

FINANCIAL INSTITUTIONS, MARKETS AND STRUCTURE LINKAGES
WITH ECONOMIC PERFORMANCE IN SELECTED AFRICAN COUNTRIES:
TIME SERIES EVIDENCE

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DECLARATION

By submitting this work, I, Ronald Rateiwa, declare that the work in its entirety is my original work and that I am the sole author. I further declare that the reproduction and publication of this work by Stellenbosch University will not infringe any third party rights, and that I have not previously, in its entirety or in part, submitted it for obtaining any qualification.

R. Rateiwa

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DEDICATION

I dedicate this thesis to our living Almighty God. May His artistry be revealed through this work.

I also dedicate this work to my darling wife, Patronella Chiedza Rateiwa, our daughter, Thelma Tinomudaishe, and our sons, Russell Kutenda and Providence Munesu Rateiwa. This work is also for you, my parents, my brothers and sisters, and my in-laws.

FINANCIAL INSTITUTIONS, MARKETS AND STRUCTURE LINKAGES WITH ECONOMIC PERFORMANCE IN SELECTED AFRICAN COUNTRIES: TIME SERIES EVIDENCE

ABSTRACT

As traditional sources of financing such as bank lending have slowed down, the call to mobilise financial resources for the attainment of the SDGs and the Africa Agenda 2063 has grown louder. Consequently, the need for more research to identify and understand untapped and underused sources of economic growth has become even more urgent. Unfortunately, although research on the finance-growth linkage is substantial, there seems to be no agreement on the channels and magnitude through which different institutions influence economic growth.

For that reason, and to contribute to the finance-growth discourse, 264 trivariate models were estimated for each country (792 in total) in this thesis, to identify the channels and magnitude through which financial systems influence economic growth. The estimation is based on the cointegration and vector-error correction techniques within the Johansen cointegration framework. Estimating trivariate models enabled us to apply one of the 22 control variables at a time, thus testing the robustness of the relationship under different conditions. To cover different aspects of financial systems, 8 different measures of financial development were used. Also, the study was carried out at country level to avoid problems associated with cross-country studies. The study uses time series data from Africa's three biggest economies, namely: Egypt, Nigeria and South Africa¹ over the period 1971-2013. The thesis is organised into five empirical chapters.

Firstly, results from our analysis show that the link between bank development and economic growth in all the three countries is weak and mixed. Egypt is the only country to report overall results, though weak, which show a positive relationship between bank development and economic growth. The results for Nigeria and South Africa are not only weak, but mixed.

Secondly, analysis in respect of the relationship between stock market development and economic growth shows that such a relationship is positive in all three countries, albeit based on different measures. In Egypt, our results show that stock market development positively influences economic growth based on both stock market capitalisation and stock market value-traded measures. Results obtained in respect of Nigeria show that stock market value-traded is likely to positively influence

¹ These three countries are the three biggest economies in Africa

economic growth. The results for South Africa are surprisingly weak, given that this is the country with the deepest stock market in Africa.

Thirdly, results from this thesis show that there is potential for NBFIs to stimulate economic growth in Egypt and South Africa. In Nigeria, no evidence was found to show the influence of NBFIs on economic growth. Rather, the weak evidence that was found in respect of Nigeria suggests that economic growth will negatively influence the development of NBFIs.

Fourthly, results in respect of financial structure show that in Egypt, the liquidity of the financial system is influenced by the growth of the economy. In Nigeria, results show that the liquidity of financial markets positively influences economic growth. The results for South Africa show a positive relationship, suggesting that an increase in the liquidity of the financial markets will spur greater economic growth.

Lastly, results obtained from this thesis suggest that causality runs from stock markets and banks to NBFIs in Egypt and Nigeria, where the level of NBFIs development is low. However, in South Africa, where the NBFIs are fully developed, NBFIs influence the development of stock markets and banks. Thus, these results highlight the different channels through which financial development influences economic growth in the three countries.

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CHAPTER ONE

MOTIVATION AND OBJECTIVES OF THE STUDY

1.1. Motivation for this study

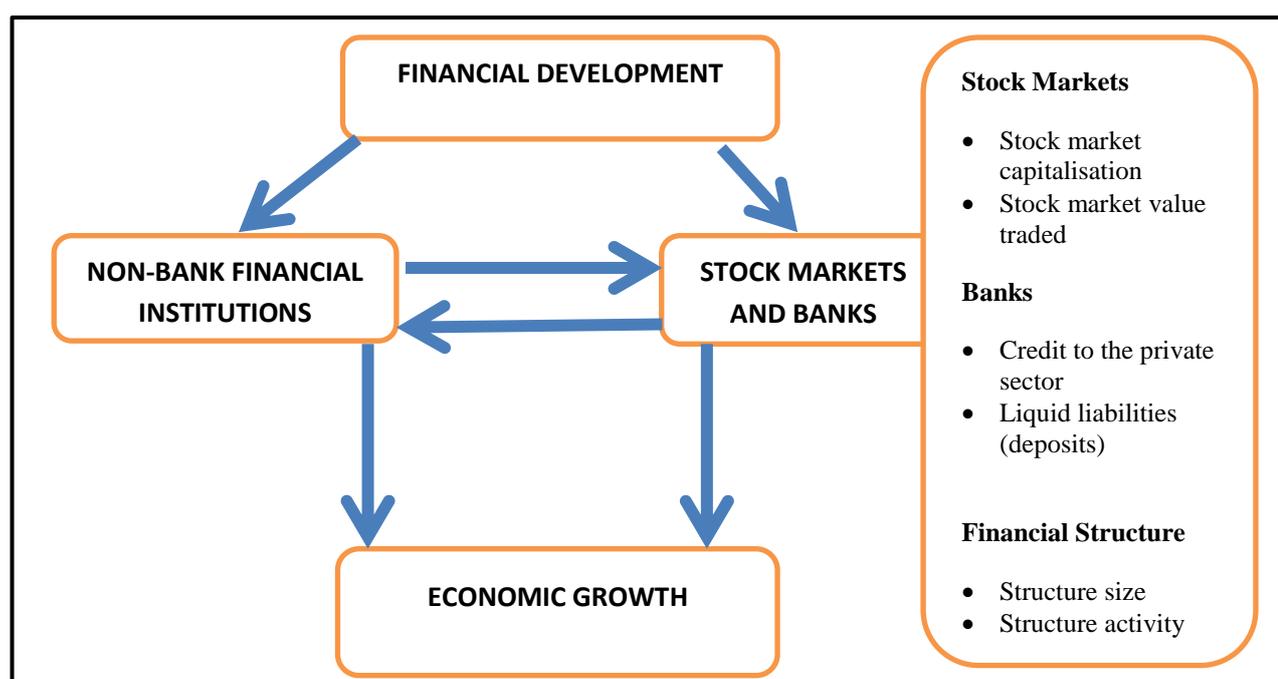
The objective of this chapter is to provide motivation for investigating the influence of financial systems on economic growth. The chapter also sets out the objectives of the study. Coverage in terms of countries and time period is also specified and justified. The chapter concludes by setting out the structure of the study in terms of the aspects covered by each chapter.

In July 2015, three of the most powerful world bodies, the United Nations (UN), the International Monetary Fund (IMF), and the World Bank convened for the UN Financing for Development Conference (FfD) to “build an international consensus on the actions needed to ensure that sufficient financing is available for developing countries in pursuing sustainable development” (International Monetary Fund, 2015). The motivation for this conference was based on the proposition that financial development – regarding depth, access and efficiency (Sahay, *et al.*, 2015) – stimulates economic growth. However, results from studies investigating the finance-growth link differ in terms of magnitude, significance and direction of causality, thus creating ambiguity regarding the true nature of the relationship between financial development and economic growth. This ambiguity is not helpful to policy makers, especially in Africa, where financial development has remained low, while poverty is rampant.

According to Levine and Renelt (1992) and Sala-I-Martin (1997), one of the key factors explaining the different results is the conditioning information set applied in each study. Employing different sets of control variables to the same variables of interest will affect the size and significance of the coefficients. This is because there are a number of control variables, which cannot be included in one regression if we are using a structural model, an approach which has been vastly adopted in this field. Therefore, to avoid running into the same problems associated with previous studies, the current study adopts a trivariate methodology to test the influence of financial development on economic growth. This will allow us to apply one of the 22 control variables at a time, thus being able to test the robustness of the relationship between financial development and economic growth under different conditions. Given that financial institutions are multi-dimensional (Čihák, *et al.*, 2013), this thesis uses 8 indicators of financial development indicators to cover different institutions and aspects of the financial systems.

Based on this supposition, this thesis will reinvestigate the finance-growth nexus in Africa by focusing on each of the different categories of financial institutions to establish the channels through which they influence economic performance of the countries involved in this study. We show these possible channels schematically in Figure 1.1 below.

Figure 1.1: Outline of the channels through which financial development influences economic growth, which channels will be investigated in this thesis.



Source: Own analysis

Figure 1.1 above shows that the influence of financial development on economic growth can either be direct or indirect. Direct through the effect of banks, stock markets and NBFIs on economic growth, and indirect through the influence of NBFIs on the development of other financial institutions such as banks and stock markets; or vice versa (that is the influence of stock markets and banks on the development of NBFIs), which in turn spurs economic growth. NBFIs are financial institutions that do not have a full banking licence, and thus cannot take deposits. However, they both compete with and complement traditional banking institutions by providing alternative financial services such as contractual savings (pension funds and insurance companies), investment intermediaries (finance companies, mutual funds and money market funds), and consumer credit (Mishkin, 2007; World Bank, 2015c). Given the increasing importance of NBFIs, this suggests that leaving out such institutions from the finance-growth analysis will underestimate the true effect of finance in the economic growth process.

Also, we observed that researchers have adopted a piecemeal approach wherein each study focuses only on one or two types of financial institution. Such a piecemeal approach suggests that other types of financial institution and the relationships among them, which are also central to understanding the finance-growth link, are omitted from the analysis. Omitting other types of institution and the relationships among them implies that the finance-growth link is either exaggerated or underestimated.

Furthermore, despite the potential of financial development in promoting economic growth and enhancing macroeconomic stability in Africa, financial development in Africa remains low and exclusive. In addition, low levels of financial development, among other factors, has led to poor economic growth, which has resulted in the continent remaining home to the largest proportion of people living in abject poverty. The IMF submitted that although financial development has contributed to economic growth in Africa, its contribution could have been more if it was at the regional benchmark level. Thus, it suggests that improving financial development to the regional benchmark would boost economic growth by 1.5% (International Monetary Fund, 2016a:12).

Therefore, as Africa gears up for the Africa Agenda 2063, there is need for a study that revisits the finance-growth link by extending the analysis to alternative sources of finance such as NBFIs. The study should also investigate the interrelationships among the different types of financial institution in order to delineate the channels through which they influence economic growth in Africa. Understanding such intricacies will ensure that whatever policy recommendations that arise from such a study will be well informed.

1.2. Objectives of the study

In the light of the foregoing, the objective of the study is to examine the link between financial development and economic growth empirically, and the causality thereof in Africa, using country-specific time series data. We set out the specific objectives of this study and the corresponding research questions in the Table 1.1 below:

Table 1.1: Research objectives

Research objectives	Research questions
1. To investigate the relationship between bank development and economic growth.	<ul style="list-style-type: none"> • What is the theoretical linkage between banks and economic growth? • Which elements of bank development influence economic growth in Egypt, Nigeria and South Africa? • What factors influence the ability of banks to stimulate economic growth in Egypt, Nigeria and South Africa?

2. To explore the nature and extent of effect of stock market development on economic growth.	<ul style="list-style-type: none"> • Why are stock markets important for economic growth in the three African biggest economies? • Through which aspects do stock markets influence economic growth in Egypt, Nigeria and South Africa? • What factors influence the ability of stock markets to stimulate economic growth in Egypt, Nigeria and South Africa?
3. To examine the relationship between NBFIs and economic growth.	<ul style="list-style-type: none"> • What is the theoretical linkage between NBFIs and economic growth? • Through which channels do NBFIs influence economic growth in the three biggest economies in Africa? • What factors influence the ability of NBFIs to stimulate economic growth in Egypt, Nigeria and South Africa?
4. To investigate the relationship between financial structure and economic growth.	<ul style="list-style-type: none"> • What is financial structure? • How does financial structure influence economic growth? • What factors influence the relationship between financial structure and economic growth in Egypt, Nigeria and South Africa?
5. To explore the interlinkage between financial institutions.	<ul style="list-style-type: none"> • How are financial institutions interconnected? • How do banks influence the development of stock markets and NBFIs? • Through which channels do NBFIs influence banks and stock market development in Egypt, Nigeria and South Africa? • How do stock markets influence the development of banks and NBFIs in Egypt, Nigeria and South Africa?

1.3. Scope of the study

The empirical investigation of the objectives set out above was carried out using data covering the period from 1971 to 2013 in Africa's three biggest economies, namely Egypt, Nigeria and South Africa.

The selection of these three countries was informed by their economic importance in Africa and the availability of data. Egypt, Nigeria and South Africa are Africa's three biggest economies, making up about 50% of Africa's total GDP (World Bank, 2015b).

Secondly, Egypt, Nigeria and South Africa account for more than 80% of all the funds raised through IPO in Africa in 2014 (African Securities Exchange Association, 2015). In order for Africa to achieve the SDGs, there is need to explore alternative sources of funding. Therefore it is important to understand the role of different financial institutions in raising financing for development.

Thirdly, Egypt, Nigeria and South Africa, have the biggest share of banking assets in Africa. They collectively control 73% of banking assets in Africa (KPMG Africa Limited, 2013). Therefore, given

that traditional bank lending has been constrained since the global economic crisis, it will be crucial to establish if and how the role of banks in promoting economic growth has changed.

Lastly, these countries are three of the five most populous countries on the continent. A booming population may increase potential demand for goods and availability of cheaper labour. This suggests that if population is growing in line with national income, then population will positively influence economic growth. However, rapid increases in population and urbanisation have not been met by increased domestic food production, resulting in an increased need for imports and reduced fiscal space, which may adversely affect economic growth (International Monetary Fund, 2015b).

Despite being the biggest economies on the continent, home to the deepest financial markets, and having implemented a number of economic and financial sector reforms, these countries have experienced sluggish and volatile economic growth. Recently, Nigeria and South Africa have been flirting with economic recession. Therefore it is important to understand which financial institutions, stock markets, banks or NBFIs are important determinants of economic growth in these countries. Understanding how financial structure has influenced economic growth and the interconnectedness between financial institutions in these countries is no less important.

If the empirical investigation shows that financial development is an important determinant of economic growth and the factors that influence such a relationship in Africa's three biggest economies, it becomes imperative that the efficiency of financial institutions in these and other developing countries be enhanced as Africa gears towards Agenda 2063. A weak causal relationship between financial development and economic growth would suggest an even greater urgency to address factors inhibiting the ability of financial systems to enhance economic growth in these countries.

Thus, just as Egypt led the civilisation process, collectively these three biggest economies in Africa have the potential to play the "big-brother role" to lead economic development on the continent. Once these three lead the development process, the rest of the continent will benefit through spillover effects. Conversely, and if these economies are not growing, they are likely to drag down the smaller ones. For instance South Africa is the economic hub for Southern African countries, wherein it takes up more than 70% of some of the countries' exports. A similar deduction can be made from the adage that says, "When Europe sneezes, Africa coughs". Lastly, owing to their geographic location – Egypt in the north, Nigeria in the west and South Africa in the south, these countries are strategically positioned to influence the pace and direction of economic transformation on the continent through financial and economic integration.

1.4. Structure of the study

In terms of the empirical chapters, this thesis starts by adopting the traditional approach used in studying the finance-growth debate, which separately tests the effect of bank and stock market development on long-run economic growth.

Secondly, the analysis is then extended to include NBFIs in the finance-growth debate often left out in previous studies (Fanta & Makina, 2017).

Thirdly, the analysis does not end with a focus on the separate effect of different financial institutions on economic growth, but is extended to examine the relationship between the relative importance or the mix of bank and stock markets in a certain financial system (financial structure), and long-run economic growth.

Lastly, the thesis extends the analysis to investigate the interrelationship between NBFIs, banks and stock markets. Such analysis helps us understand the different channels through which financial development in the selected countries influence economic growth. The thesis is organised into 10 chapters as follows.

This chapter (Chapter 1) provides the motivation for carrying out this study.

Chapter 2 provides the context for the study. The chapter reviews the structure and development of financial systems in Africa and, specifically, the three countries under study.

Chapter 3 sets the scene for the thesis by reviewing the theoretical finance-growth nexus, and recent studies on the subject. The chapter ends by showing the gap in the literature to which the study intends to contribute.

Chapter 4 provides the methodological framework employed in this thesis.

Chapters 5 and 6 introduce our empirical results from the investigation of the finance-growth nexus, starting with the traditional approach, which focuses on the separate effect of bank and stock market development on long-run economic growth.

Chapter 7 introduces and investigates the influence of NBFIs on economic growth.

Chapter 8 examines the influence of the structure of the financial system (the mix and relative importance of banks and/or stock markets within a particular financial system) on economic growth.

Chapter 9 extends the debate from only focusing on the relationship between financial institutions and economic growth to investigate the relationship among the financial institutions themselves.

Lastly, Chapter 10 provides a synthesis of the results and conclusions, and provides some policy recommendations.

CHAPTER TWO

BACKGROUND AND CONTEXT OF THE STUDY

2.1. Introduction

Despite the potential of financial development in promoting economic growth and enhancing macroeconomic stability in Africa, a contextual review of the financial markets shows that financial development in Africa (regarding both deepening, size, liquidity and access) is still far below the global average. Low levels of financial development, among other factors, has led to poor economic growth, which has resulted in the continent remaining home to the largest proportion of people living in abject poverty. We start this chapter by showing the overall state of financial development in Africa, compared to other regions of the world. The next sections will review the context of bank, stock market and NBFIs development, as well as the financial structure in the different countries.

2.2. Regional financial sector and economic performance indicators

The indicators are disaggregated into banks, stock markets and NBFIs. Banks and NBFIs are collectively referred to as financial institutions, while stock markets are referred to as financial markets.

A review of the statistics presented in Table 2.1 below shows that financial development in sub-Saharan Africa lags behind the world average, and in some cases behind its peers in less developed regions. Specifically, with regard to depth of financial institutions, financial development in sub-Saharan Africa is less than half of the world average and that of LAC and South Asia. However, in respect of the depth of financial markets, financial development in sub-Saharan Africa is comparable to the global average and its peer regions.

Secondly, the table also shows that access to financial institutions by individuals and firms in the sub-Saharan region is far less than half that of other regions. However, access to financial markets is in line with the world average and other regions. Thirdly, measures of efficiency show that financial institutions in the sub-Saharan Africa region charge more interest rates to borrowers and pay less deposit interest to depositors. According to Nicoló, *et al.* (2003: 6), the level of interest rate spread is “determined by three factors: (i) funding, operating and regulatory costs; (ii) monopoly rents accruing from banks’ market power on both the lending and deposit side; and (iii) the level of credit risk.” The likely effect of high level of spread is that high lending rates increase the cost of credit and discourage investments, while low remuneration to depositors discourages savers. Ultimately high interest rate spreads inhibit the pace of financial development.

