 4.5.1, 4.5.2 and 4.5.3 respectively.

##### 4.5.1 The Empirical Model

In line with the modified Vargas-Silva and Huang (2006) theoretical framework, Equation (4.9) constitutes the baseline specification of the empirical dynamic panel-data model, involving the 36 sampled SSA countries over a 30-year period, 1980-2009:

$$R_{it} = \rho R_{i,t-1} + x'_{it} \beta + \mu_{it} \quad (4.9)$$

where  $\rho$  is a scalar, and  $x_{it}$  is the  $i^{\text{th}}$  observation on the  $k$  explanatory variables. And because Equation (4.9) is a model with a one-way error component it has unobservable country-specific effect ( $v_i$ ) and the remaining residuals ( $\varepsilon_{it}$ ), such that  $\mu_{it} = v_i + \varepsilon_{it}$ . More explicitly, the estimated model is of the form:

$$R_{it} = \rho R_{i,t-1} + x'_{it} \beta + v_i + \varepsilon_{it} \quad (4.10)$$

where the residuals ( $\varepsilon_{it}$ ) are white-noise such that  $\varepsilon_{it} \sim IID(0, \sigma_\varepsilon^2)$ ,  $v_i \sim IID(0, \sigma_v^2)$  and  $\rho$  is a scalar such that, generally,  $|\rho| < 1$ ;  $i = 1, 2, 3, \dots, N$  is an index for individual sampled SSA countries, implying  $N = 36$ ;  $t = 1, 2, 3, \dots, T$  is an index for time-variant periods, in this case, years, so that  $T = 10$  for decade-based estimations such as 1980-89, 1990-99, and 2000-09; whilst  $T = 30$  for the estimations involving the overall study period, 1980-2009. The country-specific effect and the disturbance term are independent of each other and among themselves.  $x'_{it}$  as row vector of explanatory variables, excluding the lagged dependent variable, has the dimension  $k$  where  $k = n \times 1$  with  $n$  being the number of exogenous variables, but it is acknowledged that these variables may not be strictly exogenous.  $\rho$  is the unknown parameter of the lagged endogenous variable;  $\beta$  is the unknown parameter vector of the  $k$  exogenous variables;  $l$  is the number of significant lags carried by the dependent variable to capture “the entire history of the right-hand side variables, so that any measured influence is conditioned on

this history"<sup>65</sup> (Greene, 2003: 307); and  $v_i$  country-specific fixed effects. This model is also based on the assumptions that: (i) the error term is orthogonal to the exogenous variables so that  $E(x'_{it}\varepsilon_{it})=0$ ; (ii) the independently and identically distributed error term is uncorrelated with the lagged endogenous variable implying that  $E(R_{i,t-1}\varepsilon_{it})=0$ ; (iii) the exogenous variables might be correlated with the individual effect for which reason,  $E(x'_{it}v_i) \neq 0$ ; and (iv) there is the need to capture the dynamic effects of remittances because either altruistic migrant remittances could decay often by the second generation as family and social ties become weak (Lucas and Stark, 1985; Lozano-Ascencio, 1993; Glytsos, 1997), or the value of migrant remittances increase over time for self-interest investment motive as the legal residential and income status of migrants improve.

The endogenous variable  $R$  is a measure of remittances either as migrant remittances (MRem), *workers' remittances* (WREM) or *compensation of employees* (COMP). When deflated by population, the endogenous variable is redefined as REMPC, WREMPC and COMPPC respectively in the specific estimated models. In estimating the model on the total migrant remittance inflows in SSA, the natural logarithmic form of the dependent variable (lnMRem) was used. Macroeconomic factors influencing migrant remittance inflows as a percentage of GDP (REMGDP) were also explored to make room for comparison with the preferred REMPC results. The explanatory variables are real deposit interest rate of a typical SSA country (RIR), real bilateral exchange rate (RXR), host-country income ( $Y^f$ ), home-country income ( $Y^h$ ), home-country CPI-based inflation rate (INF), bank credit to the private sector as a percentage of GDP in the home country (PSC), and the quality of institutions in the home country (INS). For the entire sample period analysis, a dummy (D9\_11) was introduced for post-September 11, 2001 such that D9\_11=0 for 1980-2001, and D9\_11=1 for 2002-2009 to reflect the era of improved enforcement of regulations and tougher laws on international money transfers in a bid to clampdown on money laundering, official corruption and other illegal activities that threaten global security. The introduction of this time dummy (D9\_11) is also important as it helps to prevent any possible cross-individual correlation or contemporaneous correlation.

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<sup>65</sup> Because of the implicit effect of altruism behind all kinds of migrant remittances and because of the continuous influence of newly-arrived migrants on remittance flows, the number of significant lags can be very high, as many as eight, as noted in this study (the results are available but are not reported due to space), but the study restricted the number of significant lags to two as the key motivation is not to determine the historical trend in remittance flows in completeness. The lag of two is also consistent with the migrant remittances inter-generational effects theory (Elbadawi and Rocha, 1992; Lozano-Ascencio, 1993) and the optimal number of lags for stationarity (Table A4.5).

From Equation (4.10), there are  $T - 2$  orthogonality restrictions in levels which are exploited; hence that observation  $t$  in levels was used for the estimation, where differences are used as valid instruments, when it is assumed that  $x$  is at least predetermined<sup>66</sup>. For instance, for the last observation,  $T$ , specified as  $R_{iT} = +\rho R_{i,T-1} + x'_{iT}\beta + v_i + \varepsilon_{iT}$ , the instruments used are  $dy_{i,1}, dy_{i,2}, dy_{i,3}, \dots, dy_{i,T-1}, dx'_{i1}, dx'_{i2}, dx'_{i3}, \dots, dx'_{iT}$ . The corresponding matrices used for the estimation as given by Behr (2003) are shown in Box A4.1 in the Appendix.

The choice of the dynamic panel-data model is informed by the fact that data on remittance inflows in most SSA countries have been more consistently available across countries only in recent years and, therefore, the panel has small fixed  $T$  and large  $N$ . The small  $T$  large  $N$  dimension of the panel data is also underscored by the fact that a decade-by-decade analysis was carried out prior to estimating for the overall study period so as to find out, whether or not, the macroeconomic factors that attract remittances to SSA have been consistent over the past three decades. Another justification for the dynamic panel-data estimation approach is that the relationship under consideration is linear; the left-hand side variable is singular and dynamic; the explanatory variables are not strictly exogenous; there are fixed individual effects; and there are heteroskedasticity and autocorrelation within the cross-sectional units but not across them (Behr, 2003; Blundell and Bond, 1998; Roodman, 2009a). A unique advantage of dynamic panel-data models is that, by allowing for empirical modelling of dynamics alongside the individual-specific dynamics, they provide the necessary platform to account for past behaviour-effect directly on current behaviour, whilst recognising the fact that individual cross-sectional units have a predilection to behave in any particular way.

#### 4.5.2 The Methodological Approach

The methodological approach is presented under five sub-themes namely, the system Generalised Method of Moment (GMM) estimator, the Sargan test for over-identifying restrictions, the Arellano-Bond test for second-order serial correlation, the decade-based parameter evolution and instability test, and the panel-data unit root test.

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<sup>66</sup> Further discussions and insights can be found in Arellano and Bond (1991), Blundell and Bond (1998), Wooldridge (2002), Behr (2003), and Greene (2003).

#### 4.5.2.1 The System Generalised Method of Moment (sys-GMM) Estimator

The Generalised Method of Moment (GMM) estimation procedure is the preferred choice over other alternative panel-data estimation techniques such as instrumental variable panel-data fixed (or random) effects (IV FE/RE) and 2SLS panel FE/RE, because: (i) some of the explanatory variables *viz.* PSC, RXR,  $Y^f$  and  $Y^h$  are known not to be strictly exogenous,<sup>67</sup> given the possibility of a two-way causality (see Section 4.3.2); (ii) time-invariant individual features such as geography, demography and economic policy may correlate with the explanatory variables so that the error term is influenced by unobserved country-specific effects and the observation-specific errors; (iii) the dynamic nature of the model naturally gives rise to serial correlation; and (iv) the panel data setting is structured by small time dimension ( $T$ ) and large cross-sectional dimension ( $N$ ). In the presence of the aforementioned econometric problems, neither IV FE/RE nor 2SLS FE/RE panel-data estimators can be efficient, whilst GMM estimation technique was specially developed to handle these problems more efficiently.<sup>68</sup> For instance, instead of using only exogenous instruments as is in panel FE/RE and 2SLS FE/RE, the lagged endogenous regressors are also instrumented with their past levels, thereby making endogenous variables pre-determined and, hence, uncorrelated with the error term. Also, to circumvent the problems associated with time-invariant country-specific characteristics, GMM uses a unique difference transformation process to eliminate these effects (Arellano and Bover, 1995; Blundell and Bond, 1998; Greene, 2003). Furthermore, Roodman (2009a) explains with experimental evidence that within a panel data setting of  $N > T$  as is conditional to the application of GMM technique, where  $T$  is large but not in relation to  $N$  (i.e. both  $T$  and  $N$  are large, but  $N$  is still larger than  $T$ ), a shock to a country-fixed effect which is captured in the idiosyncratic error term will decline over time.

The Blundell and Bond (1998) system GMM estimation technique rather than the ‘difference’ GMM proposed by Arellano and Bond (1991) and the ‘deviation’ GMM suggested by Arellano and Bover (1995) is employed in this study. The system GMM (henceforth sys-GMM) is the preferred choice because within this framework it is possible to include non-country-specific time-invariant regressors such as D9\_11, which tend to disappear in ‘difference’ GMM (Baltagi, 2008; Roodman, 2009a). Additionally, the Arellano and Bond (1991) and the Arellano and

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<sup>67</sup> Apart from simultaneity, endogeneity in Equation (4.9) can arise from period effects which occur due to systematic shocks after a change in any of the explanatory variables; unobserved heterogeneity due to omitted variables; and variable measurement errors (Woodridge, 2002; Greene, 2003; Baltagi, 2008).

<sup>68</sup> For proof or further insight, see Hansen (1982), Holtz-Eakin *et al.* (1988), and Arellano and Bond (1991).

Bover (1995) GMM techniques are known to be inefficient when the instruments are weak as they make use of the information contained in differences only, but in the sys-GMM framework, additional level information besides the differences are used (Blundell and Bond, 1998; Roodman, 2009a). More specifically, the sys-GMM estimator uses the levels equation to obtain a system of two equations – a differenced equation and a levels equation – such that by adding the second equation, additional instruments are generated. Thus, by allowing for more instruments the estimated coefficients of the Blundell and Bond (1998) sys-GMM are not only more efficient, but also more consistent than other alternative techniques of dynamic panel-data analysis. The Blundell and Bond (1998) GMM is popularly referred to as the sys-GMM because it is composed of moment restrictions for differences and levels resulting in a common efficient estimator. This study adopted the two-step sys-GMM estimator which combines the  $T - 1$  first-differenced equations and the average level equation, and has been proven<sup>69</sup> to produce a standard covariance matrix that is robust to panel-specific autocorrelation and heteroskedasticity.

The main econometric concern of GMM methodological approach is the problem of instrument proliferation (Roodman, 2009b). The instrument proliferation problem is more severe in large samples<sup>70</sup> whereby a large collection of instruments, even if individually valid, can be invalid as a group in infinite samples because the instruments over-fit the endogenous variables (Roodman, 2009b). According to Roodman (2009b), because models involving sys-GMM are almost always over-identified, and because the Hansen  $J$  statistic<sup>71</sup> theoretically detects any violation of the instrument validity assumption, econometricians using sys-GMM are relieved of the need to probe this further. The problem, however, is that there are contexts in which instrument proliferation weakens the Hansen  $J$  test statistic (Baum *et al.* 2003; Roodman, 2009b). Proliferating purely by increasing  $T$  to prevent covariates, Roodman (2009b) concludes that the symptoms of proliferation became noticeable only when  $T = 15$ , implying a longer time dimension reduces instrument invalidity in a simulation exercise. At  $T = 20$ , the full-instrument variant never detects it, with an average  $\rho$ -value on the Hansen  $J$  test of 1.00.

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<sup>69</sup> See Roodman (2009a,b) for this proof.

<sup>70</sup> Although 'large samples' in this context are not explicitly defined, various Monte Carlo experiments in this regard seem to suggest the severe manifestation of this problem as  $N$  is about 50 in rare cases but often when  $N \rightarrow 100$  (see, for example, Roodman, 2009b; Chan *et al.* 2012).

<sup>71</sup> The Hansen  $J$  statistic is equivalent to the Sargan test statistic for over-identifying restrictions computed from robust estimates (Baum *et al.*, 2003; Roodman, 2009a,b; Chan *et al.* 2012). This is why some scholars refer to the Sargan statistic from robust estimates as the Hansen-Sargan statistic or the Sargan-Hansen statistic or as in the case of this study, simply the Sargan statistic.

The two conventional techniques to addressing instrument over-fitting in dynamic GMM panels is limiting. One of the techniques that is often used to overcome the problem of instrument proliferation is to limit the lag depth by selecting some of the lags to be included in the instrument set, making the instrument count linear in  $T$ . Another approach is to collapse the instrument set to the extent that the orthogonality condition no longer needs to be valid for any one time period but still for each lag, again making the instrument linear in  $T$ . A combination of both techniques makes the instrument count invariant to  $T$  (Mehrhoff, 2009). Currently, there is no widely accepted rule of thumb for optimal instrumentation whilst the decision to choose any of the aforementioned approaches to instrument proliferation treatment has been done arbitrarily stirring further controversy. Studies are currently underway to establish how the data can decide how the transformation matrix should look (see, for example, Mehrhoff, 2009). So far, the available preliminary results from work-in-progress on using Monte Carlo simulation to investigate model performance with instrument over-fitting has been for samples of minimum of  $N=100$  and  $T=30$  at best (see, for example, Mehrhoff, 2009; Roodman, 2009b). What remains unclear and unresolved in the literature of GMM estimation is how large or small  $T$  and  $N$  have to be, relative to each other, for the GMM estimator to be 'perfect' (Roodman, 2009b).

As has been widely documented in the literature, it must be emphasised that the instrument proliferation problem is not peculiar to GMM estimators (Tauchen, 1986; Anderson and Sørensen, 1996; Altonji and Segal, 1996; Ziliak, 1997; Bowsher, 2002). For instance, the poor performance of IV estimators when instruments are too many has been long identified by Hayashi, 2000; Ruud, 2000; Wooldridge, 2002; Arellano, 2003). Moreover, over-fitting is still a problem even at low instrument counts (Roodman, 2009b).

Furthermore, if heteroskedasticity is present the GMM estimator is more efficient than the simple IV estimator, whereas "if heteroskedasticity is absent, the GMM estimator is no worse asymptotically than the IV estimator" (Baum *et al.* 2003: 11). There is no proof suggesting, however, that in the presence of homoscedasticity other panel-data estimators including the IV estimator in a dynamic context are more efficient than the sys-GMM estimator. According to Balgati (2008: 87) "homoskedastic disturbances when heteroskedasticity is present will still result in consistent estimates of the regression coefficients, but these estimates will not be efficient" because of biased standard errors. This requires the econometrician to compute robust standard errors to correct for possible heteroskedasticity (Baum *et al.* 2003; Balgati,

2008; Roodman, 2009b; Chan *et al.* 2012). Robust estimation by two-step GMM automatically generates homoscedastic standard errors (*ibid*). In consequence of this, to exonerate the empirical results from criticisms of heteroskedasticity, a two-step robust sys-GMM estimation procedure was followed in this study.

To demonstrate empirically that in spite of the fact that there is no universally accepted perfect estimator in econometric modelling, the dynamic panel-data sys-GMM estimator is more appropriate, efficient and reliable than both conventional and robust static panel-data estimators in the general context of this study, the researcher proceeded to estimate the empirical static panel-data models involving the complete sample size, in other words, where  $(N \times T) = (30 \times 36)$ .

#### 4.5.2.2 The Sargan-Hansen Test for Over-Identifying Restrictions

If, and only if, a dynamic panel-data model is over-identified, it should be possible to verify if the excluded instruments are correctly independent of the residual process. Therefore, to test for the joint validity of the instruments used, the study adhered to the suggestions by Arellano and Bond (1991), and Roodman (2009a) *inter alia* by conducting the Sargan-Hansen test for over-identifying restrictions after the sys-GMM estimation. Like the conventional Sargan test, the Sargan-Hansen test can only be performed when a model is estimated using instrumental variable techniques and the estimated model is actually over-identified (Arellano and Bond, 1991). The “robustified Sargan statistic is numerically identical to the Hansen  $J$  statistic computed from feasible efficient two-step GMM for that model” which is commonly referred to as the Hansen-Sargan or the Sargan-Hansen statistic (Baum *et al.*, 2003: 18). In fact, in robust estimation, *stata* reports the Hansen  $J$  statistic in the place of the usual Sargan statistic with the same null hypothesis (Baum *et al.*, 2003; Roodman, 2009a,b). For simplicity sake, however, the test statistics for the joint validity of the instruments used in the sys-GMM estimations are reported as the Sargan test in this dissertation.

The routine Sargan-Hansen test is formulated on the null hypothesis that the instruments used as a group are exogenous, therefore, the higher the  $p$ -value of the test statistic, the better. The Sargan-Hansen test, which has an asymptotic  $\chi^2$  distribution with degrees of freedom equal to the number of over-identifying restrictions (i.e. number of instruments used minus number of endogenous variables), is often weak in small  $N$  where the number of instruments is large and exceeds the number of groups. Roodman (2009a,b) cautions that the Sargan-Hansen test

should not be relied upon too faithfully, as it is prone to weakness” because “large instrument collection can over-fit endogenous variables, but notes also that this does not compromise the consistency of the coefficient estimates.

According to Roodman (2009b), although the Sargan-Hansen test requires homoskedastic errors in order to be consistent, it is not vulnerable to instrument proliferation because it does not depend on an estimate of the optimal weighting matrix. The Sargan-Hansen test is based on the observation that the residuals should be uncorrelated with the set of exogenous variables if the instruments are truly exogenous (Sargan, 1958; Hansen, 1982). The Sargan test statistic can be calculated as  $nR^2$  (the number of observations  $n$  multiplied by the coefficient of determination  $R^2$ ) from the OLS regression of the residuals (from IV estimation) onto the set of exogenous variables (Sargan, 1958; Hansen, 1982; Wooldridge, 2002; Baum *et al.* 2003). This test statistic will be asymptotically chi-squared with  $m-k$  (where  $m$  is the number of instruments and  $k$  is the number of endogenous variables) degrees of freedom under the  $H_0$  that the error term is uncorrelated with the instruments.

#### 4.5.2.3 The Arellano-Bond Test for Second-Order Serial Correlation

Following the recommendations by Arellano and Bond (1991) which were later substantiated by a host of other panel data experts, including Blundell and Bond (1998), Behr (2003), Greene (2003), Roodman (2009a,b), and Baltagi (2008), the Arellano-Bond test (henceforth the A-B test) was performed. The A-B test is specially designed to detect second-order serial correlation (AR(2)) in the idiosyncratic disturbance term within a GMM framework, a situation which rendered some lags invalid as instruments. Arellano and Bond (1991) show that the A-B test for AR(2) in first differences is more relevant than that of the AR(1) because the former specifically examines the presence of autocorrelation in levels. Arellano and Bond (1991) prove that the A-B test is critically important because the consistency of the GMM estimator is dependent upon the realism of the condition that  $E(\Delta\varepsilon_{it}\Delta\varepsilon_{i,t-2}) = 0$ .

The A-B test for autocorrelation is based on a null hypothesis of no autocorrelation and it is applied to the differenced residuals. It is for this reason that the A-B test for AR(1) process in first differences usually rejects the null hypothesis essentially because  $\Delta\varepsilon_{it} = \varepsilon_{it} - \varepsilon_{i,t-1}$  and  $\Delta\varepsilon_{i,t-1} = \varepsilon_{i,t-1} - \varepsilon_{i,t-2}$  both have  $\varepsilon_{i,t-1}$  (Arellano and Bond, 1991; Blundell and Bond 2000). This

hypothesis holds true if  $\varepsilon_{it}$  is serially uncorrelated or does not follow a random walk to undermine the appropriate specification of an estimated dynamic panel-data model by GMM. Technically, therefore, the test for  $AR(2)$  in first differences is more important because, as noted earlier, it will detect autocorrelation in levels. This study transgresses accordingly by testing and reporting the A-B statistics for second-order autocorrelation.

Based on the outcome of experimental evidence, Roodman (2009a), however, observes that in small  $N$  dynamic panels the A-B test may not be reliable, but so far a more efficient alternative test for this purpose has not been developed.

#### 4.5.2.4 *The Decade-Based Parameter Evolution and Instability Test*

Generally, all available sample observations are used for estimation to enhance the possibility of an econometric specification that best fits a given dataset. This does not allow the econometrician to test for parameter constancy, stability and robustness of the estimated relationship (Brown *et al.* 1975). In panel-data econometric modelling, the econometrician will have to go by either the observations in time ( $T$ ) or the observations in cross section ( $N$ ) and use a subset of either panel-data dimension (i.e.  $T$  or  $N$ ) for the parameter evolution and instability testing. Consistent with the time-dependent decade-based analysis in Chapter Three and the revealed cyclical pattern of migrant remittances received by SSA, there is a reasonable basis to expect *a priori* a structural break by the end of each decade (in this case, 1989 and 1999).

In testing for the decade-based structural break, this study fits the specified panel-data econometric model separately for each decade in order to verify whether there are statistically significant differences in the estimated decade-based parameters. A statistically significant difference indicates a parameter evolution, hence a validated evidence of a changing impact of the explanatory variables on the dependent variable over time according to the specific decades. Accordingly, to investigate the instability of the estimated coefficients obtained from the three decades (1980-89, 1990-99 and 2000-09), the full sample data was further partitioned into two overlapping decades - 1985-1994 and 1995-2004. Within the confines of this study, only two additional time-variant sub-samples (1985-1994 and 1995-2004) are possible because as shown by Chow (1960), Gujarati (1970a,b), Fomby *et al.* (1984) and Chan *et al.* (2012), each sub-sample must necessarily have the same dimension.

Empirical econometric parameters are unlikely to be stable over time in response to policy regime changes because rational economic agents are likely to change their decisions according to the prevailing or the anticipated policy environment. In view of this hypothesis, the parameter instability test procedure proposed by Andrews (2003) and Chan *et al.* (2012) was adopted to examine the degree of instability of the estimated decade-based parameters across the three decades, 1980-89, 1990-99 and 2000-09. The justification for the Andrews (2003) and Chan *et al.* (2012) test for structural breaks and parameter instability is that the well-known econometric tests for structural breaks in the literature including the celebrated Chow (1960; 1984) test are often applied in cases of a single structural break. The modified related alternative statistical tests proposed by Andrews (1993), Andrews and Ploberger (1994), and Bai and Perron (1998) for an unknown structural breakpoint or the multiple breakpoints are appropriate only when the break is relatively long lasting and occurs in the midpoint of the sample distribution (Chan *et al.* 2012). As shown in Mancini-Griffoli and Pauwels (2006) the application of the Andrews (2003) coefficient stability test under the assumption of fixed effects panel data is straightforward.

The standardised 'diferential'  $Z$  statistic for evolution and instability in panel-data model essentially amounts to comparing two average statistics taken from a pre-break sub-sample and a post-break sample (Andrews, 2003; Chan *et al.* 2012). The determination of the average statistic for a pre-break and the post-break sub-samples requires the computation of the test statistic  $s$  times for each individual sub-sample panel in addition to any overlapping sub-sample of equal dimension if the interest is to include verifying coefficient stability by rolling over time. In general terms, Andrews (2003) and Chan *et al.* (2012) specify the standardised  $Z$  statistic to test for evolution and instability in panel-data models which involves taking the difference of the post- and pre-break average statistics as:

$$Z = \frac{\hat{\beta}^1 - \hat{\beta}^0}{\sqrt{\text{Var}(S_{\hat{\beta}^1} - S_{\hat{\beta}^0})}} = \frac{\hat{\beta}^1 - \hat{\beta}^0}{\sqrt{(S_{\hat{\beta}^1}^2 + S_{\hat{\beta}^0}^2 - 2S_{\hat{\beta}^1}S_{\hat{\beta}^0})}} \quad (6.11)$$

where  $\hat{\beta}^1$  and  $\hat{\beta}^0$  are the estimated coefficient for the post- and pre-break samples respectively,  $S_{\hat{\beta}^0}$  and  $S_{\hat{\beta}^1}$  are the corresponding standard errors, and  $Z$  follows an asymptotic distribution  $\sqrt{N}Z \overset{A}{\sim} N(0,1)$ . Intuitively, if the  $H_0$  is true then  $Z$  will be centred around zero.

However, under the alternative, the  $Z$  will centre further away from zero, indicating more

evidence against the  $H_0$ . The sample size that was used to determine  $\hat{\beta}^0$  is the same as in the case of  $\hat{\beta}^1$ , implying that, with reference to this study, each of the comparing decade-based estimated coefficient was obtained from a panel dimension of  $(N \times T) = (36 \times 10)$ . According to Chan *et al.* (2012), it is recommended to use the first  $\omega_i$  observations to estimate  $\hat{\beta}^0$  in order to effectively minimise the potential impact of serial correlation in the errors by maximising the distance between any two sub-samples.

Using  $A_j$ ,  $B_j$ ,  $C_j$ ,  $D_j$  and  $E_j$  to represent a decade-based estimated parameter for a given explanatory variable for the periods, 1980-89, 1990-99, 2000-09, 1985-94, and 1995-2004 respectively, the 'differential'  $Z_{ij}$  test for each of the three decades of interest  $i$  and a specific explanatory variable  $j$  was computed by finding the following differences:

- i.  $A_j - B_j$  to determine how each of the estimated coefficients of the results for 1980-89 is statistically different from the corresponding estimated coefficients of 1990-99.
- ii.  $B_j - C_j$  to determine how each of the estimated coefficients of the results for 1990-99 is statistically different from the corresponding estimated coefficients of 2000-09.
- iii.  $A_j - C_j$  to determine how each of the estimated coefficients of the results for 1980-89 is statistically different from the corresponding estimated coefficients of 2000-09.

Similarly, to establish the degree of time-variant evolution stability of the respective estimated parameters for each of the three decades of interest (i.e. 1980-89, 1990-99, and 2000-09) the 'differential'  $Z_{ij}$  test was computed for:

- i.  $A_j - D_j$  to determine how each of the estimated coefficients of the results for 1980-89 is statistically different from the corresponding estimated coefficients of 1985-1994.
- ii.  $B_j - D_j$  to determine how each of the estimated coefficients of the results for 1990-99 is statistically different from the corresponding estimated coefficients of 1985-1994.
- iii.  $B_j - E_j$  to determine how each of the estimated coefficients of the results for 1990-99 is statistically different from the corresponding estimated coefficients of 1995-2004.
- iv.  $C_j - E_j$  to determine how each of the estimated coefficients of the results for 2000-09 is statistically different from the corresponding estimated coefficients of 1995-2004.

Therefore, to establish, whether or not, the estimated parameter ( $A_{inf}$ ) of a given explanatory variable (say, inflation abbreviated as inf) for a decade (say, 1980-89) is statistically different from the estimated parameter ( $B_{inf}$ ) of the same explanatory variable (inf) for another decade (say, 1990-99) the 'differential'  $Z_{ij}$  statistic was computed by evaluating the expression:

$$Z_c \equiv Z_{A|B_{inf}} = \frac{(A-B)_{inf}}{\sqrt{(S_A^2 + S_B^2 - 2S_A S_B)_{inf}}} \quad (6.12)$$

where  $Z_c$  denotes the computed 'differential'  $Z$  statistic so that in case  $|Z_c| < Z_{critical\ value}$  at 95 per cent confidence interval, then the conclusion would be that the difference between the two estimated coefficients ( $A_{inf}$  and  $B_{inf}$ ) is not statistically different from zero, hence the  $H_0 : A_{inf} - B_{inf} = 0$  which implies  $A_{inf} = B_{inf}$  would not be rejected. Thus, from an econometric viewpoint, the impact of inflation on the dependent variable (say, remittances) in the 1980s and in the 1990s is actually the same. Otherwise, if  $|Z_c| > Z_{critical\ value}$ , then the  $H_0 : A_{inf} - B_{inf} = 0$  or  $H_0 : A_{inf} = B_{inf}$  is rejected at the conventional statistical levels.

#### 4.5.2.5 The Panel-Data Unit Root Test

Concerning the possible problems associated with data non-stationarity, Phillips and Moon (2000) dismiss earlier arguments by Kao (1999), and Phillips and Moon (1999) that the use of panel data naturally evades spurious regression and produces efficient, reliable and consistent parameter estimates even when both  $N$  and  $T$  are large and approach infinity. According to Phillips and Moon (2000), unlike in the case involving the use of survey data, it is often impossible to have a panel setting where  $N$  is sufficiently large in macro panel-data models. Consequently, many macro cases actually involve (in relation to each other) large  $N$  and large  $T$  even where  $N > T$ . And in the case of panels where both  $N$  and  $T$  are large, there is the need to pay serious attention to verifying the asymptotic properties of the data. Therefore, to exonerate this study from criticisms of spurious regressions, unit root tests for panel data were performed on each of the variables included in the empirical analyses despite the fact that the panel data structure is of  $N > T$ . This is because for the estimations based on the overall study period, whilst  $N$  still remained at 36,  $T$  increased to 30, compared to  $T = 10$  in the case of decade-based regressions. This study assumes that since  $T = 30$  is generally considered large

enough for a country-specific time series analysis, issues related to spurious regression cannot be downplayed, though  $N > T$ .

Consequently, out of the various panel-data unit root tests available (see Asteriou, 2006; Baltagi, 2008), this study essentially relied on the Fisher Phillips-Perron (Fisher P-P) chi-square test of individual root test and the Hadri Heteroskedasticity Consistent z-statistic (HHC) test, whilst the Levin-Lin-Chu (LLC) adjusted  $t$  test was evoked when the Fisher P-P and HHC tests were in conflict. The Fisher P-P test is essentially the panel version of the P-P test used in time series econometrics, and in reality and similarity, the average of the P-P  $t$ -test statistics of the individual cross-sectional units where the disturbance term is serially correlated with different autocorrelation properties across the cross-sectional units (Im *et al.* 2003). The null hypothesis of Fisher P-P is that each series in the panel has a unit root whilst the alternative hypothesis permits some of the individual series to be non-stationary. The main advantage of the Fisher P-P over the other alternative tests, (notably, HHC, LLC and Breitung  $t$ -test), is its ability to handle both balanced and unbalanced panel data, including balanced panels with missing data points. The HHC residual-based Lagrange Multiplier (LM) panel unit root test was developed by Hadri (2000) from the Kwiatkowski, Phillips, Schmidt and Shin (KPSS) stationarity test for time series data. The null hypothesis of HHC test is that there is no unit root in any of the series in the panel against the alternative of a unit root in the panel. The key advantage of HHC is its ability to handle panels with heteroskedasticity, but it is not applicable where a series suffers from omission(s). The LLC panel unit root test is particularly designed for panels with size structure where  $10 \leq N \leq 250$  and  $25 \leq T \leq 250$ , under the assumptions of no cross-sectional correlations, and all cross-sectional units having or not having a unit root (Levin *et al.* 2002). The LLC test, which is essentially the panel version of the popular Dickey-Fuller or Augmented Dickey-Fuller test in time series econometrics, is formulated on the hypothesis that each individual time series has a unit root against the alternative that each time series is stationary in levels (Levin *et al.* 2002). The main limitation of LLC is its inability to handle heterogeneous panels and panel series with missing data points<sup>72</sup>.

#### **4.5.3 Data Measurement, Sources and Expected Impact on Remittances**

Low frequency balanced panel data from secondary sources was used in this study. The relevant annual series were collated on 36 SSA countries for the period, 1980-2009. The

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<sup>72</sup> Further information on panel unit root tests, including the formula for the Fisher P-P, HHC, and LLC test statistics can be found in Asteriou (2006) and Baltagi (2008).

sample size was determined strictly by the availability of consistent data on the relevant variables particularly migrant remittances. The choice of the start date was contingent upon the desire to cover as many countries as possible for higher representation of the population rather than covering longer periods with limited coverage of the target population. Besides, the relevance of migrant remittance inflows in SSA became evident only in the 1980s as shown by the stylised facts presented in Chapter Three. Among other reasons, the choice of the upper limit of the study period is based on the availability of consistent data as data on some of key variables notably financial liberalisation, poverty and income inequality proxied by Gini coefficient are not currently available beyond 2009. In fact, the World Bank publishes data on poverty and income inequality after every five years. Coincidentally, the upper limit of 2009 has also enabled the researcher to be consistent with the objective of undertaking a decade-based analysis.

For this study, migrant remittances as defined in Chapter Two constitute the sum of *workers' remittances* recorded in the current account of IMF's *Balance of Payments Statistics (BoPS)* under the heading "current transfers"; and *compensation of employees* recorded under the "Income" sub-category of the current account. Mathematically, *compensation of employees* is the net of migrant remittances less *workers' remittances*. Migrant remittances and *workers' remittances* were obtained mainly from the *World Development Indicators (WDI)* published by the World Bank based on the *Balance of Payments Statistics Yearbook (BoPS)* of the IMF, and the *Migration and Remittances Factbook 2011* published by the World Bank. Other sources such as estimates based on IMF country-specific desk official information were used to fill in some of the missing data points where possible<sup>73</sup>. Compensation of employees received (COMP) was obtained by subtracting workers' remittances received (WREM) from migrant remittances (MRem) received but due to problems related to the classification of reported remittances from migrants, there are instances where the implied COMP received was less than zero because the reported WREM was greater than migrant remittances. Consistent with the definition of migrant remittances and underlying BoP double-entry accounting principle where a credit transaction cannot be negative<sup>74</sup>, for the estimations based on COMP, only data points for which COMP is non-negative were used in this study.

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<sup>73</sup> In a recent study, Singh *et al.* (2010) used a similar approach to obtain remittances data on 36 SSA countries.

<sup>74</sup> See Chapter Two of this dissertation, and IMF's *BoPS Yearbook* and *Balance of Payment Textbook* for details.

The measurement of home-country income and host-country income adopted in this study is quite rare in empirical studies. Real GDP *per capita* in US dollars at purchasing power parity (PPP) of a typical SSA country ( $Y^h$ ) was used as a proxy for the migrant-home country income which also represents the average annual earnings of the family left behind who are considered as the main prospective recipients of migrant remittances. Similarly, real GDP *per capita* PPP in US dollars of a typical migrant-host country ( $Y^f$ ) was used as a proxy for the average annual earnings of an SSA international migrant who is considered as a potential remitter. The use of real GDP *per capita* PPP instead of the commonly used real GDP *per capita* as a proxy for host-country (migrant) income and home-country (family) income in this study is second only to Schiopu and Siegfried (2006), Moore and Greenidge (2008), and Adams (2009). The justification for using the PPP-based real income includes, that: (i) in making decisions on how much and how often to remit, migrants take into consideration the quantity of goods and services the assets transferred (remittances) can actually buy in the recipient country at the prevailing market conditions; (ii) inflating the income gap between countries are resolved as non-tradables are accounted for; and (iii) any perceived existing country-specific misrepresentation of facts arising especially from monetary and exchange rate policies such as redenomination of a national currency that might be misinterpreted as leading to currency overvaluation is adequately accounted for.

Human capital accumulation (HCA) is a more comprehensive concept than just acquisition of formal education by a portion of the population of a particular country. However, most macro-level empirical studies are restricted to the measures of education (see, for example, Table A4.1) so that education and human capital are often conflated and used interchangeably in the literature. For the sake of easy access to adequate data which is its clear advantage over other alternative measures in macro-level cross-country studies, this study transgresses similarly by using secondary school enrolment to proxy for human capital accumulation (Mankiw *et al.* 1992). Barror and Lee (1996) used average years of schooling. Kalaitzidakis *et al.* (2001) used the proportion of government expenditure devoted to education. Bils and Klenow (1998) suggest the use of life expectancy to proxy for human capital accumulation. Barro (1998) and Barro and Sala-i-Martin (1995) assert that the gender disparity component of school attainment can be an alternative measure of human capital accumulation in a typical growth equation.

Measurement of institutional quality (INS) is a daunting task because it is both complex and subjective. It is complex not only because institutions have two main dimensions *viz.* the formal

and the informal, but also because each of these aspects has various components. For example, formal institutions cover bureaucracy, corruption, law, property rights protection, political environment, governance, access to information, freedom, and economic and political participation. Informal institutions cover a wide range of indicators including perceptions of life, environment, work, family, politics and society, religion and morality, and national identity (Knack, 2001; Knack and Keefer, 1997; Knowles and Weatherston, 2006). It is subjective because an objective measure of institutions does not exist (Duc and Lavallee, 2004) necessitating measurement according to the feelings and perceptions of economic actors.

There are alternative proxies to the institutional quality index constructed by Marshall and Jagers (2011) used in this study. A typical alternative is the worldwide governance indicators compiled by the World Bank based on the governance research index developed by Kaufmann *et al.* (2003; 2008) for six dimensions namely, voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. However, a major limitation of the World Bank's worldwide governance indicators is that data are only available for the years 1996, 1998, 2000 and from 2002-2007. Like the WB's worldwide governance indicators, the governance research index by Kaufmann *et al.* (2003) is not available on an annual basis neither is it available for periods prior to 1996 nor after 2002. Similarly, although the International Country Risk Guide (ICRG) reports a composite political risk index that comprises 12 institutional measures, it is limited in terms of time coverage. The 12 dimensions of the ICRG index include bureaucratic quality, corruption, internal conflict, external conflict, ethnic tensions, democratic accountability, government stability, investment profile, law and order, military in politics, socioeconomic conditions, and religious tensions. The ICRG data is not available prior to 1984 and while a good number of the sampled SSA countries do not have the ICRG data prior to the 1990s, some of the countries are not either consistently covered or they are completely excluded. There is also the worldwide index of human freedom constructed by the Fraser Institute (2008). The Fraser freedom index covers five categories, namely the size of government, the legal structures and security of property right, the access to sound money, the regulation of credit, labour and business, and the freedom to trade internationally. However, only 25 of the 36 sampled SSA countries are covered by the Fraser index. Moreover, the 10-category based economic freedom index developed by Heritage Foundation covers periods starting from 1995 at best and it is available for only 12 out of the sampled 36 SSA countries. It is for these reasons that the author relied on the Marshall and Jagers polity2 index.

Meanwhile, Rodrik (2004) cautions that because the composite governance research index and the ICRG proxies for institutional quality are generally based on surveys of domestic and foreign investors they capture perceptions rather than the true formal aspects of the institutional setting. This creates problems of reverse causality and endogeneity. Moers (1999), however, observes that the use of subjective institutional measures instead of objective indicators in growth empirics is quite consistently verified.

Liquid liabilities of the financial system are the sum of currency plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries divided by nominal GDP. Broad money ratio which is often considered as the broadest measure of financial intermediation (King and Levine, 1993) encompasses the overall lending capacity of the financial system which covers the Central Bank, deposit money banks and other financial institutions. The merits and demerits of  $M_2/GDP$  and PSC are discussed quite extensively in Chapter Seven.

Whilst the degree of trade openness (OPN) is defined and is measured as the percentage of the volume of cross-border trade flows (exports plus imports of goods) undertaken by a typical migrant-home country to its nominal GDP, the rate of inflation (INF) is measured as the annual percentage variations in consumer price index (CPI) of a typical SSA home country. Trade openness index shows the degree of economic liberalisation and participation in a globalised world whilst inflation rate measures the speed of adjustment in general price level, which reflects macroeconomic uncertainty and investment risk in the 'labour-exporting' SSA country.

Real bilateral exchange rate (RXR) is the annual average value of the national currency of a typical SSA migrant-sending country in real terms of the national currency of its leading non-SSA migrant-host country. Mathematically, it is computed as the multiplication of the nominal bilateral exchange rate by the ratio of the migrant-host country CPI to the migrant-home country CPI. Real deposit interest rate (RIR) is the annual average bank deposit interest rate less the annual average CPI-based rate of inflation of a typical migrant-sending country.

Apart from these traditional macroeconomic variables which were obtained essentially from the *International Financial Statistics Yearbook / CD-ROM (IFS)* and *World Economic Outlook (WEO)*, as well as the World Bank's *WDI* and AfDB's *African Development Indicators (ADI)*, a dummy variable for capturing the global regulatory environment in connection with cross-border

money transfer following September 11, 2001 was also introduced into the empirical model. In Table A4.2 in the Appendix, a more concise and exact information on the description, measurement and sources of the specific variables used in this study is provided. The *a priori* sign of each of the explanatory variables is also indicated in Table A4.2.

## 4.6 EMPIRICAL RESULTS AND DISCUSSIONS

This section is organised into four sub-sections. The results on robustness test models and the diagnostic tests are discussed in Section 4.6.1. Then, the main results upon which policy recommendations are made follow in this order: the empirical results on the determinants of migrant remittance inflows are presented and discussed in Section 4.6.2; those related to workers' remittance inflows are presented and discussed in Section 4.6.3; while those on compensation of employees are presented and discussed in Section 4.6.4.

### 4.6.1 Results of Robustness Models and Diagnostic Tests

To be able to compare the results from this study with those obtained from previous related studies, estimations were carried out following the common practice where international migrant remittance inflows as a percentage of GDP (REMGDP), and where the USA was assumed to be the main host country of SSA migrants. The results of these estimations are presented in Table A4.4 in the Appendix. These results show that the use of the SSA country-specific leading migrant-host countries compares very closely with using the USA as the migrant-host nation in many respects except for the differences in the magnitude of the economic and the statistical significance<sup>75</sup>. In relative terms, in the estimation involving the use of the USA as the migrant-host of SSA migrants, the test statistics (both the z-statistics and the Wald  $\chi^2$  statistic) are generally lower, with only two exceptions, home-country income and real exchange rate (see Table A4.4). Ignoring the dynamic effects of migrant remittances, the robustness results on USA versus country-specific migrant-host nations show that apart from institutional quality and the migrant-host country income the estimated coefficients of the results based on the USA as the common host nation of SSA migrants are economically more

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<sup>75</sup> Many reasons can be assigned to the close comparison of the two results. The reasons include: (1) the USA might, for security reasons, have tougher rules and regulations on international money transfers compared with other migrant-host nations, following the 9-11 terrorist attack on the former; (2) Money transfer costs might be cheaper in the USA than in the other nations hosting SSA migrants; (3) The USA might have a relatively more advanced financial infrastructure with wider migrant access to alternative official cross-border money transfers than the other SSA migrant-host nations such as Pakistan, Saudi Arabia, Portugal, Spain, Belgium, France, Germany and Great Britain; (4) SSA migrants in USA might be more skilful and economically viable, and hence with higher incomes than their counterparts in Europe and the rest of the world; and (5) The cost of living in USA might be relatively less than the average cost of living in Europe, Pakistan and Saudi Arabia.

significant than those obtained from country-specific migrant-host countries. On a lesser note, the Wald statistics<sup>76</sup> of 1400000 and the Arellano-Bond autocorrelation test on the first-difference errors at order-2 probability value of 0.9152 for the specific migrant-host nation, compared with 454424.61 and 0.9043 respectively obtained in the estimation involving USA as the SSA migrant-host nation shows that the former estimation is relatively more efficient. Therefore, for policy relevant studies, the use of 'true' migrant-host country rather than the generally assumed use of the USA as the migrant-host nation should be more appropriate.

Regarding the appropriateness of migrant remittances in *per capita* (REMPC) as against migrant remittances as a percentage of GDP (REMGDP), the estimated results presented in Table A4.4 justify REMPC in a number of ways. Generally, with the exception of home-country income and without taking into account the dynamic effects, each of the estimated coefficients from the REMPC model is both economically and statistically more robust in comparison with the estimated REMGDP model. The fact that the results from the REMGDP model suggest that, in the long run, as the income of SSA migrants increases in real terms, migrant remittances received by the sub-region decline, which is in sharp contrast to the fundamental theories of remittances and *a priori* expectation, the use of REMGDP instead of REMPC cannot be described as the more appropriate. The low value of the reported Wald statistic and the parameter estimates together with the high probability values of the majority of the explanatory variables is an attestation that the estimated lnMRem is the least efficient in comparison with REMGDP and REMPC. This is notwithstanding the fact that the signs of the estimated parameters of the lnMRem model, in contrast to the modelled REMGDP, are more consistent with those obtained from REMPC and in conformity to the underlying theories of remittances.

To demonstrate empirically that dynamic panel-data modelling by GMM is more appropriate than static panel-data estimations either by Fixed (within) Effects (FE) or by Generalised Least Squares Random Effects (RE), both the conventional and the robust FE and RE estimations were carried out for the overall study period. The empirical static panel-data modelling results for REMPC, WREMP and COMPPC are presented in Table A4.6, Table A4.7 and Table A4.8 respectively. As extensively discussed under sub-section 4.5.2.1, these empirical static panel-

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<sup>76</sup> Under  $H_0$ , in large samples, the Stata-automatically generated Wald statistic has a chi-squared distribution with degrees of freedom equal to the number of coefficient restrictions imposed on a model. According to Baltagi (2008), the Wald test for restrictions has its power dependent upon the number of instruments used and the degree of serial correlation and heterogeneity in the residuals. It, thus, is the test statistic interpreted in determining the joint statistical significance of the explanatory variables in GMM models.

data models are not expected and, in fact, did not produce unbiased estimators due to the presence of obvious endogeneity among the explanatory variables and the omission of the dynamic components. For each of the estimated static panel-data models (see Table A4.6-A4.8), the reported overall coefficient of determination ( $R^2$ ) did not exceed 10 per cent whilst the Breusch-Pagan statistic suggest the presence of serious heteroskedasticity. Besides, there is a serious concern for multicollinearity because in the midst of very low coefficient of determination  $R^2$ , the computed z-statistics are relatively high for the conventional static panel-data estimators. In the case of the heteroskedastic-corrected standard errors obtained from the robust static panel-data estimations, the reported z-statistics and  $R^2$  are statistically insignificant in each case.

The main results upon which policies are prescribed in this chapter are presented in Tables 4.2, 4.3 and 4.4 in Sections 4.6.2, 4.6.3 and 4.6.4 respectively. Given the distinctiveness of each component of migrant remittances, three main sets of estimations were carried out. Each set of estimations is either on migrant remittances, workers' remittances or compensation of employees received by SSA countries during the period 1980-2009. An overall study period, 1980-2009, as well as decade-by-decade (1980-89; 1990-99 and 2000-09) estimations was carried out. In each of these estimations international migrant remittances were measured in *per capita* terms which represent the closest proxy for remittances per migrant as revealed in Chapter Three. Also, for each of these estimations, the USA was not chosen as the common host country for SSA migrants as done in many previous studies. In other words, this study used non-SSA countries with the highest percentage of migrants from the various SSA countries as the migrant-host countries.

Each of the estimated results presented in Tables 4.2, 4.3 and 4.4 comprised of the 36 sampled SSA countries with 51, and 441 or 442 valid instruments for decade-based analysis and the overall study period analysis respectively. The number of observations for the various decade-based analyses ranges from 217 to 288, whilst 1006 was reported for the overall study period analyses except in the case of the compensation of employees estimated model for which 823 was reported due to missing observations. The reported probability value of the Wald statistic for each estimated model was 0.000, suggesting that for the balanced panel-data empirical models, each regressand was jointly explained by the set of regressors at one per cent level of statistical significance. The various statistics reported by the Arellano-Bond test

point to the fact that at five per cent level of statistical significance the idiosyncratic residuals generated from the two-step sys-GMM estimation do not suffer from second-order autocorrelation in any of the estimated results. To provide further proof that each estimated model is statistically efficient with unbiased and reliable estimated parameters, the Sargan test for over-identifying restrictions was conducted. The reported Sargan test statistic for each estimated model confirms the selected instruments for each empirical model as valid, while none of the estimated models suffered from endogeneity bias. Meanwhile, a pre-estimation examination of the asymptotic properties of the relevant variables included in the estimated model indicate that each variable is integrated of order zero (see Table A4.5 in the Appendix), hence proving the existence of a cointegrating relationship<sup>77</sup>. It also shows that none of the estimated results from this chapter is spurious whilst the estimated coefficients are cointegrating parameters. Essentially, because the motivation for this study is not just to determine the particular decade in which macroeconomic factors contributed more to migrant remittances received in SSA but more importantly to verify if as the liberalisation of the SSA financial market improves, the macroeconomic environment has had a changing impact on remittance inflows in SSA, in discussing the results presented in Sections 4.6.2, 4.6.3, and 4.6.4, more emphasis is laid on the overall study period rather than on the various decades.

#### **4.6.2 Macroeconomic Determinants of Migrant Remittances**

The estimated results on the macroeconomic determinants of migrant remittance inflows in SSA are presented in Table 4.2. The results show that the current amount of remittances sent by SSA migrants resident outside the sub-region is determined by past remittances, migrant-host country income and migrant-home country factors *viz.* institutional quality, real 'family' income, rate of inflation, credit to the private sector, real bilateral exchange rate and real deposit interest rate. The tightening rules and regulations aimed at clamping down on the use of informal money transfer channels by migrants have since 2002 contributed substantially to the increasing inflow of migrant remittances received in SSA through official channels.

The size of the amount remitted by a migrant over the immediate past two years affect the current inflow of official remittances. Whilst the immediate past year amount remitted positively impacts on the current level of migrant remittance inflows, the impact of the past two years is largely negative on current level of official remittances received by the sub-region. This seems to support the view that new migrants often remit more in the initial stages of their migration

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<sup>77</sup> For the proof of this assertion, refer to Engle and Granger (1987).

when the social ties are strong or when they are under implicit social contractual obligation to remit. Therefore, from an individual migrant's perspective, remittances are likely to decrease over time and, indeed, after a second generation of migrants, so that the stability in the flow of remittances is mainly sustained by a new generation of migrants, as observed by Elbadawi and Rocha (1992) on North African migrants in Europe, and Lozano-Ascencio (1993) in the case of Mexican migrants in USA.

**Table 4.2:** Estimated Results of Migrant Remittances (REMP) Flows to SSA, 1980-2009

| Group variable: code  | Time variable: Year       |                         |                           |                          |
|---|---------------------------|-------------------------|---------------------------|--------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel Data Procedure          |                           |                         |                           |                          |
|   | 1980-89                   | 1990-99                 | 2000-09                   | 1980-2009                |
| REMP lag 1 (REMP_1)   | 1.0998<br>(2875.64)***    | 0.6586<br>(361.51)***   | 0.8896<br>(325.32)***     | 0.9477<br>(359.71)***    |
| REMP lag 2 (REMP_2)   | -0.3488<br>(-303.75)***   | 0.1011<br>(185.00)***   | -0.2315<br>(-99.26)***    | -0.1267<br>(-107.93)***  |
| Institutional quality (INS)   | 0.9483<br>(34.62)***      | -0.2308<br>(-9.08)***   | -0.6938<br>(-6.62)***     | -0.3107<br>(-8.17)***    |
| Home-country income ( $\ln Y^h$ )   | 3.1063<br>(6.95)***       | -13.0805<br>(-58.22)*** | -0.6076<br>(-0.87)        | -1.0084<br>(-2.82)***    |
| Host-country income ( $\ln Y^f$ )   | 31.6778<br>(87.42)***     | 1.71530<br>(1.98)**     | 142.5704<br>(42.29)***    | 18.3925<br>(13.93)***    |
| Rate of inflation (INF)   | -0.0507<br>(-2.07)**      | 0.1407<br>(10.91)***    | -0.1395<br>(-5.35)***     | 0.0449<br>(4.75)***      |
| Bank credit to private sector ( $\ln PSC$ )                                       | 0.7645<br>(4.19)***       | 8.9322<br>(36.86)***    | -4.6438<br>(-9.92)***     | 2.3553<br>(7.12)***      |
| Real exchange rate ( $\ln RXR$ )  | -9.0491<br>(-112.66)***   | -2.4873<br>(-14.36)***  | -3.0266<br>(-9.92)***     | -4.9314<br>(-12.98)***   |
| Real deposit interest rate (RIR)  | -0.0300<br>(-1.14)        | 0.0760<br>(5.58)***     | 0.0263<br>(0.89)          | 0.0347<br>(4.46)***      |
| Regulatory environment (D9_11)  | .....                     | .....                   | .....                     | 4.6614<br>(71.91)***     |
| Constant term (constant)  | -285.9995<br>(-101.71)*** | 71.8419<br>(7.79)***    | -1414.6010<br>(-43.12)*** | -157.9818<br>(-12.40)*** |
| Number of observations  | 288                       | 286                     | 288                       | 1006                     |
| Number of groups (N)  | 36                        | 36                      | 36                        | 36                       |
| Number of instruments   | 51                        | 51                      | 51                        | 442                      |
| Wald $\chi^2_{[k]}$   | [9], 5520000***           | [9], 1260000***         | [9], 1230000***           | [10], 1400000***         |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                           |                         |                           |                          |
|   | -1.0780{0.281}            | -1.5868{0.113}          | -0.6783{0.498}            | -0.1065{0.915}           |
| Sargan test for over-identifying restrictions:                                    |                           |                         |                           |                          |
| $\chi^2_{[k]}$  | [41], 28.1669             | [41], 27.3812           | [41], 28.6736             | [431], 27.1849           |

Source: Author's estimation

\*\*(\*\*\*) denotes 5(1) per cent respectively.

2-step robust z-statistics in ( ), z-probabilities in { }

Over the 1980-2009 period, the most important factor that positively impact on migrant remittance inflows in SSA through official channels is the improvement in real income of countries hosting SSA migrants. In particular, a percentage rise in the real GDP *per capita* PPP in migrant-host country resulted in, on the average, about a US\$18.39 increase in remittances *per capita* received in SSA when the entire study period is taken into consideration. Although the positive effect of migrant income on remittances received in SSA was unswerving in each of the past three decades considered in this study, one striking revelation from this study is that during good economic times in the home country, thus, in the 1980s and the 2000s (see Table 3.1 in Chapter Three) SSA migrants remitted more. This finding is consistent with both altruism and self-interest theories of migrant remittance inflows which predict that as the economic status of migrants improve, migrants will remit more of their incomes home *ceteris paribus*. This result validates the findings from a host of previous related studies, notably those of Elbadawi and Rocha (1992) for six North African and European countries, Bouhga-Hagbe (2004) for Morocco, Vargas-Silva and Huang (2006) in a global study, Coulibaly (2009) for 16 LAC countries, and Singh *et al.* (2010) for 36 SSA countries. At the same time, however, this result contradicts the result obtained by Freund and Spatafora (2005) for 104 countries in SSA, EAP and ECA. The sources of this contradiction could include the use of the FE model by Freund and Spatafora (2005) which is less efficient than the sys-GMM used in this study. Also, in contrast to this study, Freund and Spatafora (2005) defined migrant remittances beyond the two current account elements (WREM and COMP) by adding migrant transfers; and covered 104 countries from various continents over the study period of 1995-2003 compared to only 36 SSA countries over the period 1980-2009 in this study. Obviously, differences in economic conditions in the sampled countries during the study periods in the two studies could affect the results obtained.

Turning to the domestic macroeconomic environment, overall, the leading puller of official migrant remittances is improved macroeconomic performance as reflected in a stronger national currency. In fact, apart from having the highest economic impact, as far as domestic factors are concerned, currency appreciation is also the most consistent determinant of migrant remittance inflows through official channels in SSA. Overall, between 1980 and 2009, the real appreciation of a typical SSA migrant-home country currency against the national currency of its migrant-host country by one percentage point increased the official inflow of migrant remittances by at least US\$4.93 in the SSA migrant-home country. In fact, in the 1980s, a similar rate of currency appreciation could attract as much as US\$9.05 *per capita* migrant

remittances compared to US\$2.49 and US\$3.03 in the 1990s and the 2000s respectively. Though this finding is in affirmation of the result obtained by Lueth and Ruiz-Arranz (2007a) for Sri Lanka, it is in contrast with the results obtained by Jadhav (2003) for India, Adenutsi and Ahoritor (2008) for Ghana, and Singh *et al.* (2010) for 36 SSA countries who found depressing effects of appreciation of local currencies on remittances received. Apart from differences in estimation techniques and scope as regards the sample size and/or the study period, and unlike the real bilateral exchange rate used in this study, nominal bilateral exchange rate was used in Jadhav (2003) and Adenutsi and Ahoritor (2008) whilst Singh *et al.* (2010) used real effective exchange rate (REER). These could be the main sources of the inconsistencies in the results across the various studies. In other studies, Lianos (1997) on Greece, Aydaş *et al.* (2004) on Turkey, Gupta (2005) on India, and Moore and Greenidge (2008) on 15 Caribbean islands, failed to find exchange rate as a determinant of remittance inflows. Here again, differences in the measurement of remittances, study period, sampled countries, sample size as well as the methodology could be the underlying sources of this contradiction.

In terms of economic significance, improved private sector access to bank credit in SSA is the second most important domestic factor that impacts on migrant remittance flows to the sub-region. A one per cent increment in private sector credit as a ratio of GDP in SSA leads to at least a US\$2.35 rise in migrant remittances received *per capita* in SSA between 1980 and 2009. With the one percentage increase in private sector access to bank credit in SSA, migrant remittances *per capita* increased by about US\$0.76 and US\$8.93 in the 1980s and the 1990s respectively. In the 2000s, however, improved access to private sector credit in SSA impacted negatively, (as much as US\$4.64), on migrant remittances *per capita* received by the sub-region. This finding seems to support the altruistic hypothesis of migrant remittances formulated by Schrooten (2005), and Giuliano and Ruiz-Arranz (2009). According to this hypothesis, in periods of improved but limited access to credit by the private sector in SSA migrant-home countries as witnessed in the 1980s and the 1990s (Table 3.3), migrants are compelled to remit more to ease the liquidity constraints at home. In the case of SSA, as there was more restricted access to private sector credit in the 1980s and the 1990s than in the 2000s (see Table 3.3 in Chapter Three), SSA international migrants were probably compelled to remit more funds to their families during the first two decades of the financial liberalisation and as access to private sector credit improved in the 2000s, migrant remittances declined. To this extent, the findings support earlier results obtained by Schrooten (2005) for 24 transition countries, Niimi and Özden (2006) for 85 countries, and Singh *et al.* (2010) for 36 SSA countries.

Overall, improvements in home-country income had depressing effects on migrant remittances received in SSA between 1980 and 2009. Over the entire study period, this depressing effect of home-country income was more pronounced in the 1990s when SSA as a sub-region recorded its worst economic performance as evident in the negative growth rate in real GDP *per capita*, the least real GDP *per capita*, and the highest external debt stock (see Table 3.1 in Chapter Three). In the 1980s, home-country income impacted positively on migrant remittance inflows, whilst in the 2000s its impact was statistically insignificant. Coincidentally, with reference to the study period, the 1980s and the 2000s were the periods in which the sub-region recorded its best economic performance as measured in the level of real GDP *per capita*, domestic savings, and external debt stock (Table 3.1). This suggests that, although, home-country income has an overall negative impact on migrant remittance inflows in SSA, under sound macroeconomic environment, migrant remittances became less altruistic, hence SSA migrants are likely to be motivated to remit more as the economic prospects of their home country improve.

The general finding that migrant remittances received in SSA increase as home-country income falls is consistent with the results obtained in all previous related studies reviewed in this study except those obtained by Freund and Spatafora (2005) for 104 developing countries, and Lueth and Ruiz-Arranz (2007b) for 11 developing countries in Asia, Europe and the Middle East. The reasons for the contrasting results obtained in this study with those aforementioned can be ascribed to differences in the measurement of remittances, choice of methodology, and scope of study (see Table A4.1). For instance, whereas a dynamic panel-data sys-GMM estimation procedure was followed in this study which effectively accounted for all possible endogeneity problems associated with remittances, Freund and Spatafora (2005), and Lueth and Ruiz-Arranz (2007b) estimated static panel-data models without IV procedures which are less efficient in this particular context. Also, while this study, just as that of Freund and Spatafora (2005) relied on global remittance data from the World Bank and the IMF, Lueth and Ruiz-Arranz (2007b) used bilateral remittances data as reported by the various Central Banks. Finally, because the results of this study suggest that the response of remittance inflows to home-country income is dependent upon the soundness of the macroeconomic environment of the recipient-countries; probably, the countries studied in the Freund and Spatafora (2005), and Lueth and Ruiz-Arranz (2007b) had superior macroeconomic conditions which enabled them to attract more non-altruistic remittances.

Generally, SSA migrants tend to remit home as a result of loss of confidence in their governments, given that institutional quality negatively impacts on migrant remittances. In the 1980s, quality institutions impacted positively on remittance inflows in SSA, but in the 1990s and the 2000s the effect of institutional quality on migrant remittance inflows was increasingly negative. This could imply that the sub-region actually suffers from ‘forced’ migration in more recent years, due to weak institutions and poor governance, so that these ‘forced migrants’ are under pressure to remit more funds home as institutions become weaker. In this case, the altruistic motive of remittances outweighs the self-interest investment motive. This finding invalidates previous results obtained by Lueth and Ruiz-Arranz (2007b) for 11 developing countries from Asia, Europe and the Middle East, and Singh *et al.* (2010) who found a positive effect of institutional quality on 36 SSA countries as well as Schrooten (2005) who found no impact of political uncertainty on remittance inflows for 42 countries in transition. The main possible source of this contrast could be the differences in measurement of institutional quality. Whereas previous studies used international country credit risk rating, this study used a more comprehensive index constructed by Marshall and Jagers (2011) to capture the qualities in governance and institutions directly. In addition, the differences in the prevailing economic conditions in the sampled countries and the differences in the study periods covered could be the underlying reason for this discrepancy.

For the entire study period, 1980-2009, the results of this study show that SSA countries receive more migrant remittances as the rate of inflation in migrant-home countries increases. This study further reveals that higher rates of inflation in migrant-sending SSA countries led to a lower inflow of remittances in the 1980s and in the 2000s, but in the 1990s, higher rates of inflation in SSA were required for the receipt of higher migrant remittances in the sub-region. This implies that during good economic times (e.g. periods with higher real *per capita* incomes in home countries) such as the 1980s and the 2000s in the context of this study (see Table 3.1), SSA countries with lower rates of inflation are more likely to receive higher migrant remittances, but during periods of economic recession more migrant remittances are received in SSA even as inflation rate escalates. This result confirms the earlier findings reported by El-Sakka and McNabb (1999) for Egypt, and Moore and Greenidge (2008) for 15 Caribbean countries. This finding, however, contradicts the results obtained by Elbadawi and Rocha (1992) for six North African and European countries, and Adenutsi and Ahortor (2008) for Ghana. Whilst sys-GMM was used in estimating a dynamic panel-data model in this study which is also on SSA countries, Elbadawi and Rocha (1992) used a panel FE model.

Additionally, differences in sampled countries and the study periods could account for this nonconformity because as revealed by the results of this study, macroeconomic fundamentals at any particular time could affect the magnitude and sign of the impact of inflation on migrant remittances received.

By and large, the real deposit interest rate of the home country is a positive factor that explains variations in *per capita* migrant remittances received by SSA between 1980 and 2009. This is notwithstanding the fact that, in the 1980s and the 2000s, real deposit interest rate of the migrant-sending SSA country was statistically insignificant in the determination of migrant remittance inflows. The implication of this finding is that a typical SSA migrant-home country can attract more migrant remittances through the formal transfer channels by offering higher returns on savings and investment. This result validates the findings of all previous related studies, *viz.* those of Lianos (1997) for Greece, Adenutsi and Ahortor (2008) for Ghana, and Adams (2009) in a cross-sectional analysis involving 76 developing countries, which also used home-country interest rates rather than interest rate differentials.

The results in Table 4.2 show that macroeconomic factors that influence migrant remittance inflows in SSA migrant-home countries have a varying impact over time and, to a very large extent, in accordance with the macroeconomic environment of the migrant-home countries. This might be the reason behind the close comparison between the results obtained for the 1980s and those for the 2000s. For example, even though migrant-host country income had a consistently positive impact on migrant remittances received in SSA in each of the past three decades, the impact was statistically and economically more robust in the 1980s and the 2000s than in the 1990s. A similar conclusion can be drawn regarding the impact of real bilateral exchange rate on migrant remittances received in SSA. Evidently, the changing impact of home-country macroeconomic factors on migrant remittance flows to SSA was for the most part different in the 1990s and consistent with the stylised fact revealed by Figure 4.1, that migrant remittance flows to SSA were most volatile and countercyclical in the 1990s.

The empirical results of the test verifying, whether or not, the estimated decade-based parameters of the macroeconomic determinants of migrant remittances are statistically different from decade to decade and stable over time are presented in Table 4.2.1. In columns A-B, B-C and A-C of Table 4.2.1, the results validate the hypothesis that the estimated decade-based coefficients of the various explanatory variables reported in Table 4.2 actually differ from decade to decade. Given the significance of each of the explanatory variables reported in

column A-B in Table 4.2.1 at the conventional statistical levels, it is concluded that, with reference to Table 4.2, the estimated parameters for the 1980-89 decade are statistically different from the corresponding estimated coefficients of the 1990-99 decade. Similarly, because the computed 'differential' z-statistic of each of the explanatory variables reported in columns B-C and A-C is statistically significant within 95 per cent confidence interval, the hypothesis that the individual explanatory variables have a decade-based changing impact on migrant remittance inflows in SSA during the 1980s, the 1990s and the 2000s is upheld. In other words, the estimated decade-based coefficients of the macroeconomic determinants of migrant remittance inflows reported in Table 4.2 are statistically different from each other, so that the impact of any particular explanatory variable on international migrant remittance inflows evolves from one decade to another in an apparent response to the cyclical behaviour of remittance inflows depicted in Figure 4.1. The implications of these results are that the macroeconomic determinants of migrant remittance inflows in SSA have a changing impact according to macroeconomic fundamentals and policy environment as explained in Chapter Three. This result has also lend credence to the proposition that macroeconomic policy environment plays a crucial role in attracting official remittances in a migrant-home country. In fact, the results also suggest the negative impact of harsh macroeconomic environment on remittance inflows in SSA can outweigh the potential strength of financial liberalisation policy in attracting remittances through the formal channels.

**Table 4.2.1:** Results of Decade-Based Parameter Evolution and Instability Tests for Migrant Remittances

|   | Estimated Decade-Based Results        |                                     |  | Decade-Based Rolling Estimated Results |                                     | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                      |                                      | Overlapping Decade-Based Coefficient Stability Test Results |                                     |                                      |                                      |
|---|---------------------------------------|-------------------------------------|--|--|-------------------------------------|---|--------------------------------------|--------------------------------------|---|-------------------------------------|--------------------------------------|--------------------------------------|
|   | A                                     | B                                   | C                                      | D                                      | E                                   | A-B   | B-C                                  | A-C                                  | A-D   | B-D                                 | B-E                                  | C-E                                  |
|   | 1980-89                               | 1990-99                             | 2000-09                                | 1985-1994                              | 1995-2004                           |   |                                      |                                      |   |                                     |                                      |                                      |
| REMPC lag 1 (REMPC_1)                           | 1.0998<br>[0.0004]<br>{2875.64}***    | 0.6586<br>[0.0018]<br>{361.51}***   | 0.8896<br>[0.0027]<br>{325.32}***      | 0.8088<br>[0.0013]<br>{607.78}***      | 1.0725<br>[0.0018]<br>{598.37}***   | 0.4411<br>[0.0014]<br>{306.33}***                               | -0.2310<br>[0.0009]<br>{-253.80}***  | 0.2102<br>[0.0023]<br>{89.43}***     | 0.2909<br>[0.0010]<br>{306.24}***                           | -0.1502<br>[0.0005]<br>{-306.49}*** | -0.4139<br>[0.0003]<br>{-1379.53}*** | -0.1829<br>[0.00094]<br>{-194.57}*** |
| REMPC lag 2 (REMPC_2)                           | -0.3488<br>[0.0011]<br>{-303.75}***   | 0.1011<br>[0.0005]<br>{185.00}***   | -0.2315<br>[0.0023]<br>{-99.26}***     | -0.1528<br>[0.0037]<br>{-41.29}***     | -0.3019<br>[0.0016]<br>{-192.64}*** | -0.4499<br>[0.0006]<br>{-749.85}***                             | 0.3325<br>[0.0018]<br>{186.81}***    | -0.1174<br>[0.0012]<br>{-99.47}***   | -0.1960<br>[0.0025]<br>{-76.88}***                          | 0.2539<br>[0.0031]<br>{80.59}***    | 0.4029<br>[0.0010]<br>{395.04}***    | 0.0704<br>[0.0008]<br>{92.64}***     |
| Institutional quality (INS)                     | 0.9483<br>[0.0274]<br>{34.62}***      | -0.2308<br>[0.0254]<br>{-9.08}***   | -0.6938<br>[0.1048]<br>{-6.62}***      | -0.8735<br>[0.0284]<br>{-30.72}***     | 0.4469<br>[0.0134]<br>{33.32}***    | 1.1791<br>[0.0020]<br>{598.50}***                               | 0.4630<br>[0.0794]<br>{5.83}***      | 1.6420<br>[0.0774]<br>{21.21}***     | 1.8217<br>[0.0010]<br>{1751.65}***                          | 0.6427<br>[0.0030]<br>{213.51}***   | -0.6777<br>[0.0120]<br>{-56.42}***   | -1.1406<br>[0.0914]<br>{-12.48}***   |
| Home-country income (lnYh)                      | 3.1063<br>[0.4469]<br>{6.95}***       | -13.0805<br>[0.2247]<br>{-58.22}*** | -0.6076<br>[0.6984]<br>{-0.87}         | 0.9956<br>[0.6914]<br>{1.44}           | ?                                   | 16.1868<br>[0.2222]<br>{72.84}***                               | -12.4729<br>[0.4737]<br>{-26.33}***  | 3.7139<br>[0.2515]<br>{14.77}***     | 2.1108<br>[0.2444]<br>{8.64}***                             | -14.0761<br>[0.4667]<br>{-30.16}*** | ?                                    | ?                                    |
| Host-country income (lnYf)                      | 31.6778<br>[0.3624]<br>{87.42}***     | 1.7153<br>[0.8663]<br>{1.98}**      | 142.5704<br>[3.3713]<br>{42.29}***     | 0.3230<br>[4.0380]<br>{0.08}           | -0.1107<br>[0.0441]<br>{-2.51}**    | 29.9625<br>[0.5039]<br>{59.46}***                               | -140.8550<br>[2.5049]<br>{-56.23}*** | -110.8930<br>[3.0089]<br>{-36.85}*** | 31.3547<br>[3.6756]<br>{8.53}***                            | 1.3923<br>[3.1717]<br>{0.44}        | 1.8260<br>[0.8222]<br>{2.22}**       | 142.6810<br>[3.3271]<br>{42.88}***   |
| Rate of inflation (INF)                         | -0.0507<br>[0.0245]<br>{-2.07}**      | 0.1407<br>[0.0129]<br>{10.91}***    | -0.1395<br>[0.0261]<br>{-5.35}***      | -0.0146<br>[0.0331]<br>{-0.44}         | -0.2744<br>[0.0166]<br>{-16.52}***  | -0.1914<br>[0.0116]<br>{-16.53}***                              | 0.2802<br>[0.0132]<br>{21.26}***     | 0.0889<br>[0.0016]<br>{55.53}***     | -0.0361<br>[0.0086]<br>{-4.18}***                           | 0.1553<br>[0.0202]<br>{7.68}***     | 0.4151<br>[0.0037]<br>{111.89}***    | 0.1349<br>[0.0095]<br>{14.24}***     |
| Bank credit to private sector (lnPSC)           | 0.7645<br>[0.1825]<br>{4.19}***       | 8.9322<br>[0.2423]<br>{36.86}***    | -4.6438<br>[0.4681]<br>{-9.92}***      | 2.5136<br>[0.4997]<br>{5.03}***        | 6.3097<br>[0.2173]<br>{29.04}***    | -8.1677<br>[0.0599]<br>{-136.45}***                             | 13.5761<br>[0.2258]<br>{60.12}***    | 5.4084<br>[0.2857]<br>{18.933}***    | -1.7490<br>[0.3172]<br>{-5.51}***                           | 6.4187<br>[0.2574]<br>{24.94}***    | 2.6226<br>[0.0250]<br>{104.69}***    | -10.9535<br>[0.2508]<br>{-43.67}***  |
| Real exchange rate (lnRXR)                      | -9.0491<br>[0.0803]<br>{-112.66}***   | -2.4873<br>[0.1732]<br>{-14.36}***  | -3.0266<br>[0.3051]<br>{-9.92}***      | -14.9534<br>[0.6270]<br>{-23.85}***    | ?                                   | -6.5618<br>[0.0929]<br>{-70.64}***                              | 0.5393<br>[0.1319]<br>{4.09}***      | -6.0225<br>[0.2248]<br>{-26.79}***   | 5.9043<br>[0.5467]<br>{10.80}***                            | 12.4661<br>[0.4538]<br>{27.47}***   | ?                                    | ?                                    |
| Real deposit interest rate (RIR)                | -0.0300<br>[0.0263]<br>{-1.14}        | 0.0760<br>[0.0136]<br>{5.58}***     | 0.0263<br>[0.0296]<br>{0.89}           | 0.0163<br>[0.0297]<br>{0.55}           | -0.2326<br>[0.0171]<br>{-13.61}***  | -0.1060<br>[0.0127]<br>{-8.36}***                               | 0.0497<br>[0.0159]<br>{3.12}***      | -0.0563<br>[0.0033]<br>{-17.27}***   | -0.0463<br>[0.0034]<br>{-13.74}***                          | 0.0597<br>[0.0161]<br>{3.72}***     | 0.3086<br>[0.0035]<br>{88.93}***     | 0.2589<br>[0.0125]<br>{20.76}***     |
| Constant term (constant)                        | -285.9995<br>[2.8119]<br>{-101.71}*** | 71.8419<br>[9.2223]<br>{7.79}***    | -1414.6010<br>[32.8062]<br>{-43.12}*** | 61.9620<br>[33.6750]<br>{1.84}**       | ?                                   | -357.8410<br>[6.4104]<br>{-55.82}***                            | 1486.4429<br>[23.5838]<br>{63.03}*** | 1128.6015<br>[29.9942]<br>{37.63}*** | -347.9615<br>[30.8631]<br>{-11.27}***                       | 9.8799<br>[24.4527]<br>{0.40}       | ?                                    | ?                                    |
| Number of observations                          | 288                                   | 286                                 | 288                                    | 288                                    | 286                                 | 287   | 287                                  | 288                                  | 288   | 287                                 | 286                                  | 287                                  |
| Number of groups                                | 36                                    | 36                                  | 36                                     | 36                                     | 36                                  | 36  | 36                                   | 36                                   | 36  | 36                                  | 36                                   | 36                                   |
| Number of instruments                           | 51                                    | 51                                  | 51                                     | 51                                     | 51                                  | 51  | 51                                   | 51                                   | 51  | 51                                  | 51                                   | 51                                   |
| Wald statistic                                  | 5520000***                            | 1260000***                          | 1230000***                             | 4740000***                             | 2320000***                          | 3390000***  | 1245000***                           | 3375000***                           | 5130000***  | 3000000***                          | 2320000***                           | 2324000***                           |
| A-B 2 <sup>nd</sup> -order autocorrelation test | -1.078(0.28)                          | -1.587(0.11)                        | -0.678(0.50)                           | 1.192(0.23)                            | n/a                                 | -   | -                                    | -                                    | -   | -                                   | -                                    | -                                    |
| Sargan over-identifying restrictions            | 28.167(0.94)                          | 27.381(0.95)                        | 28.674(0.93)                           | 33.784(0.78)                           | n/a                                 | -   | -                                    | -                                    | -   | -                                   | -                                    | -                                    |

**Source:** Author's estimation *\*/\*\*/\*\* denotes significant at 10/5/1 per cent statistical levels respectively. Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )*

With reference to columns A-D, B-D, B-E and C-E in Table 4.2.1, it can be generally concluded that the statistical evolution of the estimated decade-based parameters associated with the explanatory variables in the empirical model involving migrant remittances are statistically consistent but evolutionarily unstable over time. The only isolated exceptions to the affirmation of the instability of the estimated decade-based coefficients are the constant term and the host-country income in column B-D where the parameter estimates of the 1990s was compared with the corresponding estimated parameters of the 1985-1994 overlapping decade. In effect, a statistical justification is hereby given to the extent that the computed 'differential'  $z$ -statistics reported in columns A-D, B-D, B-E and C-E are statistically significant suggesting that, at the conventional levels of statistical significance, the estimated decade-based coefficients are centred further away from zero. Therefore, statistical evidence is hereby established that the estimated decade-based evolving coefficients reported in Table 4.2 are generally consistent and statistically stable over time. The evidence also favours instability in the estimated parameters of the decade-based empirical migrant remittance model.

#### 4.6.3 Macroeconomic Determinants of Workers' Remittances

The empirical results on the macroeconomic determinants of workers' remittance inflows in SSA are presented in Table 4.3. The results suggest that, aside the asynchronous effects, workers' remittance inflows are driven by both home-country and host-country macroeconomic factors. For the overall 30-year study period, the two most important factors which positively impact on the inflow of workers' remittances in SSA are the host-country factors *viz.* host-country income, and the enforcement of rules and regulations directed at clamping down on the use of informal channels to transfer funds globally. Among the home-country factors, 'family' income, real bilateral exchange rate, quality of institutions, and bank credit to the private sector are the most important. Besides, real deposit interest rate and inflation did have some significant impact on remittances received in SSA at various times over the past three decades, albeit the overall individual impact of each of these variables on workers' remittances was statistically insignificant. Only previous empirical studies on macroeconomic determinants of remittances in which remittances were exclusively measured as workers' remittances like the studies by Jadhav (2003), Amuedo-Dorantes *et al.* (2007), and Shahbaz and Aamir (2009) are considered relevant when comparing the results reported in Table 4.3 with those obtained in the past.

The empirical results suggest that improvements in host-country income, and regulations aimed at clamping down on the activities of informal money transfer agents were crucial in attracting higher workers' remittances through official channels to SSA between 1980 and 2009. At one per cent level of statistical significance, a one percentage rise in the real *per capita* income of a typical host country of SSA migrants had the tendency of increasing WREMPC to SSA by roughly US\$19.11 during the 1980s, US\$18.34 in the 1990s and US\$40.34 in the 2000s. This result points to the fact that during periods of relatively sound macroeconomic environment in SSA (i.e. in the 1980s and 2000s as shown in Table 3.1), a typical remittance-receiving SSA country could attract more remittances from its permanent migrants than in times (such as in the 1990s) when macroeconomic conditions at home are unfavourable. To this extent, this result is consistent with the self-interest investment motive and confirms earlier findings by Jadhav (2003) for India, and Shahbaz and Aamir (2009) for Pakistan. In the study by Amuedo-Dorantes *et al.* (2007) migrant-host income was not included in the analysis.

**Table 4.3: Estimated Results of Workers' Remittances (WREMP) Flows to SSA, 1980-2009**

| Group variable: Country Code  | Time variable: Year      |                          |                          |                         |
|---|--------------------------|--------------------------|--------------------------|-------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel Data Procedure          |                          |                          |                          |                         |
|   | 1980-89                  | 1990-99                  | 2000-09                  | 1980-2009               |
| WREMP lag 1 (WREMP_1)   | 0.8856<br>(952.27)***    | 0.5810<br>(440.56)***    | 0.9734<br>(365.67)***    | 0.9805<br>(343.77)***   |
| WREMP lag 2 (WREMP_2)   | -0.1240<br>(-145.23)***  | 0.0803<br>(76.17)***     | -0.2868<br>(-172.32)***  | -0.1151<br>(-40.47)***  |
| Institutional quality (INS)   | 2.0974<br>(68.13)***     | -1.3010<br>(-51.60)***   | -0.1695<br>(-3.17)***    | -0.8428<br>(-64.21)***  |
| Home-country income (lnY <sup>h</sup> )   | 10.6169<br>(49.61)***    | 14.0312<br>(28.06)***    | -0.6866<br>(-1.05)       | 2.7488<br>(6.67)***     |
| Host-country income (lnY <sup>f</sup> )   | 19.1087<br>(72.93)***    | 18.3370<br>(12.30)***    | 40.3369<br>(22.17)***    | 7.2828<br>(6.37)***     |
| Rate of inflation (INF)   | -0.0483<br>(-2.55)**     | -0.2398<br>(-5.01)***    | 0.0910<br>(8.07)***      | -0.0302<br>(-1.51)      |
| Bank credit to private sector (lnPSC)   | 2.0462<br>(9.84)***      | -1.2281<br>(-2.52)**     | 8.4104<br>(14.45)***     | 0.6757<br>(1.75)*       |
| Real exchange rate (lnRXR)  | -8.2534<br>(-163.05)***  | 14.3902<br>(41.23)***    | -1.7684<br>(-11.07)***   | -0.8803<br>(-1.98)**    |
| Real deposit interest rate (RIR)  | -0.0469<br>(-2.45)**     | -0.2161<br>(-4.49)***    | 0.0898<br>(8.26)***      | -0.0321<br>(-1.59)      |
| Regulatory environment (D9_11)  | .....                    | .....                    | .....                    | 5.4166<br>(72.67)***    |
| Constant term (constant)  | -218.4456<br>(-91.29)*** | -346.9176<br>(-26.55)*** | -413.6602<br>(-25.20)*** | -99.1562<br>(-12.55)*** |
| Number of observations  | 288                      | 286                      | 288                      | 1006                    |
| Number of groups (N)  | 36                       | 36                       | 36                       | 36                      |
| Number of instruments   | 51                       | 51                       | 51                       | 442                     |
| Wald $\chi^2_{[k]}$   | [9],2610000***           | [9],4410000***           | [9],1270000***           | [10],1520000***         |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): | -0.4067{0.684}           | -1.7114{0.088}*          | 1.1479{0.251}            | 0.2257{0.821}           |
| Sargan test for over-identifying restrictions:                                    |                          |                          |                          |                         |
| $\chi^2_{[k]}$  | [41],28.2255             | [41],33.2958             | [41],28.3559             | [431],28.3907           |

**Source:** Author's estimation

\*\*(\*) denotes 5(1) per cent respectively.

2-step robust z-statistics in ( ), z-probabilities in { }

Consistent with the result obtained by Shahbaz and Aamir (2009) for Pakistan, this study finds that for the overall study period, 1980-2009, workers' remittance inflows were positively influenced by the level of real *per capita* income in SSA migrant-home countries. A one percentage rise in the real *per capita* GDP PPP in a typical 'labour-exporting' SSA country increased WREMP by about US\$10.62, US\$14.03 and US\$2.75 for the periods, 1980-1989, 1990-1999, and 1980-2009 respectively. During the 2000s, the impact of migrant-home country income on workers' remittance inflows was statistically insignificant probably because in the opinion of permanent migrants, the growth of real *per capita* income recorded in the 2000s was

too low to attract more investment-oriented remittances from them. Overall, this finding seems to support the self-interest economic theory of remittances. In this case, permanent SSA migrants from whom the largest proportion of remittances is received are generally driven by self-interest economic motives to remit. Again, permanent migrants are likely to remit more with the slightest improvement in income level at home during difficult economic times as was the case during the 1990s in SSA.

As far as the home-country factors are concerned, variation in real bilateral exchange rate of the domestic currency relative to the currency of the migrant-host country is the second most important reason why permanent SSA migrants remit. At five per cent level of statistical significance, a one per cent rate of depreciation of the currency of a typical migrant-home country led to a decrease in WREMPC by US\$0.88 during the past three decades. Although it is difficult to clearly attribute this result to the dominance of any particular remittance theory, the evidence seems to support the self-interest economic theory when the results of the decade-by-decade analysis are taken into account. This is because during periods of favourable economic conditions at home (i.e. the 1980s and 2000s in the context of this study), permanent migrants remit less as home-country currency depreciates against host-country currency. However, during periods of unfavourable macroeconomic conditions at home (e.g. the 1990s) depreciation of the home-country currency increased remittances received from permanent SSA migrants. Perhaps, permanent migrants regard weaker home-country currency as an outcome of poor economic management at home, hence the need to remit less for investment purposes. However, altruistic-driven permanent migrants who remit an equivalent home-country currency denominated fixed amount without taking into account the purchasing power of the domestic currency, remit less equivalent foreign currency when the home-country currency depreciates. The overall positive impact of real exchange rate on workers' remittance inflows in SSA validates previous results reported by Jadhav (2003) for India, Amuedo-Dorantes *et al.* (2007) for 111 developing countries, and Shahbaz and Aamir (2009) for Pakistan.

At one per cent level of statistical significance, a unit improvement in the index of institutional quality could increase WREMPC by US\$2.10 in 1980s, but decrease WREMPC by US\$1.30 in the 1990s, US\$0.17 in the 2000s and US\$0.84 over the entire study period, 1980-2009. The negative impact of institutional quality on workers' remittance inflows in the 1990s and the 2000s might be due to the increasing exodus of SSA citizens in recent years due to poor

governance, because with higher stock of migrants, the possibility of receiving more altruistic remittances increases. In other words, consistent with the predictions of the altruistic theory, the more SSA permanent migrants lose confidence in the rule of law and governance at home, the more these migrants will remit home to support their families left behind. It is also possible that as institutions become weaker and corruption becomes more prevalent, permanent migrants take advantage to invest more at home since it is then relatively easier for the elite class to set up businesses and to evade taxes on returns on investment. The changing trend in the magnitude of institutional quality on WREMPC received in SSA points to the fact that improvements in the quality of institutions could enhance the chances of a migrant-home country to receive more non-altruistic remittances from its permanent migrants. Previous related studies did not analyse the effects of institutional quality on workers' remittances.

Consistent with the predictions of the self-interest remittance investment theory, this study finds that for the overall study period 1980-2009, official workers' remittance inflows are positively influenced by the level of financial development as reflected in the access of the private sector to bank credit. A one per cent improvement in private sector access to bank credit as a ratio of nominal GDP in the migrant-home country stimulated about a US\$2.05 rise in WREMPC in the 1980s, a US\$1.23 decrease in WREMPC in the 1990s, and a US\$8.41 increase in WREMPC in the 2000s. Thus, under favourable macroeconomic conditions, an SSA migrant-home country stands a higher chance of attracting more remittances from its permanent migrants by promoting private sector access to bank credit. In other words, workers' remittances were complementary rather than a substitute for private sector credit in SSA between 1980 and 2009. This finding appears somehow more consistent with the self-interest investment motive than to the altruistic motive because improved private sector access to bank credit could encourage investment-oriented permanent SSA migrants to remit more through official channels for self-interest economic motive. None of the previous related studies reviewed in this study analysed the effects of private sector credit on workers' remittance inflows.

Overall, there was a statistically zero-effect of home-country real deposit interest rate on WREMPC in SSA between 1980 and 2009. However, the same cannot be said for the decade-based analysis. A one percentage rise in home-country real deposit interest rate decreased WREMPC by US\$0.05 and US\$0.22 in the 1980s and the 1990s respectively; but in the 2000s, a similar change in the real deposit interest rate increased WREMPC by US\$0.09. This implies that under similar macroeconomic conditions, with the passage of time, permanent SSA migrants have been becoming more and more positively responsive to increases in real deposit

interest rate at home since the implementation of financial liberalisation in the 1980s. This seems to justify the self-interest investment theory of remittances among permanent SSA migrants in recent years. Previous related studies failed to consider the effect of home-country interest rate on workers' remittance inflows.