Table 2.1: Selected indicators of financial sector development for selected regions compared to the world averages: 2003 - 2013

	Sub-Saharan Africa			World averages			Latin America and the Caribbean			South Asia		
Depth of financial institutions (% of GDP)	2003	2008	2013	2003	2008	2013	2003	2008	2013	2003	2008	2013
Bank credit to the private sector	10.9	13.5	16.7	25.3	35.5	40.2	28.3	31.6	37.8	25.1	32.6	43.0
Deposits of commercial banks	14.4	19.0	23.1	36.4	44.9	47.5	38.9	41.2	43.0	34.2	42.8	54.4
Assets of NBFIs	5.9	4.6	8.1	6.7	4.9	12.9	1.7	2.6	15.5	8.8	6.6	15.8
Depth of financial markets (% of GDP)												
Stock market capitalisation	11.9	35.7	22.2	27.1	41.3	30.8	15.7	26.8	24.6	11.4	29.4	20.1
Stock market value traded	0.4	1.1	0.6	3.3	10.4	3.9	0.4	2.7	0.3	2.8	7.7	5.2
Access to financial institutions												
Bank accounts per 1000 adults	11	83	166	43	272	559	420	487	711	434	269	433
Firms using banks to finance investment (% of firms)		12.2	13.0	4.1	26.8	24.3	14.9	43.7			1.4	18.4
Access to financial markets												
Value traded outside the top 10 (% of total value traded)	45.0	30.9	67	42.4	42.8	54.1	40.8	35.3	40.1	49.7	62.4	75.9
Market capitalisation outside the top 10 (% of total market capitalisation)	71.7	58.2	80.2	47.7	44.4	49.6	43.7	34.7	36.7	57.3	64.1	61.0
Efficiency of financial institutions												
Bank lending-deposit spread	11.6	8.3	8.8	6.9	6.2	6.0	9.3	7.9	7.7	6.5	6.6	4.8
Efficiency of financial markets												
Stock market turnover (Value traded as a % of stock market capitalisation)	3.5	6.8	2.6	22.0	31.8	12.2	3.7	4.5	3.1	35.6	91.1	31.5
Other indicators												
Bank concentration (% of total banking assets)	83.9	81.2	75.4	78.5	74.3	69.5	58.7	74.4	66.4	57.0	52.5	72.6

Source: World Bank (2015b)

A similar picture also shows with regard to efficiency of financial markets. The table shows that financial markets in sub-Saharan Africa are less liquid compared to other regions. Lastly, the indicator of bank concentration shows that the banking sector in sub-Saharan Africa is more concentrated compared to other regions. According to the dictates of competition economics, dominance is a source of market power. The high level of concentration may be one of the factors which explain why banks in the sub-Saharan region enjoy higher interest rate spreads compared to other regions, which consequently adversely affect financial development.

Table 2.2 below provides an overview of selected financial access indicators in the countries under study. Indicators included show the level of access to financial markets by both firms and individuals in each of the three countries. However, some of the data were not available for certain indicators in some of the countries, especially on access to financial services.

Table 2.2: Access to financial markets in each of the countries

	Egypt				Nigeria				South Africa		
Access to financial institutions	2003	2008	2013		2003	2008	2013		2003	2008	2013
Commercial bank branches (per 100,000 adults)	3,91	4,63	4,87		4,66	6,21	6,01		4,74	7,84	10,34
Access to financial markets											
Value traded outside the top 10 (% of total value traded)	48,94	59,04	47,93				7,78		31,85	49,53	67,03
Market capitalisation outside the top 10 (% of total market capitalisation)	51,69	51,74	49,92				29,2		60,62	77,19	80,25
Other indicators											
Bank concentration (% of total banking assets)	56,92	57,65	58,94		36,11	54,9	39,42		99,4	78,31	76,52

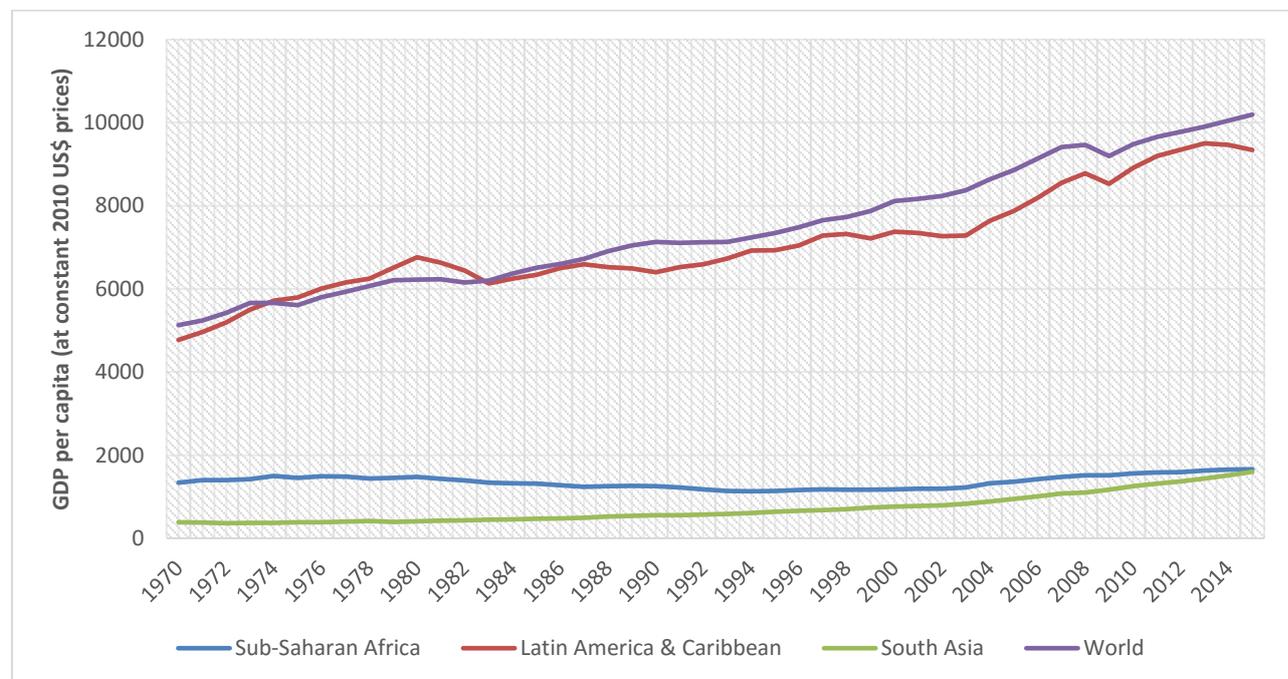
Source: GDF Database (2017)

The table above shows that although access to financial services measured by the number of commercial branch per 100 000 adults has been increasing in all the countries, it is highest in South Africa. Secondly, stock markets in Egypt and South Africa appear more competitive than that in Nigeria. The stock exchange in Nigeria is dominated by the top ten firms in terms of both value traded and capitalisation. However, a look at the concentration of banks suggests that the banking sector in South Africa is the least competitive. However, this is because the sector is dominated by the top five banks, which vigorously compete against one another.

Whether by coincidence or by empirical linkage, the low levels of financial development in sub-Saharan Africa are associated with low levels of economic growth (proxied by per capita GDP) and high levels of poverty (measured by poverty head count). Figure 2.1 and Figure 2.2

below show that economic growth in sub-Saharan Africa has remained almost static over more than four decades, while economic growth in other regions has more than doubled.

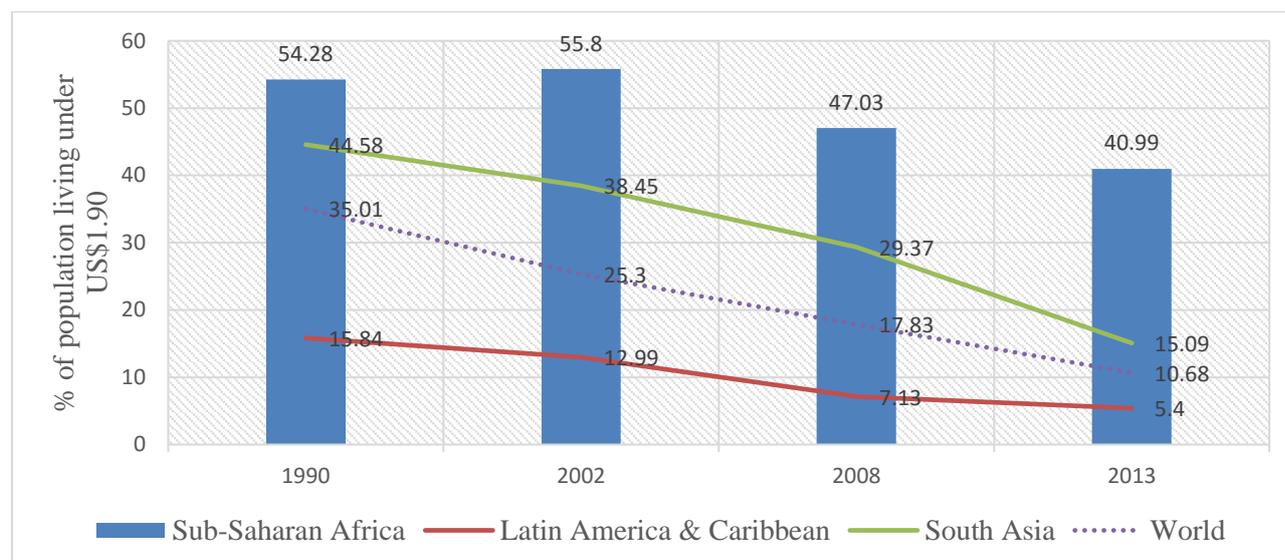
Figure 2.1: GDP per capita of selected regions at constant US\$ prices: 1970 - 2014



Source: *World Development Indicators* (World Bank, 2016)

Figure 2.1 above shows that between the 1980s and the 1990s, per capita GDP in sub-Saharan Africa was declining. This period corresponds with the implementation of structural adjustment programmes in this region. Unsurprisingly, poverty levels have also remained very high in this region. On the contrary, the South Asia region, whose GDP per capita is currently at almost the same level as that of sub-Saharan Africa, witnessed a significant decline in the proportion of people living under US\$1.90 from more than 44% in 1990 to 15% in 2013 (see Figure 2.2 below).

Figure 2.2: Poverty headcount ratio: Proportion of the population living on less than US\$1.90 per day



Source: *World Development Indicators (World Bank, 2016)*

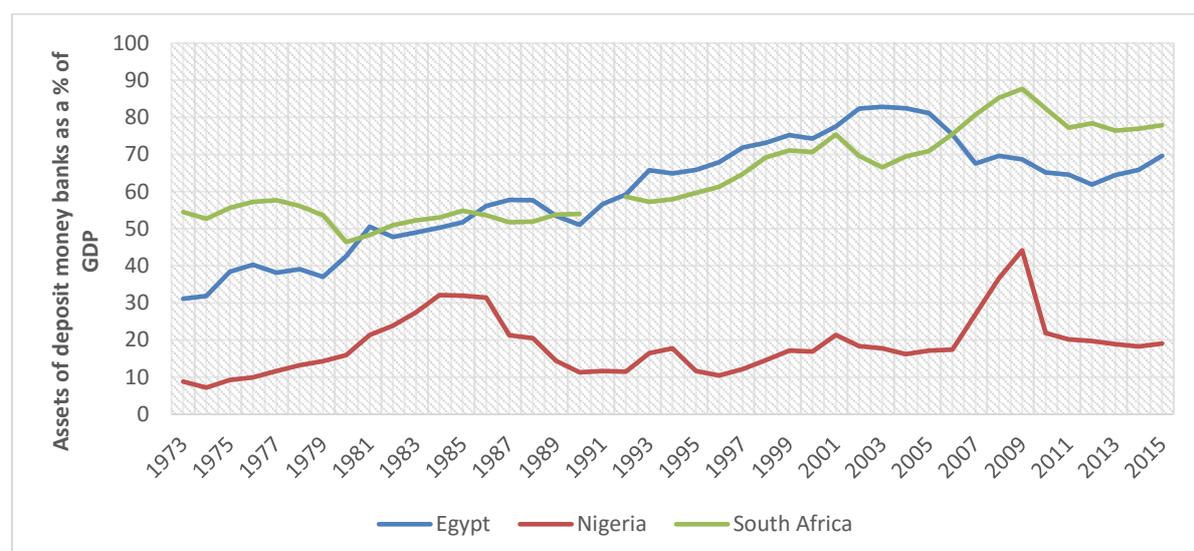
In the following sections, we narrow down the contextual analysis to specific types of financial institution in the countries of interest in this study, i.e., Egypt, Nigeria and South Africa. The types of financial institution covered are stock markets, banks and NBFIs.

2.3. Overview of bank development in Egypt, Nigeria and South Africa

In this section, we present an overview of the development of banks in Africa and the three countries under study. The objective of such a review is to establish the factors which may influence the relationship between bank development and economic growth in each of the countries being studied.

Figure 2.3 below shows the size and growth of assets owned by deposit-taking banks in the three countries under study. A look at the trend growth of assets owned by these banks presented in the figure below shows that the size of the banking sector in Egypt is comparable to that in South Africa based on assets owned by these banks expressed as a percentage of GDP. However, Nigeria has the smallest banking sector, which is just a third of those in Egypt and South Africa.

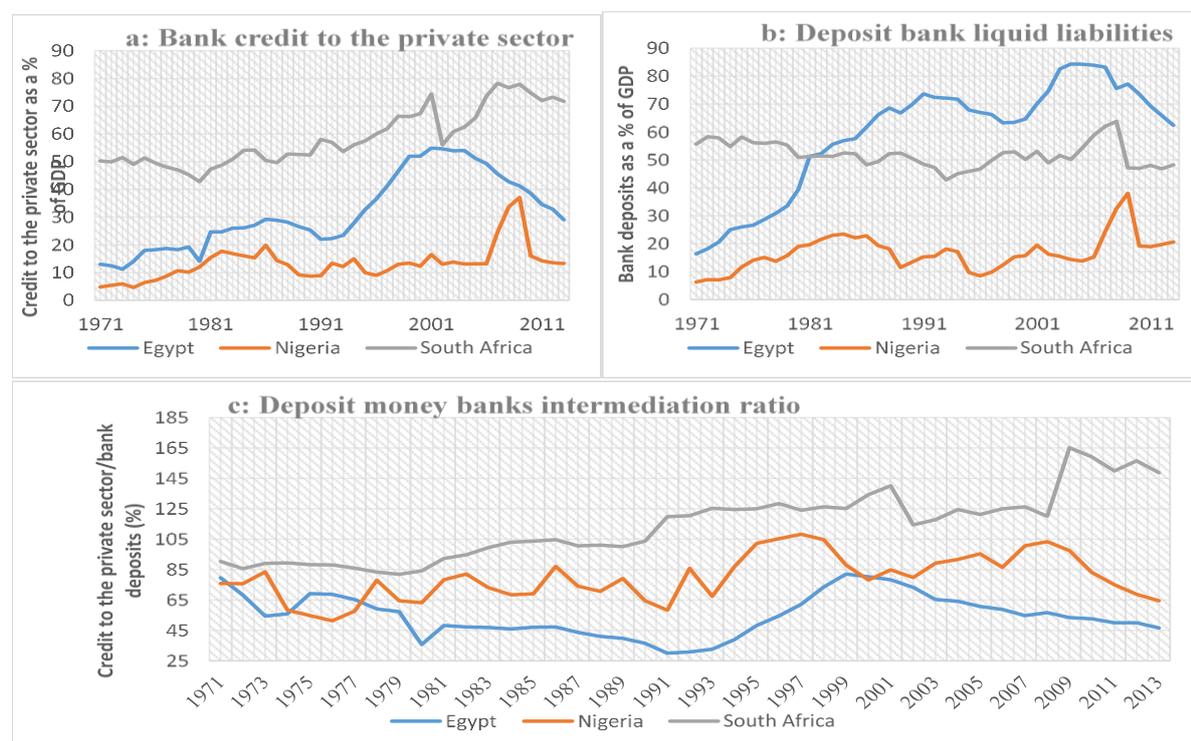
Secondly, we use aggregate measures to show the level of bank development in each country. Bank development is proxied by credit to the private sector, bank liquid liabilities and the intermediation ratio. Credit to the private sector and liquid liabilities are expressed as a percentage of GDP.

Figure 2.3: Assets of deposit-taking banks in Egypt, Nigeria and South Africa

Source: GDF Database (2017)

Figure 2.3 and 2.4 show that Nigeria has the least developed banks using both deposits and credit extended to the private sector, compared to Egypt and South Africa. The other observation is that South Africa has the highest level of credit extended to the private sector, while Egypt has the highest level of deposits. Furthermore, we observed that of the three countries, South Africa has the highest intermediation levels, currently more than 100%. This suggests that the banks in South Africa extend more credit than the deposits they mobilise². Egypt has the least intermediation levels, despite having bank deposits and assets comparable to South Africa's. This suggests that banks in Egypt appear to be stricter when it comes to lending.

² This suggests that financial systems in South Africa are more integrated with the global financial systems, and that deposit money banks accordingly do not rely solely on domestic savings for lending, but on international capital inflows as well. It also captures the level of credit extended to the private sector based on deposits mobilised.

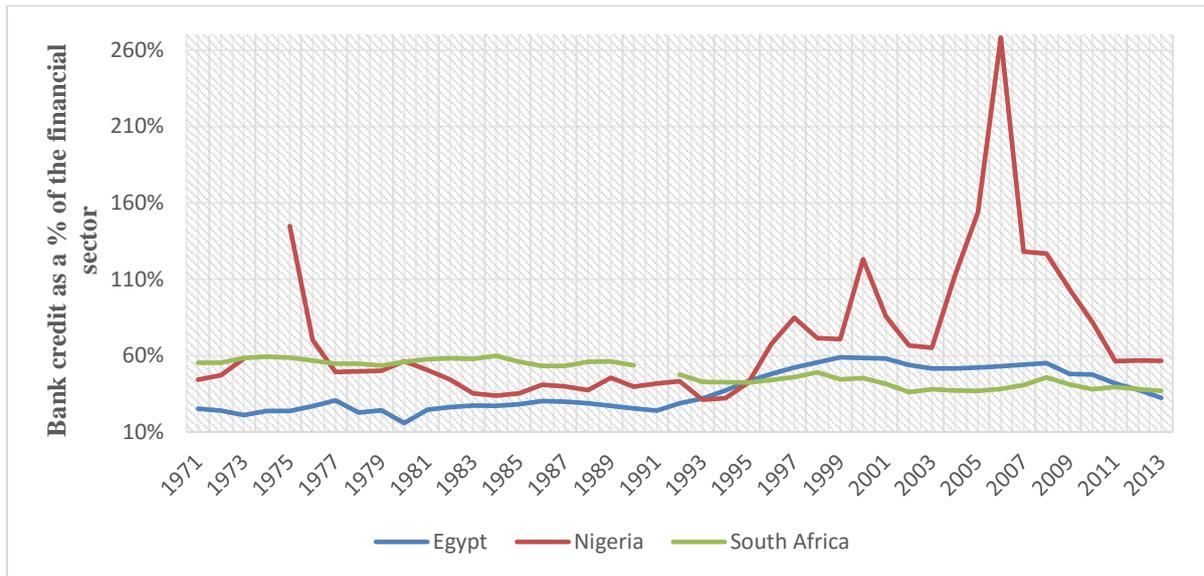
Figure 2.4: Indicators of bank development in Egypt, Nigeria and South Africa: 1971-2013

Source: World Development Indicators (2015) and the International Financial Statistics

Thirdly, we analyse the trend in the size of deposit banks relative to the size of the financial sector in each country. We present this analysis in Figure 2.5 below.

The figure shows that currently, South Africa has the smallest banking sector relative to the size of its financial sector. Specifically, analysis shows that the proportion of the banking sector in South Africa has been declining over time, and is currently at less than 40%. In Egypt, the relative size of the banking sector gradually increased from 1971, reaching its highest level of 59% in 1999, before declining to just over 40% in 2013. However, in Nigeria, the financial sector is dominated by the banks. Around the crisis period between 2005 and 2009, the banking sector was advancing loans which were more than twice those of the rest of the financial sector.

Figure 2.5 Relative importance of deposit money banks in the financial sector of each country

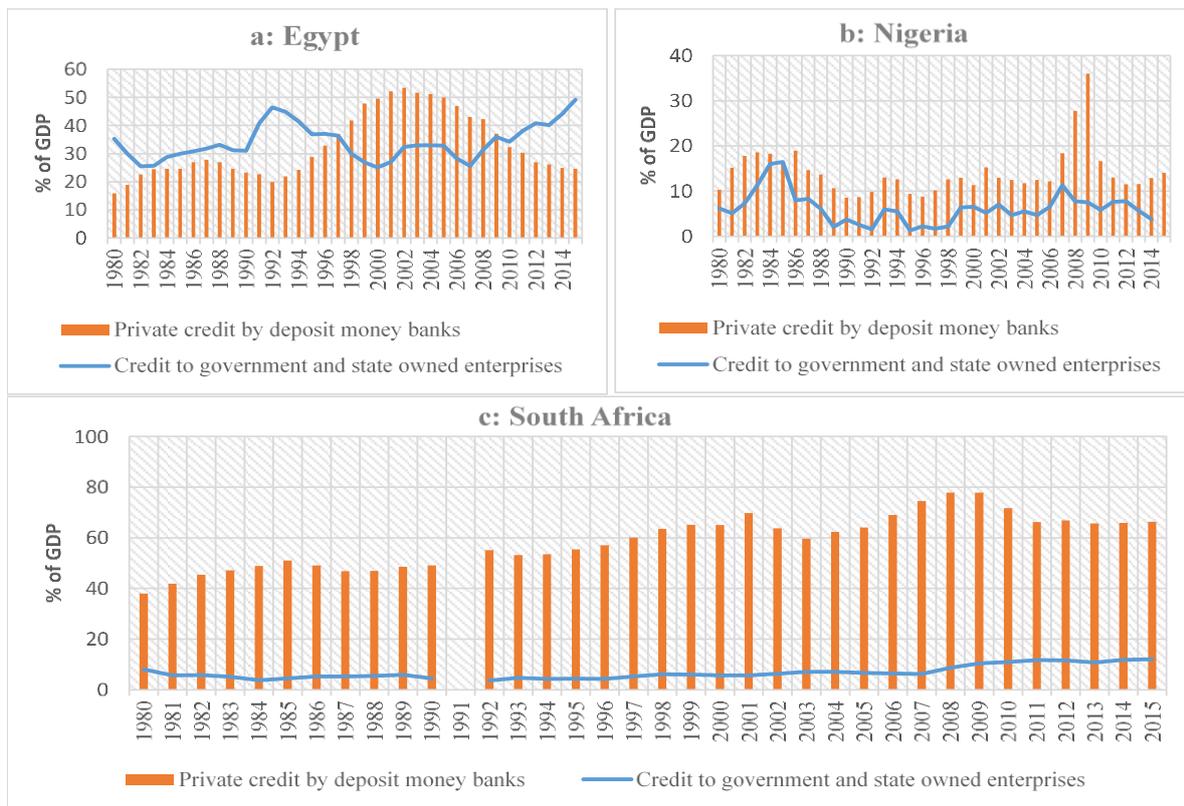


Source: GDF Database (2017)

Fourthly, we look at the role of government in credit markets in each of the three countries. In this case, the role of government is measured by credit extended to government and state-owned enterprises.

Figure 2.6 below shows that the participation of government in credit markets is highest in Egypt and lowest in South Africa, relative to the size of the banking sector. In Nigeria and South Africa, the activity by the government in the credit markets is always less than that of the private sector. However, in Egypt, in some instances, government seems to be borrowing more than the private sector.

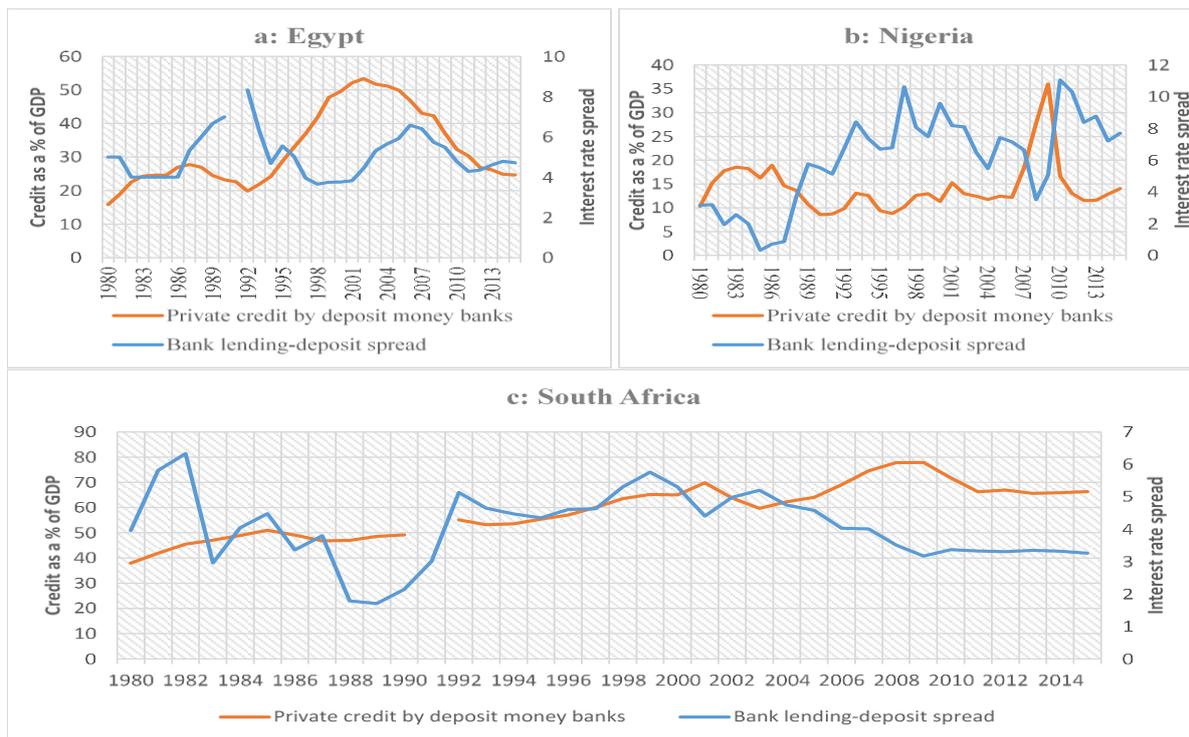
Figure 2.6: Participation of government in credit markets



Source: GDF Database (2017)

Fifthly, given that interest rates are one of the important factors influencing the credit market, in the figure below we wanted to check the relationship between interest rate spread and the level of credit in each of the three countries. Analysis presented in the figure below shows that, in all the three countries, there appears to be an inverse relationship between the level of credit and interest rate spread. This further highlights the importance of ensuring an effective monetary policy, because its influence on credit market also affects economic growth.

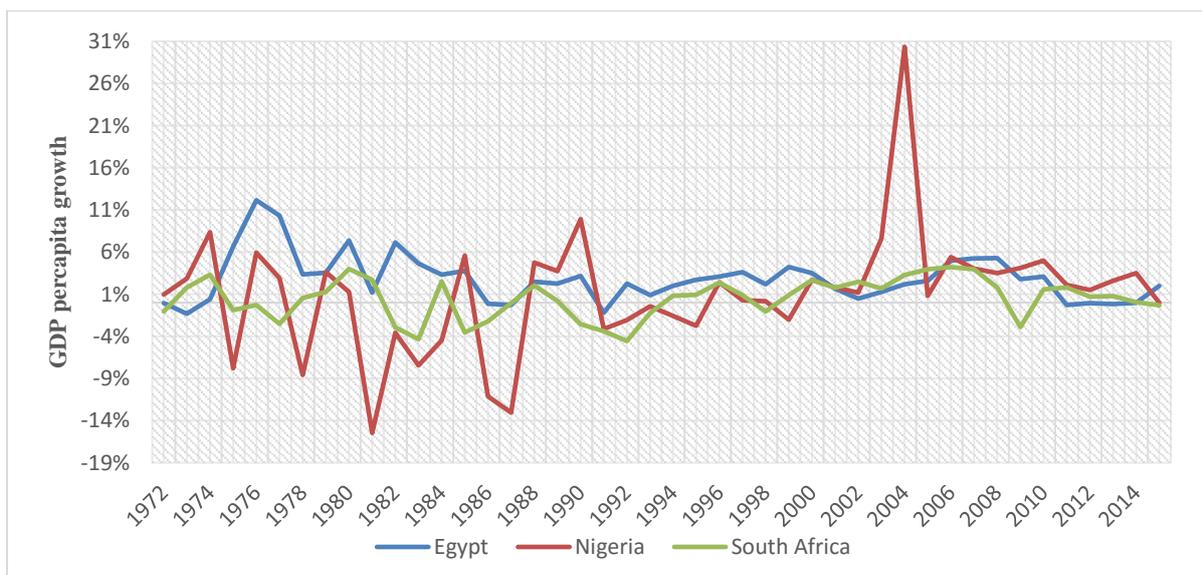
Figure 2.7: The relationship between the level of credit and interest rate spread



Source: GDF Database (2017)

Over the same period, the three countries experienced varying levels of economic growth as shown in the figure below. The level of economic growth was calculated as the growth in GDP per capita at constant US\$ prices.

Figure 2.8: GDP growth rates in Egypt, Nigeria and South Africa



Source: GDF Database (2017)

The natural question that follows is what factors might have influenced the trends in bank development presented above. In addition, whether the trend and level of bank development also influenced economic growth in each of the respective countries. The following paragraphs present some of the historical context which might have contributed to such trends.

Egypt

From the mid-1970s, the Egyptian banking sector expanded rapidly following the adoption of the open door policy, which was outward looking and promoted the role of the private sector in order to stimulate economic growth. In the 1990s, a time that coincided with the Economic Structural Adjustment Programme (ESAP), Egypt adopted a more liberal regulatory regime for its banking sector. Credit controls and portfolio restrictions were eliminated. At the same time, the regulatory authorities adopted the Basel Accord in order to improve the stability of the banking sector (Elsayed, 2015). This period coincided with a decline in interest rate spread and participation of government in credit markets. At the same time, credit to the private sector started to increase. This suggests that such reforms might have contributed to performance of the banking sector in Egypt.

Between 2000 and 2010, Egypt witnessed another set of financial sector reforms, which led to improved regulation of the sector. Better regulation led to improved efficiency of banks. It is interesting to note that a study on the impact of changes in regulation between 2004 and 2010 led to improved efficiency of the banking sector, wherein public banks performed better than private banks (Elsayed, 2015). Ultimately, the regulatory reforms helped insulate Egypt's banking sector from the ruinous asset bubbles that rattled global financial markets. Moreover, this phase of reforms resulted in the interest rate spread declining, and there was a noticeable increase in credit extended to government. At the same time, credit to the private sector declined.

Coincidentally, the periods of financial reforms were associated with relatively higher levels of economic growth. However, the later part of the second phase of reform witnessed a decline in economic growth between 2010 and 2013, which could have resulted from the spillover effect of the global financial crisis.

Nigeria

In Nigeria, during or around the 1970s, the Nigerian government pursued an indigenisation policy whereby foreign banks were nationalised, and entry was restricted. The authorities at

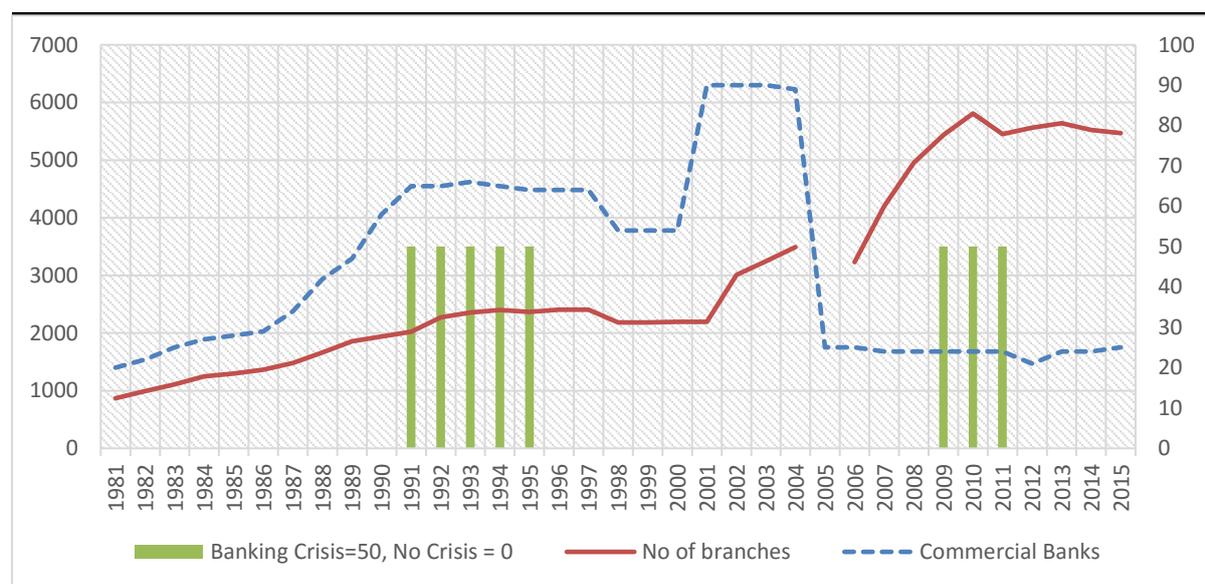
the time also implemented financial repression by setting up deposit interest rate floors and lending interest rate ceilings. As a result of financial repressive policies, interest rate spreads were low, resulting in more credit being advanced to the private sector as well as government. However, the period was characterised by predominantly negative and fluctuating economic growth. At the same time, the number of banks remained static at around 20 (Barros & Caporale, 2012).

The advent of the Structural Adjustment Programme prescribed by the IMF and World Bank resulted in some of the controls in the sector being eliminated, starting from 1986. Specifically, credit allocation quotas, interest rate regulation, entry restrictions and indigenisation policies were relaxed (Barros & Caporale, 2012). This period witnessed the number of commercial banks significantly increasing from 29 in 1986 to 65 in 1991 (Central Bank of Nigeria, 2016). Other sources suggest that the number of banks in 1991 was 107, and increased to 120 in 1992, a number which is far more than what is reported by the Central Bank of Nigeria (Barros & Caporale, 2012: 4).

Unfortunately, the reforms resulted in the interest rate spreads significantly increasing, and the level of credit decreasing. Also, the increase in the number of banks was not matched with an increase in the regulatory and supervisory capacity of the Central Bank. Consequently, instead of intermediating funds between savers and borrowers, banks started engaging in arbitrage activities outside core banking activities. Where loans were given, they were given to politically connected individuals. The result was that 25 banks were declared insolvent and liquidated between the period 1992 and 2004 (Barros & Caporale, 2012). At this point, the number of commercial banks was 89.

Figure 2.9 below shows the relationship between the number of banks, number of branches and the occurrence of banking crises in Nigeria. The occurrence of a crisis is shown by 50, while the absence is shown by a zero.

Figure 2.9: The number of commercial banks, the number of branches and the occurrence of banking crises in Nigeria



Source: WDI (2016) and GDF Database (2013)

The significant increase in capital requirements from N2 billion to N25 billion in 2004 led to a wave of bank consolidation through mergers and acquisitions. According to Sanusi (2010), the consolidation of banks increased the amount of capital available to them, thus aiding the speed of credit creation. In addition, poor fiscal management policies allowed excess liquidity arising from the oil sector into the banking system. This resulted in bank deposits and credit mirroring the oil price and its volatility. Specifically, between 2004 and 2009, bank deposits and credit grew at an average of 76% per annum (Sanusi, 2010). The other factors affecting the ability of Nigerian banks to effectively intermediate funds are poor corporate governance and weak regulation in the sector. Commenting on the capability of the Central Bank of Nigeria before the 2008 banking crisis, Sanusi explained that, “critical gaps in the regulatory framework and regulations, uneven supervision and enforcement, unstructured governance & management processes at the CBN” were a major concern (Sanusi, 2012).

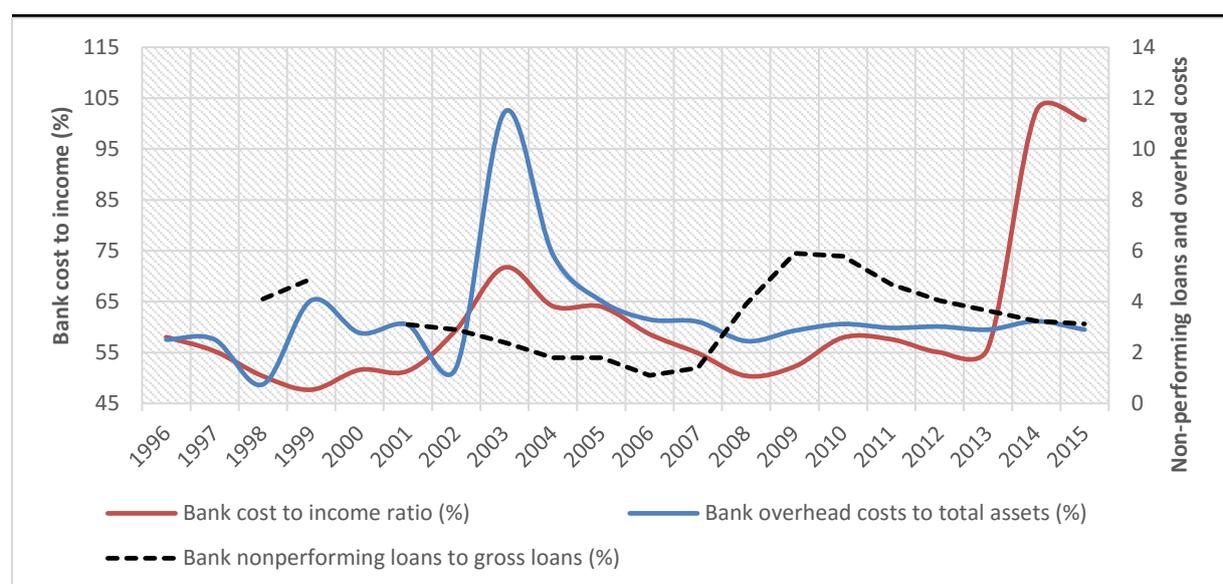
South Africa

South Africa has one of the biggest financial systems on the continent. The introduction of the Financial Services Charter led to an increase in financial inclusion from 55% in 2005 to 85% in 2016 (National Treasury, 2017). However, such access to financial services did not translate into an improvement of the quality of life of low income households or viable sources of funding for small business. The National Treasury laments that the reason for such a

disconnection is that most of the financial products are inappropriate, and there is rampant customer abuse by financial institutions. In addition, most households are so over-indebted that they withdraw all their salary on pay day (National Treasury, 2017).

Between 1997 and 2002, the banking sector experienced a crisis leading to a number of banks being placed under curatorship (South African Reserve Bank, 2002). The situation was exacerbated by sudden withdrawal of deposits, as the public feared for the safety of their savings. Between 2002 and 2003, 22 banks exited the South African banking system. Consequently, the number of banks decreased from 45 in 2002 to 19 in 2004 (South African Reserve Bank, 2002:7). At the same time, the banks experienced very high overheads, as shown in Figure 8 below. Bank overhead costs expressed as a percentage of bank assets significantly rose from 1.4% in 2002 to 11.4 in 2003. Bank operating costs to income ratio increased from 59% in 2002 to 71% in 2003. Figure 2.10 below shows the emergence of some of the challenges confronting the South African banking sector over time.

Figure 2.10: Selected indicators of performance of the banking sector in South Africa



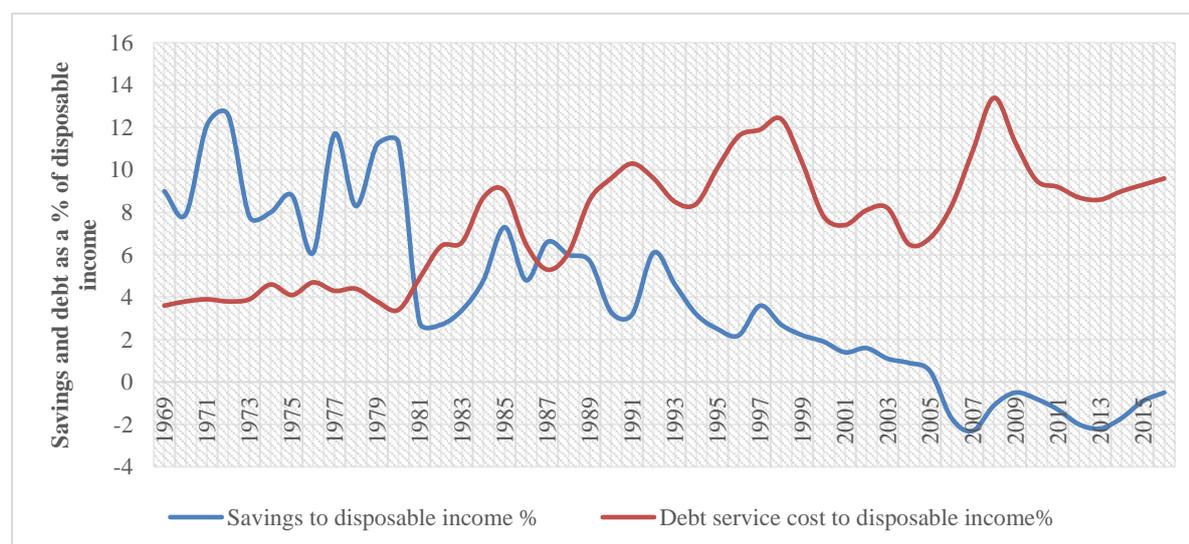
Source: WDI (2016) and GDF Database (2013)

When it appeared as if the banks had managed to contain costs, non-performing loans started to increase. Thus, the second wave of challenges for the South African banking sector started at the onset of the global financial crisis. The level of non-performing loans increased by 300% from 1.4% in 2007 to 5.9% in 2009. The increase in non-performing loans may have been fuelled by the significant reduction in interest rate spread, while the amount of credit extended increased. At the same time the level of indebtedness also increased, wherein household debt

increased to more than 77% of disposable income (South African Reserve Bank, 2016). Such a situation may have adverse consequences for the economy if not properly managed.