In the 1980s and the 1990s, migrant-home country inflation had a depressive effect on WREMPC received (-US\$0.05 and -US\$0.24 respectively), but a positive effect of US\$0.09 in the 2000s. For the entire study period, however, the effect of domestic inflation on WREMPC was statistically insignificant in SSA. This result suggests that workers' remittances were inversely related to home-country inflation in the early years of financial liberalisation in SSA when the rate of inflation was relatively higher (see Table 3.1). Nonetheless, as the home-country macroeconomic environment became fairly stable and the tendencies for rising price levels in SSA decreased in the 2000s, a marginal rise in the rate of inflation stimulated higher inflows of remittances from permanent migrants probably because this was considered by investment-oriented migrants as an opportunity for making higher profits. As shown in this study that the overall impact of inflation on workers' remittances received by SSA countries is statistically insignificant, it is contradictory to the findings from the only relevant previous study in which home-country inflation was found to have negatively impacted on workers' remittance inflows. Contextually, the relevant previous study is that by Shahbaz and Aamir (2009) on Pakistan over the period, 1971-2006. A possible reason for this conflicting result could be the differences in the macroeconomic fundamentals such as differences in the rates of inflation between Pakistan and the SSA migrant-home countries analysed in this study. Besides methodological differences, the contradiction could also be attributed to differences between the relatively high WREMPC received by Pakistan as one of the all-time leading recipients of workers' remittances in the world compared to the sampled SSA countries, none of which received REMPC up to US\$1 per day during the period under investigation.

The estimated results on the determinants of workers' remittances in SSA suggest that optimal remittances from permanent SSA migrants cannot be received unconditionally as permanent SSA migrants are sensitive to home-country macroeconomic conditions when making remittance decisions. It is the migrant-sending SSA countries with conducive investment climate as reflected in higher real *per capita* income, stronger domestic currency, lower rate of inflation, and higher private sector access to bank credit, *inter alia* that have the chance of mobilising optimal remittances from their permanent migrants.

**Table 4.3.1:** Results of Decade-Based Parameter Evolution and Instability Tests for Workers' Remittances

|   | Estimated Decade-Based Results       |                                       |                                       | Decade-Based Rolling Estimated Results |                                      | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                     |                                     | Overlapping Decade-Based Coefficient Stability Test Results |                                      |                                     |                                     |
|---|--------------------------------------|---------------------------------------|---------------------------------------|--|--------------------------------------|---|-------------------------------------|-------------------------------------|---|--------------------------------------|-------------------------------------|-------------------------------------|
|   | A                                    | B                                     | C                                     | D                                      | E                                    | A-B   | B-C                                 | A-C                                 | A-D   | B-D                                  | B-E                                 | C-E                                 |
|   | 1980-89                              | 1990-99                               | 2000-09                               | 1985-1994                              | 1995-2004                            |   |                                     |                                     |   |                                      |                                     |                                     |
| WREMPCLag 1 (WREMPCLag_1)                       | 0.8856<br>[0.0009]<br>{952.27}***    | 0.5810<br>[0.0013]<br>{440.56}***     | 0.9731<br>[0.0027]<br>{365.67}***     | 0.7754<br>[0.0009]<br>{819.38}***      | 0.9731<br>[0.0025]<br>{397.3}***     | 0.3047<br>[0.0004]<br>{781.15}***                               | -0.3922<br>[0.0013]<br>{-292.68}*** | -0.0875<br>[0.0017]<br>{-50.60}***  | 0.1103<br>[0.0000]<br>{5512.5}***                           | -0.1944<br>[0.0004]<br>{-525.41}***  | -0.3921<br>[0.0011]<br>{-347.02}*** | 0.0001<br>[0.0002]<br>{0.29}        |
| WREMPCLag 2 (WREMPCLag_2)                       | -0.1240<br>[0.0008]<br>{-145.23}***  | 0.0803<br>[0.0011]<br>{76.17}***      | -0.2868<br>[0.0017]<br>{-172.32}***   | 0.0079<br>[0.0031]<br>{2.51}**         | -0.0979<br>[0.0013]<br>{-75.77}***   | -0.2043<br>[0.0002]<br>{-1021.35}***                            | 0.3671<br>[0.0006]<br>{601.79}***   | 0.1628<br>[0.0008]<br>{201.01}***   | -0.1319<br>[0.0023]<br>{-57.84}***                          | 0.0724<br>[0.0021]<br>{34.81}***     | 0.1782<br>[0.0002]<br>{742.33}***   | -0.1889<br>[0.0004]<br>{-510.62}*** |
| Institutional quality (INS)                     | 2.0974<br>[0.0308]<br>{68.13}***     | -1.3010<br>[0.0252]<br>{-51.60}***    | -0.1695<br>[0.0535]<br>{-3.17}***     | -0.5978<br>[0.0120]<br>{-49.98}***     | -0.6550<br>[0.0637]<br>{-10.28}***   | 3.3983<br>[0.0056]<br>{610.11}***                               | -1.1315<br>[0.0282]<br>{-40.05}***  | 2.2668<br>[0.0227]<br>{99.95}***    | 2.6952<br>[0.0188]<br>{143.21}***                           | -0.7031<br>[0.0132]<br>{-53.07}***   | -0.6459<br>[0.0385]<br>{-16.77}***  | 0.4856<br>[0.0103]<br>{47.33}***    |
| Home-country income (lnYh)                      | 10.6169<br>[0.2140]<br>{49.61}***    | 14.0312<br>[0.5000]<br>{28.06}***     | -0.6866<br>[0.6539]<br>{-1.05}        | -13.1980<br>[0.3407]<br>{-38.74}***    | -11.3476<br>[0.5582]<br>{-20.33}***  | -3.4143<br>[0.2860]<br>{-11.94}***                              | 14.7178<br>[0.1539]<br>{95.67}***   | 11.3035<br>[0.4399]<br>{25.70}***   | 23.8149<br>[0.1267]<br>{188.01}***                          | 27.2291<br>[0.1594]<br>{170.87}***   | 25.3787<br>[0.5000]<br>{50.75}***   | 10.6610<br>[0.6539]<br>{16.30}***   |
| Host-country income (lnYf)                      | 19.1087<br>[0.2620]<br>{72.93}***    | 18.3370<br>[1.4908]<br>{12.30}***     | 40.3369<br>[1.8194]<br>{22.17}***     | -9.4318<br>[0.7102]<br>{-13.28}***     | 51.6566<br>[0.7455]<br>{69.29}***    | 0.7717<br>[1.2288]<br>{0.63}                                    | -21.9999<br>[0.3286]<br>{-66.95}*** | -21.2283<br>[1.5574]<br>{-13.63}*** | 28.5405<br>[0.4482]<br>{63.67}***                           | 27.7688<br>[0.7806]<br>{35.57}***    | -33.3196<br>[0.7453]<br>{-44.71}*** | -11.3197<br>[1.0739]<br>{-10.54}*** |
| Rate of inflation (INF)                         | -0.0483<br>[0.0189]<br>{-2.55}**     | -0.2398<br>[0.0479]<br>{-5.01}***     | 0.0910<br>[0.0113]<br>{8.07}***       | 0.0559<br>[0.0180]<br>{3.10}***        | -0.1129<br>[0.0279]<br>{-4.04}***    | 0.1915<br>[0.0289]<br>{6.62}***                                 | -0.3308<br>[0.0366]<br>{-9.04}***   | -0.1393<br>[0.0077]<br>{-18.14}***  | -0.1042<br>[0.0009]<br>{-112.03}***                         | -0.2957<br>[0.0298]<br>{-9.91}***    | -0.1270<br>[0.0199]<br>{-6.37}***   | 0.2038<br>[0.0167]<br>{12.23}***    |
| Bank credit to private sector (lnPSC)           | 2.0462<br>[0.2079]<br>{9.84}***      | -1.2281<br>[0.4873]<br>{-2.52}**      | 8.4104<br>[0.5820]<br>{14.45}***      | 0.3494<br>[0.4922]<br>{0.71}           | 4.1030<br>[0.2726]<br>{15.05}***     | 3.2743<br>[0.2794]<br>{11.72}***                                | -9.6385<br>[0.0947]<br>{-101.80}*** | -6.3642<br>[0.3741]<br>{-17.01}***  | 1.6968<br>[0.2842]<br>{5.97}***                             | -1.5776<br>[0.0048]<br>{-327.29}***  | -5.3311<br>[0.2147]<br>{-24.83}***  | 4.3073<br>[0.3094]<br>{13.92}***    |
| Real exchange rate (lnRXR)                      | -8.2534<br>[0.0506]<br>{-163.05}***  | 14.3902<br>[0.3490]<br>{41.23}***     | -1.7684<br>[0.1597]<br>{-11.07}***    | -12.0783<br>[0.2149]<br>{-56.20}***    | 2.6634<br>[0.1481]<br>{17.98}***     | -22.6436<br>[0.2984]<br>{-75.88}***                             | 16.1586<br>[0.1893]<br>{85.37}***   | -6.4850<br>[0.1091]<br>{-59.43}***  | 3.8249<br>[0.1643]<br>{23.28}***                            | 26.4686<br>[0.1341]<br>{197.38}***   | 11.7268<br>[0.1357]<br>{86.42}***   | -4.4318<br>[0.0116]<br>{-381.72}*** |
| Real deposit interest rate (RIR)                | -0.0469<br>[0.0192]<br>{-2.45}**     | -0.2161<br>[0.0481]<br>{-4.49}***     | 0.0898<br>[0.0109]<br>{8.26}***       | 0.0468<br>[0.0183]<br>{2.56}***        | -0.1165<br>[0.0288]<br>{-4.05}***    | 0.1691<br>[0.0290]<br>{5.84}***                                 | -0.3059<br>[0.0372]<br>{-8.21}***   | -0.1367<br>[0.0083]<br>{-16.49}***  | -0.0938<br>[0.0009]<br>{-107.76}***                         | -0.2629<br>[0.0298]<br>{-8.81}***    | -0.0996<br>[0.0194]<br>{-5.15}***   | 0.2063<br>[0.0179]<br>{11.53}***    |
| Constant term (constant)                        | -218.4456<br>[2.3929]<br>{-91.29}*** | -346.9176<br>[13.0666]<br>{-26.55}*** | -413.6602<br>[16.4151]<br>{-25.20}*** | 251.4770<br>[6.6599]<br>{37.76}***     | -463.1400<br>[8.3179]<br>{-55.68}*** | 128.4720<br>[10.6737]<br>{12.04}***                             | 66.7430<br>[3.3485]<br>{19.93}***   | 195.2150<br>[14.0222]<br>{13.92}*** | -469.9220<br>[4.2670]<br>{-110.13}***                       | -598.3940<br>[6.4067]<br>{-93.40}*** | 116.2220<br>[4.7487]<br>{24.47}***  | 49.4793<br>[8.0972]<br>{6.11}***    |
| Number of observations                          | 288                                  | 286                                   | 288                                   | 288                                    | 286                                  | 287   | 287                                 | 288                                 | 288   | 287                                  | 286                                 | 287                                 |
| Number of groups                                | 36                                   | 36                                    | 36                                    | 36                                     | 36                                   | 36  | 36                                  | 36                                  | 36  | 36                                   | 36                                  | 36                                  |
| Number of instruments                           | 51                                   | 51                                    | 51                                    | 51                                     | 51                                   | 51  | 51                                  | 51                                  | 51  | 51                                   | 51                                  | 51                                  |
| Wald statistic                                  | 261000***                            | 410000***                             | 127000***                             | 407000***                              | 998838.91***                         | 1510000***  | 268500***                           | 1368500***                          | 1508500***  | 224000***                            | 704420***                           | 562919***                           |
| A-B 2 <sup>nd</sup> -order autocorrelation test | -0.407(0.68)                         | -1.711(0.09)*                         | 1.148(0.25)                           | -0.459(0.65)                           | -0.411(0.68)                         | -   | -                                   | -                                   | -   | -                                    | -                                   | -                                   |
| Sargan over-identifying restrictions            | 28.223(0.94)                         | 33.296(0.80)                          | 28.356(0.93)                          | 26.984(0.95)                           | 26.903(0.96)                         | -   | -                                   | -                                   | -   | -                                    | -                                   | -                                   |

Source: Author's estimation *\*\*/\*/\*\*\*/denotes significant at 10/5/1 per cent statistical levels respectively. Standard errors in [], z-statistics in {},  $\chi^2$  probabilities in ()*

In Table 4.3.1, the results of the statistical inquiry into the extent to which the estimated parameters of the decade-based estimations actually differ from decade to decade are reported. The extent to which the estimated coefficients of each of the explanatory variables for the 1980-89 decade differ from the corresponding estimated coefficients of the 1990-99 decade as well as those of the 1990-99 and the 1980-89 decade respectively differ from those of the 2000-09 decade are reported in columns A-B, B-C and A-C respectively.

With reference to column A-B, the results of the reported 'differential'  $z$ -statistics suggest that with the exception of host-country income, each of the estimated parameters for the 1980-89 decade is statistically different from the corresponding estimated parameters for the 1990-99 decade at five per cent level of statistical significance. Furthermore, the statistical significance of the computed 'differential'  $z$ -statistics reported in column B-C validate the hypothesis that each explanatory variable actually had a decade-based varying impact on workers' remittances in the 1990-99 decade compared with the 2000-09 decade. In much the same manner, with 95 per cent statistical confidence, each explanatory variable had a decade-based evolving impact on workers' remittance inflows in SSA when the 1980-89 decade is compared with the 2000-09 decade. Therefore, in statistical terms, the macroeconomic factors determining workers' remittance inflows in SSA between 1980 and 2009 had a changing impact according to the macroeconomic conditions and policy environment in each of the three identified decades 1980-89, 1990-99 and 2000-09.

Each of the computed 'differential'  $z$ -statistics reported in columns A-D, B-D, B-E and C-E is statistically significant at five per cent level. The only exception is the immediate past value of workers' remittances (WREMPC\_1) in column C-E where the estimated parameter of the 2000-09 decade statistically compares to the corresponding parameter estimate of the overlapping decade, 1995-2004. Therefore, overall, a statistical basis has now been established that there is statistical evolution and instability in each of the estimated decade-based parameters over time. Needless to say, the reported results in Table 4.3.1 suggests that the extent to which the macroeconomic factors influence workers' remittance inflows in SSA between 1980 and 2009 differ across the three decades (1980-89, 1990-99 and 2000-09), which can possibly be attributed to the changing macroeconomic policy environment.

#### 4.6.4 Macroeconomic Determinants of Compensation of Employees

The estimated results on the determinants of compensation of employees received in SSA are presented in Table 4.4. As expected, these results show that remittances sent by temporary migrants follow a historical process with an evidence of decay by the second generation of temporary migrants. Econometrically, the estimated results are reliable having passed all the relevant diagnostic tests discussed under Section 4.6.1. The empirical results show that in descending order of economic significance of the estimated parameters, host-country income, home-country income, real bilateral exchange rate, tougher rules and regulations prohibiting unofficial remittance channels, bank credit to the private sector, institutional quality, real deposit interest rate, and inflation are crucial to understanding the changing levels of compensation of employees *per capita* (COMPPC) received in SSA between 1980 and 2009. Over the past three decades, host-country income, regulations discouraging illegal remittances, the amount of COMPPC received last year, institutional quality, real deposit interest rate, and inflation impacted positively on current COMPPC received in the migrant-sending SSA countries. Conversely, home-country income, real exchange rate, bank credit to the private sector, and the amount of COMPPC received two years ago impacted negatively on current COMPPC received in SSA. In the absence of any known previous related studies on macroeconomic determinants of compensation of employees, it is impossible to compare the results reported in Table 4.4 with others.

A one percentage increase in the real GDP *per capita* PPP of a migrant-host country had a US\$2.85 depressing effect on COMPPC in the 1980s. The impact of host-country income, however, turned positive thereafter and became even more economically significant over time. For example, with a one percentage rise in migrant-host country real *per capita* GDP PPP, there was the propensity for *per capita* remittances received from temporary migrants to increase by US\$46.57 in the 1990s, US\$89.30 in the 2000s, and for the overall study period (i.e. 1980-2009), by US\$15.80. This shows a consistent increasing impact of host-country income on remittances received from temporary SSA migrants. One possible reason could be the ever-increasing income gap between migrant-sending countries and the more industrialised migrant-host countries, which has led to unusually increasing temporary migration in recent years. Another possible explanation for the negative impact of migrant-host country income on COMPPC received in SSA in the 1980s could be the saving and investment constraints faced by investment-oriented temporary SSA migrants that might favour migrant investment in the host country rather than in the home country in the early years of financial liberalisation.

**Table 4.4: Results on Compensation of Employees (COMPPC) Flows to SSA, 1980-2009**

| Group variable: Country Code  | Time variable: Year     |                          |                          |                        |
|---|-------------------------|--------------------------|--------------------------|------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel Data Procedure          |                         |                          |                          |                        |
|   | 1980-89                 | 1990-99                  | 2000-09                  | 1980-2009              |
| COMPPC lag 1 (COMPPC_1)   | 0.6704<br>(424.00)***   | 0.7143<br>(816.56)***    | 0.6996<br>(352.48)***    | 0.8388<br>(324.16)***  |
| COMPPC lag 2 (COMPPC_2)   | 0.0111<br>(23.07)***    | -0.0993<br>(-67.68)***   | 0.0016<br>(1.30)         | -0.0363<br>(-26.09)*** |
| Institutional quality (INS)   | -0.0171<br>(-1.00)      | 0.5569<br>(189.29)***    | 0.3930<br>(7.22)***      | 0.5401<br>(18.58)***   |
| Home-country income (lnY <sup>h</sup> )   | -6.9860<br>(-27.27)***  | -17.9083<br>(-75.68)***  | -5.1970<br>(-15.92)***   | -8.6096<br>(-36.15)*** |
| Host-country income (lnY <sup>f</sup> )   | -2.8463<br>(-5.31)***   | 46.5742<br>(31.91)***    | 89.3016<br>(89.31)***    | 15.8024<br>(20.16)***  |
| Rate of inflation (INF)   | 0.5289<br>(56.50)***    | 0.3423<br>(14.58)***     | -0.5403<br>(-25.50)***   | 0.1525<br>(10.24)***   |
| Bank credit to private sector (lnPSC)   | 2.1798<br>(12.98)***    | 1.1275<br>(11.07)***     | -14.2033<br>(-50.18)***  | -2.2669<br>(-17.40)*** |
| Real exchange rate (lnRXR)  | -4.8357<br>(-182.02)*** | -2.6922<br>(-38.34)***   | -10.1267<br>(-74.26)***  | -3.7227<br>(-26.70)*** |
| Real deposit interest rate (RIR)  | 0.5229<br>(70.89)***    | 0.3512<br>(15.71)***     | -0.2282<br>(-8.76)***    | 0.1539<br>(10.19)***   |
| Regulatory environment (D9_11)  | .....                   | .....                    | .....                    | 2.3746<br>(29.40)***   |
| Constant term (constant)  | 89.1156<br>(24.70)***   | -328.6384<br>(-24.67)*** | -778.5007<br>(-88.61)*** | -72.0586<br>(-8.80)*** |
| Number of observations  | 217                     | 237                      | 251                      | 823                    |
| Number of groups (N)  | 34                      | 35                       | 35                       | 35                     |
| Number of instruments   | 51                      | 51                       | 51                       | 441                    |
| Wald $\chi^2_{[•]}$   | [9], 3220000***         | [9], 7030000***          | [9], 1820000***          | [10], 8170000***       |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): | 0.9107{0.362}           | -0.9071{0.364}           | -1.1818{0.237}           | -0.8738{0.382}         |
| Sargan test for over-identifying restrictions:                                    |                         |                          |                          |                        |
| $\chi^2_{[•]}$  | [41], 21.0029           | [41], 29.2380            | [41], 30.4453            | [431], 31.3146         |

Source: Author's estimation

\*\*\* denotes 5(1) per cent respectively.

2-step robust z-statistics in ( ), z-probabilities in { }

The reason is that the majority of the SSA countries that embarked upon financial liberalisation in the 1980s actually started implementing the programme in the latter years of the decade (see Table 5.1 in Chapter Five). In this regard, the possibility of SSA temporary migrants finding it relatively more costly and frustrating to remit through official channels and to invest at

home is high. Also, a fall in the real *per capita* income in migrant-host countries could dampen the aspiration of temporary migrants to seek permanent residential status and rather encourage higher return of temporary migrants, hence the need to remit more in the 1980s. Finally, self-interest seeking temporary migrants who remit mainly because they consider their family at home as insurance in the event of undesirable economic shocks in the host country, are likely to remit more even as their real earnings fall and the general economic prospects in the host country become bleak.

In line with the altruistic theory, migrant-sending SSA countries received more remittances from temporary migrants when the real *per capita* GDP PPP declined at home. This finding is consistent throughout the three decades. In fact, during periods of economic recession as reflected in the reduced real *per capita* GDP in the 1990s (see Table 3.1), a one percentage decrease in home-country income stimulated as much as a US\$17.91 increase in COMPPC received compared to US\$6.96 in the 1980s and US\$5.20 in the 2000s. Thus, unlike permanent SSA migrants, temporary SSA migrants seem to remit more for altruism rather than for self-interest investment purposes.

With a one percentage real depreciation of the national currency of a typical migrant-sending SSA country against the currency of the migrant-host country, COMPPC received in SSA declined by US\$4.84 in the 1980s, US\$2.69 in the 1990s, US\$10.13 in the 2000s, and US\$3.72 for the overall period, 1980-2009. Although this result is applicable to both altruism and self-interest economic theories, given the consistency with which it is parallel to the sign of home-country income, altruism seems the more likely underlying reason behind remittances received by SSA from its temporary migrants since 1980. The altruistic theory of migrant remittances predicts that where the amount remitted is fixed in home-country denominated currency, migrants tend to remit less when the home-country currency depreciates against the host-country currency because a smaller amount of the foreign currency (say, the French franc) would be equivalent to the usual nominal amount of remittances sent by migrants in the home-country currency.

In conformity with the altruistic theory, between 1980 and 2009, the overall impact of private sector access to bank credit is negative on COMPPC received in SSA. This is notwithstanding the fact that, in the 1980s and the 1990s, increased access to private sector credit was a positive determinant of COMPPC received in SSA. In the 2000s, a one percentage increase in

private sector access to bank credit in migrant-home country reduced COMPPC received by the sub-region by about US\$2.27. A possible explanation for this result within the context of altruistic theory is that in the early years of financial liberalisation, private sector credit in SSA was very low due to the underdevelopment of the financial market. Therefore, initially, temporary migrants might have remitted more to alleviate credit constraints at home since the marginal improvement in private sector access to credit in migrant-home countries might still be low in the early years of financial liberalisation. However, as the financial markets developed with improved private sector access to competitive credit over time, the incentive for remitting by temporary migrants for this specific purpose might have waned.

Generally, an improvement in the quality of institutions impacted positively on remittances received by SSA from its temporary migrants between 1980 and 2009, although the effect of institutions was not statistically significant at the conventional statistical levels during the initial years of financial liberalisation, 1980-1989. Holding all other factors constant, with a one percentage improvement in governance and democratic dispensation in SSA, COMPPC received by migrant-sending countries within the sub-region increased by US\$0.56 in the 1990s, US\$0.39 in the 2000s, and US\$0.54 over the entire study period, 1980-2009. The possible reason for this finding is that as political risks are reduced and state governance improves at home, temporary migrants are more likely to return home instead of using the geopolitical tensions at home to seek asylum or permanent residential status abroad. With the higher return rate of temporary migrants, all other things remaining equal, COMPPC received by migrant-sending SSA countries are increased for both altruistic and non-altruistic reasons.

For the entire study period, the impact of home-country real deposit interest rate on COMPPC received was positive in SSA. In the 1980-89 period, a one percentage increase in the home-country real deposit interest rate increased COMPPC received in SSA by US\$0.52. In the 1990s, this positive impact decreased to US\$0.35. In the 2000s, a similar rise in the home-country real deposit interest rate reduced COMPPC received in SSA by US\$0.23. These results suggest that the apparent self-interest investment motive that might have stimulated temporary migrants in the 1980s steadily faded away and by the 2000s, altruism seems to have emerged more dominantly. It is also possible that the self-interest motive might still be a dominant reason behind the compensation of employees even in the 2000s except that temporary migrants now invest more in the host country than at home due to higher rate of real returns on investment in the migrant-host country.

A one percentage increase in the home-country rate of inflation increased COMPPC received by US\$0.53 in the 1980s, US\$0.34 in the 1990s, and US\$0.15 for the overall period, 1980-2009, in migrant-sending SSA countries. In the 2000s, however, the impact of inflation on COMPPC received in SSA was negative. This seems to suggest that in the 1980s and the 1990s, temporary SSA migrants might have remitted more for altruism, but in more recent years, these migrants are becoming more self-interest investment driven. Here again, the evidence seems to suggest that unlike in the initial years of implementing financial liberalisation in SSA temporary migrants are becoming increasingly motivated by the self-interest investment motive rather than by altruism.

The varying impact of home-country macroeconomic factors on the amount of COMPPC received in SSA is evident in the decade-based analysis. It is apparent that besides home-country income, host-country income, and real exchange rate, the estimated parameters of the remaining factors failed to carry the same sign from the 1980s to the 2000s. There seems to be sufficient evidence to conclude that temporary migrants are generally altruistic, but the extent of this altruism seems to be fading in favour of the self-interest economic motive.

In columns A-B, B-C and A-C of Table 4.4.1, the empirical results on the extent to which the decade-based parameter estimates of the inflows of compensation of employees in SSA from 1980 to 2009 differ over time are reported. Column A-B reports the results on comparing the parameter estimates of the 1980-89 decade with the corresponding parameter estimates of the 1990-99 decade. In column B-C of Table 4.4.1, the results on comparing the parameter estimates of the 1990-99 decade with the corresponding parameter estimates of 2000-09 decade are reported, whilst the results on the statistical difference between the parameter estimates of the 1980-89 decade and the 2000-09 decade are reported in column A-C. The reported 'differential'  $z$ -statistics in columns A-B, B-C and A-C show that each of the estimated parameters reported in Table 4.4 is statistically different from decade to decade. Stated differently, at one per cent level of statistical significance, each of the macroeconomic factors influencing the inflows of COMPPC received in SSA between 1980 and 2009 had a decade-based evolving impact in an apparent response to the macroeconomic policy environment in the remittance-receiving SSA country.

**Table 4.4.1:** Results of Decade-Based Parameter Evolution and Instability Tests for Compensation of Employees

|   | Estimated Decade-Based Results      |                                       |                                      | Decade-Based Rolling Estimated Results |                                      | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                      |                                      | Overlapping Decade-Based Coefficient Stability Test Results |                                     |                                     |  |
|---|-------------------------------------|---------------------------------------|--------------------------------------|--|--------------------------------------|---|--------------------------------------|--------------------------------------|---|-------------------------------------|-------------------------------------|--|
|   | A                                   | B                                     | C                                    | D                                      | E                                    | A-B   | B-C                                  | A-C                                  | A-D   | B-D                                 | B-E                                 | C-E                                    |
|   | 1980-89                             | 1990-99                               | 2000-09                              | 1985-1994                              | 1995-2004                            |   |                                      |                                      |   |                                     |                                     |  |
| COMPPC lag 1 (COMPPC_1)                         | 0.6704<br>[0.0016]<br>{424.00}***   | 0.7143<br>[0.0009]<br>{816.56}***     | 0.6996<br>[0.0020]<br>{352.48}***    | 0.4992<br>[0.0018]<br>{272.01}***      | 1.1879<br>[0.0017]<br>{708.15}***    | -0.0440<br>[0.0007]<br>{-61.90}***                              | 0.0147<br>[0.0011]<br>{13.23}***     | -0.0293<br>[0.0004]<br>{-73.15}***   | 0.1712<br>[0.0003]<br>{658.42}***                           | 0.2151<br>[0.0010]<br>{221.79}***   | -0.4736<br>[0.0008]<br>{-584.65}*** | -0.4883<br>[0.0003]<br>{-1627.53}***   |
| COMPPC lag 2 (COMPPC_2)                         | 0.0111<br>[0.0005]<br>{23.07}***    | -0.0993<br>[0.0015]<br>{-67.68}***    | 0.0016<br>[0.0013]<br>{1.30}         | -0.0982<br>[0.0021]<br>{-47.29}***     | -0.2497<br>[0.0063]<br>{-39.50}***   | 0.1103<br>[0.0010]<br>{111.45}***                               | -0.1009<br>[0.0002]<br>{-458.55}***  | 0.0095<br>[0.0008]<br>{12.29}***     | 0.1093<br>[0.0016]<br>{68.31}***                            | -0.0011<br>[0.0006]<br>{-1.72}*     | 0.1504<br>[0.0049]<br>{31.01}***    | 0.2513<br>[0.0051]<br>{49.56}***       |
| Institutional quality (INS)                     | -0.0171<br>[0.0171]<br>{-1.00}      | 0.5569<br>[0.0029]<br>{189.29}***     | 0.3930<br>[0.0544]<br>{7.22}***      | -0.2142<br>[0.0046]<br>{-47.02}***     | -0.3961<br>[0.0477]<br>{-8.31}***    | -0.5740<br>[0.0142]<br>{-40.54}***                              | 0.1639<br>[0.0515]<br>{3.18}***      | -0.4101<br>[0.0373]<br>{-10.99}***   | 0.1971<br>[0.0126]<br>{15.70}***                            | 0.7711<br>[0.0016]<br>{478.94}***   | 0.9530<br>[0.0447]<br>{21.31}***    | 0.7891<br>[0.0068]<br>{116.55}***      |
| Home-country income (lnYh)                      | -6.9860<br>[0.2562]<br>{-27.27}***  | -17.9083<br>[0.2366]<br>{-75.68}***   | -5.1970<br>[0.3264]<br>{-15.92}***   | -9.2130<br>[0.1209]<br>{-76.17}***     | 1.6488<br>[0.5646]<br>{2.92}***      | 10.9223<br>[0.0195]<br>{558.75}***                              | -12.7112<br>[0.0898]<br>{-141.52}*** | -1.7889<br>[0.0703]<br>{-25.46}***   | 2.2271<br>[0.1352]<br>{16.47}***                            | -8.6952<br>[0.1157]<br>{-75.17}***  | -19.5570<br>[0.2366]<br>{-82.65}*** | -6.8458<br>[0.3264]<br>{-20.97}***     |
| Host-country income (lnYf)                      | -2.8463<br>[0.5360]<br>{-5.31}***   | 46.5742<br>[1.4595]<br>{31.91}***     | 89.3016<br>[0.9999]<br>{89.31}***    | 39.4113<br>[0.7525]<br>{52.37}***      | 30.1835<br>[0.6356]<br>{47.49}***    | -49.4205<br>[0.9235]<br>{-53.51}***                             | -42.7274<br>[0.4596]<br>{-92.96}***  | -92.1479<br>[0.4639]<br>{-198.65}*** | -42.2576<br>[0.2165]<br>{-195.17}***                        | 7.1630<br>[0.7070]<br>{10.13}***    | 16.3907<br>[0.8240]<br>{19.89}***   | 59.1181<br>[0.3643]<br>{162.26}***     |
| Rate of inflation (INF)                         | 0.5289<br>[0.0094]<br>{56.50}***    | 0.3423<br>[0.0235]<br>{14.58}***      | -0.5403<br>[0.0212]<br>{-25.50}***   | 0.1089<br>[0.0152]<br>{7.15}***        | -0.0775<br>[0.0446]<br>{-1.74}*      | 0.1866<br>[0.0141]<br>{13.22}***                                | 0.8826<br>[0.0023]<br>{385.40}***    | 1.0692<br>[0.0118]<br>{90.38}***     | 0.4200<br>[0.0059]<br>{71.42}***                            | 0.2333<br>[0.0082]<br>{28.32}***    | 0.4198<br>[0.0211]<br>{19.92}***    | -0.4628<br>[0.0234]<br>{-19.80}***     |
| Bank credit to private sector (lnPSC)           | 2.1798<br>[0.1679]<br>{12.98}***    | 1.1275<br>[0.1018]<br>{11.07}***      | -14.2033<br>[0.2831]<br>{-50.18}***  | 3.7781<br>[0.0892]<br>{42.36}***       | -9.7486<br>[0.3211]<br>{-30.36}***   | 1.0523<br>[0.0661]<br>{15.92}***                                | 15.3308<br>[0.1812]<br>{84.61}***    | 16.3830<br>[0.1151]<br>{142.31}***   | -1.5983<br>[0.0787]<br>{-20.30}***                          | -2.6506<br>[0.0127]<br>{-209.37}*** | 10.8761<br>[0.2192]<br>{49.61}***   | -4.4547<br>[0.0381]<br>{-117.07}***    |
| Real exchange rate (lnRXR)                      | -4.8357<br>[0.0266]<br>{-182.02}*** | -2.6922<br>[0.0702]<br>{-38.34}***    | -10.1267<br>[0.1364]<br>{-74.26}***  | -4.8532<br>[0.1075]<br>{-45.13}***     | -1.9484<br>[0.0661]<br>{-29.46}***   | -2.1434<br>[0.0436]<br>{-49.10}***                              | 7.4344<br>[0.0662]<br>{112.39}***    | 5.2910<br>[0.1098]<br>{48.19}***     | 0.0175<br>[0.0810]<br>{0.22}                                | 2.1609<br>[0.0373]<br>{57.90}***    | -0.7438<br>[0.0041]<br>{-182.31}*** | -8.1783<br>[0.0702]<br>{-116.45}***    |
| Real deposit interest rate (RIR)                | 0.5229<br>[0.0074]<br>{70.89}***    | 0.3512<br>[0.0224]<br>{15.71}***      | -0.2282<br>[0.0261]<br>{-8.76}***    | 0.0813<br>[0.0117]<br>{6.92}***        | -0.0540<br>[0.0446]<br>{-1.21}       | 0.1716<br>[0.0150]<br>{11.46}***                                | 0.5794<br>[0.0037]<br>{157.03}***    | 0.7510<br>[0.0187]<br>{40.23}***     | 0.4415<br>[0.0044]<br>{101.04}***                           | 0.2699<br>[0.0106]<br>{25.44}***    | 0.4052<br>[0.0222]<br>{18.23}***    | -0.1742<br>[0.0185]<br>{-9.40}***      |
| Constant term (constant)                        | 89.1156<br>[3.6079]<br>{24.70}***   | -328.6384<br>[13.3214]<br>{-24.67}*** | -778.5007<br>[8.7857]<br>{-88.61}*** | -314.0904<br>[8.0930]<br>{-38.81}***   | -282.4071<br>[9.2079]<br>{-30.67}*** | 417.7540<br>[9.7135]<br>{43.01}***                              | 449.8620<br>[4.5357]<br>{99.18}***   | 867.6163<br>[5.1778]<br>{167.57}***  | 403.2060<br>[4.4851]<br>{89.90}***                          | -14.5480<br>[5.2284]<br>{-2.78}***  | -46.2313<br>[4.1135]<br>{-11.24}*** | -496.0940<br>[0.4222]<br>{-1174.94}*** |
| Number of observations                          | 217                                 | 237                                   | 251                                  | 237                                    | 286                                  | 227   | 244                                  | 234                                  | 227   | 237                                 | 262                                 | 268                                    |
| Number of groups                                | 34                                  | 35                                    | 35                                   | 35                                     | 35                                   | 35  | 35                                   | 35                                   | 35  | 35                                  | 35                                  | 35                                     |
| Number of instruments                           | 51                                  | 51                                    | 51                                   | 51                                     | 51                                   | 51  | 51                                   | 51                                   | 51  | 51                                  | 51                                  | 51                                     |
| Wald statistic                                  | 3220000***                          | 7030000***                            | 1820000***                           | 407000***                              | 2320000***                           | 5125000***  | 4425000***                           | 2520000***                           | 1813500***  | 3718500***                          | 4675000***                          | 2070000***                             |
| A-B 2 <sup>nd</sup> -order autocorrelation test | 0.911(0.36)                         | -0.907(0.36)                          | -1.182(0.24)                         | -0.459(0.65)                           | 1.192(0.23)                          | -   | -                                    | -                                    | -   | -                                   | -                                   | -                                      |
| Sargan over-identifying restrictions            | 21.002(0.99)                        | 29.238(0.92)                          | 30.45(0.89)                          | 26.984(0.95)                           | 33.784(0.78)                         | -   | -                                    | -                                    | -   | -                                   | -                                   | -                                      |

Source: Author's estimation *\*\*/\*\*/\*\* denotes significant at 10/5/1 per cent statistical levels respectively. Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )*

In the strict sense of stability of the estimated decade-based coefficients over time, the results as reported in columns A-D, B-D, B-E and C-E of Table 4.4.1 suggest that, generally, the statistical differences in each of the estimated decade-based parameters is statistically consistent over time and this provides the statistical evidence for evolution and instability in the estimated decade-based parameters. The only exception to this finding is the reported  $z$ -statistic associated with real bilateral exchange rate reported in column A-D of Table 4.4.1 suggesting that there is evidence against statistical instability of the estimated coefficient when the 1980-89 decade and the 1985-94 decade are compared.

#### **4.7 CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS**

In harmony with the objectives specified, this chapter examined at both the aggregated and disaggregated levels, the macroeconomic factors that influence the flow of migrant remittances to SSA. To verify if the impact of the macroeconomic factors that influence migrant remittance inflows in SSA vary over time, separate empirical analyses were carried out for each of the past three decades along with the overall study period analysis. Given the results obtained and in response to the underlying research questions, the study concludes that, generally:

- i. Both host-country and home-country macroeconomic factors play a crucial role in determining the amount of officially reported remittances received in SSA between 1980 and 2009. Of these factors, however, host-country factors *viz.* migrant-host country income, and the enforcement of laws and regulations prohibiting the use of informal channels in remitting were found to be the most positive determinants of remittances received in SSA. Concerning home-country macroeconomic factors, overall, real bilateral exchange rate, real income *per capita* PPP and institutional quality impacted negatively on migrant remittances received, whilst bank credit to private sector, inflation, and real deposit interest rate had positive impact on remittance inflows in SSA. Apart from these factors, the amount of remittances received over the past two years also influence how much remittances are received at any particular point in time.
- ii. The impact of macroeconomic factors on migrant remittances received in SSA varied over time, but the pattern of this varying effect is largely dependent upon the general macroeconomic performance rather than on any specific programme such as financial liberalisation. For example, in the 1980s and the 2000s when real income levels were relatively high, migrant remittances were pro-cyclical, and seemed to be driven more by

the self-interest investment motive rather than by altruism. Unlike in the ‘bad times’ of the 1990s, during the ‘good times’ of the 1980s and the 2000s, it was migrant-sending SSA countries with lower rates of inflation, higher income growth, stronger currencies and higher real deposit interest rates that mobilised more remittances through the official channels. This implies that though the pursuit of financial liberalisation has a substantial potential of enhancing the mobilisation of international migrant remittances in SSA through official channels, this ambition can only be successful provided favourable macroeconomic environment exists in the migrant-sending country. Stated differently, financial liberalisation should be seen only as a necessary but not a sufficient condition for mobilising remittances from SSA migrants outside the sub-region since its impact on remittance inflows is contingent upon the macroeconomic fundamentals of the migrant-sending countries.

- iii. Macroeconomic factors, to a reasonable extent, impacted differently on workers’ remittances and migrant remittances received in SSA over the past three decades even though the results from these two measures of remittances are more consistent than in comparison with compensation of employees. Both workers’ remittances and migrant remittances seem to be driven by the self-interest economic motive. For the entire study period, real deposit interest rate and inflation were not statistically significant in determining workers’ remittances received in SSA, but these two variables had significant positive impact on migrant remittances received in the sub-region. The impact of home-country income on migrant remittances was negative but positive in the case of workers’ remittances. The effects of the remaining macroeconomic variables, viz. host-country income, bank credit to the private sector, regulatory environment, institutional quality and real exchange rate on migrant remittances and workers’ remittances received in SSA were the same in terms of statistical direction. However, in terms of economic importance, generally, each of these variables exerted higher impact on migrant remittances than on workers’ remittances, except for the ‘political economy’ variables - institutional quality and regulatory environment. This finding implies that it may not be appropriate to use only workers’ remittances in studies that aim at trying to provide a complete insight into remittances from international migrants.
- iv. Macroeconomic factors were important determinants of compensation of employees received in SSA between 1980 and 2009. Overall, whereas host-country income,

regulatory environment, quality institutions, real deposit interest rate and rate of inflation had positive effects, home-country income, bank credit to private sector, and real exchange rate had negative effects on compensation of employees. This finding appears to lend support for the validity of the altruistic theory of remittance inflows. Thus, while permanent migrants from SSA seem to be influenced by the self-interest investment motive, temporary migrants from the sub-region are likely to be more altruistic.

The conclusions of this study are imperative with a number of policy implications for strategies aimed at attracting optimal migrant remittances to SSA through the formal financial sector. The key policy implication is that since host-country factors are exogenous to remittance-recipient countries and because these industrialised countries host migrants from other countries of the developing world that have been receiving higher remittances than SSA as a sub-region, SSA cannot attribute its low receipt of officially reported remittances to factors in the migrant-host countries. By implication, the low receipt of migrant remittances by SSA countries should be ascribed to the absence of relevant and effective macroeconomic policies for the mobilisation of remittances from their citizens living abroad. Explicitly, countries that are receiving higher official migrant remittances today are doing so largely because these countries have put some policy measures in place for this specific purpose. Therefore, to mobilise increased remittances from SSA migrants through official channels, it is recommended that SSA countries should design attractive policies that will induce its nationals living and working outside the sub-region, to remit home conveniently. More specifically, policy makers in SSA should:

- i. advance stable and credible macroeconomic policy environment through reduction in the rate of inflation, improvement in economic performance which reflects in higher real *per capita* income, and stronger national currency in the international financial market so as to encourage private sector savings and investment. Self-interest seeking migrants may be encouraged to remit more funds home for investment purposes if the macroeconomic conditions at home are favourable or investment friendly. For instance, with higher growth in home-country income, not only migrants but recipients of remittances be will encouraged to invest as the domestic market expands;
- ii. ensure that they encourage stronger institutions through improved democratic governance and freedom from strife as in more recent years, since quality institutions

- impact positively on the inflows of workers' remittances and compensation of employees. To achieve this, pragmatic measures must be put in place to reduce corruption (or the perception thereof), improve national security and peace, and create a conducive environment through the enactment of laws that protect the interest of investors and entrepreneurs, whether resident at home or abroad;
- iii. continue to rigorously pursue prudent financial market liberalisation programmes which are expected to deregulate exchange rates, promote competition among banks and other like-service providers, including post offices working with Money Transfer Operators (MTOs). In SSA, the most notable MTOs are Western Union and MoneyGram for which many financial institutions, especially commercial banks and post offices, act as agents or intermediaries. When financial liberalisation leads to competition in the financial market, financial institutions are expected to become more efficient, resulting in reduced money transfer fees, the introduction of innovative and diversified financial products and services, and expansion and wider coverage with more outlets at home and abroad. This is critical because for as long as SSA migrants find the patronage of informal money transfer channels cheaper, safer, more convenient and accessible, the sub-region cannot improve upon the mobilisation of remittances from its nationals living abroad through the formal transfer channels.
  - iv. roll out strategic policies under the pursuit of financial liberalisation programmes that will motivate commercial banks to reach out to migrants in their host countries. For instance, commercial banks can open outlets in major migrant-host nations, offer preferential interest rates on remittances saved, convert asset holdings in local currencies at a premium rate, and invest saved remittances in high-yielding financial instruments. It should also be feasible for local banks to open a joint account for migrants and their main target remittance-recipients. Banks can even pay 'assured remittances' on behalf of migrants under special terms and conditions;
  - v. not only stabilise the local currency in the international markets under the pursuit of financial liberalisation programme but also integrate foreign exchange markets so as to abolish the existence of dual exchange rates, which hitherto, create incentive for migrants to use unofficial channels for transferring funds. Normally, under a dual exchange rate regime, there is a wide disparity between a relatively lower official rate

and a relatively higher parallel rate. Under this condition, more local currencies are received in any given amount of foreign currency as higher premiums exist in 'black' foreign markets where operators do not pay any commission on their earnings. Also, high exchange rate volatility can provide an incentive for currency hedging or hoarding which can ultimately reduce the patronage of official channels to remit; and

- vi. design special incentive packages, including zero tax on remittances received, special remittance agreements with major migrant-host countries, the regulation of informal intermediaries in the money transfer market, the issuing of special foreign currency denominated bonds targeted at the Diaspora communities, establishing 'remittance banks' at home with branches, and creating opportunities for social security contributions from abroad, in order to attract SSA citizens resident abroad to remit funds home through the formal money transfer channels.

**APPENDIX 4**

**Table A4.1:** Summary of Empirical Studies on Macroeconomic Determinants of Remittances

| Author(s), Year           | Case Study   | Study Period  | Model & Estimation Method  | Variables Included   | Key Finding(s)   |
|---------------------------|--|---|--|--|--|
| Elbadawi and Rocha (1992) | Six North African and European countries (Algeria, Morocco, Portugal, Tunisia, Turkey, Yugoslavia) | 1977-1989   | Correlation analysis for six countries.<br><br>Fixed-Effects model involving a panel of five countries (excluding Algeria) | <i>Dependent:</i> Logarithm of remittances; remittances per migrant worker; logarithm of remittances <i>per capita</i> . (Remittances here mean remittances from both categories of foreign residents either for 12 or more months or less than 12 months).<br><i>Explanatory:</i> Migrant stock, native-country real GDP, black market premium, inflation, duration of stay in host country, dummy for political stability, host-nation GDP and deposit interest rate differential between home and host country. | Migrant stock and real GDP in host country have positive effects on remittance inflows. Black market premium, domestic inflation rate, and length of stay negatively impact on remittance inflows. Thus, although migrant stock may positively affect remittances in migrant-home countries, an ageing labour force abroad decelerates remittance inflows. Also, special incentive schemes cannot substitute for a stable and credible macroeconomic policy. |
| Lianos (1997)             | Greece   | 1961-1991 for Germany; 1981-1991 for Belgium; 1980-1991 for Sweden. | A set of single equation OLS models on bilateral remittances from Belgium, Germany and Sweden to Greece                    | <i>Dependent:</i> Unpublished data obtained from the Bank of Greece on funds sent home by Greek migrants in Belgium, Germany, Sweden)<br><i>Explanatory:</i> migrant's income, family income, rate of interest, rate of inflation, exchange rate, rate of unemployment, number of migrants   | Remittance inflows are positively influenced by migrants' income, inflation, real discount (or deposit) interest rate and number of migrants. Exchange rate, Unemployment rate and home country income have no statistical significant impact  |
| Buch <i>et al.</i> (2002) | 145 countries  | 1970-99 for Correlation. 1990-99 averages for OLS                   | Correlations coefficient. Cross-sectional OLS based on each country's averages of the 1990s                                | <i>Dependent</i> (for OLS): Remittance (WREM plus private capital flows) ratio to GDP. For correlation analysis, remittances/GDP and growth rates of remittances were used.<br><i>Explanatory:</i> GDP <i>per capita</i> or Human Development Indicator (HDI) or index of economic freedom representing the level of country development, macroeconomic instability, inflation, dummy for Island states, and female economic participation   | Land dummy positively impact on remittances; GDP <i>per capita</i> and female activity have negative effects on inward remittances whilst inflation was statistically insignificant.   |
| Jadhav (2003)             | India  | 1988(2)-2003(1) (quarterly data)                                    | Single equation OLS estimation   | <i>Dependent:</i> Log of WREM<br><i>Explanatory:</i> Price of international crude oil used as an indicator of economic activities in oil exporting Middle East and Gulf regions as Indian migrant hosts, US GDP  | Improved economic activities of migrant host countries (both oil exporting and non-oil exporting hosts) and exchange rate depreciation are positive drivers of   |

|                             |  |                                  |   |  |   |
|-----------------------------|--|----------------------------------|---|--|---|
|                             |  |                                  |   | as economic activity indicator of non-oil Indian migrant hosts, interest (deposit) rate differential (domestic minus LIBOR), nominal exchange rate.  | remittance flows to India. Deposit interest rate differential does not affect remittance flows to India.  |
| Aydaş <i>et al.</i> (2004)  | Turkey   | 1964-1993                        | Single equation OLS   | <i>Dependent:</i> Remittance data restricted to only cash transfers<br><i>Explanatory:</i> Log of: migrant stock, host-country <i>per capita</i> income, home-country <i>per capita</i> income, domestic growth, and black market premium. Also, dummy for military regime to capture political instability, interest rate differential, domestic inflation, and real currency overvaluation.  | Results reported for 1979-1993 show that stock of migrants and real overvaluation of domestic currency were insignificant. Interest rate differential and host-country income positively determines remittances. Home-country income, inflation, black market premium and political instability negatively affect remittance inflows.   |
| Bouhga-Hagbe (2004)         | Morocco (Bilateral study with France as host nation for Moroccan migrants) | 1993(1)-2004(4) (quarterly data) | Co-integration graphing and error-correction (ECM) modelling by OLS | <i>Dependent:</i> Logarithm of remittances (defined as total migrant worker transfers) an equivalence of WREM+COMP+ migrant transfers (MT).<br><i>Explanatory:</i> Wages in France, financial assets held by Moroccan emigrants, interest rate differential, bilateral exchange rate, and real GDP   | Wages in France and interest rate differential and are positive long-run determinants. No evidence of portfolio diversification motives behind remittances in the long run. In the short run, volume of real estate construction in Morocco by Moroccan migrants is a positive driver of remittances into Morocco. Exchange rate depreciation enhances remittance inflows in the short run. |
| Freund and Spatafora (2005) | 104 countries in SSA, EAP and ECA  | 1995-2003                        | Fixed effects panel data estimation.                                | <i>Dependent:</i> Remittances (WREM+COMP+MT with many adjustments in absence of data) in logarithmic levels, <i>per capita</i> , and per emigrant.<br><i>Explanatory:</i> Domestic output, domestic <i>per capita</i> income, stock of migrant workers, dummy for dual exchange rate, transfer or service fees, exchange rate spread, host country (the country which has the largest share of a sampled country's migrant workers) <i>per capita</i> income | Transfer fee, host-country <i>per capita</i> income and dual exchange rate adversely affect remittance inflows. Migrant stock and home-country <i>per capita</i> income positively impact on remittance inflows. Exchange rate spread not significant.  |
| Gupta (2005)                | India  | 1990-2003                        | A set of single equations OLS                                       | <i>Dependent:</i> Logarithm of real remittances defined as private transfers on current accounts of BoPS<br><i>Explanatory:</i> Trend, migrant stock, lagged dependent variable, migrant earnings, US non-agricultural employment, credit rating of India, political uncertainty, stock market return, exchange rate variation, drought, annual changes in LIBOR, changes in oil prices, issuance of bonds, dummy for Asian financial crisis,                | Migrant stock, earnings of migrants, and host-country economic environment are positive determinants of remittances received by India. Interest differential not statistically significant.   |

|                                 |  |   |  |   |  |
|---------------------------------|--|---|--|---|--|
|                                 |  |   |  | and dummy for post-September-11, 2001   |  |
| Schrooten (2005)                | 24 transition countries  | 1990-2003   | Dynamic panel data estimation technique following first-differenced Generalised Method of Moment (GMM)   | <i>Dependent:</i> REMGDP and REMPC where remittances are defined as WREM+COMP+MT.<br><i>Explanatory:</i> Lagged dependent variable, native-country GDP <i>per capita</i> , unemployment rate, domestic credit to private sector/GDP, dummy for wars, institutional development measured by an index that takes the value between 1 and 4.5, openness, <i>per capita</i> income growth rate.   | Remittances <i>per capita</i> and remittances per GDP are driven by similar factors. Remittances are highly driven by unemployment rate in native country, GDP <i>per capita</i> , and higher international integration of host country's real sector decrease remittances. Institutional development has no impact on remittances <i>per capita</i> . War dummy has no effect on remittances/GDP but remittances <i>per capita</i> increase during war times. Remittances act as substitute for well-performing banking sector. |
| Akkoyunlu and Kholodilin (2006) | Turkey (focus on bilateral analysis involving Turkish migrants in Germany) | 1962-2004   | Cross-correlations, unrestricted bivariate VARs and Granger-causality test   | Two forms of remittances were tried. Bilateral real total remittances and bilateral real remittances <i>per capita</i> . Bilateral remittances (measured directly from official source – Deutsche Bundesbank) in this study imply remittances from Germany to Turkey. Real German GDP, real Turkish GDP, exchange rate, CPI and number of migrants  | Remittances response more positively to changes in economic activity in host country. No causality between remittances and real GDP <i>per capita</i> or with real growth in German GDP. No correlation between growth rate of German real GDP and growth rate of real remittances per migrant. No correlation between annual growth rates of Turkish real GDP and annual growth rates of real remittances per migrant.  |
| Niimi and Özden (2006)          | 85 countries   | 2000 (due to limited time series data on migrant stock) | Cross-country analysis involving single equation OLS (ignoring endogeneity) and Instrumental Variable (IV) estimation (taking into account endogeneity problems) | <i>Dependent:</i> Three forms of remittances (measured as WREM+COMP+MT) were tried. These are remittances/GDP ratio, logarithm of real remittances, and the logarithm of real remittances <i>per capita</i> .<br><i>Explanatory:</i> Level of migration, educational level of migrants, financial development (either bank deposit or private sector bank credit to GDP), and economic conditions in native-country (GDP growth and GDP <i>per capita</i> ) | Stock of migrants is the main determinant of remittances. Education level of migrant relative to population in home country, size of economy and level of economic development adversely affect remittance inflows. Financial development positive but largely insignificant and where private sector credit is occasionally significant, it is generally positive.  |
| Schiopu and Siegfried (2006)    | 21 Western European countries (as source countries) 7 EU neighbouring      | Differ across nations but averaged between 2001-2003    | A set of 11 single equations OLS (With the exception of income differential and return on financial assets the other explanatory                                 | <i>Dependent:</i> Logarithm of bilateral remittances (which were not specifically defined) per migrant obtained from Central Banks in recipient countries<br><i>Explanatory:</i> Rate of return on financial assets, income differentials (real <i>per capita</i> GDP PPP of host country minus real <i>per capita</i> GDP PPP of home country),  | Increases in migrant skills, GDP differential between home and host countries promote remittances received. Large informal sector in migrant resident country and fund transfer fees depress official remittances. Interest rate   |

|                                      |  |  |   |   |  |
|--------------------------------------|--|--|---|---|--|
|                                      | countries  |  | variables were not included at the same time)   | migration, skill level, income inequality, remittance transfer cost, unofficial economic activity, and rate of return on real estate  | differential not significant determinant.  |
| Vargas-Silva and Huang (2006)        | Two cases: (1) Net remittances between US and rest of the world (ROW). (2) Remittances to Mexico from US                     | 1981(1)-2003(4): Quarterly data        | Vector Error Correction Model (VECM) supported by Variance Decomposition, Impulse Response, Granger-causality   | <b>US study:</b> Net aggregate remittances (i.e. private remittances plus other transfers) with ROW). US Federal Funds Rate (US FFR), US money supply (US M <sub>2</sub> ), US CPI, US unemployment, two indices of economic conditions (exchange with the US\$ and home country inflation) from ROW <sup>78</sup> .<br><b>Mexico study:</b> Inward remittances (i.e. Mexico's credit current transfers)). US FFR, US M <sub>2</sub> , US CPI, US unemployment; and Mexican GDP, CPI and domestic currency exchange rate with the US\$ (to represent home country economic conditions). All variables in real terms or logarithm. | Generally, host-country economic conditions are relatively important in driving remittances. For Mexico, none of the home-country economic factors was significant. US M <sub>2</sub> explains the largest percentage of remittance variance. A positive shock to US M <sub>2</sub> elicits a positive response from both measures of remittances. US FFR, US inflation, US unemployment Granger-cause inward remittances to Mexico. |
| Amuedo-Dorantes <i>et al.</i> (2007) | 111 developing countries with a comparative analysis of 19 Small Island Developing States (SIDS) and 92 developing countries | 1990-2003                              | Panel VAR with variance decompositions, and impulse response functions. Three estimations: 19 SIDS only, 92 developing countries only, and 111 full sample developing countries | <i>Dependent:</i> WREM as ratio of GDP<br><i>Explanatory:</i> Multilateral real effective exchange rate, natural disasters and official foreign aid.  | Real effective exchange rate depreciation enhances remittance inflows. 2.4% of remittances' error forecast variance explained by the remaining system variables. Remittances explain 27.5% of foreign aid's error forecast variance. Remittances increase following a disaster shock but that of aid is more robust.   |
| Lueth and Ruiz-Arranz (2007a)        | Sri Lanka  | 1996-2004 (Quarterly observations)     | Co-integrating single equation OLS for long-run parameter estimations and Vector Error Correction Model (VECM) for short run parameter estimations.                             | <i>Dependent:</i> Remittances (WREM+COMP+MT) in actual volumes and not seasonally adjusted<br><i>Explanatory:</i> Real GDP, CPI, exchange rate, and oil price (simple average of UK Brent, Dubai and West Texas crude oil prices).  | Remittances and oil price positively correlate. Real GDP and exchange rate of home country adversely affect remittance inflows.  |
| Lueth and Ruiz-Arranz (2007b)        | 11 developing countries in Asia, Europe  | Differ across countries, but generally | Pooled OLS, Fixed Effects and Random Effects panel data   | <i>Dependent:</i> Logarithm of total bilateral remittances (as reported by various Central Banks)<br><i>Explanatory:</i> Nominal GDP of home country, physical  | Motive to remit is mixed, but altruism appears less of a factor than is widely believed. Remittances are positively  |

<sup>78</sup> ROW is proxied by Brazil, Colombia, the Dominican Republic, El Salvador and Mexico because these were the largest five recipients of remittances from the US at the time of this study.

|                               |                         |  |  |   |   |
|-------------------------------|-------------------------|--|--|---|---|
|                               | and the Middle East     | ranged 1980-2004. Average period is 9 years                                  | estimation   | distance between a sampled country and source countries, and a vector of potential factors influencing remittance flows which includes GDP <i>per capita</i> of home and source countries, separate dummies for share border, common language, and political risks proxied by country international credit rating.  | driven by oil prices and native-country GDP. Remittances reduce as exports decline, investment and political climate of home country worsen.  |
| Adenutsi and Ahoritor (2008)  | Ghana                   | 1983(4)-2005(4)  | Static and dynamic VAR, Vector Error Correction Model (VECM), Impulse Response Functions and Variance Decompositions | <i>Dependent:</i> Log of remittances (WREM+COMP)<br><i>Explanatory:</i> Interest rate (treasury bill rate), monetary aggregate (M <sub>1</sub> ), exchange rate and domestic price level.   | Static long-run model reveals that monetary aggregates, exchange rate, and interest rate impact positively on remittance inflows whilst domestic price level negatively affect the inflow of remittances. This result holds for the dynamic long-run model except that exchange rate has a negative influence on remittances under this circumstance.         |
| Elkhider <i>et al.</i> (2008) | Morocco                 | 1970-2006  | VAR and Vector Error Correction Model (VECM)   | <i>Dependent:</i> Logarithm of total remittances (WREM+COMP+MT) sent by Moroccan migrants abroad<br><i>Explanatory:</i> Agricultural GDP, exchange rate, time trend   | Agricultural GDP has a positive effect on remittances received whereas exchange rate negatively affects remittance inflows in the long run. In the short run, however, exchange rate positively influences remittances. Thus, over the long run, exchange rate depreciation does not positively impact on the Moroccan resident abroad.                       |
| Moore and Greenidge (2008)    | 15 Caribbean countries  | 1987-2008  | Panel Generalised Least Squares (Panel GLS)  | <i>Dependent:</i> Logarithm of remittances (WREM+COMP) as a ratio of GDP.<br><i>Explanatory:</i> Real interest rate differential, real GDP <i>per capita</i> differential (the PPP measure), home country inflation, real effective exchange rate, age dependency ratio   | Interest rate differential, income differential, inflation and dependency ratio have significant positive impact on remittances. Real effective exchange rate (REER) negative but insignificant impact.   |
| Adams (2009)                  | 76 developing countries | Cross-sectional data with each country having a data point between 1995-2001 | 2-stage Instrumental variable (IV) estimation. Instruments for migrant skills, migrant stock and poverty.            | <i>Dependent:</i> Log of REMPC where remittances are new undefined national data assembled by the author.<br><i>Explanatory:</i> Skill composition of migrants, home country poverty, <i>per capita</i> GDP, <i>per capita</i> GDP square, real deposit interest rate, exchange rate spread, cost of remitting money, GINI coefficient, percentage of population under 14 years and dummy for war | Skills of migrants play a crucial in remittance determination. Higher-skilled labour exporters receive less REMPC than countries which export a larger proportion of low-skilled migrants. Real deposit interest rate impact positively on REMPC. Poverty incidence at home, exchange rate spread, cost of remitting, and periods of war do not affect REMPC. |
| Coulibaly (2009)              | 16 LAC                  | 1980-2006  | Panel VAR, impulse   | <i>Dependent:</i> Remittances (WREM+COMP+MT) <i>per</i>   | Host-country GDP and interest   |

|                            | countries  |           | response functions, variance decompositions  | <i>capita</i> .<br><i>Explanatory</i> : Growth rates in host country (US) GDP and home-country GDP, interest rate differential  | differential positively drive remittances to LAC whilst increases in native-country GDP dampens inward remittances.  |
|----------------------------|--|-----------|--|---|--|
| Shahbaz and Aamir (2009)   | Pakistan   | 1971-2006 | Autoregressive Distributive Lag (ARDL) model   | <i>Dependent</i> : WREMGDP and WREMPG.<br><i>Explanatory</i> : Manufacturing output used as proxy for economic activity at home country, world GDP, inflation, REER, world interest rate, and secondary school enrolment as proxy for skilled labour at home.   | In the long run, increases in world GDP, REER and inflation impact positively on remittance inflows, whereas world interest rate, home-country manufacturing output and secondary school enrolment adversely affect remittances in the long run.   |
| Akkoyunlu (2010)           | Turkey (Bilateral study involving Turkish migrants in Germany) | 1962-2005 | Single equation co-integration and error-correction models by OLS. General-to-specific approach for a parsimonious unrestricted general model. | <i>Dependent</i> : Remittances from Germany (obtained from Balance sheets of Bundesbank) as a ratio of GDP.<br><i>Explanatory</i> : Real Turkish GDP <i>per capita</i> , real German GDP <i>per capita</i> , stock of Turkish migrant workers in Germany, real exchange rate, government instability.   | Turkish income negatively impact on remittance inflows in the long run but stock of migrants, real exchange rate, and political instability have positive effects.<br>In the short run, German GDP had a positive but Turkish GDP had a negative effect on remittance inflows.   |
| Singh <i>et al.</i> (2010) | 36 SSA countries   | 1990-2005 | Fixed Effects Panel Data (Single Equation and 2SLS) Estimation   | <i>Dependent</i> : Measurement of remittances was inconsistent. It ranged from constructing new dataset, WREM+COMP+MT to using only "other current transfers" due to data unavailability. In the empirical model, logarithm of remittances/GDP was used as the dependent variable.<br><i>Explanatory</i> : Real GDP <i>per capita</i> of home country, real GDP <i>per capita</i> of host country, migrant stock/population, dual exchange rate regime, institutional quality (proxied by international country risk index which is on financial risk as far as the debt payment of a country is concerned), financial development (M <sub>2</sub> /GDP or domestic credit/GDP), real bilateral exchange rate against the US dollar, interest rate differential | Stock of migrants residing in wealthier nations, quality institutions and host-country income positively impacted on remittance inflows. Also, financial development proxied by M <sub>2</sub> /GDP and domestic credit/GDP impacted positively on remittance inflows with M <sub>2</sub> /GDP having a more robust effect. Home-country income and interest differential have depressing effects on remittances inflows. Real exchange rate and dual exchange regime had no significant impact on remittance inflows. |

Source: Author's compilation from various sources.

**Box A4.1: Matrices Corresponding to the Instruments Used in the Estimation**

$$R_i = \begin{bmatrix} R_{i3} - R_{i,2} \\ R_{i4} - R_{i,3} \\ \vdots \\ R_{iT} - R_{i,T-1} \\ R_{i3} \\ \vdots \\ R_{iT} \end{bmatrix} \quad X_i = \begin{bmatrix} R_{i2} - R_{i1} & x'_{i3} - x'_{i2} \\ R_{i3} - R_{i,2} & x'_{i4} - x'_{i3} \\ \vdots & \vdots \\ R_{i,T-1} - R_{i,T-2} & x'_{iT} - x'_{i,T-1} \\ R_{i,2} & x'_{i2} \\ \vdots & \vdots \\ R_{i,T-1} & x'_{iT} \end{bmatrix}$$

$$\widehat{X} = (R_{-1}, X), \quad \gamma' = (\rho, \beta'), \quad W = (W'_1, W'_2, \dots, W'_N)'$$

$$W_i^D = \begin{bmatrix} [R_{i1}, x'_{i1}, x'_{i2}] & 0 & \cdots & 0 \\ 0 & [R_{i1}, R_{i2}, x'_{i1}, x'_{i2}, x'_{i3}] & \cdots & 0 \\ 0 & 0 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & [R_{i1}, R_{i2}, \dots, R_{i,T-2}, x'_{i1}, x'_{i2}, \dots, x'_{iT-1}] \end{bmatrix}$$

$$W_i^L = \begin{bmatrix} [dR_{i1}, dx'_{i1}, dx'_{i2}] & 0 & \cdots & 0 \\ 0 & [dR'_{i2}, dR'_{i3}, dx'_{i2}, dx'_{i3}, dx'_{i4}] & \cdots & 0 \\ 0 & 0 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & [dR'_{i2}, \dots, dR'_{i,T-2}, dx'_{i2}, \dots, dx'_{iT-1}] \end{bmatrix}$$

$$W_i = \begin{bmatrix} W_i^D & 0 \\ 0 & W_i^L \end{bmatrix}$$

The first-step estimator uses a covariance matrix taking this autocorrelation into account enlarged for the level equations.

$$V = W'GW = \sum_{i=1}^N W_i'G_T W_i$$

where  $G = (I_N \otimes G^{D,L})$  and  $G^D = \begin{bmatrix} 2 & -1 & & 0 \\ -1 & 2 & \ddots & \\ & \ddots & \ddots & -1 \\ 0 & & -1 & 2 \end{bmatrix}$

$$G^L = \begin{bmatrix} 1 & 0 & & 0 \\ 0 & 1 & \ddots & \\ & \ddots & \ddots & 0 \\ 0 & & 0 & 1 \end{bmatrix}$$

$$G^{D,L} = \begin{bmatrix} W_i^D & 0 \\ 0 & W_i^L \end{bmatrix}$$

The two-step GMM estimator used the residuals of the first-step to estimate the covariance matrix as suggested by White (1980):

$$\hat{V} = \sum_{i=1}^N W_i' F_T \hat{\varepsilon}_i \hat{\varepsilon}_i' F_T' W_i$$

Hence, finally, the resulting estimator is  $\hat{\gamma}^{\text{sys-GMM}} = (XW\hat{V}^{-1}W'X)^{-1} XW\hat{V}^{-1}W'R$ .

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**Source:** Behr (2003: 13-14).

**Table A4.2:** Data Description, Measurement and Sources

| Variable                             | Notation        | Description, Measurement and Main Sources  |
|--------------------------------------|-----------------|--|
| <b>Dependent Variables</b>           |                 |  |
| Remittances                          | $\ln MRem$      | The sum of <i>workers' remittances</i> and <i>compensation of employees</i> . <b>Source:</b> Mainly <i>WDI</i> based on <i>BoPS</i> , <i>Migration and Remittances Factbook 2011 (MRF-2011)</i> , and author's compilations from country desks under the African Department of the IMF and WB.   |
| Remittances as percentage of GDP     | $REM GDP$       | <b>Source:</b> Author's computation as total migrant remittances received as a percentage of nominal GDP of a recipient SSA country based on the sources of migrant remittances cited above and nominal GDP data reported mainly in <i>WDI</i> and <i>WEO</i> .  |
| Remittances per capita               | $REM PC$        | <b>Source:</b> Author's computation as total migrant remittances received as a ratio of total population of a recipient SSA country based on the sources of migrant remittances cited above and population data reported mainly in <i>WDI</i> and <i>WEO</i> .   |
| Workers' remittances per capita      | $WREM PC$       | <i>Workers' remittances</i> are the remittances sent by migrants who spent 12 months or more in the host country. <b>Source:</b> Author's computation as gross workers' remittances received as a ratio of total population of a recipient SSA country based on the sources of migrant remittances cited above and population data reported mainly in <i>WDI</i> .                   |
| Compensation of employees per capita | $COM PPC$       | Compensation of employees are the remittances received from citizens who spent less than 12 months in the host country. <b>Source:</b> Author's computation as total compensation of employees received as a ratio of total population of a recipient SSA country based on the sources of migrant remittances cited above. The population data was collated mainly from <i>WDI</i> . |
| <b>Explanatory Variables</b>         |                 |  |
| Lagged dependent                     | $(\bullet)_i^+$ | The immediate past values of the dependent variable. <b>Source:</b> Author's computation.  |
| Inflation rate                       | $INF^{+/-}$     | Rate of growth in annual average consumer price index. <b>Source:</b> <i>WDI</i> , <i>IFS</i> and <i>WEO</i> .   |
| Real exchange rate                   | $\ln RXR^{+/-}$ | The annual average value of the national currency of a sampled SSA country in real terms of the national currency of the migrant-host country. Computed as a multiplication of nominal exchange rate by the ratio of host-country CPI to home-country CPI. <b>Source:</b> Author's computation based on <i>WDI</i> , <i>IFS</i> and <i>WEO</i> .                                     |
| Host-country income                  | $\ln Y^{f+}$    | Real <i>per capita</i> GDP at purchasing power parity (PPP) in US dollars (constant 2000 prices) of a typical non-SSA migrant host country. <b>Source:</b> <i>WDI</i> .  |
| Home-country income                  | $\ln Y^{h+/-}$  | Real <i>per capita</i> GDP PPP in US dollars (constant 2000 prices) of a typical SSA country. <b>Source:</b> <i>WDI</i> .  |
| Real Deposit Interest Rate           | $RIR^{+/-}$     | Average annual deposit rate of a typical SSA country less minus average annualised CPI-based inflation rate. <b>Source:</b> Author based on <i>WDI</i> , <i>IFS</i> , <i>WEO</i> and Central Banks of selected countries.  |
| Domestic credit to private sector    | $\ln PSC^{+/-}$ | Total domestic credit to the private sector by the home-country financial system as a ratio of nominal GDP. <b>Source:</b> <i>WDI</i> , <i>ADI</i> and the Central Bank website of selected sampled countries.   |
| Institutional quality                | $INS^{+/-}$     | A polity2 index used to capture the qualities of democratic governance and institutions in a typical home SSA country. It ranges between -10 for low democratic governance (including dictatorship and autocratic regimes) and weak institutions, and +10 for high democratic governance and strong institutions. <b>Source:</b> Marshall and Jagers (2011)                          |
| Regulatory environment               | $D9\_11^+$      | A dummy (=1 for post-2001 and 0 elsewhere) to capture post-September 11, 2001, when the US and other migrant-host countries improved regulations on international money transfers, which has discouraged migrants from using informal channels to remit. <b>Source:</b> Author's construction.   |

**Source:** Author. **Note:** The a priori sign is indicated by +/- in the notation column of each variable. *WDI*, *ADI*, *WEO*, *IFS* and *BoPS* refer to April 2011 CD-ROM and e-database editions. The prefix notation 'ln' denotes natural logarithm.

**Table A4.3: Host Countries of SSA Migrants**

| Migrant Home-Country | Top-5 SSA Migrant Host Countries in the World |             |             |             |            | Top-3 Non-SSA Host Countries |             |            |
|----------------------|---|-------------|-------------|-------------|------------|------------------------------|-------------|------------|
|                      | 1   | 2           | 3           | 4           | 5          | 1: Host                      | 2           | 3          |
| Benin (BEN)          | NIG (27.71)                                   | BFA (12.68) | TOG (12.45) | CIV (10.60) | GAB (5.59) | FRA (2.22)                   | GER (1.30)  | PAK (1.07) |
| Botswana (BSW)       | RSA (18.01)                                   | NAM (16.96) | GBR (12.47) | ZIM (11.64) | USA (9.58) | GBR (12.47)                  | USA (9.58)  | AUS (4.27) |
| Burkina Faso (BFA)   | CIV (72.47)                                   | GUI (11.03) | GHA (5.13)  | DRC (1.38)  | PAK (1.06) | PAK (1.06)                   | GER (1.03)  | FRA (0.37) |
| Cameroon (CAM)       | FRA (22.62)                                   | GAB (17.74) | NIG (9.91)  | USA (7.53)  | GER (5.43) | FRA (22.62)                  | USA (7.53)  | GER (5.43) |
| Cape Verde (CPV)     | POR (22.52)                                   | USA (13.83) | FRA (6.65)  | GER (6.61)  | MZQ (8.44) | POR (22.52)                  | USA (13.83) | FRA (6.65) |
| Comoros (COM)        | FRA (43.14)                                   | UGA (22.47) | GER (7.01)  | TZA (4.68)  | LBY (2.59) | FRA (43.14)                  | GER (7.01)  | USA (0.50) |
| Congo Republic (CON) | SUD (47.91)                                   | TZA (16.03) | FRA (8.34)  | BEL (2.68)  | GER (2.29) | FRA (8.34)                   | BEL (2.68)  | GER (2.29) |
| Côte d'Ivoire (CIV)  | FRA (27.38)                                   | BFA (19.72) | GER (5.95)  | BEN (6.56)  | GUI (5.40) | FRA (27.38)                  | GER (5.95)  | USA (4.57) |
| Ethiopia (ETH)       | USA (25.65)                                   | ISR (20.67) | SAU (7.72)  | CAN (5.08)  | SWE (3.40) | USA (25.65)                  | ISR (20.67) | SAU (7.72) |
| Gabon (GAB)          | SUD (47.30)                                   | FRA (19.69) | SLE (4.39)  | GER (3.44)  | KEN (3.66) | FRA (19.69)                  | GER (3.44)  | USA (0.92) |
| Gambia (GAM)         | ESP (12.18)                                   | USA (11.95) | NIG (8.45)  | GBR (7.73)  | SEN (3.67) | ESP (12.18)                  | USA (11.95) | GBR (7.73) |
| Ghana (GHA)          | CIV (31.91)                                   | NIG (13.06) | BFA (9.74)  | GUI (8.69)  | USA (7.31) | USA (7.31)                   | GBR (5.97)  | GER (2.27) |
| Guinea (GUI)         | CIV (23.74)                                   | LIB (12.11) | SEN (18.69) | BFA (11.17) | GAM (6.57) | GBR (1.45)                   | GER (1.34)  | USA (1.15) |
| Guinea-Bissau (GBS)  | SEN (25.45)                                   | GAM (13.36) | POR (16.72) | FRA (6.34)  | BFA (5.81) | POR (16.72)                  | FRA (6.34)  | GER (4.45) |
| Kenya (KEN)          | GBR (28.54)                                   | TZA (27.04) | UGA (7.35)  | USA (9.85)  | GER (5.38) | GBR (28.54)                  | USA (9.85)  | GER (5.38) |
| Lesotho (LSO)        | MZQ (46.02)                                   | ZIM (19.45) | RSA (16.18) | MWI (2.38)  | TZA (1.72) | GER (0.82)                   | USA (0.81)  | PAK (0.71) |
| Madagascar (MAD)     | FRA (51.55)                                   | REU (12.88) | GER (8.64)  | ZIM (4.22)  | COM (3.82) | FRA (51.55)                  | REU (12.88) | GER (8.64) |
| Malawi (MWI)         | ZAM (19.03)                                   | TZA (18.93) | RSA (17.65) | ZIM (12.91) | GBR (8.30) | GBR (8.30)                   | GER (1.93)  | USA (1.38) |
| Mali (MLI)           | CIV (30.82)                                   | BFA (27.74) | GUI (10.32) | NIG (5.77)  | GHA (5.22) | FRA (2.73)                   | GER (1.37)  | USA (0.45) |
| Mauritania (MRT)     | SEN (34.21)                                   | NIG (10.32) | FRA (8.78)  | BFA (7.68)  | GUI (7.56) | FRA (8.78)                   | ESP (3.21)  | GER (2.72) |
| Mauritius (MRS)      | FRA (18.41)                                   | RSA (18.39) | GBR (15.63) | AUS (9.70)  | GER (6.53) | FRA (18.41)                  | GBR (15.63) | AUS (9.70) |
| Mozambique (MZQ)     | TZA (22.78)                                   | ZIM (19.98) | MWI (19.16) | RSA (17.74) | POR (8.97) | POR (8.97)                   | GER (2.07)  | GBR (0.50) |
| Namibia (NAM)        | MZQ (23.07)                                   | RSA (17.28) | ZIM (13.13) | TZA (1.50)  | GBR (5.14) | GBR (5.14)                   | USA (4.19)  | GER (1.88) |
| Niger (NGR)          | BFA (27.84)                                   | CIV (26.25) | NIG (11.89) | GUI (10.79) | GHA (5.16) | GER (1.10)                   | PAK (1.06)  | FRA (0.73) |
| Nigeria (NIG)        | SUD (23.76)                                   | USA (13.74) | GBR (8.60)  | CAM (8.39)  | GHA (5.14) | USA (13.74)                  | GBR (8.60)  | GER (2.91) |
| Rwanda (RWA)         | UGA (42.17)                                   | TZA (27.94) | KEN (4.89)  | BEL (2.83)  | GER (1.87) | BEL (2.83)                   | GER (1.87)  | USA (1.16) |
| São Tomé & Príncipe  | POR (54.97)                                   | CPV (15.94) | GER (9.30)  | BFA (3.00)  | GUI (2.93) | POR (54.97)                  | GER (9.30)  | FRA (1.02) |
| Senegal (SEN)        | GAM (20.56)                                   | FRA (18.32) | ITA (9.58)  | MRT (8.48)  | GER (5.30) | FRA (18.32)                  | ITA (9.58)  | GER (5.30) |
| Seychelles (SEY)     | GBR (17.40)                                   | RSA (18.69) | AUS (14.55) | ZIM (6.24)  | TZA (6.18) | GBR (17.40)                  | AUS (14.55) | CAN (6.15) |
| Sierra Leone (SLE)   | USA (22.87)                                   | LIB (18.31) | GBR (18.18) | GHA (5.00)  | GER (4.50) | USA (22.87)                  | GBR (18.18) | GER (4.50) |
| South Africa (RSA)   | GBR (18.15)                                   | MZQ (16.04) | AUS (10.12) | USA (8.99)  | ZIM (7.37) | GBR (18.15)                  | AUS (10.12) | USA (8.99) |
| Sudan (SUD)          | SAU (32.05)                                   | UGA (24.31) | JOR (3.78)  | USA (3.43)  | EGY (2.64) | SAU (32.05)                  | JOR (3.78)  | USA (3.43) |
| Swaziland (SWZ)      | MZQ (28.48)                                   | RSA (17.05) | ZIM (14.53) | GBR (7.43)  | USA (5.46) | GBR (7.43)                   | USA (5.46)  | GER (2.30) |
| Tanzania (TNZ)       | UGA (20.46)                                   | RSA (18.31) | GBR (11.48) | ZIM (8.81)  | CAN (6.95) | GBR (11.48)                  | CAN (6.95)  | USA (4.47) |
| Togo (TOG)           | NIG (36.10)                                   | BEN (12.05) | BFA (8.75)  | GUI (8.84)  | GAM (6.61) | FRA (6.38)                   | GER (2.02)  | USA (1.63) |
| Uganda (UGA)         | GBR (32.41)                                   | TZA (23.82) | USA (7.38)  | CAN (6.48)  | GER (6.06) | GBR (32.41)                  | USA (7.38)  | CAN (6.48) |

**Source:** Author's compilation from Parson et al. (2007). **Note:** AUS, CAN, ISR, ITA, LIB, DRC, EGY, REU, SWE, ZAM, ZIM, JOR and LBY stand for Australia, Canada, Israel, Italy, Liberia, Democratic Republic of Congo, Egypt, Reunion, Sweden, Zambia, Zimbabwe, Jordan and Libya respectively.

**Table A4.4:**  
**Robustness Test Results of International Migrant Remittance Flows to SSA, 1980-2009**

| Group variable: Country Code  |                          | Number of obs = 1006        |                        |                         |
|---|--------------------------|-----------------------------|------------------------|-------------------------|
| Time variable: Year   |                          | Number of groups (N)= 36    |                        |                         |
|   |                          | Number of instruments = 442 |                        |                         |
| Two-Step Estimation by Blundell-Bond System Dynamic Panel Data Procedure          |                          |                             |                        |                         |
|   | REMP                     | lnMRem                      | REMGDP                 | REMP_USA                |
| Migrant remittances lag 1 (*_1)   | 0.9477<br>(359.71)***    | 0.6438<br>(13.19)***        | 1.0306<br>(203.61)***  | 0.9359<br>(331.25)***   |
| Migrant remittances lag 2 (*_2)   | -0.1267<br>(-107.93)***  | 0.0851<br>(2.98)***         | -0.1009<br>(-18.52)*** | -0.1248<br>(-46.02)***  |
| Institutional quality (INS)   | -0.3107<br>(-8.17)***    | -0.0054<br>(-1.33)          | -0.0469<br>(-14.64)*** | -0.1087<br>(-1.96)**    |
| Home-country income (lnY <sup>h</sup> )   | -1.0084<br>(-2.82)***    | -0.0887<br>(-0.17)          | -1.4763<br>(-5.58)***  | -4.2271<br>(-8.68)***   |
| Host-country income (lnY <sup>f</sup> )   | 18.3925<br>(13.93)***    | 1.2693<br>(2.63)***         | -0.9862<br>(-2.13)**   | 15.2761<br>(7.03)***    |
| Rate of inflation (INF)   | 0.0449<br>(4.75)***      | -0.0008<br>(-0.25)          | 0.0088<br>(2.41)**     | 0.0781<br>(3.80)***     |
| Bank credit to private sector (PSC)   | 2.3553<br>(7.12)***      | -0.0848<br>(-1.58)          | 0.1612<br>(4.02)***    | 2.7793<br>(5.29)***     |
| Real exchange rate (RXR)  | -4.9314<br>(-12.98)***   | -0.0131<br>(-0.08)          | -0.2125<br>(-5.84)***  | -6.8819<br>(-26.01)***  |
| Real deposit interest rate (RIR)  | 0.0347<br>(4.46)***      | -0.0024<br>(-0.81)          | 0.0101<br>(2.71)***    | -0.0615<br>(-2.75)***   |
| Regulatory environment (D9_11)  | 4.6614<br>(71.91)***     | 0.1905<br>(8.59)***         | 0.6862<br>(72.01)***   | 4.8291<br>(37.86)***    |
| Constant term (constant)  | -157.9818<br>(-12.40)*** | -7.6688<br>(-2.71)***       | 21.3176<br>(5.11)***   | -100.3526<br>(-4.80)*** |
| Wald $\chi^2_{[10]}$  | 1.40e+06***              | 18200.39***                 | 4.29e+06***            | 454424.61***            |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                          |                             |                        |                         |
|   | -0.1065{0.915}           | -1.0463{0.295}              | -1.0233{0.306}         | -0.1202{0.904}          |
| Sargan test of over-identifying restrictions:                                     |                          |                             |                        |                         |
| $\chi^2_{[431]}$  | 27.1849                  | 31.4014                     | 32.2858                | 21.5861                 |

Source: Author's estimation

\*/\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively

2-step robust z-statistics in ( ), z-probabilities in { }

REMP\_USA reports estimates where the USA is assumed as the host country for SSA migrants

**Table A4.5:** Results of Panel Unit Root Tests

| VARIABLES        | PANEL UNIT ROOT TEST STATISTICS |                        |                        | Conclusion |
|------------------|---------------------------------|------------------------|------------------------|------------|
|                  | Fisher P-P <i>chi-square</i>    | Hadri HC z-stat        | LLC Adjusted t-stat    |            |
|                  | At Level                        | At Level               | At Level               |            |
| REMPC            | 2.7415***<br>{0.0031}           | 37.9585***<br>[0.0000] |                        | I(0)       |
| WREMP            | 2.5115***<br>{0.0060}           | 38.1682***<br>[0.0000] |                        | I(0)       |
| COMPPC           | 9.0253***<br>{0.0000}           | n/a<br>n/a             |                        | I(0)       |
| INS              | 4.0808***<br>{0.0000}           | 38.2215***<br>[0.0000] |                        | I(0)       |
| lnY <sup>h</sup> | 2.4244***<br>{0.0000}           | 49.0222***<br>[0.0000] |                        | I(0)       |
| lnY <sup>i</sup> | -4.8303<br>{1.0000}             | 23.2519***<br>[0.0000] | -4.2924***<br>(0.0000) | I(0)       |
| INF              | 25.8682***<br>{0.0000}          | n/a<br>n/a             | n/a<br>n/a             | I(0)       |
| lnPSC            | 0.6143<br>{0.2695}              | 38.0580***<br>[0.0000] | -1.5210*<br>(0.0641)   | I(0)       |
| lnRXR            | -0.2351<br>{0.5929}             | 30.8740***<br>[0.0000] | -2.0439**<br>(0.0205)  | I(0)       |
| RIR              | 25.3546***<br>{0.0000}          | 11.6515***<br>[0.0000] |                        | I(0)       |

Source: Author's computations

Note: Figures in brackets are respective probability values. \*\*\*/\*\*/\* significant at 1/5/10 level statistical level respectively. Constant and trend included. n/a means not applicable due to omitted data.