Figure 2.11 below shows that the savings to disposable income (STDI) ratio has declined significantly over the long term, from more than 10% in the 1970s to -0.5% in 2016. A negative STDI implies that households' disposable income is now less than their expenditure basket, and thus they have to rely on borrowing in order to survive. Conversely, over the same time, the debt service cost to disposable income (DSTI) ratio doubled from around 4% to more than 9%. An increase in the DSTI ratio reflects the increasing debt burden on households. While this may be explained by increasing interest rates, in this case it is also probably attributable to excessive exposure to debt by households.

Figure 2.11: Savings to disposable income and the debt service cost to disposable income ratios expressed as a percentage: 1965-2014



Source: SARB, 2017

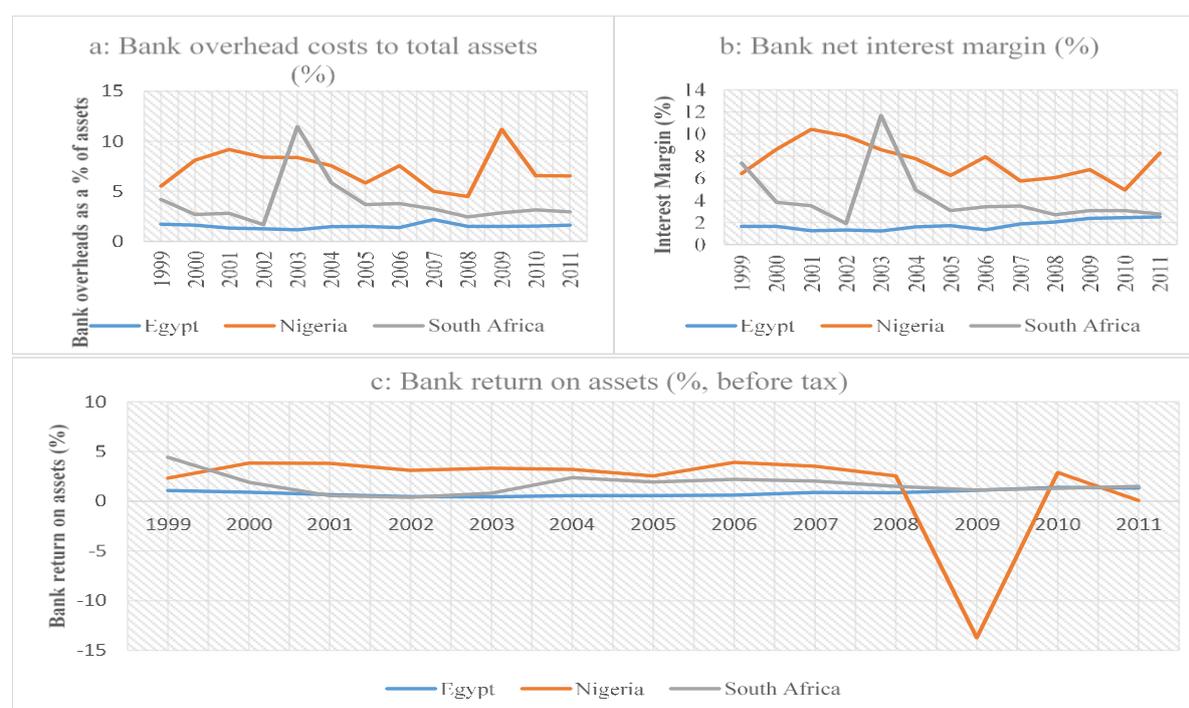
Other measures of bank development

In addition to the indicators of bank development presented above, we also present below statistics to show the characteristics of banks in Egypt, Nigeria and South Africa. These characteristics are also reflective of the efficiency of banks in these countries based on the

following measures: overhead costs³, interest margin⁴ and gross return⁵ of deposit money banks (World Bank, 2006; 2013).

Based on bank overhead costs, Figure 2.12 below suggests that Egypt has the most efficient banking sector of the three selected countries. Thus the high level of deposits may be due to the efficiency of the banking system in Egypt. The trend for South Africa has two noticeable spikes, which correspond with the period where 22 banks exited the sector. The net interest margin and the return on assets which are reflective of market power or lack of competitiveness, show that banks in Nigeria are least competitive. The trough in respect of Nigeria occurs around the time of the 2009 banking crisis. Such factors may explain why, in addition to mobilising the lowest levels of deposits, banks in Nigeria lend the least compared to Egypt and South Africa.

Figure 2.12 Banks performance in Egypt, Nigeria and South Africa: 1999-2011



Notes: Bank overhead costs = [operating expenses of a bank / total assets held]; interest margin = [the accounting value of bank's net interest revenue / Average interest-bearing (total earning) assets] and return on assets = [the bank's pre-tax income / total assets held]

Source: Global Financial Development Database (2013)

³ Overhead costs are measured as operating expenses of a bank as a share of the value of all assets held. Total assets include total earning assets, cash and due from banks, foreclosed real estate, fixed assets, goodwill, other intangibles, current tax assets, deferred tax assets, discontinued operations and other assets.

⁴ Interest margin is measured as the accounting value of banks' net interest revenue as a share of its average interest-bearing (total earning) assets.

⁵ Return on assets is measured as the deposit money banks' pre-tax income as a percentage of total assets.

The next section reviews stock market development in Africa, and particularly in Egypt, Nigeria and South Africa.

2.4. Context of stock market development in Africa

In this section, we will review the historical context and performance of stock markets in Africa. The section will also review factors prevailing in each country that may influence the ability of stock markets in stimulating economic growth.

Stock market activity in Africa started in the nineteenth century, with stock markets being established in Egypt, South Africa and Zimbabwe. In Egypt, the first stock exchange was the Alexandra Stock Exchange, established in 1883, followed by the Cairo Stock Exchange in 1903. The two stock markets in Egypt were later amalgamated into the current Egypt Stock Exchange in 1997 (African Securities Exchange Association, 2015).

In South Africa, the Johannesburg Stock Exchange (JSE) was established in 1887, and continued to evolve to its current state. The Zimbabwe Stock Exchange (ZSE) was established in 1896 in Zimbabwe, the then Rhodesia, and continued operating until 1924, when the stock market collapsed as a result of the decline in mining activities. After the collapse of the Zimbabwe Stock Exchange, companies started trading through the London Stock Exchange and the JSE until the ZSE was re-established in 1946 (Karekwaivenani, 2003).

Other early stock markets include the Casablanca Stock Exchange in 1929, the Nairobi Stock Exchange in 1954, and Nigeria in 1960. Between 1961 and 1988, there was only one stock exchange established, the Bourse de Tunis, formed in 1969.

Table 2.3 below provides a summary of stock markets in Africa, showing the year of establishment, number of firms listed, and the stock market turnover ratio.

Table 2.3: Salient features of stock markets in Africa

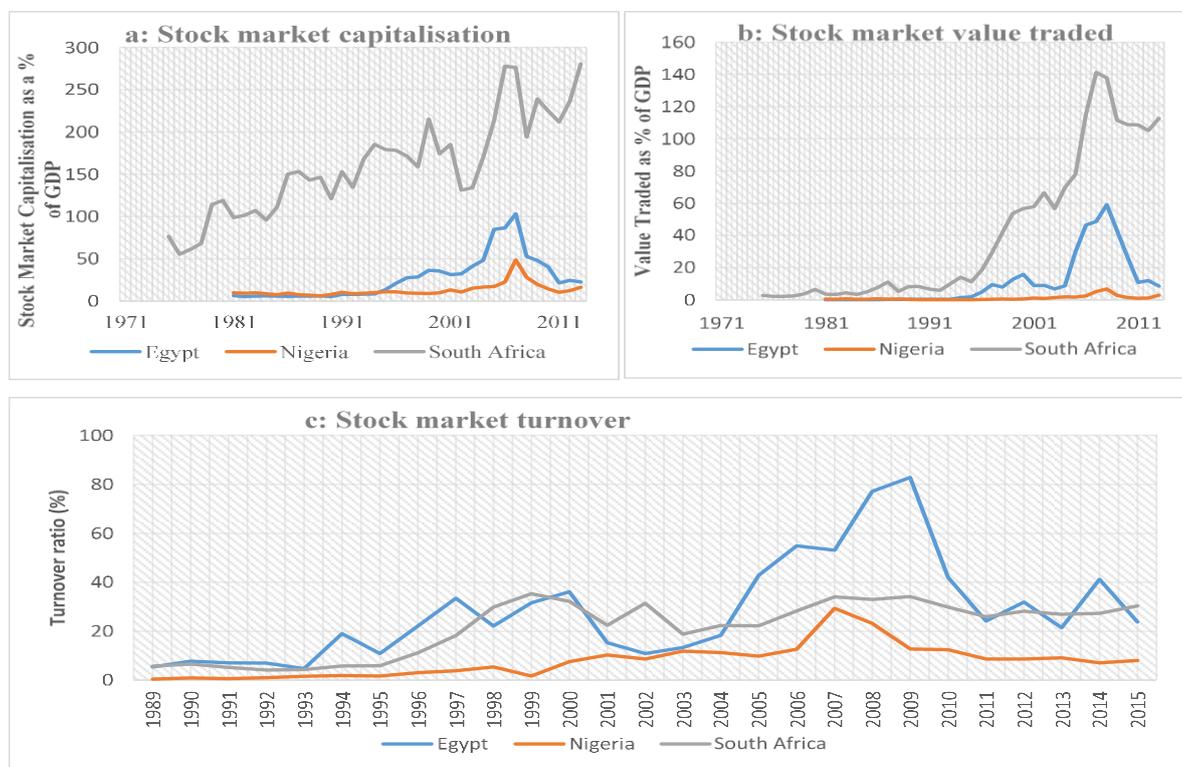
	Year Established	Number of Companies Listed				Stock Market Turnover Ratio			
		2011	2012	2013	2014	2011	2012	2013	2014
Botswana Stock Exchange	1994	37	39	35	35	0,02	0,03	0,06	0,05
Bourse Régionale des Valeurs Mobilières (BRVM)	1998	38	37	37	38	0,02	0,02	0,03	0,02
Bourse de Valores De Cabo Verde	2005	4	4	4	4	0,01	0,00	0,00	0,01
Bourse de Tunis	1969	57	59	71	77	0,11	0,14	0,10	0,10
Casablanca Stock Exchange	1929			75	75			0,11	0,08
Dar-es-Salaam Stock Exchange	1996	17	17	18	21	0,00	0,00	0,02	0,05
Douala Stock Exchange	2001		6	3	3		0,01	0,00	0,13
Egyptian Exchange	1883/1903	232	235	236	247	0,50	0,50	0,38	0,58
Ghana Stock Exchange	1989	34	34	34	35	0,01	0,00	0,01	0,01
Johannesburg Stock Exchange	1887	406	400	386	391	0,47	0,41	0,37	0,35
Khartoum Stock Exchange	1994	56	59	60	65	0,03	0,31	0,35	0,46
Malawi Stock Exchange	1988	14	14	14	14	0,00	0,00	0,00	0,00
Mauritius Stock Market	1988	87	88	91	90	0,07	0,05	0,05	0,07
Nairobi Securities Exchange	1954	58	60	61	65	0,09	0,06	0,08	0,09
Nigerian Stock Exchange	1960	198	194	190	198	0,10	0,07	0,08	0,12
Rwanda Stock Exchange	2008	4	4	5	5	0,01	0,02	0,08	0,04
Seychelles Stock Exchange	2012			1	4			0,01	0,23
Namibian Stock Exchange	1992	32	33	34	38	0,00	0,00	0,00	0,00
Uganda Securities Exchange	1997	10	15	16	16	0,00	0,00	0,00	0,00
Zimbabwe Stock Exchange	1946	78	79	67	65	0,13	0,11	0,09	0,10

Source: Compiled by author based on information accessed from African Securities Exchange Association (2015) and websites of different stock markets

Currently, there are 27 functioning stock markets, the latest additions being the Somali Stock Exchange, which traded its first shares on 15 September 2015 (SomalilandPress, 2015), and the Maseru Securities Market, which was launched on 22 January 2016 (Central Bank of Lesotho, 2016). Despite this phenomenal growth, the majority of stock markets in Africa have remained shallow and illiquid, both in absolute and relative terms, except the Johannesburg Stock Exchange (JSE). For instance, only three countries (Egypt, Nigeria and South Africa) have more than a hundred companies listed on their stock markets.

We briefly discuss the trend and growth in stock markets in these countries using three indicators; stock market capitalisation, value traded and turnover.

Figure 2.13: Indicators of stock market development



Source: WDI (2016) and GDF Database (2013)

The figure above shows that South Africa has the largest and most active stock market relative to the size of its economy. However, when liquidity is measured against the size of its stock market, Egypt appears to be comparable to South Africa, and in some instances more liquid than South Africa. Nigeria has the least liquid stock market.

In the following paragraphs we briefly discuss the historical developments and regulation of stock markets in Egypt, Nigeria and South Africa.

Egypt

Changes in regulation have had a significant influence on the growth of stock markets in Egypt. The successive waves of nationalisation around the 1950s hindered stock market development in Egypt (Omran, 2006). During this period, 93 listed companies had their stocks transferred to government. The nationalisation of listed companies led to the number of companies listed significantly declining from 275 in 1958 to 55 in 1974. Consequently, this led to the decline in market capitalisation as a percentage of GDP from 13% in 1958 to 1% in 1974 (Omran, 2006: 406).

From 1974, the Egyptian government adopted an 'open door' policy in order to improve the macro environment and encourage both foreign and domestic investment. At the same time, the Capital Markets Authority was established. However, according to the World Bank (2002), such policy did not bear much fruit as investments were hampered by other factors such as biases in the tax system against security investments, lack of protection for small investments, and absence of securities laws.

In 1991, economic reforms, which also included capital markets, were aimed at encouraging private investment and improving security of investment. Such reforms, which also included institutional reforms, succeeded in revitalising the stock markets (World Bank, 1992). This led to significant improvement in the size and performance of stock markets as shown in the figures above. In order to consolidate gains from the reforms and streamline regulation of the financial sector, the Egyptian Financial Services Authority (EFSA) was established in 2004. The EFSA is a merger of three regulatory bodies: the Egyptian Insurance Supervisory Authority, the Capital Market Authority, and the Mortgage Finance Authority (Egyptian Financial Supervisory Authority, 2017). Unfortunately, the Egyptian stock markets were not spared from the effects of the global financial crisis. As a result, both the size and activity of stock markets significantly declined, as shown in Figure 2.13.

Nigeria

Before 1988, stock markets in Nigeria were regulated through the Lagos Stock Exchange Act 1961 and the Companies Act 1968. These regulations were replaced by the Securities and Exchange Commission Act 1988. In 1999, the Investment and Securities Act was promulgated, which later became the Investments and Securities Act 2007 (San, 2013).

One of the major challenges confronting the Nigerian stock markets is dominance by a few players (African Securities Exchange Association, 2015). For instance, the Dangote Group accounts for 43% of the stock market capitalisation. Moreover, Dangote Cement, which is part of the Dangote Group, accounts for 32% of total market capitalisation (Egene, 2016). Although the Nigerian economy is dominated by oil companies, they are not fully listed on the stock exchange (Oke & Adeusi, 2012). Therefore, the structure of the Nigerian stock exchange is likely to influence the channel and the ways in which it influences economic growth.

Developments following the global crisis may also influence the role of stock markets in promoting economic growth in Nigeria. Before the global financial crisis, Nigerian stock markets were characterised by excessive growth fueled by banks which were diverting funds from productive sectors to the stock markets for speculation (Sanusi, 2012). In this way, the stock markets acted as a leakage to the flow of investment funds, as it became a haven for profit taking. In addition, stock markets in Nigeria were affected by the global financial crisis, resulting in capitalisation declining by 65% between March 2008 and January 2009. This was caused by the fact that local banks that were enjoying international credit lines and guarantees suddenly lost those facilities, which then required them to sell their stock in order to re-establish liquidity (Njiforti, 2015).

South Africa

South Africa currently has the largest and most sophisticated stock market in Africa, and it is comparable to those in developed countries. However, it remains dominated by a few players, wherein the top 20 companies, out of the 391 listed companies in 2014, accounted for 74% of total stock market capitalisation, while the top 10 accounted for 60% of total stock market capitalisation (Deloitte, 2014). Moreover, corporate ownership and control of the economy has remained concentrated, leaving the market prone to abuse by such dominant firms (Roberts, 2004). This has also been evidenced by the fact that at least 15 of the top 25⁶ firms by market capitalisation have been investigated by the Competition Commission of South Africa for abuse of dominance, which has the effect of increasing the cost of doing business in the economy.

Secondly, the World Economic Forum (2013) reported that South Africa has the best regulated securities exchange market. However, by its own admission, the JSE stated in its Insider

⁶ Check www.compcom.co.za, www.comptrib.co.za and <https://businessstech.co.za/news/business/164635/the-biggest-companies-in-south-africa-by-market-cap/>

Trading Booklet 2016⁷ that the current legal framework to prevent insider trading has become inadequate as the economy grew in sophistication (Johannesburg Stock Exchange, 2016). Currently, the National Treasury is working with the World Bank to review the Financial Markets Act to enable the capital market regulatory framework to respond to a changing market landscape, and increase its competitiveness⁸. This illustrates that, although the country has one of the most developed regulatory systems, it is the enforcement and coordination among different regulators that may create opportunities for regulatory arbitrage.

To highlight some of these weaknesses, the stock market in South Africa has not been immune to market abuses⁹ in the form of insider-trading, trade-based and disclosure-based manipulation, which affect the ability of the stock market to contribute to economic growth (Chitimira, 2014). Legislative ambiguity in respect of authority to adjudicate and prosecute stock market abuse cases, and the administrative penalties, might have affected the effectiveness of regulation in preventing stock market abuse (Chitimira, 2014). In addition, lack of regulatory coordination between different regulatory agencies, such as the JSE, FSB and the Competition Commission, may also provide stock market abusers with regulatory arbitrage opportunities.

The next section reviews the development of NBFIs in Africa, and specifically in the three countries under study.

2.5. Brief overview of NBFi development in Africa

In this section, we endeavour to establish the trend of NBFIs development in Africa and factors within the NBFIs sector which may enable or disable the ability of NBFIs to stimulate economic growth. While literature suggests that NBFIs can be measured as assets of NBFIs or credit to the private sector (Fanta & Makina, 2017) expressed as percentage of GDP, in this study we adopted the former owing to data challenges.

NBFIs rose to prominence during the global financial crisis as they were blamed for the failures of the financial systems. NBFIs are often referred to as shadow banking. The Financial Stability Board defines shadow banking as the “credit intermediation involving entities and activities

⁷ Accessed from <https://www.jse.co.za/content/JSERulesPoliciesandRegulationItems/Insider%20Trading%20Booklet%202016.pdf> on 31 December 2017.

⁸ A consulting firm has recently been commissioned to work with the World Bank in carrying out this review.

⁹ Between 2009 and 2014, 77 cases of insider trading were investigated and firms fined a total of R99 million. Accessed from <https://mg.co.za/article/2014-09-29-insider-trading-tops-jses-laundry-list-of-white-collared-crimes> on 31 December 2017.

(fully or partially) outside the regular banking system, or non-bank credit intermediation, in short” (Financial Stability Board, 2013: iv). According to Claessens and Ratnovski (2014), shadow banking activities include the following:

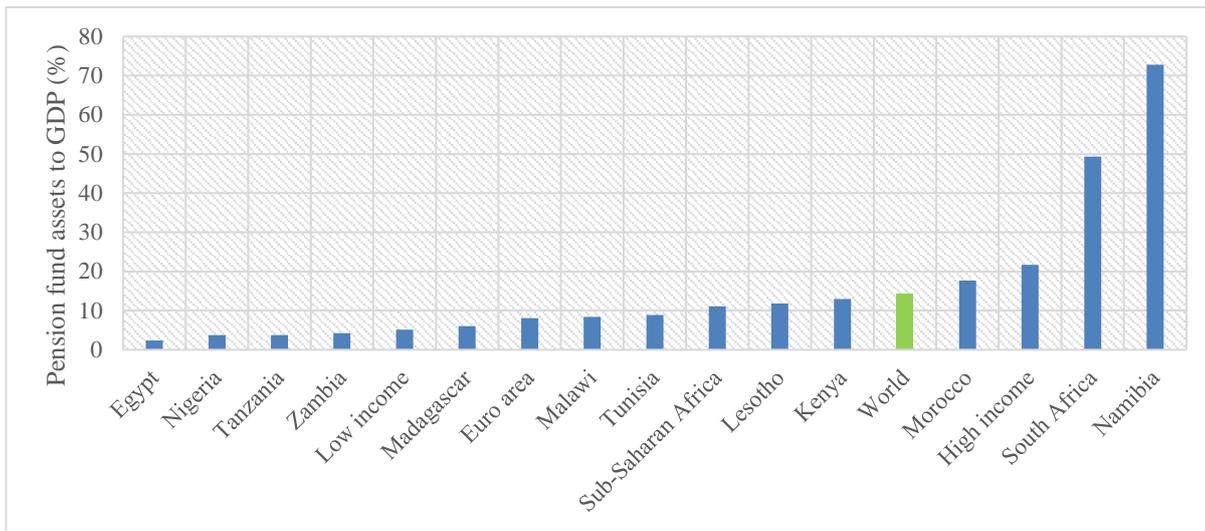
- Securitisation – mostly liquidity and maturity transformation.
- Collateral services – including the reuse of collateral in repo transactions, derivatives and securities lending.
- Bank wholesale funding arrangements.
- Deposit-taking and/or lending by non-banks

NBFIs institutions that are involved in these activities include hedge funds, investment companies, underwriters, market-makers, custodians, brokers, mutual funds, money market intermediaries, leasing and finance companies and insurance companies.

In Africa, NBFIs still remain very rudimentary, except in South Africa and Namibia. Figures presented below show that most African countries fall far below the world average, and in some cases below the low income countries and sub-Saharan African countries’ average. The analysis is carried out using assets of pension funds, insurance and mutual companies, which are some of the biggest players in the NBFIs sector.

Figure 2.14 shows that the pension fund sector in most of the African countries is far smaller than the world and regional average. However, South Africa and Namibia have pension fund assets which are not only greater than the world average, but the average for high income countries. Surprisingly, despite being two of the top three biggest economies on the continent, Egypt and Nigeria have pension funds which are not only smaller than the world or sub-Saharan African average, but also the average for low income countries. This suggests that there is greater room for Egypt and Nigeria to grow their pension sector to levels that are commensurate with the size of their economies.

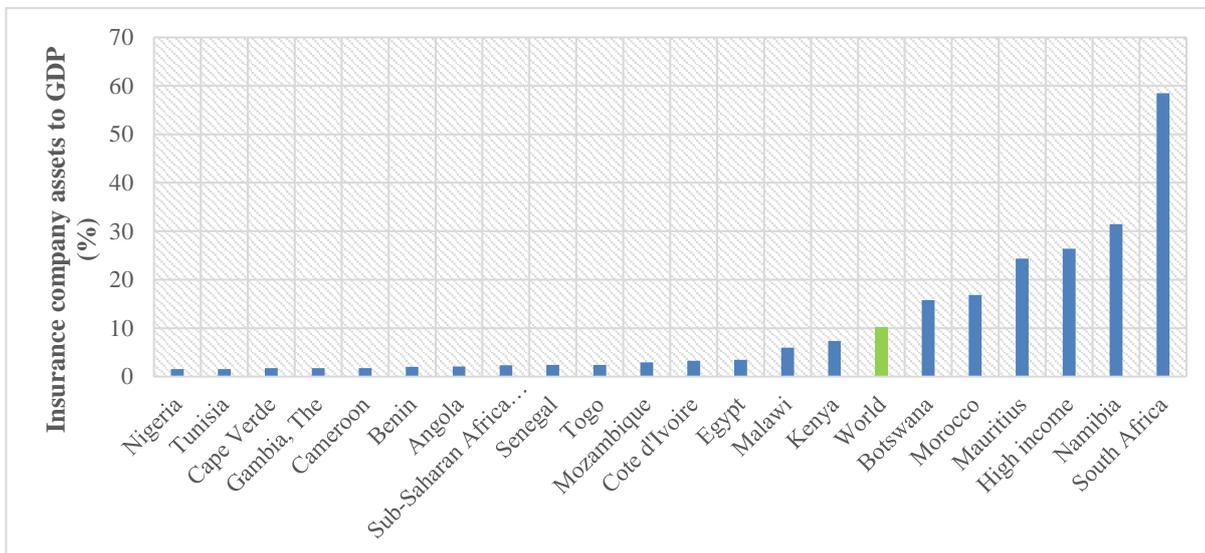
Figure 2.14: Pension fund assets to GDP (1992 -2015)



Source: GDF Database (2017)

Similarly, Figure 2.15 shows that most African countries have insurance sectors that are much smaller than the world average and the sub-Saharan Africa average. Egypt and Nigeria also fall into this category.

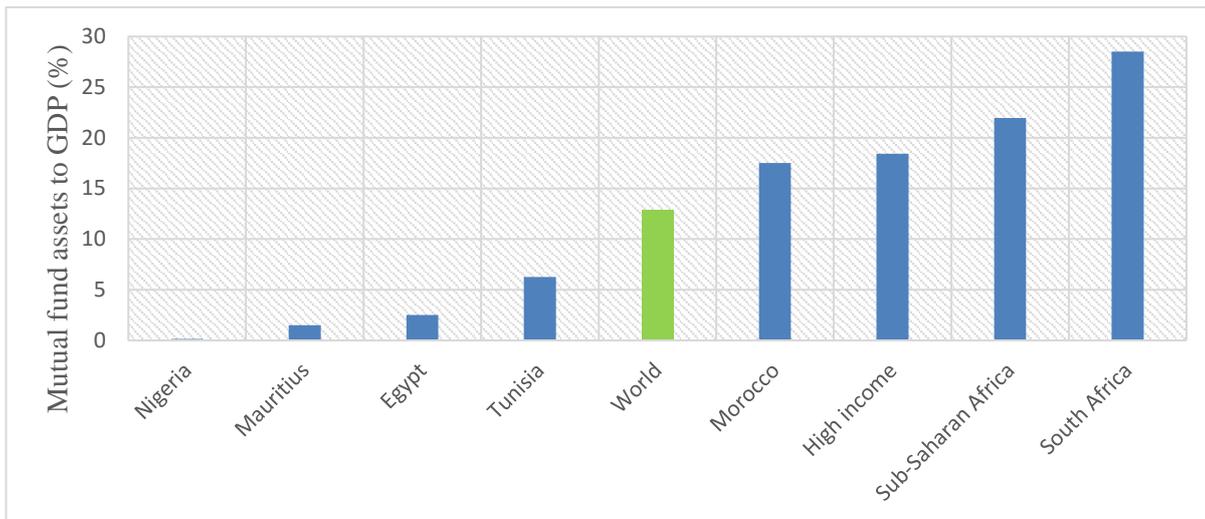
Figure 2.15: Insurance company assets to GDP (1992 – 2015)



Source: GDF Database (2017)

Mutual funds are also still very small in most African countries, as shown in Figure 2.16. Surprisingly, the sub-Saharan Africa average is greater than the world average. This is likely because of the dominant country influence by South Africa, which has a relatively big mutual funds sector.

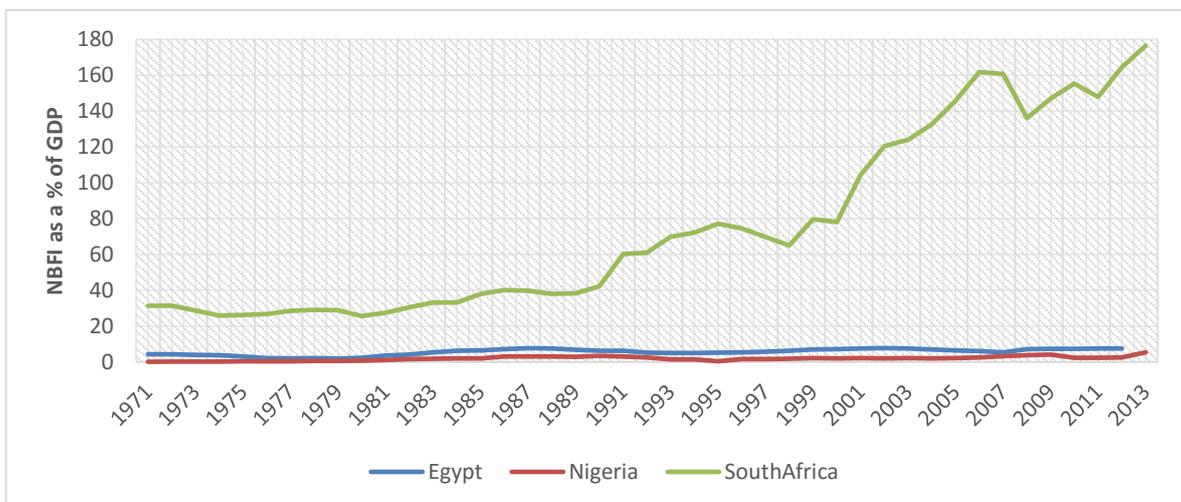
Figure 2.16: Mutual fund assets to GDP (1992 - 2015)



Source: GDF Database (2017)

Next, we narrow the review to the three countries under study to establish the trend of NBFIs growth over time. We present this analysis in Figure 2.17 below.

Figure 2.17: NBFi assets as a percentage of GDP



Source: World Development Indicators (2015), Central Banks of Nigeria, Egypt and South Africa

Figure 2.17 above shows that the NBFi sectors in Egypt and Nigeria are still very small compared to South Africa. The vast difference in the size of the NBFIs of these countries is very surprising given that the size of their economies is comparable. We endeavour to establish some of the factors which might have influenced the growth and development of the sector in each country.

In Egypt, NBFIs are considered one of the main channels of pooling together resources for financing the country's development plan (Egyptian Financial Supervisory Authority, 2017). The biggest players in this sector are insurance and pension fund companies. Regulation of NBFIs in Egypt is the mandate of the Egyptian Financial Supervisory Authority (EFSA), established in 2009, which began operating in July 2011. The EFSA was formed out of a merger of three regulatory bodies in order to consolidate and streamline regulation of NBFIs in that country, following a financial sector reform that began in 2004.

Egypt has one of the highest pension fund coverages of employees compared to other developing countries: it was around 80% in 2010.¹⁰ While there are different pension schemes, literature suggests that a defined contribution pension system enhances economic efficiency, as individuals are induced to faithfully pay their contributions, work for the longest possible time, and search for the best investment for their savings. In addition, a defined contribution system also transfers risk and fiscal burdens from government to would-be beneficiaries (Helmy, 2006). However, it is still worrying why the high level of pension fund coverage is not translating into growth of the sector.

In Nigeria, the regulation of NBFIs is split between the central bank and the National Pension Commission (NPC). The NPC was set up in 2004, during the pension reform wherein pension contributions became mandatory. The NPC regulates the pension funds, while the central bank regulates the insurance companies and other NBFIs. Nigeria's NBFIs sector is an example of the country's untapped and underused, boundless potential (Yusuf & Yusuf, 2010). Regulation of NBFIs in Nigeria is fragmented and still in its gestation or infancy stage, and its impact is still minimal.

The main players¹¹ in the NBFIs sector in Nigeria are currently being regulated by different bodies. This creates a high risk of conflicting regulatory objectives. For instance, one regulator may be concerned about stability of the sector, and thus focus on issues like capital adequacy, as was the case with the insurance sector. On the other hand, the pension regulator is concerned about coverage and/or inclusion, wherein the focus is mainly on ensuring that as many people as possible have pension funds. The body that currently attempts to carry out the coordinating

¹⁰ Accessed from Pension Development Network at <http://www.pensiondevelopment.org/393/egypt.htm> on 12 July 2017.

¹¹ Insurance and pension companies,

function is the Financial Services Regulation Coordinating Committee, which is a structure of the central bank (FSRCC, 2017).

The pension system in Nigeria is relatively underdeveloped. Pension coverage is less than 4% of national population, and less than 12% of the labour force (Anohu-Amazu, 2016a & b).

The Financial Services Board (FSB), which was established in 1991, is responsible for the regulation of NBFIs in South Africa (Financial Services Board, 2016). Pension funds, insurance companies and collective investment schemes account for a significant proportion of NBFIs assets. Currently, the country is in the process of establishing the Twin-Peak model of regulation, which will lead to the establishment of the Prudential Authority and the Financial Sector Conduct Authority. The objective of the regulatory reform in this regard is that the Twin-Peak model will enhance consumer protection and stability of the financial sector (Dixon, 2014).

Across the three countries, regulation of NBFIs also entails restrictions on allowable investments for pension funds. Such restrictions have an impact on the type of assets where investment of pension funds is allowed. Such restriction is likely to affect the ability of the NBFIs to promote economic growth. For instance, regulation that only allows the bulk of pension funds to be invested in government bonds is likely to affect the ability of NBFIs to promote economic growth as fewer funds are invested in productive sectors. We summarise below restrictions on pension fund investments.

Table 2.4 below shows that Egypt and Nigeria have more restrictive regulations compared to South Africa, in respect of investments in equities. In South Africa, up to 75% of pension funds can be invested in equities, while a maximum limit of 20% and 25% applies in Egypt and Nigeria respectively. In addition, pension fund companies are not allowed to offer any form of loans, while in Egypt and South Africa they can commit up to 30% and 5% of their assets in loans.

Table 2.4: Regulation of pension fund investments in Egypt, Nigeria and South Africa

	Equity	Real estate	Retail bonds	Loan	Bank deposit
Egypt	20%	10%	20%	25%	25%
Nigeria	25%	0%	20%	Not allowed	35%
South Africa	75%	25%	100%	5%	100%

Source: Compiled by author

Therefore the high level of investment restrictions in the NBFIs sector might be the biggest hindrance to growth and development of the sector. This suggests that regulation plays an important role in the performance of NBFIs.

We now focus on the relative importance of the different financial institutions in each of the economies.

2.6. Financial structure

Financial systems across the globe come in different sizes and shapes. In this section, we present the structure of the financial systems in Africa and the countries under study. Financial structure can be defined using various terms such as the *mix*, *composition*, *organisation*, *balancedness* or the relative importance of various financial institutions and the services they offer in each economy at a particular point in time (Stulz, 2000; Cuadro-Sáez & García-Herrero, 2007; Lin, *et al.*, 2009; Cull, *et al.*, 2013).

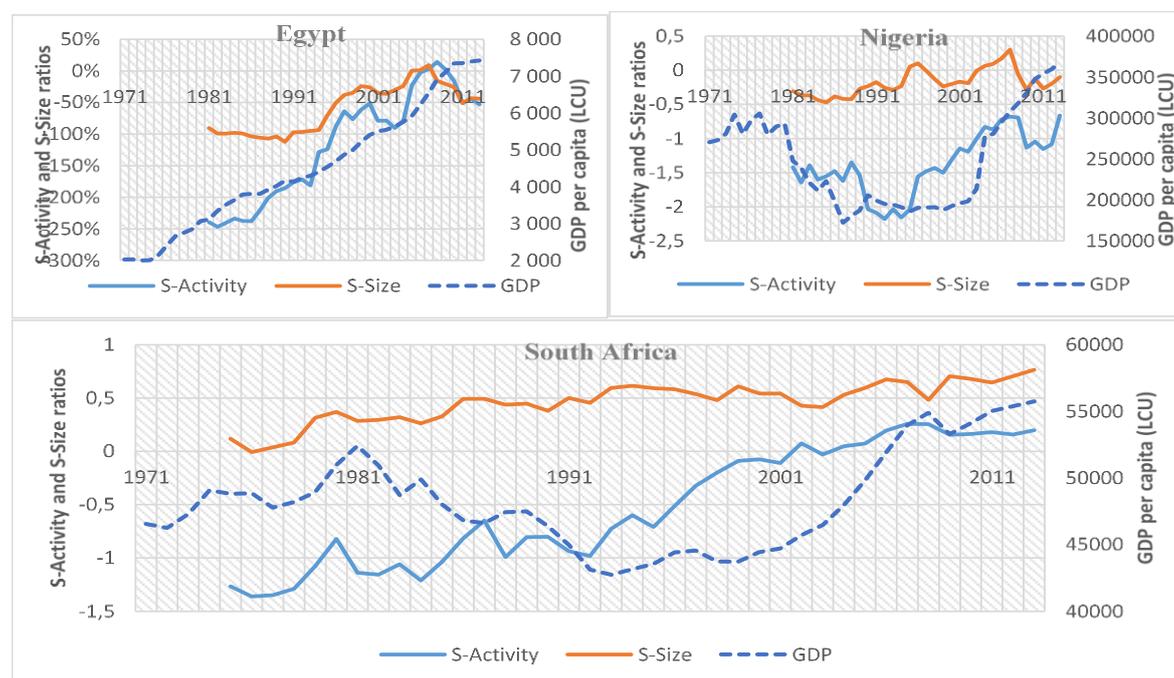
Levine (2002) suggested three measures of financial structure, namely:

- Structure-Size (S-Size): = ratio of stock market capitalisation / liquid liabilities of deposit money banks.
- Structure-Activity (S-Activity): = ratio of stock market value traded / deposit money bank credit to the private sector.
- Structure-Efficiency (S-Efficiency): = ratio of stock market turnover / bank overheads.

A positive value implies a market-based financial structure, wherein stock markets dominate the financial system. On the other hand, a negative value of the financial structure implies a bank-based financial system wherein banks are dominant compared to stock markets.

Figure 2.18 shows the co-movement between structure (measured by S-Activity and S-Size ratios) and GDP growth in Egypt, Nigeria and South Africa per capita GDP. This suggests some strong positive correlation between financial structure and per capita GDP, which requires application of more rigorous econometric techniques to establish the exact nature of this relationship.

Figure 2.18: Co-movement between financial structure and per capita GDP¹² for Egypt, Nigeria and South Africa: 1975-2013



Source: *Global Financial Development Database (2013)*, *World Development Indicators (2015)*, *Central Banks of Nigeria, Egypt and South Africa*

2.7. Conclusion in respect of the context of financial systems in Africa

Our review of the context of financial systems showed that the financial system in Africa is still underdeveloped compared to its peers. In its 2016 Regional Economic Outlook for sub-Saharan Africa, the IMF concluded that financial development in sub-Saharan Africa is still below the regional benchmark¹³ level (International Monetary Fund, 2016a). At the same time, the continent remains home to the largest proportion of poor people. This suggests an urgency to address any factors that might be inhibiting financial development in the regions, or factors that may be preventing the ability of financial systems to stimulate economic growth.