**Table A4.6:** Static Panel-Data Modelling of Migrant Remittance Inflows in SSA, 1980-2009

|   | <b>Fixed<br/>Effects (FE)</b> | <b>Random GLS<br/>Effects (RE)</b> | <b>Robust FE</b>     | <b>Robust Random<br/>GLS (RE)**</b> |
|---|-------------------------------|------------------------------------|----------------------|-------------------------------------|
| Institutional quality (INS)             | -0.6913<br>(-3.57)***         | -0.5852<br>(-3.08)***              | -0.6913<br>(-1.68)*  | -0.5852<br>(-1.58)                  |
| Home-country income (lnY <sup>h</sup> ) | 17.6715<br>(4.45)***          | 14.3954<br>(4.16)***               | 17.6715<br>(1.04)    | 14.3954<br>(1.08)                   |
| Host-country income (lnY <sup>f</sup> ) | 36.9054<br>(5.32)***          | 28.7328<br>(4.79)***               | 36.9054<br>(1.76)*   | 28.7328<br>(1.70)*                  |
| Rate of inflation (INF)                 | 0.1267<br>(1.12)              | 0.1162<br>(1.02)                   | 0.1267<br>(1.08)     | 0.1162<br>(1.07)                    |
| Bank credit to private sector (lnPSC)   | 5.6051<br>(3.69)***           | 6.1008<br>(4.02)***                | 5.6051<br>(1.75)*    | 6.1008<br>(1.73)*                   |
| Real exchange rate (lnRXR)              | -9.6136<br>(-5.18)***         | -7.1883<br>(-4.87)***              | -9.6136<br>(-1.69)*  | -7.1883<br>(-1.88)*                 |
| Real deposit interest rate (RIR)        | 0.1577<br>(1.34)              | 0.1480<br>(1.24)                   | 0.1577<br>(1.34)     | 0.1480<br>(1.38)                    |
| Regulatory environment (D9_11)          | 6.5054<br>(3.14)***           | 7.9939<br>(3.98)***                | 6.5054<br>(1.65)*    | 7.9939<br>(2.40)**                  |
| Constant term (constant)                | -447.9099<br>(-6.81)***       | -354.5817<br>(-6.09)***            | -447.9099<br>(-1.59) | -354.5817<br>(-1.63)                |
| Number of observations                  | 1078                          | 1078                               | 1078                 | 1078                                |
| Number of groups (N)                    | 36                            | 36                                 | 36                   | 36                                  |
| Overall R <sup>2</sup>                  | 0.0962                        | 0.0998                             | 0.0962               | 0.0998                              |
| F-statistics                            | 27.32{0.000}***               | 208.93{0.000}***                   | 2.74{0.019}**        | 20.76{0.008}***                     |
| Hausman_FE                              | -10.19*                       | n/a                                | n/a                  | n/a                                 |
| Breusch-Pagan (B-P) statistics          | n/a                           | 8618.63{0.000}***                  | n/a                  | n/a                                 |

**Source:** Author's estimation

\*/\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively  
robust z-statistics in ( ), probabilities in { }, \* probabilities not available  
n/a denotes not available or required, \*\* most efficient and reliable results

**Table A4.7:** Static Panel-Data Modelling of Workers' Remittance Inflows in SSA, 1980-2009

|   | <b>Fixed<br/>Effects (FE)</b>       | <b>Random GLS<br/>Effects (RE)</b>  | <b>Robust FE<sup>++</sup></b> | <b>Robust Random<br/>GLS (RE)</b> |
|---|-------------------------------------|-------------------------------------|-------------------------------|-----------------------------------|
| Institutional quality (INS)             | -1.2893<br>(-5.50) <sup>***</sup>   | -1.0818<br>(-4.84) <sup>***</sup>   | -1.2893<br>(-1.39)            | -1.0818<br>(-1.32)                |
| Home-country income (lnY <sup>h</sup> ) | 16.0950<br>(3.35) <sup>***</sup>    | 12.4477<br>(3.24) <sup>***</sup>    | 16.0950<br>(0.86)             | 12.4477<br>(0.99)                 |
| Host-country income (lnY <sup>f</sup> ) | 43.8241<br>(5.22) <sup>***</sup>    | 28.6914<br>(4.31) <sup>***</sup>    | 43.8241<br>(1.90)*            | 28.6914<br>(1.68)*                |
| Rate of inflation (INF)                 | 0.0691<br>(0.51)                    | 0.0558<br>(0.41)                    | 0.0691<br>(0.56)              | 0.0558<br>(0.49)                  |
| Bank credit to private sector (lnPSC)   | 5.3290<br>(2.90) <sup>***</sup>     | 6.0171<br>(3.34) <sup>***</sup>     | 5.3290<br>(1.49)              | 6.0171<br>(1.52)                  |
| Real exchange rate (lnRXR)              | -9.3396<br>(-4.17) <sup>***</sup>   | -5.2262<br>(-3.30) <sup>***</sup>   | -9.3396<br>(-1.65)*           | -5.2262<br>(-1.69)*               |
| Real deposit interest rate (RIR)        | 0.0750<br>(0.53)                    | 0.0626<br>(0.44)                    | 0.0750<br>(0.58)              | 0.0626<br>(0.54)                  |
| Regulatory environment (D9_11)          | 4.5760<br>(1.83)*                   | 7.0209<br>(2.98) <sup>***</sup>     | 4.5760<br>(0.96)              | 7.0209<br>(1.63)                  |
| Constant term (constant)                | -512.0303<br>(-6.44) <sup>***</sup> | -354.8648<br>(-5.46) <sup>***</sup> | -512.0303<br>(-1.95)*         | -354.8648<br>(-1.87)*             |
| Number of observations                  | 1078                                | 1078                                | 1078                          | 1078                              |
| Number of groups (N)                    | 36                                  | 36                                  | 36                            | 36                                |
| Overall R <sup>2</sup>                  | 0.0583                              | 0.0631                              | 0.0583                        | 0.0631                            |
| F-statistics                            | 18.14{0.000} <sup>***</sup>         | 132.10{0.000} <sup>***</sup>        | 1.75{0.122}                   | 11.61{0.170}                      |
| Hausman_FE                              | 29.49{0.000} <sup>***</sup>         | n/a                                 | n/a                           | n/a                               |
| Breusch-Pagan (B-P) statistics          | n/a                                 | 4910.85{0.000} <sup>***</sup>       | n/a                           | n/a                               |

**Source:** Author's estimation

\*/\*/\*/\* denotes statistical significance at 10%, 5%, 1% respectively

robust z-statistics in ( ), probabilities in { }, n/a denotes not available or required

<sup>++</sup> most efficient and reliable results based on Hausman test and B-P statistics

**Table A4.8:** Static Panel-Data Modelling of Compensation of Employees to SSA, 1980-2009

|   | <b>Fixed<br/>Effects (FE)</b> | <b>Random GLS<br/>Effects (RE)</b> | <b>Robust FE</b>   | <b>Robust Random<br/>GLS (RE)**</b> |
|---|-------------------------------|------------------------------------|--------------------|-------------------------------------|
| Institutional quality (INS)                 | 0.7327<br>(5.59)***           | 0.6904<br>(5.50)***                | 0.7327<br>(1.15)   | 0.6904<br>(1.17)                    |
| Home-country income ( $\ln Y^h$ )           | 1.6016<br>(0.61)              | 0.8084<br>(0.37)                   | 1.6016<br>(0.18)   | 0.8084<br>(0.15)                    |
| Host-country income ( $\ln Y^f$ )           | -8.5768<br>(-1.82)*           | -4.6367<br>(-1.19)                 | -8.5768<br>(-1.03) | -4.6367<br>(-0.94)                  |
| Rate of inflation (INF)                     | 0.0910<br>(1.19)              | 0.0893<br>(1.18)                   | 0.0910<br>(1.01)   | 0.0893<br>(1.00)                    |
| Bank credit to private sector ( $\ln PSC$ ) | 0.8000<br>(0.79)              | 0.8425<br>(0.85)                   | 0.8000<br>(0.46)   | 0.8425<br>(0.57)                    |
| Real exchange rate ( $\ln RXR$ )            | -0.3033<br>(-0.23)            | -1.2132<br>(-1.27)                 | -0.3033<br>(-0.27) | -1.2132<br>(-1.49)                  |
| Real deposit interest rate (RIR)            | 0.1266<br>(1.60)              | 0.1251<br>(1.59)                   | 0.1266<br>(1.01)   | 0.1251<br>(1.01)                    |
| Regulatory environment (D9_11)              | 3.2265<br>(2.31)**            | 2.7448<br>(2.09)**                 | 3.2265<br>(1.19)   | 2.7448<br>(1.18)                    |
| Constant term (constant)                    | 79.8442<br>(1.79)*            | 50.1661<br>(1.33)                  | 79.8442<br>(1.00)  | 50.1661<br>(0.87)                   |
| Number of observations                      | 970                           | 970                                | 970                | 970                                 |
| Number of groups (N)                        | 36                            | 36                                 | 36                 | 36                                  |
| Overall R <sup>2</sup>                      | 0.0202                        | 0.0537                             | 0.0202             | 0.0537                              |
| F-statistics                                | 6.66{0.000}***                | 54.35{0.000}***                    | 0.74{0.656}        | 4.77{0.782}                         |
| Hausman_FE                                  | 2.72{0.951}                   | n/a                                | n/a                | n/a                                 |
| Breusch-Pagan (B-P) statistics              | n/a                           | 5724.30{0.000}***                  | n/a                | n/a                                 |

**Source:** Author's estimation

\*/\*\*/\*\*\* denotes statistical significance at 10%, 5%, 1% respectively  
robust z-statistics in ( ), probabilities in { }, n/a denotes not available or required  
\*\* most efficient and reliable results based on Hausman test and B-P statistics

## CHAPTER FIVE

### THE IMPACT AND CAUSAL EFFECTS OF FINANCIAL LIBERALISATION ON INTERNATIONAL REMITTANCE INFLOWS IN SUB-SAHARAN AFRICA

#### 5.0 INTRODUCTION

This chapter is devoted to exploring the causal effects and impact of financial liberalisation on official international remittance inflows in sub-Saharan Africa (SSA). This is motivated by the proposition that a less restricted and a more inclusive financial system has salutary consequences for remittance mobilisation through the formal financial system as banks and allied financial institutions enter into the international remittance market to make it more competitive, leading to high efficiency and a reduced cost on fund transfers. A sample of 13 SSA countries for which relevant data are available was used. The study begins with background information in Section 5.1. Section 5.2 presents some selected stylised facts on international remittance inflows and financial liberalisation in SSA whilst Section 5.3 reviews the literature on financial liberalisation and financial resource mobilisation. In Section 5.4, the empirical models, methodology and issues related to data are discussed. The empirical results are presented and discussed in Section 5.5. Section 5.6, the last, discusses applicable policy guidelines.

#### 5.1 BACKGROUND

While official remittances to sub-Saharan Africa (SSA) have been increasing steadily over the past three decades coinciding with the implementation of financial liberalisation programmes, the sub-region has still remained the region that receives the least migrant remittances by any good measure (see Figure A3.2 in Chapter Three). But while SSA receives the least remittances through official channels, Freund and Spatafora (2005) estimate that, in relative terms, SSA is the highest recipient of informal remittances because of the underdevelopment of the domestic financial sector. Earlier, Kapur (2004) reported that banks in industrialised economies<sup>79</sup> facilitate the flow of remittances through official transfer channels by competing with the traditional non-bank remittance service providers. This suggests that a liberalised financial system which can motivate banks and other formal financial institutions to enter the global remittance market and compete with other formal remittance service providers such as

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<sup>79</sup> These are also economies where financial markets are relatively developed with less financial repressive policies.

Money Transfer Operators (MTOs) might be a necessary condition if a country is to receive higher remittances through official channels. With low participation of banks in the international remittance market, the existing competition between MTOs and unregulated informal remittance-transfer service providers hardly enables SSA countries to mobilise optimal formal remittances.

Although the financial system alone does not represent the entire official remittance channel as post offices<sup>80</sup>, mobile telecommunication service providers and international MTOs such as Western Union, MoneyGram, Vigo, and DoIEx are equally recognised as official channels globally, low participation of domestic banks in the remittance market must be discouraged for a number of reasons. Firstly, increased competition in the remittance market as a result of higher bank participation is necessary in mobilising more remittances and in reducing the high commissions charged by the few existing official transfer agents. The few dominant MTOs that have market power in the absence of meaningful competition from banks tend to charge above what would have been the competitive market price on non-competitive remittance-corridors. Indeed, available data on charges on money transfers by the two leading MTOs in SSA (Western Union and MoneyGram) show that although there is a high degree of regional homogeneity in the cost structures, a considerable price variation exists among SSA countries, depending mainly upon market size and competition on the remittance corridor<sup>81,82</sup>.

Secondly, because MTOs and other non-bank remittance-transfer institutions do not intermediate<sup>83</sup> in the financial system, the participation of banks and stock exchanges in the remittance market is vital to ensuring that remittances received are put into optimal use.

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<sup>80</sup> In most SSA countries, post offices are only directly important in the local remittance market when rural-urban migrants purchase postal orders. And because typical post offices do not have branches outside their national borders, they act mainly as agents for MTOs in the international remittance market. And even though some households may receive remittances in the form of bankers' drafts through post offices, in this particular case, post offices can only be seen as performing their traditional function rather than as direct participants in the international remittance market.

<sup>81</sup> This is based on accessible information on the websites of Western Union and MoneyGram and author's personal inquiries with these MTOs during the period, February 6-22, 2011, on remitting US\$500 to selected SSA countries from France, Spain, Germany, Portugal, UK and the USA using Western Union and MoneyGram. From France, the least priced countries are Francophone West Africa, especially Mali, Senegal and Togo. From the UK and USA, the remittance corridors to Botswana, Cape Verde, Ghana, Kenya, Nigeria, Seychelles, South Africa, and Uganda, are among the least priced. Major price differences among recipient SSA countries are related to the primary minimum fee rather than the secondary percentage fees charged by the MTOs.

<sup>82</sup> A similar observation was made by Suki (2007) on the US-LAC remittance corridor with prices relatively lower on the US-Mexico corridor largely due to differences in intensity of competition following increased participation of banks.

<sup>83</sup> It must be said that in some SSA countries, for instance, SADC countries, post offices offer post-bank services where customers can deposit money, but these post offices are not licensed to give loans to customers.

Thirdly, increased bank participation can directly contribute to the elimination of dual exchange rate regimes as, unlike other agents, banks generally have foreign exchange departments and, hence, can convert remittances into local currencies using officially approved rates. Fourthly, increased bank participation can help solve the low degree of 'bancarisation' and high financial exclusion syndromes in SSA. Fifthly, given its unique resilient and countercyclical character, remittances received through banks can be important to the 'labour-exporting' country through securitisation of expected remittances as collateral. Ketkar and Ratha (2001; 2004) report that in the year 2001, the Central Bank of Brazil issued a 5-year bond valued at US\$300 million and secured future remittances from Brazilian migrants in Japan. And, finally, because the 5-year bond issued by Banco do Brasil in the year 2001 earned an enviable BBB+ rating which is by far higher than the existing rating of Brazil's sovereign bond (Ketkar and Ratha, 2001), it can be said that receiving higher remittances through banks can improve the international credit rating of recipient countries.

Thus, there is certainly no doubt that the surest way to attract higher remittances to SSA through the formal channels and to make the most out of remittance inflows is to liberalise the domestic financial sector for higher competition so that formal financial institutions in SSA can be attracted to enter the remittance market and compete with MTOs. The entry of banks and other formal financial institutions into the remittance market can boost openness, reduce remittance transmission costs, improve services, including quality standards, increase efficiency, and expand service options to both senders and receivers of remittances. However, unless the appropriate sequencing and pace are followed, financial liberalisation can be associated with a higher risk of financial fragility due to higher speculative behaviour of economic agents in response to changing trends in capital flows and fluctuations in the rates of interest and exchange rates (Stiglitz, 1994; Mathieu, 1998). Nevertheless, unlike other forms of private external capital, international remittances are well-known not only to be risk-free, but also non-debt creating, non-volatile and possessing the finest shock-mitigating effects (Bugamelli and Paternò, 2008; Adenutsi, 2011). Notwithstanding the above, it would be erroneous to think that the mere pursuit of financial liberalisation programmes will cause an automatic inflow of international remittances. This is because, as noted in Chapter Two, the concept of financial liberalisation is multidimensional, with Abiad *et al.* (2010), for example,

identifying nine components<sup>84</sup>.

Therefore, it can be argued that the implications of financial liberalisation for international remittance inflows through the formal financial system is contingent upon whether or not the deregulation of restrictions on capital inflows is accompanied by liberalisation of restrictions on capital outflows. If there are fewer restrictions on external capital inflows and outflows in a typical migrant-home country, there is a higher likelihood that international migrants will remit home using the formal financial system. One reason is that when a migrant finds it convenient to freely reallocate his/her portfolio investments from his/her home country to other parts of the world, a typical migrant-home country can receive higher remittances through the formal financial system as remittances driven by speculative motives increase. Another important aspect is whether or not, following financial liberalisation, real interest rates and interest rate spreads in a typical migrant-home developing country are above or below the world market rates. This is consistent with the self-interest investment theory underlying the flow of international remittances. According to this theory, when investment in migrant-home countries is relatively less risky and more rewarding, more non-altruistic remittances are received in the home country of migrants.

Also, depending upon the extent to which financial liberalisation has led to increased financial efficiency as measured by reduced cost of international money transfers, increased access of residents to quality, innovative and reliable financial services and products with wider options for portfolio diversification, a country could receive more international remittances when migrants switch from informal remittance service providers to patronise the services of the formal financial institutions participating in the remittance market. This is also a natural possibility as the lower transaction cost of remitting alleviates the extra burden on remitters, especially migrants on low incomes and/or those who remit regularly. And, whether or not, the implementation of financial liberalisation policies in SSA will cause higher inflows of international remittances through the formal financial system, is dependent upon the trade-off between the risk exposure associated with increased financial openness and a host of many factors including the size of the unofficial remittances received; stock and legal status of

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<sup>84</sup> These are specific reform policies on directed credit, reserve requirements, interest rate controls, entry barriers, banking supervision, privatisation, international capital flows, aggregate credit ceilings, and security market development. Abiad *et al.* (2010), however, consider directed credit, reserve requirements and aggregate credit ceilings as complementary policies aimed at achieving the same specific purpose.

migrants; target recipients' access to convenient financial services; and the magnitude as well as the regularity of remittances. This is because even if total remittances (i.e. the sum of official and unofficial remittances) remain unchanged following the merits of financial liberalisation, holding all other factors constant, countries which hitherto received higher unofficial remittances are more likely to receive higher remittances through the formal financial system than those that traditionally received fewer unofficial remittances. In much the same manner, countries that traditionally receive more remittances by virtue of having a large stock of legal and working migrants in the Diaspora are more likely to receive even more remittances through the formal financial system if these countries adopt financial liberalisation programmes.

As a result, though, in principle, the causal relationship between international remittances and financial liberalisation may be expected to be uni-directional (running from financial liberalisation to remittance inflows), because the policies implemented under financial liberalisation programmes are assumed to be deliberate and independent actions of the monetary authority of a country; a bi-directional causality cannot be ruled out entirely. Indeed, the impact of financial liberalisation on international remittance inflows can be positive, zero, or negative, depending upon the specific aspects of financial liberalisation which received the most (or domineering) policy reform attention. For instance, one does not expect a strong causal relationship between remittances and financial liberalisation if the financial reforms policy implemented is concentrated on reduction of direct reserve requirements and direct credit control rather than on promoting financial efficiency and competition through privatisation and relaxation of entry requirements. Although remittances may respond to these financial policy reforms in the long run, these policies can hardly have a direct short-run impact or causal effect on attracting remittances through the banking system. Therefore, since the impact and causal effects of financial liberalisation and international remittances remain theoretically unresolved, they should be seen as issues of empirical concern.

To fill this research gap, six key research questions are imperative, holding all other factors constant, and with reference to SSA.

- i. What are the stylised facts about financial liberalisation and international remittance inflows?
- ii. Is there any causal relationship between financial liberalisation and international remittance inflows?

- iii. If yes to (ii), then which specific policy component(s) under the financial liberalisation programme cause(s) international remittance inflows?
- iv. What is the impact of financial liberalisation on international remittance inflows?
- v. How does each specific policy component of financial liberalisation impact on international remittance inflows?
- vi. Does the impact of financial liberalisation on international remittances (if any), vary over time in response to the increasing implementation of the liberalisation policies?

Consequently, the specific objectives of this chapter are six-fold. The first is to provide some stylised facts on the relationship between international remittances received and financial liberalisation in SSA. The second is to verify if there is any causal relationship between international remittance inflows and the broad index of financial liberalisation in SSA. The third is to trace the direction of any existing line of causality between each specific policy component of financial liberalisation programmes and international remittance inflows in SSA. Fourthly, it is to examine the overall impact of financial liberalisation on international remittance inflows in SSA. The fifth is to determine the policy-specific impact of financial liberalisation on international remittance inflows. The sixth is to verify if, with the passage of time and as the financial market became more and more liberalised, the impact of financial liberalisation on remittances increased.

To achieve these objectives, 13 SSA countries for which relevant data are available from 1980 to 2009 are analysed. This study is essential because, according to the McKinnon-Shaw hypothesis, financial liberalisation is vital to the mobilisation of domestic resources and various forms of private external capital and, for that matter, international remittances. It is also imperative for policy making in SSA being the sub-region that receives the least remittances through official channels. This is because whilst Orozco (2004) reports that banks do not play any significant role in the remittance market, (specifically, not more than three per cent on the US-Mexico corridor<sup>85</sup>), Alberola and Salvado (2006) develop a notional model to prove that the presence of banks in the remittance market is crucial to receiving higher official remittances.

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<sup>85</sup> This is one of the largest remittance corridors in the world. In fact, Mexico, with most of its migrants in the US, is the largest recipient of remittances in LAC, and the third in the world as at 2009 (see *WDI*, April 2011).

The motivation behind this study lies in the fact that it addresses some crucial aspects of the remittance literature, the causal linkages and direct effects of financial liberalisation on international remittances received through official channels, which have so far been ignored in empirical studies. In fact, apart from some attempts<sup>86</sup> at exploring the impact of remittances on financial development indicators which are generally considered as measures of financial reforms outcome, the researcher is not aware of any previous work devoted to exploring the relationship between financial liberalisation and international remittance inflows.

## 5.2 SELECTED STYLISED FACTS

Table 5.1 shows the year in which SSA countries embarked upon financial liberalisation programmes. 19 out of the 38 countries listed in Table 5.1 fully embarked upon financial reform programmes in the 1980s.

**Table 5.1:** Implementation of Financial Liberalisation in SSA

| Country                  | Year of FLB | Country                          | Year of FLB |
|--------------------------|-------------|----------------------------------|-------------|
| Benin                    | 1989        | Malawi                           | 1987        |
| Botswana <sup>+</sup>    | 1989        | Mali                             | 1989        |
| <b>Burkina Faso</b>      | <b>1989</b> | Mauritania                       | 1990        |
| Burundi                  | 1986        | Mauritius <sup>+</sup>           | 1981        |
| <b>Cameroon</b>          | <b>1990</b> | <b>Mozambique<sup>+</sup></b>    | <b>1992</b> |
| Congo, DR                | 2001        | Namibia <sup>+</sup>             | 1991        |
| Congo Republic           | 1990        | Niger                            | 1989        |
| <b>Cote d'Ivoire</b>     | <b>1989</b> | <b>Nigeria<sup>+</sup></b>       | <b>1987</b> |
| Central Africa Republic  | 1990        | Rwanda                           | 1994        |
| Chad                     | 1990        | <b>Senegal</b>                   | <b>1989</b> |
| <b>Ethiopia</b>          | <b>1994</b> | Seychelles <sup>+</sup>          | 1984        |
| Gabon                    | 1990        | Sierra Leone                     | 1991        |
| Gambia                   | 1985        | <b>South Africa<sup>++</sup></b> | <b>1980</b> |
| <b>Ghana<sup>+</sup></b> | <b>1987</b> | Sudan                            | 1997        |
| Guinea                   | 1996        | <b>Tanzania<sup>+</sup></b>      | <b>1991</b> |
| Guinea-Bissau            | 1989        | Togo                             | 1989        |
| <b>Kenya<sup>+</sup></b> | <b>1991</b> | <b>Uganda<sup>+</sup></b>        | <b>1988</b> |
| Lesotho                  | 1996        | Zambia <sup>+</sup>              | 1992        |
| <b>Madagascar</b>        | <b>1986</b> | Zimbabwe                         | 1993        |

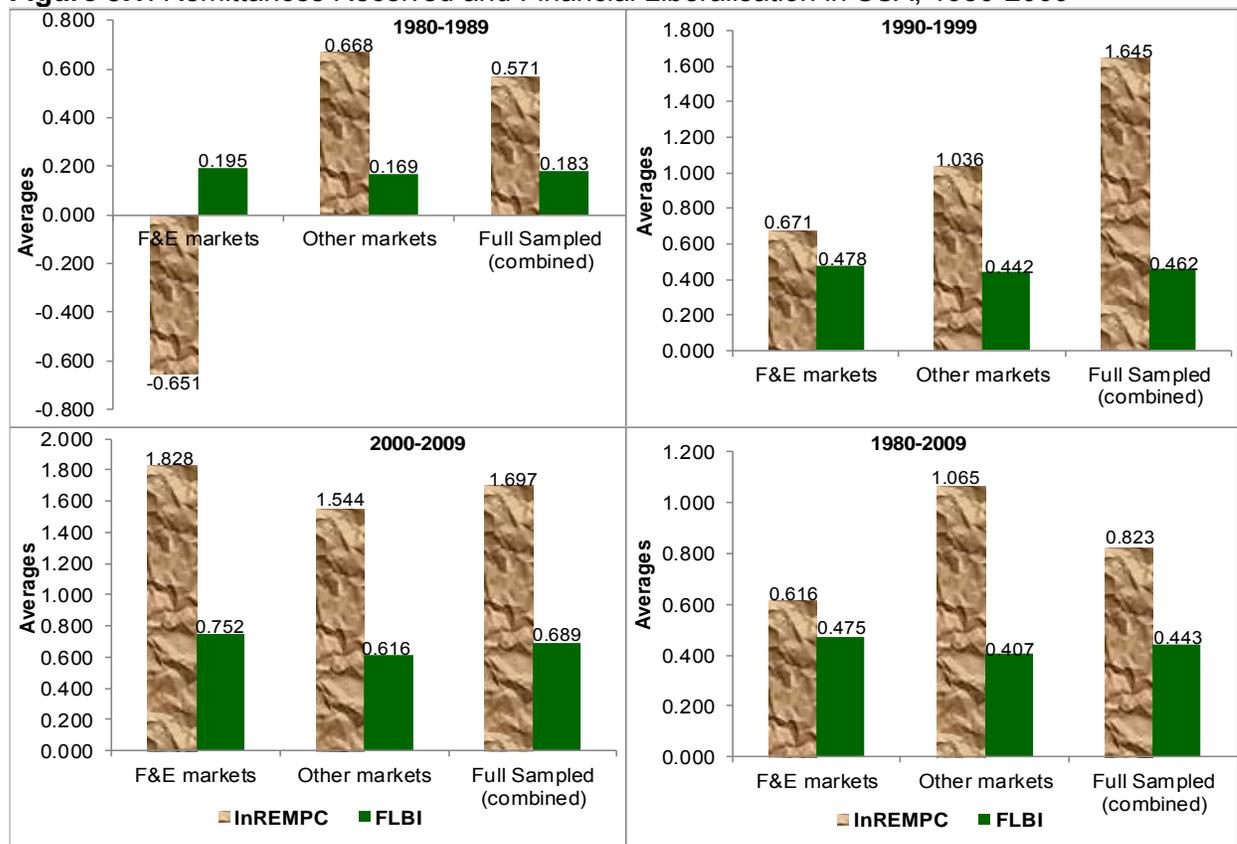
**Source:** Author, based mainly on various Central Bank reports and website information. <sup>+</sup>(<sup>++</sup>) denotes that country is classified as having frontier (emerging) financial market respectively. Bold means the country is sampled for the empirical analysis reported in this chapter.

<sup>86</sup> See, for example, Aggarwal *et al.* (2006), Toxopeus and Lensink (2007), Gupta, Pattillo and Wagh (2009), and Gheeraert *et al.* (2010).

Republic of South Africa is the first country within the sub-region to liberalise its financial market, and this was in 1980, whilst Congo DR was the latest to adopt the programme just about a decade ago. Despite the gradual abandonment of financial repressive policies in favour of liberalisation policies (see Table A5.7), most SSA still have underdeveloped financial markets today. According to IMF (2008a), as at 2007, the only emerging financial market in SSA was that of the Republic of South Africa, with only 12 countries within the sub-region (those marked \* in Table 5.1) having frontier financial markets.

Figure 5.1 reveals that even though countries with emerging and frontier markets have relatively more liberalised financial markets, they receive far less international remittances (in *per capita* or per migrant terms) compared with other countries within the sub-region that have underdeveloped financial markets (see also Table A5.6 for evidence).

**Figure 5.1:** Remittances Received and Financial Liberalisation in SSA, 1980-2009



**Source:** Author's estimation. **Note:** InREMPC and FLBI represent natural logarithm of remittances per capita (in US\$) and financial liberalisation index respectively. F&E markets stands for frontier and emerging markets.

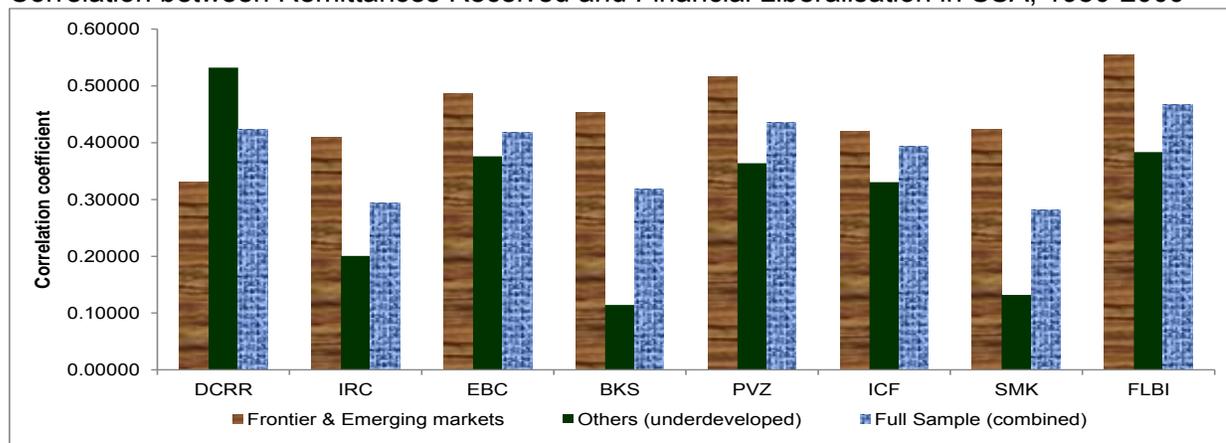
There can be three possible explanations for this revelation. First, whereas the analysis stretches over a 30-year period (i.e. 1980-2009), the IMF classification of financial markets was only done in 2007. This could imply that most of the countries classified as having frontier and emerging financial markets might have attained this status not too long ago. Second, only six countries with frontier financial markets (Ghana, Kenya, Mozambique, Nigeria, Tanzania and Uganda) were included in this analysis because of lack of data on financial liberalisation index and/or international remittances on the other six frontier countries (Botswana, Cape Verde, Mauritius, Namibia, Seychelles, and Zambia). Incidentally, whilst Botswana, Cape Verde, Mauritius and Seychelles are among the traditional leading recipients of remittances *per capita*, Ghana, Mozambique and Tanzania are among the very least recipients within the sub-region (see Figure 3.5 in Chapter Three). Third, it is possible that most of the international remittances received through official channels in countries with underdeveloped financial markets are not received through the financial system, which includes banks and the stock exchange, whilst FLBI is based on policy reforms in the banking sector and the stock market.

One important observation that can be made from Figure 5.1 is that, although SSA countries with underdeveloped financial markets attracted more officially reported remittances *per capita* than their counterparts with frontier and emerging financial markets, over time, it is the latter group that is increasingly receiving more officially reported remittances *per capita* in relative terms. For example, from an average low of natural logarithmic value of -0.651 in the 1980s, SSA countries with frontier and emerging markets recorded a more than 200 percentage rise by the end of the 1990s; and a further rise in excess of 270 per cent in the 2000s over the reported figure in the 1990s. In similar natural logarithmic values, SSA countries with underdeveloped financial markets recorded a mere 50 per cent rise in remittances *per capita* in each successive decade.

The relationship between international remittances received *per capita* and financial liberalisation (FLB) including its specific policy components are shown in Figure 5.2. Overall, international remittances are positively correlated with the degree of financial liberalisation. In countries with frontier and emerging financial markets, the positive correlation between international remittances and the various dimensions of FLB excluding policy on directed credit, reserve requirement and aggregate credit ceilings (DCRR), are stronger than in countries with underdeveloped financial markets (see also Table A5.5).

**Figure 5.2:**

Correlation between Remittances Received and Financial Liberalisation in SSA, 1980-2009

**Source:** Author's estimation.

Refer to Table 5.2 for meaning of IRC, EBC, BKS, PVZ, ICF and SMK.

Correlation, however, only provides evidence of a possible contemporaneous relationship between a pair of variables, which does not necessarily suggest a direct relationship or causality between the pair of variables under consideration. For empirical evidence on the impact or the causal relationship between FLB or the specific FLB policies and international remittance inflows, a more rigorous statistical analysis, which is the object of this chapter, is required.

## 5.3 LITERATURE REVIEW

### 5.3.1 Theoretical Literature

A survey of the literature suggests that there are three main theories that are central to our understanding of the role a financial system can play in financial resource mobilisation. These are the Repressionist theory, the McKinnon-Shaw liberalist theory, and the Neostructuralist theory.

#### 5.3.1.1 The Financial Repression Theory

The Financial Repression model dominated the financial and monetary policy formulation in both industrialised and developing economies prior to the mid-1970s (Fry, 1995). Advocates of financial repression, particularly, Hilferding (1910), Gesell (1911), Keynes (1936), Nicholas (1974), and Tobin (1965) express misgivings about the efficient role of the financial system in a capitalist economy and caution that without careful management of money supply, an economy is bound to suffer severe negative ramifications. This is because capital-intensive investment which is considered a desideratum in capital-constrained developing countries can only be

promoted at lower cost of capital, hence the need to allow the state to take better control over money supply. This proposition is based on the assumption that it is the government-regulated rather than the market-directed financial system that can best determine the type and volume of savings and investment that are desirable to promote social welfare, especially in developing countries where institutions are weak (Gerschenkron, 1962). Another justification given for financial repression is that the government is responsible for protecting borrowers against usury practices by moderating the free market determination of interest rates. Tobin (1965), and Giovannini and de Melo (1993) explain that financial repression ensures that interest rates are maintained below market rates, reduces the cost of servicing debts and enables governments to finance social development projects.

Repressionists argue that in developing countries, in particular, where institutional constraints undermine government efforts to mobilise sufficient tax revenue to offset government expenditure, financial repression is the second best strategy (Fry, 1995). In his liquidity preference theory, Keynes (1936) demonstrates, among others, that because the relationship between speculative balances and interest rate is negative, in order to stimulate investment, it is important for policy makers to keep interest rates low and below the level that interest rates would have attained at full-employment. According to Keynes (1936), speculative demand for money increases when people expect the market value of alternative assets such as consols or government bonds that attract fixed coupon income or dividends to fall. Using his portfolio allocation model, Tobin (1965) corroborates the findings of the earlier contribution of Gesell (1911) by showing that welfare can be enhanced by a reduction in deposit interest rates, by taxing money as proposed by Gesell (1911), or by accelerating the rate of growth in monetary stock, thereby raising the rate of inflation. Various empirical studies such as those by Drazen (1981) and Fischer (1979a,b; 1981) confirm the practical validity of the Tobin model. However, some economists, notably McKinnon (1973) and Shaw (1973), argue against the pursuit of financial repressive policies because it restricts financial institutions from being competitive in resource mobilisation and allocation. Repressive financial policies lead to holding large excess liquidity which limits the capacity of banks to create credit, and even to expand financial services to the wider population (McKinnon, 1973; Shaw, 1973). Fry (1989; 1993) shows that financial repression, rather than increasing capital inflows, increases current account deficit and accelerates accumulation of foreign debts.

The implication is that financial repression policies are by and large restrictive as far as competition in the financial system is concerned. Therefore, these repressive policies do not create the ideal competitive environment for financial institutions to adopt efficient, innovative and aggressive resource mobilisation strategies which could lead to the development of specialised products and services aimed at international migrants. In the absence of competition and privatisation, the few existing financial institutions which might offer remittance services could have the tendency of charging supernormal profits.

#### *5.3.1.2 The McKinnon-Shaw Financial Liberalisation Theory*

McKinnon (1973) and Shaw (1973) dismiss the hitherto dominant Keynesian-structuralist proposition by identifying low private savings and investment, interest rate ceilings, high reserve requirements, high inflation tax, and direct credit control in favour of the state as the deleterious consequences of financial repression. Contrary to the repressionists' view, financial liberalists<sup>87</sup> propose reliance on less discriminatory market forces for the free determination of interest rates in order to facilitate an efficient process of financial intermediation and capital mobility. McKinnon (1973) and Shaw (1973) observe that the savings and investment that take place under financially repressive regimes are not only inadequate but also of low quality. This is because the private sector is crowded-out, as the public sector has uncompetitive access to credit and other services provided by the banks; but, unlike the private sector, the public sector can save or invest in projects with low or negative rates of return. The McKinnon-Shaw theory implies the determination of interest rates by market forces; the abandonment of the fixed exchange rate regime; the relaxation of entry requirements in the formal financial market to boost competition; the elimination of directed and selective credit controls; the privatisation of state-owned banks to enhance efficiency, economies of scale and scope, the integration of informal financial markets into the formal financial system; the removal of artificial barriers to international capital mobility; and the establishment of vibrant capital markets.

A positive real deposit interest rate is likely to stimulate voluntary private savings because banks now pay more attractive returns on deposits which can attract savings previously held in

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<sup>87</sup> Although McKinnon (1973) and Shaw (1973) are recognised as the scholars who formalised the intellectual debate in favour of financial liberalisation, Fry (1995) traces the call for less government intervention in the financial markets to the 17<sup>th</sup> century and acknowledges Locke (1695), Smith (1776), Bentham (1787) and Schumpeter (1912) as the earliest proponents.

non-financial assets<sup>88</sup> and outside the banking systems. Furthermore, Schumpeter (1912), Goldsmith (1969), McKinnon (1973), Shaw (1973), and Bencivenga and Smith (1991) assert that the extent of financial intermediation in an economy is crucial for efficient resource mobilisation and allocation, and for dealing with moral hazards, adverse selection and issues related to transaction costs. Also, because financial liberalisation embraces foreign exchange deregulation and external account liberalisation, a country can benefit from higher inflows of external capital in response to improved international integration, interest rate equalisation and financial openness (Kapur, 1983; Mathieson, 1979; Fry, 1995). Further, under financial reforms, a country stands a better chance to correct its trade imbalances through foreign exchange adjustments, given the relative elasticity of imports and exports. Thus, the pursuit of financial liberalisation enables governments to deploy both monetary and exchange rate policies to attain external equilibrium. Levine and Zervos (1998) reason that, when the stock market is liberalised, more risk-sharing between domestic and foreign residents is expected to decrease equity premium; and increased capital inflows may also improve stock market liquidity whilst increased liquidity reduces the equity premium.

Yet, using a 3-sector model involving households, firms, and the government, Akyuz (1995), demonstrates that while the McKinnon-Shaw hypothesis may be applicable to raising financial savings through higher real deposit interest rates, total savings may decrease due to a shift in income from firms to renters, and even as lower tax revenue and higher interest payment on debt reduce government savings. With regard to remittances, Beine *et al.* (2011) contend that because remittances impact positively on macroeconomic stability and financial development, there is a high incentive for migrant-home countries to liberalise their financial sector in order to receive more remittances as a result of financial openness.

### 5.3.1.3 *The Neostructuralist Financial Theory*

Neostructuralists led by van Wijnbergen (1982; 1983), Taylor (1983), Buffie (1984) and Kohsaka (1984), reject the proposition of the liberalists, arguing that financial liberalisation can be counter-productive in developing countries because in these economies the role of informal financial institutions is crucial in financial resource mobilisation and allocation. These neostructuralists employed various theories including the cost-push inflation, mark-up pricing,

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<sup>88</sup> For entrepreneurs and corporate institutions, this can take the form of holding foreign currencies, excess raw materials, inventories or intermediate goods whilst households may prefer the purchase of lands, gold and other forms of tangible wealth which can appreciate in value.

and the Keynesian-adjustment mechanism models to oppose the predictions of the McKinnon-Shaw models. Essentially, the neostructuralists argue that because the liberalists failed to take into account the importance of curb markets in developing countries, their models represent “a serious lacuna” (Fry, 1995: 130). In the view of the neostructuralists, competitive financial markets cannot be effective in developing countries because of high market failures due to low levels of incomes, high fragmentation of the financial markets, and information asymmetry (van Wijnbergen, 1983; Taylor, 1983; Buffie, 1984; Kohsaka, 1984; Stiglitz, 1994; Ogaki *et al.* 1996). Furthermore, in the formal financial sector where commercial banks dominate, the bulk of mandatory reserve requirements<sup>89</sup> constitute an important leakage in the circular flow of funds during the process of financial intermediation<sup>90</sup>. These reasons make curb financial markets essential in the mobilisation of household saving and credit extension, especially in rural communities where the largest proportion of the population of developing countries resides.

Consequently, Taylor (1983), van Wijnbergen (1983), Buffie (1984) and Khosaka (1984) conclude that, practically, for developing countries in particular, the pursuit of financial liberalisation is likely to inhibit the rate of economic growth due to credit constraints because higher real interest rates increase the costs of production, reduce real wages, and cause stagflation. In fact, Stiglitz (1994) was very emphatic in suggesting that government intervention in the financial market should be considered as the better alternative towards achieving Pareto-optimality conditions in developing countries, given the high incidence of market failures due to missing and incomplete information, credit and insurance markets, as well as oligopolistic tendencies which undermine perfect competition in the financial sector. However, government intervention in the allocation of critical resources such as finance can only be efficient where state institutions are strong as reflected in high levels of transparency and accountability. In SSA, in particular, the application of the neostructuralist model in achieving desirable results is doubtful because governments lack the capacity, integrity and public confidence to be entrusted with the leading role of allocating scarce financial resources equitably and without favour or without seeking egoistic and political interests.

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<sup>89</sup> Even under financial liberalisation, these requirements may be high in developing countries because in low-income countries, generally, the propensity to dissave is much higher than the propensity to save.

<sup>90</sup> But Courakis (1984; 1986) proves that if demand for loans is highly interest-inelastic relative to the demand for deposits; equilibrium deposit rate rises as required reserve ratio increases; and the funds mobilised from required reserves are deposited with specialised development finance institutions other than commercial banks for lending that would not be undertaken by commercial banks, higher reserve requirements can generate higher deposits.

Additionally, the McKinnon-Shaw hypothesis only calls for the removal of discriminatory repressive policies that distort financial prices, whilst encouraging governments to implement prudent policies that allow market forces to lead the efficient determination of resource allocation. Liberalists acknowledge the fact that perfect markets cannot occur in the real world; therefore, the McKinnon-Shaw theory should not be taken as advocating for the operation of perfect financial markets but a more competitive financial system based on the dictates of the market rather than the government. In fact, McKinnon (1981; 1984) cautions that financial liberalisation cannot succeed in developing countries without the role of the government because fiscal discipline is an important pre-requisite since budget deficits in these economies are often financed by taxing the financial system in a variety of ways. Furthermore, Chang and Jung (1984) challenge the significance and applicability of the neostructuralists theory on the grounds that, curb markets in developing countries are non-competitive, less developed and fragmented, and not as efficient as the neostructuralists might want the world to believe.

Although, theoretically, the impact of financial liberalisation on savings mobilisation may be ambiguous, the fact remains that if the multidimensional integrated policies of financial liberalisation are pursued in a sound macroeconomic environment, the policies are likely to achieve their fundamental objectives. Where a well-implemented financial liberalisation programme leads to widening the scope of a financial system with higher access of the public to quality banking services, and creating an attractive saving and investment environment through higher opportunity for risk diversification and improved information symmetry, higher official remittances are likely to be received. This is because when the financial sector is repressed, migrants will be attracted to remit through unofficial channels that are not often liable to the payment of taxes or meeting other stringent obligations imposed by monetary authorities on the formal financial institutions<sup>91</sup>. Also, under a repressive financial environment, the official remittance market will be uncompetitive with the few dominant MTOs charging excessively high commissions with the aim of earning monopolistic rents as altruism makes the supply of remittances highly inelastic to transfer fees. Alberola and Salvado (2006) developed a 2-period financial model to prove, without uncertainty, that when banks enter and compete in the remittance market, the commissions charged by MTOs on remittance transfers will fall and more official remittances can be received in migrant-home countries.

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<sup>91</sup> World Bank (1989:67) observes that financial repression breeds emergence of vibrant informal financial markets (curb markets) that are not subject to any government regulation – be it “taxes, supervision or otherwise”.

### 5.3.2 Related Empirical Literature

In a fixed effects panel data analysis of 104 developing countries over the period 1995-2003, Freund and Spatafora (2005) find that, in most developing countries and particularly those in SSA, the presence of a dual exchange rate regime and the high transfer fees on remittances (i.e. the sum of workers' remittances, compensation of employees and migrant transfers) charged by official money transfer institutions are the reasons why SSA countries receive lower official remittances and relatively higher informal remittances than countries from other regions.

Beine *et al.* (2011) investigate the relationship between remittances and financial openness in a sample of 66 mostly developing countries from 1980 to 2005 using a dynamic generalised ordered logit model and a 2-step process similar to the 2-stage least squares method. Remittances were measured as the sum of workers' remittances, compensation of employees and migrant transfer as ratio of nominal GDP whilst financial openness (the dependent variable) was measured as a categorical variable according to the capital account openness indicator. In the midst of other explanatory variables (political regime, trade openness, and domestic financial development), it was found out that the impact of remittances on financial openness was positive and statistically significant, but financial openness had no impact on remittance inflows.

Based on descriptive statistical indicators, Singh and Hari (2011) conclude that international remittances increased in India during the post-reforms era because of liberalisation and capital account convertibility. The study period was 1971-2008; and international remittances were proxied by the total migrant transfers.

From the literature reviewed, it is clear that none of the underlying theories of financial liberalisation is self-sufficient for policy design towards attracting higher inflows of international remittances through official channels. What seems palpable, however, is that under a liberalised financial environment, there is a higher likelihood that financial institutions will compete to mobilise resources from internal and international sources. For instance, as competition in the financial market intensifies, banks are more likely to devise cost-saving strategies to attract remittances from international migrants, and more especially because domestic resource mobilisation might be difficult, given the low disposable household incomes in SSA. Indeed, the implementation of financial liberalisation policies in a stable macroeconomic environment as a step towards attracting higher international remittances

through official channels has been the most dominant policy recommendation from studies<sup>92</sup> on the sub-region. Moreover, although the role of curb markets in financial intermediation could be important in developing countries, for which reason policies under financial liberalisation programmes in SSA should have been taken into account, information on informal financial sector is at best incomplete due to the fragmentation and low literacy level of participants. Also, through liberalisation, the domestic financial market is expected to be integrated whereby informal financial markets will be absorbed into the formal financial system. Furthermore, the motivation for this study is to encourage the flow of remittances through the formal financial system. And, because the financial sector policies being implemented in SSA since the 1980s have been based on the recommendations of the liberalist school (World Bank, 1994; Mathieu, 1998), the analytical framework of this study is in line with the McKinnon-Shaw theory.

Consistent with the McKinnon-Shaw theory, financial liberalisation is expected to cause a higher inflow of international remittances through official channels. Each specific financial liberalisation policy, probably with the exception of DCRR (directed credit, reserve requirements, and aggregated credit ceiling), is also expected to cause a higher inflow of official international remittances. Similarly, the direct impact of financial liberalisation or each specific financial liberalisation policy implemented is predicted to have a strong non-negative contemporaneous impact. Table 5.2 summarises the expected impact of financial liberalisation on international remittance inflows.

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<sup>92</sup> Some of these studies are Freund and Spatafora (2005), Giuliano and Ruiz-Arranz (2009), Gupta, Pattillo and Wagh (2009), and Adenutsi (2011).

**Table 5.2:****Expected Impact of Financial Liberalisation Policies on International Remittance Inflows**

| <b>SPECIFIC FLB POLICY</b>                  | <b>MAIN MOTIVATION FOR POLICY REFORM</b>  | <b>EXPECTED LONG-RUN IMPLICATIONS FOR OFFICIAL INTERNATIONAL REMITTANCES</b>  |
|---|---|---|
| Interest rate liberalisation (IRC)          | Ensure real interest rates are competitive and attractive to induce higher private savings and efficient credit allocation  | <b>Positive:</b> As real deposit rates in SSA increase relative to the prevailing rates in migrant-host countries, more investment-oriented remittances are likely to be received in SSA as migrants decide to save and invest at home rather than abroad.  |
| Reduction in reserve requirements*          | Make more resources available to banks to create more money through higher extension of credit to potential borrowers especially the private sector                     | <b>Ambiguous:</b> No direct effect on remittance inflows but if permanent migrants from whom the most remittances are received and who often remit more under sound macroeconomic conditions in their home countries see this as a sound economic policy, more remittances can be received. On the other hand, altruistic-driven remittances may fall when, with a reduction in reserve requirements, banks can now create more to ameliorate credit constraints. |
| Reduction in directed credit control*       | Ensure efficient resource allocation such that projects with relatively lower risks and higher return attract the most credit from lending institutions                 | <b>Ambiguous:</b> This depends on whether a country receives more or less altruistic remittances relative to non-altruistic remittances. Altruistic remittances increase with limited access to private sector credit, but non-altruistic remittances increase in response to sound macroeconomic policies which offer improved private sector investment opportunities.  |
| Privatisation of banks (PVZ)                | Make banks more profit-oriented through adherence to professional and innovative practices for efficient service delivery   | <b>Positive:</b> With higher professionalism, banks may expand to reduce the number of unbanked and offer more attractive products and services to different segments of the market and deliver services more promptly. Banks, therefore, are likely to become more competitive in the international remittance market.   |
| Relaxation of entry barriers (EBC)          | Promote competition among banks and enhance operational efficiency often necessitating expansion and strategic management even as banks take higher operational risks   | <b>Positive:</b> Competition breeds efficiency resulting in lower average cost in the long run, which enables banks to charge competitive commissions on international remittances and roll out innovative products and services to attract migrants to remit more through the banking system.  |
| Prudential regulation and supervision (BKS) | Prevent predators from taking advantage of the financial system to exploit others, boost confidence among agents and moderate risk-taking under competitive environment | <b>Positive:</b> With improved confidence in the financial system, migrants will patronise services offered by banks, and cease to remit through unofficial money transfer channels.  |
| External account liberalisation (ICF)       | Facilitate international capital mobility as a pre-condition for mobilising more financial resources from overseas.   | <b>Positive:</b> International migrants may find it easier to remit more funds to SSA at relatively reduced cost; recipients can conveniently receive remittances in preferred foreign currencies.  |
| Development of stock markets (SMK)          | Create more opportunities for portfolio risk diversification and access to longer-term corporate finance through equity capital   | <b>Positive:</b> As opportunity to diversify risk is improved and more investment products are made available, migrants are inclined to remit more for investment-driven motives.   |

**Source:** Author. **Note:** \*combined as aggregate credit ceilings, directed credit and reserve requirement (DCRR) in Figure 5.2 as in Abiad et al. (2010) (see Chapter Two for details).

#### 5.4 EMPIRICAL MODEL, METHODOLOGICAL APPROACH AND DATA ISSUES

A set of two empirical models and analytical approaches were employed to achieve the objectives of this chapter. Each empirical model and methodological approach is briefly discussed below.

### 5.4.1 Empirical Panel Granger Non-Causality Model and Analytical Approach

To test the causal relationship between international migrant remittance inflows and financial liberalisation in SSA between 1980 and 2009, the Granger non-causality panel-data modelling with fixed effects as proposed by Hurlin and Venet (2001), and Hurlin (2004) was adopted as consistent with Equations (5.1) and (5.2).

$$\ln REMPC_{i,t} = \sum_{k=1}^{\rho} \phi_k \ln REMPC_{i,t-k} + \sum_{k=0}^{\rho} \beta_k \ddot{F}_{i,t-k} + \mu_{i,t} \quad (5.1)$$

$$\ddot{F}_{i,t} = \sum_{k=1}^{\rho} \theta_k \ddot{F}_{i,t-k} + \sum_{k=0}^{\rho} \lambda_k \ln REMPC_{i,t-k} + \varepsilon_{i,t} \quad (5.2)$$

where  $\ln REMPC$  denotes natural logarithm of international remittances *per capita*,  $\ddot{F}$  is FLBI or any policy component of FLB such as directed credit, reserve requirement and aggregate credit ceilings (DCRR), interest rate control (IRC), banking sector entry requirements (EBC), banking supervision (BKS), privatisation of banks (PVZ), international capital flows (ICF), and security markets development (SMK).  $\rho$  is the optimal lag selected according to the Akaike Information Criterion (AIC), and the Schwarz Information Criterion (SIC) with the log likelihood ratio and Durbin-Watson statistic playing a 'judiciary' role in the event of a conflict between AIC and SIC. The individual countries in the panel are represented by  $i$  and  $i=1,2,\dots,N$  so that  $N=13$  when the full sample analysis is conducted otherwise, either  $N=7$ ; or  $N=6$  when a sub-sample involving only seven countries with frontier and emerging financial markets; or when the analysis is restricted to only the six countries with underdeveloped financial markets. The time period is  $t$  and  $t=1,2,\dots,T$  implying for the period 1980-2009,  $T=30$ .<sup>93</sup> Each error term has two components (Baltagi, 2008), and hence can be decomposed into an unobservable country- and time-specific fixed component and a random disturbance component, where  $\mu_{i,t} = \alpha_{i,t} + v_{i,t}$  and  $\varepsilon_{i,t} = \eta_{i,t} + v_{i,t}$  in which case  $\alpha_i$  and  $\eta_i$  are intercepts whilst  $v_{i,t}$  and  $v_{i,t}$  are the assumed independently and normally distributed residuals with  $E(v_{i,t})=0$ ;  $E(v_{i,t})=0$  and finite heterogeneous variances  $E(v_{i,t}^2) = \sigma_{v,t}^2$ ;  $E(v_{i,t}^2) = \sigma_{v,t}^2$ ;  $\forall t=1,\dots,T$ .

<sup>93</sup> Based on the argument that only eight out of the 13 sampled countries initiated FLB programmes in the 1980s and that most of the countries adopted FLB programmes in the late-1980s (see Table 5.1),  $T$  was reduced to 20 in a second estimation of Equations (5.1) and (5.2). It is acknowledged that doing so in a panel setting of relatively small  $T$  (20) against a small  $N$  (13; 7; 6) in the presence of an optimal lag of 2 in a Granger-causality modelling reduced the degrees of freedom considerably which could adversely affect the reliability of the estimators reported in Table A5.3.

The F-statistic was used to trace the existence and direction of causality by testing the following alternative panel Granger non-causality hypotheses ( $H_A$ ) with respect to SSA:

For Equation (5.1),  $H_{A1} : \phi_k \neq 0, \forall k \in [1, \rho]; \forall i \in [1, N]$  and  $\beta_k \neq 0, \forall k \in [0, \rho]; \forall i \in [1, N]$ .

For Equation (5.2),  $H_{A2} : \theta_k \neq 0, \forall k \in [1, \rho]; \forall i \in [1, N]$  and  $\lambda_k \neq 0, \forall k \in [0, \rho]; \forall i \in [1, N]$ .

In testing for causality in a panel setting, it is important to pay attention to the question of heterogeneity which can be caused by permanent cross-sectional disparities especially in this particular case which involves a small cross-section ( $N$ ) over a large time series ( $T$ ) with  $N$  classified into two distinct sub-groups - frontier and emerging, and underdeveloped financial markets. Therefore, the estimation was carried out for each sub-group and the entire group. In doing so, it was ensured that the balance within the panel setting remained unchanged just as the lag order ( $k$ ), so that the critical condition  $T > 5 + 2k$  proposed by Hurlin (2004) is not violated in any estimation.

Prior to the estimation of the empirical models, the tests for panel stationarity and co-integration were conducted to address the concerns of spurious regression and to ensure that each estimated regression meets a long-run equilibrium condition. These issues are particularly relevant in situations where the panel structure is of large  $T$  and as is in the case of this study,  $N < T$  with  $N/T \rightarrow 0$  becoming more and more robust in the sub-sample estimations. According to Kao (1999), it is possible to circumvent spurious regression by using panel data as panel-data estimates give a consistent estimate of the true value of the parameter as both  $T$  and  $N$  approach infinity. However, Entorf (1997) proves that spurious regression can still manifest itself in fixed effects regressions when the true model involves independent random walks, with or without drifts, and more especially as  $T \rightarrow \infty$  and  $N$  remains finite. As is the practice in most panel data studies (Christopoulos and Tsionas, 2004; Hsiao and Hsiao, 20036), this study relied on more than one panel-data unit root test. The Breitung  $t$ -statistic (BT) test developed by Breitung (2000) and the Hadri Heteroskedasticity Consistent  $z$ -statistic (HHC) test by Hadri (2000) were used in determining the stationarity status of the variables. Where a conflict between the two aforementioned common-root tests surfaces, the Fisher Phillips-Perron (Fisher P-P) chi-square test of individual root was conducted to validate the results. BT and

HHC were used rather than the popularly used Im, Pesaran and Shin (IPS) test and Levin, Lin and Chu (LLC) test because IPS and LLC tests are less efficient as proven by many scholars including Maddala and Wu (1999), Breitung (2000), Maddala *et al.* (2000) and Baltagi (2008). Hlouskova and Wagner (2006) prove that the Breitung test outperforms the Hadri test. Yet, the HHC test statistic, which is a residual-based Lagrange Multiplier (LM) test, has the speciality of taking into consideration issues of heteroskedastic consistency. The panel unit root test results reported in Table A5.1 reveal that all the variables are integrated of order zero.

Since each variable under consideration is  $I(0)$ , the issue of co-integration is no longer a serious concern. However, in order to erase any doubts and to reconfirm this principle, the Engle and Granger (1987) procedure was used to investigate if there is a long-run relationship between  $\ln\text{REMPC}$  and  $\text{FLBI}$ ; or  $\ln\text{REMPC}$  and each of the components of  $\text{FLBI}$  in a bivariate analysis with an intercept as recommended by (Asteriou, 2006). For a decision to be taken on co-integration, the Johansen unrestricted co-integration rank (JUCR) tests for panel data based on both the trace statistic and the maximum Eigenvalue statistic would have to ideally validate the Engle-Granger 2-Step (EG2S) test, but even where JUCR failed to confirm EG2S, the existence of co-integration cannot be rejected because JUCR is more applicable to non-stationary series (see Asteriou, 2006; Baltagi, 2008). In other words, given the  $I(0)$  status of all the variables under consideration, co-integration is only considered to be non-existent if both JUCR and EG2S consistently prove this. This is imperative because this study is interested in only the long-run FLB-impact and causal relationship with international remittances. As was the case in the EG2S procedure, a constant but no trend was included in the JUCR test with a lag interval of 1-4, typical of tests involving data of annual frequency. The results of co-integration tests reported in Table A5.2 suggest that a long-run equilibrium relationship exists between  $\ln\text{REMPC}$  and  $\text{FLBI}$  as well as between  $\ln\text{REMPC}$  and each component of  $\text{FLBI}$ .

#### 5.4.2 Empirical Static Panel Model and Methodological Approach

In order to determine the impact of  $\text{FLBI}$  as well as the policy-specific impact of  $\text{FLB}$  on remittance inflows, a set of bivariate static panel models was analysed<sup>94</sup>. The general mathematical bivariate static panel-data model is of the form:

$$\ln \text{REMPC}_{it} = f(\ddot{F}_{i,t}) \quad i = 1, 2, \dots, N \quad t = 1, 2, \dots, T \quad (5.3)$$

<sup>94</sup> Severe multicollinearity among the various dimensions of the  $\text{FLBI}$  as reflected in the close similarity in the reported pairwise correlation coefficients (see Table A5.5) precludes this study from a multivariate analysis.

where both variables and all notations, except the notation for functional relationship ( $f$ ), are as defined in Equation (5.2). Following from Equation (5.3), the specific empirical econometric model estimated is of the form:

$$\ln REMPC_{it} = \beta_0 + \beta_1 \ddot{F}_{i,t} + \omega_{it} \quad (5.4)$$

where, in this case,  $\beta_0$  is a scalar; the two-way composite disturbance term takes the form,  $\omega_{it} = \alpha_i + \tau_t + \mu_{it}$ , so that  $\alpha_i$  is the unobservable individual country-specific heterogeneity,  $\tau_t$  captures the unobservable individual-invariant time effect, with the random error term ( $\mu_{it}$ ) accounting for the remaining non-systematic effects, for which reason  $\mu_{it} \sim N(0, \sigma_\mu^2)$ . It is important to note that  $\tau_t$  takes care of any time-specific effect, such as a structural change or a shock, that is not included in the estimated regression model (Wooldridge, 2002; Baltagi, 2008). The implication here is that, more explicitly, Equation (5.4) is actually of the form:

$$\ln REMPC_{it} = \beta_0 + \beta_1 \ddot{F}_{i,t} + \alpha_i + \tau_t + \mu_{it} \quad (5.5)$$

Consistent with the McKinnon-Shaw FLB hypothesis, it is expected *a priori* that when (5.5) is estimated,  $\beta_1 \geq 0$ . Unlike Equation (5.2), with Equation (5.5), it is possible to explore the long-run contemporaneous effects of financial liberalisation on international remittances in SSA when the dynamic effects of remittances are discounted. Generally, Equation (5.5) can be estimated by pooled OLS, panel Fixed Effects (FE) or panel Random Effects (RE) models depending upon the assumptions made about the behaviour of  $\alpha_i$ .

Pooled OLS can only be appropriate with efficient and unbiased estimators if Equation (5.5) truly has a common constant because there are no differences among the sampled countries ( $N$ ), in which case  $\alpha_i = 0$ , implying:

$$\ln REMPC_{it} = \beta_0 + \beta_1 \ddot{F}_{i,t} + \varepsilon_{it} \quad (5.6)$$

where  $\varepsilon_{it} = \tau_t + \mu_{it}$  as the time-variant effects  $\tau_{it}$  in a strictly bivariate model is absorbed by the error term so that the empirical model is now reduced to a “one-way error component regression model” (Baltagi, 2008: 13). Thus, the common constant approach to estimating static panel-data models is best applicable under the hypothesis that the panel data under

consideration is *a priori* strictly homogenous to the extent that  $\alpha_i$  (in Equation 5.5) has no influence on the intercept ( $\beta_0$ ) or the disturbance term ( $\varepsilon_{it}$ ). From experience, the validity of the assumption  $\alpha_i = 0$  is a rare possibility, particularly for panel data with large  $N$ .

Even though where  $\alpha_i \neq 0$ , the  $\alpha_i$  terms can be rewritten as coefficients of a set of dummy variables designed to account for the belongingness of the cross-sectional unit  $i$  and the modified model can then be estimated with the appropriate dummies to capture the effects of  $\alpha_i$ ; this approach becomes complicated and impractical in large  $N$  and even as  $N \rightarrow \infty$ . If  $\alpha_i$  is correlated with  $\ddot{F}$ , failure to account for the effects of  $\alpha_i$  results in heterogeneity bias in the estimated model due to omitted variable(s). Under this circumstance, the variations in  $\alpha_i$  leads to serial correlation in  $\omega_{it}$ , where  $E(\omega_{it}\omega_{ij}) = \sigma_\omega^2$  for  $t \neq j$ , pointing to the fact that pooled OLS estimator would be inefficient with bias standard errors, requiring the adoption of either panel FE models or panel RE models according to the orthogonality of  $\alpha_i$ .

The panel FE model is appropriate where it is considered that each individual country has a fixed-effect resulting in parametric shifts of the estimated regression by the fixed value for each individual country. Mathematically, for an efficient panel FE estimator, Equation (5.6) must be of the form:

$$\ln REMPC_{it} = \lambda + \beta_1 \ddot{F}_{i,t} + \varepsilon_{it} \quad (5.7)$$

where  $\lambda = (\beta_0 + \alpha_i)$  for  $\alpha_i \neq 0$ , and where  $\alpha_i$  which is now absorbed into the common constant ( $\beta_0$ ) varies according to individual countries (Greene, 2003). But where  $\alpha_i \neq 0$ , and the effects of  $\alpha_i$  is absorbed into a compound error term rather than the intercept, such that  $v_{it} = (\varepsilon_{it} + \alpha_i)$  as in Equation (5.8), panel RE estimator rather FE estimator is more efficient and less biased in the presence of endogeneity.

$$\ln REMPC_{it} = \beta_0 + \beta_1 \ddot{F}_{i,t} + v_{it} \quad (5.8)$$

Therefore, whereas in panel FE models  $\alpha_i$  is assumed as constant, in panel RE models,  $\alpha_i$  is assumed to be drawn independently from some probability distributions. The underlying

principle of panel RE models is that, there is an individual effect, which is random rather than fixed, and this effect may reflect omitted variables which are not fixed in nature (Maddala, 1971; Greene, 2003).

A fixed effect can be determined from a selected sample, not a random sample obtained from experimental design. Hence, inferences are applicable to only the observed effects and not to the larger population. Another limitation of panel FE estimator is that it cannot be used to determine the effects of time-constant covariates as those covariates cancel out during the “within” transformation. A “within” estimator can be obtained from a typical FE model (Equation 5.8) as follows:

$$(\ln REMPC_{it} - \ln \overline{REMP C}_{it}) = \beta_1 (\ddot{F}_{it} - \ddot{\overline{F}}_{it}) + (\varepsilon_{it} - \overline{\varepsilon}_{it}) \quad (5.9)$$

where the mean of each variable is subtracted from that variable and the constant terms cancelled out. An alternative way to obtain the FE estimator from Equation (5.8) is to use the “between” approach, in which case each one lag rather than the mean of each variable is used as shown in Equation (5.10):

$$(\ln REMPC_{it} - \ln REMPC_{it-1}) = \beta_1 (\ddot{F}_{it} - \ddot{F}_{it-1}) + (\varepsilon_{it} - \varepsilon_{it-1}) \quad (5.10)$$

Panel RE is a variant of Generalised Least Squares (GLS) and it is used effectively when the error term of a given static panel model is heteroskedastic, i.e.  $E(vv') \neq \sigma_v^2$  based on Equation (5.10). The basic assumptions that must hold for the panel RE estimator to be efficient include  $E(\varepsilon_{it}) = E(\alpha_i) = 0$ ,  $E(\varepsilon_{it}^2) = \sigma_\varepsilon^2$ ,  $E(\alpha_i^2) = \sigma_\alpha^2$ ,  $E(\varepsilon_{it}\alpha_i) = 0$  for all  $t$  and  $i$ ,  $E(v_{it}^2) = \sigma_\varepsilon^2 + \sigma_\alpha^2$  for  $t = s$ ,  $E(v_{it}v_{is}) = \sigma_\alpha^2$  for  $t \neq s$ , and most importantly,  $E(\ddot{F}_{it}\alpha_i) = 0$  for all  $t$  and  $i$  for RE estimator to be consistent, which was tested following the popularly used Hausman (1978) specification test and the Breusch and Pagan (1980) Lagrange Multiplier (LM) test statistic. Panel RE modelling involves the combination of the panel FE “within” estimator and the FE “between” estimator, so that the RE estimator is the overall correctly-weighted average estimator of the FE “within” and the “between” estimators.

Based on the results obtained in Chapter Four and the plausibility of a bi-causal relationship between remittances and financial liberalisation, it is quite certain that the presence of endogeneity in the bivariate empirical model (5.4) cannot be disregarded. Endogeneity in

empirical model (5.4) could arise from time effects ( $\tau_t$ ) due to a systematic policy shock to  $\ddot{F}$ , simultaneity emanating from random shocks triggered by variations in  $\ddot{F}$ , measurement errors in reporting  $\ddot{F}$ , and very importantly, and unobserved heterogeneity due to model underfitting. It is well acknowledged in the remittance literature that measurement errors are severe (see Chapter Two). In Chapter Four, it was found that tougher regulations aimed at clamping down on using informal channels to remit following the September 11, 2001 terrorist attack on the US impacted positively and significantly on official remittance inflows in SSA. This implies that by not specifically accounting for time effects ( $\tau_t$ ), the bivariate empirical models (5.6)-(5.10) cannot be exonerated from obvious endogeneity bias. Evidence that remittances can, under some circumstances, Granger-cause  $\ddot{F}$  (see Table 5.3) is a further indication that the Equations (5.6)-(5.10) are prone to severe problem of endogeneity.

Considering the high possibility of endogeneity, it might seem obvious that the RE model should be used for this study. However, the study proceeded to estimate the empirical model by the three possible methods (pooled OLS, FE and RE) and selected the best model based on the Hausman test and the Breusch-Pagan (B-P) test<sup>95</sup>. The Hausman specification test for the RE model, which was developed to test orthogonality of the random effects and the regressor, is based on the notion that under the hypothesis of no correlation, OLS in the Least Squares Dummy Variable (LSDV) model or FE model and GLS are equally consistent, but OLS estimator is less efficient<sup>96</sup>. The B-P Lagrange Multiplier (LM) test designed for evaluating reliability of random effects estimators derived from GLS is distributed as chi-square with one degree of freedom on the null hypothesis that  $\sigma_v^2 = 0$ , the alternative being  $\sigma_v^2 \neq 0$  (see Breusch and Pagan (1980) for further details). Using the overall index of financial liberalisation (FLBI), the Hausman test as well as the B-P test strongly confirm the RE model as the superior, hence producing the most efficient estimators (see Table 5.4). Specifically, the high B-P LM test statistic far exceeds the 99 per cent critical value for chi-square with one degree of freedom, leading to the rejection of the null hypothesis in favour of RE model (Table 5.4). Similarly, except for the 1990-1999 model on SSA countries with underdeveloped financial markets, the Hausman test consistently endorsed the RE estimators as the most efficient (Table 5.4). Accordingly, the study proceeded to explore the impact of financial liberalisation on

<sup>95</sup> Because the estimated pooled OLS model could not produce an improved  $R^2$  (see Table A5.4), whilst the basic diagnostic tests including the F-statistic and Durbin-Watson test failed, it was not preferred over the panel models.

<sup>96</sup> For further details on this test, see Hausman (1978) and Greene (2003).

international migrant remittance inflows in SSA based on the panel RE estimators rather than on the panel FE estimators.

Finally, following the same estimation procedure outlined under 4.5.2.4 in Chapter Four, the ‘differential’ student *t*-test was used to verify the incidence and degree of decade-based parameter evolution and instability for each of the relevant estimated decade-based models.

### **5.4.3 Data Type, Description and Sources**

Data on financial liberalisation (see Table A5.8 for summary) was essentially obtained from Abdul Abiad and Thierry Tresselt of the IMF who, together with Enrica Detragiache, published “A New Database of Financial Reforms” in *IMF Staff Papers*, 57(2): 281-302 in the year 2010<sup>97</sup>. Following Abiad *et al.* (2010), the author constructed the financial liberalisation index for the sampled countries for the most recent years, 2006-2009 which are covered by Abiad *et al.* (2010). International migrant remittances are the sum of *workers’ remittances* and *compensation of employees* obtained from the April 2011 e-database and CD-ROM editions of World Bank’s *WDI and Migration and Remittances Factbook 2011 (MRF-2011)*, and IMF’s *BoPS*. For Tanzania and Uganda, missing published data on remittances for the period 1980-1994 was filled in with estimates based on country-specific information obtained from country-desk officials at the Headquarters of IMF and the World Bank in Washington, DC, USA.

## **5.5 EMPIRICAL RESULTS AND DISCUSSIONS**

### **5.5.1 The Causal Effects of Financial Liberalisation on Remittance Inflows in SSA**

The main empirical panel Granger-causality results of this study are presented in Table 5.3. On the basis of the overall index (FLBI), the empirical results suggest that, generally, the pursuit of financial liberalisation programme Granger-causes higher international remittance inflows through official channels in SSA. This implies that for a typical SSA country to receive higher inflows of official remittances, the liberalisation of its financial market is a necessary condition. At 10 per cent level of statistical significance, it can be concluded that there is a reverse causality between financial liberalisation and international remittance inflows in SSA. The overall causal effect of financial liberalisation on international remittance inflows is only statistically significant for the 13 sampled SSA countries and the seven sampled SSA countries with frontier and emerging financial markets. Thus, in the case of the sampled SSA countries with underdeveloped financial markets, however, the overall causal effect of financial

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<sup>97</sup> See Chapter Two for details on the procedures and main sources of raw data for this purpose.

liberalisation on international remittance inflows is statistically insignificant at the conventional statistical levels.

**Table 5.3:**  
Financial Liberalisation-Remittances Bivariate Panel Granger Non-Causality Results in SSA, 1980-2009

| Null Hypothesis:                    | No. of Lags <sup>†</sup> | Frontier & Emerging |                      | Others (underdeveloped) |                      | Full Sample (combined) |                      |
|-------------------------------------|--------------------------|---------------------|----------------------|-------------------------|----------------------|------------------------|----------------------|
|                                     |                          | Obs                 | F-statistic(F-prob.) | Obs                     | F-statistic(F-prob.) | Obs                    | F-statistic(F-prob.) |
| FLBI does not Granger cause lnREMPC | 2                        | 196                 | 3.3233(0.04)**       | 168                     | 1.0733(0.34)         | 364                    | 5.0715(0.01)***      |
| lnREMPC does not Granger cause FLBI | 2                        | 196                 | 2.6842(0.07)*        | 168                     | 0.1451(0.87)         | 364                    | 2.3481(0.10)*        |
| BKS does not Granger cause lnREMPC  | 2                        | 196                 | 1.7021(0.19)         | 168                     | 0.0249(0.98)         | 364                    | 1.6752(0.19)         |
| lnREMPC does not Granger cause BKS  | 2                        | 196                 | 3.0983(0.05)**       | 168                     | 0.2006(0.82)         | 364                    | 2.5310(0.08)*        |
| DCRR does not Granger cause lnREMPC | 2                        | 196                 | 0.9431(0.39)         | 168                     | 0.6127(0.54)         | 364                    | 0.8491(0.43)         |
| lnREMPC does not Granger cause DCRR | 2                        | 196                 | 0.0277(0.97)         | 168                     | 1.5260(0.22)         | 364                    | 0.5416(0.58)         |
| EBC does not Granger cause lnREMPC  | 2                        | 196                 | 2.0624(0.13)         | 168                     | 0.9141(0.40)         | 364                    | 3.0587(0.05)**       |
| lnREMPC does not Granger cause EBC  | 2                        | 196                 | 0.3700(0.69)         | 168                     | 0.1869(0.83)         | 364                    | 0.4457(0.64)         |
| ICF does not Granger cause lnREMPC  | 2                        | 196                 | 1.0574(0.35)         | 168                     | 1.8263(0.16)         | 364                    | 2.2426(0.11)         |
| lnREMPC does not Granger cause ICF  | 2                        | 196                 | 2.5167(0.08)*        | 168                     | 6.4845(0.00)***      | 364                    | 5.2644(0.01)***      |
| IRC does not Granger cause lnREMPC  | 2                        | 196                 | 2.9737(0.05)*        | 168                     | 4.3704(0.01)**       | 364                    | 5.9720(0.00)***      |
| lnREMPC does not Granger cause IRC  | 2                        | 196                 | 1.2062(0.30)         | 168                     | 0.5226(0.59)         | 364                    | 0.4452(0.64)         |
| PVZ does not Granger cause lnREMPC  | 2                        | 196                 | 0.4190(0.66)         | 168                     | 0.7238(0.49)         | 364                    | 1.3058(0.27)         |
| lnREMPC does not Granger cause PVZ  | 2                        | 196                 | 1.3669(0.26)         | 168                     | 0.6084(0.55)         | 364                    | 1.8524(0.16)         |
| SMK does not Granger cause lnREMPC  | 2                        | 196                 | 4.9066(0.01)***      | 168                     | 1.4194(0.24)         | 364                    | 6.7773(0.00)***      |
| lnREMPC does not Granger cause SMK  | 2                        | 196                 | 0.2817(0.75)         | 168                     | 0.8156(0.44)         | 364                    | 0.8173(0.44)         |

**Source:** Author. **Note:** <sup>†</sup> is a model-specific optimal lag selected according to SIC, AIC and log likelihood.  
REMPC here refers to migrant remittances per capita

The specific financial liberalisation policies implemented in SSA which have so far Granger-caused higher inflows of international remittances through official channels between 1980 and 2009, in order of magnitude and statistical relevance, are policy reforms on stock market development (6.7773), interest rate deregulation (5.9720), and relaxation of entry barriers to promote competition in the banking industry (3.0587). In each of these cases, the causality direction is only one way – from the specific policy reform to remittance inflows. The effect of interest rate deregulation on international remittance inflows in SSA countries with underdeveloped financial markets is more robust compared to countries with frontier and emerging markets. The causal effect of relaxation of barriers to entry into the banking industry to allow for greater competition (EBC), although significant for the entire sample, is statistically insignificant for each specific sub-sample.

Quite strikingly, although external account liberalisation does not Granger-cause increased remittance inflows in SSA, remittances received in the sub-region were necessary to cause elimination of policy constraints to international capital inflows. This holds for SSA countries with frontier and emerging financial markets but more importantly, for countries with relatively

less developed financial markets. This finding seems to suggest that the more remittances received, the more policy makers in SSA are encouraged to relax restrictions of international capital inflows, probably, as a strategy to receive more remittances from abroad.

The results imply that other FLB policies such as reforms on directed credit and reserve requirements, international capital flows, and privatisation have not caused increased flow of remittances through official channels to SSA. Whereas the composite index of financial liberalisation and specific FLB policies on stock market development and interest rate deregulation Granger-cause international remittance inflows in SSA frontier and emerging financial markets, so far it is only interest rate deregulation that Granger-causes higher inflow of remittances in SSA countries with underdeveloped financial markets. As far as financial liberalisation is concerned in SSA, FLB policy on stock market development is the main cause of remittance inflows in countries with frontier and emerging financial markets, whilst interest rate liberalisation is the most important cause of remittance inflows in countries with underdeveloped financial markets. These results seem to lend support to the self-interest economic motive and imply that higher returns on interest-bearing banking sector financial assets or reduced interest rate related charges on remittances are the first and foremost influencing factors that cause higher inflow of international remittances in SSA countries with relatively underdeveloped financial markets. Similarly, there is strong evidence for the self-interest investment motive in the case of SSA countries with frontier and emerging financial markets where stock markets are relatively vibrant and with higher returns. There is also evidence of international remittances causing improved banking supervision in SSA; and more particularly in countries with frontier and emerging financial markets.

### **5.5.2 Empirical Results on the Impact of FLB on International Remittances in SSA**

In Table 5.4, the empirical results of the overall impact of financial liberalisation as measured by FLBI, as well as the FLB policy-specific impact on international remittance inflows in SSA are presented. For the full sample of 13 SSA countries, the overall impact of financial liberalisation on international remittance inflows was zero in the 1980s, but this turned positive in the 1990s and the positive impact became even more robust, both statistically and economically in the 2000s. Specifically, when all other factors are held constant, a one unit increase in FLBI resulted in a 1.7241 and 5.2825 percentage increases in remittance inflows at 10 and 5 per cent levels of statistical significance in the 1990s and 2000s respectively. As a sub-group, neither SSA countries with frontier and emerging markets nor other SSA countries

with underdeveloped financial markets recorded a statistically significant impact of FLBI on remittance inflows in the 1980s and 1990s. In the 2000s, the impact of FLBI on remittance inflows in SSA countries with frontier and emerging markets, and those with underdeveloped financial markets was positive and significant for both sub-groups. Whilst the positive impact in the 2000s of FLBI on SSA was economically more significant for countries with underdeveloped financial markets, for the entire post-reforms era, 1980-2009, the impact of FLBI on remittance inflows in SSA countries with frontier and emerging markets was relatively higher 3.8050 compared to 2.0804 for countries with underdeveloped financial markets (Table 5.4). Taking into consideration the economic and the statistical significance of FLBI, it is apparent that between 1980 and 2009, there was a consistent increasing impact of financial liberalisation on remittance inflows in SSA; and this trend of impact is more consistent in countries with frontier and emerging financial markets than in other SSA countries with underdeveloped financial markets.

Turning to the specific FLB policies implemented in SSA over the past three decades, it can be argued that with the exception of policies on entry requirements into the banking industry for competition (EBC), generally, in the 1980s, FLB impacted negatively on remittance inflows. More specifically, policies of banking supervision and regulations (BKS), and to some extent international capital flow deregulation (ICF) in the case of underdeveloped financial markets, as well as the privatisation of state-owned banks (PVZ) and stock market development (SMK) in the case of frontier and emerging markets, were deterrent to remittance inflows in SSA in the 1980s. Thus, during the initial years of implementing FLB programmes in SSA, as far as remittance inflows were concerned, it was the countries with underdeveloped financial markets that, ironically, benefitted the most, and where reform policies on EBC, IRC, and SMK were the most productive. This might be due to the fact that most of the sampled countries are at similarly low levels of liberalisation in the 1980s, as these countries generally embarked upon FLB programmes in the late 1980s (see Table 5.1).

Apart from an improved statistical significance on the impact of policies on directed credit, aggregate credit ceilings and reserve requirements (DCRR), SSA countries with underdeveloped financial markets failed to build on the initial gains made on the effects of FLB on remittance inflows during the 1990s. In the 1990s, besides DCRR, SSA countries with frontiers and emerging financial markets can only boast of having enjoyed higher positive impacts of two FLB-specific policies (BKS, and SMK) on remittance inflows when compared

with other SSA countries that have underdeveloped financial markets (Table 5.4).

In the 2000s, it was countries with underdeveloped financial markets that received a more significant positive impact from FLBI and all the specific FLB-policy components except DCRR, on officially reported remittance inflows. Unlike in the 1980s and the 1990s, during the 2000s, FLB had a consistent positive impact on both categories of SSA countries. Apart from ICF in countries with frontier and emerging financial markets, each FLB-specific policy had a positive and more significant impact on remittance inflows in both categories of countries in the 2000-2009 decade. During the 2000s, for the entire sample of 13 countries, in descending order of economic value, the FLB-specific policy effects are: IRC (0.8022), EBC (0.6580), SMK (0.6096), PVZ (0.6002), DCRR (0.5999), BKS (0.3780), and ICF (0.2005) (see Table 5.4).

**Table 5.4:**  
Results of the Impact of Financial Liberalisation on International Remittance Inflows in SSA 1980-09

|                        | Frontier and Emerging Markets |                     |                      |                      | Underdeveloped Financial Markets |                     |                      |                      | Full Sample (Both Markets) |                     |                     |                      |
|------------------------|-------------------------------|---------------------|----------------------|----------------------|----------------------------------|---------------------|----------------------|----------------------|----------------------------|---------------------|---------------------|----------------------|
|                        | 1980-89                       | 1990-99             | 2000-09              | 1980-09              | 1980-89                          | 1990-99             | 2000-09              | 1980-09              | 1980-89                    | 1990-99             | 2000-09             | 1980-09              |
| FLBI                   | 0.0536<br>(0.03)              | 1.9421<br>(1.55)    | 3.7140<br>(4.16)***  | 3.8050<br>(3.11)***  | 7.5113<br>(1.48)                 | 0.9393<br>(0.87)    | 9.8180<br>(7.15)***  | 2.0804<br>(1.96)**   | 2.5143<br>(1.00)           | 1.7241<br>(1.90)*   | 5.2825<br>(3.51)*** | 3.2078<br>(3.76)***  |
| BKS                    | -0.3598<br>(-30.77)***        | 0.9644<br>(2.72)*** | 0.3278<br>(2.06)**   | 1.1975<br>(3.91)***  | ?<br><i>n/a</i>                  | 0.1002<br>(0.74)    | 0.6067<br>(2.66)**   | 0.6277<br>(2.48)**   | -0.3657<br>(-35.75)***     | 0.5760<br>(2.14)**  | 0.3800<br>(2.52)**  | 1.0140<br>(4.49)***  |
| DCRR                   | -0.2120<br>(-1.23)            | 0.6280<br>(2.12)**  | 0.7638<br>(2.12)**   | 0.9939<br>(2.35)**   | 0.9579<br>(1.38)                 | 0.3908<br>(3.85)*** | 0.6236<br>(2.03)**   | 0.5484<br>(2.59)***  | 0.2983<br>(0.67)           | 0.5378<br>(2.90)*** | 0.5999<br>(2.05)**  | 0.7572<br>(3.15)***  |
| EBC                    | 0.4367<br>(0.68)              | 0.1461<br>(1.58)    | 0.4566<br>(31.73)*** | 0.7679<br>(2.97)***  | 0.9111<br>(8.02)***              | 0.1513<br>(1.10)    | 1.1286<br>(9.90)***  | 0.4385<br>(2.22)**   | 0.6545<br>(1.77)*          | 0.1548<br>(2.00)**  | 0.6580<br>(3.08)*** | 0.6290<br>(3.71)***  |
| ICF                    | 0.2837<br>(1.25)              | 0.1063<br>(0.58)    | 0.1578<br>(1.36)     | 0.6508<br>(3.50)***  | -2.4975<br>(-17.49)***           | 0.0155<br>(0.06)    | 0.5181<br>(2.42)**   | 0.4130<br>(0.78)     | -0.0341<br>(-0.09)         | 0.1014<br>(0.65)    | 0.2005<br>(1.98)**  | 0.6118<br>(3.58)***  |
| IRC                    | 0.0190<br>(0.10)              | 0.2487<br>(1.38)    | 0.6093<br>(3.26)***  | 0.5044<br>(2.94)***  | 0.9042<br>(1.88)*                | 0.2159<br>(0.71)    | 0.9025<br>(5.15)***  | 0.4847<br>(1.60)     | 0.34<br>(1.14)             | 0.25<br>(1.60)      | 0.8022<br>(4.45)*** | 0.6086<br>(3.46)***  |
| PVZ                    | -1.1064<br>(-2.72)***         | 0.2554<br>(1.00)    | 0.4325<br>(7.96)***  | 0.7583<br>(2.09)**   | 0.2436<br>(1.47)                 | -0.0592<br>(-0.24)  | 0.7171<br>(5.93)***  | 0.2949<br>(1.68)*    | -0.6792<br>(-1.29)         | 0.1954<br>(1.03)    | 0.6002<br>(5.66)*** | 0.5448<br>(2.77)***  |
| SMK                    | -0.6466<br>(-2.73)***         | 0.5240<br>(1.66)*   | 0.4547<br>(5.45)***  | 1.4552<br>(5.30)***  | 1.7788<br>(20.26)***             | 0.0241<br>(-0.12)   | 1.3075<br>(34.06)*** | 0.7616<br>(2.12)**   | 0.2926<br>(0.38)           | 0.2651<br>(1.32)    | 0.6096<br>(3.48)*** | 1.2227<br>(5.17)***  |
| Overall R <sup>2</sup> | 0.1265                        | 0.0887              | 0.3920               | 0.3075               | 0.0505                           | 0.3304              | 0.0950               | 0.1469               | 0.0693                     | 0.1554              | 0.0681              | 0.2189               |
| Obs                    | 70                            | 70                  | 70                   | 210                  | 60                               | 60                  | 60                   | 180                  | 130                        | 130                 | 130                 | 390                  |
| Groups                 | 7                             | 7                   | 7                    | 7                    | 6                                | 6                   | 6                    | 6                    | 13                         | 13                  | 13                  | 13                   |
| Hausman_FE             | 0.99<br>{0.32}                | 0.10<br>{0.75}      | 0.01<br>{0.94}       | 0.05<br>{0.82}       | 0.29<br>{0.59}                   | 61.46<br>{0.00}***  | 1.21<br>{0.27}       | 0.09<br>{0.77}       | 0.11<br>{0.74}             | 1.71<br>{0.19}      | 0.5<br>{0.48}       | 0.06<br>{0.81}       |
| B-P stat_RE            | 235.57<br>{0.00}***           | 181.01<br>{0.00}*** | 262.16<br>{0.00}***  | 1290.65<br>{0.00}*** | 201.70<br>{0.00}***              | 172.75<br>{0.00}*** | 211.25<br>{0.00}***  | 1501.22<br>{0.00}*** | 456.16<br>{0.00}***        | 358.17<br>{0.00}*** | 469.69<br>{0.00}*** | 2786.03<br>{0.00}*** |

Source: Author's estimation.

Note: \*\*\*(\*\*)\* represent statistical significance at 1%(5%)10% respectively.

Constant term included in each estimation.

z-statistics in ( );  $\chi^2$ -statistics in { }

All statistics based on robust standard errors.

? means nonexistent (absorbed by constant term), n/a means not applicable  
R<sup>2</sup>, Hausman's specification tests, and B-P tests are based on estimated models involving FLBI

For the group of 13 sampled SSA countries, since the adoption of FLB in the 1980s, holding all other determinants of remittance inflows constant, policy reforms on developing the stock market emerged as the most important (Table 5.4.1). Among the bank-based liberalisation policies, banking supervision and prudential regulation emerged the most economically significant. Other factors in descending order of economic significance are: DCRR (0.7572), EBC (0.6290), IFC (0.6118), IRC (0.6086) and PVZ (0.5448) (see Table 5.4).