Therefore, whether financial development is the engine or just a lubricant for economic growth in Africa, any research to understand the factors that significantly enhances Africa's growth prospects is worth the effort. This thesis is an effort in this regard. Its objective is to examine the link between financial development and economic growth empirically, and the causality

¹² Measured at constant local currency units

¹³ The benchmark level of financial development was estimated based on an empirical analysis of 152 countries over the period 1980 to 2013 to obtain the levels of financial development consistent with individual countries' structural characteristics. "Structural characteristics include log of real GDP per capita and its square to account for nonlinearities, population, population density, the age-dependency ratio to account for different saving behaviours across income groups, dummies for oil exporters and legal origin, and time dummies to capture the global macroeconomic environment" (International Monetary Fund, 2016b:61).

thereof in Africa, using country-specific time series data. In addition, the study will also examine the interlinkages between financial systems to establish the channels through which financial systems influence economic growth.

CHAPTER THREE

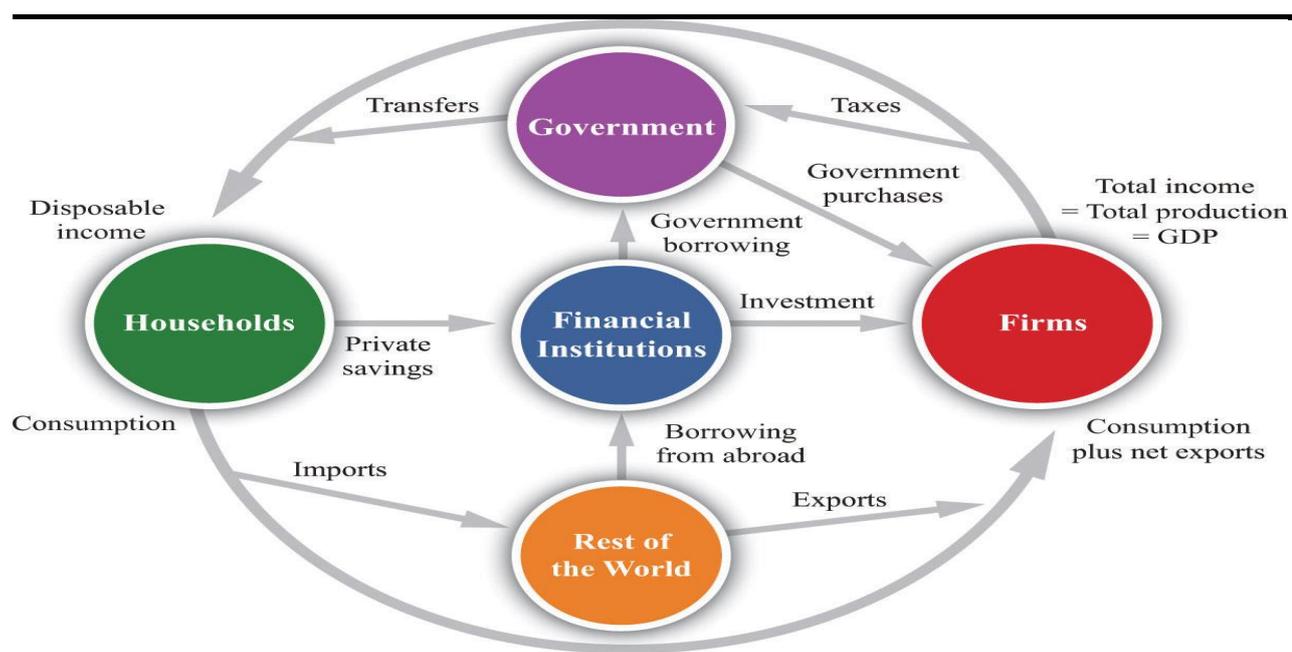
FINANCIAL SYSTEMS AND ECONOMIC GROWTH: THEORY AND EVIDENCE

3.1. Overview

“A financial system is somewhat like a car’s carburettor: we know that it is important if things are to operate properly, but we are less sure about how it works and why it is important” (Knoop, 2008: 13). Thus, the objective of this chapter is to briefly explain the theoretical framework linking financial development and economic growth. This will demonstrate whether or not, why and how the financial system matters for economic growth. The chapter further reviews empirical literature, and concludes by raising questions that need investigating in this thesis.

3.2. Why do financial systems matter?

The circular flow of income clearly illustrates that the financial system acts as the heart of the economy (Mohr, *et al.*, 2008). It plays a role similar to that of the *invisible hand* by Adam Smith (Mankiw, 1998). The financial system supports the functioning of all the different economic units in the economy such as firms, government and households by facilitating transactions and flow of resources between and among each economic unit (Mishkin, 2007). Specifically, the financial system acts as the intermediary allowing funds to flow from all the units active in the economy, for instance, from savers (households) to borrowers (firms). By doing so, the financial system finances capital investments in the economy, and redirects the flow of funds from less productive projects to higher yielding projects, thus facilitating economic growth. We illustrate the central role of the financial systems to all economic activity using the circular flow of income in Figure 3.1 below.

Figure 3.1: The circular flow of income

Source: Adapted from Mohr, *et al.* (2008)

Despite the profound work of Adam Smith relating to the invisible hand to attain efficient market outcomes, reality has shown that perfect markets remain a theoretical construct, especially in developing countries (Mohr, *et al.*, 2008). Studies by Čihák, *et al.* (2013) and Levine (2004) identified the reasons that may impede smooth functioning of an economy as idealised in the circular flow of income. The first reason is that it is not only difficult but costly to obtain information about potential investments. Secondly, the relationship between different economic units is defined through contracts. However, there are costs and uncertainties associated with drafting, interpreting and enforcing such contracts. Lastly, the process of transacting goods, services and financial instruments between economic units has costs. The cumulative effect of these market imperfections is that they prevent the flow of the economy's savings to the best and high-yielding projects, thus inhibiting economic growth and poverty alleviation.

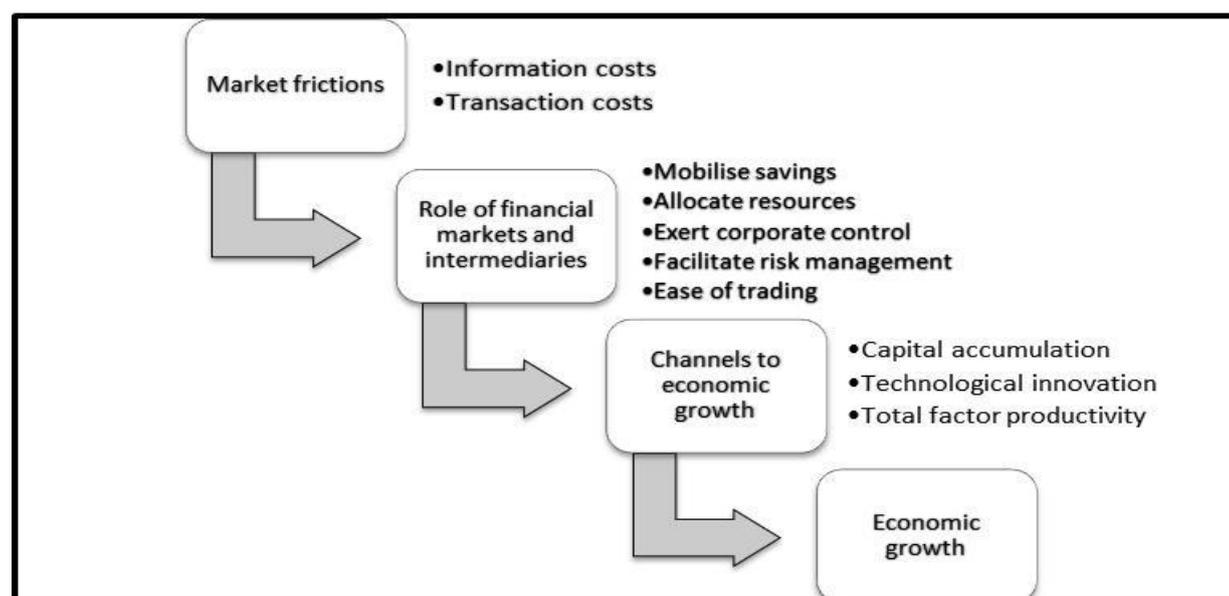
Levine (2004) and Čihák, *et al.* (2013) further explained that it is the existence of these market imperfections that creates incentives for the development of financial systems. Thus, financial contracts, markets and intermediaries are developed to ameliorate the adverse effects of these market imperfections. Consequently, the existence of imperfect information, limited contract enforcement and transaction costs inspired the development of financial systems to mitigate

their negative effect on the wellbeing of economic units. Specifically, Čihák, *et al.* (2013: 6) explained that financial development can be defined as:

“improvements in the quality of five key financial functions: (1) producing and processing information about possible investments and allocating capital based on these assessments; (2) monitoring individuals and firms and exerting corporate governance after allocating capital; (3) facilitating the trading, diversification, and management of risk; (4) mobilizing and pooling savings; and (5) easing the exchange of goods and services and financial instruments.”

The schematic figure below summarises the evolution of financial systems and the functions they perform, which functions ultimately enhance economic growth.

Figure 3.2: Evolution and functions of financial markets and intermediaries



Source: Own analysis based on Čihák, *et al.* (2013) and Levine (2004)

The focus of the next section is to demonstrate the linkage between these functions and economic growth. Specifically, the next section will discuss the theoretical model linking financial development to economic growth.

3.3. The finance-growth nexus

A number of theories have been put forward to explain economic growth, which is complex and multidimensional. The theories can be classified into early views (1776 – 1933), classical (1947 – 1960), neoclassical (1956) and contemporary (1990) (Dang & Pheng, 2015). Each model represents an improvement on the previous model.

The early views on economic growth were popularised by Adam Smith and Karl Marx. Adam Smith believed in capitalism, and argued that economic growth would be enabled through free trade, private property and competition. On the other hand, Karl Marx believed in communism where there is communal ownership of property.

The classical theory of economic growth was supported by (i) the linear stages of growth, (ii) the structural change model, and (iii) the international dependence model.

The classical growth theories were followed by the neoclassical growth theories which were publicised by Solow in 1956 (McCallum, 1996). The neoclassical growth model posits that there are three factors of production, labour capital and technology. Its proponents argued for free markets, dismantling of public ownership and government regulation to facilitate efficient functioning of markets. They also argued that provided with the same rate of technological progress, growth would be expected to converge, and that opening up national markets would allow for additional domestic and foreign capital resulting in developing countries converging at higher income levels. However, the major weakness of this model is that it was an exogenous model which argued the convergence rate of economic growth was determined outside the model (McCallum, 1996). Secondly, it also assumed that technological progress was exogenous, thus ignoring technology-enhancing activities such as learning or training, investment in research and capital accumulation.

Thus, for the same reasons, such a model cannot be applied in understanding the finance-growth relationship. The basic tenet of the finance-growth relationship is that there is potential for a bi-directional causation, which implies that either or both variables should be endogenous in the model.

Therefore, for the purposes of illustrating the finance-growth link, we adopt one of the highly referenced works which employed the endogenous growth (AK) model to demonstrate that financial intermediation can influence economic growth (Pagano, 1993). The endogenous growth model argues that technological progress is endogenously determined in the model as it can be influenced by the production of knowledge (Dang & Pheng, 2015). It further argues that differences in the level of investment in human capital (education), infrastructure or research and development explains the differences in economic development across countries. This also informs our decision to run different models for each of the countries under study, given that they have different levels of economic growth, and factors influencing the same are also different.

We review the AK model in the following section to show how Pagano arrived at this conclusion: how financial intermediation can influence economic growth.

The AK model provides the theoretical framework to link financial intermediation to economic growth. The model is expressed as:

$$Y_t = AK_t \quad (1)$$

where Y_t is aggregate economic output produced by perfectly competitive firms that combine labour and capital to produce goods; A is the technological parameter which is assumed to be greater than zero, and K_t is the composite measure of capital available in the economy. The capital comprises physical and human capital, knowledge and public infrastructure (Goodwin, 2003).

For simplicity, we assume that the economy produces a single good, which good can either be consumed or invested. If invested, the change in capital stock at any given time is influenced by two factors, namely, gross investment and depreciation. We demonstrate each of these aspects below:

$$K_{t+1} = I + (1 - \delta)K_t \quad (2)$$

Where K_{t+1} is the change in capital stock, I is the gross investment and δ is depreciation. In competitive market equilibrium, I is equal to gross investment, S . As indicated above, savings are transformed into investment (from savers to borrowers) through financial intermediation. However, the process of financial intermediation absorbs some of the resources, implying that one unit of savings will generate less than a unit of investment. Thus, only a fraction, ϕ , of the savings is invested. The remaining fraction of $1 - \phi$ is described as the cost of financial intermediation.

Therefore, the objective of financial development is to reduce the leakage of resources through financial intermediation costs, thus raising the proportion of savings, ϕ , that is invested. An increase in ϕ will increase the economic growth rate as shown below. Based on the discussion above, gross investment in any period is only equal to a certain proportion of the savings:

$$\phi S_t = I_t \quad (3)$$

Thus, Equation (3) demonstrates that financial intermediation can influence the amount of savings that are eventually invested into productive assets, which enhances economic growth.

Secondly, we use Equation (4) below, to demonstrate that financial intermediation can also influence economic growth through its influence on capital accumulation. We expand Equation (2) to demonstrate this effect where:

$$K_{t+1} = I + K_t - \delta K_t$$

$$\Rightarrow \Delta K = I - \delta K_t$$

$$\Rightarrow \Delta K = \phi S_t - \delta K_t \quad (4)$$

In this case, Equation (4) shows that financial development which is likely to have the effect of increasing the proportion of savings that will be channelled to investment, which in turn will influence the rate of change of capital. Thus, reducing the cost of financial intermediation will increase capital accumulation, leading to higher economic growth. On describing the relationship between savers and borrowers and the role of financial intermediaries, Bagehot (1874: 11) had this to say: “In this constant and chronic borrowing, Lombard Street is the great go-between. It is a sort of standing broker between quiet saving districts of the country and the active employing districts.”

Lastly, we use Equation (5) below to demonstrate that financial intermediation can influence the change in aggregate income (the growth rate) from one period to the other through its influence on the savings rate. S/Y gives the savings rate, s . Based on Pagano (1993), the growth rate of the economy g_y is expressed as:

$$g_y = A\phi s - \delta \quad (5)$$

We briefly describe the mechanisms through which a change in the three parameters related to the role of financial institutions in Equation (5) above leads to economic growth based on the work of Levine (2004) and Aziakpono (2011).

1. S – Savings rate: Financial systems are more effective than individuals at mobilising savings in a manner that increases economic growth by overcoming transaction costs associated with collecting savings from disparate savers, exploiting economies of scale and overcoming investment indivisibilities. Many projects require huge capital investments and are risky, which is normally beyond the means of individual investors. However, with financial institutions, “good projects will not fail for lack of capital” (Levine, 2004: 23). In this way, financial intermediation promotes economic growth.

However, we pause to mention that the effect of the savings rate on economic growth may be ambiguous. The ambiguity arises from the fact that as the financial system grows, credit becomes readily and cheaply available, there is better diversification of the risk, and better insurance over idiosyncratic liquidity shocks, thus reducing the need to save, thereby reducing economic growth in the process.

2. A – Technological or productivity parameter: Financial institutions have the ability to reduce information acquiring and processing costs. This will improve ex-ante assessment of investment opportunities leading to the identification of the best production technologies and more efficient allocation of capital. In addition, better information enables financial institutions to fund more promising projects. This boosts the rate of technological innovation and productivity of each rand saved, thus fostering economic growth (Levine, 2004: 8-9).
3. ϕ – The fraction of the savings invested: As indicated above, $1 - \phi$ is described as the cost of financial intermediation. The cost of intermediation can be viewed as a reward to financial institutions for services offered, and is a leakage of resources. The reward to financial institutions can be in the form of the spread between the deposit and lending rates, and brokers' or dealers' commissions, amongst other bank charges. Although intermediation costs can also be reflective of the x-inefficiencies of financial intermediaries of their market power, they often get compounded by high reserve ratio requirements and transaction taxes (Aziakpono, 2008: 25-26). Therefore, as financial systems develop, they gain experience, and competition among service providers increases. Such competition is likely to lead to improved efficiency and reduced intermediation costs. Lower intermediation costs imply that a bigger proportion of the savings will be invested (Aziakpono, 2011). Thus, economic growth increases when more funds are invested into the productive sectors.

In the next section, we explain the hypothesis to be tested on the equilibrium relationship between financial development and economic growth.

3.4. Three hypotheses regarding the finance-growth nexus

Literature suggests that the relationship between financial development (using various indicators) and economic growth is by no means simple or apparent.

Patrick (1966) proposed the *demand-following* and *supply-leading* hypotheses. A *demand-following* scenario implies that causality runs from economic growth to financial development. In this case, financial systems should develop in response to the demand for their services by the real economy. On the other hand, a *supply-leading* scenario arises when causality runs from financial development to economic growth. Thus, the supply of services by financial systems precedes the demand for such by the real economy.

Lastly, the causality between financial development and economic growth can also take the form of a simultaneous two-way causality. The simultaneous two-way causality can either be a vicious or virtuous cycle (Berthelemy & Varoudakis, 1996). A vicious cycle occurs when economic growth is too low, so low that it prevents the development of the financial sector, which, in turn, prevents economic growth. In this instance, the long-run coefficient of financial development on economic growth (or vice versa) is expected to be negative. On the other hand, a virtuous cycle arises when a high level of economic growth supports the development of the financial sector, which, in turn, stimulates further economic growth. Thus, the long-run effect of financial development on economic growth (or vice versa) is expected to be positive.

In the next section we focus on selected empirical studies to establish if, in reality, financial development enhances economic growth.

3.5. Empirical studies on the finance-growth nexus: African countries

In this section, we build onto previous comprehensive literature reviews on the link between financial development and economic growth, namely Levine (2004), Demirgüç-Kunt and Levine (2009), Aziakpono (2011) and Valickova, *et al.* (2015).

The earliest review of those listed above was Levine (2004). This comprehensive review covered both time series and panel methodologies studies carried out at firm and industry level, country-specific and cross-country studies. The observation from the review of empirical studies carried out in this paper was that there is a “strong positive link between the functioning of the financial system and long-run economic growth” (Levine, 2004: 85)

The next comprehensive review was carried by Demirgüç-Kunt and Levine (2009). In their review, they focused on literature studying the effect of financial development on improving the livelihoods of the poor, thus reducing inequality. From the review, it was concluded that there is a “strong beneficial effect of financial development on the poor” (Demirgüç-Kunt &

Levine, 2009: 46). Thus, financial development expands opportunities to participate in economic activities of the country by those that were previously disadvantaged.

By adding to the earlier two comprehensive reviews of literature, Aziakpono (2011) reviewed empirical studies on the finance-growth nexus with a particular focus on developing countries. The review found that there were three main lines of difference in the relationship between finance and economic growth. The first one is that the sign of the coefficient of the effect of financial development on economic growth is not uniform. Secondly, the magnitude and significance also varied. Lastly, causality results are either two-way or one-way. Aziakpono (2011) identified that the cause of the differences in the nature of the relationship between finance and economic growth is the measure of financial development used, the control variables used, the time-period covered by the study, and the sample of countries as well as the method of analysis used.

The latest review of the four is Valickova, *et al.* (2015). This comprehensive review covered 67 studies investigating the influence of financial development on economic growth. Valickova, *et al.* (2015) concluded that there is a “positive and statistically significant” effect of financial development on economic growth. However, from the review, Valickova, *et al.* (2015) identified four patterns in the relationship between financial development and economic growth. The first one is that the effect of financial development on economic growth is different across regions. The review showed that the effect is strong in Latin American and European countries, but weak in sub-Saharan African countries. Secondly, the effect of financial development has been varying over time. Specifically, Valickova, *et al.* (2015) found that the effect decreased in the 1990s, but has rebounded over the past decade to the levels experienced in the 1980s. Thirdly, the measures of financial development used matters. The review showed that stock-market-based measures showed a stronger effect on economic growth than bank-based measures. This supported the hypothesis that financial structure matters for economic growth. Lastly, the review by Valickova, *et al.* (2015) showed that the methodology employed matters. For instance, it was revealed that estimation techniques that do not control for endogeneity tend to overstate the effect of financial development of economic growth.