**Table 5.4.1:**

**Financial Liberalisation-Remittance Impact by Rank of Economic Significance in SSA, 1980-09**

|                         | BKS | DCRR | EBC | ICF            | IRC            | PVZ | SMK | FLBI-IMPACT |
|-------------------------|-----|------|-----|----------------|----------------|-----|-----|-------------|
| Frontier & Emerging     | 2   | 3    | 4   | 7              | 6              | 5   | 1   | 3.20776     |
| Others (Underdeveloped) | 2   | 3    | 4   | 6 <sup>n</sup> | 7 <sup>n</sup> | 5   | 1   | 2.08042     |
| Full Sample             | 2   | 3    | 4   | 5              | 6              | 7   | 1   | 3.80504     |

**Source:** Author based on Table 5.4.

**Note:** <sup>n</sup> means not statistically significant.

1=first (most significant),....., 7=seventh (least significant)

The economic significance order of the specific FLB-policy impact on remittance inflows is virtually the same in SSA countries irrespective of the level of financial market development (Table 5.4.1). For example, the first five economically most important FLB policies (SMK, BKS, DCRR, EBC, and PVZ) that impact on the inflow of remittances in both categories of SSA countries are the same. And, while IRC and ICF are the sixth and seventh most important specific policies in SSA countries with frontier and emerging financial markets, these two FLB-specific policies did not impact on the inflow of international migrant remittances in SSA countries with underdeveloped financial markets when the entire 30-year period is taken into consideration. This, notwithstanding, is the positive and significant effect of these two on migrant remittance inflows in the 13 SSA countries during the 2000s (see Table 5.4).

Table 5.4.2 presents the results that investigate the statistical justification for the apparent changing impact of financial liberalisation on official international remittance inflows in SSA countries having frontier and emerging markets between 1980 and 2009. The empirical results suggest that there is consistent evidence that the estimated decade-based parameters are statistically different from one another lending further support to the hypothesis favouring a pattern of evolution across the three decades in SSA countries with frontier and emerging financial markets. The few cases in which this hypothesis could not hold consistently across decades concern some of the components of the financial liberalisation index, namely: entry barriers and pro-competition (EBC), international capital flows (ICF), privatisation of banks (PVZ) and stock market development (SMK).

**Table 5.4.2:**  
Parameter Evolution and Instability Test Results in Frontier and Emerging SSA Financial Markets

|                        | Estimated Decade-Based Results     |                                 |                                  | Decade-Based Rolling Estimated Results |                                 | Based Coefficient Stability Test Results |                                    |                                     | Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                 |                                    |
|------------------------|------------------------------------|---------------------------------|----------------------------------|--|---------------------------------|--|------------------------------------|-------------------------------------|---|------------------------------------|---------------------------------|------------------------------------|
|                        | A                                  | B                               | C                                | D                                      | E                               | A-B                                      | B-C                                | A-C                                 | A-D   | B-D                                | B-E                             | C-E                                |
|                        | 1980-89                            | 1990-99                         | 2000-09                          | 1985-1994                              | 1995-2004                       |  |                                    |                                     |   |                                    |                                 |                                    |
| FLBI                   | 0.0536<br>[1.7853]<br>{0.03}       | 1.9421<br>[1.2529]<br>{1.55}    | 3.7140<br>[0.8928]<br>{4.16}***  | 2.8033<br>[0.9014]<br>{3.11}***        | 1.9890<br>[0.6812]<br>{2.92}*** | -1.8885<br>[0.5324]<br>{-3.55}***        | -1.7719<br>[0.3602]<br>{-4.92}***  | -3.6604<br>[0.8925]<br>{-4.10}***   | -2.7497<br>[0.8840]<br>{-3.11}***                           | -0.8612<br>[0.3516]<br>{-2.45}**   | -0.0469<br>[0.5718]<br>{-0.08}  | 1.7250<br>[0.2116]<br>{8.15}***    |
| BKS                    | -0.3598<br>[0.0117]<br>{-30.77}*** | 0.9644<br>[0.3545]<br>{2.72}*** | 0.3278<br>[0.1591]<br>{2.06}**   | 1.9437<br>[0.3202]<br>{6.07}***        | 0.4003<br>[0.1067]<br>{3.75}*** | -1.3241<br>[0.3428]<br>{-3.86}***        | 0.6366<br>[0.1954]<br>{3.26}***    | -0.6876<br>[0.1474]<br>{-4.66}***   | -2.3034<br>[0.3085]<br>{-7.47}***                           | -0.9793<br>[0.0343]<br>{-28.52}*** | 0.5641<br>[0.2478]<br>{2.28}**  | -0.0725<br>[0.0524]<br>{-1.38}     |
| DCRR                   | -0.2120<br>[0.1724]<br>{-1.23}     | 0.6280<br>[0.2962]<br>{2.12}**  | 0.7638<br>[0.3603]<br>{2.12}**   | 0.4528<br>[0.2461]<br>{1.84}*          | 0.0039<br>[0.1965]<br>{0.02}    | -0.8400<br>[0.1238]<br>{-6.78}***        | -0.1358<br>[0.0641]<br>{-2.12}**   | -0.9758<br>[0.1879]<br>{-5.19}***   | -0.6648<br>[0.0737]<br>{-9.02}***                           | 0.1752<br>[0.0501]<br>{3.49}***    | 0.6240<br>[0.0997]<br>{6.26}*** | 0.7599<br>[0.1638]<br>{4.64}***    |
| EBC                    | 0.4367<br>[0.6422]<br>{0.68}       | 0.1461<br>[0.0925]<br>{1.58}    | 0.4566<br>[0.0144]<br>{31.73}*** | 0.2361<br>[0.1276]<br>{1.85}*          | 0.1465<br>[0.2441]<br>{0.60}    | 0.2906<br>[0.5497]<br>{0.53}             | -0.3105<br>[0.0781]<br>{-3.98}***  | -0.0199<br>[0.6278]<br>{-0.03}      | 0.2006<br>[0.5146]<br>{0.39}                                | -0.0900<br>[0.0351]<br>{-2.56}**   | -0.0003<br>[0.1516]<br>{-0.00}  | 0.3102<br>[0.2297]<br>{1.35}       |
| ICF                    | 0.2837<br>[0.2270]<br>{1.25}       | 0.1063<br>[0.1832]<br>{0.58}    | 0.1578<br>[0.1160]<br>{1.36}     | 0.3994<br>[0.2481]<br>{1.61}           | 0.1651<br>[0.1162]<br>{1.42}    | 0.1775<br>[0.0438]<br>{4.06}***          | -0.0515<br>[0.0672]<br>{-0.77}     | 0.1260<br>[0.1110]<br>{1.14}        | -0.1157<br>[0.0211]<br>{-5.48}***                           | -0.2931<br>[0.0649]<br>{-4.52}***  | -0.0588<br>[0.0670]<br>{-0.88}  | -0.0073<br>[0.0002]<br>{-30.45}*** |
| IRC                    | 0.0190<br>[0.1900]<br>{0.10}       | 0.2487<br>[0.1802]<br>{1.38}    | 0.6093<br>[0.1869]<br>{3.26}***  | 0.1497<br>[0.1062]<br>{1.41}           | 0.0585<br>[0.2249]<br>{0.26}    | -0.2297<br>[0.0098]<br>{-23.48}***       | -0.3606<br>[0.0067]<br>{-54.02}*** | -0.5903<br>[0.0031]<br>{-189.96}*** | -0.1307<br>[0.0838]<br>{-1.56}                              | 0.0990<br>[0.0741]<br>{1.34}       | 0.1902<br>[0.0447]<br>{4.26}*** | 0.5508<br>[0.0380]<br>{14.50}***   |
| PVZ                    | -1.1064<br>[0.4077]<br>{-2.72}***  | 0.2554<br>[0.2553]<br>{1.00}    | 0.4325<br>[0.0543]<br>{7.96}***  | 0.4600<br>[0.5823]<br>{0.79}           | 0.2118<br>[0.0861]<br>{2.46}**  | -1.3618<br>[0.1514]<br>{-8.99}***        | -0.1771<br>[0.2010]<br>{-0.88}     | -1.5389<br>[0.3524]<br>{-4.37}***   | -1.5664<br>[0.1755]<br>{-8.92}***                           | -0.2047<br>[0.3269]<br>{-0.63}     | 0.0436<br>[0.1693]<br>{0.26}    | 0.2207<br>[0.0317]<br>{6.95}***    |
| SMK                    | -0.6466<br>[0.2368]<br>{-2.73}***  | 0.5240<br>[0.3157]<br>{1.66}*   | 0.4547<br>[0.0834]<br>{5.45}***  | 0.9876<br>[0.2896]<br>{3.41}***        | 0.1718<br>[0.1468]<br>{1.17}    | -1.1706<br>[0.0788]<br>{-14.85}***       | 0.0694<br>[0.2322]<br>{0.30}       | -1.1013<br>[0.1534]<br>{-7.18}***   | -1.6342<br>[0.0528]<br>{-30.97}***                          | -0.4636<br>[0.0261]<br>{-17.79}*** | 0.3522<br>[0.1689]<br>{2.09}**  | 0.2829<br>[0.0634]<br>{4.46}***    |
| Overall R <sup>2</sup> | 0.1265                             | 0.0887                          | 0.3920                           | 0.0576                                 | 0.0539                          | 0.1076                                   | 0.2404                             | 0.2592                              | 0.0921  | 0.0732                             | 0.0713                          | 0.2230                             |
| Obs                    | 70                                 | 70                              | 70                               | 70                                     | 70                              | 70                                       | 70                                 | 70                                  | 70  | 70                                 | 70                              | 70                                 |
| Groups                 | 7                                  | 7                               | 7                                | 7                                      | 7                               | 7  | 7                                  | 7                                   | 7   | 7                                  | 7                               | 7                                  |
| Hausman_FE             | 0.99(0.32)                         | 0.10(0.75)                      | 0.01(0.94)                       | 0.00(0.98)                             | 0.02(0.89)                      | -  | -                                  | -                                   | -   | -                                  | -                               | -                                  |
| B-P Stat_RE            | 235.57***                          | 181.01***                       | 262.16***                        | 214.90***                              | 250.18***                       | -  | -                                  | -                                   | -   | -                                  | -                               | -                                  |

Source: Author's estimation

\*/\*\*/\*\* denotes significant at 10/5/1 per cent statistical levels respectively.  
Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )

With reference to column A-B, the estimated coefficients of the 1980-89 differ statistically from the corresponding estimated coefficients of 1990-99 for the overall financial liberalisation index (FLBI) and each of the components of FLBI, except EBC. Similarly, with the exception of ICF, PVZ and SMK, the computed  $t$ -statistics reported in column B-C of Table 5.4.2 point to the fact that the estimated coefficients of the 1990-99 decade are statistically different from the corresponding estimates of the 2000-09 decade. In a similar vein, the estimated parameters of the 1980-89 decade are statistically different from the corresponding parameter estimates of the 2000-09 decade as reported in column A-C of Table 5.4.2.

In columns A-D, B-D, B-E and C-E of Table 5.4.2, the inter-temporal evolution of the differences in the estimated decade-based coefficients involving the impact of financial liberalisation on international remittance inflows in SSA countries with frontier and emerging financial markets are reported. The only consistent statistical evidence of coefficient instability in the evolution throughout the study period, with reference to SSA countries with frontier and emerging financial markets, relates to DCRR (directed credit, reserve requirement and aggregate credit ceilings) and stock market development (SMK) components of the overall financial liberalisation index (FLBI). There is also an appreciably strong statistical evidence of consistency in the instability of the estimated decade-based coefficients associated with the impact of the overall financial liberalisation index (FLBI), banking supervision (BKS) and international capital flows (ICF) on international remittance inflows in SSA countries with frontier and emerging financial markets. In the case of FLBI and ICF, however, the coefficient instability test fails when the respective estimated decade-based coefficients of the 1990-99 decade are compared with the corresponding estimates of the 1995-2004 overlapping decade. Finally, there is widespread evidence in favour of decade-based coefficient instability when the estimated parameters of the 2000-09 decade are compared with those of the 1995-2004 decade as reported in column C-E of Table 5.4.2.

Table 5.4.3 reports the results of the statistical inquiry into the estimated decade-based changing impact of financial liberalisation index (FLBI) and its components on international remittance inflows in SSA countries with underdeveloped financial markets. As in previous related cases, columns A-B, B-C and A-C report the results of the statistical differences of the estimated decade-based coefficients of 1980-89 and 1990-99, 1990-99 and 2000-09, as well as 1980-89 and 2000-09 respectively. The estimated results suggest that in the case of SSA countries with underdeveloped financial markets, when the corresponding estimated decade-based coefficients of 1980-89 and 1990-99 are compared, the various estimated decade-based coefficients are statistically different from each other at the conventional statistical levels. A similar result was obtained when the respective estimated coefficients of 1990-99 and 2000-09 decades are compared. The results, however, show that the estimated decade-based coefficients of DCRR (directed credited, reserve requirements, and aggregate credit ceilings) are statistically the same, implying that with reference to SSA countries having underdeveloped financial markets, the decade-based impact of DCRR on international migrant remittance inflows is statistically the same in the 1980s, the 1990s and the 2000s. The empirical results of the statistical test on comparing the estimated decade-based coefficients of the 1980-89

decade to those of the 2000-09 decade show that besides FLBI, DCRR and interest rate control (IRC), the various components of FLBI actually impact on international remittance inflows differently in the 1980s and the 2000s as reported in Table 5.4.

**Table 5.4.3:**  
Parameter Evolution and Instability Test Results in Underdeveloped SSA Financial Markets

|                        | Estimated Decade-Based Results     |                                 |                                  | Decade-Based Rolling Estimated Results |                                 | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                     | Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                    |                                  |
|------------------------|------------------------------------|---------------------------------|----------------------------------|--|---------------------------------|---|------------------------------------|-------------------------------------|---|------------------------------------|------------------------------------|----------------------------------|
|                        | A                                  | B                               | C                                | D                                      | E                               | A-B   | B-C                                | A-C                                 | A-D   | B-D                                | B-E                                | C-E                              |
|                        | 1980-89                            | 1990-99                         | 2000-09                          | 1985-1994                              | 1995-2004                       |   |                                    |                                     |   |                                    |                                    |                                  |
| FLBI                   | 7.5113<br>[5.0752]<br>{1.48}       | 0.9393<br>[1.0796]<br>{0.87}    | 9.8180<br>[1.3731]<br>{7.15}***  | 0.8444<br>[0.4352]<br>{1.94}**         | 2.8612<br>[0.7569]<br>{3.78}*** | 6.5720<br>[3.9956]<br>{1.64}*                                   | -8.8787<br>[0.2935]<br>{-30.25}*** | -2.3067<br>[3.7021]<br>{-0.62}      | 6.6669<br>[4.6400]<br>{1.44}                                | 0.5040<br>[0.6444]<br>{0.78}       | -1.9219<br>[0.3227]<br>{-5.96}***  | 6.9568<br>[0.6162]<br>{11.29}*** |
| BKS                    | ?<br>?<br>?                        | 0.1002<br>[0.1354]<br>{0.74}    | 0.6067<br>[0.2281]<br>{2.66}***  | 0.1639<br>[0.1389]<br>{1.18}           | 0.4466<br>[0.1861]<br>{2.40}**  | ?<br>?<br>?   | -0.5065<br>[0.0927]<br>{-5.46}***  | ?<br>?<br>?                         | ?<br>[0.1939]<br>{-0.20}                                    | -0.0387<br>[0.0507]<br>{-6.83}***  | -0.3464<br>[0.0420]<br>{3.81}***   | 0.1601<br>[0.0420]<br>{3.81}***  |
| DCRR                   | 0.9579<br>[0.6942]<br>{1.38}       | 0.3908<br>[0.1015]<br>{3.85}*** | 0.6236<br>[0.3072]<br>{2.03}**   | 0.1515<br>[0.0802]<br>{1.89}*          | 0.5358<br>[0.1728]<br>{3.10}*** | 0.5671<br>[0.5926]<br>{0.96}                                    | -0.2328<br>[0.2057]<br>{-1.13}     | 0.3344<br>[0.3870]<br>{0.86}        | 0.8065<br>[0.6140]<br>{1.31}                                | 0.3106<br>[0.0214]<br>{14.55}***   | -0.1450<br>[0.0713]<br>{-2.03}**   | 0.0878<br>[0.1344]<br>{0.65}     |
| EBC                    | 0.9115<br>[0.1136]<br>{8.02}***    | 0.1513<br>[0.1375]<br>{1.10}    | 1.1286<br>[0.1140]<br>{9.90}***  | 0.2101<br>[0.0735]<br>{2.86}**         | 0.2640<br>[0.1941]<br>{1.36}    | 0.7602<br>[0.0240]<br>{31.75}***                                | -0.9773<br>[0.0236]<br>{-41.48}*** | -0.2171<br>[0.0004]<br>{-562.38}*** | 0.7014<br>[0.0402]<br>{17.47}***                            | 0.0779<br>[0.0641]<br>{1.21}       | -0.1127<br>[0.0565]<br>{-1.99}**   | 0.8646<br>[0.0801]<br>{10.79}*** |
| ICF                    | -2.4975<br>[0.1428]<br>{-17.49}*** | 0.0155<br>[0.2578]<br>{0.06}    | 0.5181<br>[0.2141]<br>{2.42}**   | 0.4328<br>[0.2121]<br>{2.04}**         | 0.3631<br>[0.1737]<br>{2.09}**  | -2.5130<br>[0.1150]<br>{-21.84}***                              | -0.5027<br>[0.0437]<br>{-11.50}*** | -3.0156<br>[0.0713]<br>{-42.29}***  | -2.9303<br>[0.0694]<br>{-42.25}***                          | -0.1967<br>[0.0457]<br>{-4.30}***  | -0.3477<br>[0.0841]<br>{-4.13}***  | 0.1550<br>[0.0404]<br>{3.84}***  |
| IRC                    | 0.9042<br>[0.4810]<br>{1.88}*      | 0.2159<br>[0.3040]<br>{0.71}    | 0.9025<br>[0.1752]<br>{5.15}***  | 0.0042<br>[0.0848]<br>{0.05}           | 0.7666<br>[0.2808]<br>{2.73}*** | 0.6884<br>[0.1769]<br>{3.89}***                                 | -0.6867<br>[0.1288]<br>{-5.33}***  | 0.0017<br>[0.3057]<br>{0.01}        | 0.9000<br>[0.3962]<br>{2.27}**                              | 0.1311<br>[0.2192]<br>{0.60}       | -0.5507<br>[0.0232]<br>{-23.69}*** | 0.1360<br>[0.1055]<br>{1.29}     |
| PVZ                    | 0.2436<br>[0.1657]<br>{1.47}       | -0.0592<br>[0.2465]<br>{-0.24}  | 0.7171<br>[0.1209]<br>{5.93}***  | 0.1538<br>[0.0999]<br>{1.54}           | 0.1729<br>[0.1081]<br>{1.60}*   | 0.3028<br>[0.0808]<br>{3.75}***                                 | -0.7763<br>[0.1256]<br>{-6.18}***  | -0.4735<br>[0.0448]<br>{-10.57}***  | 0.0898<br>[0.0659]<br>{1.36}                                | -0.1590<br>[0.1467]<br>{-1.08}     | -0.2321<br>[0.1385]<br>{-1.68}*    | 0.5442<br>[0.0128]<br>{42.37}*** |
| SMK                    | 1.7788<br>[0.0878]<br>{20.26}***   | -0.0241<br>[0.2008]<br>{-0.12}  | 1.3075<br>[0.0384]<br>{34.06}*** | -0.0736<br>[0.2104]<br>{-0.35}         | 0.5163<br>[0.1660]<br>{3.11}*** | 1.8029<br>[0.1129]<br>{15.96}***                                | -1.3316<br>[0.1624]<br>{-8.20}***  | 0.4713<br>[0.0494]<br>{9.54}***     | 1.8524<br>[0.1226]<br>{15.11}***                            | -0.2345<br>[0.0097]<br>{-24.30}*** | -0.5404<br>[0.0347]<br>{-15.55}*** | 0.7912<br>[0.1276]<br>{6.20}***  |
| Overall R <sup>2</sup> | 0.0505                             | 0.3304                          | 0.0950                           | 0.1646                                 | 0.2625                          | 0.1905  | 0.2127                             | 0.0728                              | 0.1076  | 0.2475                             | 0.2965                             | 0.1788                           |
| Obs                    | 60                                 | 60                              | 60                               | 60                                     | 60                              | 60  | 60                                 | 60                                  | 60  | 60                                 | 60                                 | 60                               |
| Groups                 | 6                                  | 6                               | 6                                | 6                                      | 6                               | 6   | 6                                  | 6                                   | 6   | 6                                  | 6                                  | 6                                |
| Hausman_FE             | 0.29(0.59)                         | 61.46(0.00)***                  | 1.21(0.27)                       | 0.65(0.42)                             | 0.30(0.58)                      | -   | -                                  | -                                   | -   | -                                  | -                                  | -                                |
| B-P STAT-RE            | 201.70***                          | 172.75***                       | 211.25***                        | 213.17***                              | 203.41***                       | -   | -                                  | -                                   | -   | -                                  | -                                  | -                                |

Source: Author's estimation  
 \*\*\*/\*\*\* denotes significant at 10/5/1 per cent statistical levels respectively.  
 Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )

Again, with reference to the computed 'differential' *t*-statistics reported in Table 5.4.3, it can be concluded that generally, the evolution of the estimated decade-based coefficients are not statistically stable over time except in the case of SMK and ICF, and to some extent entry barriers and pro-competition (EBC) and FLBI. The remaining decade-based coefficients exhibit inconsistent and isolated cases of stability in two out of the possible four estimations. The statistical evidence of relatively low and inconsistent parameter stability over time in SSA countries with underdeveloped financial markets might be due to the relative slow pace of financial liberalisation process in these countries especially during the early stages of economic

reforms (see Abiad *et al.* 2010). It is also possible that a significant proportion of the officially reported remittances received in SSA countries with underdeveloped financial markets during the 1980s and the 1990s might have passed through other officially recognised channels such as the MTOs and post offices hence outside the banking system and the stock markets upon which the financial liberalisation index was developed.

The results of the estimated decade-based coefficients evolution and stability tests on the impact of financial liberalisation on international remittances in 13 sampled SSA countries for which relevant data are available for a bivariate panel-data analysis are presented in Table 5.4.4. More specifically, within the context of a bivariate panel-data analysis, the computed *t*-statistics providing the statistical evidence for the changing impact of financial liberalisation on international remittance inflows in the 1980-89, 1990-99 and 2000-09 decades are reported in columns A-B, B-C and A-C respectively of Table 5.4.4.

The results reported in column A-B show that the impact of the overall index of financial liberalisation (FLBI), directed credit, reserve requirements and aggregate credit ceilings (DCRR), international capital flows (ICF), interest rate control (IRC) and stock market development (SMK) on international remittance inflows in the 1980-89 decade is not statistically different from the corresponding estimated coefficients reported for the 1990-99 decade reported in Table 5.4. This might be due to the fact that most of the sampled SSA countries actually began the implementation of financial reform policies in the latter part of the 1980s. Secondly, the pace of financial deregulation and reforms during the initial stages of implementation might be relatively slow. Apart from DCRR, in SSA, FLBI as well as each of its component indicators had a statistically different impact on international remittance inflows in 1990-99 decade when compared with the corresponding estimated coefficients for the 2000-09 decade as suggested by the computed 'differential' *t*-statistics reported in columns B-C of Table 5.4.4. There is substantial evidence that, both at the integrated and disaggregated levels, financial liberalisation impact on international remittance inflows in SSA differs statistically across the 1980-89 decade and the 2000-09 decade as shown in column A-C.

**Table 5.4.4:**  
Financial Liberalisation-Remittance Parameter Evolution and Instability Test Results in SSA

|                        | Estimated Decade-Based Results     |                                 |                                 | Rolling Estimated Results       |                                 | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                   | Overlapping Decade-Based Coefficient Stability Test Results |                                     |                                  |                                   |
|------------------------|------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---|------------------------------------|-----------------------------------|---|-------------------------------------|----------------------------------|-----------------------------------|
|                        | A                                  | B                               | C                               | D                               | E                               | A-B   | B-C                                | A-C                               | A-D   | B-D                                 | B-E                              | C-E                               |
|                        | 1980-89                            | 1990-99                         | 2000-09                         | 1985-1994                       | 1995-2004                       |   |                                    |                                   |   |                                     |                                  |                                   |
| FLBI                   | 2.5143<br>[2.5142]<br>{1.00}       | 1.7241<br>[0.9074]<br>{1.90}**  | 5.2825<br>[1.5050]<br>{3.51}*** | 1.9261<br>[0.5335]<br>{3.61}*** | 2.3444<br>[0.5042]<br>{4.65}*** | 0.7902<br>[1.6068]<br>{0.49}                                    | -3.5584<br>[0.5976]<br>{-5.95}***  | -2.7683<br>[1.0093]<br>{-2.74}**  | 0.5882<br>[1.9807]<br>{0.30}                                | -0.2020<br>[0.3739]<br>{-0.54}      | -0.6203<br>[0.4032]<br>{-1.54}   | 2.9381<br>[1.0008]<br>{2.94}***   |
| BKS                    | -0.3657<br>[0.0102]<br>{-35.75}*** | 0.5760<br>[0.2692]<br>{2.14}**  | 0.3800<br>[0.1508]<br>{2.52}**  | 0.8911<br>[0.1853]<br>{4.81}*** | 0.4102<br>[0.0926]<br>{4.43}*** | -0.9416<br>[0.2589]<br>{-3.64}***                               | 0.1960<br>[0.1184]<br>{1.66}*      | -0.7456<br>[0.1406]<br>{-5.30}*** | -1.2567<br>[0.1750]<br>{-7.18}***                           | -0.3151<br>[0.0839]<br>{-3.75}***   | 0.1658<br>[0.1765]<br>{0.94}     | -0.0302<br>[0.0582]<br>{-0.52}    |
| DCRR                   | 0.2983<br>[0.4452]<br>{0.67}       | 0.5378<br>[0.1854]<br>{2.90}*** | 0.5999<br>[0.2926]<br>{2.05}**  | 0.2561<br>[0.1133]<br>{2.26}**  | 0.2716<br>[0.1275]<br>{2.13}**  | -0.2395<br>[0.2598]<br>{-0.92}                                  | -0.0621<br>[0.1072]<br>{-0.58}     | -0.3016<br>[0.1526]<br>{-1.98}**  | 0.0422<br>[0.3319]<br>{0.13}                                | 0.2817<br>[0.0721]<br>{3.91}***     | 0.2662<br>[0.0579]<br>{4.59}***  | 0.3283<br>[0.1651]<br>{1.99}**    |
| EBC                    | 0.6545<br>[0.3697]<br>{1.77}*      | 0.1548<br>[0.0774]<br>{2.00}**  | 0.6580<br>[0.2136]<br>{3.08}*** | 0.2272<br>[0.0817]<br>{2.78}**  | 0.2206<br>[0.1511]<br>{1.46}    | 0.4996<br>[0.2923]<br>{1.71}*                                   | -0.5032<br>[0.1362]<br>{-3.69}***  | -0.0036<br>[0.1561]<br>{-0.02}    | 0.4273<br>[0.2880]<br>{1.48}                                | -0.0724<br>[0.0043]<br>{-16.81}***  | -0.0658<br>[0.0737]<br>{-0.89}   | 0.4374<br>[0.0625]<br>{6.99}***   |
| ICF                    | -0.0341<br>[0.3791]<br>{-0.09}     | 0.1014<br>[0.1561]<br>{0.65}    | 0.2005<br>[0.1013]<br>{1.98}**  | 0.4295<br>[0.1746]<br>{2.46}**  | 0.2237<br>[0.0956]<br>{2.34}**  | -0.1356<br>[0.2230]<br>{-0.61}                                  | -0.0991<br>[0.0548]<br>{-1.81}*    | -0.2346<br>[0.2778]<br>{-0.84}    | -0.4637<br>[0.2045]<br>{-2.27}**                            | -0.3281<br>[0.0185]<br>{-17.69}***  | -0.1222<br>[0.0605]<br>{-2.02}** | -0.0232<br>[0.0057]<br>{-4.08}*** |
| IRC                    | 0.3379<br>[0.2964]<br>{1.14}       | 0.2467<br>[0.1542]<br>{1.60}    | 0.8022<br>[0.1803]<br>{4.45}*** | 0.1141<br>[0.0731]<br>{1.56}    | 0.2949<br>[0.1705]<br>{1.73}*   | 0.0912<br>[0.1422]<br>{0.64}                                    | -0.5555<br>[0.0261]<br>{-21.28}*** | -0.4643<br>[0.1161]<br>{-4.00}*** | 0.2238<br>[0.2232]<br>{1.00}                                | 0.1326<br>[0.0810]<br>{1.64}        | -0.0483<br>[0.0163]<br>{-2.96}** | 0.5073<br>[0.0098]<br>{51.79}***  |
| PVZ                    | -0.6792<br>[0.5265]<br>{-1.29}     | 0.1954<br>[0.1897]<br>{1.03}    | 0.6002<br>[0.1060]<br>{5.66}*** | 0.1995<br>[0.1750]<br>{1.14}    | 0.2006<br>[0.0671]<br>{2.99}*** | -0.8746<br>[0.3368]<br>{-2.60}**                                | -0.4048<br>[0.0837]<br>{-4.84}***  | -1.2794<br>[0.4205]<br>{-3.04}*** | -0.8787<br>[0.3515]<br>{-2.50}**                            | -0.0041<br>[0.0147]<br>{-0.27}      | -0.0052<br>[0.1226]<br>{-0.04}   | 0.3996<br>[0.0389]<br>{10.26}***  |
| SMK                    | 0.2926<br>[0.7699]<br>{0.38}       | 0.2651<br>[0.2008]<br>{1.32}    | 0.6096<br>[0.1752]<br>{3.48}*** | 0.7117<br>[0.2039]<br>{3.49}*** | 0.3056<br>[0.1092]<br>{2.80}**  | 0.0275<br>[0.5691]<br>{0.05}                                    | -0.3445<br>[0.0257]<br>{-13.43}*** | -0.3170<br>[0.5947]<br>{-0.53}    | -0.4192<br>[0.5660]<br>{-0.74}                              | -0.4466<br>[0.0031]<br>{-143.60}*** | -0.0406<br>[0.1951]<br>{-0.21}   | 0.3039<br>[0.1845]<br>{1.65}*     |
| Overall R <sup>2</sup> | 0.0693                             | 0.1554                          | 0.0681                          | 0.0792                          | 0.1353                          | 0.1124  | 0.1118                             | 0.0687                            | 0.0743  | 0.1173                              | 0.1454                           | 0.1017                            |
| Obs                    | 130                                | 130                             | 130                             | 130                             | 130                             | 130   | 130                                | 130                               | 130   | 130                                 | 130                              | 130                               |
| Groups                 | 13                                 | 13                              | 13                              | 13                              | 13                              | 13  | 13                                 | 13                                | 13  | 13                                  | 13                               | 13                                |
| Hausman-FE             | 0.11(0.74)                         | 1.71(0.19)                      | 0.50(0.48)                      | 0.18(0.67)                      | 0.29(0.59)                      | -   | -                                  | -                                 | -   | -                                   | -                                | -                                 |
| B-P STAT-RE            | 456.16***                          | 358.17***                       | 469.69***                       | 438.26***                       | 458.71***                       | -   | -                                  | -                                 | -   | -                                   | -                                | -                                 |

**Source:** Author's estimation *\*/\*\*/\*\* denotes significant at 10/5/1 per cent statistical levels respectively. Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )*

Considering the results of coefficient instability test reported in columns A-D, B-D, B-E and C-E of Table 5.4.4, it is quite obvious that apart from the estimated coefficients of ICF, none of the estimated decade-based coefficients exhibits a complete and consistent pattern of instability over the three decades. The overriding implication of this result is that although, generally, the impact of financial liberalisation on remittance inflows seems to vary from decade to decade, there is very little evidence in favour of instability among the estimated decade-based coefficients over the period 1980-2009. This might be due to the general slow pace of the liberalisation process in the early stages of the economic reforms and the fact that most of the officially reported remittances received in SSA during the 1980s and the 1990s might have been transferred through MTOs and post offices rather than the formal financial institutions

such as banks and stock markets.

## **5.6 CONCLUSIONS AND POLICY RECOMMENDATIONS**

As SSA countries with underdeveloped financial markets received more official remittances than the SSA countries with frontier and emerging financial markets, it is implied that most of the officially reported remittances received in SSA between 1980 and 2009 were transferred through other officially approved channels other than the banking system and the stock market. This is evidence that SSA banks are not active participants in the international remittance market; leaving MTOs mainly Western Union and MoneyGram to be enjoying monopolistic advantages. Under this circumstance, given the altruistic nature of remittances and the demand for MTO services on official remittances, international money transfer might be highly price-inelastic enabling these MTOs to charge higher fees on remittance transfers in a bid to earn supernormal profits on the major SSA remittance-corridors. The low participation of banks in the remittance market might be due to mistrust of banks and the relative superior efficiency of MTOs, at least, in connection with the speed, coverage, precision and reliability of the service offered. The low participation of SSA banks may also be due to the existence of structural and systemic constraints to competitive conditions such as poor financial infrastructure, inappropriate legal and regulatory framework, and lack of convenient access to banking services.

In contrast to MTOs, the few SSA banks that have offshore facilities to facilitate cross-border payment systems can be described not only as generally inefficient and unreliable, but also costly due to lack of automated direct links for retail transfers. This is why effecting a single remittance transfer to a typical SSA country through the banking system often involves a multi-stage series of network correspondent bank transactions that do not only increase the total cost of remitting but also delay the time taken for the target recipient to receive the funds transferred. The forefront position of SSA bourses in attracting official remittances should not be taken for granted as, unlike SSA banks, the majority of these stock exchanges are part of the global capital markets and have online facilities. Clearly, SSA banks are not taking advantage of financial liberalisation policies pursued in the sub-region to attract more remittances strategically. In other words, even though the implementation of FLB programme is necessary, it is not in itself sufficient to attract more remittances through the formal financial system.

The results of this study imply that the underlying objectives have been achieved and the answers to the specific research questions posed have been provided. The main answers are that, by the stylised facts, SSA countries with frontier and emerging financial markets are, in relative terms, more likely to receive more remittances through the formal financial system when compared with other SSA countries with underdeveloped financial markets. Generally, financial liberalisation Granger-causes international remittance inflows with a low statistical evidence for a reverse causal effect. Policies on the stock market development Granger-caused higher inflows of remittances than the financial liberalisation policies on the banking system. On the impact of financial liberalisation, and each of the specific reform policies implemented under the programme, the findings of this study provide the affirmation that the overall and specific policy impact of financial liberalisation on remittance inflows is positive and that this impact is more significant in countries with frontier and emerging financial markets than in other SSA countries where financial markets are underdeveloped. The statistical and economic significance of the effects of financial liberalisation and each of its specific policies on international remittance inflows have been generally increasing over time.

It is, therefore, recommended that, in order to attract more official remittances to SSA through the formal financial system, domestic banks should devise strategies to enter into the lucrative remittance market and compete away supernormal profits earned by MTOs. This will reduce the cost of remitting on the official remittance-corridors of SSA, and encourage migrants to patronise the services offered by banks in the international remittance market. More specifically, by the evidence of the empirical results and best practices elsewhere, it is suggested that SSA banks should:

- i. Introduce differentiated services and develop remittance-products through technological innovation. Innovative products, online and automation in payment systems are necessary to reduce the cost of handling small cross-border money transfers. Although this may require huge capital investment, banks must appreciate the substantial long-term benefits from such an investment project mainly because remittance inflows, which are less negatively affected by economic downturns, can cushion banks in periods of recession. Consequently, SSA banks should develop the payment systems that can directly communicate across borders or even develop products that can use existing payment systems such as credit cards and/or ATM products.

- ii. Open overseas branches and offer more offshore services to residents at home to facilitate payments and receipts of remittances internationally. With an effective network system, it should be possible to develop and extend the internal electronic proprietary payment systems to all branches including overseas branches, and complement this payment system with an account-to-account collection and delivery system. Through this, remittances deposited in overseas branches should be easily and readily accessible to target recipients at home at relatively low transaction costs.
- iii. Through further liberalisation of the financial market, promote competition that breeds financial innovation both in terms of products and services. One aspect of the competitive landscape of which banks can take advantage is to target migrants as customers by offering relatively low costs on remittance services whilst aiming at making reasonable gains from other supporting services offered, using remittances as leverage. Examples include providing relevant information on investment opportunities at home, offering mortgages and housing loans, and assisting migrants in planning for their retirement and in insuring their valuable assets.
- iv. Establish bilateral and multilateral partnerships and networks with one another not excluding rural and community banks, and with post offices and foreign banks, in order to build an efficient and reliable national and international payment systems among collaborating banks and institutions, in a manner that will make banks appear more visible and conveniently accessible in the remittance market at home and overseas. In order to succeed in the long run, SSA banks must focus on strategic partnerships, networks, and negotiated alliances and franchises similar to the models used by large multinationals, so as to enable them to overcome the challenges of high operational costs and the geographic fragmentation of the remittance markets.

Meanwhile, because stock markets tend to be the most important channel through which SSA migrants remit (with reference to the impact on official remittances received), it is hereby suggested that policy makers should design policies aimed at further enhancing electronic trading via stock market automation, and improving financial literacy on the role of stock markets as well as the regional and international integration of SSA stock markets among migrants and potential recipients of remittances. In SSA countries where stock markets do not currently exist or are underdeveloped, regionalisation of capital markets could be of tremendous benefit in this regard.

**APPENDIX 5**

**Table A5.1: Panel Unit Root Test Results**

|               | PANEL UNIT ROOT TEST STATISTICS |                            |                         |                              | Conclusion |
|---------------|---------------------------------|----------------------------|-------------------------|------------------------------|------------|
|               | Breitung <i>t</i> -stat         |                            | Hadri HC <i>z</i> -stat | Fisher P-P <i>chi-square</i> |            |
|               | At Level                        | 1 <sup>st</sup> Difference | At Level                | At Level                     |            |
| <b>BKS</b>    | -1.4719*                        |                            | 4.5862***               |                              | I(0)       |
|               | {0.0705}                        |                            | (0.0000)                |                              |            |
| <b>DCRR</b>   | -1.5026*                        |                            | 4.8241***               |                              | I(0)       |
|               | {0.0665}                        |                            | (0.0000)                |                              |            |
| <b>EBC</b>    | -2.5113***                      |                            | 6.6481***               |                              | I(0)       |
|               | {0.0060}                        |                            | (0.0000)                |                              |            |
| <b>FLBI</b>   | -2.5523***                      |                            | 3.5286***               |                              | I(0)       |
|               | {0.0054}                        |                            | (0.0002)                |                              |            |
| <b>ICF</b>    | -2.7046***                      |                            | 5.4839***               |                              | I(0)       |
|               | {0.0034}                        |                            | (0.0000)                |                              |            |
| <b>IRC</b>    | -0.2735                         | -3.8695***                 | 5.6366***               | -2.5925***                   | I(0)       |
|               | {0.3922}                        | {0.0001}                   | (0.0000)                | [0.0048]                     |            |
| <b>lnREMP</b> | -0.3146                         | -7.2297***                 | 6.0585***               | 46.2448***                   | I(0)       |
|               | {0.3765}                        | {0.0000}                   | (0.0000)                | [0.0086]                     |            |
| <b>PVZ</b>    | -2.9646***                      |                            | 7.0261***               |                              | I(0)       |
|               | {0.0015}                        |                            | (0.0000)                |                              |            |
| <b>SMK</b>    | -2.9011***                      |                            | 5.8985***               |                              | I(0)       |
|               | {0.0019}                        |                            | (0.0000)                |                              |            |

**Source:** Author's computations **Note:** Figures in brackets are respective probability values. \*\*\*/ \*\*/ \* significant at 1%/5%/10 level statistical level respectively. Constant and trend included.

**Table A5.2: Results of Panel Co-integration Tests**

| Explanatory Variable | Engel-Granger 2-Step (EG2S) |                 | Johansen Unrestricted Cointegrating Rank (JUCR) Test |            |                   |                |                   |
|----------------------|-----------------------------|-----------------|--|------------|-------------------|----------------|-------------------|
|                      | Resid_Mean                  | t-stat(t-prob.) | Hypothesis   | Trace stat | 5% Critical Value | Max-Eigen stat | 5% Critical Value |
| <b>BKS</b>           | 1.76E-16                    | 6.0950(0.00)*** | None   | 7.824      | 15.4947           | 6.8273         | 14.2646           |
|                      |                             |                 | At most 1  | 0.9967     | 3.8415            | 0.9967         | 3.8415            |
| <b>DCRR</b>          | 6.38E-17                    | 6.9910(0.00)*** | None   | 22.9069*** | 15.4947           | 17.2493**      | 14.2646           |
|                      |                             |                 | At most 1  | 5.6576**   | 3.8415            | 5.6576**       | 3.8415            |
| <b>EBC</b>           | 3.60E-16                    | 6.7017(0.00)*** | None   | 30.5906*** | 15.4947           | 22.1948***     | 14.2646           |
|                      |                             |                 | At most 1  | 8.3957***  | 3.8415            | 8.3957***      | 3.8415            |
| <b>FLBI</b>          | 1.48E-16                    | 4.5307(0.00)*** | None   | 19.5899**  | 15.4947           | 12.6661*       | 14.2646           |
|                      |                             |                 | At most 1  | 6.9238***  | 3.8415            | 6.9238***      | 3.8415            |
| <b>ICF</b>           | 1.40E-16                    | 5.5711(0.00)*** | None   | 20.9139*** | 15.4947           | 15.7397**      | 14.2646           |
|                      |                             |                 | At most 1  | 5.1742**   | 3.8415            | 5.1742**       | 3.8415            |
| <b>IRC</b>           | 1.84E-16                    | 6.8417(0.00)*** | None   | 29.1684*** | 15.4947           | 23.2101***     | 14.2646           |
|                      |                             |                 | At most 1  | 5.9582**   | 3.8415            | 5.9582**       | 3.8415            |
| <b>PVZ</b>           | 1.21E-16                    | 7.3991(0.00)*** | None   | 17.1967**  | 15.4947           | 14.3087**      | 14.2646           |
|                      |                             |                 | At most 1  | 2.8880*    | 3.8415            | 2.8880*        | 3.8415            |
| <b>SMK</b>           | 2.32E-16                    | 7.6376(0.00)*** | None   | 16.3152**  | 15.4947           | 13.5167**      | 14.2646           |
|                      |                             |                 | At most 1  | 2.7985*    | 3.8415            | 2.7985*        | 3.8415            |

**Source:** Author's estimation **Note:** \*\*\*/\*\*/\* represent statistical significance at 1%/5%/10% respectively. Constant no trend included the HHC test for the EG2S and the JUCR tests.

**Table A5.3:**

Financial Liberalisation-Remittances Bivariate Panel Granger Non-Causality Results in SSA, 1990-2009

| <i>Null Hypothesis:</i>             | <i>No. of</i>            | <b>Frontier &amp; Emerging</b> |                             | <b>Others (underdeveloped)</b> |                             | <b>Full Sample (combined)</b> |                             |
|-------------------------------------|--------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|-------------------------------|-----------------------------|
|                                     | <i>Lags</i> <sup>‡</sup> | <i>Obs</i>                     | <i>F-statistic(F-prob.)</i> | <i>Obs</i>                     | <i>F-statistic(F-prob.)</i> | <i>Obs</i>                    | <i>F-statistic(F-prob.)</i> |
| FLBI does not Granger cause lnREMPC | 2                        | 126                            | 0.6587(0.52)                | 108                            | 0.3249(0.72)                | 234                           | 0.9785(0.38)                |
| lnREMPC does not Granger cause FLBI | 2                        | 126                            | 1.3263(0.27)                | 108                            | 0.6783(0.51)                | 234                           | 1.5404(0.22)                |
| BKS does not Granger cause lnREMPC  | 2                        | 126                            | 0.9363(0.40)                | 108                            | 0.3499(0.71)                | 234                           | 0.0353(0.97)                |
| lnREMPC does not Granger cause BKS  | 2                        | 126                            | 2.8622(0.06)*               | 108                            | 0.0039(0.99)                | 234                           | 2.6058(0.08)*               |
| DCRR does not Granger cause lnREMPC | 2                        | 126                            | 0.0587(0.94)                | 108                            | 0.1765(0.84)                | 234                           | 0.2054(0.81)                |
| lnREMPC does not Granger cause DCRR | 2                        | 126                            | 3.5036(0.03)**              | 108                            | 2.7280(0.07)*               | 234                           | 0.5508(0.58)                |
| EBC does not Granger cause lnREMPC  | 2                        | 126                            | 1.0642(0.35)                | 108                            | 0.2385(0.78)                | 234                           | 0.7132(0.49)                |
| lnREMPC does not Granger cause EBC  | 2                        | 126                            | 0.6269(0.54)                | 108                            | 0.1116(0.45)                | 234                           | 0.1287(0.88)                |
| ICF does not Granger cause lnREMPC  | 2                        | 126                            | 0.2254(0.80)                | 108                            | 0.2937(0.75)                | 234                           | 0.3627(0.70)                |
| lnREMPC does not Granger cause ICF  | 2                        | 126                            | 0.7919(0.46)                | 108                            | 0.8024(0.45)                | 234                           | 1.7068(0.18)                |
| IRC does not Granger cause lnREMPC  | 2                        | 126                            | 0.2709(0.76)                | 108                            | 2.1224(0.13)                | 234                           | 0.1639(0.85)                |
| lnREMPC does not Granger cause IRC  | 2                        | 126                            | 0.6033(0.55)                | 108                            | 2.0724(0.13)                | 234                           | 1.1212(0.33)                |
| PVZ does not Granger cause lnREMPC  | 2                        | 126                            | 0.0687(0.93)                | 108                            | 0.0971(0.91)                | 234                           | 0.5578(0.57)                |
| lnREMPC does not Granger cause PVZ  | 2                        | 126                            | 1.5406(0.22)                | 108                            | 0.4279(0.65)                | 234                           | 1.8102(0.17)                |
| SMK does not Granger cause lnREMPC  | 2                        | 126                            | 6.7021(0.00)***             | 108                            | 2.4403(0.09)*               | 234                           | 8.1991(0.00)***             |
| lnREMPC does not Granger cause SMK  | 2                        | 126                            | 0.2721(0.76)                | 108                            | 1.7109(0.19)                | 234                           | 1.2681(0.28)                |

**Source:** Author.**Note:** <sup>‡</sup> is a model-specific optimal lag selected according to SIC, AIC and log likelihood. REMPC here refers to migrant remittances per capita

**Table A5.4:** Empirical Modelling Robustness Test for Impact of Financial Liberalisation on International Remittances in SSA, 1980-2009

|                        | Pooled Ordinary Least Squares |                     |                     |                     | Panel Fixed Effects    |                     |                       |                     | Panel Random Effects   |                     |                     |                     |
|------------------------|-------------------------------|---------------------|---------------------|---------------------|------------------------|---------------------|-----------------------|---------------------|------------------------|---------------------|---------------------|---------------------|
|                        | 1980-89                       | 1990-99             | 2000-09             | 1980-09             | 1980-89                | 1990-99             | 2000-09               | 1980-09             | 1980-89                | 1990-99             | 2000-09             | 1980-09             |
| FLBI                   | 3.6820<br>[3.68]***           | 3.5006<br>[4.90]*** | 3.1291<br>[4.05]*** | 3.4454<br>[9.38]*** | 2.3926<br>[0.89]       | 1.6491<br>[1.83]*   | 5.4055<br>[3.35]***   | 3.2042<br>[3.75]*** | 2.5143<br>(1.00)       | 1.7241<br>(1.90)*   | 5.2825<br>(3.51)*** | 3.2078<br>(3.76)*** |
| BKS                    | 0.4944<br>[1.99]**            | 0.3764<br>[1.37]    | 0.0116<br>[-0.06]   | 0.7655<br>[6.67]*** | -0.3805<br>[-32.89]*** | 0.5811<br>[2.15]**  | 0.3903<br>[2.44]**    | 1.0170<br>[4.50]*** | -0.3657<br>(-35.75)*** | 0.5760<br>(2.14)**  | 0.3800<br>(2.52)**  | 1.0140<br>(4.49)*** |
| DCRR                   | 1.7848<br>[5.21]***           | 0.6545<br>[3.10]*** | -0.2647<br>[-1.24]  | 0.8952<br>[8.39]*** | 0.2239<br>[0.51]       | 0.5347<br>[2.86]*** | 0.7274<br>[2.11]*     | 0.7547<br>[3.13]*** | 0.2983<br>(0.67)       | 0.5378<br>(2.90)*** | 0.5999<br>(2.05)**  | 0.7572<br>(3.15)*** |
| EBC                    | 0.6418<br>[5.15]***           | 0.3831<br>[2.66]*** | 0.6431<br>[4.80]*** | 0.7135<br>[8.58]*** | 0.6572<br>[1.55]       | 0.1426<br>[1.88]*   | 0.6597<br>[2.99]***   | 0.6267<br>[3.67]*** | 0.6545<br>(1.77)*      | 0.1548<br>(2.00)**  | 0.6580<br>(3.08)*** | 0.6290<br>(3.71)*** |
| ICF                    | 0.8364<br>[2.35]**            | 0.6059<br>[4.03]*** | 0.4618<br>[3.35]*** | 0.8612<br>[8.63]*** | -0.0597<br>[-0.15]     | 0.0819<br>[0.53]    | 0.1845<br>[1.65]      | 0.6048<br>[3.60]*** | -0.0341<br>(-0.09)     | 0.1014<br>(0.65)    | 0.2005<br>(1.98)**  | 0.6118<br>(3.58)*** |
| IRC                    | 0.0155<br>[0.11]              | 0.2669<br>[1.89]*   | 0.0928<br>[0.54]    | 0.4512<br>[5.66]*** | 0.3481<br>[1.14]       | 0.2459<br>[1.56]    | 1.0198<br>[5.9e04]*** | 0.6111<br>[3.34]*** | 0.3379<br>(1.14)       | 0.2467<br>(1.60)    | 0.8022<br>(4.45)*** | 0.6086<br>(3.46)*** |
| PVZ                    | 0.2089<br>[1.46]              | 0.8137<br>[5.94]*** | 0.5567<br>[4.35]*** | 0.6942<br>[9.09]*** | -1.0075<br>[-2.07]**   | 0.1333<br>[0.78]    | 0.6023<br>[5.67]***   | 0.5407<br>[2.74]*** | -0.6792<br>(-1.29)     | 0.1954<br>(1.03)    | 0.6002<br>(5.66)*** | 0.5448<br>(2.76)*** |
| SMK                    | -0.0362<br>[-0.10]            | 0.2963<br>[1.22]    | 0.2516<br>[1.46]    | 0.6928<br>[5.74]*** | 0.3141<br>[0.40]       | 0.2636<br>[1.32]    | 0.6379<br>[3.48]***   | 1.2312<br>[5.16]*** | 0.2926<br>(0.38)       | 0.2651<br>(1.32)    | 0.6096<br>(3.48)*** | 1.2227<br>(5.17)*** |
| Overall R <sup>2</sup> | 0.0693                        | 0.1554              | 0.0681              | 0.2189              | 0.0693                 | 0.1554              | 0.0681                | 0.2189              | 0.0693                 | 0.1554              | 0.0681              | 0.2189              |
| Obs                    | 390                           | 390                 | 390                 | 390                 | 390                    | 390                 | 390                   | 390                 | 390                    | 390                 | 390                 | 390                 |
| Groups                 | 13                            | 13                  | 13                  | 13                  | 13                     | 13                  | 13                    | 13                  | 13                     | 13                  | 13                  | 13                  |

Source: Author's estimation.

Note: \*\*\*/\*\*/\* represent statistical significance at 1%/5%/10% respectively.

Constant term included for each estimation. z-statistics in ( ); t-statistics in [ ]; with both statistics based on robust standard errors. R<sup>2</sup>, Hausman's specification tests, and B-P tests are based on estimated models involving FLBI

**Table A5.5: Pairwise Correlation Coefficients of Financial Liberalisation Indicators and Remittances in SSA, 1980-2009**

| <b>Frontier &amp; Emerging Markets</b>                           |         |        |        |        |        |        |        |        |        |
|--|---------|--------|--------|--------|--------|--------|--------|--------|--------|
|  | InREMPC | DCRR   | IRC    | EBC    | BKS    | PVZ    | ICF    | SMK    | FLBI   |
| InREMPC  | 1.0000  |        |        |        |        |        |        |        |        |
| DCRR   | 0.3313  | 1.0000 |        |        |        |        |        |        |        |
| IRC  | 0.4095  | 0.7183 | 1.0000 |        |        |        |        |        |        |
| EBC  | 0.4864  | 0.4909 | 0.3691 | 1.0000 |        |        |        |        |        |
| BKS  | 0.4534  | 0.6472 | 0.6308 | 0.5485 | 1.0000 |        |        |        |        |
| PVZ  | 0.5165  | 0.6644 | 0.6412 | 0.4420 | 0.6769 | 1.0000 |        |        |        |
| ICF  | 0.4202  | 0.3280 | 0.5639 | 0.5069 | 0.5040 | 0.4928 | 1.0000 |        |        |
| SMK  | 0.4242  | 0.6776 | 0.5697 | 0.5084 | 0.6616 | 0.6686 | 0.4541 | 1.0000 |        |
| FLBI   | 0.5546  | 0.8132 | 0.8319 | 0.6922 | 0.8344 | 0.8377 | 0.7042 | 0.8058 | 1.0000 |
| <b>Others (underdeveloped)</b>                                   |         |        |        |        |        |        |        |        |        |
|  | InREMPC | DCRR   | IRC    | EBC    | BKS    | PVZ    | ICF    | SMK    | FLBI   |
| InREMPC  | 1.0000  |        |        |        |        |        |        |        |        |
| DCRR   | 0.5318  | 1.0000 |        |        |        |        |        |        |        |
| IRC  | 0.2008  | 0.6158 | 1.0000 |        |        |        |        |        |        |
| EBC  | 0.3761  | 0.5886 | 0.5952 | 1.0000 |        |        |        |        |        |
| BKS  | 0.1142  | 0.6124 | 0.7271 | 0.5423 | 1.0000 |        |        |        |        |
| PVZ  | 0.3636  | 0.5853 | 0.5811 | 0.8485 | 0.5939 | 1.0000 |        |        |        |
| ICF  | 0.3303  | 0.4288 | 0.6677 | 0.5953 | 0.5723 | 0.5568 | 1.0000 |        |        |
| SMK  | 0.1319  | 0.5765 | 0.4762 | 0.5959 | 0.6570 | 0.5401 | 0.4020 | 1.0000 |        |
| FLBI   | 0.3833  | 0.7831 | 0.8237 | 0.8760 | 0.8059 | 0.8681 | 0.7330 | 0.7207 | 1.0000 |
| <b>Full Sample (frontier &amp; emerging plus underdeveloped)</b> |         |        |        |        |        |        |        |        |        |
|  | InREMPC | DCRR   | IRC    | EBC    | BKS    | PVZ    | ICF    | SMK    | FLBI   |
| InREMPC  | 1.0000  |        |        |        |        |        |        |        |        |
| DCRR   | 0.4226  | 1.0000 |        |        |        |        |        |        |        |
| IRC  | 0.2932  | 0.5965 | 1.0000 |        |        |        |        |        |        |
| EBC  | 0.4178  | 0.5116 | 0.4573 | 1.0000 |        |        |        |        |        |
| BKS  | 0.3188  | 0.6005 | 0.6608 | 0.5439 | 1.0000 |        |        |        |        |
| PVZ  | 0.4347  | 0.5991 | 0.6193 | 0.6309 | 0.6471 | 1.0000 |        |        |        |
| ICF  | 0.3939  | 0.3592 | 0.5496 | 0.5102 | 0.5102 | 0.4920 | 1.0000 |        |        |
| SMK  | 0.2817  | 0.5516 | 0.5786 | 0.5316 | 0.6581 | 0.6203 | 0.4023 | 1.0000 |        |
| FLBI   | 0.4679  | 0.7620 | 0.8236 | 0.7698 | 0.8255 | 0.8513 | 0.6898 | 0.7717 | 1.0000 |

Source: Author's estimation

**Table A5.6: Descriptive Statistics of Financial Liberalisation Indicators and Remittances Data**

| <b>Frontier &amp; Emerging Markets</b>                                   |           |          |          |          |          |          |          |          |          |
|--|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
|  | LNREMP    | DCRR     | IRC      | EBC      | BKS      | PVZ      | ICF      | SMK      | FLBI     |
| Mean   | 0.6158    | 1.3119   | 1.9619   | 2.1381   | 0.8095   | 1.5333   | 1.1095   | 1.1048   | 0.4747   |
| Median   | 1.2544    | 1.0000   | 3.0000   | 3.0000   | 1.0000   | 2.0000   | 1.0000   | 1.0000   | 0.5238   |
| Maximum  | 4.1897    | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 0.9643   |
| Minimum  | -4.4361   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   |
| Std. Dev.  | 2.0608    | 0.8917   | 1.3725   | 1.0871   | 0.8869   | 1.2301   | 1.0317   | 0.8741   | 0.2772   |
| Skewness   | -0.8828   | 0.0418   | -0.6326  | -0.7686  | 0.7521   | -0.0770  | 0.6709   | 0.3990   | -0.2940  |
| Kurtosis   | 3.0062    | 1.6321   | 1.4831   | 2.0667   | 2.5435   | 1.4172   | 2.3320   | 2.4388   | 1.8857   |
| Jarque-Bera  | 27.2761   | 16.4347  | 34.1403  | 28.2972  | 21.6219  | 22.1298  | 19.6563  | 8.3283   | 13.8896  |
| Probability  | 0.0000    | 0.0003   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0001   | 0.0155   | 0.0010   |
| Sum  | 129.3189  | 275.5000 | 412.0000 | 449.0000 | 170.0000 | 322.0000 | 233.0000 | 232.0000 | 99.6905  |
| Sum Sq. Dev.   | 887.5945  | 166.1952 | 393.6952 | 246.9952 | 164.3810 | 316.2667 | 222.4810 | 159.6952 | 16.0577  |
| Observations   | 210       | 210      | 210      | 210      | 210      | 210      | 210      | 210      | 210      |
| <b>Others (underdeveloped)</b>   |           |          |          |          |          |          |          |          |          |
|  | InREMP    | DCRR     | IRC      | EBC      | BKS      | PVZ      | ICF      | SMK      | FLBI     |
| Mean   | 1.0645    | 1.5833   | 1.2889   | 1.8944   | 0.6389   | 1.2444   | 1.2278   | 0.6611   | 0.4066   |
| Median   | 1.2571    | 1.8750   | 1.0000   | 2.0000   | 1.0000   | 1.0000   | 1.0000   | 1.0000   | 0.4226   |
| Maximum  | 4.7948    | 2.5000   | 3.0000   | 3.0000   | 2.0000   | 3.0000   | 2.0000   | 2.0000   | 0.7500   |
| Minimum  | -4.3811   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   |
| Std. Dev.  | 1.6961    | 0.8954   | 0.9542   | 1.1458   | 0.6666   | 1.1415   | 0.6415   | 0.5610   | 0.2330   |
| Skewness   | -0.4526   | -0.3459  | -0.0231  | -0.3291  | 0.5605   | 0.1443   | -0.2432  | 0.1038   | -0.2380  |
| Kurtosis   | 3.2633    | 1.5871   | 1.8926   | 1.5384   | 2.2915   | 1.5162   | 2.3231   | 2.2833   | 1.6592   |
| Jarque-Bera  | 6.6659    | 18.5619  | 9.2136   | 19.2728  | 13.1909  | 17.1370  | 5.2114   | 4.1758   | 15.1825  |
| Probability  | 0.0357    | 0.0001   | 0.0100   | 0.0001   | 0.0014   | 0.0002   | 0.0739   | 0.1239   | 0.0005   |
| Sum  | 191.6162  | 285.0000 | 232.0000 | 341.0000 | 115.0000 | 224.0000 | 221.0000 | 119.0000 | 73.1905  |
| Sum Sq. Dev.   | 514.9460  | 143.5000 | 162.9778 | 234.9944 | 79.5278  | 233.2444 | 73.6611  | 56.3278  | 9.7199   |
| Observations   | 180       | 180      | 180      | 180      | 180      | 180      | 180      | 180      | 180      |
| <b>Full Sample (frontier &amp; emerging plus underdeveloped markets)</b> |           |          |          |          |          |          |          |          |          |
|  | InREMP    | DCRR     | IRC      | EBC      | BKS      | PVZ      | ICF      | SMK      | FLBI     |
| Mean   | 0.8229    | 1.4372   | 1.6513   | 2.0256   | 0.7308   | 1.4000   | 1.1641   | 0.9000   | 0.4433   |
| Median   | 1.2554    | 1.0000   | 2.0000   | 3.0000   | 1.0000   | 2.0000   | 1.0000   | 1.0000   | 0.4881   |
| Maximum  | 4.7948    | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 0.9643   |
| Minimum  | -4.4361   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   |
| Std. Dev.  | 1.9120    | 0.9025   | 1.2425   | 1.1198   | 0.7964   | 1.1973   | 0.8745   | 0.7774   | 0.2597   |
| Skewness   | -0.8038   | -0.1314  | -0.2109  | -0.5565  | 0.7944   | 0.0389   | 0.4611   | 0.6351   | -0.2059  |
| Kurtosis   | 3.3650    | 1.5594   | 1.4238   | 1.7528   | 2.8286   | 1.4566   | 2.5955   | 3.0992   | 1.8569   |
| Jarque-Bera  | 44.1603   | 34.8452  | 43.2616  | 45.4029  | 41.4942  | 38.8065  | 16.4811  | 26.3740  | 23.9900  |
| Probability  | 0.0000    | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0003   | 0.0000   | 0.0000   |
| Sum  | 320.9352  | 560.5000 | 644.0000 | 790.0000 | 285.0000 | 546.0000 | 454.0000 | 351.0000 | 172.8810 |
| Sum Sq. Dev.   | 1422.0570 | 316.8359 | 600.5744 | 487.7436 | 246.7308 | 557.6000 | 297.4974 | 235.1000 | 26.2271  |
| Observations   | 390       | 390      | 390      | 390      | 390      | 390      | 390      | 390      | 390      |

Source: Author's computation

**Table A5.7: Degree of Financial Liberalisation in Contemporary SSA, 2005-2009**

| Ccode | Country Name  | Year | DCRR | IRC  | EBC  | BKS  | PVZ  | ICF  | SMK  | FLBI      |
|-------|---------------|------|------|------|------|------|------|------|------|-----------|
| 1     | Burkina Faso  | 2005 | 2.50 | 2.00 | 2.00 | 1.00 | 2.00 | 2.00 | 1.00 | 0.595238  |
| 1     | Burkina Faso  | 2007 | 2.50 | 2.00 | 2.00 | 1.00 | 2.00 | 2.00 | 1.00 | 0.595238  |
| 1     | Burkina Faso  | 2009 | 2.50 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 0.642857  |
| 2     | Cameroon      | 2005 | 2.50 | 1.00 | 3.00 | 1.00 | 3.00 | 1.00 | 1.00 | 0.595238  |
| 2     | Cameroon      | 2007 | 2.50 | 2.00 | 3.00 | 1.00 | 3.00 | 1.00 | 1.00 | 0.642857  |
| 2     | Cameroon      | 2009 | 2.50 | 2.00 | 3.00 | 1.00 | 3.00 | 1.00 | 1.00 | 0.642857  |
| 3     | Côte d'Ivoire | 2005 | 2.50 | 2.00 | 3.00 | 1.00 | 2.00 | 2.00 | 1.00 | 0.642857  |
| 3     | Côte d'Ivoire | 2007 | 2.50 | 2.00 | 3.00 | 1.00 | 2.00 | 2.00 | 1.00 | 0.642857  |
| 3     | Côte d'Ivoire | 2009 | 2.50 | 2.00 | 3.00 | 1.00 | 3.00 | 2.00 | 1.00 | 0.690476  |
| 4     | Ethiopia      | 2005 | 2.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 2.00 | 0.380952  |
| 4     | Ethiopia      | 2007 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.00 | 0.428571  |
| 4     | Ethiopia      | 2009 | 2.00 | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | 2.00 | 0.523810  |
| 5     | Ghana         | 2005 | 2.00 | 3.00 | 2.00 | 2.00 | 2.00 | 1.00 | 2.00 | 0.666667  |
| 5     | Ghana         | 2007 | 2.00 | 3.00 | 2.00 | 2.00 | 3.00 | 2.00 | 2.00 | 0.761905  |
| 5     | Ghana         | 2009 | 3.00 | 3.00 | 3.00 | 2.00 | 3.00 | 2.00 | 3.00 | 0.904762  |
| 6     | Kenya         | 2005 | 1.00 | 3.00 | 3.00 | 1.00 | 2.00 | 3.00 | 2.00 | 0.714286  |
| 6     | Kenya         | 2007 | 1.00 | 3.00 | 3.00 | 1.00 | 2.00 | 3.00 | 2.00 | 0.714286  |
| 6     | Kenya         | 2009 | 1.50 | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.738095  |
| 7     | Madagascar    | 2005 | 1.75 | 3.00 | 3.00 | 2.00 | 3.00 | 2.00 | 1.00 | 0.750000  |
| 7     | Madagascar    | 2007 | 1.75 | 3.00 | 3.00 | 2.00 | 3.00 | 2.00 | 1.00 | 0.750000  |
| 7     | Madagascar    | 2009 | 1.75 | 3.00 | 3.00 | 2.00 | 3.00 | 2.00 | 1.00 | 0.750000  |
| 8     | Mozambique    | 2005 | 2.50 | 3.00 | 3.00 | 1.00 | 3.00 | 1.00 | 1.00 | 0.6904762 |
| 8     | Mozambique    | 2007 | 2.50 | 3.00 | 3.00 | 1.00 | 3.00 | 2.00 | 1.00 | 0.738095  |
| 8     | Mozambique    | 2009 | 2.50 | 3.00 | 3.00 | 2.00 | 3.00 | 2.00 | 1.00 | 0.785714  |
| 9     | Nigeria       | 2005 | 2.50 | 3.00 | 3.00 | 2.00 | 3.00 | 0.00 | 3.00 | 0.785714  |
| 9     | Nigeria       | 2007 | 2.50 | 3.00 | 3.00 | 2.00 | 3.00 | 1.00 | 3.00 | 0.833333  |
| 9     | Nigeria       | 2009 | 2.50 | 3.00 | 3.00 | 2.00 | 3.00 | 1.00 | 3.00 | 0.833333  |
| 10    | Senegal       | 2005 | 2.50 | 2.00 | 3.00 | 1.00 | 3.00 | 2.00 | 1.00 | 0.690476  |
| 10    | Senegal       | 2007 | 2.50 | 2.00 | 3.00 | 2.00 | 3.00 | 2.00 | 1.00 | 0.738095  |
| 10    | Senegal       | 2009 | 2.50 | 2.00 | 3.00 | 2.00 | 3.00 | 2.00 | 1.00 | 0.738095  |
| 11    | South Africa  | 2005 | 2.25 | 3.00 | 3.00 | 2.00 | 3.00 | 3.00 | 2.00 | 0.869048  |
| 11    | South Africa  | 2007 | 2.25 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.00 | 0.916667  |
| 11    | South Africa  | 2009 | 2.25 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.964286  |
| 12    | Tanzania      | 2005 | 2.50 | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.785714  |
| 12    | Tanzania      | 2007 | 2.50 | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.785714  |
| 12    | Tanzania      | 2009 | 2.50 | 3.00 | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.785714  |
| 13    | Uganda        | 2005 | 1.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.00 | 1.00 | 0.761905  |
| 13    | Uganda        | 2007 | 1.00 | 3.00 | 3.00 | 3.00 | 3.00 | 2.00 | 1.00 | 0.761905  |
| 13    | Uganda        | 2009 | 1.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 1.00 | 0.809524  |

**Source:** *Abiad et al. (2010) and author's own computation based on various Central Bank reports and IMF's World Economic Financial Survey Reports*

**Table A5.8:** Data Description, Measurement and Sources

| Variable  | Notation                    | Description, Measurement and Main Source(s)  |
|---|-----------------------------|--|
| <b>Dependent Variable</b>   |                             |  |
| Remittances <i>per capita</i>   | <i>REMPC</i>                | Migrant remittances defined as the sum of <i>workers' remittances</i> plus <i>compensation of employees</i> received divided by total population. It was the natural logarithmic form of REMPC denoted as <i>lnREMP</i> C that was used. <b>Source:</b> Author's computation based mainly on <i>WDI</i> , <i>BoPS</i> and <i>MRF-2011</i> .                              |
| <b>Explanatory Variables</b>  |                             |  |
| Financial liberalisation index  | <i>FLBI</i> <sup>+</sup>    | Financial liberalisation comprising the normalised index of BKS, DCRR, EBC, ICF, IRC, PVZ and SMK on a zero to one scale. <b>Source:</b> Abiad <i>et al.</i> (2010) and author.  |
| Bank supervision and prudential regulation  | <i>BKS</i> <sup>+</sup>     | Policies on the adoption of a capital adequacy ratio based on the Basel standard, independence of monetary authorities, and the degree of effective bank supervision through on-site and off-site supervision, and coverage of supervision by monetary authorities. <b>Source:</b> Abiad <i>et al.</i> (2010) and author.  |
| Reduction in directed credit, aggregate credit ceilings, and reserve requirements | <i>DCRR</i> <sup>+0/-</sup> | Policies on degree of restrictions on reserve requirements, minimum amount of credit that must be channelled to certain state priority sectors, mandatory credit supply to certain sectors at subsidised rates, and aggregate credit ceilings including bank-specific credit ceilings imposed by the Central Bank. <b>Source:</b> Abiad <i>et al.</i> (2010) and author. |
| Relaxation of entry barriers  | <i>EBC</i> <sup>+</sup>     | Policies on the extent to which government allows new banks and foreign banks to enter into the domestic financial market, restrictions on branching, and the freedom banks have to engage in a wide range of activities. <b>Source:</b> Abiad <i>et al.</i> (2010) and author.  |
| International account liberalisation  | <i>ICF</i> <sup>+</sup>     | Policies on exchange rate system unification, restrictions on capital inflows, and restrictions on capital outflows. <b>Source:</b> Abiad <i>et al.</i> (2010) and author.   |
| Interest rate deregulation  | <i>IRC</i> <sup>+</sup>     | Degree to which deposit rates and lending rates are separately free from government control set or subject to a binding ceiling or floor. <b>Source:</b> Abiad <i>et al.</i> (2010) and author.  |
| Privatisation of banks  | <i>PVZ</i> <sup>+</sup>     | Degree of privatisation of banks coded according to the proportion of privately-owned bank assets to state-owned bank assets. <b>Source:</b> Abiad <i>et al.</i> (2010) and author.  |
| Securities market reforms   | <i>SMK</i> <sup>+</sup>     | Policies such as introduction of auctioning of treasury bills or the establishment of a security commission towards the development of securities markets; and the extent to which the equity market is open to participation of foreign investors. <b>Source:</b> Abiad <i>et al.</i> (2010) and author.  |

**Source:** Author's compilation. **Note:** The *a priori* sign is indicated by +/- by the notation column of each variable.

## CHAPTER SIX

### REMITTANCES AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA<sup>\*,\*</sup>

#### 6.0 INTRODUCTION

A dynamic panel-data model covering 36 SSA countries was estimated following the system GMM estimation procedure to explore the direct long-run impact of remittances on economic growth. Under the assumption that the effects of remittances on economic growth could vary over time in response to the macroeconomic policy environment in remittance-recipient countries, a decade-based analysis was undertaken. This chapter further explores the possible size-effects of international migrant remittances on economic growth in SSA over the past three decades, 1980-2009. The section that follows presents the background whilst Section 6.2 presents selected stylised facts. Section 6.3 outlines the theoretical framework and reviews the empirical literature on remittance inflows and economic growth. In Section 6.4, the empirical model, methodological approach, and data issues are presented. The estimated results are presented and analysed in 6.5 before the concluding remarks and policy recommendations are outlined in Section 6.7.

#### 6.1 BACKGROUND

Consistent with increasing international migration of active labour from the developing world to the advanced economies in recent years, there has been an upsurge and a continuous flow of migrant remittances to the developing world of which sub-Saharan Africa (SSA) is a part. Without any immediate aspirations for a narrowing income gap between the advanced world and the developing world in this era of increasing elimination of trade barriers under the tenets of globalisation, the South-North trend in international migration is set to continue unabated.

From a mere US\$2.05 billion in 1970, global migrant remittance inflows increased to US\$36.69 billion in 1980, US\$68.38 billion in 1990, US\$131.49 billion in 2000, US\$274.54 billion in 2005 and to US\$416.12 billion in 2009. During this same period, SSA received US\$0.02 billion, US\$1.40 billion, US\$1.88 billion, US\$4.64 billion, US\$9.42 billion and US\$20.75 billion respectively. As at 2009, the global official inflows of migrant remittances had emerged as the

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\* A paper based on this chapter and titled "The Impact of International Remittances on Economic Growth in Sub-Saharan Africa," was presented at ESSA bi-annual conference, September 5-7, 2011, Cape Town, South Africa.

\* A related published paper by the author is: "Financial Development, International Migrant Remittances and Endogenous Growth in Ghana," *Studies in Economics and Finance*, 28(1): 68-89.

second largest source of external capital (second only to foreign direct investment (FDI)). By the end of 2009, global remittance inflows accounted for 3.39 per cent of goods exports, 35.76 per cent of FDI and as much as 326.30 per cent, which implied more than thrice the volume of overseas development assistance (ODA). This trend can also be discerned in the case of SSA, as officially reported remittances received by the sub-region represents 8.03 per cent of goods exports, 71.31 per cent of FDI and 46.62 per cent of ODA as of 2009. Globally, from 36 countries in 1980, the number of countries that received migrant remittances representing at least one per cent of their GDP increased to 58 in 1990, and 81 in the year 2000, with a further rise to 96 countries by the end of 2009. Of this figure, 25 countries, including four from SSA<sup>98</sup>, received remittances representing more than 10 per cent of their GDP by the end of 2009. This could just be one of the key reasons why the implications of international remittances in recipient countries have become increasingly important as far as economic policy research, design and implementation are concerned in recent years.

Apart from the persistent positive growth trend, migrant remittance inflows are known to exhibit a unique feature which clearly distinguishes it from other forms of external capital received by developing countries. Remittances are clearly the least volatile form of external capital (see Figure 3.1). It can be inferred from the remittance literature<sup>99</sup> that because the flow of remittances is largely influenced by the altruistic feelings of migrants and, for this reason altruism underlies all other motives behind remittance inflows, these private transfers, unlike other forms of capital, often increase in response to harsh economic conditions and crises afflicted by shocks in migrant-home countries. Another distinguishing feature of altruistic remittances is that they do not often involve the recipient in any financial risk or cost as they are often directly associated with smoothing the consumption of the target recipient.

The theoretical role of remittances in enhancing long-run economic growth in migrant-home developing countries is not straightforward. From a theoretical standpoint, it can be argued that because remittances are used mainly for consumption smoothing and investment in land and other non-tradable assets such as construction or redevelopment of private residential apartments<sup>100</sup> which do not directly generate income, remittance-recipient countries could be at risk of suffering from the Dutch disease. In this case, the inflows of remittances can actually

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<sup>98</sup> SSA countries that received 10 per cent or more of remittances as a percentage of GDP in year 2009 are Lesotho (26.23 per cent), Gambia (10.88 per cent), Togo (10.75 per cent) and Senegal (10.64).

<sup>99</sup> See, for instance, Johnson and Whitelaw (1974), Stark and Lucas (1988), Giuliano and Ruiz-Arranz (2009), World Bank (2006a,b), Acosta *et al.* (2008a), Barajas *et al.* (2009), Mundaca (2009), and Fayissa and Nsiah (2011).

<sup>100</sup> See Chapter Four for cross-country evidence on the uses of migrant remittances.

inhibit long-run economic growth as export earnings fall due to a significant reduction in international competitiveness of small-open and import-dependent remittance-recipient countries, which are traditionally exporters of primary products. The World Bank (2006a), however, downplays the Dutch disease effects associated with remittance inflows as a serious concern on the basis that increases in remittances are gradual. As remittance inflows can exacerbate international dependency, intensify emigration syndrome and reduce labour productivity through moral hazards in recipient countries, some scholars including Wiest (1984), Chami *et al.* (2005), and Kapur (2004) contend that, theoretically, remittances can impair long-run growth in developing countries.

On the reverse side of the argument is the positive role of remittances in enhancing long-run economic growth as these funds are considered as additional income to boost household consumption, and private investment and thereby create job opportunities through increased output expansion in capital-constrained migrant-home countries. In this context, by financing private consumption and entrepreneurial activities, remittances can help increase manufacturing output through increased aggregate demand and, hence, higher private investment resulting in increased demand for labour for industrial output expansion. This suggests that remittances carry along with them some positive multiplier effects and optimistic externalities, so that by helping to reduce income volatility, minimise credit market failures and smooth consumption in low-income migrant-home countries, they also help stabilise macroeconomy which is favourable for attracting private investment. Bugamelli and Paternò (2008) and Chami *et al.* (2009) find evidence for an automatic output volatility mitigating the element of remittances in remittance-recipient countries. Another important positive effect of remittances is its potential to ameliorate BoP problems which can improve the international credit rating of remittance-recipient countries that can, in the long run, affect both the magnitude and trend in government spending on the provision of public goods and the type of infrastructure that can crowd-in private investment.

The arguments above imply that the effect of remittances on long-run growth is purely an empirical issue in the absence of a theoretical consensus. Unfortunately, however, conclusions from various empirical findings buttress the theoretical controversy surrounding the long-run growth impact of remittances as findings range widely from negative, zero, positive and to conditional effects. For instance, Stark and Lucas (1988), Chami *et al.* (2005), Lee (2008) and Karagöz (2009) conclude from various studies that the impact of remittances on economic

growth is negative. IMF (2005), Baldé (2009) and Barajas *et al.* (2009) find a zero effect of remittances on economic growth. Other studies including those by Stark and Lucas (1988), Faini (2006a), Catrinescu *et al.* (2006), Ahoritor and Adenutsi (2009), Ziesemer (2008; 2009), and Adenutsi (2011), however, find a direct positive impact of remittances on growth. In connection with indirect or conditional effects of remittances on economic growth, Giuliano and Ruiz-Arranz (2009), Fajnzylber and López (2007) find a substitutability relationship between remittances and financial development, such that, remittances promote long-run growth in countries with poorly developed financial markets and where liquidity constraints are most severe.

Previous studies, however, suffer from various technical deficiencies. One fundamental limitation associated with previous studies relates to the poor definition and arbitrary measurement of international migrant remittances (see Table A6.11 in the Appendix). In this study, migrant remittances are measured to include only the two relevant current account components (workers' remittances and compensation of employees) because migrants' transfers do not flow frequently, and even when they do flow, they are mostly received by the returnee migrants themselves<sup>101</sup>. Furthermore, remittances as a ratio to GDP is not likely to yield reliable results as the issue of factor productivity is brought into question, especially in a typical cross-country study. Another important problem with previous studies is that they fail to provide an insight into the possible changing impact of remittances on economic growth in remittance-recipient countries. Some previous studies also try to model the impact of remittances on growth through an *ad hoc* indirect mechanism. This study recognises the fact that the channels through which remittances can affect growth could be many<sup>102</sup> and cannot be adequately addressed in one particular empirical study; hence, the need to rather concentrate on how remittances can directly affect growth either contemporaneously or asynchronously as the macroeconomic environment evolves in response to the implementation of financial liberalisation policies. These problems are addressed in this study using 36 SSA countries.

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<sup>101</sup> For further clarifications, see Chapter Two of this dissertation which has been particularly devoted to definition and measurement of key concepts, including remittances.

<sup>102</sup> For example, remittances can indirectly affect growth through human capital development in terms of improved access to healthcare or higher skills acquisition which are essential for higher labour productivity, financial development by augmenting domestic savings to improve credit extension, increased aggregate demand through consumption of manufactured goods, increased government expenditure on provision of critical infrastructure as government revenue increases from import tariffs and consumption tax such as the Value Added Tax (VAT).

Consequently, the principal research questions addressed in this chapter are:

- i. Do international remittances have a consistent and direct impact on long-run growth since the inception of financial liberalisation programmes in SSA? Overall, is the impact of remittances on economic growth contemporaneous or asynchronous?
- ii. Are there any direct impact variations of remittances on long-run growth based on the rate of economic growth in remittance-recipient SSA countries? If yes, which category of SSA countries is more likely to benefit from international remittances in this regard?

Accordingly, with reference to SSA, the related specific objectives of this chapter include:

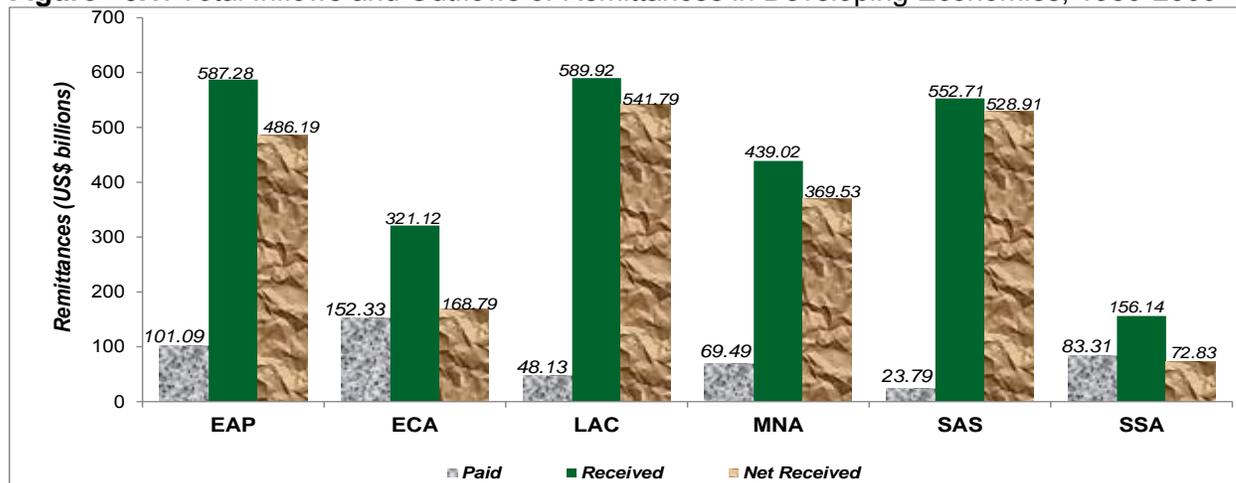
- i. To estimate the direct impact of international migrant remittance inflows on economic growth in the long run.
- ii. To examine if the direct impact of international migrant remittance inflows on economic growth is contemporaneous or asynchronous.
- iii. To determine if the impact of migrant remittance inflows on economic growth evolves over time in response to macroeconomic environment since the implementation of financial liberalisation programme three decades ago.
- iv. To verify the existence and impact of economic growth size-effects of international migrant remittances in remittance-recipient countries.

The achievement of the above-stated research objectives is very important in a number of ways. First and foremost, in terms of scope (both time span and country inclusiveness), it represents the most comprehensive empirical study on the remittance-growth relationship in SSA. Besides, the decade-based impact analysis alongside the overall period analysis makes this study not only a novelty but also the most detailed in examining the effects of remittances on economic growth. Thus, the findings of this study, among other things, reveal the time-varying effects of remittances on economic growth in SSA; and this plays a crucial role in the quest for the appropriate policy formulation for contemporary 'labour-exporting' SSA countries. Furthermore, an insight into the economic growth size-effects of remittances is crucial in designing specific relevant pro-growth policies for SSA countries with similar growth features.

## 6.2 SELECTED STYLISTED FACTS

One of the underlying reasons why the impact of migrant remittances on economic growth should not be expected to be consistent across the developing world is that these developing regions differ widely regarding net remittance inflows, but given the problems related to data, the implications of remittances are often analysed based on what has been received rather than on the net inflows. In Figure 6.1, it is shown that, notwithstanding the fact that developing economies are net recipients of remittances (see Figure A6.1), these developing economies differ widely in terms of the proportion of remittances paid relative to remittances received (see Figure 6.1). For example, between 1980 and 2009, the amount of remittances paid by SSA to the rest of the world constituted as much as 53.36 per cent of the total remittances received by the sub-region compared to only 4.30 per cent and 8.16 per cent in the case of South Asia (SAS) and LAC. Over the same period, the Middle East and North Africa (MNA) paid 15.83 per cent of the remittances received to the rest of the world, East Asia and the Pacific (EAP) paid 17.21 per cent, whilst Europe and Central Asia paid as much as 47.44 per cent of their remittances. Thus, ideally, if country-based data were readily available, it would have been more relevant and appropriate to use net remittance inflows when analysing the effects of remittances on economic growth. Indeed, in a comparative study between LAC and SSA countries, Ahortor and Adenutsi (2009) show that although remittances have positive effects on economic growth in both regions, the impact is more robust in LAC.

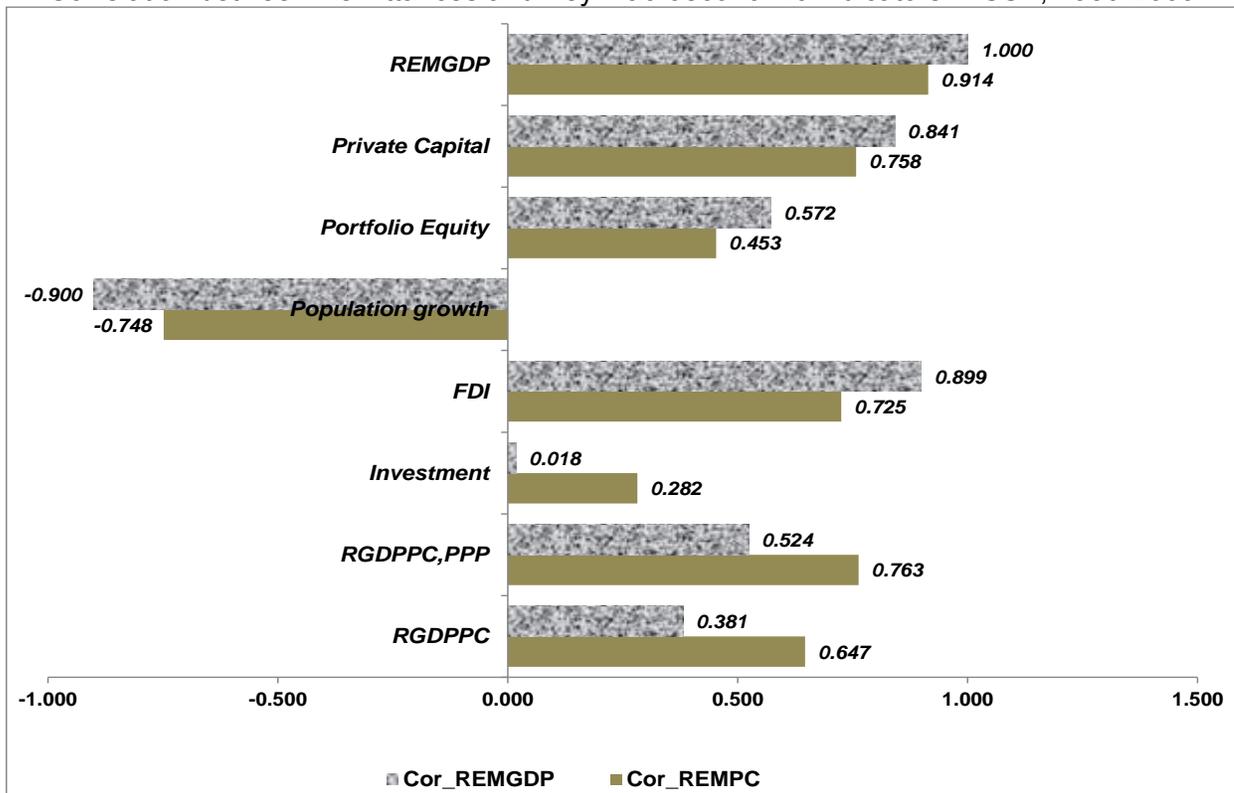
**Figure 6.1:** Total Inflows and Outflows of Remittances in Developing Economies, 1980-2009



Source: Author's estimation based on WDI (April 2011)

The cyclicality of remittance inflows in SSA is shown in Figure 4.1, with the evidence pointing to the fact that remittances were pro-cyclical in the 1980s and the 2000s but countercyclical in the 1990s. The cyclicality of remittance inflows shows the likely use to which remittances might have been put and, hence, the potential changing impact of migrant remittances on growth in SSA over the past three decades. For example, during the periods when migrant remittances were pro-cyclical, it is most likely that the self-interest motive might have dominated the motives behind remittance inflows, implying a higher likelihood of using remittances to finance income-generating projects, which have a higher positive multiplier effect on an economy than when remittances were countercyclical with higher likelihood of being spent on consumer goods. Chami *et al.* (2005) and Barajas *et al.* (2009) show that when remittances are countercyclical, they are also counterproductive and, hence, cannot have a direct positive impact on growth. In Table 3.1, it is shown that, actually, SSA as a sub-region recorded its lowest real *per capita* income and worst general macroeconomic performance in the 1990s over the past three decades.