The findings from the review by Valickova, *et al.* (2015) highlighted the observations in the review by Aziakpono (2011), that the relationship between finance and economic growth can be influenced by the variables used, sample of countries, methodology and time-period covered.

In the next section we selectively review eight cross-country empirical studies that specifically focused on Africa or included the three countries of interest in this study, namely, Egypt, Nigeria and South Africa. This is based on the fact that the focus of our study is on the long-run effect of financial development of economic growth in Africa. Afterwards, we shall focus on country-specific studies that investigated the effect of financial development of economic growth in each of the three countries.

Table 3.1 below presents a summary of cross-country studies with a focus on African countries.

3.5.1. Discussion of findings from selected studies in Table 3.1 below

The objective of the studies reviewed in Table 3.1 below was to establish the influence of financial development on economic development using evidence from a number of countries. Although all the studies confirm that finance matters for economic growth, there are some differences in how it matters, thus making comparability and applicability of the results for policy considerations difficult.

Firstly, the direction of causality was different and/or not measured in most of the studies except Akinlo and Egbetunde (2010). Given that Patrick (1966) suggested that the relationship between financial development and economic growth can either be supply-leading or demand-following, it is not enough to only establish a positive association between finance and economic growth. This suggests the need to use methodologies that test for the direction of causality. In addition, even where causality was tested, the direction of causality was different for different countries (Akinlo & Egbetunde, 2010). This also suggests the need for estimation techniques that are country-specific.

Secondly, country characteristics influence the relationship. Barajas, *et al.* (2016) found that the finance-growth link was weaker in oil-exporting countries. In addition, Demetriades and James (2011) observed that the finance-growth relationship was stronger in countries with more developed financial systems. This casts doubt into the generalisation of results in cross-country studies as country characteristics will influence the finance-growth relationship in each country.

Table 3.1: Summary of selected studies

Authors	Sample of countries	Methodology	Indicators of financial development	Findings
(Akinlo & Egbetunde, 2010)	10 sub-Saharan African countries, including Nigeria and South Africa, 1980-2005	Vector-error correction model (VECM)	<ul style="list-style-type: none"> • M2 	<ul style="list-style-type: none"> • Unidirectional causality from financial development to economic growth in Central African Republic, Congo republic, Gabon and Nigeria. • Bi-directional causality between financial development and economic growth in Chad, South Africa, Kenya, Sierra Leone and Swaziland.
(Demetriades & James, 2011)	18 sub-Saharan African countries, 1975-2006	Panel cointegration	<ul style="list-style-type: none"> • Bank deposits – liquid liabilities • Credit to the private sector 	<ul style="list-style-type: none"> • Liquid liabilities positively associated with economic growth, more so in countries with more developed financial systems. • Bank credit does not exhibit long-run relationship with economic growth
(Beck, et al., 2014)	77 countries, including Egypt and South Africa, 1980-2007	Ordinary Least Squares (OLS)	<ul style="list-style-type: none"> • Credit to the private sector • Value-added by the financial sector 	<ul style="list-style-type: none"> • Financial deepening increases economic growth and reduce its volatility • Increasing the size (value-added) has no effect of long-run economic growth.
Gambacorta, <i>et al.</i> (2014)	41 advanced and emerging countries, including Egypt and South Africa, 1989-2011	OLS and quadratic equation	<ul style="list-style-type: none"> • Bank credit to the private sector as a % of GDP. • Stock market turnover = stock market value traded/stock market capitalisation. 	<ul style="list-style-type: none"> • Both bank and stock markets foster economic growth only up to a certain point. • Beyond a certain point, expanding bank or stock markets no longer add to real economic growth.
Law & Singh (2014)	87 countries, including Egypt and South Africa, 1980-2010	GMM	<ul style="list-style-type: none"> • Credit to the private sector by financial intermediaries. • Liquid liabilities of banks – deposits. • Domestic credit (sum of credit to the private and public sectors) 	<ul style="list-style-type: none"> • Financial development below the threshold¹⁴ will exert a positive influence on economic growth • Beyond the threshold, further financial development will have a negative impact on economic growth. • More finance is not always better, as it may start to drag economic growth after a certain point. • Therefore, knowing the optimal level is important to ensure effectiveness of financial development.
Demetriades & Rousseau (2015)	84 countries, including Egypt, Nigeria and South Africa; 1975-2004	Panel regression	<ul style="list-style-type: none"> • Financial depth – liquid liabilities less narrow money (M3 less M1) • Financial liberalisation – financial sector reforms 	<ul style="list-style-type: none"> • Between 1975-1989, the effect of financial development on economic growth is positive and significant. However, over the period 1990-2004, the effect is not significant. • Financial liberalisation becomes a more important determinant of economic growth than financial

¹⁴ The threshold for private sector credit, liquid liabilities and domestic credit is 94%, 97% and 100% respectively

				<p>depth. However, the significance of effect declines with the quality of regulation and supervision.</p> <ul style="list-style-type: none"> • Thus, financial depth is no longer a significant determinant of long-run economic growth.
(Barajas, et al., 2016)	150 countries, including Egypt, Nigeria and South Africa; 1975 - 2005	GMM	<ul style="list-style-type: none"> • Credit to the private sector • Stock market turnover 	<ul style="list-style-type: none"> • The impact of financial deepening on economic growth is smaller in oil exporting and low-income countries. • These differences may be caused by differences in the level of competition and access to financial services in each of the countries studied.
(International Monetary Fund, 2016b)	43 sub-Saharan African countries, 1980-2013	GMM	<ul style="list-style-type: none"> • Financial Institutions index – principal component analysis for <ul style="list-style-type: none"> ○ Depth – credit to the private sector, pension and mutual funds assets, life and none-life insurance premiums ○ Access – number of commercial branches and ATMs ○ Efficiency – net interest margin, lending-deposit spread, non-interest income, overhead costs, return on assets and return of capital. • Financial Markets index – principal component analysis for: <ul style="list-style-type: none"> ○ Depth – stock market capitalisation and turnover and outstanding debt securities. ○ Access – stock market capitalisation outside the top 10 ○ Efficiency – stock market turnover. 	<ul style="list-style-type: none"> • The level of financial development in the region is below its benchmark. • Financial development has helped enhance economic growth and stabilising economies. • The level of financial development is still below the threshold after which the impact of financial development on economic growth becomes negative. • Raising the median financial development index to its benchmark will increase economic growth by 1.5%.

Thirdly, different methodologies test for different aspects and the results are different. Studies employing the GMM methodology (Law & Singh, 2014; Barajas, *et al.*, 2016; and International Monetary Fund, 2016b) tested for threshold effects, while those that employed OLS and panel regression (Demetriades & James, 2011; Beck, *et al.*, 2014; Gambacorta, *et al.*, 2014; Demetriades & Rousseau, 2015) tested for positive association, while Akinlo and Egbetunde (2010) was testing for the direction of causality. This also highlights that while the number of studies of the finance-growth relationship have burgeoned, each study focuses on investigating a unique aspect of the financial system. This implies that curving out a unique sample of countries covering a certain time-period will produce insightful results.

Lastly, using different measures of financial development implies difference in accuracy or relevancy of policy advice obtained from the results. Firstly, none of the studies employed the same measures of financial development, hence policy advice emanating from each study will be different. Secondly, using aggregate measures may obscure the actual cause or driver of the relationship which requires policy attention.

Thus, while our review is in line with Levine (2004), it raises pertinent issues causing differences in results, such as the variables used, time-period for the studies, and the sample of countries included in the study which were also identified in the reviews by Aziakpono (2011) and Valickova, *et al.* (2015).

The review begins with cross-country studies that included African countries, and then zoom in on those that focused only on African countries.

3.5.2. Selective review of cross-country studies, including African countries

The first paper reviewed in this regard is Barajas, *et al.* (2016), which covered 150 countries, including Egypt, Nigeria and South Africa. The study used credit to the private sector and stock market turnover as a measure of financial development in order to establish if the impact of financial deepening on economic growth differs across regions, income levels and types of economy. The study covered the period 1975 to 2007, and employed the dynamic panel estimation technique. The study concluded that the effect of financial deepening on economic growth displayed heterogeneity across countries and types of economy. In this respect, the study found that the influence of financial deepening on economic growth is smaller in oil-exporting countries, low-income regions and certain regions such as the Middle East and North Africa (MENA).

The small effect of financial development on economic growth in oil-exporting countries was attributed to the natural resource curse effects. Barajas, *et al.* (2016) found that the benefit of financial development falls continually as the degree of oil dependence increases. As a result of the natural resource curse, the researchers concluded that banks in oil-exporting countries are ineffective in generating productive capacity of the economy outside the oil sector (Barajas, *et al.*, 2016: 24). In low-income countries, Barajas, *et al.* (2016) found that the weak effect of financial development on economic growth could be attributed to shallow financial markets and institutions, coupled with lack of access to financial services.

In the MENA region, the researchers concluded that the weak link between financial development and economic growth is due to the “quality gap” arising from a disproportionately lower level of access to financial services, given the level of financial development prevailing in that region (Barajas, *et al.*, 2016: 33). In addition, it was concluded that the low effect of financial development on economic growth in oil-exporting countries, low-income countries and the MENA region is likely to emanate from the supply-side constraints, that is, the functioning of banks and the regulatory environment.

The next cross-country study reviewed in this section of the thesis was Beck, *et al.* (2014), which covered 77 countries, including Egypt and South Africa. The study used data covering the period 1980-2007, and employed an OLS regression technique. The objective of the study was to measure the impact of the size of the financial system and intermediation role on economic growth and its volatility. The size of the financial system was proxied by value added by the manufacturing system, while intermediation was measured by bank credit to the private sector. The results showed that in the long run, financial intermediation increases economic growth and reduces its volatility. There was no evidence to suggest that the size of the financial system promotes economic growth and reduces its volatility. The researchers conceded that they did not address issues of endogeneity, and omitted variables biases, issues which can be a tackled in future research.

Demetriades and Rousseau (2015) employed the panel OLS technique to investigate if the link between financial development and economic growth is changing. They used data for 84 countries over the period 1975-2004. The period of study was also divided into two additional sub-periods, 1975-1989 and 1990-2004. Egypt, Nigeria and South Africa were also included in that sample. Financial development is proxied by narrow money, that is M3 less M1. Demetriades and Rousseau (2015) argued that using the narrow definition of money would

isolate the intensity of financial intermediation because it removes the transactional component of liquid liabilities. The study introduced financial liberalisation into the model in order to establish if liberalisation had an influence on the finance-growth relationship.

The results from Demetriades and Rousseau (2015) showed that during the period 1975-1989, financial development increased economic growth. However, this was not so in the period 1990-2004. In fact, they found that in the period 1990-2004, financial liberalisation was more significant in economic growth than financial development, concluding that what matters is how well regulated a financial system is. In that regard, they found that liberalising credit allocation, for instance, will result in substantially higher economic growth, only when the banking system is well regulated and supervised (Demetriades & Rousseau, 2015: 6).

Another recent study investigating the finance-growth link using data from countries in different regions was Gambacorta, *et al.* (2014). The study was based on data from 41 developing and emerging countries, covering the period 1990-2011. Egypt and South Africa were included in the sample of countries studied. Financial development was measured by bank credit to the private sector and stock market turnover. The study employed two estimation techniques, that is, OLS and quadratic estimation.

In their study, Gambacorta, *et al.* (2014) showed that stock market turnover is positively and significantly associated with economic growth. In respect of bank development, the results showed that higher levels of bank credit to the private sector are not associated with higher economic growth. However, the quadratic estimation results showed that both banks and stock markets are associated with higher economic growth only up to a certain point (Gambacorta, *et al.*, 2014: 29). The study also found that both stock market and bank variables were significant in the regression, suggesting that they carry out different roles which are all important for economic growth. In addition, the study found that the influence of bank development is stronger in low-income than in high-income countries, implying that at early stages of development in a particular country, the development of banks rather than stock markets is more beneficial to economic growth.

Another cross-country study which included some African countries is Law and Singh (2014). Egypt and Nigeria were included, and data used in the study covered the period 1980-2010. The study employed the dynamic panel GMM methodology in order to investigate the threshold effects of financial development on economic growth. Bank credit, domestic credit and liquid liabilities (deposits) were used as measures of financial development. The results

from the study show that financial development below the threshold will exert a positive influence on economic growth. However, beyond a certain threshold, further financial development will have a negative impact on economic growth. The study suggested that the threshold beyond which financial development becomes a drag on economic growth for private sector credit, liquid liabilities and domestic credit is 94%, 97% and 100% respectively.

As presented above, while all the studies reinforce the assertion that finance fosters economic growth in line with the reviews by Levine (2004) and Demirgüç-Kunt & Levine (2009), they also illuminate that the level of income and financial development of the countries in the sample, and the measures of financial development, influence the nature of the results obtained therefrom.

These differences, given the heterogeneity of countries regarding economic growth and financial development, makes it difficult to draw policy suggestions based on these cross-country results. Secondly, using different measures of financial development suggests that the channels through which financial development influences economic growth to be tested in each study varies. These different approaches, therefore, make comparability and generalisation of such results difficult.

Lastly, given that there are the hypotheses in respect of the relationship between financial development and economic growth, the econometric method used should have the capability of investigating such hypotheses (Berthelemy & Varoudakis, 1996; Patrick, 1966). However, the majority of panel econometric techniques used in cross-country studies reviewed above do not provide for testing for endogeneity to test the three hypotheses. It is, therefore, the objective of this study to contribute to providing policy recommendations based on country-specific studies. This will help overcome challenges of generalisation (averaging) of findings and the dominant country effect. Also, the econometric method employed provides for testing endogeneity to understand the three potential relationships that may exist between financial development and economic growth.

In the next section we provide a review of previous country-specific time series studies in Egypt, Nigeria and South Africa. These are studies that attempted to improve on the weaknesses of cross-country studies which employ panel regression techniques. This approach will provide this thesis with an opportunity to improve on such previous studies in these countries to derive more robust policy conclusions.

3.5.3. *Selective review of time series studies: Egypt, Nigeria and South Africa*

In this section, we provide a high-level review of country-specific empirical studies to show how this study will contribute to the literature gap in understanding the link between financial development and economic growth in Africa.

Egypt

The first study reviewed is Abu-Bader and Abu-Qarn (2005), who employed the Granger causality technique within the VECM framework to investigate the causal relationship between financial development and economic growth. The analysis was carried out using time series data over the period 1960-2001. Financial development was proxied by four measures, namely, M2, M2 (less currency in circulation), credit to the private sector, and domestic credit to non-financial entities.

The results from the study show that M2 (less currency in circulation), credit to the private sector, and domestic credit influence economic growth. There is no direct link between M2 and economic growth.

The findings by Abu-Bader and Abu-Qarn (2005) were also supported by Abosedra, *et al.* (2016), who employed the VECM Granger causality approach to conclude that bank development measured by credit to the private sector (1975-2011) is positively associated with economic growth. Kamal (2013) also employed a similar methodology, but covering a different period, 1988-2012. The study concluded that the relationship between credit to the private sector and economic growth is positive and bidirectional.

However, another study employing a similar methodology (Johansen cointegration technique), but covering an almost similar period (1977-2012), found conflicting results (AbdelazizTouny, 2014). The study concludes that the long-run relationship between credit to the private sector and economic growth is negative.

The source of difference in the results may be the different control variables used. This calls for a methodology that tests the robustness of the relationship by employing as many control variables as possible.

Nigeria

In respect of Nigeria, we review four time series studies which recently investigated the link between financial development and economic growth (Adamu, *et al.*, 2015; Nkwede, 2015; Gabriel, *et al.*, 2016; Hassan, *et al.*, 2016).

Adamu, *et al.* (2015) investigated the long-term effects of financial development, remittances, aid and foreign direct investment on economic growth. The study employed the ARDL estimation technique using time series data covering the period 1977-2014. Financial development is proxied by domestic credit, excluding credit to central government. Using contemporaneous levels, the results show that financial development is negatively associated with long-run economic growth. However, the relationship changes to positive when the lag of financial development is used. This study did not test for the direction of causality.

Another study that investigated the link between financial development and economic growth is Gabriel, *et al.* (2016). The study employed the parsimonious error correction model and the pairwise Granger causality approach to test the direction of causality between financial development and economic growth. Data used covered the period 1986-2014. Financial development was measured by credit to the private sector, M2, stock market capitalisation and assets of insurance firms. The results show that credit to the private sector and stock market capitalisation are positively related to economic growth, but M2 and assets of insurance firms are negative. However, the Granger causality results show that in all the variables, causality runs from economic growth to financial development.

Hassan, *et al.* (2016) also recently investigated the impact of financial development on economic growth using time series data covering the period 1981-2014. Financial development was measured by stock market capitalisation, stock market value traded, M2, and credit to the private sector. The study employed the multivariate Johansen cointegration technique within the VECM framework. Results from the study showed that M2, stock market capitalisation and stock market value traded positively influence economic growth. On the other hand, credit to the private sector exerts a negative influence on economic growth. Thus, the study concluded that stock market development is likely to promote economic growth, but bank development retards it.

The last study reviewed in this section, which investigated the effect of financial development on economic growth using time series data in Nigeria, is Nkwede (2015). Financial

development was proxied by financial inclusion variables, namely bank credit to small-scale enterprises, bank credit by rural banks, deposits of rural bank branches, total number of bank branches in both urban and rural areas, and bank credit to the private sector. Data covered the period 1981-2013. The study employed the OLS technique, and found that bank credit to small enterprises and deposits of rural bank branches are negatively associated with economic growth. On the other hand, the total number of bank branches in both urban and rural areas, and bank credit to the private sector showed a positive influence on economic growth. On this basis, the study concluded that non-availability, non-accessibility and underutilisation of banking and financial services distorts economic growth in Nigeria (Nkwede, 2015: 79).

South Africa

In respect of South Africa, we reviewed three empirical studies that used time series data to investigate the impact of financial development on economic growth (Arestis, *et al.*, 2010; Ndako, 2010; Nyasha & Odhiambo, 2015).

Arestis, *et al.* (2010) employed the Johansen cointegration technique within the VECM framework and the Fully Modified Ordinary Least Squares (FMOLS) to establish the impact of financial structure on economic growth. Financial structure was measured by the ratio of stock market capitalisation to bank credit to the private sector, also known as the structure-size ratio (Levine, 2002). The data covered the period 1965-2000. The study found that, in South Africa, bank development influences economic development more than stock market development. On this basis, the study concluded that financial structure matters for economic growth (Arestis, *et al.*, 2010: 1491).

The analysis for South Africa was carried out along that for other emerging market economies, India, Taiwan, South Korea, Greece, and Phillipines in this study. A comparison of the results showed that there is significant country heterogeneity, which makes pooling data together not feasible because it hides country differences. This was demonstrated by the significant difference between country-specific results and panel estimations (Arestis, *et al.*, 2010: 1491).

The second study on South Africa reviewed in this section is Ndako (2010). The study employed the Johansen cointegration technique within the VECM framework to investigate the effect of stock markets and banks on economic growth. Data used in the analysis covered the period 1983-2007. Bank development was measured by credit to the private sector, while stock market development was proxied by stock market turnover and value traded.

The empirical results show that the relationship between bank development and economic growth is bidirectional, while that between stock market development and economic growth is unidirectional, running from economic growth to stock markets. Thus the study concluded that financial development influences economic growth.

The last of the three studies reviewed in this section is Nyasha and Odhiambo (2015). The study employed the ARDL technique to investigate the impact of financial development on economic growth, using data covering the period 1980-2012. Financial development was measured by two indices for bank and stock market development. Bank development was proxied by an index of M2, M3, and credit to the private sector. The index for stock market development was made up with stock market capitalisation, value traded and turnover.

Results from the study showed that bank development positively influences economic growth, in line with findings by both Arestis, *et al.* (2010) and Ndako (2010). However, the study found no evidence to suggest that stock market development promotes economic growth.

3.6. Summary of findings and conclusion from literature review

From the review of previous empirical studies investigating the link between financial development and economic growth in Africa, it is revealed that studies employ a “piecemeal” approach to understanding the relationship between financial development and economic growth. Specifically, the review shows that studies only assess the relationship between banks and stock markets, but would interpret their findings to represent the relationship between the whole financial system and economic growth. This is likely to result in the impact of financial development on economic growth being under or overestimated, which has an implication for the policy proposals that may be suggested.