**Figure 6.2:**  
Correlation between Remittances and Key Macroeconomic Indicators in SSA, 1980-2009



Source: Author's based on WDI (April 2011).

Note: Cor\_ denotes correlation, RGDPPC denotes real GDP per capita. PPP stands for purchasing power parity

The unique cyclical nature of migrant remittance inflows brings to the fore the likely endogeneity<sup>103</sup> problems that are associated with estimating growth models involving remittances. Unfortunately, many previous studies (see Table A6.11) failed to account for this endogeneity problem whilst modelling remittances on economic growth and this has obvious negative implications for the results obtained. Remittances received between 1980 and 2009 had a significant positive correlation with other non-debt capital inflows and core macroeconomic performance indicators such as investment rate and the level of real *per capita* income as shown in Figure 6.2. Here, it is also shown that it is migrant remittances *per capita*, which is the best available proxy for remittances per migrant that reasonably correlate with investment and general economic performance measured by real GDP *per capita*. This suggests that the conclusions from studies that used remittances as a ratio of GDP rather than remittances per migrant could be misleading, especially because in terms of remittances as percentage of GDP or exports, SSA emerges as one of the leading recipients in the world today, although the sub-region is, in fact, the least recipient in terms of actual volume (Table A6.1) and per migrant (see Figure 3.3). Table A6.1 also shows that, as a percentage of official development assistance (ODA), SSA was the least recipient as at 2009, implying that the sub-region, compared to other developing economies, remains the sole dependant on foreign aid.

### 6.3 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

The theoretical framework and the empirical literature of the effects of international migrant remittances on economic growth are presented in this section.

#### 6.3.1 Theoretical Framework

In line with the theoretical contributions of Rapoport and Docquier (2006) and Barajas *et al.* (2009), this study appeals to the endogenous growth model to evaluate the impact of international migrant remittances on economic growth in SSA. The inspiration for operating within this theoretical framework is based on the emphasis of the endogenous growth model on the role of knowledge which is measurable by the stock of the quality of human capital available rather than mere population size often determined by the quantity of human capital available. The application of the endogenous growth model to verify the potential effects of remittances on long-run growth is logical in view of the fact that, in *per capita* terms, it is the

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<sup>103</sup> Given the altruistic dominance behind remittance inflows, countries with unfavourable economic conditions and negative external shocks often receive more remittances than those with sound governance and higher growth prospects. See Clarke and Wallsten (2004), Kapur (2004) and Yang (2005) for evidence.

quality rather than quantity of human capital that is more relevant since the country with the largest number of migrants is not necessarily the leading recipient of remittances *per capita* or remittances per migrant.

Furthermore, the endogenous growth framework has been adopted because it is the best known model that adequately addresses the shortcomings of the famous neoclassical growth model proposed by Solow (1956). Prior to the famous contributions of Solow (1956; 1957), it was the classical aggregate production function proposed by Cobb and Douglas (1928) that dominated the analytical framework of models on economic growth. Although Solow's neoclassical growth model made a significant contribution to empirical analysis of economic growth and development through its emphasis on the direct link between investment in tangible assets and growth, it has some limitations. First, it has been argued that the steady-state growth in *per capita* income envisioned by Solow (1956) will only remain an illusion without exogenous technical progress as capital accumulation is subject to diminishing returns (Romer, 1986; Barro, 1990; Grossman and Helpman, 1991; Aghion and Howitt, 1992). Secondly, the neoclassical growth model as proposed by Solow (1956) failed to explain what it means by technical progress and how it will be achieved and sustained in the long run (Romer, 1986; Barro, 1990). Another widely cited criticism of the neoclassical growth model is the narrow definition of capital accumulation to include investment in tangible assets only without any value placed on intangible assets (Romer, 1986; 1990; Lucas 1988; Barro, 1990; Grossman and Helpman, 1991).

In addressing the shortcomings in the neoclassical growth model, the endogenous growth school makes room for technological knowledge that emphasises the incentives driving innovation, invention and creativity as the main pillars around which sustainable economic growth evolves. For instance, Romer (1986; 1990), Lucas (1988), Barro (1990), and Rebelo (1991) argue for economic growth models wherein the rate of growth of an economy is endogenously determined because it is related to the elements of total factor productivity. The endogenous growth models predict self-sustaining growth with exogenous technical progress in an economy in the long run. This growth rate may occur because, in the long run, tastes and preferences, state of technology<sup>104</sup>, income distribution, governance and institutional

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<sup>104</sup> Technological advancement often endogenously generates positive externalities such that the production function exhibits increasing returns to scale due to the presence of spill-over effects associated with knowledge generation and/or education (Romer, 1986; Lucas, 1988; Stokey, 1991).

arrangements are not likely to be static in the real world. Therefore, as long as international migrant remittances received in developing countries can affect any of these factors, (for instance, income distribution, technological advancement, and preferences), in the long run, they can have not only level-effects but also growth-size effects on the economies of migrant-home countries.

The potential impact of international remittance inflows on long-run economic growth can be determined within the context of the simple generic endogenous AK-technology model proposed by Rebelo (1991) in which aggregate output is a constant-returns function of the aggregate capital stock. The aggregate capital stock is physical capital stock plus human capital stock including current state of knowledge, so that the aggregate output ( $Y$ ) of a closed economy is assumed to be dependent on the stock of capital ( $K$ ) which includes physical assets accumulated ( $K_k$ ) and human capital as well as the stock of knowledge ( $K_h$ ).

$$Y = f(K) = f(K_k, K_h) \quad (6.1)$$

where  $Y = \sum_{i=1}^N Y_i$ ,  $K = \sum_{i=1}^N K_i$ , and  $N$  is the number of firms in the economy under consideration.

Following Cobb and Douglas (1928), the mathematical expression of the AK production function in Equation (6.1) takes the form:

$$Y = A_0 K = A_0 K_k^\alpha K_h^\beta \quad (6.2)$$

where  $A_0$  is the total factor productivity (TFP) which is a function of the stock of knowledge<sup>105</sup>;  $K$  is the investment in both physical assets and human capital; whilst  $K_k$  and  $K_h$  are components of  $K$  representing the investment in physical assets and human capital accumulation respectively.

Each component of  $K$  (i.e. physical and human capital stock including knowledge) is reproducible with identical technologies (Pagano, 1993). This is why the simple endogenous AK model does not assign any productive role to labour ( $L$ ) and other non-reproducible factor

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<sup>105</sup> According to the learning-by-investing hypothesis proposed by Arrow (1962), it is assumed that at any time  $t$ , technology is endogenously generated by  $A_t = M_t^\eta$  ( $0 < \eta < 1$ ) where  $M_t$ , the stock of experience at time  $t$  is a function of previous investment undertaken by various firms in the productive sector of an economy in which it is assumed that, for convenience, the rate of depreciation of physical assets is zero.

inputs<sup>106</sup> because what is assumed relevant to the production process is the quality of adjusted labour, which is the human capital that is accumulated as each new successive generation is assumed to be more knowledgeable than the one before (Romer, 1986; Lucas, 1988; Rebelo, 1991; Pagano, 1993).

Equation (6.2) can be specified in its intensive form when both sides are divided by the labour force  $L$  under the assumption of constant returns to scale, hence Equation (6.3)

$$y = Ak \tag{6.3}$$

where  $A$  is the average or marginal productivity of capital;  $y = Y/L$  representing output per labour; and  $k = K/L = (K_k/L + K_h/L)$  measuring capital-labour ratio.

A typical closed economy has both a demand side (consumption) and a supply side (production), since the goods produced in this economy are either consumed or saved which then augments the existing stock of capital. Also, as in the Keynesian national income determination, capital market equilibrium condition requires that gross savings ( $S$ ) equates gross investment ( $I$ ). However, it is known from real world experience that a proportion of the savings given as a leakage of  $1-\phi$  is incurred in the process of converting savings into investment (Pagano, 1993). Accordingly, it can be shown, as in Equation (6.4) that  $\phi S_t$  equals  $I_t$  at any particular time  $t$ .

$$S_t - (1-\phi)S_t = I_t \Rightarrow S_t - S_t + \phi S_t = I_t \Rightarrow \phi S_t = I_t \tag{6.4}$$

Thus, in excess of consumption ( $C$ ), the evolution of capital stock due to production efficiency is given as:

$$I_t = K_{t-1} - (1-\dot{d})K_t \tag{6.5}$$

where  $\dot{d}$  is the rate of depreciation of physical capital, which if equated to zero for convenience sake,  $I_t = K_{t-1} - K_t$ .

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<sup>106</sup> In fact, even if the production function were assumed to take an expanded form of  $Y = f(K, L) = f(K_k, K_h, L)$  so that  $Y = AK_k^\alpha K_h^\beta L^{1-\alpha-\beta}$ , where  $L$  denotes labour input,<sup>106</sup> because the Rebelo (1991) endogenous AK production function assumes constant returns to scale,  $\alpha + \beta = 1$  as  $\beta = 1 - \alpha$  which implies that  $L^{1-\alpha-\beta} = L^0 = 1$ , hence  $Y = f(K, L) = A_0KL$  is actually  $Y = f(K) = A_0K$ .

*The Demand Side of the Product Market - the Household Sector*

According to Bond and Wang (1996), and Barro and Sala-i-Martin (1997; 2003), consumption is analysed with households maximising an inter-temporal utility function ( $U$ ) that has a constant elasticity of substitution and, hence, takes the form of Equation (6.6):

$$U_t(c_t) = (c_t^{1-\psi}) / (1-\psi) \quad (6.6)$$

where  $c_t$  is the *per capita* consumption, whilst  $0 < \psi < 1$  is the factor to consider in making decisions on inter-temporal substitution in consumption at time  $t$ .

Sena and Fontenele (2004) specify the dynamic optimisation problem of a representative agent as:

$$\text{Maximise } U_t(c_t) = \int_0^{\infty} \{(c_t^{1-\psi}) / (1-\psi)\} e^{-rt} dt \quad (6.7)$$

$$\text{subject to the budget constraint } \tilde{k}_t = Ak_t - c_t$$

where  $\tilde{k}$  is the change in the capital-output ratio;  $r$  is the discount rate that connotes the constant rate of time preference considered by the household sector in making decisions between present consumption and future consumption of wealth which includes remittances received.  $\psi$  represents a relative risk aversion coefficient such that a rise implies a faster proportionate rate of decline in the utility derived from consuming remittances at the present time rather than saving them.

To set up the stage for solving Equation (6.7), the present-value Hamiltonian maximisation problem required is given as:

$$H^C = \{c_t^{(1-\psi)} / (1-\psi)\} + \mu_t (Ak_t - c_t) \quad (6.8)$$

which, according to Sena and Fontenele (2004: 6), yields Equations (6.9 - 6.11) as, “the three maximum principle conditions”, obtained by taking the first-order conditions of Equation (6.8) as follows:

$$\partial H^C / \partial c_t = 0 \quad (6.9)$$

$$\tilde{\mu}_t = \mu_t r - \partial H^C / \partial K_t \quad (6.10)$$

$$\tilde{k}_t = Ak_t - c_t \quad (6.11)$$

where  $\mu_t$  denotes the present-value shadow price of *per capita* household income.

Subsequent to Barro and Sala-i-Martin (1997), Sena and Fontenele (2004) derived the optimal steady-state *per capita* consumption growth rate (Equation (6.12)) by taking the logarithm and the time derivative of Equation (6.9) and using the result of Equation (6.10).

$$g_{c_t} \equiv \tilde{c}_t / c_t = (A - r) / \psi \quad (6.12)$$

where  $g_{c_t} > 0$  as long as  $A > r$  since  $0 < \psi < 1$ .

#### *The Supply Side of the Product Market - the Business Sector*

It is in the business sector of an economy that investment actually takes place through the inflow of non-altruistic remittances (here, the remittances received in excess of present consumption). Taking the logarithm and the time derivative of both sides of the third Hamiltonian optimality condition represented by Equation (6.11), Barro and Sala-i-Martin (1997), and Sena and Fontenele (2004) show that, in the long run, *per capita* capital growth equals the long-run *per capita* consumption; and this is positive and constant along the discount rate  $r$  as specified in Equation (6.13).

$$g_{k_t} = \tilde{k}_t / k_t = \tilde{c}_t / c_t \quad (6.13)$$

This implies that in the long run, all positive rates of growth are equal and constant over time in a closed economy where leakages are equal to injections; given that firms are rational and, hence, only spend on good quality projects even as consumers spend on locally produced goods and services.

#### *The Equilibrium – the ‘Complete Economy’ Balanced Growth Rate*

For a steady-state growth rate of an autarky economy that is in a long-run equilibrium, the demand side (consumption) and the supply side (production) must equal each other. This requires that:

$$g_{y_t} = g_{k_t} = g_{c_t} \Rightarrow g_{y_t} = g_{k_t} \text{ or } \Rightarrow g_{y_t} = g_{c_t} \text{ since } g_{k_t} - g_{c_t} = 0 \quad (6.14)$$

when the market of each product in this economy is cleared. Here,  $g_{y_t}$  represents the long-run growth rate in *per capita* output of the economy which is directly commensurate to the rate of growth in ‘quality’ investment by firms or the rate of growth in household consumption of locally produced goods and services in a two-sector closed economy setting.

From Equation (6.3), it can be shown that, taking logarithm of both sides,

$$g_{y_t} = \tilde{y}_t / y_t = \tilde{k}_t / k_t \quad (6.15)$$

hence, the optimal steady-state growth rates<sup>107</sup> of this economy are:

$$g_{y_t} = \tilde{y}_t / y_t = \tilde{k}_t / k_t = \tilde{c}_t / c_t = (A - r) / \psi \quad (6.16)$$

Likewise, from Equations (6.15) and (6.16), the long-run steady-state growth rate of this economy is:

$$g_{y_t} = A \frac{I_t}{Y_t} \Rightarrow A \varphi s_t \quad (6.17)$$

where  $s = S/Y$  is the gross saving rate also the long-run marginal or average propensity to save, which is inversely related to the discount rate  $r$ ; and where it is assumed that  $\dot{\lambda} = 0$ . Equation (6.16) is, thus, essentially the same as Equation (6.17). From Equation (6.17) it is apparent that remittances received can influence the long-run economic growth rate through an increase in the saving rate  $s$  (or the rate of investment), the proportion of remittances saved or invested  $\varphi$ , and the social marginal productivity of capital,  $A$ . Besides, as shown in Equation (6.16), altruistic remittances consumed by the household sector can equally stimulate economic growth in the long run through increased aggregate demand for locally produced goods. It is also important to re-emphasise the fact that the extent to which non-altruistic remittances can contribute to long-run growth is dependent upon the quality of the investment to which these funds are put by the business sector.

The underlying assumptions for the application of this model in the context of this study are:

- i. International migrant remittances are received as ‘additional income’ by households and firms in developing countries.
- ii. Remittances received are either to fulfil altruistic objective or self-interest investment motive, and altruistic remittances in excess of settlement of ‘contractual’ family debt<sup>108</sup>, are spent on consumables such as food, shelter, clothing, transportation, potable water, electricity, telecommunications and other basic necessities of modern life. Self-interest investment-driven remittances are spent on income-generating goods in the form of savings and mainly investment which include stocks, bonds, fixed deposit, treasury bills,

<sup>107</sup> This is closely related to the well-known Keynesian macroeconomic accounting approach to national income determination in which output, income and expenditure equal one another in a closed-economy setting. The implication of Equation (6.16) is that irrespective of the use to which remittances are put they can stimulate long-run growth in a migrant-home country that has no foreign sector and government.

<sup>108</sup> Especially for migrants under implicit social contract with members of their family or “sponsors” who either financed their education / training or their travelling abroad, or both.

working capital, education, vocational training, and healthcare. Therefore, the household sector is assumed to be recipients of altruistic remittances whereas the business sector is assumed to be the recipients of non-altruistic remittances. This is notwithstanding the fact that some altruistic remittances can be saved or invested for future consumption, at least, in a bid to realise the precautionary motive for holding money.

- iii. Altruistic migrant remittances are received essentially for the sake of smoothing the consumption pattern of the recipient household, whilst non-altruistic remittances are, to all intents and purposes, meant for financial gains through saving and investment.
- iv. The opportunity cost associated with using international migrant remittances to finance private sector led investment projects is not higher than the real cost of borrowing from a financial institution in the migrant-home country where capital is relatively scarce.
- v. Any saved remittances end up in the formal financial system where financial intermediaries in the migrant-home countries are efficient enough to swiftly convert short-term liabilities to medium and long-term financial assets, such that there is no time lag for this conversion. Thus, in other words, saved remittances behave just like other forms of non-altruistic remittances received outside the formal financial system because international migrants or their representatives at home decide to invest directly.
- vi. The necessary condition for a country to receive remittances from abroad is to move out of autarky to an open economy with the government playing a key role in formulating policies and regulations on international migration based on the notion that migrants with the appropriate travel documents are more likely to get decent jobs and remit home.

One important implication of the fundamental assumptions of the theoretical framework is the necessity to make crucial modifications to the simple AK endogenous growth model proposed by Rebelo (1991). Thus, in this study, following the theoretical contributions of Barro (1990), and Grossman and Helpman (1991), government spending and international trade are introduced to augment the model specified in Equation (6.17). Another implication of these assumptions is that because an open-economy case with the role of a government is assumed

in this study, the potential effect of remittances on economic growth rate can no longer be seen as definitely positive, but as dependent upon whether or not altruistic remittances are spent on locally produced consumables rather than on imported consumables; and, whether or not government expenditure finances critical public infrastructure that crowds-in the private sector rather than crowd-out the private sector. All in all, from a theoretical viewpoint, the impact of remittances on economic growth can be dependent upon the crucial fundamental features of the migrant-home country as can be reflected in the rate of economic growth. In other words, theoretically, the impact of remittance inflows on economic growth can either be negative, zero, or positive in a typical migrant-home developing country possibly depending on the unique characteristics of the recipient economy.

The ultimate impact of remittances on economic growth is not straightforward because in as much as remittances have the potential of spurring long-run growth, they can equally exert a negative impact on productivity through the problem of moral hazards in developing countries (Stark and Levhari, 1982; Lipton, 1980; Chami *et al.* 2005; 2009). In a contribution to the formulation of remittances-growth theory, Barajas *et al.* (2009) posit that the effects of remittances on economic growth are transmitted through three main channels – capital accumulation, labour force growth and TFP growth - none of which has a one-directional potential impact on long-run growth in remittance-recipient countries. The contributions of Barajas *et al.* (2009) are not novel as they are essentially parallel to an earlier contribution by Rapoport and Docquier (2006) who identify two broad channels<sup>109</sup> through which remittances can affect economic growth in remittance-recipient countries. The theoretical contributions of both Rapoport and Docquier (2006) and Barajas *et al.* (2009) are consistent and juxtaposed to the tenets of the endogenous growth model.

On the potential positive effects of migrant remittances on long-run growth through capital accumulation, Barajas *et al.* (2009) do not disagree with earlier propositions by Stahl and Arnold (1986), Massey *et al.* (1998), and de Haas (2003) that remittances can contribute to growth by reducing macroeconomic volatility, liquidity and productive investment constraints; raising real income levels, and minimising balance of payments problems in developing countries. Besides, remittance inflows help to narrow the trade gap, control external debt,

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<sup>109</sup> These are the 'liquidity constraint 1: entrepreneurship' and liquidity constraint 2: human capital'. Each of these theories has various cases under it that shows how remittances can potentially affect economic growth in the long run (see Rapoport and Docquier, 2006 for further details). The recent work by Barajas *et al.* (2009) is, however, an adequate representation of Rapoport and Docquier (2006).

facilitate debt servicing, increase credit worthiness, and increase the supply of foreign exchange in remittance-recipient countries (Adenutsi, 2011). Remittances may also reduce the cost of borrowing in capital constrained remittance-recipient countries as demand for credit from the private sector reduces and has a high potential for reducing profit margin and the default risk component of quoted lending rates by banks and other financial intermediaries. All these can enhance long-run growth in remittance-recipient countries.

However, the potential positive impact of remittances on economic growth in recipient countries can only manifest itself if remittances are less altruistic hence saved or spent mainly on 'quality' investment goods rather than on imported consumables. One important fact is that many developing countries are import dependent and, therefore, spending remittances on consumer goods is likely to result in a leakage rather than an injection of funds into the income flow of remittance-recipient countries. Indeed, it is conceivable that when remittances become permanent income transfers, they are very likely to be spent mainly on the consumption of leisure and imported consumer goods<sup>110</sup> rather than being spent on investment goods, though this is an unlikely event in the long run if migrants behave rationally.<sup>111</sup> However, if altruistic remittances are spent on locally made consumables, they can engender long-run growth through a higher demand for manufactured goods leading to an increased demand for factor inputs by local industries as firms expand production to meet the increased domestic demand and even target the export market. This can also culminate in higher wages and deposit interest rates, with the potential of reducing further migration and boosting private sector savings and investment, which can ultimately entice migrants and recipients of remittances to save or to invest in migrant-home countries thereby increasing the positive multiplier effects of remittances. Barajas *et al.* (2009) again argue that the remittances-growth channel through capital accumulation could suffer undesirable consequences by destabilising the macroeconomy of a financially developed remittance-receiving economy, where remittances act as substitutes rather than complements of credit allocation by the financial sector.

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<sup>110</sup> Even when remittances are spent on imported goods and leisure, the receipt of remittances can expand the tax net in migrant-home countries, enabling governments of these low-income countries to mobilise more resources for redistribution especially through provision of critical social infrastructure that can crowd-in the private sector to boost growth.

<sup>111</sup> A rational migrant will not continue to remit without expecting a positive impact of remittances on the lives of the recipients since the continuous inflow of remittances, whether, altruistic or self-interest, is based on mutual trust that guarantees the interest and satisfaction of both parties through strong social ties. No rational migrant who derives utility from remitting will continue to remit large funds home when social ties between him/her and the family back home become weak or the trust and confidence that the remitter has in the target recipient have diminished.

As a country cannot receive international migrant remittances without losing the services of a proportion of its labour force to the outside world, it is argued that international migration drains developing countries of highly trained and skilled labour and capital by crowding-out the domestic production of tradable goods in the brain-drained underdeveloped economy (Lipton, 1980; Taylor, 1984; Rubenstein, 1992; Ahlburg; 1991). Thus, migrant remittances, apart from deepening the foreign dependency mentality of developing countries<sup>112</sup>, can also cause higher inequality among households and macroeconomic instability in the form of inflation through excess demand for consumables and relative deficit in the domestic production capacity of developing countries (Adenutsi, 2011). In a contribution, Barajas *et al.* (2009) re-emphasise the remittances-growth nexus through labour force participation in economic activities in remittance-recipient countries where remittances may act as substitutes for wages earned from being engaged in economic activities, through the moral hazard problem. Chami *et al.* (2005; 2008) assert that there is a high possibility of this moral hazards problem occurring because migrants remit under asymmetric information having been separated from their family by distance, and with limited chances of monitoring and enforcing compliance of how remittances should be used. Therefore, recipients of remittances can divert these funds to spending on leisure and unproductive activities, thereby reducing labour participation in remittance-recipient countries in the long run. Nevertheless, since social ties and trust underlie the motivation of a migrant to remit, a rational remitting migrant is not likely to continue remitting if there is lack of reliable information on the uses of remittances because migrant remittances are often sent for specific known purposes.

According to Rapoport and Docquier (2006) and Barajas *et al.* (2009:7), the effects of remittances on growth through TFP in a remittance-recipient economy are dependent upon a variety of factors as this channel is transmitted through the efficiency of domestic investment as well as through the effects on the size of the domestic productive sectors that generate a set of 'dynamic productive externalities'. If remittances are invested rather than spent on consumer goods, then these funds may affect the efficiency of investment in recipient countries based on the informational advantage or disadvantage of the migrant or the person acting on his/her behalf in this capacity (Barajas *et al.*, 2009). Therefore, if the migrant or his/her investor agent does not have more adequate financial literacy and relevant investment information than the domestic financial intermediaries, then the altruistic remittances rather than a capital inflow

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<sup>112</sup> In countries where remittances form a significant proportion of national output, governments may become complacent and less aggressive in implementing pro-growth economic policies by over-relying on remittances.

intermediated by domestic financial intermediaries will reduce the efficiency of domestic investment (Barajas *et al.* 2009). Again, remittances can reduce capital productivity when the agents of migrants or the direct beneficiaries of remittances decide to invest in riskier projects than they would have normally done if these funds were not considered as risk-free transfers.

Furthermore, remittances have the potential of affecting the formal financial system of the recipient economies in financial resource allocation since remittance inflows most often increase the volume of funds that flow through the formal financial system (Aggarwal *et al.* 2006). This can promote financial market development and, hence, higher economic growth through increased economies of scale in financial intermediation (Barajas *et al.* 2009). But substantial inflows of international remittances can also result in equilibrium real exchange rate appreciation, a recipe for Dutch disease infestation which implies less international competitiveness of export commodities of the remittance-recipient country which can impact negatively on long-run growth in the migrant-home developing economies.

From the theoretical viewpoint, therefore, it is apparent that the impact of remittances on the long-run economic growth is indeterminate and likely to depend on the amount of non-altruistic remittances received, the unique features and the macroeconomic policy environment of a migrant-home developing country. These distinctive features of the migrant-home country can be very many<sup>113</sup> but, often, they collectively reflect in the long-run growth rate of an economy and level of economic development. For instance, the underdevelopment of financial markets, low private sector savings and investment, high income inequality, protracted fiscal deficit due to excessive government spending, and import dependency, which result in economic stagnation, are common characteristics of developing countries (Todaro and Smith, 2002; Thirlwall, 2011).

Accordingly, the focus of this chapter is to examine the direct impact of international migrant remittances on long-run economic growth, and to investigate the possible presence and impact of the economic growth rate size-effect of international remittance inflows in SSA.

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<sup>113</sup> For example, the degree of financial development, income inequality, dependency on imports, quality of labour force, and government policy can influence the pace of economic growth.

### 6.3.2 Empirical Literature on International Remittance Inflows and Economic Growth

Recent years have seen a growing interest in investigating the effects of international remittance inflows on the economic growth of developing countries. Between the year 2003 and 2011 alone, this author has come across as many as 30 empirical studies (see Table A6.11 in the Appendix) on the relationship between remittances and economic growth in migrant-home countries. The majority of these empirical studies (24 out of 30) involved cross-country/panel studies whilst the remaining six were devoted to country-specific studies. Of the 24 cross-country/panel studies, 12 of which only four<sup>114</sup> (Baldé, 2009; Kagochi *et al.*, 2010; Lartey, 2010; Singh *et al.*, 2010) were strictly devoted to SSA, were regional-based. Thus, cross-country/panel studies on the impact of remittances on the economic growth in SSA are not only relatively scarce, but also relatively recent.

Apart from Zieseimer (2008; 2009) who went as far back as 1960 and covered the period, 1960-2003, hence 44 years, cross-country/panel studies that covered the most time period normally ranged between 1970 and early 2000s (see Table A6.11). Most of these studies<sup>115</sup> were generally on developing countries and not restricted to regional studies. With reference to regional cross-country/panel studies on SSA countries, the study period covered ranged between 17 years (as in Kagochi *et al.*, 2010) and 25 years (as in Baldé, 2009). So far, only the study by Baldé (2009) covered the 1980s (specifically, 1980-2004) as all other related studies exclusive to SSA as a sub-region covered 1990/91-2007/08. Of the empirical literature reviewed, Lartey (2010), and Singh *et al.* (2010) who analysed 36 SSA countries in their various studies, compared to six by Kagochi *et al.* (2010) and 29 by Baldé (2009), represent the most inclusive cross-country/panel studies on SSA as a sub-region in terms of the number of sampled countries. Therefore, with 36 SSA countries over the period, 1980-2009, the empirical findings from this study on the effects of remittances on economic growth are the most comprehensive in terms of coverage (both time and country) on SSA as a sub-region.

From Table A6.11, it is observed that 23 out of the 30 empirical studies reviewed used international remittances as a ratio of nominal GDP (REMGDP), whilst in three other studies, the logarithm of gross international remittances was used. In the remaining four studies (those by Fayissa and Nsiah, 2008; 2010; 2011; Siddique *et al.*, 2010) remittances *per capita*

<sup>114</sup> This is exclusive of the studies by Fayissa and Nsiah (2008) on 37 African countries, and Ahortor and Adenutsi (2009) in a comparative study involving 31 small-open developing countries from LAC (16) and SSA (15).

<sup>115</sup> This is exclusive of Garcia-Fuentes and Kennedy (2009) on 14 LAC countries from 1975 to 2000; and Mundaca (2009) on 25 LAC countries between 1970 and 2002.

(REMPG) were used, but, unlike this study, none of these authors explained the motivation behind the choice of REMPG over REMGDP. The justification for using remittances *per capita* rather than remittances as a ratio of nominal GDP is provided in Chapter Three.

With regard to the composition of what constitutes international remittances, 13 of the studies summed up the three commonly used components – workers' remittances, compensation of employees, and migrant transfers; while in eight other studies, remittances were defined as comprising only workers' remittances and compensation of employees. Also, seven of the 30 empirical studies summarised in Table A6.11 defined international remittances as gross private capital transfers comparable to the broadest definition of international remittances (see Chapter Two); while in the four remaining studies, workers' remittances were used to represent international migrant remittances. With the exception of Barajas *et al.* (2009), practically no previous study gave academically justifiable explanations for the choice or inclusion of the specific components of the remittances data, as decisions on what to include or to exclude from the determination of migrant remittances were based merely on easy access to data on remittances and the manner of reporting by the source institution concerned. For example, the World Bank reports only workers' remittances and compensation of employees as components of remittances in its *WDI*, but the IMF also reports the third component (migrant transfers) in its *BoPS*. With the exception of Adenutsi (2011), all previous authors who measured remittances as the sum of workers' remittances and compensation of employees were those who coincidentally used the remittance data from the *WDI* and not the *BoPS*. In this study, the narrow definition of international remittances as the sum of workers' remittances and compensation of employees is used based on the explanations provided in Chapter Two.

The conclusions from various empirical studies suggest that the direct impact of remittances on long-run economic growth is mixed even though the majority of the results favour a positive impact (see Table A6.11). The obvious controversy in the literature on remittances has been whether or not remittances have a direct or an indirect positive impact on long-run economic growth. In various empirical studies, Amuedo-Dorantes and Pozo (2004), Chami *et al.* (2005), Fajnzylber and López (2007), Jongwanich (2007), Barajas *et al.* (2009), and Singh *et al.* (2010), it was found out that remittances do not have a direct positive growth-impact, or as in some cases, directly retard economic growth. However, the conclusions from many other studies including those by León-Ledesma and Piracha (2004), Glytsos (2005), Lucas (2005), World Bank (2006b), Calderón *et al.* (2008), Ahortor and Adenutsi (2009), Catrinescu *et al.*

(2009), Jayaraman *et al.* (2009), Mundaca (2009), Rao and Hassan (2009) and Ziesemer (2009) show that remittances do have a direct positive impact on long-run growth, except that the direct impact is marginal in most cases. Other studies that found a direct positive impact of remittances on economic growth include those by Larrey (2010), Adenutsi (2011), Ahmed *et al.* (2011), and Fayissa and Nsiah (2011).

One thing that appears quite clear from the studies that fail to find a direct (positive) impact of remittances on economic growth is that even where remittances failed to have direct (positive) impact on growth, they do have a significant positive impact on most of the factors in the neoclassical and endogenous growth models. For instance, IMF (2005), Fajnzylber and López (2007), Jongwanich (2007), Fayissa and Nsiah (2008), Le (2008) and Chami *et al.* (2009) show that even where remittances are injurious to growth, they do impact positively on other growth-enhancing factors like investment in physical assets and human capital accumulation, improved institutions, macroeconomic stability, and financial development through higher savings and in making more funds available for credit expansion.

The general conclusion from the various empirical studies on SSA as a sub-region point to the fact that the direct effect of remittances on economic growth is mixed. While Baldé (2009) found no direct impact, Kagochi *et al.* (2010) found a positive impact on SSA countries with relatively higher GDP *per capita* but no impact on SSA countries with lower GDP *per capita*. Larrey (2010) found direct positive impact of remittances on economic growth in SSA, but Singh *et al.* (2010) found a significant negative impact. These previous studies on SSA as a sub-region, however, suffer several defects especially with regard to the appropriate contextual definition and measurement of international remittances discussed in Chapter Two, and sample representativeness. For example, the results obtained by Kagochi *et al.* (2010) can be misleading in view of the fact that only six SSA countries with relatively vibrant and advanced financial markets<sup>116</sup> and relatively higher levels of income were analysed. Again, given the fundamental macroeconomic disparity across the sampled countries, as shown in Chapter Five, parameter estimates from pooled OLS may be inefficient, biased and unreliable. Moreover, none of these previous authors defined and measured international remittances in *per capita* terms or as the sum of workers' remittances and compensation of employees. Unlike this study, previous studies explored only the contemporaneous effects of international

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<sup>116</sup> See Table 5.1 and Adenutsi *et al.* (2012) for evidence.

remittances on economic growth in SSA. However, as shown in this study,<sup>117</sup> at least in the case of SSA, restricting empirical analysis of the potential remittance impact on growth to contemporary effects of remittances is, at best, an underestimation.

Apart from Lartey (2010), previous regional studies on SSA measured economic growth as logarithm of real *per capita* GDP and not the growth rate in real *per capita* GDP. It is important to emphasise that, in a cross-country/panel study, using logarithm of real *per capita* GDP as a measure of economic growth cannot be as appropriate as using the real *per capita* GDP growth for two main reasons. First, since the former invariably measures income level which can remain fairly high (in comparison with what is recorded in low-income countries) during periods of global recession as was evident in the 2007-2009 credit crunch, even though the industrialised countries with higher real *per capita* GDP suffered the heaviest recession and the lowest growth rates, the real *per capita* GDP of these countries was still far higher than the real *per capita* GDP of developing countries. Second, there are instances when a low-income country can record a higher growth rate above the real *per capita* growth recorded in a high-income country due to a number of reasons given by proponents<sup>118</sup> for the catch-up effect.

It can be seen from the literature reviewed that remittances can affect economic growth either directly or indirectly through a variety of mechanisms including quality of institutions, macroeconomic stability, human capital accumulation, investment physical capital, and financial development. However, this indirect influential behaviour is not unique to international remittances. For instance, when remittances, just like domestic financial resources, are saved but these savings are not translated into quality investment, remittances cannot be blamed for undermining economic growth. In many developing countries where default risks are high, financial institutions try to avoid extending credit to Small and Medium-Scale Enterprises (SMEs), self-employees and informal sector workers. Under this scenario, even if financial development improves by way of higher credit extension to the private sector, and yet the beneficiaries are mostly formal sector employees who are not entrepreneurs, improved private sector access to bank credit may not impact positively on economic growth as a result of low private investment. Similarly, investment in human capital development is theoretically pro-growth, but the effect of human capital accumulation on long-run growth could only be positive when measures are put in place to employ the educated to perform skill-related jobs in the

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<sup>117</sup> Compare the results reported in Table A6.8.1 and Table A6.9 with those reported in Table 6.1 for evidence.

<sup>118</sup> These include Ramsey (1928), Solow (1956), Lucas (1990), and Barro and Sala-i-Martin (1997).

domestic economy. In situations where remittances were found to have no direct contemporaneous impact but an indirect impact on long-run economic growth, it is plausible that remittances could have a direct asynchronous effect on long-run growth. It is for this reason that this study does not restrict itself to exploring only the direct contemporaneous contribution of remittances to economic growth in SSA.

### **6.3.3 A Brief Literature Review on Other Potential Determinants of Economic Growth**

Thus, far, available studies show limited and often contradictory evidence of the impact of remittances on economic growth. Theoretically, the effect of the traditional sources of growth has remained purely an empirical concern given the somewhat contentious theoretical prediction of the potential impact of each of these determinants of economic growth. Therefore, in order to provide both theoretical and empirical foundation for the empirical results of this study that under some circumstances might be considered as counter-intuitive, a brief review of the literature on the potential impact of the traditional sources of economic growth is presented below.

#### *6.3.3.1 Investment (INV)*

Classical and neoclassical economists led by Smith (1776), Domar (1947), and Harrod (1948) identify capital accumulation and productive investment as an important factor in the process of long-run economic growth. In an apparent support of this proposition, proponents of endogenous economic growth theories including Barro (1990), and Grossman and Helpman (1991) argue that capital (broadly defined as ideas (or knowledge), learning by doing and human capital accumulation) is a *sine qua non* for long-run growth through the steady-state growth rate (Lucas, 1988; Romer, 1986; 1990). The endogenous growth theory further predicts that despite the reality of the law of diminishing returns, marginal factor productivity can be increased through investment. A typical instance is where massive commercialisation, diversification, industrialisation, and technological progress financed through productive capital investments increase total factor productivity and long-run economic growth. Nonetheless, it is not theoretically illogical or counter-intuitive to predict a non-positive relationship between capital investment and economic growth especially in the developing world. The reason is that the extent to which capital investment can contribute positively to economic growth is dependent upon the quality of the investment which is easily undermined by information

asymmetry, corruption<sup>119</sup>, low quality human resources, and unfavourable political and macroeconomic environments in low-income countries. In other words, theoretically, high investment ratio does not necessarily guarantee economic growth since the magnitude, the quality and the productivity of investment in a stable socio-political and ideal macroeconomic policy environment are necessary pre-conditions. Thus, to a very large extent, the existence of appropriate policy, political and social infrastructure is crucial determinants of the effectiveness of investment in enhancing growth (Hall and Jones, 1999; Artadi and Sala-i-Martin, 2003; Fafchamps and Schündeln, 2013). In addition, because macroeconomic risk and geopolitics can influence the performance of private investment, it is conceivable that the potential contribution of investment to economic growth can be influenced by the relative dominance of private over public ownership strategic assets and firms and the quality of relevant investment information available.

Contrary to popular views and conclusions from majority of related previous studies, empirical evidence from studies conducted by Klenow and Rodriguez-Clare (1997), and Hall and Jones (1999) suggests that capital accumulation is not a primary source economic growth.

#### *6.3.3.2 Government Expenditure (GXP)*

As the largest consumer of final goods and services in a money economy, a government has the option to implement its fiscal policy through a deliberate action on its level of expenditure. In a typical endogenous growth framework, Rebelo (1991) demonstrates how economic policy including government expenditure, a key fiscal policy instrument, can affect the rate of long-run economic growth. According to the endogenous growth economists especially Barro (1990), King and Rebelo (1990), Lucas (1990) and Stokey and Rebelo (1995), the share of public expenditure in output or the composition of expenditure and taxation affects the steady-state growth rate. As has been the tradition in most import-dependent developing countries, however, unwarranted government expenditure on final goods and services leads to low public sector saving and investment, low exports and high imports with undesirable implications for price hikes and exchange rate depreciation culminating in less growth, at least, in the short run. In fact, excessive government consumption can distort market outcomes and ultimately depress economic growth. It is for this reason that governments in developing countries have been under pressure from the Bretton Woods institutions and the international donor

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<sup>119</sup> In the developing world like SSA, the undesirable impact of corruption on the quality of capital investment is most common and severe within the public sector.

community to implement austerity measures as a means of stabilising the macroeconomic environment for sustained accelerated long-run growth. However, higher government expenditure devoid of corrupt practices on locally produced final goods and services can expand the market size of the domestic economy thereby accelerating long-run growth. In various empirical studies, Landau (1983), Grier and Tullock (1987), Barro (1991), Ghura (1995), and Fölster and Henrekson (1999; 2001) observe that government expenditure is negatively correlated with economic growth, whilst Kormendi and Meguire (1985) find no empirical relationship. In sharp contrast, Aschauer (1990), Engen and Skinner (1992), Kelly (1997), Knoop (1999), and Alexious (2007) find out that government expenditure has a robust positive impact on growth.

#### 6.3.3.3 *Openness to International Trade (OPN)*

The fundamental liberalist argument is that openness to international trade has a potential positive implication for long-run growth, since openness enables countries to allocate resources more efficiently by promoting large-scale production, industrial research, innovative product development and entrepreneurial activities arising from international competition and easier access to larger product and capital markets globally. Additionally, openness to world trade can enhance international capital flows thereby increasing financial openness and financial depth which in turn facilitate financial development necessary for economic growth (Obstfeld, 1994). In the opinion of Grossman and Helpman (1991), Romer (1993), and Barro and Sala-i-Martin (1995), countries that are more open have a greater opportunity to catch up with leading technologies of the rest of the world as market size for both finished and intermediate goods expands. Enlarged market size raises research and development which is subject to increasing returns to scale, hence economic growth.

On the other hand, openness to international trade compels local industries to face higher foreign competition usually resulting in domestic industries of capital-constrained developing countries losing their market share at home leading to capacity underutilisation and retrenchment thereby impeding economic growth. Indeed, Alesina *et al.* (2000; 2005) develop a theoretical model whereby there is an inverse relationship between openness to trade and country size. Feenstra (1996) asserts that if intermediate goods are not traded, the integration effect of trade openness can hardly be beneficial to smaller countries. Chang *et al.* (2009) point out that openness promotes the efficient allocation of resources through comparative advantage, allows dissemination of knowledge and technological progress, and encourages

competition in domestic and international markets. In contrast, Krugman (1994), and Rodrik and Rodriguez (2001) argue that the effect of trade openness on growth is doubtful.

Depending upon which indicator is used to proxy trade openness, some empirical studies, including Levine and Renelt (1992), Harrison (1996), Sala-í-Martin (1997), and Rodrik and Rodriguez (2001) *inter alia* conclude that a negative relationship exists between trade restrictions and economic growth. Yanikkaya (2003), however, finds that although trade openness is positively correlated with growth, contrary to popular view, trade restrictions positively and significantly affect economic growth in most developing countries. Thus, the trade openness-growth nexus is basically an empirical question and has been extensively interrogated in both theoretical and especially empirical studies with majority of the studies finding a strong and statistically significant positive impact of trade openness on economic growth. Notable among these studies are Dollar (1992), Lee (1993), Islam (1995), Sachs and Warner (1995), Harrison (1996), Vamvakidis (1999), Frankel and Romer (1999), Greenaway *et al.* (2002), Lee *et al.* (2004), Salinas and Aksoy (2006), Foster (2008), Kneller *et al.* (2008), Wacziarg and Welch (2008), Chang *et al.* (2009), Kim (2011), Ulaşan (2012), Mercan *et al.* (2013).

#### 6.3.3.4 Human Capital Accumulation (HCA)

Despite the microeconomic theoretical consensus on the crucial contributory role of human capital on growth (Barro, 1990; 1991; Mankiw *et al.* 1992), macroeconomic empirical findings of the impact of human capital accumulation on economic growth are mixed. This may be due to the fact that the availability of institutions and socially accountable governance, job-related skills, access to job, and social infrastructure play a crucial role in determining the quality of human capital which subsequently affects long-run growth. Besides, the quality of education, retention of the educated workforce in the domestic economy and work ethics within the formal sector have a direct impact on labour productivity, hence the contribution of human capital to economic growth. Indeed, there are a host of macro-level studies that found weak, no, or negative impact of human capital on growth as reported by Benhabib and Spiegel (1994), Islam (1995), and Caselli *et al.* (1996). Quite recently, Bils and Klenow (2000), Bond *et al.* (2001), Pritchett (2001), Easterly (2001), Easterly and Levine (2001), and Kumar (2006) reaffirm the non-positive contribution of human capital to growth. Fedderke (2005) provides empirical evidence in favour of positive impact of the quality but not the quantity of human capital accumulation on total factor productivity growth. Meanwhile, Temple (1999a) and Krueger and

Lindahl (2001) argue that educational stock is only positively associated with economic growth if the initial educational endowment of a country is relatively low.

What some may perceive as a counter-intuitive result of the impact of human capital in terms of education on economic growth might be due to the fact that education could have a lag rather than contemporaneous effect. Also, human capital proxies, including education stock is, to a large extent, subject to measurement errors (de la Fuente and Domenech, 2002).

#### 6.3.3.5 Rate of Inflation (INF)

Inflation is the proxy for economic uncertainty and investment risk and, therefore, has the potential of discouraging private investment in the form of non-altruistic remittances. Romer (2006) argues that, among other things, a high variability of inflation can suppress long-term investment since this can be regarded as a signal of government malfunctioning that is capable of eroding potential capital/investment gains. According to Temple (1999b), high inflation is accompanied by exchange rate volatility, political instability and other undesirable factors that impede economic growth. Cukierman *et al.* (1993), Fischer (1993) and Gillman *et al.* (2002) obtain a negative relationship between inflation and growth. Conclusions from several other studies, including Ghosh and Phillips (1998), and Nell (2000) show that whether or not inflation promotes or undermines economic growth depends upon the rate of inflation as admittedly, an inflation rate beyond a certain threshold can jeopardise growth.

More specifically, Fischer (1993) in a cross-country study comprising both developing and industrialised countries established a negative non-linear relationship between inflation and economic growth, noting that inflation only hampers economic growth after 40 per cent threshold. Hasanov (2010) based on 2001-2009 annual data established a non-linear relationship between inflation and growth rate at a 13 per cent threshold above which inflation became injurious to the economic growth prospects in the Azerbaijani economy. Having controlled for unit roots and co-integration, Umaru and Zubairu (2012) revealed that in the case of Nigeria it is GDP growth rate that Granger-caused inflation and not inflation Granger-causing economic growth. Mallik and Chowdhury (2001) find out that the relationship between economic growth and the rate of inflation is positive and statistically significant for Bangladesh, Pakistan, India and Sri Lanka. In this study, it was further established that the sensitivity of growth to changes in inflation rates was smaller than that of inflation to changes in growth rates. By these results, it was suggested that although moderate inflation promotes growth,

faster growth rate absorbs into inflation by overheating the economy. In a panel of 124 countries comprising advanced and developing countries, Bick *et al.* (2009) find a threshold of two per cent for the industrialised countries and 17 per cent for developing countries. In the case of Brazil over the 1980-1995 period, Faria and Carneiro (2001) find that the impact on inflation on economic growth was negative in the short run but in the long run, inflation does not affect growth, a results which seems to validate the super-neutrality theory of money. Meanwhile, Wai (1959), Bhatia (1960), Dorrance (1963), and Sidrauski (1967) found no evidence for a relationship between inflation and economic growth, whilst De Gregorio (1993) and Saaed (2007) find a negative relationship in their respective studies.

#### 6.3.3.6 *Bank Credit to the Private Sector (PSC)*

There seems to be not much controversy that a relationship exists between finance and economic growth. Both theoretically and empirically, what seems to be the debate has been the direction of the causality, and the degree and type of impact of this relationship under different macroeconomic conditions. Some scholars including (Bagehot, 1873; Schumpeter, 1912; Hicks, 1969; Miller, 1998) argue that finance is a major contributor to growth while others such as Robinson (1981) suggest that growth leads financial development and Lucas (1988) shows that finance is over-stressed in explaining growth. In a theoretical contribution, Patrick (1966) identifies a contrasting two-way hypothesis suggesting that the finance-growth causality is either supply-leading or demand-following. In line with this postulation, a causal relationship that runs from the indicators of financial development such as private sector credit allocation to economic growth is described as supply-leading because it is believed that the activities of the financial institutions increase the supply of financial products and services that stimulates economic growth. In a similar fashion, when higher growth of an economy results in an increase in the demand for financial products and services, often necessitating higher competition and innovation within the financial sector hence financial development, then the demand-following hypothesis is said to have prevailed. In the presence of high degree of financial repression and weak financial sector via high-level of non-performing loans, high information and transactions costs that inhibit financial deepening and the lagging behind of financial reforms, financial development may not necessarily promote long-run growth, at least, contemporaneously. In other words, bank credit to the private sector may not enhance the prospects of economic growth in economies with high level of macroeconomic imbalances and uncertainty, limited participation of the private sector in the productive sectors of the economy, weak institutional environment, low labour productivity and widespread rent-seeking activities.

In effect, bank credit to the private sector can have a conflicting effect on economic growth depending essentially upon the cost, volume and how the credit facility is used. In the finance-growth literature, it is hypothesised that if credit expansion to the private sector is enhanced in a competitive financial market environment this can lead to higher investment in economically viable projects thereby stimulating private sector-led growth in the long run (McKinnon, 1973; Shaw, 1973; King and Levine, 1993). Rajan and Zingales (1998) observe that business enterprises receiving the majority of their operational funding from financial institutions do not expand normally in the economies which are financially developed. Similarly, financial development resulting in credit reallocation (or redistribution of finances) is a driving force behind high industrial growth rates (Fisman and Love, 2003; 2004; Hartmann *et al.* 2007). Indeed, Hsieh and Klenow (2009) attribute the robust economic breakthroughs and the enviable achievements of high performers and newly-emerging industrialised countries such as China and India of the 21<sup>st</sup> Century to reallocation of quality financial resources from lesser to higher productive sectors of their economies by financial intermediaries.

The aforementioned prospects of finance enhancing growth notwithstanding, the potential capacity of private sector credit to stimulate the desired economic growth is dependent upon a variety of factors including the amount, terms and the cost of the credit, the quality of the investment, and the policy environment. When the private sector is given adequate credit facility at relatively low cost under favourable terms of repayment in a stable and an investment-friendly political and macroeconomic environment, there is a higher likelihood that bank credit to the private sector will boost growth rather than when the contrasting conditions prevail. In fact, recent developments in the global financial front seem to suggest that there is a high conditional probability that private sector lending boom can lead to financial crises.

Habibullah and Eng (2006) following the Blundell and Bond (1998) GMM estimation technique analysed the causal relationship between financial development and economic growth in a panel of 13 Asian developing countries. The results, which is consistent with previous causality studies by Calderón and Liu (2003), Fase and Abma (2003), and Christopoulos and Tsionas (2004) confirm the Schumpeterian hypothesis of financial development promoting growth. In a related study, the IMF (2008) in its Global Financial Stability Report noted a statistically significant impact on credit growth on GDP growth. Specifically, the IMF reports that a credit squeeze and a credit spread evenly over three quarters in USA will reduce growth by about 0.8

per cent and 1.4 per cent points year-on-year respectively assuming no other supply shocks to the system.

In a panel study, Favara (2003) finds that the relationship between financial development and economic growth is at best weak; and revealing further that there is no indication that finance spurs growth and in some specifications, the relationship is puzzlingly negative. The results obtained by Favara (2003) further suggest that financial development does not have a first-order effect on economic growth; the link between them is not linear and if the dynamic specification and slope heterogeneity across countries are taken into account, the effect is substantially negative.

In the case of Turkey, Kar and Pentecost (2000) observe that when bank deposit, private sector credit or domestic credit ratios are alternatively used as a proxy for financial development, causality runs from economic growth to financial development, suggesting that economic growth leads financial development. Meanwhile, Demetriades and Hussein (1996) observe that bi-directional causality is possible. From a study involving 16 less developed countries, they find a bi-directional causality in six countries, reversal causality in six countries, while there was no evidence of a causal relationship in the case of South Africa. Shan and Jianhong (2006) also find a bi-directional relationship in the case of China. Abu-Bader and Abu-Qarn (2008) for Egypt for the period 1960-2001 within a trivariate VAR framework, used four different measures of financial development (ratio of  $M_2$ /GDP,  $(M_2-M_1)$ /GDP ratio, ratio of bank credit to the private sector to GDP, and the ratio of credit issued to private sector to total domestic credit). The empirical results show that a bi-directional exists between financial development and economic growth, and the indicators of financial development stimulate growth through investment and economic efficiency. Arcand *et al.* (2012) reveal that there is a threshold effect of 80-90 per cent above which the contribution of financial development to economic growth is negative.

In an empirical study on the relationship between financial development and economic growth in Egypt based on 1974-2002 data, Bolbol *et al.* (2005) report that the effect of bank-based indicators on total factor productivity was negative unless these indicators are interacted with *per capita* income. Ayadi *et al.* (2013) using data from 1985-2009 find that credit to the private sector and bank deposits are negatively associated with economic growth, which affirms deficiencies in credit allocation in the north or south Mediterranean countries. After controlling

for stock market development, Naceur and Ghanzouani (2007) report that banking sector development indicators negatively impact on economic growth in 11 selected Middle East and North African countries based on 1979-2003 annual panel data following dynamic modelling.

Other examples of studies that find a positive impact of financial development on economic growth include Goldsmith (1969) in a cross-country study involving countries where there are no appropriate financial structure and/or infrastructure. For 77 countries, King and Levine (1993) confirm the results of Goldsmith (1969). Also, Beck *et al.* (2000), Rioja and Valev (2004a,b) and Rousseau and Wachtel (2000) for a sample of countries in a panel data framework. These conclusions seem to be the case especially in middle and high-income countries.

#### *6.3.3.7 Broad Money to GDP Ratio ( $M_2/GDP$ )*

Financial market development is an important ingredient for economic growth and development (Hicks, 1969; Fry, 1995). Developed financial systems have efficient financial markets that provide a better platform for monitoring operations and projects undertaken by financial intermediaries, information and the safety net necessary for lowering transaction costs, and channelling savings towards new and quality investments, thus leading to economic growth (Greenwood and Jovanovic, 1990; Levine, 1991; Bencivenga and Smith, 1991, Blackburn and Hung, 1996). Nevertheless, a negative impact of financial development proxied by  $M_2/GDP$  is not impossible under some circumstances. De Gregorio and Guidotti (1995) observe that where financial repression exists or where financial liberalisation process is too fast and characterised by a poor regulatory environment, the development of the banking sector can lead to lower savings and investment rate, thereby impeding growth. In fact, Lartey (2010) obtained a similar result.

#### *6.3.3.8 Foreign Direct Investment (FDI)*

This is one of the traditional sources of private external capital in the developing world. It usually comprises the transfer of modern technology and (new) knowledge to enable the recipient country to exploit the experience for an accelerated growth and sustainable development. The macroeconomic impact of FDI is not automatically positive but primarily dependent upon the nature and scope of FDI in terms of the scale, beneficiary sector, concentration of local firms in the sector, duration of business and many other secondary conditions (Manning and Shea, 1989). In much the same manner, Lipsey *et al.* (1994), Epstein

(1999), and Vo (2004) assert that FDI is favourable to economic prosperity only if the appropriate conditions such as adequate absorptive capacity and quality human capital exist in the beneficiary target country. Also of importance in determining the impact of FDI in the host country are the capacities of domestic enterprises to face and hold out to foreign competition, abundance of projects and market gaps that cannot be filled up by domestic entrepreneurs in the host country (*ibid*). A host of empirical studies including Blomström *et al.* (1996), Borensztein *et al.* (1998), and de Mello (1999) found evidence of a positive impact of FDI on economic growth.

From various empirical studies, Bengelsdijk *et al.* (2008) find that unlike in the case of developed countries, FDI has no significant impact on developing countries. Jackman (1982), Akinlo (2004), Carkovic and Levine (2005), and Schneider (2005) find no relationship between FDI and economic growth in LDCs. In related empirical studies, Bos *et al.* (1974), Rothgeb (1984), Saltz (1992), Kholdy (1995), Mencinger (2003), Durham (2004), and Darrat *et al.* (2005), find a negative effect of FDI on growth in host developing or non-OECD countries.

#### 6.3.3.9 Institutional Quality (INS)

Hall and Jones (1999), Kaufmann *et al.* (2003) and Acemoglu *et al.* (2005) argue that good institutions stimulate economic growth and development whilst poor institutions impede growth and development. Weak institutions breed corruption, and corruption creates an unstable and unsafe business environment (Gray *et al.* 2004) because of increased selectivity, inequality and the opacity of the rules for the outsiders. Lack of confidence in the domestic political system, weak institutions and bad governance normally breed macroeconomic instability arising from economic mismanagement, direct unproductive rent-seeking economic activities, and public sector corruption especially in the form of public funds (Acemoglu *et al.* 2001; Hermes and Lensink, 2001; Lensink *et al.* 2000). Similarly, Owens (1987), North (1981; 1990), Sen (1999), and Todaro and Smith (2002) posit that quality institutions arising from political, economic and social rights and freedom coupled with transparent governance and security are a necessary condition for long-run economic growth and development. The contribution of the state of institutions on growth may not be significant in the short run because Acemoglu *et al.* (2001; 2002; 2005) argue that the influence of institutions on growth is more of long term rather than short term. Resnick and Birner (2006) express uncertainty about the role of institutions in the growth and the development process of an economy.

Persson *et al.* (2000) developed a theoretical model that shows how strong institutions in terms of good parliamentary system, a proxy for participatory democracy enhance effective public spending, and invariably good economic performance. This theory has been corroborated in empirical studies undertaken by Knack and Keefer (1995), Hall and Jones (1999), Knack (2000), Acemoglu *et al.* (2001; 2005), Dollar and Kraay (2003), Persson and Tabellini (2003; 2004), Glaeser *et al.* (2004), and Rodrik *et al.* (2004).

#### 6.3.3.10 Official Development Assistance (ODA)

Given the high dependency of SSA countries on the outside world for donor support (see Chapter Three), it is of crucial relevance to include overseas development assistance or aid (ODA) in a growth model of a typical developing country to capture the impact of official external assistance on growth (Burnside and Dollar, 2000; Easterly, 2003). Proponents of foreign aid, notably Chenery and Strout (1966), Papanek (1973), Levy (1988) and Islam (1995), argue that ODA is crucial to the growth process of developing countries. However, Heller (1975) and Boone (1994) argue that foreign aid cannot be a propeller of domestic savings and economic growth in developing countries.

Theoretical arguments against foreign aid include dependency mentality (Kanbur, 2000), private sector crowding-out effects (Bauer, 1976; Krauss, 1983), worsening bureaucratic quality (Knack and Rahman, 2007), weakening governance (Knack, 2000; Rajan and Subramanian, 2007), and lowering international trade competitiveness through the Dutch disease effects (Rajan and Subramanian, 2005). Chenery and Strout (1966) caution against over-reliance on foreign aid by arguing that foreign aid can be detrimental and counter-productive to growth mainly because the potential contribution of aid to production and investment, hence growth, is dependent upon the absorption capacity of the aid-recipient country to make good use of the aid. Factors that enhance the absorptive capacity of foreign aid include existing infrastructure, availability of skilled labour, the institutional and administrative capacity of national and local governments.

On the reverse side of the argument, Sachs *et al.* (2004) and Sachs (2005a,b) maintain that foreign aid is beneficial to low-income countries and actually advocate for more aid to the developing world because aid is the most surest means by which escaping poverty traps in low-income countries is possible. In another contribution to the literature, Easterly (2007a,b)

argue that history does not favour the effectiveness of aid in promoting economic growth, hence more aid carry undesirable consequences for growth in aid-recipient countries.

While microeconomic studies on the impact of foreign aid on economic growth are clear and generally positive, macroeconomic studies are generally inconclusive; perhaps, due to the paradoxical micro-macro conflicting outcomes in empirical studies, which can be attributed to well-known measurement errors and aggregation problems.

Some macro-level studies, including Guillaumont and Chauvet (2001), Clemens *et al.* (2004), Dalgaard *et al.* (2004) and Moreira (2005) find foreign aid as a positive determinant of economic growth in aid-recipient countries. In an empirical contribution, Burnside and Dollar (2000: 847) observe that foreign aid has “a positive impact on economic growth in developing countries with good fiscal, monetary and trade policies, but has little effect in the presence of poor policies.” The findings by Burnside and Dollar (2000) have been validated by Collier and Dollar (2001; 2002), and Collier and Hoeffler (2004) that foreign aid only works effectively on growth in aid-receiving countries with “good policies.” In many ways, these results have since influenced some donor countries to be increasingly and conditionally allocating aid to developing countries that perform well and/or have good policies. Having investigated the impact of foreign aid on economic growth in 71 aid-receiving countries using annual data from 1960 to 1997, Karras (2006) concludes that the impact of foreign aid on economic growth is not only positive, but also significant, permanent and sizeable. Similarly, Hansen and Tarp (2000; 2001) point out that a positive aid-growth link exists even under favourable economic conditions in aid-receiving countries.

In other related studies, Boone (1994; 1996), Easterly *et al.* (2004), and Easterly (2005) conclude that the foreign aid-growth relationship is neutral in various empirical contexts. Bobba and Powell (2007) find a negative impact of foreign aid on economic growth.

## **6.4 EMPIRICAL MODEL, METHODOLOGY AND DATA ISSUES**

### **6.4.1 The Empirical Model and Methodology**

From the literature reviewed, stylised facts and the theoretical framework presented above, it is obvious that remittances are likely to correlate with many traditional determinants of growth in different ways. This is a recipe for a severe endogeneity problem that poses a challenge when there is an attempt to analyse the impact of remittances on economic growth using a

macroeconomic technique. Among the possible panel-data estimation techniques involving large cross-sections ( $N$ ) and small time period ( $T$ ), a dynamic model following the Generalised Method of Moments (GMM) procedure is recommended (see Chapter Four). This study, therefore, used the system GMM procedure suggested by Blundell and Bond (1998) to estimate an empirical dynamic panel-data model, with the dimension ( $N = 36$ ) and ( $T = 10$ ) for decade-based analysis, and  $N \times T = 36 \times 30$  for overall period analysis. The empirical model in its general form is specified as Equation (6.18).

$$growth_{i,t} = \beta_1 growth_{i,t-1} + \beta_2 \ln INV_{i,t-\rho} + \beta_3 \ln GXP_{i,t} + \beta_4 \ln OPN_{i,t} + \beta_5 \ln REMPC_{i,t-\rho} + \beta_6' Z_{i,t} + \mu_t + \phi_i + \varepsilon_{i,t} \quad (6.18)$$

where economic growth is measured by an annual percentage change in real *per capita* GDP in US\$ which signifies improvements in productivity<sup>120</sup>; investment (INV) measured as the ratio of gross fixed capital formation to GDP; trade openness (OPN), government expenditure (GXP), and *REMP*C represents migrant remittances *per capita* proxied by the sum of *workers' remittances* and *compensation of employees*<sup>121</sup> as a ratio of population. Central government final consumption expenditure (GXP) as a percentage of nominal GDP was introduced to capture the role and size of government (Barro, 1990). Considering the important role of the trade sector in endogenous growth (Grossman and Helpman, 1991), openness to international trade (OPN) was proxied by the sum of exports and imports as a percentage of nominal GDP was included in the model. The elements of the matrix  $Z$  are the set of principal control variables. The original elements of  $Z$  are foreign direct investment, official development assistance, bank credit to the private sector, broad money ratio, human capital accumulation, inflation, real exchange rate, and institutional quality. Initial growth rate is included so as to capture the possibility of the absolute common convergence phenomenon<sup>122</sup> among the sampled countries.

The subscripts  $i$  and  $t$  are the country and time identities respectively whilst  $\mu_t$  and  $\phi_i$  are the time-specific and country-fixed effects respectively, and  $\rho$  is the specific significant lag

<sup>120</sup> This also denotes economic efficiency and the long-run output expansion rate of material production. It captures the extent to which economic production rises in relation to increases in population size of a country.

<sup>121</sup> *Workers' remittances* are funds transferred back home by permanent migrants whilst *compensation of employees* are the funds sent home by migrants who are temporarily resident (less than 12 months) abroad.

<sup>122</sup> See Ramsey (1928), Solow (1956), Swan (1956), Koopmans (1965), Baumol (1986), and Barro and Sala-i-Martin (1997) for justification; even though the unconditional convergence hypothesis may not necessarily hold in a panel study involving countries with wide structural disparities in terms of technological advancement, saving rate, rate of depreciation, and population growth as shown in Aghion and Howitt (1997), Gaulier *et al.* (1999), and Barro (2003).

operator on INV and REMPC following the accelerator principle<sup>123</sup>, such that  $0 \leq \rho \leq 4$ . The idiosyncratic disturbance term ( $\varepsilon$ ) which is assumed to be normally distributed with a constant variance and zero mean, takes into account the unobserved time-variant factors that can influence economic growth. Equation (6.18) is a semi-log endogenous growth model. Thus, the empirical model of this study states that economic growth in country  $i$  at year  $t$  is determined by initial growth, government expenditure ratio, openness to international trade, current and past rates of investment and remittances and other orthodox growth determinants contained in  $Z$ . In line with the endogenous growth theory, the *a priori* signs are  $\beta_2, \beta_3, \beta_4 > 0$ ; but for the other coefficients, their signs are indeterminate *a priori* although the expected sign of  $\beta_5$  is skewed towards positive, because for the most part of the period under study, migrant remittance inflows in SSA were pro-cyclical.

The system GMM estimation procedure adopted in this study yields more efficient, precise and reliable estimators than the first-difference GMM proposed by Arellano and Bond (1991) and deviations GMM proposed by Arellano and Bover (1995) as noted in Chapter Four. The merits of the system GMM (sys-GMM) over the other alternative estimation techniques for a panel setting of this nature are thoroughly discussed in Chapter Four (see also Blundell and Bond, 1998; Behr, 2003; Baltagi, 2008).

In order to obliterate any such misgivings concerning the reliability of the results for the entire period when  $N$  can be thought of as reasonably large, the time series properties of each of the variables were investigated, using the Fisher Phillips-Perron (Fisher P-P) chi-square test and the Hadri Heteroskedasticity Consistent (HHC)  $z$ -test. In the event of a conflict between the Fisher P-P statistic and the HHC statistic, the study employed the Levin-Lin-Chu (LLC) adjusted  $t$  test<sup>124</sup>. The panel unit root test results presented in Table A6.5 show that each variable is integrated into order zero, hence the estimated model is co-integrated<sup>125</sup>, and the

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<sup>123</sup> An implication of this theory is that the effect of (private) investment and, for that matter, self-interest investment-driven remittances on economic growth is less likely to be instantaneous.

<sup>124</sup> A concise discussion of these panel unit root tests is presented in Chapter Four.

<sup>125</sup> Note that the problem of co-integration relates to trended time series of a particular non-zero order that can potentially create problems in empirical econometrics if the linear combination of these variables does not yield a stationary residual. Therefore, in models exclusively involving  $I(0)$  time series, the problem of co-integration does not arise (Engle and Granger, 1987; Gujarati, 1995; Asteriou, 2006).

empirical results obtained from the long-run equilibrium relationship are not econometrically spurious<sup>126</sup>.

To verify if migrant remittances received have a long-run size-effect on economic growth, according to the growth rates among the 36 sampled SSA countries, an expanded Equation (6.18) was re-estimated<sup>127</sup> to include a median-dummy variable. This median-dummy variable (MDV) is a dichotomous variable that takes the value of one if in a particular time period  $t$ , the growth rate of a country  $i$  exceeds the median growth rate of the sampled countries; otherwise it takes the value of zero. In other words,  $MDV = 1, \text{ if } growth_{i,t} > growth_{median}$ , and  $MDV = 0, \text{ if otherwise}$ . A statistical significance of the estimated parameter corresponding to MDV indicates evidence of size-effect of remittances within the sample requiring a further investigation of the nature of this bias. Therefore, where MDV is statistically significant, the study proceeds to the third-stage of estimation, in which MDV-remittance interactive effect was explored to evaluate how remittances received impacted on economic growth in SSA countries where the economic growth rate exceeds the median-level of the sampled group of countries. The corresponding expanded second-stage and third-stage estimated models are specified as Equation (6.19) and Equation (6.20) respectively:

$$growth_{i,t} = \beta_1 growth_{i,t-1} + \beta_2 \ln INV_{i,t-\rho} + \beta_3 \ln GXP_{i,t} + \beta_4 \ln OPN_{i,t} + \beta_5 \ln REMPC_{i,t-\rho} + \beta'_6 \Omega_{i,t} + \beta_7 MDV_{i,t} + \mu_t + \phi_i + \varepsilon_{i,t} \quad (6.19)$$

$$growth_{i,t} = \beta_1 growth_{i,t-1} + \beta_2 \ln INV_{i,t-\rho} + \beta_3 \ln GXP_{i,t} + \beta_4 \ln OPN_{i,t} + \beta_5 \ln REMPC_{i,t-\rho} + \beta'_6 \Omega_{i,t} + \beta_7 MDV_{i,t}^{\otimes} + \mu_t + \phi_i + \varepsilon_{i,t} \quad (6.20)$$

where the elements in matrix  $\Omega$  are the 'final' set of explanatory variables that emerged from the original set of control variables contained in matrix  $Z$  in Equation (6.18);  $MDV$  is the median-dummy variable defined above, and  $MDV^{\otimes}$  is the interaction of  $MDV$  and migrant remittances *per capita* in the exact empirical context as in Equation 6.18. The computed median values of economic growth are 0.414481 for 1980-89; 0.881176 for 1990-99; 2.181857

<sup>126</sup> If a stationary or an I(0) combination exists, time series is said to be co-integrated and a long-run equilibrium relationship of the variables exists.

<sup>127</sup> Augmenting Equation (6.18) with the introduction of MDV does not affect the original panel structure in which  $N > T$ .

for 2000-09; and 1.315342 for the overall study period, 1980-09. All other variables in Equations (6.19) and (6.20) are defined under Equation (6.18) and Table A6.2 in the Appendix.

Finally, for the overall study period, 1980-2009, static panel-data models were estimated to provide further empirical evidence on the relationship between migrant remittance inflows and economic growth in SSA. Both the conventional and the robust static panel-data Fixed (within) Effects (FE) and Random GLS Effects (RE) models were estimated. In this econometric exploration, decade-based estimations were not carried out essentially because as explained under 4.5.2 in Chapter Four, static panel-data modelling of the issue at stake cannot be the most appropriate in terms of the efficiency and reliability of the estimators within the confines of this particular analysis. Certainly, the estimates from the static panel-data models are not expected to necessarily confirm those obtained from system dynamic GMM estimations. Clearly, in the event of the anticipated conflict in results, it is the robust two-step sys-GMM results that are relied upon to inform policy imperatives.

#### **6.4.2 Data Sources and Description**

Unless otherwise specified in Table A6.2, the annual panel data used in this study were collated from the April 2011 Edition of *World Development Indicators* (WDI) published by the World Bank and *World Economic Outlook* (WEO) published by the IMF. The list of countries included in the analysis is presented in Chapter One. Economic growth is measured as an annual growth rate in real GDP *per capita* in a typical migrant-home SSA country. In the absence of available data on capital stock, investment in physical capital (INV) measured by gross fixed capital formation as a ratio to GDP was used. Gross fixed capital formation comprises the monetary value of land improvements, plant, machinery and equipment purchases, construction of roads, railways, and other infrastructure like schools, hospitals, offices, private residential dwellings, and commercial and industrial buildings. Government expenditure (GXP) was proxied by central government final consumption spending as a percentage of nominal GDP. Openness to international trade (OPN) was proxied by the sum of exports and imports as a percentage of nominal GDP. Openness measures based on trade flows and trade dependent ratio are by far the most commonly used in empirical studies as shown in the works of Frankel and Romer (1999), Irwin and Tervio (2002), Frankel and Rose (2002), Dollar and Kraay (2004), and Squalli and Wilson (2011).

Secondary school enrolment used as a proxy for human capital development (HCA) was introduced into the model as a key determinant of growth in order to be consistent with the models that appeal to endogenous growth theory (see Romer, 1986, 1990; Lucas, 1988; Barro, 1990, 1991; World Bank, 2006b; Calderón *et al.* 2008). Private sector credit (PSC) is the stock of claims by deposit money banks and other financial institutions on the private sector as a percentage of nominal GDP. Broad money ratio ( $M_2/GDP$ ) was measured as broad money as a percentage of nominal GDP.

Foreign direct investment (FDI) is the net inflows of investment, being the sum of equity capital, reinvestment of profits, other long-term capital, and short-term capital, to acquire long-term management interest in an enterprise operating in an economy other than that of the investor, expressed as a percentage of nominal GDP<sup>128</sup>. Rate of inflation (INF) is the annual percentage change in the cost to the average consumer acquiring a basket of basic essential goods and services in an economy. Official development assistance (ODA) is the disbursement flows (net of repayments) from official donors to a country as a percentage of nominal GDP. Institutional quality was included among the control variables so as to assess the effects of governance on economic growth. This variable was proxied by polity2 index (which ranges from -10 for low democratic governance to +10 for high democratic governance and strong institutions) was obtained from Marshall and Jaggers (2011) who developed this index. Real exchange rate was also included in the initial set of control variables. In the final estimation, however, institutional quality and real exchange rate were excluded, based on the efficiency test of the empirical model. The set of explanatory variables<sup>129</sup> included in the empirical model has been the most popularly used in empirical growth modelling involving remittances (see Table A6.11). The statistical description and the bivariate correlation coefficients of the dataset are presented in Table A6.3 and Table A6.4 respectively.

## 6.5 EMPIRICAL RESULTS AND DISCUSSIONS

First and foremost, in Table A6.10, the estimated results of the impact of migrant remittance inflows on economic growth within the context of static panel-data modelling of 36 SSA countries over the period 1980-2009 are presented. Based on the Hausman specification test conducted on the empirical Fixed (within) Effects (FE) and the Random GLS Effects (RE) models, the empirical results of the FE model were relied upon. The Breusch-Pagan statistic,

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<sup>128</sup> This is how FDI (net inflows) reported in *WDI* is defined by the World Bank.

<sup>129</sup> See Table A6.2 for the 'final' set of the explanatory variables used in the estimated model.

however, shows that the reported standard errors of the conventional FE and RE empirical models are not homoscedastic. Accordingly, alongside the estimated conventional FE and RE models, robust heteroskedasticity-corrected versions of the empirical static FE and RE models were estimated and reported in Table A6.10 as robust FE and robust RE respectively.

Therefore, with reference to the reported static panel-data modelling of the impact of migrant remittances on economic growth, the estimated results of the robust FE are deemed the most efficient and reliable in the context of this study. The estimated empirical robust FE results show that, consistent with the dynamic panel-data estimation by sys-GMM reported in Table 6.1, migrant remittances have a significant positive asynchronous impact on economic growth in SSA between 1980 and 2009. Although, in comparison with dynamic panel-data modelling, the empirical results from the robust static panel-data model estimations are less reliable because of the omission of dynamic effects and the presence of endogeneity bias, the results suggest that for the overall period 1980-2009, human capital accumulation had a significant positive impact on economic growth, whereas bank credit to the private sector, and broad money to GDP ratio inhibited growth in SSA. The computed  $R^2$  of 0.0531 suggests that the explanatory power of the estimated robust static FE panel-data model is merely 5.31 per cent leaving as much as 94.69 per cent of the total variations in economic growth in SSA unexplained. Invariably, this gives further evidence of the inappropriateness of static panel-data estimation in the context of this particular analysis. More importantly, the main empirical results of this chapter which are based on dynamic panel-data estimations following sys-GMM in determining the impact of migrant remittances on economic growth in SSA are presented in Table 6.1.

The Sargan test for the hypothesis that the estimated growth model and the over-identifying conditions are correctly specified and valid is upheld at one per cent level of statistical significance. The Arellano-Bond test statistic suggests that there are no second-order serial correlations in the first-differenced disturbances at the conventional levels of statistical significance. The Wald statistic confirms that, for each of the estimated sys-GMM, the explanatory variables jointly explained the variations in the rate of economic growth in SSA over the past three decades. Based on the robustness of the model performance diagnostic

tests<sup>130</sup>, the findings of this study as presented in Table 6.1 (cf. Table A6.8.1 in the Appendix) also show that the direct impact of migrant remittances on long-run growth is not contemporaneous, but with a one-year lag<sup>131</sup>.

**Table 6.1:** Estimated Impact of Remittances on Economic Growth in SSA, 1980-2009

| Group variable: Country Code  |  | Time variable: Year               |                                  |                                  |  |
|---|--|-----------------------------------|----------------------------------|----------------------------------|--|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |  |                                   |                                  |                                  |  |
|   | 1980-89  | 1990-99                           | 2000-09                          | 1980-2009                        |  |
| Initial economic growth (growth_1)  | -0.1027<br>(-4.83)***  | -0.2159<br>(-30.41)***            | 1.3386<br>(4.54)***              | 0.1000<br>(1.24)                 |  |
| Investment (lnINV_1)  | -5.5122<br>(-3.90)***  | 1.0946<br>(1.68)*                 | -2.8670<br>(-2.33)**             | 0.9692<br>(1.81)*                |  |
| Government expenditure (lnGXP)  | -1.2861<br>(-0.88)   | 2.0337<br>(1.77)*                 | -0.8103<br>(-1.54)               | -11.1898<br>(-2.46)**            |  |
| Trade openness (lnOPN)  | 6.3826<br>(3.44)***  | 1.1837<br>(0.74)                  | 0.8309<br>(0.67)                 | 13.0927<br>(3.02)***             |  |
| <b>Migrant Remittances (lnREMPC_1)</b>  | <b>1.0378</b><br><b>(3.64)***</b>  | <b>0.6717</b><br><b>(3.91)***</b> | <b>-0.1917</b><br><b>(-0.68)</b> | <b>1.9733</b><br><b>(2.50)**</b> |  |
| Human capital accumulation (lnHCA)  | 1.8855<br>(1.64)*  | 3.2674<br>(2.63)***               | -1.9897<br>(-2.23)**             | -5.0397<br>(-1.50)               |  |
| Rate of inflation (INF)   | -0.0053<br>(-0.92)   | 0.0723<br>(4.74)***               | -0.0959<br>(-5.72)***            | -0.0023<br>(-0.40)               |  |
| Bank credit to private sector (lnPSC)   | 0.1995<br>(0.24)   | -2.5885<br>(-3.04)***             | 1.6250<br>(1.71)*                | -2.4258<br>(-1.36)               |  |
| Broad money to GDP ratio (lnM <sub>2</sub> /GDP)                                  | -1.5905<br>(-4.72)***  | -9.3526<br>(-8.35)***             | -2.4518<br>(-2.28)**             | -11.9825<br>(-2.80)***           |  |
| Foreign direct investment (FDI)   | 0.3246<br>(6.20)***  | -0.0899<br>(-4.51)***             | 0.0819<br>(2.43)**               | -0.1072<br>(-1.99)**             |  |
| Constant term   | 2.6847<br>(1.00)   | 11.0032<br>(1.78)*                | 20.2703<br>(6.12)***             | 30.6042<br>(2.07)**              |  |
| Number of observations  | 319  | 322                               | 324                              | 1037                             |  |
| Number of groups (N)  | 36   | 36                                | 36                               | 36                               |  |
| Number of instruments   | 54   | 54                                | 54                               | 444                              |  |
| Wald $\chi^2_{[10]}$  | 1337.39***   | 22377.75***                       | 403.15***                        | 79.89***                         |  |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |  |                                   |                                  |                                  |  |
|   | 0.3336{0.739}  | -1.2508{0.211}                    | 0.9028{0.367}                    | 0.2574{0.797}                    |  |
| Sargan test of over-identifying restrictions:                                     |  |                                   |                                  |                                  |  |
| $\chi^2_{[43]}$   | 29.6174  | 23.4327                           | 24.7495                          | 21.7956                          |  |
| <b>Source:</b> Author's estimation  | ***/*** denotes statistical significance at 10%, 5% and 1% respectively<br>2-step robust z-statistics in ( ), z-probabilities in { } |                                   |                                  |                                  |  |

<sup>130</sup> Generally, the reported statistics and probabilities of the Wald  $\chi^2$ , Arellano-Bond order-2 tests and Sargan tests are more robust for the estimation involving the asynchronous impact of remittances on economic growth (Table 6.1) than the results involving the contemporaneous impact of remittances on growth (Table A6.8.1).

<sup>131</sup> In fact, comparing the results in Table 6.1 to those reported in Table A6.9, both remittances and investment are more asynchronous than contemporaneous.

The empirical results show that between 1980 and 2009 migrant remittances received had a significant positive impact of 1.9733 on long-run economic growth in SSA, but the size of this impact varies over time in response to some macroeconomic fundamentals. In the 1980s and the 1990s, previous year remittances impacted positively on long-run growth, whilst in the 2000s, the remittances had a negative but statistically insignificant impact on growth in SSA. These findings are in spite of the facts that since the implementation of financial liberalisation programmes in SSA in the 1980s, international remittance inflows have been increasing steadily (see Figure 3.2) and remittance inflows in SSA were somewhat countercyclical in the 1990s compared to the pro-cyclical trend of the 1980s and the 2000s (see Figure 4.1).

More specifically, the results show that a one percentage rise in *per capita* international migrant remittances received between 1980 and 1989 had a 1.0378 positive impact on the real *per capita* GDP growth rate in SSA. Between 1990 and 1999, a similar rise in the receipt of *per capita* international migrant remittances had a 0.67171 impact on economic growth rate in migrant-home SSA countries. In more recent years (i.e. 2000-2009), however, the ordinary effect of international remittances on economic growth rate in SSA countries is statistically zero. The results of the decade-by-decade analysis show that, even though international migrant remittances had a significant positive impact on economic growth in SSA between 1980 and 2009, the impact of remittances on SSA countries as a group has been declining over the years<sup>132</sup>. These results seem to suggest that a mere policy switch towards the implementation of financial liberalisation programmes alone may not be adequate to maximise the impact of international remittances on economic growth in SSA.

Overall, in descending order of the magnitude in terms of economic significance, other important macroeconomic factors that contributed to economic growth in SSA between 1980 and 2009 are international trade openness, broad money to GDP ratio, government expenditure, investment in physical assets and FDI. By implication, the general contributions of human capital accumulation, private sector credit and the rate of inflation to economic growth in SSA between 1980 and 2009 were statistically insignificant.

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<sup>132</sup> This declining trend is similar to the contemporaneous impact of remittances on economic growth in SSA reported in Table A6.8.1.

Specifically, the empirical results show that trade openness and investment impacted positively on economic growth over the 30-year period. On the average, a one per cent increase in openness to international trade and investment to GDP ratio resulted in approximately 13.09 per cent and 0.97 per cent rise in economic growth in SSA. Therefore, holding all other factors constant, over the past three decades, migrant remittances emerge as the second most important contributor to economic growth in SSA. Over the same period, however, increases in broad money, government expenditure and FDI were harmful to economic growth in SSA. In the case of  $M_2/GDP$  ratio, this could be attributed to the inherent limitations associated with its measurement, a measurement problem more pronounced in the developing world because of the excessive dominance of the currency in circulation ( $M_1$ ) over quasi money, hence measuring degree of monetisation rather than financial development (see 7.2.2.4 for further details).

The finding that government expenditure to GDP ratio undermines economic growth in SSA should not be considered counter-intuitive since majority of sampled SSA countries are import-dependent, implying that the governments of these SSA countries might have spent more on imported consumables rather than locally-produced goods and services. Again, high level of public sector corruption could lead to over-invoicing and financial loss to the state by way of over-payment of bills for the purchase of final goods and services by the government.

The negative contribution of FDI could be a reflection in the high participation of foreigners in the retail markets of most SSA countries rather than investment in the valued-added productive sectors of the FDI-receiving economy. In other words, on the average, net FDI inflows have not been effective in contributing to economic growth in SSA over the past three decades, probably due to the low absorptive capacity of the recipient SSA countries.

The results of the statistical test verifying the extent to which the estimated decade-based coefficients of the empirical growth model evolve over time across the three decades are presented in columns A-B, B-C and A-C of Table 6.2. Column A-B of Table 6.2 reports the results on how the estimated coefficients of the 1980-89 decade differ statistically from the corresponding estimated coefficients of the 1990-99 decade. The results on the extent to which the estimated decade-based coefficients of 1990-99 and 2000-09 are statistically different, are reported in column B-C. In column A-C of Table 6.2, the results of the extent to which how the estimated coefficients of 1980-89 decade are statistically different from the corresponding

estimated coefficients of the 2000-09 decade are reported. The null hypothesis that there is no statistical difference between any pair of the corresponding estimated decade-based coefficients to signify evolution in the empirical growth model across the three decades is rejected with 95 per cent statistical confidence. In other words, statistically, international migrant remittances just like the other explanatory variables in the empirical growth model had statistically significant decade-based changing impact on economic growth in SSA between 1980 and 2009.

With reference to columns A-D, B-D, B-E and C-E of Table 6.2, there is also a robust statistical evidence that the reported differences among the estimated decade-based coefficients of international migrant remittances are consistent providing further evidence for parameter instability over time between 1980 and 2009. Furthermore, the instability of the estimated decade-based coefficients of the other explanatory variables are statistically significant and generally consistent except in the case of foreign direct investment (FDI) as reported in columns A-D, B-D, B-E and C-E of Table 6.2.

**Table 6.2:** Results of Decade-Based Parameter Evolution and Instability Tests for Impact of Migrant Remittances on Growth in SSA

|  | Estimated Decade-Based Results    |                                    |                                   | Decade-Based Rolling Estimated Results |                                   | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                     |                                     | Overlapping Decade-Based Coefficient Stability Test Results |                                     |                                     |                                    |
|--|-----------------------------------|------------------------------------|-----------------------------------|--|-----------------------------------|---|-------------------------------------|-------------------------------------|---|-------------------------------------|-------------------------------------|------------------------------------|
|  | A                                 | B                                  | C                                 | D                                      | E                                 | A-B   | B-C                                 | A-C                                 | A-D   | B-D                                 | B-E                                 | C-E                                |
|  | 1980-89                           | 1990-99                            | 2000-09                           | 1985-1994                              | 1995-2004                         |   |                                     |                                     |   |                                     |                                     |                                    |
| Initial economic growth (growth_1)               | -0.1027<br>[0.0213]<br>{-4.83}*** | -0.2159<br>[0.0071]<br>{-30.41}*** | 1.3386<br>[0.2948]<br>{4.54}***   | -0.2428<br>[0.0208]<br>{-11.70}***     | 0.0559<br>[0.0248]<br>{2.25}**    | 0.1132<br>[0.0142]<br>{7.99}***                                 | -1.5544<br>[0.2877]<br>{-5.40}***   | -1.4413<br>[0.2736]<br>{-5.27}***   | 0.1401<br>[0.0005]<br>{274.61}***                           | 0.0269<br>[0.0137]<br>{1.97}***     | -0.2717<br>[0.0177]<br>{-15.33}***  | 1.2827<br>[0.2700]<br>{4.75}***    |
| Investment (lnINV_1)                             | -5.5122<br>[1.4134]<br>{-3.90}*** | 1.0946<br>[0.6515]<br>{1.68}*      | -2.8670<br>[1.2305]<br>{-2.33}**  | 1.0883<br>[0.9804]<br>{1.11}           | -0.0833<br>[0.8332]<br>{-0.10}    | -6.6067<br>[0.7618]<br>{-8.67}***                               | 3.9616<br>[0.5789]<br>{6.84}***     | -2.6451<br>[0.1829]<br>{-14.46}***  | -6.6005<br>[0.4329]<br>{-15.25}***                          | 0.0063<br>[0.3289]<br>{0.02}        | 1.1779<br>[0.1817]<br>{6.48}***     | -2.7837<br>[0.3973]<br>{-7.01}***  |
| Government expenditure (lnGXP)                   | -1.2861<br>[1.4614]<br>{-0.88}    | 2.0337<br>[1.1490]<br>{1.77}*      | -0.8103<br>[0.5262]<br>{-1.54}    | -6.1741<br>[1.3751]<br>{-4.49}***      | 3.8095<br>[1.1440]<br>{3.33}***   | -3.3198<br>[0.3124]<br>{-10.62}***                              | 2.8440<br>[0.6228]<br>{4.56}***     | -0.4758<br>[0.9353]<br>{-0.51}      | 4.8881<br>[0.0863]<br>{56.61}***                            | 8.2078<br>[0.2261]<br>{36.30}***    | -1.7758<br>[0.0050]<br>{-355.87}*** | -4.6198<br>[0.6178]<br>{-7.48}***  |
| Trade openness (lnOPN)                           | 6.3826<br>[1.8554]<br>{3.44}***   | 1.1837<br>[1.5997]<br>{0.74}       | 0.8309<br>[1.2401]<br>{0.67}      | 1.6063<br>[1.3613]<br>{1.18}           | 5.6055<br>[0.9389]<br>{5.97}***   | 5.1989<br>[0.2558]<br>{20.33}***                                | 0.3529<br>[0.3595]<br>{0.98}        | 5.5517<br>[0.6153]<br>{9.02}***     | 4.7763<br>[0.4941]<br>{9.67}***                             | -0.4226<br>[0.2384]<br>{-1.77}**    | -4.4218<br>[0.6607]<br>{-6.69}***   | -4.7746<br>[0.3012]<br>{-15.85}*** |
| Migrant Remittances (lnREMPC_1)                  | 1.0378<br>[0.2851]<br>{3.64}***   | 0.6717<br>[0.1718]<br>{3.91}***    | -0.1917<br>[0.2819]<br>{-0.68}    | -0.0862<br>[0.3916]<br>{-0.22}         | 0.3459<br>[0.2402]<br>{1.44}      | 0.3661<br>[0.1133]<br>{3.23}***                                 | 0.8634<br>[0.1101]<br>{7.84}***     | 1.2295<br>[0.0032]<br>{380.65}***   | 1.1240<br>[0.1065]<br>{10.55}***                            | 0.7579<br>[0.2198]<br>{3.45}***     | 0.3258<br>[0.0684]<br>{4.76}***     | -0.5376<br>[0.0417]<br>{-12.89}*** |
| Human capital accumulation (lnHCA)               | 1.8855<br>[1.1497]<br>{1.64}*     | 3.2674<br>[1.2424]<br>{2.63}***    | -1.9897<br>[0.8922]<br>{-2.23}**  | -0.2258<br>[2.2578]<br>{-0.10}         | -3.9252<br>[1.6919]<br>{-2.32}**  | -1.3819<br>[0.0927]<br>{-14.91}***                              | 5.2571<br>[0.3501]<br>{15.01}***    | 3.8752<br>[0.2575]<br>{15.05}***    | 1.8475<br>[1.1081]<br>{1.67}*                               | 3.2294<br>[1.0154]<br>{3.18}***     | 3.2662<br>[0.4495]<br>{7.27}***     | -1.9909<br>[0.7997]<br>{-2.49}**   |
| Rate of Inflation (INF)                          | -0.0053<br>[0.0057]<br>{-0.92}    | 0.0723<br>[0.0152]<br>{4.74}***    | -0.0959<br>[0.0168]<br>{-5.72}*** | 0.0380<br>[0.0115]<br>{3.32}***        | 0.0012<br>[0.0110]<br>{0.11}      | -0.0775<br>[0.0095]<br>{-8.16}***                               | 0.1681<br>[0.0015]<br>{110.61}***   | 0.0906<br>[0.0110]<br>{8.22}***     | -2.0235<br>[0.0057]<br>{-354.07}***                         | -1.9460<br>[0.0038]<br>{-514.13}*** | 1.5548<br>[0.0042]<br>{366.69}***   | 1.3867<br>[0.0058]<br>{240.74}***  |
| Bank credit to private sector (lnPSC)            | 0.1995<br>[0.8313]<br>{0.24}      | -2.5885<br>[0.8515]<br>{-3.04}***  | 1.6250<br>[0.9503]<br>{1.71}*     | 2.0182<br>[0.7106]<br>{2.84}***        | -1.4825<br>[0.5573]<br>{-2.66}**  | 2.7880<br>[0.0202]<br>{138.02}***                               | -4.2135<br>[0.0988]<br>{-42.65}***  | -1.4255<br>[0.1190]<br>{-11.98}***  | 0.4253<br>[0.1207]<br>{3.53}***                             | -2.3628<br>[0.1408]<br>{-16.77}***  | 1.3367<br>[0.2942]<br>{4.54}***     | 5.5502<br>[0.3929]<br>{14.12}***   |
| Broad money to GDP ratio (lnM <sub>2</sub> /GDP) | -1.5905<br>[0.3370]<br>{-4.72}*** | -9.3526<br>[1.1201]<br>{-8.35}***  | -2.4518<br>[1.0753]<br>{-2.28}**  | -0.9019<br>[1.2355]<br>{-0.73}         | -4.1919<br>[0.9570]<br>{-4.38}*** | 7.7622<br>[0.7831]<br>{9.91}***                                 | -6.9009<br>[0.0447]<br>{-154.24}*** | 0.8613<br>[0.7384]<br>{1.17}        | -0.6886<br>[0.8985]<br>{-0.77}                              | -8.4508<br>[0.1154]<br>{-73.25}***  | -5.1608<br>[0.1630]<br>{-31.65}***  | 1.7401<br>[0.1183]<br>{14.71}***   |
| Foreign direct investment (FDI)                  | 0.3246<br>[0.0524]<br>{6.20}***   | -0.0899<br>[0.0199]<br>{-4.51}***  | 0.0819<br>[0.0337]<br>{2.43}**    | 0.1707<br>[-5.5682]<br>{3.72}***       | -0.0307<br>[-0.0740]<br>{-0.67}   | 0.4145<br>[0.0324]<br>{12.78}***                                | -0.1718<br>[0.0138]<br>{-12.47}***  | 0.2427<br>[0.0187]<br>{13.01}***    | 0.1539<br>[5.6205]<br>{0.03}                                | -0.2606<br>[5.5881]<br>{-0.05}      | -0.0592<br>[0.0939]<br>{-0.63}      | 0.1126<br>[0.1077]<br>{1.05}       |
| Constant term                                    | 2.6847<br>[2.6847]<br>{1.00}      | 11.0032<br>[6.1816]<br>{1.78}*     | 20.2703<br>[3.3121]<br>{6.12}***  | 4.7133<br>[5.2369]<br>{0.90}           | -2.4543<br>[4.4088]<br>{-0.56}    | -8.3185<br>[3.4969]<br>{-2.38}**                                | -9.2671<br>[2.8695]<br>{-3.23}***   | -17.5856<br>[0.6274]<br>{-28.03}*** | -2.0286<br>[2.5523]<br>{-0.79}                              | 6.2900<br>[0.9446]<br>{6.66}***     | 13.4575<br>[1.7989]<br>{7.48}***    | 22.7246<br>[1.0705]<br>{21.23}***  |
| Number of observations                           | 319                               | 322                                | 324                               | 324                                    | 322                               | 320.5   | 323                                 | 321.5                               | 321.5   | 323                                 | 322                                 | 323                                |
| Number of groups                                 | 36                                | 36                                 | 36                                | 36                                     | 36                                | 36  | 36                                  | 36                                  | 36  | 36                                  | 36                                  | 36                                 |
| Number of instruments                            | 54                                | 54                                 | 54                                | 54                                     | 54                                | 54  | 54                                  | 54                                  | 54  | 54                                  | 54                                  | 54                                 |
| Wald statistic                                   | 1337.39***                        | 22377.75***                        | 403.15***                         | 2448.41***                             | 3832.23***                        | 11857.57***   | 11390.45***                         | 870.27***                           | 1892.90***  | 12413.08***                         | 13104.99***                         | 2117.69***                         |
| A-B 2 <sup>nd</sup> -order autocorrelation test  | 0.334(0.74)                       | -1.251(0.21)                       | 0.903(0.37)                       | -0.044(0.96)                           | -0.626(0.53)                      | -   | -                                   | -                                   | -   | -                                   | -                                   | -                                  |
| Sargan over-identifying restrictions             | 29.617(0.93)                      | 23.433(0.99)                       | 24.750(0.99)                      | 19.542(0.99)                           | 22.211(0.99)                      | -   | -                                   | -                                   | -   | -                                   | -                                   | -                                  |

Source: Author's estimation

\*/\*\*/\*\* denotes significant at 10/5/1 per cent statistical levels respectively.

Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )

In Table 6.3, the results as to whether international migrant remittances received have a size-effect on long-run growth in SSA migrant-home countries with varying rates of economic growth are presented<sup>133</sup>. The results show that, indeed, between 1980 and 2009, international migrant remittances had a significant economic growth rate size-effect on SSA. This is based on the one per cent level statistical significance of MDV reported in Table 6.3. The results further show that although in the 1980s it was SSA countries with relatively lower growth rates that benefitted more from the receipt of international remittances as far as the impact on economic growth was concerned, this trend has since the 1990s switched in favour of SSA countries with relatively higher economic growth rates. Yet, the overall positive impact of international remittances on economic growth in SSA between 1980 and 2009 was about 1.9733 (Table 6.1), but for SSA countries with relatively higher growth rates, the impact was 0.8897 (Table 6.3).

**Table 6.3:** Estimated Results of Remittance-Growth Size-Effect on SSA, 1980-2009

| Type of Dummy Effect           | 1980-1989              | 1990-1999               | 2000-2009               | 1980-2009               |
|--------------------------------|------------------------|-------------------------|-------------------------|-------------------------|
| Independent Dummy              | 8.2954 (12.25)***      | 6.0315 (16.62)***       | 4.8045 (23.99)***       | 6.5931 (22.11)***       |
| MDV-Remittance Interactive     | <b>-0.0459 (-0.13)</b> | <b>0.4973 (3.56)***</b> | <b>0.9131 (9.50)***</b> | <b>0.8897 (4.51)***</b> |
| Number of observations         | 319                    | 322                     | 324                     | 1037                    |
| Number of groups               | 36                     | 36                      | 36                      | 36                      |
| Instruments                    | 55                     | 55                      | 55                      | 445                     |
| Wald ( $\chi^2_{1,1}$ )        | 487.15***              | 13680.52***             | 2918.34***              | 98.70***                |
| Arellano-Bond Test             | 0.3896{0.6968}         | -1.1889{0.2345}         | 0.6677{0.5043}          | 0.3944{0.6933}          |
| Sargan Test ( $\chi^2_{(a)}$ ) | [43], 30.9076          | [43], 22.5484           | [43], 23.0167           | [433], 27.9407          |

Source: Author's estimation

Note: \*\*\* denotes significant at 1 per cent. Diagnostic tests in italics apply to estimated MDV-Remittance Interactive model only.

The results in Table 6.3 reveal that between 1980 and 1989, international migrant remittances received in SSA had no significant impact on economic growth in migrant-home SSA countries with relatively higher growth rates. Therefore, given that, for the entire sample of 36 SSA countries, the impact of international migrant remittances on economic growth was most statistically significant during the 1980-1989 period (see Table 6.1), it can be concluded that it was SSA countries with relatively lower growth rate that benefited from the positive impact of remittances on economic growth during that era (i.e. the early years of financial liberalisation). In other words, between 1980 and 1989, 'labour-exporting' SSA countries with relatively higher growth rates did not benefit from the impact of migrant remittances on economic growth.

<sup>133</sup> The complete estimated results on the existence of size-effect are reported in Table A6.6 whilst the impact of this size-effect on countries with growth rates above the median growth rate of the sub-region is presented in Table A6.7.

Between 1990 and 1999, remittance-receiving SSA countries with relatively higher growth rates had a significant share amounting to 0.4973 (Table 6.3) of the entire sample impact of 0.6717 (Table 6.1). Thus, contrary to the 1980s, it is a typically 'labour-exporting' SSA country with a growth rate above the median growth rate of the sub-region in the 1990s that profited more from maximising the growth-impact of remittances during that recessionary era. This implies that migrant remittances can still stimulate economic growth during hard times such as periods of regional economic recession. This is possible in a less import-dependent country when remittance-recipient households become less luxurious and patronise more locally produced goods even as the propensity of saving or directly investing remittances fall due to the higher cost of living.

An important finding in this chapter is that, in very recent years (the 2000s), it is only remittance-receiving SSA countries with relatively higher economic growth rates that benefitted from maximising the positive impact of migrant remittances on economic growth. Whereas the overall impact of international remittances on economic growth in SSA was statistically insignificant with some potential of inhibiting growth during the 2000s (Table 6.1), in migrant-home SSA countries with relatively higher growth rates, remittances impacted positively and significantly on growth, the magnitude of which is 0.9131 (Table 6.3). One possible explanation for this finding is that, unlike in the past, in the 2000s, migrant remittance flows to SSA countries have become relatively more pro-cyclical and this trend emanates more from the less altruistic workers' remittances than from compensation of employees (see Figure 4.2). Further, in determining the cyclical behaviour of migrant remittances as shown in this study, it is the growth in remittance inflows instead of the actual receipts that exhibits the factual cyclicity in remittance inflows in SSA.

On the other hand, for the 30 sampled SSA countries, international remittances had no contemporaneous effect on economic growth over the entire study period; and the contemporaneous effect of remittances on economic growth was positive, negative, and zero in the 1980s, 1990s, and the 2000s respectively (see Table A6.8.1). Consistent with the estimates from the asynchronous model, the results in Table A6.8.2 show that the contemporaneous growth rate size-effect of remittances has since the 1990s favoured SSA countries with relatively higher growth rates. Even in the 1990s when the general contemporaneous impact of international remittances on growth was -0.5616 (Table A6.8.1), remittances had a 0.9085

(Table A6.8.2) contemporaneous impact on remittance-receiving SSA countries with relatively higher rates of economic growth. Similarly, during the 2000s, the contemporaneous impact of remittances on economic growth in migrant-home SSA countries with relatively higher growth rates was 1.0131 (Table A6.8.2) even when the contemporaneous impact on the entire sample was statistically zero (A6.8.1). Besides, between 1980 and 2009, at one per cent level of statistical significance, the contemporaneous impact of international remittances on economic growth in remittance-receiving SSA countries with relatively higher growth rates in any particular year was 1.1934 (Table A6.8.2), although for both categories of the sampled countries, the impact was statistically zero (Table A6.8.1).

Evidently, the long-run impact of international migrant remittances on economic growth in SSA is not automatic. Migrant-sending SSA countries with relatively higher rates of growth at any point in time have a better chance of benefiting more from remittances in terms of growth prospects. In other words, although generally during the 2000-2009 decade international remittances may not necessarily impact significantly on economic growth in the 36 sampled countries, they contributed to substantial growth in remittance-receiving SSA countries with relatively higher growth rates. It is, thus, noted that between 1980 and 2009, at worst, international remittances had no impact on economic growth in SSA. Unquestionably, a close examination of the trend in the changing impact of remittance inflows on economic growth shows their continuous rising positive impact on growth in high-growth 'labour-exporting' SSA countries since the implementation of financial liberalisation programme in the 1980s.

Overall, the findings of this study invalidate the widely held view that remittances are anti-growth in low-income countries where the propensity to consume is high. To the extent that, in more recent years, the positive impact of remittances on long-run growth is more pronounced in remittance-receiving SSA countries with relatively higher real *per capita* GDP growth rates, this finding contradicts earlier conclusions drawn by Chami *et al.* (2005), Jongwanich (2007), Barajas *et al.* (2009), and Karogöz (2009) that remittances are deterrent to economic growth in developing countries. An important source of this contradiction is the fact that unlike in previous studies, this study analysed the impact of remittances on real *per capita* GDP growth rate, and not the logarithm of real *per capita* GDP (as in Barajas *et al.* (2009) and Karagöz (2009)), which is commensurate with income status, or a group of countries classified as low-income countries (as in Chami *et al.* (2005) and Jongwanich (2007)). Thus, unlike in those previous related studies, this study took recognition of the fact that, in line with the cyclicity character of

international remittance inflows, it is the actual growth rate rather than mere income level of remittance-receiving country that is more relevant in understanding the implications of remittances for economic growth in an empirical context. The reason is that while developing (or low-income) countries are the major recipients of international remittances (see Figure A6.1 and Table A6.1), economic growth can occur in any economy at one time or the other, irrespective of its income level. For example, a developing country like Ghana recorded a real GDP *per capita* growth 12.42 per cent in 2011 which is far higher than the growth rate of OECD countries in that year even though the logarithm of Ghana's real *per capita* GDP is far lower than that of the OECD countries for that same year. Again, these aforementioned previous studies just like Baldé (2009) and Singh *et al.* (2010) that found negative or no direct impact of remittances on economic growth failed to take cognisance of the fact that the direct effects of international remittances on economic growth could be asynchronous and not merely contemporaneous as proven by this study.

The findings of this study, however, confirm the results obtained from a host of previous studies including the World Bank (2006b), Ramirez and Sharma (2008), Acosta, Baerg and Mandelman (2009), Ahoritor and Adenutsi (2009), Catrinescu *et al.* (2009), Mundaca (2009), Kagochi *et al.* (2010), Lartey (2010), Cooray (2012), and Shera and Meyer (2013). Thus, with the exception of Baldé (2009) and Singh *et al.* (2010) the findings of this study are generally consistent with all known previous studies on SSA and other regions of the developing world.

## **6.6 CONCLUSIONS AND POLICY RECOMMENDATIONS**

This study explored the impact of international migrant remittance inflows on long-run economic growth in SSA over the period, 1980-2009. The analysis was carried out for the overall study period and for each of the three past decades, 1980-1989, 1990-1999, and 2000-2009. Consistent with the underlying objectives, both the contemporaneous and asynchronous effects of remittances were explored. Finally, the implications of international remittance inflows for economic growth based on the economic growth size-effects of SSA since the inception of financial liberalisation programmes in the sub-region were analysed.

The general conclusion from this study is that when international migrant remittances are properly measured and the economic growth model is correctly specified and instrumented to reduce the well-known endogeneity problems associated with remittance inflows, the overall impact of international remittances on long-run growth in SSA is significantly positive and

consistently more asynchronous. Thus, the impact of remittances on economic growth in SSA is less contemporaneous and varies over time in consistency with the macroeconomic policy environment during the liberalised regime. Generally, international migrant remittances had a higher positive impact on economic growth in SSA in periods when remittances were procyclical as was the case in the 1980s and the 2000s than during the 1990s when remittances were countercyclical to economic growth. This implies there is no significant evidence that remittances retard economic growth in SSA. At worst, the impact of remittances on economic growth was found to be statistically insignificant. Given the general decreasing positive impact of remittances on economic growth in the 36 sampled countries but, at the same, the increasing positive impact of remittances on the sampled countries with relatively higher growth rates, it is important to note that although the pursuit of financial liberalisation programme in SSA is indispensable to attracting more official remittances into the sub-region, this is not a sufficient condition for remittances to have a consistent positive impact on economic growth in migrant remittance-receiving SSA countries. It is a must for remittance-receiving SSA countries to implement other pro-growth strategies in order to optimise the remittance-growth potential.

Conceivably, the most persuasive evidence revealed by this study is the fact that, as far as the implications for long-run economic growth are concerned, international migrant remittances have considerable size-effects in SSA countries. The results have shown that in remittance-receiving SSA countries with relatively higher growth rates at any point in time, the impact of international remittances on economic growth was both statistically and economically robust, and this positive impact has been increasing steadily over time. The results imply that, with reference to SSA, the automatic economic growth and macroeconomic stabilisation effects of international remittances that existed in the past, have gradually faded away. Consequently, in contemporary SSA, it is only migrant remittance-receiving countries with relatively higher growth rates that have the prospects of maximising the potential contribution of international migrant remittances on economic growth in the long run, provided that these countries can mobilise substantial remittances through official channels. Therefore, in spite of the broad positive impact of international remittances on economic growth in SSA, it can still be economically suicidal for policy makers in SSA to live under unguided optimism of remittances serving as an automatic macroeconomic stabiliser and a growth stimulant in recipient countries irrespective of macroeconomic fundamentals.

The findings from this study imply that even though it is imperative for remittance-receiving SSA countries to implement well-coordinated and effective policies geared towards attracting optimal remittances through official routes to stimulate economic growth, this may not be sufficient unless policy makers support these efforts with the implementation of other pro-growth policies. In view of this, in addition to the remittance attraction strategies espoused in the preceding chapters, the following policy recommendations are made towards maximizing the economic growth potentials of international remittance inflows in SSA.

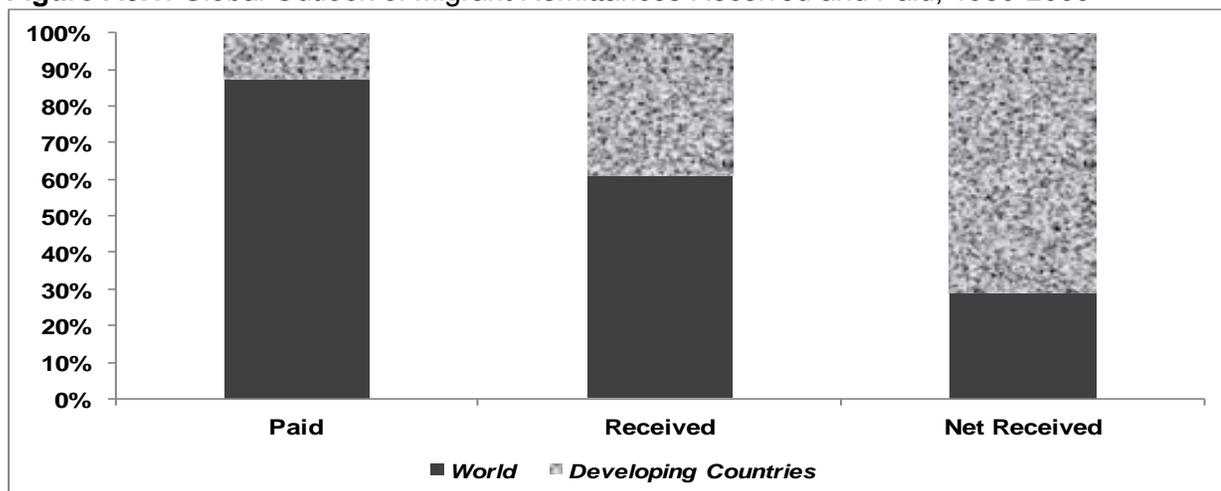
- i. Strategic policy measures must be put in place to stabilise the macroeconomy, and create an investment climate that encourages the private sector to invest more in high profit-yielding projects. Under this condition, more international migrants are likely to invest directly in profitable projects at home while, at the same time, recipients of remittances may now find it more lucrative to save and invest a higher proportion of the remittances received, rather than consume these funds instantly. In this regard, monetary and fiscal policy coordination aimed at low and stable rates of inflation, exchange rate stability, and financial policy transparency are highly recommended.
- ii. Complementary policies such as stronger institutions for good governance and reduced public sector corruption which can reduce 'wasteful' government spending are required. These policies are imperative because excessive government spending can crowd-out the private sector and subsequently retard economic growth whilst government spending on critical social infrastructure and services such as the construction of roads, extension of electricity and telecommunication services can crowd-in the private sector to boost investment in the productive sectors of the economy. This means that it is remittance-receiving SSA countries that can boost the confidence of international migrants through good governance, stronger institutions and reasonable government spending that are likely to maximise the growth potentials of international remittances received.
- iii. There is the need for trade and industrial policies that are aimed at reducing over-dependency on imports of basic necessities in the form of food and clothing that can be locally produced. This also requires modernisation of production techniques to uplift the quality of locally produced goods. This is because the spending of international remittances on imported consumables rather than on locally produced goods tends to

reduce the growth potential of remittances in migrant-home countries. Specific policies that can be implemented for this purpose include the introduction of special subsidies or tax holidays for local industries; the advancement of pro-competition policies; private-public sector ownership of strategic capital-intensive industries; and the establishment of venture capital funds to provide easy access to medium-term enterprise credit. Other relevant policies include the establishment of special funds and institutions for the conduct of industrial innovatory research towards a permanent transformation and revitalisation of local industries and SMEs as well as regionalisation and globalisation.

- iv. Policies on financial development towards higher efficiency of financial institutions when playing their intermediation role can stimulate long-run economic growth through the saving rate and the social marginal productivity of invested international remittances in SSA. Therefore, it is important to provide an enabling environment through improved information symmetry and financial market deregulation that will give financial institutions the confidence and the incentive to switch private sector credit allocation from the consuming household sector to the investing business sector.
- v. Finally, to maximize the growth potentials of international remittance inflows in SSA, it is imperative for policy makers to put measures in place to make use of the available human capital and to mitigate the tendency of international remittances to become an incentive for further migration of skilled labour. This is important because remittances received in youthful and aged populated countries are more likely to be spent on imported consumables when the remittance-recipient countries are not capable of producing adequate basic necessities locally. Excessive spending of international remittances on imported consumables will increase the dependency of the migrant-sending SSA country and worsen its macroeconomic vulnerability to adverse external shocks.

## APPENDIX 6

Figure A6.1: Global Outlook of Migrant Remittances Received and Paid, 1980-2009



Source: Author based on WDI

**Table A6.1:**  
Global Inflows of Migrant Remittances and Major Forms of External Capital (as of 2009)

|                                 | Remittances<br>(US\$ billions) | Remittances as a percentage of: |                 |              |               |
|---------------------------------|--------------------------------|---------------------------------|-----------------|--------------|---------------|
|                                 |                                | GDP                             | Export of Goods | FDI          | ODA           |
| <b>World</b>                    | <b>416.12</b>                  | <b>0.75</b>                     | <b>3.39</b>     | <b>35.76</b> | <b>326.30</b> |
| <b>Developing Economies</b>     | <b>307.65</b>                  | <b>1.88</b>                     | <b>0.08</b>     | <b>0.86</b>  | <b>2.42</b>   |
| East Asia and Pacific           | 85.79                          | 1.36                            | 4.91            | 84.58        | 834.64        |
| Europe and Central Asia         | 36.02                          | 1.41                            | 5.38            | 41.81        | 444.67        |
| Latin America and the Caribbean | 56.59                          | 1.43                            | 8.12            | 73.85        | 621.62        |
| Middle East and North Africa    | 33.44                          | 3.22                            | <i>n/a</i>      | 120.44       | 246.10        |
| South Asia                      | 75.06                          | 4.45                            | 35.63           | 195.40       | 523.72        |
| Sub-Saharan Africa              | 20.75                          | 2.49                            | 8.03            | 71.31        | 46.62         |

Source: Author based on WDI (April 2011 Edition)

**Table A6.2:** Data Description, Measurement and Sources

| VARIABLE                              | NOTATION                                 | DESCRIPTION, MEASUREMENT AND MAIN SOURCES   |
|---------------------------------------|--|---|
| <b>Dependent Variable</b>             |  |   |
| Economic growth                       | <i>growth</i>                            | Annual percentage change rate in real <i>per capita</i> GDP (in constant US\$). <b>Source:</b> <i>WDI</i> .   |
| <b>Explanatory Variables*</b>         |  |   |
| Investment in physical assets         | <i>lnINV<sup>+/-</sup></i>               | Gross fixed capital formation as a ratio to nominal GDP. <b>Source:</b> <i>WDI</i> and <i>WEO</i> .   |
| Government expenditure                | <i>lnGXP<sup>+/-</sup></i>               | Central government final consumption expenditure as a percentage of nominal GDP. <b>Source:</b> Author based on <i>WDI</i> , <i>IFS</i> and <i>WEO</i> .  |
| Openness to international trade       | <i>lnOPN<sup>+/-</sup></i>               | Sum of exports and imports as a percentage of nominal GDP. <b>Source:</b> Author's computation based on <i>WDI</i> and <i>WEO</i> .   |
| Remittances <i>per capita</i> lag one | <i>lnREMPC_1<sup>+/-</sup></i>           | Lag one of the sum of <i>workers' remittances</i> and <i>compensation of employees</i> as ratio of population. <b>Source:</b> <i>WDI</i> , <i>BoPS</i> , <i>MRF-2011</i> CD-ROMs and e-databases and estimates based on country-specific information obtained from country-desk officials of the IMF and the World Bank.                                      |
| Human capital accumulation            | <i>lnHCA</i>                             | Net enrolment ratio of children of official school age based on International Standard Classification of Education 1997 who enrolled in post-primary school relative to the population of the corresponding official school age. <b>Source:</b> <i>WDI</i> .  |
| Inflation rate                        | <i>INF<sup>+/-</sup></i>                 | Rate of growth in annual average of consumer price index. <b>Source:</b> <i>WDI</i> and author based on <i>IFS</i> and <i>WEO</i> .   |
| Broad money to GDP ratio              | <i>lnM<sub>2</sub>/GDP<sup>+/-</sup></i> | Sum of currency outside banks, demand deposit other than those of the central government, and time, savings and foreign currency deposits of resident sector other than the central bank as ratio of GDP. <b>Source:</b> <i>WDI</i> and author based on <i>IFS</i> and <i>WEO</i> .   |
| Domestic credit to private sector     | <i>lnPSC<sup>+/-</sup></i>               | Total domestic credit to the private sector by the financial system as a ratio of nominal GDP. <b>Source:</b> <i>WDI</i> , <i>Africa Development Indicators (ADI)</i> , and the Central Bank website of selected sampled countries.   |
| Foreign direct investment             | <i>FDI<sup>+/-</sup></i>                 | Net inflows of investment, being the sum of equity capital, reinvestment of profits, other long-term capital, and short-term capital, to acquire long-term management interest in an enterprise operating in an economy other than that of the investor, expressed as a percentage of nominal GDP. <b>Source:</b> Author based on <i>WDI</i> and <i>WEO</i> . |

**Source:** Author based on April 2011 editions of *WDI*, *ADI*, *WEO* and *IFS* were primarily used. **Note:** The a priori sign is indicated by <sup>+/-</sup> by the notation column of each variable. Only final explanatory variables are included in Table A6.2, thus excluding control variables that were dropped from the final estimated model. In preceding a variable means that variable is in its natural logarithmic value.

**Table A6.3:** Descriptive Statistics of Dataset

| VARIABLE  | Obs  | Mean    | Std. Dev. | Min       | Max      |
|-----------|------|---------|-----------|-----------|----------|
| growth    | 1080 | 0.9829  | 5.4418    | -52.2019  | 37.8386  |
| lnINV_1   | 1044 | 2.9077  | 0.4786    | -3.1397   | 4.3398   |
| lnGXP     | 1080 | 2.6623  | 0.4265    | 0.2683    | 3.9985   |
| lnOPN     | 1080 | 4.1373  | 0.5579    | 1.8954    | 5.5232   |
| lnREMPC_1 | 1044 | 1.4404  | 2.2497    | -6.1374   | 5.7400   |
| lnHCA     | 1080 | 3.1584  | 0.7503    | 0.8774    | 4.7694   |
| INF       | 1078 | 13.5133 | 22.2021   | -100.0000 | 200.0260 |
| lnM2GDP   | 1080 | 3.1085  | 0.6503    | -2.7186   | 4.7652   |
| lnPSC     | 1080 | 2.6018  | 0.8090    | -1.2469   | 5.1301   |
| FDI       | 1074 | 2.3102  | 4.3904    | -28.6243  | 36.1138  |

Source: Author's estimation

**Table A6.4:** Bivariate Correlation of Variables

|           | growth  | lnINV_1 | lnGXP   | lnOPN   | lnREMPC_1 | lnHCA   | INF     | lnM2GDP | lnPSC  | FDI    |
|-----------|---------|---------|---------|---------|-----------|---------|---------|---------|--------|--------|
| growth    | 1.0000  |         |         |         |           |         |         |         |        |        |
| lnINV_1   | 0.1258  | 1.0000  |         |         |           |         |         |         |        |        |
| lnGXP     | 0.0083  | 0.3226  | 1.0000  |         |           |         |         |         |        |        |
| lnOPN     | 0.0905  | 0.4137  | 0.3952  | 1.0000  |           |         |         |         |        |        |
| lnREMPC_1 | 0.1826  | 0.2796  | 0.2652  | 0.4579  | 1.0000    |         |         |         |        |        |
| lnHCA     | 0.1060  | 0.2136  | 0.2512  | 0.5300  | 0.3789    | 1.0000  |         |         |        |        |
| INF       | 0.0022  | -0.1641 | -0.2470 | -0.2696 | -0.2756   | -0.2804 | 1.0000  |         |        |        |
| lnM2GDP   | 0.0159  | 0.2035  | 0.2370  | 0.3143  | 0.3938    | 0.4615  | -0.1674 | 1.0000  |        |        |
| lnPSC     | -0.0092 | 0.3103  | 0.3254  | 0.3435  | 0.3849    | 0.3827  | -0.3039 | 0.5291  | 1.0000 |        |
| FDI       | 0.1340  | 0.2765  | 0.0994  | 0.3633  | 0.2601    | 0.2667  | -0.1180 | 0.1764  | 0.0489 | 1.0000 |

Source: Author's estimation

**Table A6.5:** Results of Panel Unit Root Tests

| VARIABLES                  | PANEL UNIT ROOT TEST STATISTICS |                          |                             | Conclusion |
|----------------------------|---------------------------------|--------------------------|-----------------------------|------------|
|                            | Fisher P-P <i>chi-square</i>    | Hadri HC z-stat          | LLC Adjusted <i>t</i> -stat |            |
|                            | At Level                        | At Level                 | At Level                    |            |
| <b>growth</b>              | 59.1524***<br>{0.0000}          | 3.7901***<br>[0.0001]    |                             | I(0)       |
| <b>lnINV</b>               | 5.4517***<br>{0.0000}           | 32.2079***<br>[0.0000]   |                             | I(0)       |
| <b>lnGXP</b>               | 5.8323***<br>{0.0000}           | 33.3928***<br>[0.0000]   |                             | I(0)       |
| <b>lnOPN</b>               | 9.0605***<br>{0.0000}           | 23.7910***<br>[0.0000]   |                             | I(0)       |
| <b>lnREMPC</b>             | 2.7415***<br>{0.0031}           | 37.9585***<br>[0.0000]   |                             | I(0)       |
| <b>lnHCA</b>               | -0.7845<br>{0.7836}             | 44.0794***<br>[0.0000]   | -4.4781***<br>(0.000)       | I(0)       |
| <b>INF</b>                 | 25.8682***<br>{0.0000}          | <i>n/a</i><br><i>n/a</i> | <i>n/a</i><br><i>n/a</i>    | I(0)       |
| <b>lnM<sub>2</sub>/GDP</b> | 0.2765<br>{0.3911}              | 36.2907***<br>[0.0000]   | -3.5126<br>(0.0002)***      | I(0)       |
| <b>lnPSC</b>               | 0.6143<br>{0.2695}              | 38.0580***<br>[0.0000]   | -1.5210*<br>(0.0641)        | I(0)       |
| <b>FDI</b>                 | 18.8927***<br>{0.0000}          | <i>n/a</i><br><i>n/a</i> | <i>n/a</i><br><i>n/a</i>    | I(0)       |

Source: Author's computations

Note: Figures in brackets {}, [], and () are probability values of chi-square, z-statistics, and t-statistics respectively. \*\*\* ( ) significant at 1%(10%) level respectively. Constant and trend included except LLC. Where applicable (in Fisher P-P and LLC tests), optimal lag 2 was included. *n/a* means not applicable due to missing data.

**Table A6.6:**  
**Estimated Impact of Median-Dummy Variable (MDV) on Growth in SSA, 1980-2009**

|   | 1980-89                            | 1990-99                            | 2000-09                            | 1980-2009                          |
|---|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Initial economic growth (growth_1)  | -0.1118<br>(-5.01)***              | -0.2259<br>(-18.79)***             | 0.1031<br>(3.98)***                | -0.0573<br>(-1.24)                 |
| Investment (lnINV_1)  | -5.8496<br>(-6.55)***              | -3.3227<br>(-0.53)                 | -1.8533<br>(-1.11)                 | 0.3504<br>(0.50)                   |
| Government expenditure (lnGXP)  | 0.3866<br>(0.28)                   | 3.5794<br>(1.84)*                  | -0.1456<br>(-0.31)                 | 1.1172<br>(0.52)                   |
| Trade openness (lnOPN)  | 2.2973<br>(3.37)***                | -4.3048<br>(-3.17)***              | -0.2780<br>(-0.34)                 | 0.4241<br>(0.20)                   |
| Migrant Remittances (lnREMPC_1)   | 0.0609<br>(0.34)                   | 0.8970<br>(2.72)***                | -0.0551<br>(-0.15)                 | -0.1670<br>(-0.27)                 |
| Human capital accumulation (lnHCA)  | 1.5868<br>(1.91)**                 | 2.2190<br>(1.73)*                  | -0.5793<br>(-0.55)                 | 1.6318<br>(0.71)                   |
| Rate of inflation (INF)   | 0.0001<br>(0.01)                   | 0.0927<br>(7.40)***                | -0.0925<br>(-6.44)***              | 0.0211<br>(4.15)***                |
| Bank credit to private sector (lnPSC)   | 2.2357<br>(1.88)*                  | -2.3794<br>(-1.44)                 | 0.1257<br>(0.15)                   | -1.8981<br>(-0.98)                 |
| Broad money to GDP ratio (M <sub>2</sub> /GDP)                                    | -1.7864<br>(-3.16)***              | -6.0046<br>(-2.79)***              | -3.1372<br>(-4.26)***              | -1.2747<br>(-2.05)**               |
| Foreign direct investment (FDI)   | -0.0042<br>(-0.12)                 | 0.0681<br>(2.38)**                 | 0.0135<br>(0.45)                   | -0.0416<br>(-1.68)*                |
| <b>Median Dummy (MDV)</b>   | <b>8.2954</b><br><b>(12.25)***</b> | <b>6.0315</b><br><b>(16.62)***</b> | <b>4.8045</b><br><b>(23.99)***</b> | <b>6.5931</b><br><b>(22.11)***</b> |
| Constant term   | -2.7333<br>(-0.44)                 | 22.2861<br>(4.02)***               | 19.3791<br>(6.67)***               | -4.1941<br>(-0.72)                 |
| Number of observations  | 319                                | 322                                | 324                                | 1037                               |
| Number of groups (N)  | 36                                 | 36                                 | 36                                 | 36                                 |
| Number of instruments   | 55                                 | 55                                 | 55                                 | 445                                |
| Wald $\chi^2_{[11]}$  | 1285.81***                         | 6103.88***                         | 6057.29***                         | 1026.37***                         |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                                    |                                    |                                    |                                    |
|   | 0.7679{0.443}                      | 1.2097{0.226}                      | 1.9954{0.046}**                    | 0.7918{0.429}                      |
| Sargan test of over-identifying restrictions:                                     |                                    |                                    |                                    |                                    |
| $\chi^2_{[•]}$  | [43], 17.7359                      | [43], 21.2452                      | [43], 27.0407                      | [433], 28.0675                     |

Source: Author's estimation

\*/\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively  
 2-step robust z-statistics in ( ), z-probabilities in { }

**Table A6.7:****Median Dummy Variable-Remittances Interactive Effect on Economic Growth in SSA, 1980-2009**

| Group variable: Country Code  | Time variable: Year              |                                   |                                   |                                   |
|---|----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                                  |                                   |                                   |                                   |
|   | 1980-89                          | 1990-99                           | 2000-09                           | 1980-2009                         |
| Initial economic growth (growth_1)  | -0.1135<br>(-3.50)***            | -0.2181<br>(-25.35)***            | 0.1252<br>(4.27)***               | -0.0313<br>(-0.85)                |
| Investment (lnINV_1)  | -5.9107<br>(-3.73)***            | 2.1314<br>(3.57)***               | -2.0687<br>(-2.82)***             | 1.2177<br>(2.69)***               |
| Government expenditure (lnGXP)  | -1.5255<br>(-0.73)               | -0.4817<br>(-0.22)                | -0.0918<br>(-0.26)                | 1.1936<br>(0.50)                  |
| Trade openness (lnOPN)  | 5.5104<br>(3.00)***              | 0.0932<br>(0.07)                  | 1.2389<br>(1.11)                  | 4.4187<br>(1.65)*                 |
| Migrant Remittances (lnREMPC_1)   | 0.8088<br>(2.35)**               | 0.1352<br>(0.57)                  | -0.5921<br>(-2.03)**              | 0.3572<br>(0.49)                  |
| Human capital accumulation (lnHCA)  | -1.5177<br>(-1.07)               | 4.8085<br>(3.47)***               | -1.5728<br>(-1.28)                | -0.2881<br>(-0.18)                |
| Rate of inflation (INF)   | -0.0022<br>(-0.30)               | 0.0884<br>(6.24)***               | -0.1001<br>(-6.81)***             | 0.0123<br>(2.54)**                |
| Bank credit to private sector (lnPSC)   | 1.3965<br>(1.02)                 | -1.5441<br>(-1.61)*               | 0.8751<br>(0.96)                  | -1.9582<br>(-1.28)                |
| Broad money to GDP ratio (M <sub>2</sub> /GDP)                                    | -1.5213<br>(-3.09)***            | -12.3836<br>(-8.03)***            | -2.9902<br>(-3.52)***             | -1.1578<br>(-0.50)                |
| Foreign direct investment (FDI)   | 0.2657<br>(3.03)***              | -0.0808<br>(-2.72)***             | 0.0258<br>(1.27)                  | -0.0165<br>(-0.45)                |
| <b>MDV-Remittance Interactive Effect</b>  | <b>-0.0459</b><br><b>(-0.13)</b> | <b>0.4973</b><br><b>(3.56)***</b> | <b>0.9131</b><br><b>(9.50)***</b> | <b>0.8897</b><br><b>(4.51)***</b> |
| Constant term   | 3.8045<br>(0.76)                 | 20.9344<br>(3.91)***              | 16.9125<br>(4.25)***              | -15.6067<br>(-1.78)*              |
| Number of observations  | 319                              | 322                               | 324                               | 1037                              |
| Number of groups (N)  | 36                               | 36                                | 36                                | 36                                |
| Number of instruments   | 55                               | 55                                | 55                                | 445                               |
| Wald $\chi^2_{[11]}$  | 487.15***                        | 13680.52***                       | 2918.34***                        | 98.70***                          |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                                  |                                   |                                   |                                   |
|   | 0.3896{0.697}                    | -1.1889{0.235}                    | 0.6677{0.504}                     | 0.3944{0.693}                     |
| Sargan test of over-identifying restrictions:                                     |                                  |                                   |                                   |                                   |
| $\chi^2_{[43]}$   | [43], 30.9076                    | [43], 22.5484                     | [43], 23.0167                     | [433], 27.9407                    |

**Source:** Author's estimation\*/\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively  
2-step robust z-statistics in ( ), z-probabilities in { }

**Table A6.8.1: The Contemporaneous Impact of Remittances on Growth in SSA, 1980-2009**

| Group variable: Country Code  | Time variable: Year         |                               |                          |                            |
|---|-----------------------------|-------------------------------|--------------------------|----------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                             |                               |                          |                            |
|   | 1980-89                     | 1990-99                       | 2000-09                  | 1980-2009                  |
| Initial economic growth (growth_1)  | -0.0874<br>(-3.95)***       | -0.1901<br>(-15.16)***        | 0.1150<br>(3.89)***      | -0.0720<br>(-1.25)         |
| Investment (lnINV_1)  | -4.2215<br>(-3.11)***       | 1.7371<br>(3.40)***           | -2.6489<br>(-2.01)**     | 1.3823<br>(2.49)**         |
| Government expenditure (lnGXP)  | -1.4266<br>(-1.10)          | 3.0085<br>(1.65)*             | -0.4708<br>(-0.88)       | -1.9675<br>(-0.54)         |
| Trade openness (lnOPN)  | 5.6675<br>(3.57)***         | 0.7993<br>(0.81)              | 1.4759<br>(1.05)         | 3.5264<br>(1.22)           |
| <b>Migrant Remittances (lnREMPC)</b>  | <b>1.1778<br/>(4.48)***</b> | <b>-0.5616<br/>(-2.65)***</b> | <b>0.0559<br/>(0.19)</b> | <b>-0.3161<br/>(-0.44)</b> |
| Human capital accumulation (lnHCA)  | -1.8469<br>(-1.79)*         | 8.0193<br>(4.63)***           | -2.2491<br>(-2.39)**     | 3.0523<br>(0.91)           |
| Rate of inflation (INF)   | -0.0037<br>(-0.66)          | 0.0797<br>(6.13)***           | -0.0816<br>(-4.41)***    | 0.0057<br>(1.16)           |
| Bank credit to private sector (lnPSC)   | 0.5825<br>(0.60)            | -3.0861<br>(-3.39)***         | 1.3957<br>(1.16)         | -2.2319<br>(-2.30)**       |
| Broad money to GDP ratio (lnM <sub>2</sub> /GDP)                                  | -1.4102<br>(-2.49)**        | -10.1077<br>(-4.41)***        | -2.6217<br>(-2.31)**     | -5.2225<br>(-2.62)***      |
| Foreign direct investment (FDI)   | 0.2780<br>(8.08)***         | -0.0841<br>(-3.99)***         | 0.0597<br>(1.68)*        | -0.0197<br>(-0.72)         |
| Constant term   | 0.3041<br>(0.09)            | -1.3404<br>(-0.16)            | 17.2455<br>(4.62)***     | 0.5389<br>(0.05)           |
| Number of observations  | 319                         | 322                           | 324                      | 1037                       |
| Number of groups (N)  | 36                          | 36                            | 36                       | 36                         |
| Number of instruments   | 54                          | 54                            | 54                       | 444                        |
| Wald $\chi^2_{(10)}$  | 408.59***                   | 14059.59***                   | 543.44***                | 54.99***                   |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                             |                               |                          |                            |
|   | 0.4235{0.672}               | -0.9508{0.342}                | 0.7934{0.428}            | -0.1369{0.891}             |
| Sargan test of over-identifying restrictions:                                     |                             |                               |                          |                            |
| $\chi^2_{[1\bullet]}$   | [43], 24.3549               | [43], 22.0945                 | [43], 22.4493            | [433], 23.9006             |

**Source:** Author's estimation\*\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively  
2-step robust z-statistics in ( ), z-probabilities in { }

**Table A6.8.2:** Contemporaneous Size-Effect of Remittances on Growth in SSA, 1980-2009

| Type of Dummy Effect                           | 1980-1989             | 1990-1999               | 2000-2009               | 1980-2009               |
|--|-----------------------|-------------------------|-------------------------|-------------------------|
| Independent MDV                                | 9.2427 (16.14)***     | 6.4127 (18.96)***       | 4.8690 (4.15)***        | 6.1316 (17.91)***       |
| <b>MDV-Remittance Interactive</b>              | <b>0.5061 (1.78)*</b> | <b>0.9085 (5.46)***</b> | <b>1.0131 (9.76)***</b> | <b>1.1934 (7.28)***</b> |
| Number of observations                         | 319                   | 322                     | 324                     | 1037                    |
| Number of groups                               | 36                    | 36                      | 36                      | 36                      |
| Instruments                                    | 55                    | 55                      | 55                      | 445                     |
| <i>Wald (<math>\chi^2_{11}</math>)</i>         | <i>681.36***</i>      | <i>8901.23***</i>       | <i>1551.25***</i>       | <i>169.96***</i>        |
| <i>Arellano-Bond Test</i>                      | <i>0.4941{0.6212}</i> | <i>-0.8531{0.3936}</i>  | <i>0.6988{0.4847}</i>   | <i>0.2100{0.8336}</i>   |
| <i>Sargan Test (<math>\chi^2_{(0)}</math>)</i> | <i>(43), 25.1545</i>  | <i>(43), 21.0542</i>    | <i>(43), 24.0050</i>    | <i>(433), 19.4533</i>   |

Source: Author's estimation

Note: \*(\*\*\*) denotes significant at 10(1) per cent. Diagnostic tests in italics apply to estimated MDV-Remittance Interactive model only.

**Table A6.9:****Robustness Test Results of Contemporaneous Investment and Remittances on Growth in SSA**

| Group variable: Country Code  | Time variable: Year               |                                     |                                  |                                  |
|---|-----------------------------------|-------------------------------------|----------------------------------|----------------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                                   |                                     |                                  |                                  |
|   | 1980-89                           | 1990-99                             | 2000-09                          | 1980-2009                        |
| Initial economic growth (growth_1)  | -0.0529<br>(-1.79)*               | -0.1923<br>(-11.86)***              | 0.1351<br>(4.36)***              | 0.0275<br>(0.64)                 |
| Investment (lnINV)  | 2.2876<br>(1.16)                  | 0.3664<br>(0.52)                    | 0.8885<br>(0.67)                 | -0.6420<br>(-0.40)               |
| Government expenditure (lnGXP)  | -3.0070<br>(-1.52)                | 2.0886<br>(1.01)                    | -0.3621<br>(-0.66)               | -4.0264<br>(-1.76)*              |
| Trade openness (lnOPN)  | 3.8383<br>(1.48)                  | -0.7285<br>(-0.62)                  | 0.8229<br>(0.72)                 | 7.7684<br>(2.47)**               |
| <b>Migrant Remittances (lnREMPC)</b>  | <b>1.1634</b><br><b>(3.14)***</b> | <b>-0.5997</b><br><b>(-3.29)***</b> | <b>-0.1911</b><br><b>(-0.94)</b> | <b>-0.2465</b><br><b>(-0.30)</b> |
| Human capital accumulation (lnHCA)  | 2.3937<br>(1.54)                  | 8.2896<br>(7.06)***                 | -2.5539<br>(-2.26)**             | -1.4554<br>(-0.57)               |
| Rate of inflation (INF)   | -0.0086<br>(-1.32)                | 0.0705<br>(5.58)***                 | -0.0981<br>(-5.49)***            | 0.0047<br>(1.19)                 |
| Bank credit to private sector (lnPSC)   | -2.8983<br>(-2.49)**              | -3.5998<br>(-2.25)**                | 1.1131<br>(0.92)                 | -2.2459<br>(-1.65)*              |
| Broad money to GDP ratio (lnM <sub>2</sub> /GDP)                                  | -1.7036<br>(-4.61)***             | -9.8037<br>(-4.43)***               | -3.2262<br>(-3.11)**             | -3.2760<br>(-2.79)***            |
| Foreign direct investment (FDI)   | 0.2175<br>(4.74)***               | -0.0625<br>(-2.66)***               | 0.0717<br>(1.96)*                | -0.0612<br>(-1.74)*              |
| Constant term   | -4.0003<br>(-0.51)                | 10.1952<br>(1.05)                   | 12.6526<br>(2.90)***             | 2.5215<br>(0.24)                 |
| Number of observations  | 319                               | 322                                 | 324                              | 1037                             |
| Number of groups (N)  | 36                                | 36                                  | 36                               | 36                               |
| Number of instruments   | 54                                | 54                                  | 54                               | 444                              |
| Wald $\chi^2_{[10]}$  | 732.83***                         | 13071.66***                         | 996.58***                        | 190.85***                        |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                                   |                                     |                                  |                                  |
|   | 0.2166{0.829}                     | -1.1533{0.249}                      | 0.8176{0.414}                    | 0.3800{0.704}                    |
| Sargan test of over-identifying restrictions:                                     |                                   |                                     |                                  |                                  |
| $\chi^2_{[1\bullet]}$   | [43], 22.0898                     | [43], 23.4782                       | [43], 24.5138                    | [433], 26.4248                   |

**Source:** Author's estimation\*/\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively  
2-step robust z-statistics in ( ), z-probabilities in { }

**Table A6.10:****Static Panel-Data Modelling of Remittances on Economic Growth in SSA, 1980-2009**

|  | <b>Fixed<br/>Effects (FE)</b>          | <b>Random<br/>Effects (RE)</b>         | <b>Robust FE<sup>++</sup></b>         | <b>Robust Random<br/>GLS (RE)</b>      |
|--|--|--|---------------------------------------|--|
| Investment (lnINV_1)                             | 1.8083<br>(3.93) <sup>***</sup>        | 1.8498<br>(4.51) <sup>***</sup>        | 1.8081<br>(1.65)                      | 1.8489<br>(1.93) <sup>**</sup>         |
| Government expenditure (lnGXP)                   | -0.7649<br>(-1.25)                     | -0.7251<br>(-1.56)                     | -0.7649<br>(-1.06)                    | -0.7251<br>(-1.35)                     |
| Trade openness (lnOPN)                           | 1.6326<br>(2.53) <sup>**</sup>         | -0.3114<br>(-0.71)                     | 1.6326<br>(1.69) <sup>*</sup>         | -0.3114<br>(-0.53)                     |
| <b>Migrant Remittances (lnREMPC_1)</b>           | <b>0.4521<br/>(2.91)<sup>***</sup></b> | <b>0.4718<br/>(4.87)<sup>***</sup></b> | <b>0.4521<br/>(2.04)<sup>**</sup></b> | <b>0.4718<br/>(5.03)<sup>***</sup></b> |
| Human capital accumulation (lnHCA)               | 1.3334<br>(2.49) <sup>**</sup>         | 0.7129<br>(2.28) <sup>**</sup>         | 1.3334<br>(2.34) <sup>**</sup>        | 0.7129<br>(2.34) <sup>**</sup>         |
| Rate of inflation (INF)                          | 0.0023<br>(0.26)                       | 0.0058<br>(0.71)                       | 0.0023<br>(0.12)                      | 0.0058<br>(0.41)                       |
| Bank credit to private sector (lnPSC)            | -0.9280<br>(-2.46) <sup>**</sup>       | -0.6566<br>(-2.38) <sup>**</sup>       | -0.9280<br>(-2.35) <sup>**</sup>      | -0.6566<br>(-2.09) <sup>**</sup>       |
| Broad money to GDP ratio (lnM <sub>2</sub> /GDP) | -1.0436<br>(-2.77) <sup>***</sup>      | -0.5993<br>(-1.79) <sup>*</sup>        | -1.0436<br>(-4.41) <sup>***</sup>     | -0.5993<br>(-2.44) <sup>**</sup>       |
| Foreign direct investment (FDI)                  | 0.0342<br>(0.74)                       | 0.0655<br>(1.52)                       | 0.0342<br>(0.70)                      | 0.0655<br>(1.27)                       |
| Constant term                                    | -8.3100<br>(-2.51) <sup>***</sup>      | -0.7598<br>(-0.39)                     | -8.3100<br>(-2.47) <sup>**</sup>      | -0.7598<br>(-0.39)                     |
| Number of observations                           | 1037                                   | 1037                                   | 1037                                  | 1037                                   |
| Number of groups (N)                             | 36                                     | 36                                     | 36                                    | 36                                     |
| Overall R <sup>2</sup>                           | 0.0531                                 | 0.0740                                 | 0.0531                                | 0.0740                                 |
| F-statistics                                     | 7.74{0.000} <sup>***</sup>             | 25.49{0.003} <sup>***</sup>            | 8.23{0.000} <sup>***</sup>            | 123.26{0.000} <sup>***</sup>           |
| Hausman_FE                                       | 25.00{0.003} <sup>***</sup>            | <i>n/a</i>                             | <i>n/a</i>                            | <i>n/a</i>                             |
| Breusch-Pagan (B-P) statistics                   | <i>n/a</i>                             | 2.09{0.074} <sup>*</sup>               | <i>n/a</i>                            | <i>n/a</i>                             |

**Source:** Author's estimation

\*/\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively

robust z-statistics in ( ), probabilities in { }, n/a denotes not available or required

<sup>++</sup> most efficient and reliable results based on Hausman test and B-P statistics

**Table A6.11:** Summary of Empirical Studies on the Impact of Remittances on Economic Growth

| Author(s), Year            | Case Study   | Study Period                                      | Model & Estimation Method  | Variables Included   | Key Finding(s)   |
|----------------------------|--|---|--|--|--|
| Solimano (2003)            | LAC countries with country-based evidence from Bolivia and Ecuador | 1987-2002   | Single equation country specific modelling by OLS  | <i>Dependent:</i> GDP <i>per capita</i> growth rate<br><i>Explanatory:</i> Logarithm of GDP, investment proxied by gross fixed capital formation (GFCF)/GDP, logarithm of terms of trade (ToT) change lag 1, government consumption/GDP, logarithm of ratio of remittances/GDP lag 1.  | Remittances promote long-run growth in both Bolivia and Ecuador  |
| Chami <i>et al.</i> (2005) | 113 developing countries   | 1970-1998   | Panel Fixed Effects (FE) and panel Random Effects (RE) instrumental variable modelling         | <i>Dependent:</i> Annual growth in real GDP <i>per capita</i><br><i>Explanatory:</i> Remittances (WR+CE)/GDP, changes in remittances/GDP ratio. Control variables: Investment proxied by (GFCF)/GDP, inflation, net private capital inflows/GDP, regional dummies  | Remittances are countercyclical in nature and with a negative impact on economic growth.   |
| IMF (2005)                 | 101 developing countries   | 1970-2000 (non-overlapping 5-year annual average) | Pooled single equation bivariate model estimated by OLS  | <i>Dependent:</i> Real GDP <i>per capita</i><br><i>Explanatory:</i> Remittances (WR+CE+MT)/GDP ratio   | Impact of remittances on long-run growth is not statistically significant.   |
| World Bank (2006a)         | 67 developing countries  | 1991-2005   | <i>Unspecified</i>   | <i>Dependent:</i> Logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> Logarithm of: Initial GDP <i>per capita</i> , remittances (WR+CE)/GDP, secondary school enrolment ratio capturing human capital, private sector credit/GDP ratio, political risk, openness, inflation, real exchange rate overvaluation, government consumption/GDP, time dummies | Consistent positive relationship between remittances and economic growth, both when investment was present and absent from the model. But in the absence of investment, the contribution of remittances to economic growth became small. |
| Jongwanich (2007)          | 17 developing Asia-Pacific countries                               | 1993-2003   | Panel Fixed Effects model and dynamic model by system GMM                                      | <i>Dependent:</i> Annual growth of real GDP <i>per capita</i><br><i>Explanatory:</i> Initial real GDP <i>per capita</i> growth, logarithm of remittances (WR+CE+MT), human capital development, logarithm of investment (GFCF)/GDP at time $t$ and $t-1$ , logarithm of government consumption/GDP, logarithm of openness, CPI-based inflation.                    | Remittances have direct negative impact on economic growth, but it impacts positively on growth indirectly through investment in physical assets and human capital accumulation.   |
| Fayissa and Nsiah (2008)   | 37 African countries   | 1980-2004   | Simple log-log linear using dynamic panel-data model following GMM. Robustness FE and RE model | <i>Dependent:</i> Natural logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> (Natural logarithm of) remittances (WR+CE) <i>per capita</i> , GFCF/GDP, secondary school enrolment, foreign aid (AID/GDP), foreign direct investment (FDI/GDP), terms of trade, political rights, initial level of real GDP <i>per capita</i>                            | Remittances promote growth in countries where the financial sector is underdeveloped as they serve as an alternative source of investment finance and help overcome liquidity constraints  |

|                                    |  |  |  |  |  |
|------------------------------------|--|--|--|--|--|
| Le (2008)                          | 49 selected countries  | 1970-2005 (5-year period)                            | Dynamic panel-data model. Single equation OLS with pooled data and Panel Fixed Effects 2-Stage Least Squares (FE2SLS) instrumental variable (IV) models robustness check | <i>Dependent:</i> Logarithm of real GDP <i>per capita</i> 5-year annual average. Also, average annual 5-year real GDP <i>per capita</i> growth<br><i>Explanatory:</i> Initial real GDP <i>per capita</i> growth, trade openness measured as exports (X) plus imports (M) as a ratio of GDP, remittances (WR+CE+MT) as a ratio of GDP, quality institutions from polity IV project, and vector of other variables including religious affiliation, and education. | Institutions foster growth but remittances hamper economic growth.   |
| Ramirez and Sharma (2008)          | 23 Latin American countries  | 1990-2005  | Panel Unit Root and Panel Co-integration test using Fully-Modified OLS approach.<br><br><i>Two main estimations:</i> With and without financial development              | <i>Dependent:</i> Changes in logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> Logarithm of remittances/GDP ratio, and a set of control variables that include fixed capital formation/GDP, openness, labour force, M <sub>2</sub> /GDP and domestic credit/GDP.  | With financial development, remittances have higher positive impact on growth than without the presence of financial development. In both cases (i.e. with or without financial development), the impact of remittances on upper-middle income group is more positive than it is the case of lower income group.                         |
| Ziesemer (2008)                    | 50 poor developing countries (i.e. countries with GDP <i>per capita</i> less than US\$1200 (in 2000 prices)) | 1960-2003  | Dynamic panel-data models and system GMM   | <i>Dependent:</i> Logarithm of GDP <i>per capita</i><br><i>Explanatory:</i> (Logarithm of) GDP <sub>t-5</sub> , literacy rate, ODA/GDP, logGFCF/GDP(-x), interest rate, remittances (WR)/GDP, labour force, world GDP proxied by GDP of USA  | Remittances enhance savings, public expenditure on education and growth, but reduce tax revenues and emigration. Taking into account direct and indirect effects of remittances on levels and growth rates of GDP <i>per capita</i> , it was found that remittances impact positively on economic growth, investment and literacy rates. |
| Acosta, Baerg and Mandelman (2009) | 10 LAC countries   | Longitudinal survey data (average period: 2000-2004) | Dynamic panel-data model using GMM   | <i>Dependent:</i> Logarithm of <i>per capita</i> income<br><i>Explanatory:</i> Logarithm of initial <i>per capita</i> income, remittances (WR+CE+MT) but with some exceptions where two or less components are used. Control variables include average years of secondary school education for male population, and for the female population, price of investment goods relative to that of the USA. All explanatory variables used are of one lag.             | Remittances promote long-run growth.   |
| Ahortor and Adenutsi (2009)        | 31 small-open developing countries from LAC (16) and SSA (15)  | 1986-2006  | Dynamic panel-data model using system GMM  | <i>Dependent:</i> Natural logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> Initial growth, remittances (WR+CE+MT+ other current transfers)/GDP, investment (GFCF)/GDP, human capital measured as secondary school enrolment, openness (X+M)/GDP, logarithm of CPI as   | Generally remittances have positive impact on long-run growth in small-open developing countries. The impact is more robust in LAC than SSA. Contemporaneously, remittances  |

|                                   |  |  |  |   |  |
|-----------------------------------|--|--|--|---|--|
|                                   |  |  |  | proxy for inflation, government spending/GDP  | positively affect growth with higher impact in LAC. In dynamic terms, remittances retard growth, but with overall positive impact  |
| Baldé (2009)                      | 29 SSA countries   | 1980-2004 (3-year moving average data)<br>Unbalanced panel | Panel 2SLS IV estimation technique                                   | <i>Dependent:</i> Natural logarithm of average of 3-year GDP <i>per capita</i><br><i>Explanatory:</i> Natural logarithm of initial GDP <i>per capita</i> , remittances (WR+CE+MT)/GDP, ODA/GDP, population growth rate, trade openness (X+M)/GDP, secondary school enrolment for human capital formation, government consumption/GDP, inflation, investment (GFCF)/GDP and political stability                    | Remittances do not have a direct positive impact on economic growth  |
| Barajas <i>et al.</i> (2009)      | 84 developing and emerging countries receiving remittances | 1970-2004 (5-year period average)                          | Pooled OLS IV and FE-IV  | <i>Dependent:</i> Logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> (Logarithm of) initial growth, remittances (WR)/GDP denoted as REMGDP, REMGDP <sup>2</sup> , REMGDP*M <sub>2</sub> /GDP interaction, and average growth rate in top-20 trading partners. Control variables: logarithm of trade/GDP, FDI/GDP, fiscal balance/GDP, population growth rate, and M <sub>2</sub> /GDP; political risk | At best, remittances have no effect on economic growth in the long run, probably because poor institutions do not make remittances to be channelled to growth-enhancing projects   |
| Catrinescu <i>et al.</i> (2009)   | 162 developing countries                                   | 1970-2003 (unbalanced panel data)                          | Dynamic panel-data modelling in the context of GMM                   | <i>Dependent:</i> Logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> (Logarithm of) real GDP <i>per capita</i> lag 1, remittances (WR+CE)/GDP with control variables as gross capital formation/GDP, gross domestic savings/GDP, net private capital inflows/GDP, inflation rate and regional dummies   | Remittances have a weak impact positive impact on long-run growth, but the positive impact improves in the presence of sound macroeconomic policies and institutions.  |
| Garcia-Fuentes and Kennedy (2009) | 14 LAC countries   | 1975-2000 (overlapping 5-year moving average)              | Panel Random Effects (RE) 2SLS with pooled OLS and RE for robustness | <i>Dependent:</i> Growth of output per worker<br><i>Explanatory:</i> Human capital stock (HCAP), human capital growth, remittances (WR+CE+MT)/GDP defined as (REMGDP), HCAP*REMGDP interaction, growth rates of HCAP and physical capital plus control variables including time dummies, investment/GDP, government consumption/GDP, and inflation  | Remittances positively impact on human capital development but directly deter economic growth. Also, there is significant positive effect of the interaction between human capital and economic growth. Thus, the impact of remittances on growth is dependent upon the level of human capital development |
| Giuliano and Ruiz-Arranz (2009)   | 100 developing countries                                   | 1975-2002 (5-year annual average data)                     | System GMM with Pooled OLS and FE models for robustness test         | <i>Dependent:</i> Logarithm of <i>per capita</i> GDP<br><i>Explanatory:</i> Logarithm of Initial level of GDP <i>per capita</i> , remittances (measured according to country-specific reporting data)/GDP ratio defined as (REMGDP), financial development proxied by M <sub>2</sub> /GDP, domestic credit/GDP, bank deposits/GDP, and bank loans/GDP. Control variables include trade openness,                  | Remittances impact positively on long-run growth in countries with less developed financial systems by serving as an alternative finance of investment and entrepreneurial activities to overcome credit constraints. In the absence of financial development,   |

|                                |  |                              |  |  |   |
|--------------------------------|--|------------------------------|--|--|---|
|                                |  |                              |  | human capital growth rate denoted by secondary school enrolment, government fiscal balance/GDP, investment/GDP rate, inflation, and population growth rate   | remittances alone do not have a positive impact on economic growth. Remittances have a positive impact on growth at both the median and the mean level of financial development, but their impact becomes zero and eventually turns negative in countries with developed financial systems above the 75 <sup>th</sup> percentile of the sample distribution |
| Jayaraman <i>et al.</i> (2009) | Samoa                                  | 1981-2008                    | Single equation Autoregressive Distributed Lag (ARDL) bounds testing model   | <i>Dependent:</i> Logarithm of real GDP<br><i>Explanatory:</i> (Logarithm of) remittances (WR+CE+MT)/GDP, private sector credit/GDP, exports/GDP   | Remittances have a direct significant positive impact on economic growth  |
| Karagöz (2009)                 | Turkey                                 | 1970-2005                    | Single equation double logarithmic model using OLS estimation procedure  | <i>Dependent:</i> Logarithm of GDP <i>per capita</i><br><i>Explanatory:</i> (Logarithm of) initial GDP <i>per capita</i> , remittances (all private transfers implying WR+CE+MT+ other current transfers)/GDP, FDI/GDP, exports/GDP  | Remittances impact negatively on economic growth whilst exports and domestic investment are positive determinants of economic growth.   |
| Mundaca (2009)                 | 25 LAC countries.                      | 1970-2002                    | Dynamic panel data following first-difference GMM. Full sample as estimated alongside three sub-samples categorised as: (i) large recipients relative to GDP; (ii) low, lower middle & upper middle income but with large receipts of remittances but poorest; and (iii) Central American countries. | <i>Dependent:</i> Annual growth of output <i>per capita</i><br><i>Explanatory:</i> Initial output growth rate, logarithm of investment proxied by (GFCF) <i>per capita</i> , remittances measured as WR/GDP ratio at time $t-1$ , indicators of financial development at time $t-1$ (here main emphasis is on bank private sector credit (PSC)/GDP. Human capital development measured as literacy rate among adults aged 15 years and above.<br><br>Initial estimation involved on three explanatory variables: investment, initial growth and remittances. | The long-run impact of remittances on economic growth is positive and significant in all four groups (full sample, and three sub-samples) analysed. Expansion of financial services to citizens of remittance recipient countries should lead to better use of remittances and boost long-run growth.   |
| Rao and Hassan (2009)          | 40 highest remittance-recipients as of | 1970-2006 (unbalanced panel) | Dynamic panel-data modelling following system GMM  | <i>Dependent:</i> Growth of GDP per worker proxied by GDP divided by labour force<br><i>Explanatory:</i> Financial development proxied by  | Remittances have positive growth effects although the impact is small.  |

|                              |  |                                   |   |  |   |
|------------------------------|--|-----------------------------------|---|--|---|
|                              | 2007 of which 9 are from SSA <sup>134</sup>                                |                                   |   | M <sub>2</sub> /GDP, PSC/GDP), government expenditure/GDP, investment/GDP rate, remittance (WR+CE+MT)/GDP, inflation (GDP deflator), real effective exchange rate (REER), and human capital  |   |
| Ziesemer (2009)              | 96 countries that received remittances of at least US\$1 in 2003           | 1960-2003                         | Dynamic panel-data model using GMM  | <i>Dependent:</i> 5-year logarithm differences in GDP <i>per capita</i> (i.e. $\log\text{GDPPC}_t - \log\text{GDPPC}_{t-5}$ )<br><i>Explanatory:</i> Logarithm of lagged dependent variables, literacy rate (-), $\log\text{GFCF}/\text{GDP}$ , $\log\text{GFCF}/\text{GDP}(-5)$ , remittances (WR)/GDP, logarithm of labour force   | Poorer countries (those with less than US\$1200 (2000) GDP <i>per capita</i> have greater positive impact of remittances on long-run growth. Savings react much more strongly than investment, with remittances reducing amounts of debts incurred and debt service paid. |
| Fayissa and Nsiah (2010)     | 18 Latin American countries  | 1980-2005 (unbalanced panel data) | Dynamic panel-data model one-step GMM. Pooled OLS, FE and RE for robustness | <i>Dependent:</i> Natural logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> (Natural logarithm of) remittances (WR+CE) <i>per capita</i> , tertiary school enrolment, GFCF/GDP, FDI/GDP, ODA/GDP, other official flows/GDP, trade openness, economic reform index, exchange rate fluctuations   | Remittances have significant positive effects on economic growth in Latin America where the financial system is less developed.   |
| Kagochi <i>et al.</i> (2010) | 6 SSA countries (Botswana, Ghana, Kenya, Nigeria, South Africa, Swaziland) | 1991-2007                         | Pooled OLS  | <i>Dependent:</i> Logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> (Logarithm of) Remittance (WR+CE+MT), GFCF <i>per capita</i> , population growth rate, human capital (proxied by life expectancy and education)   | Remittances are a positive determinant of economic growth in countries where GDP <i>per capita</i> is high, but in low GDP <i>per capita</i> countries, their effect is zero.   |
| Lartey (2010)                | 36 SSA countries   | 1990-2008                         | Dynamic panel-data models within 2-step system GMM framework                | <i>Dependent:</i> Annual growth of GDP <i>per capita</i><br><i>Explanatory:</i> Remittance (WR+CE+MT)/GDP, private sector credit/GDP, deposit money bank assets/GDP, government expenditure/GDP, inflation (GDP deflator based), FDI, trade openness, terms of trade, population growth rate (all in logs except GDP growth and inflation)   | Remittances have positive impact on economic growth just as the interaction effect of remittances and financial depth   |
| Morton <i>et al.</i> (2010)  | Largest 20 remittance recipients as of 2008                                | 1980-2008                         | Descriptive statistics and trend analysis alongside correlation coefficient | <i>Dependent:</i> Real GDP <i>per capita</i> growth rate. Also, absolute real GDP <i>per capita</i> and annual GDP growth<br><i>Explanatory:</i> Remittances (WR+CE)/GDP ratio, poverty headcount ratio (US\$2 per day PPP as percentage of population), income share lowest 20 per cent of population, gross domestic savings, final consumption expenditure/GDP, capital formation growth rate, CPI, | Remittances reduced poverty but aggravated income inequality. Traditional factors such as physical capital formation, human capital formation and good governance are found to be crucial determinants of growth.   |

<sup>134</sup> These SSA countries are Ethiopia (2 per cent), Kenya (5.4 per cent), Mali (3.3 per cent), Mauritius (2.9 per cent), Mozambique (1.3 per cent), Nigeria (6.7 per cent), Rwanda (1.9 per cent), Senegal (8.5 per cent), Sierra Leone (9.4 per cent), and Uganda (7.2 per cent). Figures in brackets are the remittances ratio to GDP in each sampled country in 2007 cited by authors. Conspicuously missing from the list of SSA countries are traditionally well-known largest remittance-recipients like Lesotho, Cape Verde, Gambia and Sudan.

|                               |   |                 |  |   |  |
|-------------------------------|---|-----------------|--|---|--|
|                               |   |                 |  | literacy rate and population growth rate.   |  |
| Siddique <i>et al.</i> (2010) | Bangladesh, India and Sri Lanka   | 1976-2006       | Granger-causality under VAR framework  | <i>Dependent:</i> Annual GDP <i>per capita</i> growth<br><i>Explanatory:</i> Remittances (WR+CE+MT) <i>per capita</i>   | Remittances Granger-cause economic growth in Bangladesh. In Sri Lanka, the causal relation is bi-directional, whereas there exists no causal relationship in the case of India   |
| Singh <i>et al.</i> (2010)    | 36 SSA countries  | 1990-2008       | Double log panel FE and panel FE 2SLS  | <i>Dependent:</i> Logarithm difference of real GDP <i>per capita</i><br><i>Explanatory:</i> (Logarithm of) Initial growth, remittances (WR+CE+MT)/GDP, M <sub>2</sub> /GDP, domestic credit/GDP, population growth, government expenditure/GDP, openness, terms of trade, political risk, real exchange rate, REMGDP*institutions and REMGDP*financial development  | Remittances have direct negative impact on economic growth, but countries with higher quality institutions have better potential for harnessing the contribution of remittances to growth  |
| Adenutsi (2011)               | Ghana   | 1987(3)-2007(4) | Dynamic equilibrium-correction mechanism model, unrestricted co-integration model and Granger-causality test | <i>Dependent:</i> Natural logarithm of real GDP<br><i>Explanatory:</i> Natural logarithm of initial real GDP, secondary school enrolment as proxy for human capital formation, investment (GFCF/GDP), remittances (WR+CE)/GDP, and financial development indicators (M <sub>2</sub> /GDP and bank credit to private sector as ratio of total bank credit). Control variables include government expenditure/GDP, openness to trade (X+M)/GDP, exchange rate, CPI-based inflation, AID and FDI | Although remittances generally promote economic growth in the short run and in the long run, their impact is low and lower in the long run. In the short run, there is a stronger lagged impact of remittances on growth. There is no causality between credit to the private sector remittance inflows, but a bi-directional causality exists between remittances and M <sub>2</sub> /GDP |
| Ahmed <i>et al.</i> (2011)    | Pakistan  | 1976-2009       | ARDL modelling by OLS  | <i>Dependent:</i> Logarithm of real GDP<br><i>Explanatory:</i> (Logarithm of) remittances (WR+CE+MT)/GDP, M <sub>2</sub> /GDP, government expenditure/GDP, dummy for natural calamity (earthquake)  | Remittances have both short-run and long-run significant positive impacts on economic growth.  |
| Fayissa and Nsiah (2011)      | 64 countries from Africa (29), Asia (14) and LAC (21)                               | 1985-2007       | Panel Unit-Root tests, co-integration model and Panel Fully-Modified OLS (PFMOLS)                            | <i>Dependent:</i> Logarithm of real GDP <i>per capita</i><br><i>Explanatory:</i> Remittances (WR+CE) <i>per capita</i> , economic freedom, capita-labour ratio (GFCF/labour force), economic openness   | Remittances have significant positive impact on growth in all three regions as well as in the full sample as a group   |
| Cooray (2012)                 | Six South Asian countries (India, Bangladesh, Nepal, Maldives, Pakistan, Sri Lanka) | 1970-2008       | Dynamic panel-data modelling by sys-GMM. Also, OLS and FE Model  | <i>Dependent:</i> Natural log of output <i>per capita</i><br><i>Explanatory:</i> Remittances (WR+CE+MT)/GDP ratio, human capital development proxied by secondary school enrolment, government expenditure as ratio of GDP, openness proxied by (X/GDP), FDI/GDP, polity index by Marshall & Jagers for institutional quality   | Remittances are found to have a direct significant positive impact on economic growth. Remittances also have significant positive interactive effects on growth through educational levels and financial sector development  |

**Source:** Author's compilation from various sources. **Note:** WR, CE and MT denote workers' remittances, compensation of employees and migrants' transfers respectively as defined in Chapter Two.

## CHAPTER SEVEN

### THE DEVELOPMENTAL-IMPACT OF REMITTANCES IN SUB-SAHARAN AFRICA

#### 7.0 INTRODUCTION

This chapter verifies whether or not international remittance inflows contribute to various aspects of economic development in sub-Saharan Africa (SSA). The aspects of economic development outcomes covered in this study are those related to poverty, income inequality, labour market, human welfare and development, and financial development. In the case of financial market development, an attempt was made to investigate whether remittances had varying impact on SSA countries over time as the pursuit of financial liberalisation programme progressed. Consequently, the background information on the relevance of this chapter is presented in Section 7.1. This is followed by the review of the theoretical and the empirical literature on remittance inflows and economic development in Section 7.2. Section 7.3 discusses the econometric issues as related to the analytical framework and the empirical model. This section also outlines issues related to the data used for the empirical analysis. In Section 7.4, the empirical results are presented and discussed, whilst Section 7.5 concludes with policy implications and recommendations.

#### 7.1 BACKGROUND

Arguably, international migration and its consequential effects on the economic transformation of migrant-home countries have received the most attention from academics, policy makers and researchers in the area of development economics and finance in this era of globalisation. The upsurge of research interest in international migrant remittances, in particular, is not too surprising given the magnitude and stability in the positive growth trend. There is one other important reason why a lot of policy research on the implications of remittances for economic development might have overtaken related studies on other forms of development finance since the recognition of remittances as an alternative source of development finance. Unlike all other forms of development finance, remittances can have a direct impact on the disintegrated levels of a remittance-receiving economy. Consequently, from the theoretical perspective, the direct linkages of international remittances and economic development can be explored at three possible levels – micro, meso, and macro.

At the micro level, remittances are a major source of additional income for sustenance and capital for financing small and medium-scale enterprises (SMEs) in remittance-receiving households. Unlike aid, remittances flow directly to individual households and institutions; and unlike loans they attract no direct interest and financial repayment obligations. Besides contributing to increased consumption in the short run by empowering recipients to settle food, clothing, shelter, healthcare, funerals and festival bills and so on, remittances can engineer longer term development processes through investment in education, skills training, land, housing, and SMEs. At the meso level, local communities can benefit from social development projects such as the construction of roads, schools, and hospitals as well as the supply of educational materials and healthcare equipment, initiated and funded by overseas-based associations of native migrants. Associations of migrants can also mobilise funding through non-governmental organisations (NGOs) and other development-oriented organisations in support of important social projects such as vaccination against communicable diseases and the provision of potable water in their local communities back home. Accordingly, besides the indirect trickling down effects, families without international migrants can also benefit directly from international migration at the meso level.

At the macro level, international remittances are an essential source of foreign exchange, as they inject substantial foreign capital into an economy which may help remittance-receiving countries to stabilise the macroeconomy through reduction in balance of payments (BoP) problems and budget deficits. On the reverse side, remittances may contribute to destabilising the macroeconomy of the receiving countries by sparking inflation through excess demand and worsening BoP problems in import-dependent small-open economies. Meanwhile, remittance inflows are also generally countercyclical as they increase during economic downturns; hence, they contribute significantly to accommodating various forms of negative natural and macroeconomic shocks in migrant-home countries. For instance, global evidence has consistently shown that remittance inflows have always increased in disaster and conflict inflicted countries (Clarke and Wallsten, 2004; Yang, 2007; Yang and Choi, 2007). Besides, remittance inflows have consistently remained the most resilient form of private external capital during global financial crises and violent conflicts in migrant-home developing countries.<sup>135</sup> In this sense, international remittances represent a more stable source of poverty reduction than other forms of capital inflows, at least, at the macro level. And as available statistics suggests,

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<sup>135</sup> The World Bank estimates that in disaster-afflicted Haiti remittances represent about 17 per cent GDP in 2001, while in some areas of war-torn Somalia, they accounted for up to 40 per cent of GDP in the late 1990s.

international remittances are more equally spread across developing countries than other forms of foreign capital.

It can, thus, be said that depending upon the structure of the economy of a migrant-home country, remittances can play a direct role in the economic development of a country through increased consumption of the basic needs of life, job creation, financial market development, human capital development, poverty alleviation, and economic empowerment. Remittances do not only directly affect the various units of the economy of the remittance-recipient economy, but they also have the potential to influence migrant-home countries indirectly in a number of ways. Remittances received in excess of present consumption can be saved which could then put financial institutions in a better position to expand credit at a relatively reduced cost. This, in turn, can lead to higher job creation and poverty reduction. In fact, such private investments can even attract additional investment, either by decreasing the risks of specific projects for private investors, or by establishing business networks and openings that promise new business opportunities for private financial institutions and multinational companies. Despite these, from theoretical perspective, the implications of migrant remittances on labour productivity and income inequality are far from being universally conclusive when the issue of moral hazards, further migration of highly-trained labour, and the socioeconomic background of migrants are broadly considered. In this respect, at the macro level, the extent to which migrants remittances can impact on any specific developmental outcomes in a migrant-home economy can be seen as being dependent upon some macroeconomic fundamentals.

Following from the above, an analysis of the effects of remittances at each level – micro, meso, and macro – should provide the best and the most comprehensive insight into the actual direct effects of migrant remittances on economic development in migrant-home countries. However, achieving such an objective seems impossible across countries in the absence of accurate and reliable micro- and meso-level data in the sampled countries. Accordingly, the focus of this study is to explore the implications of remittances for economic development at the macro level, based on the principle that the micro and meso effects of remittances on economic development will, in the long run, reflect at the macro level. Meanwhile, empirical studies on the impact of remittances on developmental outcomes have been far from being conclusive, irrespective of the level of the analyses (see Table A7.1), justifying the theoretical stance that, at any level of empirical analysis, migrant remittance inflows can have both forward and backward linkages to the development prospects of migrant-home countries.

This study, therefore, seeks to contribute to filling this research gap by providing answers to the following research questions within the context of SSA:

- i. Do migrant remittances reduce poverty headcount, poverty gap and poverty severity?
- ii. What is the impact of migrant remittance inflows on income inequality?
- iii. What is the impact of migrant remittances on human welfare and development outcomes such as educational attainment and life expectancy?
- iv. How do migrant remittance inflows affect labour market outcomes with reference to labour productivity, labour participation and unemployment?
- v. To what extent do migrant remittances promote financial market development? And, does the impact of remittances on financial market development change over time as the pursuit of policies under the financial liberalisation programme progresses?
- vi. Do migrant remittances have a universal impact on various aspects of economic development in all categories of countries? Otherwise, which category of countries benefit the most from receiving international migrant remittance inflows as far as economic development is concerned?

Finding the appropriate answers to each of the above-stated questions constitutes the underlying objective of this chapter. Nevertheless, with respect to SSA, the specific objectives that this chapter seeks to achieve are:

- i. To determine the impact of international migrant remittance inflows on poverty.
- ii. To examine the impact of international migrant remittance inflows on income inequality.
- iii. To evaluate the effects of international migrant remittance inflows on human welfare and development outcomes *viz.* human development indicators, educational attainment and life expectancy.

- iv. To determine the impact of migrant remittance inflows on labour market outcomes such as labour productivity, labour participation, and unemployment.
- v. To evaluate the impact of migrant remittance inflows on financial development.
- vi. To examine if, in each case (i.e. objectives i-v), the developmental-impact of migrant remittance inflows change over time as financial liberalisation policies are implemented.
- vii. To verify if, in each particular case (i.e. objectives i-v), the developmental-impact of migrant remittance inflows has a size-effect and, if so, estimate the impact of the size-effect on economic development with particular reference to each specific indicator of economic development.

This study is important because the recent euphoria concerning the upsurge of international migrant remittances has attracted an appreciable number of empirical studies on the possible implications of remittances for economic development across the developing world of which sub-Saharan Africa (SSA) is a part. To date, comprehensive macroeconomic policy options for the developmental-impact of migrant remittances have not been studied in any systematic way. For instance, the negative effects of remittances on one developmental outcome (say, (lower) labour participation) could be due to the positive effects of remittances on another developmental outcome (say, (higher) educational attainment)<sup>136</sup>.

## 7.2 THE LITERATURE ON REMITTANCE INFLOWS AND ECONOMIC DEVELOPMENT

### 7.2.1 Theories of the Developmental-Impact of International Migrant Remittances

Theoretically, three main schools of thought can be identified concerning the possible long-run impact of international remittances on 'labour-exporting' developing countries. These schools of thought are the *remittance-optimistic developmental*, the *remittance-pessimistic structural dependence* and the *transnational-migrant remittance* based on the theories of international migrant migration<sup>137</sup>. The theories of international migration are being applied to international remittance flows because of the absence of an existing specific theory on international migrant

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<sup>136</sup> This can happen when remittances are used to finance the education and training of children of school going age who were hitherto out of school due to poverty, and are compelled to work for income in support of their families.

<sup>137</sup> The main theories of international migration are the migration optimism (also known as the *developmentalist* and neoclassical school of the 1950s and 1960s), the migration pessimism (or the historical structural dependency school of the 1970s and 1980s) and the migration pluralism (or the New Economics of Labour Migration and Livelihood School) which has been dominating the approaches to analysing the effects of international migration since the 1990s (de Haas, 2007).

remittances in the context of economic development from a macroeconomic perspective. In connection with this, it is important to note that even though it is generally known that migration is a pre-requisite for receiving migrant remittances, it is also possible that the desire for receiving remittances can influence international migration. Actually, there is evidence<sup>138</sup> to show that the receipt of migrant remittances in developing countries can engender further migration<sup>139</sup> to the industrialised world.

From the viewpoint of the *developmentalist school*, international remittances have a strong potential to accelerate economic development processes in both industrialised 'labour-importing' countries and non-industrialised 'labour-exporting' countries, as large scale South-North migration is adequately compensated for by large scale North-South migrant remittances leading to international factor price equalisation. In other words, labour is transferred from capital-constrained developing countries where labour is abundant and, often in excess supply, hence relatively cheaper, to labour-constrained industrialised countries where capital is in abundant and, often in excess supply hence relatively cheaper. Proponents, notably, Kindleberger (1965), Beijer (1970), Penninx (1982), and Stark *et al.* (1997) of this neoclassical-inclined doctrine argue that, all other things remaining equal, international migration can, therefore, lead to an increase in global production of goods and services, especially as technological knowledge, attitudes, modernisation, information, rational and democratic ideas are also transferred to developing countries. For instance, international remittances can contribute positively to the removal of production and investment constraints, raising real income levels, and lessening, if not solving the perennial BoP problems of developing countries. In addition, remittances can help to narrow the trade gap, control external debt, facilitate debt servicing, reduce exchange rate volatility and accumulate foreign exchange. The *developmentalist school* also argues that the emergence of migration on the global scene is aiding the industrialised countries in increasing production at a faster rate than it would have been possible without access to cheap labour from developing countries. Therefore, international migration has a two-sided positive impact on the global economy. On the side of the 'labour-importing' industrialised countries, increased supply of labour as a result of immigration reduces the cost of hiring labour, whilst on the side of the 'labour-exporting'

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<sup>138</sup> See, for example, Cox and Jimenez (1992) for Peru, and Ilahi and Jafarey (1999) for Pakistan.

<sup>139</sup> This can happen in two possible ways: (i) When sponsored migrants under implicit social contract with their sponsors (often their families) are obliged to remit in order to finance another family member (see Poirine, 1997; Brown and Poirine, 2005). (ii) When non-migrant families, upon seeing the life-transforming impact of remittances on the families of a migrant, decide to sponsor a family member to go abroad for the purpose of receiving remittances.

developing countries, the emigration of 'excess' labour reduces the supply of labour, thereby increasing the cost of hiring labour towards equilibrium in the international labour market.

Besides the direct positive effects of international remittances on socioeconomic development, the *developmentalist school* also contends that even when migrants fail to return home they often contribute to financing development projects in their native communities either personally or through their involvement in the activities of charitable organisations in countries where they are permanently resident (Massey *et al.* 1998). Furthermore, from the experiences gained from abroad, returnee migrants often act as agents of positive social change in governance, innovation and entrepreneurship in their home countries. Consequently, in the long run, developing countries stand to gain from the migration of their nationals who would otherwise have been unemployed or underemployed and lowly paid at home. This benefit comes directly through remittances, and indirectly through other afore-stated channels such as donations, social work, skills and knowledge transfers.

The *remittance-pessimistic structural dependence school* that emerged in the 1970s following the global economic decline with industrial restructuring and increasing unemployment as a result of the 1973 oil crisis contends that international migration drains underdeveloped migrant-home countries of skilled labour. The remittance-pessimist school further argues that international migration crowds-out domestic production of tradable goods in the brain-drained underdeveloped economy. This school of thought does not see how the negative effects of brain drain can adequately be compensated for by the receipt of international remittances. The remittance-pessimistic theorists (Almeida, 1973; Bhagwati, 1976; Lipton, 1980; Reichert, 1981; Taylor, 1984; Rubenstein, 1992) argue that international migration only reinforces the underdevelopment syndrome of developing countries through lower production capacity and over-dependency, as remittances received are not adequate compensation for the lost labour efforts in developing countries.

More specifically, remittance-pessimists contend that it is the industrialised countries that stand to gain more in international migration through access to cheap labour, and high taxation on migrant earnings and even commissions on transferring remittances. In effect, the low wages paid to migrants in industrialised economies are not sufficient to help in narrowing the development gap between the North and the South. Worst of all, even when remittances are received in large amounts, there are very good reasons to predict that, given the abysmally low

incomes and widespread poverty in developing countries, it is difficult or impossible to avoid conspicuous consumption and put remittances into productive use (Lipton, 1980; Entzinger, 1985; Lewis, 1986). This can include remittances being “wasted” on housing, family debt settlement, land purchase, land and chieftaincy litigations, transportation, funerals, festivals, financing conflicts, leisure, and other non-productive goods and services. In this case, remittances can destabilise the macroeconomy by way of demand-pull inflation (Russell, 1986a,b; Appleyard, 1989; Rubenstein, 1992), with higher trade deficit in developing countries which are predominantly net importers of essential goods. Furthermore, it is argued that higher remittance inflows may aggravate higher income inequality as the very poorest cannot afford to send a family member abroad (Lipton, 1980; Stahl, 1982). The tendency for further migration is also high when more remittances are received in low-income countries. Another possible negative consequence of higher inflow of remittances in the household is the moral hazard problem when recipients reduce work efforts (Chami *et al.* 2005); and at the national level, governments of developing countries may also over rely on these funds rather than implementing sustainable pro-growth economic policies.

Subsequent to the more recent emergence of the New Economics of Labour Migration (NELM) paradigm as proposed by Stark, (1978; 1991), Stark and Bloom (1985), Taylor (1999), Bracking (2003), Carling (2004) and Robinson (2004) it is possible to identify a third school of thought, the *transnational-migrant remittance school* based on the concept of pluralism. This school sought to reconcile the two strictly divergent perceptions on the outcome of international migration by focusing on how remittances together with socioeconomic networks, link local and global development processes (Levitt, 2001). This approach does not restrict itself to considering financial remittance flows alone, but also takes into account the flow of goods, services and new ideas that impact on the broader social fabric and structures of the economies of both ‘labour-importing’ and ‘labour-exporting’ countries (Datta *et al.* 2006). By taking a balanced view of the implications of international migration, the *transnational migrant-remittance school* focuses on how remittances are embedded within an emerging structure where various economic, social, institutional and even political transactions occur. This neo-liberalist functionalist ideology relates migration decisions with the impact of migration to collective household survival and the pursuit of income and/or initial capital for productive investment as a means of insuring against both income and production risks at the household level (Stark, 1978; 1991; Taylor, 1999; Stark and Levhari, 1982). This is the fundamental reason why remittances are seen as being beneficial at the household level with positive spill-

overs to the national economy; as with increased disposable incomes, effective demand for industrial goods and services increase, and this, in turn, stimulates domestic production (Skeldon, 2002; Ratha, 2003). Higher remittance inflows may also result in the increased vibrancy of domestic capital markets and the expansion of productive infrastructure (Ballard, 2004).

According to Vertovec (1999), the transnationally adopted identities and connections between international migrants and migrant households in home countries can lead to radical modernisation of telecommunication infrastructure such as cellular networks, telephone, internet, and satellite, as migrants remit through globalised banking systems. Therefore, the *transnational-migrant remittance school* hypothesis is essential to the understanding of the framework within which migrants remit as it does not only take cognisance of how remittances reinforce and create inequality and differentiation, but it also recognises the fact that these private transfers have various degrees of positive social effects and, hence, have a huge potential to contribute to poverty alleviation and socioeconomic transformation (Ballard, 2004; Carling, 2004). It is probably due to the broad inclusiveness of the *transnational-migrant remittance theory* inferred from the NELM doctrine that explains its dominance in analytical studies over the past two or three decades (see Table A7.1). The quest to follow the pluralist dimension of the popular *transnational-migrant remittance theory* explains the underlying analytical macroeconometric framework of this chapter.

## **7.2.2 Literature Review on Effects of Remittances and Developmental Outcomes**

In addition to the summary of reviews of the impact of remittances on economic development reported in Table A7.1, in this section, a classified approach has been adopted to review empirical studies on the effects of international remittances on poverty, income inequality, human capital development and financial market development.

### *7.2.2.1 Effects of International Remittances on Poverty and Income Inequality*

From both theoretical and empirical literature, it seems that there is less controversy concerning the positive effects of remittances on poverty in migrant-home countries than the possible conflicting effects on income inequality. The main theoretical debate centres on the fact that it is only households with relatively higher incomes that can afford to finance the cost of international migration. Therefore, international migrant remittances can widen income inequality in migrant-home countries (Lipton, 1980; Stahl, 1982). This poses a serious

challenge to policy makers, given that inequality is often a determinant of poverty<sup>140</sup> as it indirectly undermines long-run growth by reducing motivation for optimal labour productivity and, hence, can result in the perpetuation of the poverty cycle.

Adams (1991), in a micro-level study based on a survey of 1000 households in rural Egypt, using income data from households with and without migrants to determine the effects of remittances on poverty, income distribution and rural development, observes that migrant remittances were important in alleviating poverty. For a sample of 77 developing countries over the period 1980-2008, the UN (2011) obtained a similar poverty-alleviating impact of remittances. However, Adams (1991) concludes that despite the direct poverty-mitigating effects of international remittances, they also contributed to inequality in the distribution of income. Chimhowu *et al.* (2004) provide evidence in support of the view that remittances do increase inequality at a national level, but internationally they transfer resources from developed to developing countries, thereby contributing to reducing income inequality across countries. Analogous to these inequality-aggravation findings is the result obtained by Rodriguez (1998) on Philippines.

In contrast, inequality-reducing effects of remittances were found by Barham and Boucher (1998) for Nicaragua; Adams (2006) in the case of Ghana; and the World Bank (2007) for households in East European and former Soviet Union countries. Gustafsson and Makonnen (1993) reveal that in Lesotho, migrant remittances do not only reduce poverty but they actually decrease income inequality. For Mexico, Esquivel and Huerta-Pineda (2007) find that remittance-recipient households are less likely to be poor, based on the National Household Survey Data on income and expenditure for year 2002. Evidence from various cross-country studies including those by Adams and Page (2005), Spatafora (2005), Acosta *et al.* (2008b), Shafiq *et al.* (2012) and Orzell (2013) lend support to the fact that remittances directly reduce poverty; whilst many more studies including those by Stark *et al.* (1986), Taylor (1992), McKenzie and Rapoport (2007), and Unger (2005) show that remittances directly reduce inequality.

#### *7.2.2.2 Effects of International Remittances on Labour Market Outcomes*

The question as to whether remittances affect labour market outcomes is very important because migrant remittances are received at the cost of losing the participation of the emigrant

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<sup>140</sup> See Table A7.1 for evidence on empirical models on poverty.

in the home-country labour market. It is also known that remittances can directly affect the labour market in a number of ways including: (i) job creation when remittances are driven by the investment motive; (ii) job creation through market expansion when remittances are spent on locally produced goods and services; and (iii) higher economic inefficiency which increases the unemployment rate (especially of the other factors of production) through reduced output level due to brain drain. International remittances can also affect the labour market indirectly, through moral hazard effects, because when they are received in 'satisfactory' amounts and become permanent incomes, they can reduce productivity and participation of labour. Theoretically, the extent to which remittances (as compensation for losing the services of a migrant at home) can affect the labour market of the migrant-home country is dependent upon the degree of friction in the domestic labour market in question.

According to Pond and McPake (2006), almost a quarter of the new overseas trained physicians that registered with the National Health Services of the United Kingdom between the years 2002 and 2003 came from SSA alone. The large-scale emigration of skilled professionals has created high job vacancies in some key sectors in many SSA countries, but it is common knowledge that developing countries like those in SSA have high rates of graduate unemployment and underemployment<sup>141,142</sup>. Based on survey data on the city of Managua in Nicaragua, Funkhouser (1992) finds that international remittances lead to about five per cent reduction in the labour force participation of women, as well as by 2.1 per cent of men. At the same time, however, remittances increase the probability of self-employment by 1.2 per cent among men and 1.1 per cent among women. Hanson (2007), based on the 2000 population census survey, obtains similar results for Mexico where remittances reduce female labour supply relatively more than in the case of male remittance recipients.

In Zambia and Zimbabwe, just like in Ghana, Bach (2006) finds that the annual rate of attrition in public health employment due to emigration ranges between 15 per cent and 40 per cent. In another empirical work, Gupta, Pattillo and Wagh (2009) find that, on the average, 20 per cent of SSA tertiary educated population above 15 years of age are employed in OECD countries compared with less than 10 per cent for South Asia. And within SSA, Angola, Guinea-Bissau and Mozambique have expatriation rates in excess of 50 per cent of their tertiary educated

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<sup>141</sup> Bhagwati (1976) argues that brain drain can have a detrimental effect on economic development of migrant-sending countries because even where skilled labour is unemployed, their social marginal impact is not necessarily zero as they could move inland the countryside, where they would have been employed productively.

<sup>142</sup> However, the issue of underemployment and rural unemployment as is the common case in contemporary SSA can neutralise Bhagwati's argument.

population. Of the top-10 countries with the highest emigration rate of tertiary educated population, six are from SSA alone.<sup>143</sup> Strangely, with the exception of Mauritius, none of these six SSA countries mentioned as having exported the most educated migrants is a major recipient of remittances in terms of actual volume or in relative terms. This seems to confirm earlier conclusions by Steiner and Velling (1994) and Rodriguez and Horton (1995), that the educational level of migrants has no impact on the amount of funds transferred in the form of remittances<sup>144</sup>. However, even if remittances are spent on domestically produced consumables, they are expected to carry substantial positive multiplier effects on employment that can manifest in the labour market. Increased demand for domestically produced goods and services, increased retail activities and small-scale industrialisation, hence, higher demand for factor inputs, are some of these positive effects. Also, Ratha (2003) finds that the negative effects of brain drain are largely offset by inward migrant remittances. It is, therefore, important to explore the extent to which remittances have been able to impact on labour market outcomes in SSA as a sub-region.

#### *7.2.2.3 Effects of International Remittances on Human Development and Welfare*

From the typology of the uses of remittances (see Chapter 4), it is clear that migrant remittances in excess of daily consumption expenditure are spent on financing education, vocational training and improved access to quality healthcare services, each of which promotes the development of human capital. This implies that remittances could contribute directly to reducing income constraints that limit maximum human capital investment for optimal labour productivity. Human capital accumulation is central to the economic development prospects of a country through higher labour productivity and greater prospects of reducing dependency ratios and breaking the seemingly perpetuating cycle of poverty. However, the effects of remittances on human capital development seem ambiguous in the face of international migration because: (i) it is active labour with relevant skills that can be attracted to compete more favourably in the international labour market, and are therefore the most likely to jump onto the exodus wagon; (ii) skilled labour can only contribute meaningfully to economic development of their native countries if they are gainfully employed and retained in a skilled

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<sup>143</sup> These are Guinea-Bissau (70.4 per cent), Angola (53.8 per cent), Mozambique (52.3 per cent), Mauritius (50.3 per cent), Gambia (42.4 per cent), and Burundi (35.0 per cent). And among the top-20 countries, 75 per cent are SSA countries (Gupta, Pattillo and Wagh, 2009 based on OECD, Trends in International Migration Database, 2006).

<sup>144</sup> Possible explanations for this are: (i) migrants with higher levels of education might not necessarily be coming from poor homes where remittances are much more needed to augment meagre family incomes; and (ii) educated migrants are more likely to have residential status, given the quality of their skills and, hence, are more likely to reunite with their families in the foreign country when compared with their illiterate counterparts.

related profession in the home country; and (iii) even where highly skilled citizens migrate into the Diaspora, they are not necessarily the highest remitters (Rodriguez and Horton, 1995).

Conclusions from empirical studies have been largely unanimous on the fact that migrant remittance inflows directly promote human capital development in migrant-home countries. For instance, in Zimbabwe, although households with migrants abroad tend to have less cultivated lands, these remittance beneficiary households also tend to have a higher level education than their non-remittance receiving counterparts (de Haan, 2000). Duryea *et al.* (2005) find significant evidence for lower incidence of infant mortality when female participation in the labour market was reduced upon receipt of remittances. This is likely to result from a higher time allocation to maternal care. Using the case of Philippines, Yang (2004) shows that reduced labour force participation is associated with increased school attainment among Pilipino children aged between 17 and 21 years in remittance-recipient households. Cox-Edwards and Ureta (2003) also find that remittances directly and instantaneously reduce school dropout rate in El Salvador. For Mexico, López-Córdova (2005) confirms earlier results by Hanson and Woodruff (2003) and McKenzie and Rapoport (2006) that in remittance-recipient homes, illiteracy rates are lower among boys and girls of school going age and teenagers. For a group of Latin American countries, Acosta *et al.* (2008b) obtain a similar result whereby migrant remittances enhance educational attainment even when counterfactual scenarios of migration without remittances, and, no migration and, hence, no remittances were taken into account.

With regard to the direct role of remittances in promoting human capital accumulation through higher access to improved healthcare system in developing migrant-sending countries where public healthcare is inefficient and pro-rich in the absence of an effective universal health insurance system, international evidence has shown that remittances have been most useful. In Mexico, for instance, Amuedo-Dorantes and Pozo (2006) report that remittances received directly increase healthcare expenditure by households, and that these expenditures are more responsive to increases in remittances than non-remittance incomes. Duryea *et al.* (2005) conclude from an empirical study on Mexico that migrant remittances have a direct positive impact on reducing infant mortality through higher mother-child time allocation, increased access to improved housing conditions and potable water. Hildebrandt and McKenzie (2005) also find international remittances to have reduced child mortality rate and increased birth weight of infants from remittance-receiving households in Mexico. Similarly, from a study

carried out on Mexican municipalities, López-Córdova (2005) reports that as more remittances are received, infant mortality declines. In the case of 11 Latin American countries, Acosta *et al.* (2008b) also discover that remittances contribute substantially to improvements in health indicators. To provide an insight into the empirics of the effects of migrant remittances on human development and welfare in SSA, this chapter explores the implications of international remittances received for both dimensions – educational attainment and life expectancy as well as integrated human welfare.

#### 7.2.2.4 Effects of International Remittances on Financial Market Development

The large volume and strong stability in the inflow of migrant remittances offer remittance-receiving developing countries a good opportunity to develop their financial sector in order to attract more official inflow of these funds from their citizens residing abroad. A financial sector is considered as developed if financial intermediaries can more freely and efficiently provide quality and reliable payments mechanism, facilities for financial resource mobilisation and credit allocation, information symmetry, liquidity and risk mitigation (Pagano, 1993; World Bank, 2005). Essentially, McKinnon (1973), Shaw (1973), Fry (1995), Kar and Pentecost (2000), and the World Bank (2005) consider financial development to be a consequence of financial liberalisation since the pursuit of financial repressive policies undermines the scope and pace of financial development.

Theoretically, migrant remittances can either substitute or complement the role of the financial sector in resource mobilisation and allocation depending upon the level of financial development in migrant-home countries. According to the substitutability hypothesis of remittances, the restricted access of the private sector to the formal sector credit in low-income countries where credit markets are imperfect and the financial sector is underdeveloped can be partially offset by higher inflows of remittances (Giuliano and Ruiz-Arranz, 2009). The inflow of high international remittances allows recipients to invest in high return investment projects despite the difficulties in accessing bank credit. Besides, it is this credit constraint awareness that compels migrants to remit more funds home in excess of family consumption and to potential investors who lack the collateral assets to access credit from the formal financial market. Therefore, in the case of the substitutability hypothesis, there is an inverse relationship between financial development (FDV) and international remittance inflows, such that, if  ~~$\frac{\partial FDV}{\partial REMPC} > 0$~~  and  ~~$\frac{\partial FDV}{\partial REMPC} < 0$~~ , then  $\frac{\partial FDV}{\partial REMPC} = \beta_1$ , but

$\hat{\beta}_1 < 0$ ; where  $\hat{\beta}_1$  and  $\Omega$  denote estimated  $\beta_1$  and other macroeconomic determinants of FDV respectively; and when any possible reverse causality between FDV and REMPC is ignored.

On the contrary, the complementarity hypothesis of remittances holds when higher international remittance inflows and a higher degree of financial development foster each other. According to Giuliano and Ruiz-Arranz (2009), in economies where capital market imperfections are limited and access to credit is readily available, and where potential investors can rely on the financial sector; remittances can be counter-productive and have moral hazard effects. On the one hand, a country receives more international remittances because of a higher degree of financial development, which results in higher financial sophistication and reduced transaction costs associated with remittance inflows. In other words, the propensity to remit through the formal financial system increases as the financial sector of the migrant-home country develops and there is higher access to quality financial services and innovative financial products at competitive prices. On the other hand, higher inflows of international remittances stimulate the incentive of formal financial institutions, including the monetary authorities, to implement prudent legal and institutional reforms to boost remittance inflows as well as enhance the productive uses of remittances received. Accordingly, higher levels of financial development help migrants to remit more, and in turn, a significant inflow of remittances contributes to the development of the domestic financial system in many ways, but, in particular, financial inclusion (Terry and Wilson, 2005). For the complementarity hypothesis of remittances to be valid with respect to how remittances contribute to financial development in migrant-home countries, it is expected that, once it is established that, in general,  $\frac{\partial \text{FDV}}{\partial \text{REMP}} > 0$ , and, specifically,  $\frac{\partial \text{FDV}}{\partial \text{REMP}} > \frac{\partial \text{REMP}}{\partial \text{FDV}}$ , then  $\frac{\partial \text{REMP}}{\partial \text{FDV}} > 0$ .

The World Bank (2005) asserts that financial development can be determined from five main dimensions. These are the ability of financial intermediaries to provide savings facilities for resource mobilisation, credit allocation and the monitoring of borrowers, payment mechanisms, risk mitigation, and liquidity services (World Bank, 2005). There are a set of indicators for each of these aspects of financial development, as shown in Table 7.1.

Of the numerous indicators of financial development, this study adopts only two measures – broad money to GDP ratio and private bank credit as ratio of GDP – due mainly to data

limitations on the other indicators in the sampled countries; and for the sake of comparability with a majority of previous related studies.

**Table 7.1:** Functions of Financial System and Financial Sector Development Indicators

| Function  | Key Indicators  |
|---|---|
| Provision of savings facilities for resource mobilisation | <ul style="list-style-type: none"> <li>• Broad money (<math>M_2</math>) to GDP</li> <li>• Ratio of bank deposits to GDP</li> <li>• Proportion of population with bank accounts</li> <li>• Total number of bank branches</li> <li>• Population per bank branch</li> <li>• Distribution of branches and other outlets</li> <li>• Household and corporate holdings of non-bank financial assets</li> </ul> |
| Credit allocation and monitoring of borrowers             | <ul style="list-style-type: none"> <li>• Private sector bank credit as ratio of GDP</li> <li>• Ratio of bank loans to bank deposits</li> <li>• Volume of finance raised from the issuance of bonds and money market instruments</li> </ul>  |
| Provision of payments mechanism                           | <ul style="list-style-type: none"> <li>• Proportion of payments (volume and value) made with different payment instruments</li> <li>• Number of days for clearing cheques</li> <li>• Number and distribution of clearing centres</li> </ul>   |
| Risk mitigation   | <ul style="list-style-type: none"> <li>• Ratio of insurance premiums to GDP</li> <li>• Number of insurance and derivative products and services available</li> <li>• Insurance and derivative products held as a ratio of population</li> </ul>   |
| Provision of liquidity services                           | <ul style="list-style-type: none"> <li>• Interest rate spread</li> <li>• Interest rate structure</li> <li>• Prices of basic financial services</li> </ul>   |

**Source:** Author based on World Bank (2005)

*Broad money to GDP:* According to the World Bank (2005: 20), “the overall extent of financial savings can be ascertained by examining the level and trends in the ratio of broad money to GDP”. Broad money is recorded as  $M_2$  or  $M_3$  in the standing of money supply by monetary authorities, although data on  $M_3$  is relatively scarce in many developing countries. This indicator, specifically ( $M_2 / GDP$ ), which is the standard and most commonly used indicator of financial sector development (World Bank, 1989; Kar and Pentecost, 2000) may, however, inflate the real size and depth of the financial sector if currency ( $M_1$ ) constitutes a high proportion of broad money (De Gregorio and Guidotti, 1995; World Bank, 2005). When currency outside the banking system constitutes a larger proportion of broad money, then the use of broad money as a ratio to nominal GDP merely measures the degree of monetisation rather than financial development. Cash-based economies, a common feature of underdeveloped financial systems, automatically have a higher degree of monetisation in the absence of other sophisticated financial instruments. Accordingly, De Gregorio and Guidotti (1995), suggest the use of less liquid forms of monetary aggregates (i.e.  $M_2$  or  $M_3$ ) as a proxy for financial sector development. However, the problem of monetisation could still be present if  $M_2$  or  $M_3$  is measured as  $M_1$  plus quasi money, which indeed is the case, taking into

consideration the vertical composition of money supply as recorded in the Balance Sheets of Central Banks. In this case, it would have been more appropriate to use ( $M_2$  or  $M_3$  minus  $M_1$ ) as a ratio of GDP to measure FDV in highly monetised SSA countries. Yet, data on  $M_1$  over the study period, 1980-2009, is lacking in most of the sampled SSA countries. In spite of the limitation of  $M_2/GDP$  as an indicator of FDV, it continues to enjoy a popular patronage in empirical studies. Some of the recent studies that used  $M_2/GDP$  in the remittance literature include those of de Leon-Manlagnit (2006), Drinkwater *et al.* (2006), Shahbaz *et al.* (2007), Ebeke and Le Goff (2009), Giuliano and Ruiz-Arranz (2009), Gupta, Pattillo and Wagh (2009), and Adenutsi (2011).

*Bank credit to private sector as a ratio to GDP:* According to Kar and Pentecost (2000: 6), this “is one of the five most commonly used proxies for financial development” to evaluate the extent of financial intermediation by banks. Bank credit to private as a ratio to GDP is considered as a more direct measure of financial intermediation when compared with domestic credit/GDP ratio because the former directly captures the proportion of credit extended by banks to finance productive private-sector investment projects. In other words, bank credit to government agencies and state institutions are excluded from the computation of this indicator. The underlying theory is that the private sector, unlike the public sector, is more efficient in utilising debt capital because the private sector is confronted with more stringent loan repayment obligations, a higher quest for entrepreneurial success and an intrinsic desire to avoid perpetual dependency on debt capital. Notwithstanding the fact that this indicator exclusively measures credit directed at the private sector, one major limitation<sup>145</sup> of this indicator is that it does not suggest how bank loans to the private sector are actually utilised. Financial development is expected to culminate in raising returns on investment and reducing the cost of capital and the risk of investment by ameliorating information symmetry, reducing information and transactions cost, and facilitating risk management (Rajan and Zingales, 1998; Wurgler, 2000). However, this indicator does not provide information related to these aspects of financial development (Levine *et al.* 2000). All the same, private sector credit to GDP enjoys extensive patronage in empirical studies as shown in Table A7.1 in the Appendix.

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<sup>145</sup> Another critical drawback for using this indicator of financial development for countries in SSA is that many of the countries in the sub-region included credit to public enterprises as part of private sector claims, especially before as well as in the earlier years of economic reforms. Meanwhile, during those years, it was state-owned enterprises (SOEs) that received the majority of the credits extended by banks, the majority of the banks which were also state owned (various SSA Central Bank reports).

So far, conclusions from available empirical studies have been quite unanimous on the direct positive impact of migrant remittance inflows on financial development in remittance-recipient countries (see Drinkwater, 2006; Acosta *et al.*, 2008a; Shahbaz *et al.*, 2007; Gheeraert *et al.* 2010; Gani and Sharma, 2013), with this impact often turning more robust in countries with lowly-developed financial markets as implied by Giuliano and Ruiz-Arranz (2009).

The financial development strategies that developing countries can adopt to attract a higher inflow of official remittances include lowering the cost of international funds transfers, widening financial services to advance financial inclusion; providing offshore banking facilities; and rolling out innovative financial products with diversified risks. Meanwhile, Acosta, Baerg and Mandelman (2009) show that well-developed financial markets of remittance-recipient countries can be important in channelling remittances into productive uses in migrant-home countries. It is for this reason that examining the impact of remittances on financial development should be seen as vital to the understanding of the development prospects of migrant remittance inflows in SSA as a region where the majority of the countries have underdeveloped financial markets.

## **7.3 ANALYTICAL FRAMEWORK, EMPIRICAL MODEL AND DATA ISSUES**

### **7.3.1 Analytical Framework and Empirical Model**

An important methodological challenge related to modelling the effects of migrant remittances on economic development outcomes is endogeneity bias that could arise from reverse causality, omitted variable bias and migrants' self-selection bias of target recipients. In addition, remittance inflows do not only affect the socioeconomic welfare of direct recipients but also non-migrant households, the business sector, the local community, and the nation as a whole. To circumvent this problem, it is important to adopt an econometric approach where it is possible to overcome endogeneity in the empirical model. Analysts who take serious cognisance of this problem often use either instrumental variable techniques or dynamic panel-data modelling especially where the data dimension is of a larger cross-section over time series<sup>146</sup>. Of these two approaches, dynamic panel-data modelling by Generalised Method of Moment (GMM) dominates the empirical studies of recent years and even where the two approaches are used for robustness tests, conclusions have been based mainly on results from GMM estimators<sup>147</sup>. Therefore, to estimate the macroeconomic impact of remittance inflows on

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<sup>146</sup> See Table A7.1 for details.

<sup>147</sup> See, for example, Aggarwal *et al.* (2006), Giuliano and Ruiz-Arranz (2006), Acosta *et al.* (2008a,b), Acosta, Baerg and Mandelman (2009), Jongwanich (2007), Gyimah-Brempong and Asiedu (2009), and Adenutsi and Ahoritor (2010).

economic development in SSA, this study relies on a dynamic panel-data modelling by system GMM<sup>148</sup>.

Each estimated model has remittances incorporated into an otherwise standard endogenous growth-type economic development model<sup>149</sup> with motivation from the *transnational-migrant remittance* paradigm. This is because, as noted in Section 7.2, within the context of the *transnational-migrant remittance theory*, it is possible to explore the effects of remittances on a wide array of developmental outcomes from both the migrant-pessimist and the migrant-optimist perspectives. Also, because economic development is a multi-dimensional concept<sup>150</sup>, there can be many developmental outcomes, but consistent with the afore-stated objectives, the study restricts itself to analysing the impact of remittances on poverty (headcount, gap, severity), income inequality, three indicators of labour market outcomes, three indicators of human capital development and welfare, and two indicators of financial development. The choice of each indicator was based essentially on the popularity in empirical studies and data availability.

The general empirical dynamic panel-data model is specified as Equation (7.1), which states that any measure of economic development outcome ( $\tilde{E}_{i,t}$ ) in country  $i$  at time  $t$  is explained by the initial level of the specific measure of the economic development outcome in question ( $\tilde{E}_{i,t-1}$ ), current remittances *per capita* which also connotes remittances *per capita*<sup>151</sup> received in a sampled in country ( $R_{i,t}$ ) plus a set of other possible macroeconomic determinants of  $\tilde{E}$ . Mathematically, it is specified that:

$$\tilde{E}_{i,t} = \mu_i + \phi_i \tilde{E}_{i,t-1} + \psi_1 R_{i,t} + \psi_2 Z_{i,t} + \varepsilon_{i,t} \quad (7.1)$$

where the regressand,  $\tilde{E}$ , denotes a measure of economic development outcome of interest;  $R$ ,  $Z$ ,  $\mu_i$ ,  $\phi_i$  and  $\varepsilon_{i,t}$  are as previously defined in Chapter Six. However,  $Z$  now contains additional control variables such as annual GDP growth rate as a proxy for business cycle, literacy rate, real lending rate, and real GDP *per capita* at purchasing power parity (PPP).  $\psi_1$ ,

<sup>148</sup> The relative superior qualities of system GMM over alternative GMM estimation techniques of dynamic panel-data models are well discussed in Chapter Four of this dissertation.

<sup>149</sup> See Chapter Six for details of endogenous growth model.

<sup>150</sup> See Todaro and Smith (2002), and Thirlwall (2011).

<sup>151</sup> For the justification of this analogy, see Chapter Three.

$\psi_2$  and  $\psi_3'$  being the corresponding parameter estimates of  $\tilde{E}$ ,  $R$  and  $Z$ . The notation  $\ln$  preceding  $R$  and  $Z$  signifies natural logarithm; and all control variables previously used in Chapter Six remain as defined and as to whether they are in natural logarithmic or algorithmic forms, specific details are provided in Tables A7.2 and A7.6 in the Appendix. Although, both intuitively and by anecdotal evidence,  $Z$  may contain a wide array of potential explanatory variables, Perotti (1996), Acosta *et al.* (2008a,b) and Acosta, Baerg and Mandelman (2009) offer a reasonable justification for selecting regressors within the context of economic growth model<sup>152,153</sup>. Beyond the underlying theoretical relevance, a further justification for adopting this approach of choosing the regressors is to make room for comparability of results with previous related studies, and at the same time satisfying the condition of parsimonious approach to the empirical modelling. This is important because apart from estimations involving financial development indicators, for all other estimations, the number of observations reduced drastically particularly due to unavailability of annual data<sup>154</sup> in the 36 sampled countries. It is expected *a priori* that migrant remittances have poverty-mitigating effects and impact positively on human welfare, school attainment and life expectancy, but with regard to income inequality, financial development and labour market outcomes, the *a priori* effects are indeterminate.

Similar to the approach used in Chapter Six, a three-step estimation procedure was used to determine the impact of migrant remittances on a given economic development outcome at step one; investigate the presence or absence of discriminatory impact of remittances on the given developmental outcome at step two; and, given that this size-effect exists, estimate the impact on the relevant group at step three. In doing so, a median-dummy variable (MDV) was introduced as an additional variable in the 'final' parsimonious empirical model at the second-step estimation. In step three, MDV was replaced with the MDV-remittance interactive variable in the empirical model for re-estimation. With the exception of the empirical unemployment model, MDV takes the value of one if in a particular time period  $t$ ,  $\tilde{E}$  of a country  $i$  exceeds the median  $\tilde{E}$ ; otherwise it takes the value of zero (see Table A7.3).

Consistent with previous chapters, for the empirical models involving annual panel data over the entire study period, 1980-2009 and for the 36 sampled SSA countries, static panel-data

<sup>152</sup> This has been the norm in macro level cross-country panel-data studies. For examples, see Table A7.1.

<sup>153</sup> Here, the study choice of regressors is those of the endogenous growth model as espoused in Chapter Six.

<sup>154</sup> Only 5-year average data are available for socioeconomic development variables such as indicators of poverty, inequality, human welfare and development indicators (excluding school enrolment) and labour market outcomes.

models were estimated to, among other things, demonstrate that, indeed, dynamic panel-data modelling outperforms the former. In pursuit of this objective, it is only the empirical models determining the impact of migrant remittance inflows on the two selected financial development indicators namely bank credit to the private sector and broad money to GDP ratio that were subjected to this compelling exercise. For each of these financial development indicators, both the conventional and heteroskedasticity-corrected robust Fixed (within) Effects (FE) and GLS Random Effects (RE) models were estimated. Based on the econometric issues discussed under 4.5.2 in Chapter 4, the results of the estimated robust static panel-data parameters are not expected to confirm the parameter estimates from the two-step sys-GMM estimators from the empirical dynamic panel-data models in either case.

### 7.3.2 Data Issues

The empirical analysis of this chapter encompasses 36 sampled SSA countries listed in Chapter One of this dissertation. However, in some specific cases, the sample size was reduced due to constraint on relevant data. For instance, in the case of empirical poverty and inequality models, only 34 countries (excluding Mauritius and Sudan) were analysed. For this same reason, the number of countries was further reduced to 27 (excluding Congo Republic, Côte d'Ivoire, Ethiopia, Gambia, Guinea, Guinea-Bissau, Niger, Senegal and Togo) in the estimation involving the rate of unemployment.

With the exception of educational attainment proxied by secondary school enrolment and financial development indicators, annual panel-data on most of the developmental outcome variables at the centre of analysis in this chapter are scarce over the study period, 1980-2009. In this respect, in estimating the impact of remittances on human welfare and human capital development outcomes, poverty, inequality, and labour market outcomes, rather than using annual panel data as was done in the case of financial development, a 5-year non-overlapping average data was used. Using non-overlapping 5-year average data reduces the time dimension of the panel data from 30 to 6 for the overall study period as there are only two observations per decade. With the panel-data dimension still having the structure of  $N > T$ , when the sys-GMM estimation technique is executed on the empirical dynamic model in which  $N = 36$  and  $T = 6$  as a result of the 5-year non-overlapping averaging of data, the efficiency of system estimators was not compromised<sup>155</sup>.

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<sup>155</sup> Even where  $N$  was reduced to 27 in the unemployment model due to data constraint, the system GMM was still applicable because  $T=6$ .

In line with previous related studies (see Table A7.1), poverty headcount ratio and poverty gap index which measure the incidence and depth of poverty respectively, and squared poverty gap index as a proxy for poverty severity are the indicators of poverty used in this study whilst the Gini index was used to measure income inequality. Human development index (HDI) representing the geometric mean of three normalised indices of life expectancy, knowledge and education<sup>156</sup>, and living standards as measured in natural logarithm of gross national income at PPP was used as a proxy for general human welfare status. Secondary school enrolment was used as a measure for educational attainment, whilst life expectancy was used as a narrow measure for human welfare. Unemployment rate, labour force participation rate and labour productivity rate were used to measure labour market outcomes. The definition, specific measurement and main source of the dependent variables and explanatory variables not previously used in this study as explanatory variables are outlined in Table A7.6 in the Appendix. Unless otherwise specified, each variable is in its natural logarithmic form.

## **7.4 EMPIRICAL RESULTS AND DISCUSSIONS**

### **7.4.1: The Impact of Remittances on Poverty and Income Inequality in SSA**

The empirical results on the impact of international migrant remittances on poverty and income inequality in SSA are reported in Table 7.2. As can be seen in Table 7.2.1, the study further shows that the poverty-alleviating effects of remittances differ across SSA countries, using the group median-level indicators of poverty as a reference point. From Table 7.2, it is shown that a one percentage increase in remittances per migrant received in SSA reduces poverty in terms of incidence, gap and severity by 0.0217, 0.0292 and 0.0584 respectively.

With statistically significant estimated coefficients of 0.0452, 0.0750 and 0.1500 for poverty headcount, poverty gap and poverty severity respectively reported in Table 7.2.1, this study reveals that when the incidence of poverty by any of the three measures is above the median level (see Table A7.3), official remittances received aggravate poverty in migrant-receiving countries, at least, internationally<sup>157</sup>. Thus, although generally, remittances alleviate poverty in SSA, in migrant remittance-receiving SSA countries with relatively high probability incidence of poverty, remittances actually aggravate poverty.

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<sup>156</sup> Knowledge is proxied by adult literacy rate with two-thirds weighting, whilst primary, secondary and tertiary gross school enrolment which captures education, takes one-third weighting.

<sup>157</sup> Note that the poverty line used in this study is based on international caloric requirements based on PPP. Therefore remittances can actually reduce poverty at national levels in both categories of countries (which is outside the scope of this study), but not in terms of comparative international landscape (as revealed by this study).

**Table 7.2:** Impact of Remittances on Poverty and Inequality in SSA, 1980-2009

| Group variable: Code  |                                     | Time variable: Year (5-year average) |                                    |                                  |
|---|-------------------------------------|--------------------------------------|------------------------------------|----------------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                                     |                                      |                                    |                                  |
|   | <b>Poverty<br/>Headcount</b>        | <b>Poverty<br/>Gap</b>               | <b>Poverty<br/>Severity</b>        | <b>Income<br/>Inequality</b>     |
| Initial Dependent variable (* <sub>t-1</sub> )                                    | 1.0506<br>(31.51)***                | 0.8323<br>(7.21)***                  | 0.8323<br>(7.21)***                | 0.9112<br>(11.22)***             |
| <b>Migrant remittances (lnREMPC)</b>  | <b>-0.0217</b><br><b>(-3.04)***</b> | <b>-0.0292</b><br><b>(-2.07)**</b>   | <b>-0.0584</b><br><b>(-2.07)**</b> | <b>-0.0014</b><br><b>(-0.27)</b> |
| Human capital accumulation (lnHCA)  | .....<br>.....                      | -0.3216<br>(-5.14)***                | -0.6432<br>(-5.14)***              | -0.0334<br>(-2.06)**             |
| Real GDP <i>per capita</i> (lnY_PPP)  | -0.0305<br>(-0.55)                  | -0.0748<br>(-2.18)***                | -0.1496<br>(-2.18)***              | 0.0742<br>(2.85)                 |
| Investment in physical assets (lnINV)   | 0.0862<br>(1.73)*                   | -0.1702<br>(-2.20)**                 | -0.3405<br>(-2.20)**               | 0.0680<br>(2.77)***              |
| Foreign direct investment (FDI)   | -0.0178<br>(-3.30)**                | .....<br>.....                       | .....<br>.....                     | .....<br>.....                   |
| Official development assistance (lnODA)   | 0.0195<br>(0.82)                    | 0.0671<br>(1.93)*                    | 0.1342<br>(1.93)*                  | -0.0200<br>(-2.97)***            |
| Trade openness (lnOPN)  | -0.1351<br>(-1.80)*                 | 0.0417<br>(0.42)                     | 0.0834<br>(0.42)                   | -0.1359<br>(-2.88)***            |
| Rate of inflation (INF)   | -0.0012<br>(-2.22)**                | 0.0005<br>(0.71)                     | 0.0092<br>(0.71)                   | .....<br>.....                   |
| Government expenditure (lnGXP)  | 0.2993<br>(4.10)***                 | 0.6133<br>(5.49)***                  | 1.2266<br>(5.49)***                | .....<br>.....                   |
| Real exchange rate (lnRXR)  | 0.0159<br>(0.53)                    | 0.0354<br>(0.61)                     | 0.0707<br>(0.61)                   | -0.0290<br>(-1.76)*              |
| Business cycle (BZC)  | .....<br>.....                      | .....<br>.....                       | .....<br>.....                     | -0.0090<br>(-5.75)***            |
| Institutional quality (INS)   | .....<br>.....                      | .....<br>.....                       | .....<br>.....                     | 0.0035<br>(1.23)                 |
| Constant term   | -0.5860<br>(-1.03)                  | 0.2443<br>(0.30)                     | 0.4885<br>(0.30)                   | 0.4926<br>(1.39)                 |
| Number of observations  | 169                                 | 169                                  | 169                                | 175                              |
| Number of groups  | 34                                  | 34                                   | 34                                 | 36                               |
| Number of instruments   | 25                                  | 25                                   | 25                                 | 25                               |
| Wald $\chi^2_{[1]}$   | [11],17667.07***                    | [11],2518.00***                      | [11],2518.00***                    | [10],596.03***                   |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): | -5.186{0.604}                       | 0.7467{0.455}                        | 0.7467{0.455}                      | -0.0169{0.987}                   |
| Sargan test of over-identifying restrictions:                                     |                                     |                                      |                                    |                                  |
| $\chi^2_{[13]}$   | 16.0871                             | 20.0526*                             | 20.0526*                           | 11.4428                          |

Source: Author's estimation

\*/\*\*/\*\*\* denotes statistical significance at 10%, 5%, 1% respectively  
2-step robust z-statistics are in ( ), z-probabilities in { }

This may be due to the fact that, in SSA, the poorest countries in terms of real GDP *per capita*, such as Burundi, Congo Republic, Ethiopia, Malawi and Rwanda, receive the least official remittances *per capita* (see Figure 3.5). Besides, even in the 2000-2009 decade when SSA received its highest amount of migrant remittances, no country could receive even up to US\$1 per day, as Cape Verde (the highest recipient) received only US\$249.88 per annum. This seems to justify the apprehension of remittance-pessimists that severely poor families would normally not have the means to sponsor migrants to high-income countries in order to receive migrant remittances.

To the extent that remittances generally have a direct and instantaneous poverty-mitigating effect on SSA, the findings of this study are consistent with the results obtained in related previous studies including those of Adams and Page (2005), López-Córdova (2005), Acosta *et al.* (2006), Gupta, Pattillo and Wagh (2009), Kalim and Shahbaz (2009), Gubert *et al.* (2010), UN (2011), Shafiq *et al.* (2012) and Orzell (2013).

**Table 7.2.1:** Comparative Analysis of Remittance Effects on Poverty and Inequality in SSA

| Type of Dummy Effect          | Poverty Headcount                 | Poverty Gap                        | Poverty Severity                   | Income Inequality                  |
|-------------------------------|-----------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Independent Median            | 0.1415 (2.83) <sup>***</sup>      | 0.2620 (4.73) <sup>***</sup>       | 0.5240 (4.73) <sup>***</sup>       | 0.1388 (6.27) <sup>***</sup>       |
| MDV-Remittance Interactive    | <b>0.0452 (2.67)<sup>**</sup></b> | <b>0.0750 (4.40)<sup>***</sup></b> | <b>0.1500 (4.40)<sup>***</sup></b> | <b>0.0357 (4.09)<sup>***</sup></b> |
| Number of observations        | 169                               | 169                                | 169                                | 175                                |
| Number of groups              | 34                                | 34                                 | 34                                 | 36                                 |
| Instruments                   | 26                                | 26                                 | 26                                 | 25                                 |
| Wald ( $\chi^2_{(w)}$ )       | [12], 9448.46 <sup>***</sup>      | [12], 1240.28 <sup>***</sup>       | [12], 1240.28 <sup>***</sup>       | [11], 486.67 <sup>***</sup>        |
| Arellano-Bond Test            | -0.8852{0.3760}                   | 0.7114{0.4769}                     | 0.7114{0.4769}                     | 0.1813{0.8561}                     |
| Sargan Test ( $\chi^2_{13}$ ) | 12.5386                           | 18.8135                            | 18.8135                            | 11.5240                            |

Source: Author's estimation

Note: <sup>\*\*\*</sup>(<sup>\*\*</sup>) denote statistical significance at 5(1) per cent respectively  
2-step robust z-statistics in ( ); z-probabilities in { }

At the conventional levels of statistical significance, it can be concluded that remittances did not contribute significantly to equalising incomes in 'labour-exporting' SSA countries during the 1980-2009 period (Table 7.2). From Table 7.2.1, it is shown that migrant remittances received actually aggravate poverty and income inequality in SSA countries with relatively higher levels of poverty and income inequality. Thus, the potential poverty and income-equalising effects of migrant remittance inflows are a preserve advantage for only remittance-receiving SSA countries with relatively lower poverty and income inequality.

To a large extent, this result is consistent with the findings of Nguyen (2008) and Ekebe and Le Goff (2009) that although remittances reduce poverty, they are less inequality-mitigating. This

finding, however, is in contrast with the findings by Acosta *et al.* (2008a) for 10 LAC countries and that of Gubert *et al.* (2010) for Mali; that, remittances either reduce or have no effects on income equality. Differences in sampled countries, period of study and the level of analysis could be the source of this variation. For example, this is a purely macro-level study unlike in the case of Acosta *et al.* (2008a) and Gubert *et al.* (2010) that are micro-level studies.

#### **7.4.2 The Impact of Remittances on Labour Market Outcomes in SSA**

The empirical results on the implications of remittance inflows for labour market outcomes in SSA are presented in Table 7.3. Contrary to the trepidation of the remittance-pessimistic structural dependence view, the findings of this study show that in SSA between 1980 and 2009, international migrant remittance inflows did not impair labour market outcomes, as they contributed directly to reducing the unemployment rate. The estimated results (see Table 7.3) show that a 100 per cent increase in international migrant remittances *per capita* had an approximately -1.67 per cent impact on unemployment rate in the 27 sampled SSA countries. Although this finding may seem to suggest that the direct unemployment-reducing impact of international migrant remittances is economically low, it is important to note that international remittances are the second most important only after trade openness in reducing unemployment rate in SSA between 1980 and 2009.

Even more striking is the fact that between 1980 and 2009, the direct effect of international remittance inflows was even more important than government expenditure when it comes to solving the perennial unemployment problem in SSA. One possible explanation for this finding is that whereas international remittance inflows are directly and instantaneously beneficial to the private sector, as a result of bad governance and weak institutions, a colossal amount of government spending over the period was not pro-poor or was due to public sector corruption and debt servicing which culminated in crowding-out the private sector.

For the 36 sampled SSA countries, the impact of international remittance inflows on labour market participation was both economically and statistically insignificant. Similarly, between 1980 and 2009, international migrant remittances did not have any significant impact on labour productivity in SSA (Table 7.3). More specifically, in Table 7.3, it is shown that, on the average, international remittances had no moral hazard effects with reference to labour force participation and productivity, given that, the estimated coefficients of -0.0002 and 0.0046 respectively, are not only low but also statistically insignificant even at 10 per cent.

**Table 7.3: Impact of Remittances on Labour Market Outcomes in SSA, 1980-2009**

| Group variable: Country Code  |                                    | Time variable: Year (5-year average) |                                |
|---|------------------------------------|--------------------------------------|--------------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                                    |                                      |                                |
|   | <b>Unemployment</b>                | <b>Labour Participation</b>          | <b>Labour Productivity</b>     |
| Initial Dependent variable (* <sub>t-1</sub> )                                    | 0.4472<br>(17.62)***               | 0.7878<br>(18.12)***                 | 0.7579<br>(13.24)***           |
| <b>Migrant remittances (lnREMPC)</b>  | <b>-0.0167</b><br><b>(-2.02)**</b> | <b>-0.0002</b><br><b>(-0.48)</b>     | <b>0.0046</b><br><b>(0.54)</b> |
| Human capital accumulation (lnHCA)  | 0.0082<br>(0.13)                   | 0.0047<br>(2.08)**                   | 0.0640<br>(2.44)**             |
| Real GDP <i>per capita</i> (lnY_PPP)  | 0.0364<br>(1.03)                   | 0.0076<br>(2.26)**                   | 0.1046<br>(2.77)**             |
| Investment in physical capital (lnINV)  | .....                              | .....                                | 0.1248<br>(4.92)***            |
| Institutional quality (INS)   | 0.0071<br>(0.81)                   | 0.00199<br>(2.41)**                  | -0.0023<br>(-1.50)             |
| Trade openness (lnOPN)  | -0.1313<br>(-3.64)***              | .....                                | -0.1117<br>(-2.50)**           |
| Rate of inflation (INF)   | .....                              | -0.0002<br>(-3.10)                   | -0.0016<br>(-2.80)**           |
| Government expenditure (lnGXP)  | 0.1977<br>(2.33)**                 | .....                                | -0.2170<br>(-6.65)***          |
| Real exchange rate (lnRXR)  | .....                              | 0.0057<br>(2.99)***                  | -0.0636<br>(-4.03)***          |
| Business cycle (BZC)  | 0.0270<br>(6.98)***                | .....                                | .....                          |
| Official development assistance (lnODA)   | .....                              | .....                                | 0.0194<br>(1.55)               |
| Foreign direct investment (FDI)   | .....                              | .....                                | 0.0035<br>(1.80)*              |
| Constant term   | 0.8263<br>(2.61)**                 | 0.8578<br>(4.52)***                  | 1.6949<br>(4.29)***            |
| Number of observations  | 132                                | 179                                  | 179                            |
| Number of groups  | 27                                 | 36                                   | 36                             |
| Number of instruments   | 22                                 | 21                                   | 26                             |
| Wald $\chi^2_{[1]}$   | [8], 1093.41***                    | [7], 1310.25***                      | [12], 3193.04***               |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                                    |                                      |                                |
|   | -1.1477{0.251}                     | 0.1721{0.863}                        | 0.6324{0.527}                  |
| Sargan test of over-identifying restrictions:                                     |                                    |                                      |                                |
| $\chi^2_{[13]}$   | 12.5546<br>0.483                   | 18.9955<br>0.123                     | 14.3350<br>0.351               |

**Source:** Author's estimation      \*\*\*/\*\*\* denotes statistical significance at 10%, 5%, 1% respectively  
 2-step robust z-statistics in ( ), z-probabilities in { }

The results in Table 7.3.1 show that the unemployment-solving effect of remittances did not prevail when the unemployment rate of an SSA country in any particular year fell below the

median level for the sampled SSA countries during the period under study. There is statistical evidence of a size-effect in relation to unemployment rate. The implication here is that, over the 30-year period, the unemployment-reducing effects of migrant remittances received are merely to the benefit of SSA countries with relatively higher unemployment rates.

**Table 7.3.1:** Comparative Analysis of Remittance Effects on Labour Market Outcomes

| Type of Dummy Effect          | Unemployment           | Labour Participation | Labour Productivity  |
|-------------------------------|------------------------|----------------------|----------------------|
| Independent Median            | -0.4691 (-3.70)***     | 0.0105 (5.26)***     | 0.1211 (3.25)***     |
| MDV-Remittance Interactive    | <b>-0.0133 (-0.49)</b> | <b>0.0006 (0.77)</b> | <b>0.0176 (2.77)</b> |
| Number of observations        | 132                    | 180                  | 179                  |
| Number of groups              | 27                     | 36                   | 36                   |
| Instruments                   | 23                     | 22                   | 27                   |
| Wald ( $\chi^2_{(0)}$ )       | [11], 1609.80***       | [8], 1287.00***      | [13], 2683.23***     |
| Arellano-Bond Test            | -1.1557{0.2478}        | 0.2109{0.8329}       | 0.7514{0.4524}**     |
| Sargan Test ( $\chi^2_{13}$ ) | 12.6260                | 18.3883              | 14.6549              |

Source: Author's estimation

Note: \*\*(\*\*\*) denotes statistical significance at 5(1) per cent respectively 2-step robust z-statistics in ( ); z-probabilities in { }

The statistical significance of the estimated coefficients of the 'autonomous' effects of MDV on the rates of labour participation and labour productivity, (0.0105 and 0.1211 respectively), provide evidence of size-effect of remittances on labour market outcomes (Table 7.3.1). In this case, if received in larger amount, migrant remittances can have the potential of inducing higher rates of productivity in countries with higher rates of labour productivity, but for countries with lower rates of labour productivity the impact of remittances is zero. And, whereas in migrant-receiving SSA countries with labour market participation rates above the median level of the group, remittances have positive but statistically insignificant impact, in the case of countries with lower rates of participation, the impact is negative but statistically insignificant. In effect, it is only SSA countries with higher rates of labour participation that stand the chance of benefitting more from international remittances received as the amount received increases. The result that migrant remittances do not negate labour market outcomes confirms those obtained by Drinkwater *et al.* (2006) for 19 developing countries and Orrenius *et al.* (2010) for Mexican states.

### 7.4.3 The Impact of Remittances on Human Welfare and Development in SSA

The empirical results on the impact of international remittance inflows on human welfare and human capital development in SSA are reported in Table 7.4.

**Table 7.4:** Human Development and Welfare Impact of Remittances in SSA, 1980-2009

| Group variable: Country Code  | Time variable: Year (5-year average) |                                   |                            |
|---|--------------------------------------|-----------------------------------|----------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                                      |                                   |                            |
|   | <b>Human<br/>Welfare</b>             | <b>Educational<br/>Attainment</b> | <b>Life<br/>Expectancy</b> |
| Initial Dependent variable ( $\bullet_{t-1}$ )                                    | 0.8624<br>(19.96)***                 | 0.8686<br>(13.43)***              | 0.7291<br>(32.89)***       |
| <b>Migrant remittances (lnREMPC)</b>  | <b>0.0203<br/>(4.43)***</b>          | <b>0.0427<br/>(2.81)***</b>       | <b>0.0060<br/>(2.24)**</b> |
| Real GDP <i>per capita</i> (lnY_PPP)  | 0.0384<br>(3.13)***                  | 0.0525<br>(2.02)**                | .....<br>.....             |
| Investment in physical capital (lnINV)  | 0.0173<br>(1.11)                     | .....<br>.....                    | 0.0167<br>(1.73)*          |
| Institutional quality (INS)   | 0.0034<br>(2.71)***                  | 0.0157<br>(3.52)***               | .....<br>.....             |
| Trade openness (lnOPN)  | -0.0343<br>(-1.67)*                  | 0.0027<br>(0.07)                  | .....<br>.....             |
| Rate of inflation (INF)   | 0.0010<br>(5.66)***                  | -0.0049<br>(-2.83)***             | .....<br>.....             |
| Government expenditure (lnGXP)  | 0.0191<br>(1.05)                     | .....<br>.....                    | -0.0023<br>(-0.15)         |
| Real exchange rate (lnRXR)  | 0.0100<br>(2.32)**                   | 0.0547<br>(2.88)***               | 0.0031<br>(1.52)           |
| Business cycle (BZC)  | 0.0014<br>(1.96)**                   | .....<br>.....                    | 0.0098<br>(16.42)***       |
| Real lending rate (RLR)   | .....<br>.....                       | -0.0038<br>(-2.69)***             | .....<br>.....             |
| Official development assistance (lnODA)   | .....<br>.....                       | .....<br>.....                    | 0.0194<br>(2.71)***        |
| Foreign direct investment (FDI)   | .....<br>.....                       | 0.0002<br>(0.08)                  | -0.0015<br>(-1.45)         |
| Constant term   | -0.4601<br>(-5.25)***                | -0.1282<br>(-0.51)                | 1.0163<br>(11.07)***       |
| Number of observations  | 177                                  | 171                               | 176                        |
| Number of groups  | 36                                   | 36                                | 36                         |
| Number of instruments   | 24                                   | 23                                | 22                         |
| Wald $\chi^2_{[k]}$   | [10], 17893.81***                    | [9], 4225.10***                   | [8], 2299.28***            |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                                      |                                   |                            |
|   | -1.3212{0.186}                       | -2.3683{0.018}                    | -1.3154{0.188}             |
| Sargan test of over-identifying restrictions:                                     |                                      |                                   |                            |
| $\chi^2_{[k]}$  | 21.1125*                             | 18.4159                           | 16.8539                    |

Source: Author's estimation

\*/\*\*/\*\*\* denotes statistical significance at 10%, 5%, 1% respectively  
2-step robust z-statistics are in ( ), z-probabilities in { }

The findings of this study suggest that, in SSA, international remittance inflows have significant positive effects on overall human welfare, educational attainment and life expectancy; with an impact magnitude of about 0.0203 per cent, 0.0427 per cent and 0.0060 per cent respectively, in response to a one percentage rise in remittances *per capita* (Table 7.4). The empirical results show that, generally, international remittances received in SSA between 1980 and 2009 contributed positively to promoting human welfare (or socioeconomic wellbeing), educational attainment, and life expectancy. These remittance-developmental effects, however, vary according to the level of development in remittance-recipient countries (see Table 7.4.1).

As far as the positive effect of remittances on socioeconomic development is concerned, the findings of this study are consistent with related previous studies by Adenutsi and Ahoritor (2010) for 31 developing countries from Latin America and the Caribbean (LAC) and SSA and Adenutsi (2010a,b) for selected SSA countries. On the positive direct impact on schooling, the results of this study confirm earlier results obtained by Cox-Edwards and Ureta (2003) for El Salvador, and Ponce (2008) for Ecuador, in various household survey studies. Again, the results of the direct positive impact of remittances on life expectancy are consistent with those obtained by Ajayi *et al.* (2009) for 38 SSA countries based on 2007 data.

In Table 7.4.1, it is shown that the positive impact of remittances on human welfare is more beneficial to SSA countries with relatively higher indices of human development (HDI). In the case of educational attainment, the positive impact of remittances was only beneficial to SSA countries with relatively lower level of educational attainment, as the impact of remittances on educational attainment is actually negative (-0.0159) in migrant-sending SSA countries with higher levels of attainment. With reference to life expectancy, the MDV-remittance interactive effect suggests that over the past three decades, it is remittance-receiving SSA countries with relatively higher life expectancy that benefited more from the direct positive impact of migrant remittances.

**Table 7.4.1:** Comparative Analysis of Remittance Effects on Human Development and Welfare

| Type of Dummy Effect          | Human Welfare          | Educational Attainment   | Life Expectancy         |
|-------------------------------|------------------------|--------------------------|-------------------------|
| Independent Median            | 0.1045 (6.34)***       | 0.0577 (6.23)***         | 0.0537 (4.79)***        |
| MDV-Remittance Interactive    | <b>0.0126 (2.52)**</b> | <b>-0.0159 (-2.42)**</b> | <b>0.0146 (3.66)***</b> |
| Number of observations        | 177                    | 171                      | 176                     |
| Number of groups              | 36                     | 35                       | 36                      |
| Instruments                   | 25                     | 24                       | 23                      |
| Wald ( $\chi^2_{(o)}$ )       | [11], 20805.06***      | [10], 4287.92***         | [9], 1381.19***         |
| Arellano-Bond Test            | -1.3035{0.1924}        | -2.4975{0.0125}**        | -1.3199 {0.1869}        |
| Sargan Test ( $\chi^2_{13}$ ) | 20.9558                | 18.8594                  | 21.1165                 |

Source: Author's estimation

Note: \*\*(\*\*\*) denotes statistical significance at 5(1) per cent  
2-step robust z-statistics are in ( ); z-probabilities are in { }

#### 7.4.4: The Impact of Remittances on Financial Development in SSA

##### 7.4.4.1: The Impact of Remittances on Bank Credit to the Private Sector

Overall, migrant remittances did not impact on private sector credit allocation in SSA between 1980 and 2009. However, the results from the decade-by-decade analysis suggest that migrant remittances exert a direct and a significant positive impact on bank credit allocation to the private sector under sound macroeconomic policy environment, with this impact increasing over time as SSA countries pursued financial liberalisation programme over the past three decades. The results in Table 7.5.1 suggest that, in the 1980s and 2000s, a percentage rise in international remittances *per capita* led to increased private sector credit allocation by banks by 0.0429 per cent and 0.0684 per cent respectively in SSA.

**Table 7.5.1: Impact of Remittances on Private Sector Bank Credit in SSA, 1980-2009**

|   | Group variable: Country Code      |                                     |                                   | Time variable: Year            |
|---|-----------------------------------|-------------------------------------|-----------------------------------|--------------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                                   |                                     |                                   |                                |
|   | <b>1980-1989</b>                  | <b>1990-1999</b>                    | <b>2000-2009</b>                  | <b>1980-2009</b>               |
| Initial private sector credit (lnPSC_1)   | 0.5577<br>(26.13)***              | 0.7830<br>(13.65)***                | 0.9892<br>(47.66)***              | 0.7850<br>(28.20)***           |
| <b>Migrant remittances (lnREMPC)</b>  | <b>0.0429</b><br><b>(7.14)***</b> | <b>-0.0350</b><br><b>(-6.50)***</b> | <b>0.0684</b><br><b>(8.68)***</b> | <b>0.0085</b><br><b>(1.09)</b> |
| Real GDP <i>per capita</i> (lnY_PPP)  | 0.2062<br>(6.64)***               | 0.2643<br>(3.98)***                 | -0.0161<br>(-1.00)                | 0.3153<br>(5.94)***            |
| Rate of inflation (INF)   | -0.0015<br>(-10.69)***            | -0.0020<br>(-6.91)***               | 0.0035<br>(4.17)***               | -0.0010<br>(-2.08)**           |
| Government expenditure (lnGXP)  | -0.0232<br>(-1.22)                | 0.2611<br>(5.83)***                 | 0.0407<br>(7.74)***               | 0.0183<br>(1.04)               |
| Real lending rate (RLR)   | -0.0004<br>(-0.10)                | 0.0045<br>(13.26)***                | 0.0037<br>(6.59)***               | 0.0024<br>(8.95)***            |
| Trade openness (lnOPN)  | 0.0742<br>(1.92)*                 | -0.1762<br>(-4.30)***               | -0.1105<br>(-5.37)***             | -0.0704<br>(-3.99)**           |
| Constant term   | -0.5467<br>(-3.41)***             | -1.3059<br>(-3.53)***               | 0.3440<br>(2.31)**                | -1.5033<br>(-3.86)***          |
| Number of observations  | 275                               | 298                                 | 312                               | 952                            |
| Number of groups  | 33                                | 35                                  | 35                                | 35                             |
| Number of instruments   | 51                                | 51                                  | 52                                | 441                            |
| Wald $\chi^2_{[7]}$   | 35196.80***                       | 3216.39***                          | 10012.35***                       | 2740.95***                     |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): |                                   |                                     |                                   |                                |
|   | -1.3473{0.178}                    | -0.1804{0.857}                      | -1.2995{0.194}                    | -0.8380{0.402}                 |
| Sargan test of over-identifying restrictions:                                     |                                   |                                     |                                   |                                |
| $\chi^2_{[43]}$   | [43], 17.7853                     | [43], 27.6982                       | [43], 27.1016                     | [433], 29.8626                 |

Source: Author's estimation

\*\*\*/\*\*/\* denotes statistical significance at 10%, 5%, 1% respectively  
2-step robust z-statistics are in ( ), z-probabilities are in { }

During the turbulent times of the 1990s (see Table 3.1), however, migrant remittance inflows impacted negatively (-0.0350) on bank credit allocation in SSA probably because during this era, migrant remittances were instantaneously spent on consumables rather than saved to enable banks create more money. In fact, it was shown in Adenutsi *et al.* (2012) that official remittances *per capita* and domestic savings are highly and positively correlated in SSA, a coefficient of 0.867 over the period 1980-2009. Even though correlation does not necessarily imply causation, it is evident from this study that when gross domestic savings as a percentage of GDP were relatively high at 22.23 and 23.50 in the 1980s and 2000s respectively (see Table 3.1), remittances impacted more and positively on private sector credit allocation (Table 7.5.1). However, when gross domestic savings ratio declined to 14.48 per cent in the 1990s (Table 3.1), the impact of remittances on credit allocation turned negative and with lower coefficient.

Table 7.5.1.1 provides statistical justification for the decade-by-decade changing impact of international migrant remittances on bank credit to the private sector in SSA over the past three decades – 1980-89, 1990-99 and 2000-09. Indeed, in columns A-B, B-C and A-C of Table 7.5.1.1, the statistical significance of the computed ‘differential’ z-statistics affirms the rejection of the null hypothesis at one per cent level of statistical significance that the corresponding estimated decade-based coefficients are not statistically different from one another. With the exception of real lending rate, this conclusion actually holds for all other determinants of bank credit to the private sector as reported in Table 7.5.1. The computed ‘differential’ z-statistics associated with real lending rate reported in columns A-B and A-C of Table 7.5.1.1 shows that the estimated coefficient of real lending rate for the 1980-89 decade is not statistically different from the corresponding estimates for the 1990-99 decade and the 2000-09 decade respectively.

From the computed z-statistics reported in columns A-D, B-D, B-E and C-E of Table 7.5.1.1, it can be concluded that, generally, the variations in the estimated decade-based parameters of migrant remittances are statistically stable over time. Thus, there is instability in the decade-based parameter estimates reported in Table 7.5.1. Apart from a few violations like initial private sector credit and trade openness (as reported in column B-D), real GDP *per capita* PPP (with reference to column B-E) and government expenditure and real lending rate (as reported in column C-E), there is a substantially significant statistical evidence for coefficient instability over time for each of the explanatory variables. Therefore, it can be concluded that, on the average, the estimated decade-based coefficients of migrant remittance inflows on bank credit to the private sector in SSA are evolving and the evolution is instable across the three decades, 1980-89 1990-99 and 2000-09.

**Table 7.5.1.1: Results of Parameter Evolution and Instability Tests for Impact of Migrant Remittances on Private Sector Credit in SSA**

|   | Estimated Decade-Based Results     |                                   |                                   | Decade-Based Rolling Estimated Results |                                   | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                     | Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                    |                                     |
|---|------------------------------------|-----------------------------------|-----------------------------------|--|-----------------------------------|---|------------------------------------|-------------------------------------|---|------------------------------------|------------------------------------|-------------------------------------|
|   | A                                  | B                                 | C                                 | D                                      | E                                 | A-B   | B-C                                | A-C                                 | A-D   | B-D                                | B-E                                | C-E                                 |
|   | 1980-1989                          | 1990-1999                         | 2000-09                           | 1985-1994                              | 1995-2004                         |   |                                    |                                     |   |                                    |                                    |                                     |
| Initial private sector credit (lnPSC_1)         | 0.5577<br>[0.0213]<br>{26.13}***   | 0.7830<br>[0.0574]<br>{13.65}***  | 0.9892<br>[0.0207]<br>{47.66}***  | 0.7256<br>[0.0176]<br>{41.22}***       | 0.8917<br>[0.0209]<br>{42.58}***  | -0.2254<br>[0.0360]<br>{-6.25}***                               | -0.2061<br>[0.0366]<br>{-5.63}***  | -0.4315<br>[0.0006]<br>{-731.37}*** | -0.1680<br>[0.0037]<br>{-44.91}***                          | 0.0574<br>[0.0398]<br>{1.44}       | -0.1086<br>[0.0364]<br>{-2.98}**   | 0.0975<br>[0.0002]<br>{513.26}***   |
| Migrant remittances (lnREMPC)                   | 0.0429<br>[0.0060]<br>{7.14}***    | -0.0350<br>[0.0054]<br>{-6.50}*** | 0.0684<br>[0.0079]<br>{8.68}***   | 0.0000<br>[0.0040]<br>{0.01}           | 0.0115<br>[0.0038]<br>{3.04}***   | 0.0779<br>[0.0006]<br>{123.63}***                               | -0.1034<br>[0.0025]<br>{-41.36}*** | -0.0255<br>[0.0019]<br>{-13.64}***  | 0.0429<br>[0.0020]<br>{21.34}***                            | -0.0350<br>[0.0014]<br>{-25.36}*** | -0.0465<br>[0.0016]<br>{-29.24}*** | 0.0569<br>[0.0041]<br>{13.91}***    |
| Real GDP <i>per capita</i> (lnY_PPP)            | 0.2062<br>[0.0311]<br>{6.64}***    | 0.2643<br>[0.0664]<br>{3.98}***   | -0.0161<br>[0.0160]<br>{-1.00}    | 0.4641<br>[0.0157]<br>{29.54}***       | 0.2466<br>[0.0375]<br>{6.58}***   | -0.0581<br>[0.0353]<br>{-1.64}*                                 | 0.2804<br>[0.0503]<br>{5.57}***    | 0.2223<br>[0.0149]<br>{14.87}***    | -0.2579<br>[0.0154]<br>{-16.80}***                          | -0.1998<br>[0.0507]<br>{-3.94}***  | 0.0177<br>[0.0289]<br>{0.61}       | -0.2627<br>[0.0214]<br>{-12.29}***  |
| Rate of inflation (INF)                         | -0.0015<br>[0.0001]<br>{-10.69}*** | -0.0020<br>[0.0003]<br>{-6.91}*** | 0.0035<br>[0.0008]<br>{4.17}***   | -0.0027<br>[0.0003]<br>{-8.58}***      | -0.0003<br>[0.0002]<br>{-1.49}    | 0.0006<br>[0.0002]<br>{3.73}***                                 | -0.0055<br>[0.0005]<br>{-10.15}*** | -0.0049<br>[0.0007]<br>{-7.10}***   | 0.0012<br>[0.0002]<br>{7.29}***                             | 0.0007<br>[0.0000]<br>{34.00}***   | -0.0017<br>[0.0001]<br>{-19.11}*** | 0.0038<br>[0.0006]<br>{5.97}***     |
| Government expenditure (lnGXP)                  | -0.0232<br>[0.0190]<br>{-1.22}     | 0.2611<br>[0.0448]<br>{5.83}***   | 0.0407<br>[0.0053]<br>{7.74}***   | 0.1832<br>[0.0367]<br>{4.99}***        | 0.0213<br>[0.0260]<br>{0.82}      | -0.2843<br>[0.0257]<br>{-11.04}***                              | 0.2204<br>[0.0395]<br>{5.58}***    | -0.0639<br>[0.0138]<br>{-4.63}***   | -0.2064<br>[0.0177]<br>{-11.68}***                          | 0.0779<br>[0.0081]<br>{9.65}***    | 0.2397<br>[0.0188]<br>{12.78}***   | 0.0193<br>[0.0208]<br>{0.93}        |
| Real lending rate (RLR)                         | -0.0004<br>[0.0036]<br>{-0.10}     | 0.0045<br>[0.0003]<br>{13.26}***  | 0.0037<br>[0.0006]<br>{6.59}***   | 0.0054<br>[0.0004]<br>{12.67}***       | 0.0039<br>[0.0004]<br>{10.78}***  | -0.0048<br>[0.0033]<br>{-1.48}                                  | 0.0008<br>[0.0002]<br>{3.50}***    | -0.0041<br>[0.0030]<br>{-1.34}      | -0.0058<br>[0.0032]<br>{-1.82}**                            | -0.0009<br>[0.0001]<br>{-10.22}*** | 0.0005<br>[0.0000]<br>{18.00}***   | -0.0002<br>[0.0002]<br>{-1.18}      |
| Trade openness (lnOPN)                          | 0.0742<br>[0.0387]<br>{1.92}**     | -0.1762<br>[0.0410]<br>{-4.30}*** | -0.1105<br>[0.0206]<br>{-5.37}*** | -0.1608<br>[0.0177]<br>{-9.11}***      | -0.0102<br>[0.0207]<br>{-0.49}    | 0.2504<br>[0.0023]<br>{108.88}***                               | -0.0657<br>[0.0204]<br>{-3.22}***  | 0.1848<br>[0.0181]<br>{10.21}***    | 0.2350<br>[0.0210]<br>{11.18}***                            | -0.0154<br>[0.0233]<br>{-0.66}     | -0.1660<br>[0.0203]<br>{-8.19}***  | -0.1004<br>[0.0001]<br>{-772.08}*** |
| Constant term                                   | -0.5467<br>[0.1603]<br>{-3.41}***  | -1.3059<br>[0.3699]<br>{-3.53}*** | 0.3440<br>[0.1476]<br>{2.31}**    | -2.4567<br>[0.1810]<br>{-13.57}***     | -1.6032<br>[0.2969]<br>{-5.40}*** | 0.7592<br>[0.2096]<br>{3.62}***                                 | -1.6499<br>[0.2224]<br>{-7.42}***  | -0.8907<br>[0.0127]<br>{-69.91}***  | 1.9100<br>[0.0207]<br>{92.18}***                            | 1.1508<br>[0.1889]<br>{6.09}***    | 0.2973<br>[0.0730]<br>{4.07}***    | 1.9472<br>[0.1493]<br>{13.04}***    |
| Number of observations                          | 275                                | 298                               | 312                               | 289                                    | 308                               | 286.5   | 305                                | 293.5                               | 282   | 293.5                              | 303                                | 310                                 |
| Number of groups                                | 33                                 | 35                                | 35                                | 34                                     | 35                                | 34  | 35                                 | 34                                  | 34  | 35                                 | 35                                 | 35                                  |
| Number of instruments                           | 51                                 | 51                                | 51                                | 51                                     | 51                                | 51  | 51                                 | 51                                  | 51  | 51                                 | 51                                 | 51                                  |
| Wald statistic                                  | 35196.80***                        | 3216.39***                        | 10012.35***                       | 25567.30***                            | 12671.59***                       | 19206.8***  | 6614.37***                         | 22604.58***                         | 30382.05***   | 14391.85***                        | 7943.99***                         | 11341.97***                         |
| A-B 2 <sup>nd</sup> -order autocorrelation test | -1.347(0.18)                       | -0.180(0.86)                      | -1.300(0.19)                      | -1.374(0.17)                           | 0.574(0.57)                       | -   | -                                  | -                                   | -   | -                                  | -                                  | -                                   |
| Sargan over-identifying restrictions            | 17.785(0.99)                       | 27.700(0.97)                      | 27.102(0.97)                      | 20.915(0.99)                           | 28.602(0.95)                      | -   | -                                  | -                                   | -   | -                                  | -                                  | -                                   |

Source: Author's estimation

\*/\*\*/\*\* denotes significant at 10/5/1 per cent statistical levels respectively.

Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )

Table 7.5.1.2 reveals that, under favourable macroeconomic conditions, SSA countries with relatively higher levels of financial development measured in terms of private sector credit stand a better chance to develop their financial systems through higher remittance inflows. During periods of harsh economic conditions, the negative impact of migrant remittances on private sector credit allocation is higher (-0.0376) in countries with fairly developed financial markets than in those with relatively underdeveloped financial markets, given that, for the entire group, the impact was 0.0350. The finding that remittances directly contribute to financial development as far as private sector credit allocation is concerned, confirms the results obtained in previous studies notably those of Aggarwal *et al.* (2006), Shahbaz *et al.* (2007), Giuliano and Ruiz-Arranz (2009), Ambrosius (2011), and Gani and Sharma (2013).

**Table 7.5.1.2:** Comparative Analysis of Remittance Effects on Private Sector Credit in SSA

| Type of Duummy Effect           | 1980-1989               | 1990-1999                 | 2000-2009               | 1980-2009               |
|---------------------------------|-------------------------|---------------------------|-------------------------|-------------------------|
| Independent MDV                 | 0.2718 (17.55)***       | 0.1522 (9.73)***          | 0.1955 (11.32)***       | 0.2065 (12.33)***       |
| MDV-Remittance Interactive      | <b>0.0455 (3.31)***</b> | <b>-0.0376 (-2.81)***</b> | <b>0.0753 (7.46)***</b> | <b>0.0350 (6.86)***</b> |
| Number of observations          | 275                     | 298                       | 312                     | 952                     |
| Number of groups                | 33                      | 35                        | 35                      | 35                      |
| Instruments                     | 52                      | 52                        | 52                      | 442                     |
| Wald ( $\chi^2_{\frac{8}{8}}$ ) | 34185.29***             | 2321.43***                | 4212.82***              | 2881.88***              |
| Arellano-Bond Test              | -1.3538{0.1758}         | -0.3827{0.7019}           | -1.0641{0.2873}         | -0.7925{0.4280}         |
| Sargan Test ( $\chi^2_{(o)}$ )  | [43], 22.1234           | [43], 27.6027             | [43], 27.6188           | [443], 29.5662          |

Source: Author's estimation

Note: \*\*\* denotes statistical significance at 1 per cent respectively  
2-step robust z-statistics are in ( ); z-probabilities are in { }

As a final point, a mere academic exercise was undertaken to show that empirically, in comparison with robust static panel-data modelling, the estimated robust dynamic panel-data modelling of the impact of migrant remittance inflows on financial development in SSA over the period 1980-2009 actually produced more convincing results. The static panel-data version of the estimated impact of migrant remittance inflows on bank credit to the private sector in SSA over the period, 1980-2009, is reported in Table A7.4 in the Appendix. Static panel-data FE and RE models were estimated and the Hausman test was performed to select the estimated FE model as the better of the two in the empirical context of this estimation. When the Breusch-Pagan test for heteroskedasticity was carried out, it was revealed that, at 10 per cent level of statistical significance, the standard errors of the estimated conventional models are not homoscedastic, hence the need to re-estimate and rely upon heteroskedasticity-corrected robust estimations. By implication, the most reliable and efficient estimated result among the class of empirical static panel-data estimations in this very context is the estimated robust FE

model reported in Table A7.4. The reported  $R^2$  of 0.2365 implies that the empirical robust FE model estimating the impact of migrant remittance inflows on private sector credit in SSA has an overall explanatory power only 23.65 per cent. Thus, the overall performance of the empirical robust FE static panel-data model perform very poor since the percentage of the residuals sum of squares to the total sum of squares is as much as 76.35. The reported  $z$ -statistics of the robust FE estimation show that, in SSA, migrant remittances, rate of inflation, and government expenditure do not explain bank credit to the private sector whilst trade openness and real GDP *per capita* PPP do positively impact on private sector credit. To a reasonable extent, the results of the robust FE static panel-data estimation (as reported in Table A7.4) validate the results of the two-step sys-GMM dynamic panel-data estimation (reported in Table 7.5.1) as far as the impact of remittance inflows on private sector credit is concerned for the overall period, 1980-2009 as in both cases, though with contradictory signs, migrant remittances do not statistically influence bank credit allocation to the private sector in SSA.

#### 7.4.4.2 The Impact of Remittances on $M_2/GDP$ in SSA

Table 7.5.2 presents the result of a consistent positive trend of the impact of remittances on  $M_2/GDP$  as a complementary indicator of financial development over the past three decades. In the early years of the adoption of financial liberalisation programmes (i.e. in the 1980s), the impact of a 100 percentage rise in migrant remittances *per capita* on  $M_2/GDP$  was approximately negative 5.16 per cent. The impact of remittances on  $M_2/GDP$  turned positive (3.41 per cent) in the 1990s and this positive impact became even more robust (4.08 per cent) in the 2000s. Therefore, it can be concluded that the contribution of migrant remittances to financial development when measured as  $M_2/GDP$ , was increasingly positive and robust in SSA between 1980 and 2009.

**Table 7.5.2: Impact of Remittances on Broad Money-GDP Ratio in SSA, 1980-2009**

|   | Group variable: Country Code        |                                   |                                   | Time variable: Year              |
|---|-------------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure          |                                     |                                   |                                   |                                  |
|   | <b>1980-1989</b>                    | <b>1990-1999</b>                  | <b>2000-2009</b>                  | <b>1989-2009</b>                 |
| Lagged dependent variable (lnM <sub>2</sub> /GDP <sub>-1</sub> )                  | 0.6088<br>(37.65)***                | 0.5812<br>(25.61)***              | 0.8990<br>(18.45)***              | 0.6884<br>(12.73)***             |
| <b>Migrant remittances (lnREMPC)</b>  | <b>-0.0516</b><br><b>(-4.94)***</b> | <b>0.0341</b><br><b>(8.06)***</b> | <b>0.0408</b><br><b>(5.39)***</b> | <b>0.0058</b><br><b>(2.34)**</b> |
| Human capital accumulation (lnHCA)  | -0.1847<br>(-4.62)***               | 0.0814<br>(4.32)***               | 0.0166<br>(0.55)                  | 0.1316<br>(3.92)***              |
| Real GDP <i>per capita</i> (lnY_PPP)  | 0.4234<br>(7.05)***                 | 0.0403<br>(1.65)*                 | -0.2401<br>(14.19)***             | 0.0446<br>(0.83)                 |
| Official development assistance (lnODA)   | -0.0228<br>(-1.00)                  | 0.0135<br>(1.55)                  | 0.0121<br>(2.15)**                | 0.0175<br>(2.84)***              |
| Rate of inflation (INF)   | 0.0056<br>(6.08)***                 | -0.0007<br>(-2.72)***             | 0.0025<br>(7.48)***               | 0.0015<br>(5.23)***              |
| Government expenditure (lnGXP)  | -0.1558<br>(-3.04)***               | 0.2322<br>(11.33)***              | 0.0652<br>(16.52)***              | 0.1016<br>(1.93)*                |
| Real exchange rate (lnRXR)  | 0.0621<br>(3.54)***                 | -0.0109<br>(-0.87)                | -0.0043<br>(-0.33)                | 0.0254<br>(2.15)**               |
| Real lending rate (RLR)   | 0.0135<br>(9.05)***                 | 0.0028<br>(10.01)***              | 0.0068<br>(17.72)***              | 0.0064<br>(25.79)***             |
| Constant term   | -1.1817<br>(-2.40)**                | 0.0500<br>(0.19)                  | 1.4746<br>(4.15)***               | -0.2946<br>(-1.03)               |
| Number of observations  | 266                                 | 298                               | 312                               | 942                              |
| Number of groups  | 32                                  | 35                                | 35                                | 35                               |
| Number of instruments   | 53                                  | 53                                | 53                                | 443                              |
| Wald $\chi^2_{[9]}$   | 328835.92***                        | 7618.21***                        | 2337.83***                        | 3042.13***                       |
| Arellano-Bond test for zero autocorrelation in first-difference errors (order 2): | -0.9692{0.332}                      | -1.5505{0.121}                    | -1.8405{0.066}                    | -1.0435{0.296}                   |
| Sargan test of over-identifying restrictions:                                     |                                     |                                   |                                   |                                  |
| $\chi^2_{[•]}$  | [43], 18.4130                       | [43], 29.0973                     | [43], 28.5025                     | [433], 27.0762                   |

**Source:** Author's estimation *\*/\*\*/\*\* denotes statistical significance at 10/5/1 per cent respectively*  
*2-step robust z-statistics in ( ), z-probabilities in { }*

In a similar fashion, remittance-receiving SSA countries within the sub-region with relatively higher levels of liquidity received an overall higher impact of 0.0207 remittances over the entire study period (Table 7.5.2.1), compared to the general impact of 0.0058 for the full sample (Table 7.5.2). This also holds for the most recent decade, 2000-2009. Nevertheless, in the early years of financial liberalisation, the impact on remittances on SSA countries with relatively higher levels of  $M_2/GDP$  was lower (-2.98 per cent and 1.90 per cent for the 1980s and the 1990s respectively) than the average impact of -5.16 per cent and 3.41 per cent for the entire sampled 36 SSA countries.

**Table 7.5.2.1:** Comparative Analysis of Remittance Effects on Broad Money-GDP Ratio in SSA

| Type of Dummy Effect          | 1980-1989          | 1990-1999        | 2000-2009        | 1980-2009        |
|-------------------------------|--------------------|------------------|------------------|------------------|
| Independent Dummy             | 0.2258 (3.50)***   | 0.1349 (9.03)*** | 0.1710 (9.71)*** | 0.1950 (6.54)*** |
| MDV-Remittance Interactive    | -0.0298 (-4.50)*** | 0.0190 (4.90)*** | 0.0513 (8.27)*** | 0.0207 (4.40)*** |
| Number of observations        | 266                | 298              | 312              | 942              |
| Number of groups              | 32                 | 35               | 35               | 35               |
| Instruments                   | 54                 | 54               | 54               | 444              |
| Wald ( $\chi^2_{10}$ )        | 36401.62 ***       | 9001.79***       | 11688.22***      | 11632.52***      |
| Arellano-Bond Test            | -1.0068{0.3140}    | -1.4279{0.1533}  | -1.6676{0.0954}* | -1.0420{0.2974}  |
| Sargan Test ( $\chi^2_{10}$ ) | [43], 18.5894      | [43], 28.9679    | [43], 26.7313    | [443], 22.2294   |

Source: Author's estimation

Note: \*(\*\*\*) denotes statistical significance at 10(1) per cent respectively  
2-step robust z-statistics in ( ); z-probabilities in { }

The finding that migrant remittances generally impact positively on  $M_2 / GDP$  is in consonance with the results obtained in earlier related studies reviewed in this study (see Table A7.1).

In Table 7.5.2.2, the results of the statistical differences and stability of the estimated decade-based coefficients of the impact of migrant remittances on broad money as a ratio of GDP ( $M_2/GDP$ ) in SSA are reported. Columns A-B, B-C and A-C report the 'differential' z-statistics of the statistical differences between the estimated coefficients of 1980s and 1990s, 1990s and 2000s, and 1980s and 2000s respectively. Under the working hypothesis that the estimated decade-based coefficients truly differ from each other statistically when the computed 'differential' z-statistics centre further away from zero, the results suggest that the estimated decade-based coefficients are actually different from each other at five per cent level of statistical significance. Thus, international migrant remittance inflows have a decade-based changing impact on  $M_2/GDP$  in SSA between 1980 and 2009. In fact, for the period 1980-2009, the changing impact of the other determinants of  $M_2/GDP$  as reported in Table 7.5.2 generally holds.

**Table 7.5.2.2:** Results of Parameter Evolution and Instability Tests for Impact of Migrant Remittances on Broad Money Supply in SSA

|   | Estimated Decade-Based Results    |                                  |                                    | Decade-Based Rolling Estimated Results |                                   | Non-Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                    | Overlapping Decade-Based Coefficient Stability Test Results |                                    |                                      |                                    |
|---|-----------------------------------|----------------------------------|------------------------------------|--|-----------------------------------|---|------------------------------------|------------------------------------|---|------------------------------------|--------------------------------------|------------------------------------|
|   | A                                 | B                                | C                                  | D                                      | E                                 | A-B   | B-C                                | A-C                                | A-D   | B-D                                | B-E                                  | C-E                                |
|   | 1980-1989                         | 1990-1999                        | 2000-2009                          | 1985-1994                              | 1995-2004                         |   |                                    |                                    |   |                                    |                                      |                                    |
| Lagged dependent variable (lnM <sub>t</sub> /GDP) | 0.6088<br>[0.0162]<br>{37.65}***  | 0.5812<br>[0.0227]<br>{25.61}*** | 0.8990<br>[0.0487]<br>{18.45}***   | 0.1661<br>[0.0061]<br>{27.30}***       | 0.9227<br>[0.0318]<br>{29.02}***  | 0.0276<br>[0.0065]<br>{4.24}***                                 | -0.3178<br>[0.0260]<br>{-12.2}***  | -0.2902<br>[0.0326]<br>{-8.91}***  | 0.4428<br>[0.0101]<br>{43.88}***                            | 0.4151<br>[0.0166]<br>{24.99}***   | -0.3414<br>[0.0091]<br>{-37.52}***   | -0.0236<br>[0.0169]<br>{-1.40}     |
| Migrant remittances (lnREMPC)                     | -0.0516<br>[0.0105]<br>{-4.94}*** | 0.0341<br>[0.0042]<br>{8.06}***  | 0.0408<br>[0.0076]<br>{5.39}***    | -0.0239<br>[0.0041]<br>{-5.83}***      | 0.0020<br>[0.0060]<br>{0.34}      | -0.0857<br>[0.0062]<br>{-13.809}***                             | -0.0067<br>[0.0033]<br>{-2.00}**   | -0.0924<br>[0.0029]<br>{-32.14}*** | -0.0277<br>[0.0063]<br>{-4.37}***                           | 0.0581<br>[0.0001]<br>{460.95}***  | 0.0321<br>[0.0017]<br>{18.52}***     | 0.0388<br>[0.0016]<br>{24.23}***   |
| Human capital accumulation (lnHCA)                | -0.1847<br>[0.0400]<br>{-4.62}*** | 0.0814<br>[0.0188]<br>{4.32}***  | 0.0166<br>[0.0302]<br>{0.55}       | -0.2430<br>[0.0195]<br>{-12.45}***     | 0.1778<br>[0.0258]<br>{6.90}***   | -0.2661<br>[0.0212]<br>{-12.58}***                              | 0.0648<br>[0.0113]<br>{5.72}***    | -0.2013<br>[0.0098]<br>{-20.50}*** | 0.0583<br>[0.0205]<br>{2.85}**                              | 0.3244<br>[0.0007]<br>{470.12}***  | -0.0964<br>[0.0069]<br>{-13.89}***   | -0.1612<br>[0.0044]<br>{-36.72}*** |
| Real GDP per capita (lnY_PPP)                     | 0.4234<br>[0.0601]<br>{7.05}***   | 0.0403<br>[0.0244]<br>{1.65}*    | -0.2401<br>[0.0169]<br>{-14.19}*** | -0.1948<br>[0.0148]<br>{-13.15}***     | -0.1756<br>[0.0246]<br>{-7.14}*** | 0.3832<br>[0.0356]<br>{10.75}***                                | 0.2804<br>[0.0075]<br>{37.43}***   | 0.6636<br>[0.0431]<br>{15.38}***   | 0.6182<br>[0.0453]<br>{13.66}***                            | 0.2350<br>[0.0096]<br>{24.48}***   | 0.2159<br>[0.0002]<br>{1199.28}***   | -0.0645<br>[0.0077]<br>{-8.41}***  |
| Official development assistance (lnODA)           | -0.0228<br>[0.0228]<br>{-1.00}    | 0.0135<br>[0.0087]<br>{1.55}     | 0.0121<br>[0.0056]<br>{2.15}**     | -0.0151<br>[0.0120]<br>{-1.25}         | 0.0082<br>[0.0038]<br>{2.13}**    | -0.0363<br>[0.0141]<br>{-2.58}**                                | 0.0014<br>[0.0031]<br>{0.46}       | -0.0348<br>[0.0172]<br>{-2.03}**   | -0.0077<br>[0.0107]<br>{-0.72}                              | 0.0285<br>[0.0034]<br>{8.52}***    | 0.0053<br>[0.0048]<br>{1.09}         | 0.0039<br>[0.0017]<br>{2.20}**     |
| Rate of inflation (INF)                           | 0.0056<br>[0.0009]<br>{6.08}***   | -0.0007<br>[0.0003]<br>{-2.72}** | 0.0025<br>[0.0003]<br>{7.48}***    | 0.0041<br>[0.0002]<br>{25.40}***       | 0.0005<br>[0.0004]<br>{1.33}      | 0.0063<br>[0.0007]<br>{9.37}***                                 | -0.0032<br>[0.0001]<br>{-40.13}*** | 0.0031<br>[0.0006]<br>{5.20}***    | 0.0015<br>[0.0008]<br>{1.91}**                              | -0.0048<br>[0.0001]<br>{-53.67}*** | -0.0012<br>[0.0001]<br>{-10.67}***   | 0.0020<br>[0.0000]<br>{67.87}***   |
| Government expenditure (lnGXP)                    | -0.1558<br>[0.0513]<br>{-3.04}*** | 0.2322<br>[0.0205]<br>{11.33}*** | 0.0652<br>[0.0039]<br>{16.52}***   | 0.0909<br>[0.0112]<br>{8.15}***        | 0.0244<br>[0.0200]<br>{1.22}      | -0.3880<br>[0.0307]<br>{-12.62}***                              | 0.1671<br>[0.0166]<br>{10.09}***   | -0.2210<br>[0.0473]<br>{-4.67}***  | -0.2467<br>[0.0401]<br>{-6.15}***                           | 0.1413<br>[0.0093]<br>{15.13}***   | 0.2079<br>[0.0005]<br>{392.20}***    | 0.0408<br>[0.0160]<br>{2.55}**     |
| Real exchange rate (lnRXR)                        | 0.0621<br>[0.0175]<br>{3.54}***   | -0.0109<br>[0.0125]<br>{-0.87}   | -0.0043<br>[0.0132]<br>{-0.33}     | -0.1896<br>[0.0124]<br>{-15.24}***     | 0.0059<br>[0.0099]<br>{0.60}      | 0.0730<br>[0.0050]<br>{14.61}***                                | -0.0066<br>[0.0006]<br>{-10.97}*** | 0.0665<br>[0.0044]<br>{15.10}***   | 0.2518<br>[0.0051]<br>{49.27}***                            | 0.1787<br>[0.0001]<br>{1624.64}*** | -0.0169<br>[0.0026]<br>{-6.36}***    | -0.0103<br>[0.0032]<br>{-3.16}***  |
| Real lending rate (RLR)                           | 0.0135<br>[0.0015]<br>{9.05}***   | 0.0028<br>[0.0003]<br>{10.01}*** | 0.0068<br>[0.0004]<br>{17.72}***   | 0.0071<br>[0.0002]<br>{35.18}***       | 0.0040<br>[0.0003]<br>{14.38}***  | 0.0107<br>[0.0012]<br>{8.77}***                                 | -0.0039<br>[0.0001]<br>{-39.30}*** | 0.0068<br>[0.0011]<br>{6.04}***    | 0.0064<br>[0.0013]<br>{4.93}***                             | -0.0043<br>[0.0001]<br>{-53.63}*** | -0.0011<br>[0.0000]<br>{-1140.00}*** | 0.0028<br>[0.0001]<br>{27.90}***   |
| Constant term                                     | -1.1817<br>[0.4924]<br>{-2.40}**  | 0.0500<br>[0.2634]<br>{0.19}     | 1.4746<br>[0.3553]<br>{4.15}***    | 5.4343<br>[0.1521]<br>{35.72}***       | 0.8237<br>[0.2416]<br>{3.41}***   | -1.2318<br>[0.2290]<br>{-5.38}***                               | -1.4246<br>[0.0920]<br>{-15.49}*** | -2.6564<br>[0.1370]<br>{-19.38}*** | -6.6160<br>[0.3402]<br>{-19.45}***                          | -5.3842<br>[0.1112]<br>{-48.41}*** | -0.7736<br>[0.0218]<br>{-35.45}***   | 0.6510<br>[0.1138]<br>{5.72}***    |
| Number of observations                            | 266                               | 298                              | 312                                | 284                                    | 308                               | 282   | 305                                | 289                                | 275   | 291                                | 303                                  | 310                                |
| Number of groups                                  | 32                                | 35                               | 35                                 | 35                                     | 35                                | 34  | 35                                 | 34                                 | 34  | 35                                 | 35                                   | 35                                 |
| Number of instruments                             | 53                                | 53                               | 53                                 | 53                                     | 53                                | 53  | 53                                 | 53                                 | 53  | 53                                 | 53                                   | 53                                 |
| Wald statistic                                    | 328835.92***                      | 7618.21***                       | 2337.83***                         | 6078.18***                             | 12480.96***                       | 168227.07***  | 4978.02***                         | 165586.88***                       | 167457.05***  | 6848.20***                         | 10049.56***                          | 7409.40***                         |
| A-B 2 <sup>nd</sup> -order autocorrelation test   | -0.969(0.33)                      | -1.551(0.12)                     | -1.841(0.07)                       | -1.146(0.252)                          | -2.009(0.045)                     | -   | -                                  | -                                  | -   | -                                  | -                                    | -                                  |
| Sargan over-identifying restrictions              | 18.413(0.99)                      | 29.097(0.95)                     | 28.503(0.956)                      | 23.018(0.995)                          | 26.477(0.978)                     | -   | -                                  | -                                  | -   | -                                  | -                                    | -                                  |

Source: Author's estimation

\*/\*\*/\*\*\* denotes significant at 10/5/1 per cent statistical levels respectively.

Standard errors in [ ], z-statistics in { },  $\chi^2$  probabilities in ( )

As reported in columns A-D, B-D, B-E and C-E of Table 7.5.2.2, the differences in the estimated decade-based coefficients of international migrant remittance inflows are statistically consistent showing coefficient instability across the three decades within 99 per cent confidence interval. Indeed, the evolution in the estimated decade-based coefficients of all other explanatory variables reported in Table 7.5.2.2 is consistently and statistically unstable across the three decades between 1980 and 2009. The only exception to this general observation is the estimates of official development assistance (ODA) as shown in columns A-D and B-E in Table 7.5.2.2. In conclusion, the estimated decade-based coefficients reported in Table 7.5.2.2 are actually different and this evolution is statistically consistent, implying parameter instability from decade to decade over the 1980-2009 period.

Finally, to satisfy the intellectual curiosity of persons who may be interested in seeing how migrant remittance inflows affected broad money-GDP ratio in SSA between 1980 and 2009 within the confines of static panel-data analytical framework, FE and RE models were estimated. The static panel-data empirical results of the impact of international migrant remittance inflows on broad money as a ratio of GDP in SSA over the period, 1980-2009 are presented in Table A7.5. Out of the four static panel-data estimations conducted comprising conventional FE, conventional RE, robust FE and robust RE estimations, the Hausman specification test statistic and the Breusch-Pagan heteroskedasticity test statistic jointly suggest that the most efficient and reliable result in the context of static estimations is reported under robust GLS RE empirical model presented in Table A7.5 in the Appendix. Although in the presence of heteroskedasticity the conventional RE results indicate that migrant remittance inflows, real GDP *per capita* PPP, human capital accumulation, and real lending rate positively stimulate variations in broad money-GDP ratio, government expenditure and real exchange rate negatively affect broad money-GDP ratio with reference to SSA between 1980 and 2009. However, when the robust RE estimation to correct heteroskedasticity was undertaken, besides human capital accumulation, none of the explanatory variables statistically impact on broad money-GDP ratio, thereby sharply contradicting the results of the dynamic panel-data estimation by sys-GMM as reported under Table 7.5.2.

## 7.5 CONCLUSIONS AND POLICY RECOMMENDATIONS

This chapter explored the impact of migrant remittances on various aspects of economic development, *viz.* poverty, income inequality, unemployment, labour participation, labour productivity, human welfare, educational attainment, life expectancy, and financial development in SSA. In general, an affirmative common answer to the research questions of this chapter is hereby given, that, migrant remittance inflows have a positive developmental impact on SSA, with no evidence for moral hazard effects on labour market outcomes. Based on the empirical findings, this study concludes that, in remittance-receiving SSA countries:

- i. Remittances have huge potential for promoting economic development by way of helping to reduce poverty, but not necessarily income inequality. In fact, there is some evidence for an income inequality-equalising effect of remittances, but this is not statistically significant at the conventional levels, probably because the amount remittances received per migrant is too low in the sub-region. In countries with a relatively higher incidence of poverty and income inequality, remittances actually exacerbate poverty and income inequality.
- ii. Remittances contribute directly to reducing the rate of unemployment. However, in countries with mild unemployment problems, increased inflows of remittances alone may not be sufficient to reduce or solve the perennial frictions in their labour markets. It is in countries with relatively 'unmanageable' unemployment rates that migrant remittances directly contribute more substantially to reducing the unemployment rates.
- iii. Although, in general, remittances have no long-run impact on labour force participation, there are prospects that if more remittances are received, they can actually contribute positively to higher labour force participation in countries with relatively higher rates of labour market participation. In countries where labour productivity rates are relatively high, remittances impact positively on productivity. In either case, the findings of this study indicate that migrant remittance inflows to SSA do not lead to moral hazard effects in the labour market, probably because the amount of remittances received by the sub-region is too low for recipients to solely rely on as a means of livelihood.
- iv. Over the past three decades, remittances contributed significantly to promoting human welfare, educational attainment and life expectancy. But, whereas remittances promoted higher general human welfare in countries with relatively lower HDI and

lower rates of educational attainment, it is in countries with relatively higher years of life expectancy that remittances contributed more to increasing life expectancy. This may be due to the fact that in very poor countries, availability of quality healthcare facilities and access to modern medical services are more challenging. This implies that in the absence of quality healthcare infrastructure and motivated professionals, migrant remittances may not contribute significantly to increasing life expectancy in remittance-recipient countries.

- v. Since the adoption of financial liberalisation programmes in the 1980s, migrant remittances have been stimulating financial development through higher private sector credit and broad money to GDP ratio. However, without a sound macroeconomic policy environment, the impact of remittances on financial development can be negligible and even negative under extreme adverse economic conditions. In the contemporary world, the higher the level of financial development of a country, the more robust the impact of migrant remittances on financial market development in response to macroeconomic conditions.
- vi. The contribution of remittances to financial development has been increasing steadily over the years under sound macroeconomic policy environment. The contribution of remittances to financial development in the recent past decade (2000-2009) has been greater than at the onset of adopting financial liberalisation programme in the 1980s. This trend points to the fact that there is a higher prospect of migrant remittances contributing to the development of financial markets in SSA provided prudent policy measures are put in place to stabilise the macroeconomic environment.

The main implications of the conclusions<sup>158</sup> enumerated above are that migrant remittances promoted economic development in SSA over the past three decades, but the optimal contribution of remittances to the development of SSA has not been realised, mainly because the sub-region failed to: (i) mobilise adequate remittances from its migrants; and (ii) create the ideal macroeconomic policy environment for remittances to contribute effectively towards economic development. This is because even though remittances have a potential to engender

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<sup>158</sup> It is important to note that with regard to the conclusions based on the distributive effects of the comparative analyses in particular, given that higher unofficial remittances are more likely to be received in poorer countries with weaker institutions and financial infrastructure, the developmental-impact of remittances in these countries could be underestimated if only official remittances are used, as happened in the case of this study because data on unofficial remittances are not available over the study period and across the sampled countries.

economic development in SSA, the specific socioeconomic and geopolitical conditions of the migrant-home country, by and large, determine the extent to which the benefits of remittances can be exploited.

Consequently, there is the need to attract optimal official remittances in order to realise the full developmental-impact of remittances in SSA. In addition to the specific policy measures that can be put in place to attract higher inflows of official remittances noted in the preceding chapters, this study recommends the need for governments to stabilise the macroeconomic policy environment by ensuring lower and stable prices, creating an ideal investment climate, and being committed to pursuing pro-growth policies which have equitable distributive effects. Besides pursuing sound macroeconomic policies, this study prescribes the following specific policies towards enhancing the developmental-impact of migrant remittances in SSA:

- i. Pursue complementary development strategies towards eliminating market distortions in favour of the rich, so as to reduce poverty, income inequality and higher unemployment rates. Poverty alleviation policies such as capacity building, vocational training, access to venture capital and microcredit, and other SME incentive packages through which the economically-disadvantaged and the vulnerable groups such as deprived rural dwellers and marginalised women stand a better chance to gain and improve upon their welfare, can be useful in enhancing the poverty-alleviating and inequality-reducing effects of remittances.
- ii. Adopt an integrated economic development programme in which fiscal and monetary policies are well-coordinated in a manner that will ensure that progressive price and income policies are designed and implemented towards bridging the gap between high-income and low-income earners at all levels of economic development.
- iii. Enhance the institutional capacity of banks and other financial institutions including social security and pension funds, credit unions and microfinance institutions so that these institutions can develop innovative products for the Diaspora population and at the same time ensure optimal financial inclusiveness. In this way, more official remittances can be received and managed more effectively for sustainable socioeconomic development.

- iv. Encourage the formation of vibrant and progressive migrant hometown associations in all major migrant host countries as a means to mobilise more remittances to finance development projects at the community level. Community-based projects financed by remittances are often of public nature and the benefits accrue to all users irrespective of income status and, whether or not, a family has an international migrant.
  
- v. Enhance the institutional capacity of local governments to enable them to design and implement cutting-edge attractive development programmes according to their unique culture, history, heritage, and to develop tourist attractions. Through this, effective social and business networks can be formed to facilitate the mobilisation of resources to finance critical development projects. Furthermore, through these networks a platform can be created to harness the intellectual capital of migrants for the benefit of their native countries.

APPENDIX 7

**Table A7.1:** Summary of Empirical Studies on the Impact of Remittances on Economic Development

| Author(s), Year             | Case Study  | Study Period  | Model & Estimation Method   | Variables Included  | Key Finding(s)   |
|-----------------------------|---|---|---|---|--|
| Glytsos (2002)              | Egypt, Greece, Jordan, Morocco, Portugal                            | 1969-1998   | OLS, simultaneous equations with distributed lag feature estimated by 2SLS      | <i>Dependent:</i> Private consumption expenditure, gross domestic investment (private and public) including changes in stocks, imports (M), disposable income comprising GDP and volume of remittances.<br><i>Explanatory:</i> GDP growth rate, government spending/GDP, cumulative gross domestic investment/GDP, goods exports/GDP, real migrant remittances proxied by (WR+CE+MT)/CPI  | The impact of remittances on all development outcome indicators (dependent variables) except investment in Egypt is positive for both short- and long run and so are the distributed time effects with only one negative interim multiplier effect in Morocco for consumption and income but with positive overall effects in each case.   |
| Adams and Page (2005)       | 71 Developing countries   | New dataset collected by authors (1980-1999) depending upon country-specific availability | OLS and 1 <sup>st</sup> -Stage IV estimation                                    | <i>Dependent:</i> (Log of) Poverty (less than US\$1 per person; gap; squared gap), income inequality (Gini index).<br><i>Explanatory:</i> (Log of) Remittances <i>per capita</i> , <i>per capita</i> GDP PPP, regional dummies, survey mean income <i>per capita</i> GDP, distance from remittance-sending area, government stability, percentage of population over 25 years with secondary education.   | Remittances, just as migration, significantly reduce the incidence, depth and severity of poverty in developing countries. A 10 percentage rise in international remittances leads to a 3.5 percentage decrease in the share of the population living in poverty.  |
| López-Córdova (2005)        | Mexican municipalities (a survey data of more than 2400 households) | 2000 cross-sectional data   | 2SLS estimation with remittances as an instrumental variable                    | <i>Dependent:</i> Various developmental outcome variables including poverty, educational attainment, infant mortality, illiteracy rate and healthcare indicators.<br><i>Explanatory:</i> Remittances received by households. Control variables (squared remittances, distance between US-Mexico border from municipalities, historical migration rates, municipal <i>per capita</i> income, percentage of population in rural communities, fraction of indigenous people, Gini coefficient, share of employment in agriculture and in government sector, unemployment rate, homicide rate at municipal level, and governance. | An increase in the fraction of households receiving international remittances is positively correlated with higher schooling, healthcare indicators and reduced poverty. International remittances lead to improved welfare, reduced infant mortality and illiteracy among children aged 6-14 while increasing school attendance among the latter group. Also, poverty levels and marginalisation index decline. |
| Acosta <i>et al.</i> (2006) | 10 LAC countries  | Cross-sectional data based on most recent National  | Cross-sectional country-specific data analysis by OLS and Instrumental variable | <i>Dependent:</i> (Log of) Poverty (headcount, gap, squared gap).<br><i>Explanatory:</i> (Log of) Remittances (WR+CE+MT) <i>per capita</i> or Remittances/GDP, GDP <i>per capita</i> or   | Remittances do not have a significant inequality-alleviating effect, but they do reduce poverty headcounts significantly. A percentage rise in remittance ratio to   |

|                                 |  |                              |  |  |   |
|---------------------------------|--|------------------------------|--|--|---|
|                                 |  | Household Survey Data (NHSD) | estimation   | household mean income, Gini index, remittances*regional dummy variable.<br><u>Instrumental variables</u> : Distance between home and host countries, percentage of population over age 25 that have completed secondary education, government stability, growth of sender countries weighted by distance, growth of sender countries weighted by stock of migrants of receiving countries  | GDP reduces the fraction of population living in poverty by about 0.4 per cent.   |
| Aggarwal <i>et al.</i> (2006)   | 99 developing countries  | 1975-2003                    | Panel FE, RE and system dynamic GMM estimations  | <i>Dependent</i> : Financial development (either bank credit to private sector/GDP or bank deposit/GDP).<br><i>Explanatory</i> : Dynamic Panel Model (Log of) Remittances(WR+CE+MT)/GDP, lag of dependent variable, control variables (real GDP, real GDP <i>per capita</i> , inflation, current and capital account openness, dummy for dual exchange rate regimes).<br>2 <sup>nd</sup> set of control variables are exports/GDP, AID/GDP, FDI/GDP, portfolio equity/GDP. | Remittances have positive impact on financial development and this finding is robust for all estimations even after accounting for all possible forms of endogeneity.   |
| Drinkwater <i>et al.</i> (2006) | 19 remittance-dependent countries (remittances of at least 1 per cent of GDP)                          | 1976-2003 (unbalanced panel) | OLS and FE modelling   | <i>Dependent</i> : Unemployment rate; investment (GCF)/GDP.<br><i>Explanatory</i> : Remittances (WR+CE+MT)/GDP, M <sub>2</sub> /GDP, openness (X+M)/GDP, fiscal policy (budget deficit)/GDP, uncertainty (5-year moving average of CPI), economic activity (real GDP growth rate), real interest rate, AID/GDP   | Remittances help in solving credit constraint problems in recipient countries. Remittances have a small negative effect on unemployment, but a significant positive effect on investment. The positive investment effect outweighs the negative search income effect and so remittances can reduce unemployment rate in the long run. |
| Faini (2006a)                   | 37 countries with migrants in Europe as reported in the European Community Households Survey 1994-2001 | 1990-2000 (Pooled data)      | Aggregate data modelling and pooled data modelling. Linear, Log-linear functional form estimations. Log of distance between home-country and host-country used as an instrument in a re-estimated IV model | <i>Dependent</i> : Remittances (WR+CE+MT)/population,<br><i>Explanatory</i> : Total migration/population, home-country income <i>per capita</i> , ratio of skilled migrants/population, <i>per capita</i> income*migration of skilled and unskilled workers.<br>In pooled-data regression, time dummy, and time dummy*migration stock included.  | Brain drain is associated with a smaller flow of remittances. Migration stock leads to higher inflow of remittances. Skilled migrants remit less, hence the cost of migration outweighs the benefit from remittances in migrant-exporting countries.  |
| De Leon-Manlagnit (2006)        | 40 developing countries  | 1975-2003                    | Single equation by OLS, 2SLS based on 5-year moving average data) with investment  | <i>Dependent</i> : Private household consumption/GDP; private household investment (GFC)/GDP<br><i>Explanatory</i> (consumption regression): Remittances   | Remittances have significant positive impact on private household consumption with or without interaction effects. Transitory remittance incomes not  |

|                              |  |   |   |   |   |
|------------------------------|--|---|---|---|---|
|                              |  |   | as IV   | (WR+CE+MT)/GDP, Control variables – domestic permanent income, bank credit/GDP, quasi money/GDP, economic openness (X+M)/GDP, current fiscal balance/GDP, remittances*GDP, transitory remittances*financial development (FDV) indicator, transitory remittances*openness, transitory remittances*FDV*openness.<br><br><i>Explanatory</i> (investment regression): Remittances (WR+CE+MT)/GDP, Control variables – lending rate, current fiscal balance/GDP, transitory remittances*openness, permanent remittances*openness, openness*financial development indicator | significant in both models and so are all its interactive effects.  |
| Acosta <i>et al.</i> (2008a) | 10 LAC countries                         | Household survey data 2000-2004                       | Dynamic panel-data modelling by GMM   | <i>Dependent:</i> Log difference in inequality (Gini index)<br><i>Explanatory:</i> (Log of) Gini index <sub>t-1</sub> , remittances (WR+CE+MT) but with some exceptions at time <sub>t-1</sub> , average years of secondary education of the female population <sub>t-1</sub> , average years of secondary education of the male population <sub>t-1</sub> , price of capital <sub>t-1</sub> , remittances <sub>t-1</sub> *LAC regional dummy or remittances in LAC   | Remittances reduce income inequality.   |
| Jongwanich (2007)            | 17 Asia-Pacific developing countries     | 1993-2003   | Panel IV-FE modelling of poverty and human capital development functions. Dynamic panel-data modelling of investment function by system GMM | <i>Dependent:</i> Poverty (headcount ratio of US\$1 per day)<br><i>Explanatory:</i> Economic growth, inequality, remittances (WR+CE+MT)/GDP and control variables (human capital, inflation, trade openness).<br>Human capital model: initial income and remittances/GDP.<br>Investment model: Lag of investment (GFCF)/GDP, growth, openness, inflation, remittances, and real interest rate.  | Remittances have significant impact on poverty reduction through increasing income, smoothing consumption and easing capital constraints of the poor.                                   |
| Shahbaz <i>et al.</i> (2007) | Pakistan                                 | 1971-2001   | ARDL and Johansen co-integration approach   | <i>Dependent:</i> Log of financial development proxied by private sector credit/GDP<br><i>Explanatory:</i> (Log of) Remittances(WR+CE+MT)/GDP, real GNP <i>per capita</i> , CPI, exports  | Remittances promote financial development in the long run, and although remittances carry a positive sign, statistically, they are not a short-run determinant of financial development |
| Toxopeus and Lensink (2007)  | 64 developing countries including 10 SSA | 2001-2005 (unbalanced data mostly starting from 2003) | Single equation by OLS  | <i>Dependent:</i> Share of households with bank accounts as a proxy for financial inclusion<br><i>Explanatory:</i> Log of remittances <i>per capita</i> ; governance index; population density; log of GDP; GDP <i>per capita</i> ; communication infrastructure; concentration ratio; credit   | Remittances have a development impact through their positive effects on financial inclusion.  |

|                                    |   |  |  |  |   |
|------------------------------------|---|--|--|--|---|
|                                    | countries   |  |  | information index; share of assets in government-owned banks; restrictions on bank activities; requirements for entry into banking   |   |
| Acosta <i>et al.</i> (2008b)       | 101 developing countries  | 1970-2003  | System GMM estimation of a dynamic panel model   | <i>Dependent:</i> Log of changes in Gini index ( $g_t - g_{t-1}$ )<br><i>Explanatory:</i> (Log of) Initial inequality ( $g_{t-1}$ ), one lag remittances/GDP ( $rem_{t-1}$ ), ( $rem_{t-1}$ )*LAC regional dummy. Control variables: average years of secondary education of female and male population, <i>per capita</i> income, distance between host country and home country, market distortions proxied by price of investment goods.  | Generally, remittances contribute to improved higher income and inequality. In LAC. Remittances either reduce or have no impact on inequality as a one percentage increase in remittances lead to a decrease in the number of persons living in poverty by 0.4 per cent.  |
| Nguyen (2008)                      | Vietnam   | National Survey Data 2002, 2004 on 4008 households | Panel FE estimation  | <i>Dependent:</i> Outcome variable (household income, consumption <i>per capita</i> , income inequality (Gini index, Theil's L index, Theil's T index), poverty (headcount index, gap and squared gap)<br><i>Explanatory:</i> Secondary school enrolment, number of dependants, household size, squared household size, type of employment of household head, locality, domestic remittances, type of residential apartment, international remittances   | Remittances increase household income and consumption remarkably, and although they help decrease poverty marginally, there is also evidence for marginal increase in income inequality.  |
| Ponce (2008)                       | 937 Households in Ecuador (National Living Standard Measurement Survey) | 2006   | Several estimations of single equation modelling OLS and 2SLS using remittances as instrumental variable | <i>Dependent:</i> Development outcome variables (school enrolment of children aged 6-15; child malnutrition; respiratory diseases and diarrhoea infection rate among children under 5 years; access to health services; log of <i>per capita</i> consumption; log of consumption of food; log of educational expenditure; log of health expenditure)<br><i>Explanatory:</i> Individual demographic features such as age, sex, educational attainment, ethnicity of household head, and monthly remittances received by household | Remittances have positive effect on consumption, and access to education and healthcare. Remittances lead to higher probability of children attending private schools. Remittances increase consumption by about 9 per cent. If remittances increase by US\$10, educational spending increase by 18 per cent; and 25 per cent in case of healthcare expenditure |
| Acosta, Baerg and Mandelman (2009) | 109 developing and transition countries                                 | 1990-2003 (unbalanced data)                        | Dynamic panel-data estimation by first-difference GMM  | <i>Dependent:</i> Real exchange rate index<br><i>Explanatory:</i> Remittances(WR+CE+MT)/GDP; bank credit/GDP; bank deposit/GDP; remittances*bank credit/GDP; remittances*bank deposit/GDP; Control variables: ToT, excess money growth, trade openness, GDP <i>per capita</i> , GDP growth   | Remittances exert pressure on real exchange rate, with weaker impact on countries with deeper and more sophisticated financial markets which seem to retain trade competitiveness. Well-developed financial market can more effectively channel remittances into productive investment.   |
| Ajayi <i>et al.</i> (2009)         | 38 SSA countries  | 2007   | Simple linear equation by OLS  | <i>Dependent:</i> Life expectancy at birth<br><i>Explanatory:</i> Remittances/GDP, migration rate,   | Remittances have significant positive impact on life expectancy.  |

|                                   |   |   |  |  |   |
|-----------------------------------|---|---|--|--|---|
|                                   |   |   |  | inequality as measured by Gini coefficient   |   |
| Ebeke and Le Goff (2009)          | 80 developing countries   | 1970-2000   | Single equation OLS, IV estimation and system GMM in which the dynamic properties of the dependent variable was excluded           | <i>Dependent:</i> Gini coefficient<br><i>Explanatory:</i> Level of development proxied by log of GDP <i>per capita</i> , dependency ratio, migration costs proxied by cost of passport, brain-drain level, log of remittances (WR+CE+MT) <i>per capita</i> . Control variable: FDI/GDP, M <sub>2</sub> /GDP, inflation, log of government consumption/GDP, trade openness; state of institutions. REMPC*logGDP; REMPC*initial brain drain; REMPC*passport costs; REMPC*distance  | The more the mean income of the recipient country is high, the more remittances reduce income inequality. International remittances are less inequality-mitigating as the costs of migration rise. The more the brain drain is important, the more remittances promote income inequality.   |
| Giuliano and Ruiz-Arranz (2009)   | 73 developing countries   | 1975-2002   | System GMM estimation of a dynamic panel-data model  | <i>Dependent:</i> Bank deposit/GDP, bank loans/GDP, bank credit/GDP, M <sub>2</sub> /GDP<br><i>Explanatory:</i> Remittances (WR+CE+MT)/GDP with investment as a control variable.  | For the mean and median categories of countries, remittances have a robust positive effect on financial development with this impact increasing in the presence of investment. Above the median level of financial depth, however, remittances have dampening effect.   |
| Gupta, Pattillo and Wagh (2009)   | 76 developing countries for poverty estimations.<br><br>44 SSA countries for financial development estimation | Survey data beginning 1980 (unbalanced data). 1975-2004 5-year averages | Model I:<br>Pooled OLS 3SLS for poverty models<br><br>Model II:<br>Panel RE, Panel FE, Plus FE-IV for financial development model. | <i>Dependent:</i> (Log of): Poverty (headcount, gap and squared gap)<br><i>Explanatory:</i> (Log of): remittances (WR+CE+MT)/GDP, real GDP for country size, real GDP <i>per capita</i> for institutional development, CPI-based inflation, gini coefficient, distance, trade openness (X+M)/GDP, dual exchange rate market dummy for capital account openness, school (average school years among over 25 years of population).<br><br><i>Dependent:</i> (Log of): Bank deposits/GDP; M <sub>2</sub> /GDP<br><i>Explanatory:</i> (Log of): Remittances/GDP instrumental variable. (Exogenous variables): real GDP, real GDP <i>per capita</i> , inflation, trade openness, (FDI+ODA)/GDP for capital account openness 1, dual exchange rate dummy for capital account openness 2. | Remittances have a direct poverty mitigating effect and enhance financial development in the long run. Remittances negatively impact on poverty headcount (-0.13) and poverty gap (-0.13). Remittances reduce income inequality.<br><br>In all estimations, remittances exerted positive and robust impact on financial development |
| Gyimah-Brempong and Asiedu (2009) | Ghana   | National survey data from Ghana Living Standards Survey (GLSS5)         | IV-2 Stage Probit modelling for the cross-sectional data analysis.<br><br>Dynamic pseudo panel-                                    | <i>Dependent:</i> Poverty (headcount, gap, squared gap)<br><i>Explanatory:</i> Domestic remittances, international remittances, age, squared age, gender, ethnicity, education, household size, rural location, number of adult workers, gender*abroad (i.e. interacting gender  | Remittances increase the probability of a family to escape poverty or being chronically poor. International remittances have higher poverty mitigating effects than domestic  |

|                              |  |                                    |   |  |   |
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|                              |  | in 2005/2006. Psuedo-panel GLSS3-5 | data estimation by GMM  | with gender of international migrant)  | remittances. Remittances also increase the number of children in remittance-recipient households attending school, hence raises human capital formation.  |
| Kalim and Shahbaz (2009)     | Pakistan   | 1973-2006                          | Fully-Modified OLS estimation of log-linear single equation specification                     | <i>Dependent:</i> Poverty headcount ratio<br><i>Explanatory:</i> (Log of) Remittances/GDP, lag of dependent variables as proxy for economic shocks, trade openness, lag one of GDP growth, inflation, urbanisation (share of urban population), tax revenue/GDP, FDI/GDP.<br>In another estimation, these variables were used in addition to the square of remittances | Remittances have poverty-mitigating effects both in the short- and long run.  |
| Portes (2009)                | 46 countries                                       | 1970-2000                          | Seemingly Unrelated Regression (SUR) by parsimonious approach alongside pooled OLS and SUR FE | <i>Dependent:</i> Average income of a decile<br><i>Explanatory:</i> Log of real remittances (WR+CE), controlling for average income level, human capital accumulation proxied by secondary school enrolment, inflation, trade openness (X+M)/GDP, time dummies and other country-specific characteristics  | The impact of remittances is positive and decreasing in income for the bottom 70 per cent of the population and negative and increasing in income for the top-20 countries of the population. Remittances, thus, have a huge potential for reducing income inequality across countries. |
| Adenutsi (2010a)             | 15 SSA countries                                   | 1987-2007                          | Fixed Effects panel-data modelling  | <i>Dependent:</i> Marginal deviations in human Development Index (HDI)<br><i>Explanatory:</i> (Log of): Investment (GFCF/GDP), human capital (secondary school enrolment rate), remittances (WR+CE+MT), trade openness, inflation (logCPI), government expenditure/GDP, time dummy (a dichotomous variable)  | Remittances impact positively and robustly on human development.  |
| Adenutsi (2010b)             | 18 SSA countries                                   | 1987-2007                          | Fixed Effects panel-data modelling  | <i>Dependent:</i> Marginal deviations in Human development index (HDI)<br><i>Explanatory:</i> (Log of): Investment (GFCF/GDP), human capital (secondary school enrolment rate), remittances (WR+CE+MT), trade openness, inflation (logCPI), government expenditure/GDP, time dummy (a dichotomous variable)  | Remittances have a positive and a significant impact on socioeconomic development.  |
| Adenutsi and Ahoritor (2010) | 31 developing countries from LAC (16) and SSA (15) | 1986-2006                          | Dynamic panel-data modelling by system GMM  | <i>Dependent:</i> Marginal deviations in Human development index (HDI)<br><i>Explanatory:</i> (Log of): $HDI_{t-1}$ , investment (GFCF/GDP), terms of trade (ToT), remittances (WR+CE+MT), human capital (secondary school enrolment rate), trade openness, inflation (logCPI), government expenditure/GDP, time dummy (a dichotomous                                  | Remittances impact positively on socioeconomic development of SSA but impact negatively on LAC countries  |

|                                |                          |   |   | variable)   |   |
|--------------------------------|--------------------------|---|---|---|---|
| Gheeraert <i>et al.</i> (2010) | 100 developing countries | Cross country; and panel data (1975-2004) | OLS for cross-country analysis. FE and Least Squares Dummy Variable for panel data analysis     | <p><i>Investment Model:</i><br/> <i>Dependent:</i> Total investment/GDP<br/> <i>Explanatory:</i> Remittances(WR+CE+MT)/GDP i.e. REMGDP, cost of bank depositing (CDEP), marginal cost of external finance(CEXF), REMGDP*CDEP, REMGDP*CEXF, REMGDP*CDEP*CEXF, and set of control variables viz. business cycle proxied by GDP growth trend, level of economic development proxied by GDP PPP, REMGDP*GDP PPP</p> <p><i>Bank Deposit Model:</i><br/> <i>Dependent:</i> Difference in total bank deposits<br/> <i>Explanatory:</i> REMGDP, CDEP, REMGDP*CDEP. Control variables: business cycle proxied by GDP growth trend, level of economic development proxied by GDP PPP, REMGDP*GDP PPP, money creation by Central Banks proxied by differences in reserve money/GDP</p> | Remittances have significant positive impact on investment and bank deposits, implying remittances can have positive effect on financial development in remittance-recipient countries.   |
| Gubert <i>et al.</i> (2010)    | Mali households          | 2006                                      | Single equation by OLS with counterfactual approach (with or without migration and remittances) | <p><i>Dependent:</i> Poverty (headcount), Gini index<br/> <i>Explanatory:</i> Household non-remittance income, remittance income, household human capital, household physical assets, regional dummies; household head characteristics – age, marital status, sex, occupation</p>   | Remittances reduce poverty by 5 to 11 per cent; and income inequality by approximately 5 per cent, with greater impact on bottom quintiles.   |
| Orrenius <i>et al.</i> (2010)  | Mexican states           | 2003-2007                                 | Pooled OLS, and Panel 2SLS, FE modelling. Quarterly and annual data were used                   | <p><i>Dependent:</i> Employment, wage, unemployment, school enrolment (primary, secondary, technical and university)<br/> <i>Explanatory:</i> Remittances also used as instrumental variable (defined as all forms of private transfers), FDI, net migration stock, formal and informal labour force.</p>   | Remittances lead to improved labour market conditions, higher employment, and lower unemployment rates. Remittances may also reduce the fraction of workers earning minimum wages or less. Remittances, generally, have no effects on high income earners (those who earned 5 times or more above the minimum wage) |
| Ambrosius (2011)               | Mexican households       | 2002 and 2005 Mexico Family Life Survey   | Treatment-effect Modelling. Analysis at overall, rural and urban subsets                        | <p><i>Dependent:</i> Change in access to financial services<br/> <i>Explanatory:</i> Change in status of remittances received; vector of pre-determined control variables.</p>  | Remittances have significant positive impact on ownership of savings accounts and the availability of borrowing options for rural dwellers, but not urban dwellers. This effect is relevant only in the case of   |

|                        |   |  |   |   |  |
|------------------------|---|--|---|---|--|
|                        |   |  |   |   | microfinance institutions but not for traditional banks.   |
| Serino and Kim (2011)  | 66 developing countries   | 1981-2005  | OLS for full sample and quantile regression               | <i>Dependent:</i> Poverty measures (headcount, gap, gap squared based on US\$1/day threshold)<br><i>Explanatory:</i> Logarithm of: Gini index, real GDP <i>per capita</i> , remittances (total amount of remittances that flow through banks as a percentage of GDP), plus control variables – FDI, ODA, regional dummies and various year dummies          | Remittances have poverty-alleviating effects and this effect is more pronounced with worst-off group   |
| Singh and Hari (2011)  | India   | 1971-2008  | Bivariate descriptive statistics including trend analysis | <i>Dependent:</i> GDP at current market prices, gross domestic savings, gross domestic capital formation, exports, imports, foreign exchange reserve, private final consumption expenditure, FDI, balance of trade deficit, exchange rate, poverty<br><i>Explanatory:</i> Total remittances that can be approximated by (WR+CE+MT+other current transfers). | Remittances impacted positively on household sector as well as the general economy, foreign exchange reserve, reduce poverty. Remittances appear to have been used to finance more for investment than consumption goods   |
| Orzell (2012)          | 106 developing countries  | 1980-2011: (1980-2007) for pre-crisis era (2008-2011) for crisis era                           | Single equation OLS                                       | <i>Dependent:</i> Natural logarithm of Poverty headcount on \$1.25 per day PPP<br><i>Explanatory:</i> Natural logarithm of: Remittances (WR+CE), real GDP <i>per capita</i> , GINI, and REM*crisis dummy. Also included are dummies for crisis, and sub-regional grouping of sampled countries  | Despite the marginal decline in remittances in 2009, there was resurgence in 2010. Remittances have a decreasing effect on poverty rates during the period 1980-2011 and the effect was not statistically changed during the crisis. Thus, the effect of remittances on poverty during 1980-2007 is not statistically different from during the 2008-2011 crisis |
| Gani and Sharma (2013) | 57 countries (9 low income, 24 lower middle, 24 upper middle countries) | 1999-2008 for low income; 1996-2008 for lower middle income; 1995-2008 for upper middle income | FE, RE and standard-corrected FE & RE models              | <i>Dependent:</i> Credit proxied by domestic credit/GDP ratio<br><i>Explanatory:</i> Remittances (WR+CE)/GDP, GDP <i>per capita</i> growth, real interest rate, annual percentage changes in GDP deflation as proxy for inflation, technology measured as internet users per 100 people, real <i>per capita</i> GDP   | Remittance inflows in the low and upper middle income countries are positively and significantly related to domestic credit provided by the banking sector under all three forms of estimations.   |

**Source:** Author's compilation. **Note:** WR, CE, MT denote workers' remittances, compensation of employees and migrants' transfers respectively as defined in Chapter Two.

**Table A7.2: Set of Control Variables in the Empirical Models**

| Control Variables                        | The Empirical Economic Development Models Involving..... |            |       |                       |       |       |       |       |       |       |
|--|--|------------|-------|-----------------------|-------|-------|-------|-------|-------|-------|
|  | Poverty  | Inequality | InPSC | InM <sub>2</sub> /GDP | InHDI | InLIF | InEDU | InUNE | InLFP | InPRO |
| Human capital accumulation (InHCA)       | Yes  | Yes        | Yes   | Yes                   | No    | Yes   | No    | Yes   | Yes   | Yes   |
| Real GDP per capita PPP (InY_PPP)        | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Physical capital accumulation (InINV)*   | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Government expenditure (InGXP)*          | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Real lending rate (RLR)                  | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Rate of Inflation (INF)                  | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Trade openness (InOPN)                   | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Foreign direct investment, net (FDI)*    | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Overseas development assistance (InODA)* | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Real exchange rate (InRXR)               | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Business cycle (BZC)                     | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Institutional quality (INS)              | Yes  | Yes        | Yes   | Yes                   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Adult literacy rate (InLIT)              | Yes  | Yes        | Yes   | No                    | No    | Yes   | No    | Yes   | Yes   | Yes   |

Source: Author

Note: \*Variable expressed as a percentage of nominal GDP. LFP and PRO denote labour force participation and labour productivity respectively.

**Table A7.3: Median of Endogenous Variables and Specification of Median Dummy Variables**

|   | 1980-1989 | 1990-1999 | 2000-2009 | 1980-2009 | MDV <sub>i,t</sub> =1;<br>if $\check{E}_{i,t} > MDV_{i,t}$ |
|---|-----------|-----------|-----------|-----------|--|
| <b>Poverty and Income Inequality Models:</b>        |           |           |           |           |  |
| Poverty headcount (InPovH)                          |           |           |           | 3.94051   | YES  |
| Poverty gap (InPovG)                                |           |           |           | 3.08024   | YES  |
| Poverty severity (InPovS)                           |           |           |           | 6.16048   | YES  |
| Income inequality (InGini)                          |           |           |           | 3.86231   | YES  |
| <b>Labour Market Outcome Models:</b>                |           |           |           |           |  |
| Unemployment rate (InUNE)                           |           |           |           | 2.30347   | NO   |
| Labour force participation (InLFP)                  |           |           |           | 4.28693   | YES  |
| Labour productivity (InPRO)                         |           |           |           | 6.84166   | YES  |
| <b>Human Welfare and Development Models:</b>        |           |           |           |           |  |
| Socioeconomic development (InHDI)                   |           |           |           | -1.01943  | YES  |
| Educational attainment (InEDU)                      |           |           |           | 3.22312   | YES  |
| Life expectancy (InLIF)                             |           |           |           | 4.00068   | YES  |
| <b>Financial Development Models:</b>                |           |           |           |           |  |
| Bank credit to private sector (InPSC)               | 2.77029   | 2.57077   | 2.63619   | 2.69880   | YES  |
| Broad money as ratio of GDP (InM <sub>2</sub> /GDP) | 3.09268   | 3.03179   | 3.22617   | 3.10697   | YES  |

Source: Author

**Table A7.4:**

Static Panel-Data Modelling of Remittances on Private Sector Bank Credit in SSA, 1980-2009

|                                      | <b>Fixed<br/>Effects (FE)</b>      | <b>Random GLS<br/>Effects (RE)</b> | <b>Robust FE<sup>++</sup></b>     | <b>Robust Random<br/>GLS (RE)</b> |
|--------------------------------------|------------------------------------|------------------------------------|-----------------------------------|-----------------------------------|
| <b>Migrant remittances (lnREMPC)</b> | <b>-0.0105<br/>(-0.83)</b>         | <b>-0.0060<br/>(-0.47)</b>         | <b>-0.0105<br/>(-0.39)</b>        | <b>-0.0060<br/>(-0.24)</b>        |
| Real GDP <i>per capita</i> (lnY_PPP) | 1.0381<br>(14.23) <sup>***</sup>   | 0.7748<br>(12.57) <sup>***</sup>   | 1.0381<br>(5.11) <sup>***</sup>   | 0.7748<br>(5.19) <sup>***</sup>   |
| Rate of inflation (INF)              | -0.0012<br>(-1.16)                 | -0.0013<br>(-1.32)                 | -0.0012<br>(-0.85)                | -0.0013<br>(-1.01)                |
| Government expenditure (lnGXP)       | 0.1649<br>(3.50) <sup>***</sup>    | 0.1559<br>(3.28) <sup>***</sup>    | 0.1649<br>(1.24)                  | 0.1559<br>(1.12)                  |
| Real lending rate (RLR)              | -0.0005<br>(-0.33)                 | 0.0003<br>(0.18)                   | -0.0005<br>(-0.22)                | 0.0003<br>(-0.12)                 |
| Trade openness (lnOPN)               | 0.3743<br>(6.37) <sup>***</sup>    | 0.3543<br>(6.01) <sup>***</sup>    | 0.3743<br>(2.67) <sup>**</sup>    | 0.3543<br>(2.52) <sup>**</sup>    |
| Constant term                        | -6.9949<br>(-12.74) <sup>***</sup> | -4.9395<br>(-10.44) <sup>***</sup> | -6.9949<br>(-5.49) <sup>***</sup> | -4.9395<br>(-5.11) <sup>***</sup> |
| Number of observations               | 981                                | 981                                | 981                               | 981                               |
| Number of groups                     | 35                                 | 35                                 | 35                                | 35                                |
| Overall R <sup>2</sup>               | 0.2365                             | 0.2410                             | 0.2365                            | 0.2410                            |
| F-statistics                         | 55.87{0.000} <sup>***</sup>        | 249.93{0.000} <sup>***</sup>       | 13.69{0.000} <sup>***</sup>       | 76.24{0.000} <sup>***</sup>       |
| Hausman_FE                           | 25.18{0.000} <sup>***</sup>        | <i>n/a</i>                         | <i>n/a</i>                        | <i>n/a</i>                        |
| Breusch-Pagan (B-P) statistics       | <i>n/a</i>                         | 4215.11{0.000} <sup>***</sup>      | <i>n/a</i>                        | <i>n/a</i>                        |

**Source:** Author's estimation

*\*/\*\*/\*\*\* denotes statistical significance at 10%, 5%, 1% respectively  
robust z-statistics in ( ), probabilities in { }, n/a denotes not available or required  
<sup>++</sup> most efficient and reliable results based on Hausman test and B-P statistics*

**Table A7.5:** Static Panel-Data Modelling of Remittances on M<sub>2</sub>/GDP in SSA, 1980-2009

|   | <b>Fixed<br/>Effects (FE)</b> | <b>Random GLS<br/>Effects (RE)</b> | <b>Robust FE</b>         | <b>Robust Random<br/>GLS (RE)**</b> |
|---|-------------------------------|------------------------------------|--------------------------|-------------------------------------|
| <b>Migrant remittances (lnREMPC)</b>    | <b>0.0192<br/>(1.33)</b>      | <b>0.0308<br/>(2.34)**</b>         | <b>0.0192<br/>(0.75)</b> | <b>0.0308<br/>(1.20)</b>            |
| Human capital accumulation (lnHCA)      | 0.2735<br>(5.42)***           | 0.2836<br>(6.20)***                | 0.2735<br>(2.82)***      | 0.2836<br>(3.09)***                 |
| Real GDP <i>per capita</i> (lnY_PPP)    | 0.2784<br>(3.08)***           | 0.1278<br>(2.13)**                 | 0.2784<br>(1.56)         | 0.1278<br>(1.21)                    |
| Official development assistance (lnODA) | 0.0025<br>(0.10)              | -0.0011<br>(-0.04)                 | 0.0025<br>(0.06)         | -0.0011<br>(-0.03)                  |
| Rate of inflation (INF)                 | 0.0018<br>(1.62)*             | 0.0016<br>(1.49)                   | 0.0018<br>(0.77)         | 0.0016<br>(0.72)                    |
| Government expenditure (lnGXP)          | -0.1990<br>(-3.82)***         | -0.1770<br>(-3.49)***              | -0.1990<br>(-0.90)       | -0.1770<br>(-0.82)                  |
| Real exchange rate (lnRXR)              | -0.0188<br>(-0.43)            | -0.0468<br>(-2.09)**               | -0.0188<br>(-0.24)       | -0.0468<br>(1.49)                   |
| Real lending rate (RLR)                 | 0.0116<br>(7.55)***           | 0.0118<br>(7.71)***                | 0.0116<br>(1.38)         | 0.0118<br>(1.36)                    |
| Constant term                           | 0.6903<br>(1.08)              | 1.8406<br>(4.18)***                | 0.6903<br>(0.55)         | 1.8406<br>(2.33)**                  |
| Number of observations                  | 970                           | 970                                | 970                      | 970                                 |
| Number of groups                        | 35                            | 35                                 | 35                       | 35                                  |
| Overall R <sup>2</sup>                  | 0.2507                        | 0.3046                             | 0.2507                   | 0.3046                              |
| F-statistics                            | 27.58{0.000}***               | 244.08{0.000}***                   | 6.94{0.000}***           | 90.95{0.000}***                     |
| Hausman_FE                              | 12.75{0.121}                  | n/a                                | n/a                      | n/a                                 |
| Breusch-Pagan (B-P) statistics          | n/a                           | 1312.18{0.000}***                  | n/a                      | n/a                                 |

**Source:** Author's estimation

\*/\*\*/\*\* denotes statistical significance at 10%, 5%, 1% respectively

robust z-statistics in ( ), probabilities in { }, n/a denotes not available or required

\*\* most efficient and reliable results based on Hausman test and B-P statistics

**Table A7.6: Data Description, Measurement and Sources**

| VARIABLE  | NOTATION                 | DESCRIPTION, MEASUREMENT AND MAIN SOURCES   |
|---|--------------------------|---|
| <b>Dependent Variables: Poverty &amp; Income Inequality</b> |                          |   |
| Poverty headcount   | $\ln PovH$               | Share of the population living on less than US\$1.25 per day at 2005 international prices. <b>Source:</b> <i>WDI</i> .  |
| Poverty gap   | $\ln PovG$               | The mean shortfall from the poverty line <sup>159</sup> (counting the non-poor as having zero shortfall) expressed as a percentage of the poverty line. <b>Source:</b> <i>WDI</i> .   |
| Poverty severity  | $\ln PovS$               | Squared value of the PovG. <b>Source:</b> Author's computation based on <i>WDI</i> .  |
| Income Inequality   | $\ln Gini$               | Gini index measuring the extent to which the distribution of income (or consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. <b>Source:</b> <i>WDI</i> .  |
| <b>Dependent Variables: Labour Market Outcome</b>           |                          |   |
| Unemployment  | $\ln UNE$                | Share of labour force that is without work but available for, and seeking, work. <b>Source:</b> <i>WDI</i> , <i>WEO</i> and <i>African Development Indicators (ADI)</i> .   |
| Labour participation rate                                   | $\ln LPR$                | Proportion of the population aged 15 and above that is economically active: all people who supply labour for the production of goods and services during a particular year. <b>Source:</b> <i>WDI</i> and <i>ADI</i> .  |
| Labour productivity   | $\ln PRO$                | Total output proxied by GDP weighted by labour force. <b>Source:</b> Author based on <i>WDI</i> , <i>WEO</i> and <i>IMF</i> country-specific desk information.  |
| <b>Dependent Variables: Human Welfare and Development</b>   |                          |   |
| Human welfare   | $\ln HDI$                | A weighted composite statistical index, ranging between zero (worst scenario) and one (best scenario), involving three key human development indicators: life expectancy at birth; knowledge and education; and living standard. <b>Source:</b> <i>WDI</i> and <i>Human Development Reports</i> by the UN.    |
| Educational attainment                                      | $\ln EDU$                | Net enrolment ratio of children of official school age based on International Standard Classification of Education 1997, who enrolled in post-primary school relative to the population of the corresponding official school age. <b>Source:</b> <i>WDI</i> .   |
| Life expectancy   | $\ln LIF$                | The number of years a new-born child will live if prevailing patterns of mortality at the time of birth were to remain unchanged. <b>Source:</b> <i>WDI</i> .   |
| <b>Dependent Variables: Financial Market Development</b>    |                          |   |
| Domestic credit to private sector                           | $\ln PSC$                | Total financial resources in the form of loans, purchases of non-equity securities, trade credits and other accounts receivable as a ratio of GDP extended to the private sector that establish a claim for repayment. <b>Source:</b> <i>WDI</i> and author based on <i>IFS</i> and <i>WEO</i> .              |
| Broad money to GDP ratio                                    | $\ln M_2 / GDP$          | Sum of currency outside banks, demand deposit other than those of the central government, and time, savings and foreign currency deposits of resident sectors other than the central bank as ratio of GDP. <b>Source:</b> <i>WDI</i> and author based on <i>IFS</i> and <i>WEO</i> .                          |
| <b>'Uncontrolled' Explanatory Variables</b>                 |                          |   |
| Initial level of economic development                       | $\ln \tilde{E}_{-1}^{+}$ | The immediate past values of the dependent variable. <b>Source:</b> Author's computation from the specific dependent variable.  |
| Migrant remittances per capita                              | $\ln REMPC$              | The sum of <i>workers' remittances</i> and <i>compensation of employees</i> as ratio of population. <b>Source:</b> <i>WDI</i> , <i>BoPS</i> , <i>MRF-2011</i> CD-ROMs and e-databases and estimates based on country-specific information obtained from country-desk officials of the IMF and the World Bank. |
| <b>Newly Introduced Controlled Variables*</b>               |                          |   |
| Real GDP per capita PPP                                     | $\ln Y_{PPP}^{+/-}$      | GDP per capita based on purchasing power parity (PPP) at constant 2005 international prices in US dollars. <b>Source:</b> <i>WDI</i> and <i>WEO</i> .   |
| Business Cycle  | $BZC^{+/-}$              | Annual growth in real GDP. <b>Source:</b> Author based on <i>WDI</i> , <i>IFS</i> and <i>WEO</i> .  |
| Real lending rate   | $RLR^{+/-}$              | Average annual rate charged by banks on loans to prime customers minus the annual rate of inflation. <b>Source:</b> Author based on <i>WDI</i> , <i>IFS</i> and <i>WEO</i> .  |
| Official development assistance                             | $\ln ODA^{+/-}$          | Disbursement flows (net of repayments) from official donors to a country as a percentage of nominal GDP. <b>Source:</b> <i>WDI</i>  |
| Adult literacy rate   | $\ln LIT^{+/-}$          | Percentage of people aged 15 and above who can, with understanding, read and write a short, simple statement on their everyday lives. <b>Source:</b> Author based on <i>WDI</i> and <i>ADI</i> .  |

**Note:** The a priori sign is indicated by +/- by the notation column of each variable. \*Other explanatory variables are as defined and measured in preceding chapters. In each case, the April 2011 edition was primarily used.

<sup>159</sup> The World Bank defines poverty line as the annual cost of obtaining the standardised minimum daily caloric 2172 requirement of 2172 calories per person plus basic non-food essential items such as food and education.

## CHAPTER EIGHT

### SUMMARY, CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

#### 8.0 INTRODUCTION

This chapter draws the curtain on the study with an overall summary, general conclusions, policy implications and recommendations, contributions to knowledge, and suggested areas for future research. By way of organisation, Section 8.1 summarises the entire study with emphasis on the key findings. Section 8.2 concludes by drawing attention to how the study responded to the research questions posed, evaluated the hypotheses, and how the research objectives were achieved. The policy implications and recommendations of the key findings of the study follow in Section 8.3. The contributions of this study to knowledge are outlined in Section 8.4, whilst some areas for future research are suggested in Section 8.5.

#### 8.1 SUMMARY

This study was embarked upon to investigate the role macroeconomic policy can play in attracting optimal migrant remittances through official channels, and in enhancing the economic growth and developmental potentials of international migrant remittances in sub-Saharan Africa (SSA). In pursuance of these objectives, this study was organised into eight chapters of which this final one serves as the concluding one.

Chapter One set the stage with a general introduction to the study by presenting the background information, specifying the research problem, the research questions, the underlying motivation, the objectives and the hypotheses. The scope as well as the structure of the study was also discussed in Chapter One. It is observed that even though SSA is a leading 'exporter of labour', the sub-region has been the least recipient of officially reported remittances in terms of actual volume received, per migrant and *per capita*. At the same time, however, some studies including that of Freund and Spatafora (2005), identify SSA as the leading recipient of informal remittances due to the high cost of remitting through the formal financial system, which is associated with the underdevelopment of the domestic financial markets. Therefore, it is imperative to explore the role macroeconomics can play in policy formulation towards increasing the flow of migrant remittances to SSA through official channels, especially because the continuous inflow of informal remittances can destabilise not only the

socioeconomic and geopolitical fabrics of the sub-region, but also threaten global security. It is further noted that SSA is the only sub-region in the world today that still depends more on foreign aid than other non-trade external finances despite the desperate attempts in search of the required finance to close the wide resource gap towards meeting the Millennium Development Goals (MDGs). Finally, it is demonstrated in Chapter One why the scope of this study is restricted to 36 SSA countries over the period, 1980 to 2009.

The study proceeds with a discussion on the definition and measurement of the key concepts in Chapter Two. These concepts are international remittances and financial liberalisation. It is noted that, unlike financial development which is essentially a *de facto* concept, financial liberalisation is *de jure* synonymous with the timing of the gradual implementation of policy reforms and developments within the financial system. The reasons justifying why the financial liberalisation index developed by Abiad *et al.* (2010) was used in this study despite a host of other alternative measures are discussed. It is evident that there can either be a narrow definition and measurement of international remittances or a broad definition and measurement. It is the narrow definition which is concerned with regular transfers of funds by international migrants that is considered the more appropriate measure in the context of this study. In effect, the definition and measurement of international remittances is narrowed to the sum of workers' remittances and compensation of employees. This implies that, contrary to the frequently used definition and measurement of remittances, migrant transfers are excluded from the definition of international migrant remittances in this study. Rationalised reasons for this exclusion are duly assigned. Finally, the conventional problems of remittance data deficiency and low quality are also discussed with the acknowledgement that, as has become a fact in macro-level cross-country time-series analyses, the officially reported remittance data used in this study are underestimated because remittances received through informal channels are not captured and incorporated due to a myriad of complexities.

Having resolved the pertinent definitional and measurement issues surrounding the main concepts in this study, in Chapter Three, efforts are directed at providing a broad overview of macroeconomic performance and policy environment of SSA since independence in the 1960s. This is to provide an insight into understanding the observed trends in the macroeconomic performance as well as the composition and pattern of remittances and other external capital flows to SSA over the years. It is observed that, generally, very little is achieved by the sub-region in terms of real *per capita* income growth, investment and resource mobilisation, so that

the unfavourable structural features of SSA which existed during the pre-reforms era are all still present today. Admittedly, though, there seems to be some glimmer of hope regarding economic recovery and prosperity in very recent years in terms of international trade, savings, and financial development. It is noted that what would have been the initial gains from the pursuit of financial liberalisation in SSA are eroded by unfavourable macroeconomic conditions and widespread political unrest, civil strife, and bad governance in the 1990s. Following this, SSA recorded its worst macroeconomic performance during the 1990s so that most of the performance indicators of the 1980s are closely comparable with those of the 2000s. Unlike other regions of the developing world, SSA attracts the least migrant remittances but the most foreign aid. This is notwithstanding the fact that the amount of remittances received by the sub-region has been increasing steadily over the years and has increasingly been becoming more and more robust since the implementation of financial liberalisation in the 1980s. It is also observed that of the various forms of external capital, migrant remittances have been the most resilient to adverse economic shocks and the least volatile in the developing world where SSA enjoys the highest stability. A significant positive correlation exists between migrant remittance inflows and bank-based financial development indicators in SSA; and this is more robust for the highest remittance-recipient countries in comparison with the least remittance-recipient countries.

The study then progressed to Chapter Four with the determination of the macroeconomic factors that explain the changing trends in migrant remittances received in SSA. This task is executed at both the aggregated and the disaggregated levels. At the aggregated level, the macroeconomic factors that affect migrant remittances are determined whereas at the disaggregated level, the macroeconomic determinants of the components of migrant remittances (workers' remittances and compensation of employees) are separately estimated. In order to provide a further understanding of the changing cyclical behaviour of remittances received in SSA, in each case, decade-based estimations are undertaken alongside the overall study period analysis. It is evident from the literature reviewed that the motives behind the flow of migrant remittances can be broadly categorised into either altruism or self-interest. Conceptually, however, it is noted that altruism and self-interest may not necessarily be mutually exclusive as, in many cases, a remitting migrant is often motivated by both motives. The system Generalised Method of Moment (sys-GMM) estimation procedure for dynamic panel-data models is adopted. It is found out that apart from asynchronous effects both host-country and home-country macroeconomic factors play crucial roles in determining the amount

of officially reported remittances received in SSA between 1980 and 2009. Although, in response to the pursuit of a financial liberalisation programme, there seems to be an increasing impact of these macroeconomic factors on the changing trends in migrant remittance inflows, this is largely dependent upon the general macroeconomic performance of the sub-region. Macroeconomic variables, to a reasonable extent, have impacted differently on workers' remittances and migrant remittances received in SSA over the past three decades, although the results of these two are more consistent than in comparison with compensation of employees. Whereas workers' remittances and migrant remittances seem to be driven primarily by the self-interest economic motive, compensation of employees seems relatively more altruistic in nature. However, it does seem as though altruism is fading gradually.

In Chapter Five, the direct causal effects and impacts of financial liberalisation on international migrant remittance inflows in SSA are investigated using a set of bivariate empirical models, notably, panel Granger-causality and panel GLS Random Effects (RE). For this analysis, the cross-sectional sampled size dropped from 36 to 13 SSA countries for which relevant data was available. The results suggest that financial liberalisation has contributed positively to international remittance inflows through official channels in SSA, but banks have not been active participants in the international remittance market, so that most of the officially reported migrant remittances received in SSA are received outside the formal financial system. Generally, the positive impact of financial liberalisation on international remittance inflows has been increasing over time, but it is relatively more robust for SSA countries with frontier and emerging financial markets than for their counterparts with underdeveloped financial markets. Policy reforms on stock market developments impact more on official remittance inflows than those directly related to the banking sector. Of the various financial policy reforms on the banking sector, bank supervision and prudential regulation, deregulation of credit allocation and reduction in reserve requirements, and elimination of entry barriers for competition in the banking industry exert the most significant positive impact on remittance inflows. Furthermore, it is found out that financial liberalisation Granger-causes international remittance inflows in SSA with a low statistical evidence of reverse causality. Policy reforms on stock market developments are found to have had the most significant uni-directional causal effect, which runs from stock market development to international remittance inflows. It is noted that the low participation of SSA banks in the remittance market, may be one of the reasons why the cost of international money transfers is relatively higher on the various remittance-corridors linking SSA countries as compared to the remittance corridors linking migrant-home countries in other

parts of the developing world.

The study then proceeds to Chapter Six where a dynamic panel-data model involving 36 SSA countries is estimated following the sys-GMM estimation procedure, to examine the impact of migrant remittances on economic growth over the period, 1980-2009. Based on the assumption that the effects of international remittances on economic growth could vary over time in response to changing macroeconomic policy environment in remittance-recipient countries, a decade-based analysis is undertaken alongside the overall study period analysis. Also explored are the possible economic growth size-effects of migrant remittances in SSA. It is discovered that, between 1980 and 2009, migrant remittances impact positively on economic growth in the sampled 36 SSA countries. Again, for these sampled 36 countries, the impact of remittances on economic growth varies over time in response to changing macroeconomic environment such that, during the decades (the 1980s and the 1990s) that remittances have significant impact on growth, the positive impact is more significant during 'good times' (the 1980s) than during 'bad times' (the 1990s). It is, thus, found out that, broadly, since the implementation of financial liberalisation in SSA, the economic significance of international remittances to growth in the sub-region has been declining until it becomes zero in the 2000s. Another important finding in Chapter Six is that the positive impact of migrant remittances on economic growth has varying effects in response to the rate of economic growth in recipient countries such as SSA countries with relatively higher growth rates that have benefitted more directly from remittances. For SSA countries with relatively higher growth rates, the positive effects of remittances on economic growth have been increasing consistently both statistically and economically over the past three decades, even though remittances have had a zero-effect on growth in this category of countries in the 1980s. Moreover, the impact of migrant remittances on economic growth is more asynchronous with one year lag effect than contemporaneously.

Finally, the implications of migrant remittances on various aspects of economic development in SSA are examined in Chapter Seven. In doing this, a set of dynamic panel-data models is estimated following the sys-GMM technique. Aspects of economic development covered are poverty, income inequality, unemployment, labour participation, labour productivity, human welfare, educational attainment, life expectancy, and financial development. For each estimated model, except for the model involving financial development, the time frequency of the data used changed to a 5-year non-overlapping panel data due to the unavailability of annual data for most of the development outcome indicators aforementioned. Hence, the

enquiry into the time-varying effects of international remittances on economic development since the implementation of financial liberalisation programme in SSA is limited to models in which the effects of remittances on financial development are explored. On the average, migrant remittance inflows have poverty-alleviating effects with the potential of income equalisation in SSA, but in migrant-home SSA countries with relatively higher levels of poverty and inequality, remittances intensify poverty and income inequality. It is also found out that remittances significantly reduce unemployment rates in SSA with no moral hazard effects in countries with relatively lower rates of unemployment. It is further realised that remittances have no direct effects on labour participation rates in SSA, but countries with higher rates of labour participation have higher prospects of benefitting from remittances in this regard. Similarly, the overall impact of international migrant remittances on labour productivity is statistically insignificant in SSA, but in SSA countries with relatively higher rates of labour productivity, remittances contribute significantly to labour productivity.

Also, in Chapter Seven, it is noted that, overall, migrant remittances have contributed positively to enhancing human welfare, educational attainment and life expectancy in migrant-home SSA countries over the past three decades. However, the positive effects of migrant remittances on human welfare and educational attainment are more beneficial to SSA countries with relatively lower levels of human welfare and educational attainment. In fact, migrant remittances impact negatively on migrant remittance-receiving SSA countries with relatively higher rates of educational attainment. Concerning the size effects of international remittances on life expectancy in SSA, the positive impact is more robust in countries with relatively higher years of life expectancy at birth than those with relatively lower years of life expectancy. Furthermore, it is found out that between 1980 and 2009, migrant remittances impacted positively on financial market development in SSA and this impact has been increasing over time when all other factors are held constant. In particular, migrant remittances promote bank credit to the private sector as an indicator of financial development in the 1980s and the 2000s when the macroeconomic environment in SSA is relatively stable with higher real GDP *per capita*, whilst during the recession period of the 1990s, migrant remittances contribute negatively to private sector access to bank credit. Over the period 1980-2009, the impact of remittances on private sector credit has been more pronounced in migrant-home SSA countries with higher private sector access to bank credit than in other SSA countries with lower private sector access to bank credit. With regard to the impact of international remittances on broad money-GDP ratio ( $M_2 / GDP$ ) as an indicator of financial market development in SSA, it is negative in the 1980s

and positive for the subsequent decades with the economic significance of the 1990s being the least, probably due to the harsh economic conditions during that decade. The size of the economic impact of migrant remittances on  $M_2/GDP$  is more significant in countries with relatively lower  $M_2/GDP$  in the 1980s and the 1990s, but this has since switched in favour of countries with relatively higher  $M_2/GDP$  in the 2000s.

The panel Granger-causality empirical results reported in Chapter Five are based on Econometric Views version 7.0 whilst all other empirical results are based on STATA version 11.0. Tables and Figures are mainly based on Microsoft Office Excel 2007 edition.

## 8.2 CONCLUSIONS

From the foregoing, it can be concluded that the objectives of this study have been achieved in view of the fact that:

- i. the study presents the facts on the extent to which macroeconomic environment has transformed following the adoption of economic reforms in SSA; and the trend in migrant remittance flows to SSA since financial liberalisation in the 1980s;
- ii. the macroeconomic factors that influence international remittances received in SSA under liberalised financial regime are identified;
- iii. the causal effect as well as the impact of financial liberalisation on international remittance inflows in SSA are examined;
- iv. the impact of international remittance inflows on long-run economic growth in SSA is analysed; and
- v. the developmental-impact of international remittances in SSA is determined.

By achieving the underlying research objectives, the study, in effect, has responded to the pertinent research questions as follows:

- i. The macroeconomy of SSA has not demonstrated any significant improvement towards development since the adoption of economic reforms in the 1980s except in terms of financial market development and international trade. There has been a strong positive trend in the international migrant remittance inflows in SSA since the implementation of financial liberalisation programmes despite the fact that the sub-region remains the least remittance-recipient in the world.

- ii. The macroeconomic determinants of international remittance inflows in SSA are host-country income and law enforcement on banning the use of unofficial channels to remit. Other factors are home-country variables, notably real bilateral exchange rate, bank credit to private sector, home-country income, rate of inflation, institutional quality, and real deposit interest rate. The macroeconomic determinants of workers' remittances are host-country income, law enforcement on the use of official money transfer channels, home-country income, real bilateral exchange rate, institutional quality, and bank credit to private sector. Broadly, host-country income, home-country income, real bilateral exchange rate, law enforcement on use of official money transfer channels, bank credit to private sector, institutional quality, inflation rate, and real deposit interest rate are determinants of compensation of employees.
- iii. The impact and causal effect of financial liberalisation on international migrant remittance inflows in SSA are significantly robust. Overall, each specific policy implemented under financial liberalisation programme impacts positively on migrant remittance inflows. In a descending order of economic significance these policies are stock market development, prudential regulation and supervision of banks, elimination of entry barriers to the banking industry, deregulation of international capital flows, interest rate deregulation, and privatisation of banks. Also, financial liberalisation Granger-causes migrant remittance inflows through official channels. All other things remaining equal, SSA countries with frontier and emerging markets receive relatively higher migrant remittances through official channels of which the formal financial system is a part rather than other countries within the sub-region with relatively less developed financial markets. This is notwithstanding the fact that SSA countries with underdeveloped financial markets are the recipients of the most migrant remittances through official channels in which money transfer operators (MTOs) are dominant.
- iv. International migrant remittance inflows stimulate economic growth in SSA, and have a varying impact in response to macroeconomic policy environment rather than merely in reaction to improved financial market liberalisation. However, international remittances are not a panacea for long-run economic growth in every SSA country. International migrant remittances are more advantageous in enhancing growth in SSA countries with relatively higher rates of economic growth than in other SSA countries with relatively

lower rates of economic growth.

- v. To a very large extent, international migrant remittance inflows serve as a catalyst for economic development as far as poverty alleviation, unemployment, human welfare, educational attainment, life expectancy, and financial market development are concerned. Generally, migrant remittances contribute more to the economic development in 'labour-exporting' SSA countries with relatively higher levels of economic development than what other countries within the sub-region with relatively lower levels of economic development save with reference to human welfare and educational attainment.

Consequently, exclusive of hypotheses  $H_2$ ,  $H_7$ ,  $H_9$  and  $H_{10}$ , at the conventional levels of statistical significance, this study fails to accept all the hypotheses specified under Section 1.6 but, instead, concludes that, overall, with reference to SSA:

- i. macroeconomic factors are determinants of international remittance inflows;
- ii. macroeconomic determinants do not have exact influence on attracting remittances from permanent migrants (workers' remittances) and remittances from temporary migrants (compensation of employees);
- iii. financial liberalisation Granger-causes international remittance inflows with an evidence of weak reversal;
- iv. financial liberalisation impacts positively on international remittance inflows;
- v. international remittance inflows stimulate long-run economic growth;
- vi. international remittance inflows impact negatively on poverty (i.e. poverty headcount, poverty gap and poverty severity);
- vii. international remittance inflows do not influence income inequality;
- viii. international remittance inflows impact negatively on unemployment;
- ix. international remittance inflows do not affect labour participation;
- x. international remittance inflows do not influence labour productivity;
- xi. international remittance inflows promote human welfare development;
- xii. international remittance inflows impact positively on educational attainment;
- xiii. international remittance inflows impact positively on life expectancy at birth; and
- xiv. international remittance inflows promote financial development with reference to broad money to GDP ratio, and to some extent, access to private sector credit.

### 8.3 POLICY IMPLICATIONS AND RECOMMENDATIONS

A number of policy issues have been put forward by this study; the overriding ones are outlined below.

Firstly, as far as an appropriate inquiry into the stability in the flow and the impact of international migrant remittances in remittance-receiving SSA countries is concerned, it is implied that the best possible measure of migrant remittances is the sum of workers' remittances and compensation of employees, relative to population size. Secondly, it is implied that the pursuit of financial liberalisation is necessary but not a sufficient condition for receiving optimal migrant remittances through official channels as the macroeconomic performance and policy environment affect the potential contribution of financial liberalisation in this context. Thirdly, an important implication of the significant changing impact of macroeconomic factors on migrant remittance inflows in SSA is that one of the reasons why SSA is the least recipient of migrant remittances is the absence of appropriate and effective macroeconomic policies on the mobilisation of remittances from their citizens living abroad. Fourthly, it is implied that SSA countries with frontier and emerging financial markets receive more remittances through the formal financial channels but that the majority of the remittances received by the sub-region through the official channels are outside the financial system with low bank participation. It is further implied that, compared with the financial liberalisation policies on the banking system, policies on stock market development have been the most successful in the mobilisation of migrant remittances through the formal financial system. Another implication from this study is that in order to maximise the growth-enhancing impact of migrant remittances in the long run, remittance-receiving SSA countries must ensure that other pro-growth policies are vigorously pursued. Finally, it is implied that the implementation of a comprehensive economic development strategy is inevitable to maximise the developmental-impact of migrant remittances. In other words, it is imprudent to rely on migrant remittances as the main source of long-run growth in remittance-receiving SSA countries.

Therefore, the most important recommendations of this study to inform policy initiatives are:

- i. The need for policy makers to ensure stable and credible macroeconomic policy environment through reduction in the rate of inflation, improvement in economic performance which reflects in higher real *per capita* income, and a stronger national currency in the international financial market so as to encourage private sector savings

and investment. Furthermore, it is imperative to ensure that policy makers in 'labour-exporting' SSA countries devise ways to strengthen institutions through improved democratic governance and freedom from civil and political strife as in more recent years, quality institutions impact positively on the inflows of workers' remittances and compensation of employees. To achieve this, measures must be put in place to reduce corruption (or the perception thereof), improve national security and peace, and create a conducive investment environment through the enactment of laws that protect the interest of investors and entrepreneurs, whether resident at home (potential recipients of remittances) or abroad (potential remitting migrants).

- ii. Policies under financial liberalisation programme such as stock market development, prudential regulation and supervision of banks, deregulation of credit allocation, relaxation of entry barriers to the banking industry, privatisation of banks, deregulation of interest rates and external account liberalisation must be rigorously pursued. When the pursuit of financial liberalisation leads to higher competition in the financial market, financial institutions will become more efficient resulting in reduced money transfer fees, introduction of innovative and diversified financial products and services, expansion and wider coverage with more outlets at home and abroad. This is essential because when SSA migrants find the patronage of informal money transfer channels cheaper, safer, more reliable, convenient and accessible; it will be difficult, if not impossible, for the sub-region to mobilise optimal remittances through the formal money transfer channels which include the formal financial system.
- iii. Efforts must be directed at further deepening the pursuit of financial liberalisation programme in a bid to foster competition among banks towards mobilisation of optimal remittances in order to maximise the potential benefits of remittances in SSA. For example, banks can introduce differentiated services and develop remittance products such as online and automation in payment systems through technological innovation, measures which are needed to reduce the cost of handling small cross-border money transfers. Also, banks can open overseas branches and offer more offshore services to residents at home to facilitate payments and receipts of remittances internationally. And, when banks offer customers relatively lower cost on remittance services and provide relevant information on investment opportunities at home, offering mortgages and housing loans, and assisting migrants in planning for their retirement and in

insuring their valuable assets, migrants may be encouraged to remit through the banking system. Besides, when more remittances are received through the banking system, this promotes higher 'bancarisation', hence a higher propensity to save and put remittances received into productive use rather than a conspicuous consumption because banks, unlike MTOs, offer additional services such as financial intermediation necessary for economic growth and sustainable development.

- iv. SSA banks must establish bilateral and multilateral partnerships and networks with one another not excluding rural and community banks, and with post offices and foreign banks in order to build efficient and reliable national and international payment systems among collaborating banks and institutions. This will also make SSA banks more visible and conveniently accessible in the remittance market at home and overseas. The strategic partnerships, networks, and negotiated alliances and franchise should be effective in enabling local banks to overcome the challenges of high operational costs and the geographic fragmentation of the remittance markets. Banks should design special incentive packages, including zero tax on remittances received, and special remittance agreements with major migrant-host countries. There should be the regulation of informal intermediaries in the money transfer market, and banks should issue special foreign currency denominated bonds targeted at the Diaspora communities, establish 'remittance banks' at home with overseas branches or outlets, and opportunities for social security contributions from abroad, to attract migrants to remit funds home using official channels.
- v. Policy makers in SSA must pursue complementary pro-growth and development strategies towards eliminating market distortions in favour of the rich so as to reduce poverty, income inequality and high unemployment rates. Poverty alleviation policies such as capacity building, vocational training, access to venture capital and microcredit, and other SME incentive packages through which the economically disadvantaged and the vulnerable groups such as rural dwellers and women stand a better chance to gain and improve upon their welfare can be useful in enhancing the poverty-alleviating and inequality-reducing effects of remittances. Policy makers should adopt an integrated economic development programme in which fiscal and monetary policies are well coordinated in a manner that will ensure that progressive price and income policies are designed and implemented towards bridging the gap between high-income and

economically vulnerable groups of society at all levels of economic development.

#### **8.4 CONTRIBUTIONS TO KNOWLEDGE**

This study has contributed to existing body of knowledge in a number of ways, notable of these contributions are:

- i. First and foremost, this study is currently most comprehensive on SSA taking into account concurrently both the time span of 30 years (1980-2009) and cross-sectional dimension of 36 countries. All known related available studies on SSA either fall short of the time span used in this study or the number of sampled countries covered. Therefore, as far as SSA as a sub-region is concerned, this is currently the most representative and comprehensive macro-level study on international migrant remittances.
- ii. Secondly, this study is the most detailed on the macroeconomic determinants of migrant remittances and the implications of remittance inflows for economic growth and development on SSA, and arguably on remittance-receiving developing economies, considering the carefully detailed and systematic empirical analyses. For instance, unlike all other known related studies on international migrant remittances, this study has shown that the impact of macroeconomic factors that determine migrant remittance inflows can vary over time depending upon the macroeconomic fundamentals of the recipient countries. It has also shown that macroeconomic variables can have a varying impact on the two components of migrant remittances - workers' remittances and compensation of employees. This was achieved in this study by undertaking a systematic decade-by-decade analysis as well as by estimating the macroeconomic determinants of migrant remittances at the aggregated and the disaggregated levels. Similarly, a detailed analysis of the contributions of migrant remittances to economic growth and financial development as an aspect of economic development has been done to determine the time-varying remittance impact under different macroeconomic conditions. Another important novelty with regard to a detailed analysis achieved by this study is the fact that, on examining the economic growth and developmental-impact of migrant remittances in SSA, size-effects have been taken into account.

- iii. Thirdly, the use of migrant remittances *per capita* as the best alternative measure of remittances per migrant is a notable contribution of this study to the existing body of knowledge. The use of remittances per migrant, hence remittances *per capita*, in place of the commonly used remittances as a percentage of GDP is important in reducing obvious endogeneity bias as lower income countries are more likely to suffer higher emigration of active labour and hence attract higher remittances. This premise is based on the predictions of the altruistic theory. Also, the pure self-interest economic theory of remittances predict pro-cyclicality in the flow of remittances by hypothesising that migrant-home countries with higher growth rates are more likely to attract remittances from their migrants for essentially investment motives. Going by either theory, there is an apparently high likelihood that the use of remittances as a percentage of GDP rather than remittances *per capita* can yield unreliable results. A related contribution of this study is the identification and subsequent use of the most appropriate measurement of migrant remittance inflows to include only the relevant credit entries in the BoP current account (workers' remittances and compensation of employees), thereby excluding migrant transfers which are a BoP capital account credit transaction. This is contrary to common practice in most previous studies in which migrant remittances were defined as the sum of the three aforementioned items even though migrant transfers have a set of completely different features to workers' remittances and compensation of employees.
  
- iv. Fourthly, with reference to SSA, this study has contributed to widening the knowledge horizon by unrestricting the possible direct impact of remittances on economic growth in migrant-home countries to contemporaneous effects, as has been the common practice in virtually all known related studies. The finding that the direct growth-impact of migrant remittances is asynchronous rather than contemporaneous is considered a valuable contribution to knowledge in the remittances-growth literature because most scholars tend to model the impact of remittances on economic growth as if to suggest that the growth-impact of remittances should always be instantaneous. Both theoretically and as shown empirically in this study, restricting the possible impact of remittances on growth to only contemporaneous effects even when remittances are spent on investment goods cannot only be an underestimation but also technically erroneous.
  
- v. The fifth ground-breaking contribution of this study to the literature on remittances is the empirical analysis of the direct impact and causal effects of financial liberalisation on

international remittance inflows through official channels in migrant-home countries, using SSA countries as a case study. This is the first known attempt at an empirical exercise in this endeavour and, more importantly, the first time that a comprehensive *de jure* measure of financial liberalisation is used in this context. Another crucial contribution of this study is that the implications of financial liberalisation for migrant remittance inflows in SSA are further explored at the financial liberalisation policy-specific level. Furthermore, the exclusive impact and the causal effect of financial liberalisation on international migrant remittance inflows in SSA countries with frontier and emerging markets and other SSA countries with underdeveloped financial markets have been explored in a decade-by-decade analysis.

### **8.5 LIMITATIONS AND DIRECTIONS OF FUTURE RESEARCH**

The quality of the data used can be considered as a major limitation of this study. This is because the study relied on secondary sources especially the World Bank, the International Monetary Fund (IMF), and Abdul Abiad and Thierry Tresselt of the IMF who, together with Enrica Detragiache published “A New Database of Financial Reforms” in *IMF Staff Papers*, 57(2): 281-302 in the year 2010. Under some circumstances, additional information which was largely on the implementation of financial sector adjustment programmes was sourced from the various Central Bank reports and recent series of IMF’s *World Economic Financial Surveys*. For some few countries, notably Guinea (1980-1985), Guinea-Bissau and Seychelles (1980-1987), Malawi and Mauritius (1980-1993), Namibia (1980-1989), Tanzania and Uganda (1980-1994), and São Tomé and Príncipe (1991-1995) missing published data on migrant remittances was filled with estimates based on country-specific information obtained from country-desk officials at the Headquarters of the IMF and the World Bank in Washington, D.C., USA. The extrapolations were based on a three-year data average of *per capita* remittances aligned with the receipt of the country involved relative to the total receipt of SSA as a sub-region. It is, however, considered that since a substantial amount of the core data for analytical purposes was obtained from the same credible sources (the World Bank and the IMF), the empirical results obtained from this study are not negatively affected by poor quality data. Besides, in the most recent and comprehensive related study on the SSA, Singh *et al.* (2010) used a similar data compilation technique. Accordingly, as far as the quality of data is concerned, the empirical results of this study can be considered as reliable.

And, notwithstanding the aforementioned contributions of this study, it is suggested that future related research should be directed at addressing the following pertinent issues which could not be attended to in this present study.

- i. A survey study aimed at estimating the amount of migrant remittances received in SSA through the informal channels, whether or not there are country and regional differences in the amount of informal remittances received relative to the officially reported remittances and, if so, to determine the reasons behind this disparity to inform an effective policy design to mitigate them.
- ii. A counterfactual analysis should be undertaken to examine the effects of international migration on the host-country and on the home-country in order to determine whether 'labour-exporting' developing countries are actually the net beneficiaries despite losing their active labour to the industrialised world. In doing so, the impact of remittances and other non-financial gains from international migration will have to be analysed under various hypotheses such as "a with no emigration no remittances plus other gains" scenario against "a with emigration remittances earnings plus other gains" scenario, and "a with emigration remittance earnings but no other gains" scenario. It should also be interesting to explore a counterfactual condition of a world of no South-North migration, hence zero remittances, but with optimal foreign aid from the would-have been North migrant-host countries. This is considered worthy of investigation because the facts presented in this study reveal that regions that receive higher remittances are recipients of lower foreign aid and *vice versa*. Therefore, an important question that must be addressed in the future is: To what extent would the above mentioned scenarios have impacted on global economic growth and critical development indicators such as poverty and income inequality?
- iii. So far, empirical studies on international migrant remittances have been confined to remittance inflows, but as revealed in this study, concentrating on the implications of migrant remittance inflows as a direct financial gain from losing active labour to the outside world can be misleading when remittance outflows are not accounted for. SSA, for example, has not only been a destination of migrant remittances but also a major source of migrant remittances to the outside world. Therefore, it should be interesting to explore factors that determine net remittance inflows and the implications of net migrant

remittances for economic growth and development in SSA.

- iv. One of the striking findings from this study is the fact that migrant remittances impacted positively on financial liberalisation. Therefore, it is hereby suggested that future related studies should aim at identifying the appropriate sequencing of the specific reform policies under financial liberalisation programme so as to enhance an optimal flow of migrant remittances to SSA. Also, it should be interesting to determine how international remittance inflows will react to shocks emanating from each specific policy reform component of a financial liberalisation programme in developing countries. Furthermore, the question as to whether migrant remittance inflows could have a threshold effect on the financial market development could be explored in the future.
- v. Finally, because it is found in this study that financial liberalisation Granger-causes international migrant remittance inflows and remittance inflows promote financial market development in SSA, the implications of remittance inflows for financial inclusion and international financial integration should be explored in the future.

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