In particular, we highlight some of these observations below:

1. Firstly, using different control factors leads to different results, such as was the case for certain types of financial institution not covered in some of the studies (see AbdelazizTouny, 2014; Abosedra, *et al.*, 2016). Therefore the methodology employed may allow for testing the robustness of the relationship between finance and economic growth by using as many control variables as is possible.
2. Secondly, countries are significantly heterogeneous in terms of country characteristics or the level of financial development, thus discounting the validity of cross-country

studies. This suggests the need for more country-specific studies to establish the actual effect of finance on economic growth in each country.

3. Thirdly, the interrelationships between different financial institutions not investigated. Theory posits that NBFIs both compete with and complement traditional banking institutions and stock markets (Impavido & Musalem, 2000). Moreover, Figure 1 above shows that the influence of one type of financial institution (for example, banks or NBFIs) can be indirect through their influence on the development of stock markets. The reverse is also true, wherein the influence of stock markets on economic growth can be indirectly through banks or NBFIs. Our review of literature shows that none of the studies investigating the relationship between financial development and economic growth also investigated the interrelationships between the different financial institutions themselves, and the channels through which certain types of financial institutions influence economic growth. Failure to do this implies that a study may conclude that a certain type of financial institution does not influence economic growth, yet it does so through the indirect link.
4. Lastly, some of the institutions such as NBFIs are often omitted from the analysis. The observation by Sahay, *et al.* (2015) and the International Monetary Fund (2016b) is that financial systems are multifaceted and carry out different functions. However, we observed that most studies only focus on the influence of bank and stock market development on economic growth. NBFIs are not included in analysing the impact of financial development, yet they are also an important source of finance for economic growth (International Monetary Fund, 2015a). This implies that the actual effect of financial development on economic growth would be under/over or misstated.

Therefore, it is against this background that this thesis uses a different approach to investigating the link between financial development and economic growth. We are confident that this will provide new insights into the relationship between financial development and economic growth.

Firstly, to avoid all the challenges associated with country heterogeneity and cross-country studies, this thesis will use country-specific time series. Secondly, the thesis adopts an econometric methodology that allows for testing the robustness of the finance-growth relationship by employing as many control variables as is possible.

Lastly, this thesis will not only investigate the link between financial institutions and economic growth, but also the interconnectedness of financial systems among themselves.

In this way, we are confident that this thesis will contribute robustly to understanding the influence of financial development on economic growth.

The next chapter sets out the methodology to be employed to investigate the relationship between financial development and economic growth in this thesis.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1. Introduction

This chapter sets out the econometric methodology used in this thesis. However, the challenge is to decide (i) which econometric methodology to employ, (ii) which measures for the variables of interest to use, and (iii) which set of explanatory variables to apply. We start by discussing the model specification, and then the econometric technique to be employed.

4.2. Model specification

In their publication in *The American Economic Review*, Levine and Renelt (1992) highlighted that although literature on the empirical linkage between economic growth and its determinants is vast, there is no consensus on the theoretical framework to guide such analysis. Consequently, numerous econometric estimations have been developed aimed at identifying the “true” regression that explains the correlation between economic policy measures and economic growth. Unfortunately, most of the estimations obtained are “fragile”, in that a small change in the control variables would overturn the results (Levine & Renelt, 1992; Sala-I-Martin, 1997).

Sala-I-Martin (1997) further illustrated that the problem faced by empirical growth economists is complicated by the fact that the variable of interest may be significant if control variables X and Y are included. However, if Z is included, the variable of interest may become insignificant. This then raises the question regarding which variables should be included to establish the “true” correlation between finance and economic growth.

On the same issue, Levine and Renelt (1992) employed two different sets of explanatory variables on the same policy measures (variables of interest) to demonstrate that the significance of the relationship between finance and growth is susceptible to changes in the set of explanatory variables used. Thus they concluded that the majority of empirical regressions are fragile when the conditioning information set is changed.

This implies that, whether informed by literature or economic theory, the researcher will have to make a choice regarding which and how many explanatory variables to include in the regression. Such a choice requires a trade-off between parsimony and model complexity (Vandekerckhove, *et al.*, 2014). The principle of parsimony encourages the researcher not to

develop complex models that sometimes can be tweaked to fit the observed data, but will fail out of sample predictions. Moreover, the more variables that are included in a model, the more the likelihood of encountering multicollinearity problems which often obscure the true nature of the parameters estimate. Thus parsimonious models are generally simple and can fit to generalised new data sets.

Therefore the objective of this section is to identify an econometric procedure that is robust, and produces results that are consistent for both in and out of sample estimation.

The study adopted the traditional approach to investigate the finance-growth nexus by regressing economic growth (Y) on financial development (FD) together with other control variables, that is, $Y = f(FD, control\ variables)$ (Levine, 2004). However, instead of developing one structural model for each variable of interest, we adopt a trivariate model following the approach used by Luintel and Khan (1999), Aziakpono (2008), and Arestis, Luintel and Luintel (2010). In this model one of the 22 control variables is added at a time. Economic growth and financial development variables remain constant in the model since they are the variables of interest. This implies that 22 models will be estimated for each of the 12 models based on 8 measures of financial development. Our choice in this regard is guided by literature:

- The main advantage of using this approach is that adding one variable at a time helps to address model identification problems, which may result in erroneous causal inferences (Luintel & Khan, 1999; Odhiambo, 2008).
- Secondly, it helps to test the consistency and robustness of the long-run relationship between economic growth and financial development indicators after controlling for the effects of other variables (Loizides & Vamvoukas, 2005; Aziakpono, 2008).
- Thirdly, a trivariate model reduces the risk of multicollinearity, which undermines statistical significance of the regression estimates (Levine & Renelt, 1992).

Thus, the trivariate approach will be applied in all the five empirical chapters succeeding this one. Economic growth is proxied by the log of *per capita* real GDP. Our decision to use the log of *per capita* real GDP is consistent with most time series studies (Arestis, *et al.*, 2010; Ndako, 2010; Yeh, *et al.*, 2013), while cross-country studies often use the growth rate of *per capita* GDP (Demetriades & Rousseau, 2015; International Monetary Fund, 2016b; Sahay, *et*

al., 2015). The proxy for financial development will depend on the objective of each empirical chapter.

- Bank development will be proxied by credit to the private sector, deposits of commercial banks (expressed as a percentage of GDP in nominal terms) and the ratio of credit to the private sectors to deposits of commercial banks (the intermediation ratio).
- Stock market development is proxied by stock market capitalisation and stock market value traded. The values are expressed as a percentage of GDP in nominal terms.
- NBFIs will be proxied by assets of NBFIs expressed as a percentage of GDP.
- Financial structure is measured as the relative size and activities of the stock market to banks in each economy.

4.3. Econometric technique

The challenge of empirically linking finance to economic growth evolved over time as data became available and econometric techniques became complicated. Earlier attempts to link finance to growth was in the form of mere correlations (Goldsmith, 1969). However, such technique did not provide control for other variables that may influence economic growth or provide any information on the direction of causality between finance and growth (Beck, 2008).

The second generation of estimation techniques was cross-country OLS. This technique was popularised by the work of King and Levine (1993a), Levine (2002), Levine (2004), Beck, *et al.* (2014), Law and Singh (2014), and Demetriades and Rousseau (2015). However, a number of issues were identified which could violate the orthogonality conditions, namely, unobserved country-specific effects, omitted variable bias and reverse causation between finance and economic growth. Fixed effects regression and controlling for country traits were used to overcome some of these limitations.

In order to overcome weaknesses associated with the OLS techniques, the instrumental variable approach was developed (Beck, 2008). The Two-Stage-Least Squares Estimator (TSLS) and GMM were used in this regard. The weakness associated with these techniques was the identification of economic mechanisms through which the instrumental variable affected the endogenous variable, and thus the regression depended on the quality of the instrumental variable used. The dynamic panel technique was introduced to deal with some of these weaknesses. It employed internal instrumental variables, i.e., lagged values of the explanatory variables.

Some of the recent studies such as Gambacorta, *et al.* (2014) and Law and Singh (2014) argued that the finance growth relationship is non-linear. They applied threshold modelling to demonstrate that the effect of finance after a certain level of financial development starts to deteriorate. Specifically, Law and Singh (2014) concluded that the effect of financial development on economic growth becomes negative when private sector credit, liquid liabilities and domestic credit exceeds 94%, 97% and 100% of GDP, respectively. In this case, credit to the private sector for Egypt and Nigeria is still below this threshold, hence we decided not to employ threshold modelling.

However, in order to overcome weaknesses of cross-sectional techniques, time series techniques are often used. According to Beck (2008), time series techniques have more estimation power as they use high-frequency data and allow for country heterogeneity. In addition, they also have the capability to deal with unit root problems associated with financial variables, and can address causality issues (Beck, 2008).

To this end, this study employs the cointegration and vector-error correction model with the Johansen cointegration framework. The technique is employed within a country-specific setting to empirically examine the relationship between finance and economic growth. This approach provides a framework for testing the existence of a long-run equilibrium relationship between economic growth and financial development, and the causality thereof.

The multivariate vector-error correction model with k lags can be expressed as follows (Hjalmarsson & Österholm, 2007; Aziakpono, 2008; Arestis, *et al.*, 2010):

$$\Delta X_t = \Pi X_{t-1} + \sum_{i=1}^k \Gamma_i \Delta X_{t-1} + \varepsilon_{kt} \quad 1$$

Where $X_t = f(Y, FD, \text{control variables})$ is a 3 x 1 vector. The variables are integrated of order 1, that is, $I(1)$. ΔX_t is $I(0)$; Γ_i represents 3 x 3 short-run coefficient matrices; and ε_{kt} is the error term and is normally and independently distributed.

The full rank of Π matrix is r . In a trivariate model (where $n = 3$), if $r = 3$, then the variables X_t are $I(0)$. However, if the rank of the Π matrix is zero, then there is no cointegrating relationship between the variables. The Π matrix can also have a reduced rank in the order of $r \leq (n-1)$.

In a trivariate model, it is possible to have two cointegrating vectors, thus two reduced ranks are possible: $r = 1$ (one cointegrating vector) and $r = 2$ (two cointegrating vectors). In the event

of two cointegrating vectors, there is need to identify which of the two is a unique estimate of the parameters that is economically interpretable (Aziakpono, 2008; Geda, *et al.*, 2012). In our case, the relationship of interest should be financial development and economic growth. The relationship between any of the two variables of interest and the control variables is not pursued in this study. The identification of the “correction” relationship can be achieved by normalising the eigenvectors. Such normalisation involves restricting the first variable to one.

In carrying out the analysis, only models that satisfied the serial correlation and heteroscedasticity tests with a certain level of explanatory power were reported. We summarise the procedure below:

- (i) Test for unit root. The study uses Augmented Dickey-Fuller and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests.
- (ii) Estimate a VAR model and then test for cointegration: If the series are I(1), then we test for cointegration. If no cointegration is established, then the model is discarded.
- (iii) Test for exogeneity: Should cointegration exist, a weak exogeneity test is carried out to ascertain if at least one of the variables of interest (i.e. economic growth and measures of financial development variable) is endogenous. If none of the variables is endogenous, the model is not reported.
- (iv) After establishing endogeneity, estimate a VECM. The model is normalised on the variable of interest to obtain the long-run and short-run parameters.
- (v) Next, the model is tested for serial correlation and heteroscedasticity. If serial correlation or heteroscedasticity is found, then the model is not reported.
- (vi) If the model satisfies the serial correlation and heteroscedasticity, its explanatory power is also assessed. Specifically, only models with adjusted R^2 values greater than 30% are reported. This is to ensure that the model has a relatively high explanatory power and good fit.

4.4. Data and sources

Annual data covering the period 1971-2013 are used in estimating the model, but in some cases data were not available for the entire period for some of the variables. The period of study was chosen solely because of data limitations, a problem characteristic of African countries. GDP data for the three countries were obtained from the World Development Indicators (WDIs) and the United Nations Statistics (UN Stats). Banking sector and stock market development data were obtained from the IMF International Financial Statistics (IFS), the WDIs and the World

Federation of Exchanges (WFE). Data on the control variables were obtained from the IFS and the WDIs. Gaps in the data were filled by data obtained from the central banks and stock market markets in Egypt, Nigeria and South Africa. See Table 4.1 below for the full description of variables and period of coverage.

Table 4.1: Description of variables

Variable	Definition	Country		
		Egypt	Nigeria	South Africa
Y	Real GDP per capita.	1971-2013	1971-2013	1971-2013
Agric	Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production.	1971-2013	1981-2013	1971-2013
CPI	Consumer Price Index (2010 as base year).	1971-2013	1971-2013	1971-2013
DepositR	Deposit interest rate is the rate offered by commercial banks on three-month deposits.	1976-2013	1971-2013	1977-2013
Elec	Electric power consumption measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants.	1971-2011	1971-2011	1971-2011
ElecPecapita	Electric power consumption per capita.	1971-2011	1971-2011	1971-2011
ERav	National Currency per U.S. Dollar, period average.	1971-2013	1971-2013	1971-2013
ERend	National Currency per U.S. Dollar, end of period.	1971-2013	1971-2013	1971-2013
Exports	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world.	1971-2013	1971-2013	1971-2013
GasRent	Natural gas rents are the difference between the value of natural gas production at world prices and total costs of production.	1971-2013	1971-2013	1971-2013
GCF	Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.	1971-2013	1971-2013	1971-2013
GvtCons	Government consumption – final consumption expenditure includes all current government expenditures for purchases of goods and services (including compensation of employees).	1971-2013	1971-2013	1971-2013
Imports	Imports of goods and services represent the value of all goods and other market services received from the rest of the world.	1971-2013	1971-2013	1971-2013
Industri	It comprises value added in mining, manufacturing, construction, electricity, water, and gas.	1971-2013	1981-2013	1971-2013
LendingR	Lending rate is the rate charged by banks on loans to the private sector.	1976-2013	1971-2013	1971-2013
Mrents	Mineral rents are the difference between the value of production for a stock of minerals at world prices and their total costs of production.	1971-2013	1971-2013	1971-2013
NEREEExRate	Nominal Effective Exchange Rate.		1979-2013	1979-2013
NetTaxes	Net taxes on products (net indirect taxes) are the sum of product taxes less subsidies. Product taxes are those taxes payable by producers that relate to the production, sale, purchase or use of the goods and services.	1971-2013	1981-2013	1971-2013
OilRent	Oil rents – the difference between the value of crude oil production at world prices and total costs of production as a percentage of GDP.	1971-2013	1971-2013	1971-2013
OPP	Openness to trade is the total value of exports and imports, expressed as a percentage of GDP.	1971-2013	1971-2013	1971-2013
PDensity	Population density is midyear population divided by land area in square kilometers.	1971-2013	1971-2013	1971-2013

Pop	Number of people in a particular country.	1971-2013	1971-2013	1971-2013
Spread	It is the difference between the deposit and the lending rates.	1976-2013	1971-2013	1977-2013
Tel	Telephone lines are fixed telephone lines that connect a subscriber's terminal equipment to the public switched telephone network and that have a port on a telephone exchange. Integrated services digital network channels and fixed wireless subscribers are included.	1975-2013	1981-2013	1971-2013
Tel100	Telephone lines per every 100 people.	1975-2013	1981-2013	1971-2013
UrbanPop	Population in urban agglomerations of more than one million is the country's population living in metropolitan areas that in 2000 had a population of more than one million people.	1971-2013	1971-2013	1971-2013

Notes: GDP-gross domestic product; Y-economic growth; Agri-agricultural output; CPI-consumer price index; OPP-openness to trade; GCF-gross capital formation; DepositR-deposit rate; Elec-electric power consumption; ElecPecapita-electric power consumption per capita; ERav-period average national currency exchange rate per US dollar; ERend-end period national currency exchange rate per US dollar; Exports-exports; GasRent-gas rents; GvtCons-government consumption; Imports-imports; Industri-industrial output; LendingR-lending rate; Mrents-mineral rents; NEREEExRate-nominal effective exchange rate; NetTaxes-net taxes; OilRent-oil rents; PDensity-population density per square kilometre; Pop- number of people in a country; Spread- interest rate spread; Tel-number of telephone lines that are connected; Tel100-number of telephone lines per 100 people; UrbanPop-urban population.

Source: Compiled by author

In Table 4.2 below, we briefly discuss the *a priori* expectation of the control variables based on theory and empirical literature. All variables were measured as a percentage of nominal GDP, except inflation and interest rates.

Table 4.2: Description of control variables

Concept being measured	Variable and description of the <i>a priori</i> expectation
Macroeconomic stability	Macroeconomic stability is measured by inflation. Empirical evidence suggests that inflation is highly correlated with underdevelopment of the economy. In the same breath, an unstable macroeconomic environment adversely affects the development of financial institutions (Levine, 2004).
Exchange rates	Exchange rates are measured by three measures, namely, period average national currency exchange rate per US dollar; the end period national currency exchange rate per US dollar; and the nominal effective exchange rate. According to the International Monetary Fund (2015b), exchange rate movements have an effect on exports and imports, and consequently economic growth and financial development. In this study we use all the three measures of exchange rates for completeness' sake.
Trade openness	This variable is measured separately by exports, imports, and openness (exports plus imports as a percentage of GDP). Empirical studies proved that export-oriented development strategies were instrumental in the rapid economic growth experienced by Asian countries between 1960 and 1990 (Page, 1994). Thus, exports are expected to be positively associated with economic growth. However, reliance on natural resources exports may also generate externalities to the economy owing to volatility of commodity prices. On the other hand, dependency on imports may lead to depreciation of the currency, higher production costs and inflation, thus adversely affecting economic growth. Trade openness (the more a country trades with other countries) can be an indicator of how competitive a country is on the global market (Lagarde, 2015), and thus is expected to be positively correlated with economic growth.
Infrastructure	Infrastructure is proxied by telephone lines. The availability of and investment in infrastructure is expected to facilitate economic and financial transactions, thus promoting economic growth (International Monetary Fund, 2016a).
Electricity consumption	Electricity outages disrupt production and ultimately affect economic output (International Monetary Fund, 2016a). Electricity was measured by a country's aggregate and per capita consumption.
Natural resources	This was proxied by mineral rents, gas rents, and oil rents. While theory suggests that natural resources attract foreign direct investment, which should, in turn, promote economic and financial development, recent literature suggests that natural resources may inhibit per capita GDP (Ploeg & Poelhekke, 2007). This is referred to as the 'natural resource curse'. On the other hand, availability of natural resources

suggests potential for industrial growth and exports, both of which are expected to have a positive effect on per capita GDP (Sala-i-Martin & Subramanian, 2003).

Government fiscal policy	This is proxied by government consumption. Growth in government expenditure could affect financial development if it crowds out the private sector, thus affecting economic growth as well. However, government intervention through credit guarantee schemes can enhance stability of the financial markets, thus promoting financial development and economic growth (World Bank, 2012). Therefore, the <i>a priori</i> expectation can either be positive or negative, depending on the composition of government expenditure.
Population	Rapid increase in population and urbanisation has not been met by increased domestic food production, resulting in an increased need for imports and reduced fiscal space, which may adversely affect economic growth (International Monetary Fund, 2015b). On the other hand, a booming population may increase potential demand for goods and availability of cheaper labour. This suggests that if population is growing in line with national income, then population will positively influence economic growth. However, if population is outstripping growth of national income, its impact on economic growth is likely to be negative.
Interest rates	Measured by lending rates, deposit rates, and interest rates spread. Literature suggests that interest rates influence both the supply and demand of financial services. High deposit rates are expected to attract savings, which are then invested into the economy (Nguyen, <i>et al.</i> , 2015). On the other hand, high lending rates discourage borrowing for investment in productive assets (Beck, Fuchs & Uy, 2009; Beck & Cull, 2013). Thus a wide interest rate spread is likely to retard the development of banks, thus reducing per capita GDP.
Agriculture and industry output	This is the value added by the agricultural, manufacturing, mining and construction sectors. More output produced by these sectors should be directly correlated to national output.

Source: Compiled by author

CHAPTER FIVE

BANKING SECTOR DEVELOPMENT AND ECONOMIC PERFORMANCE: EMPIRICAL EVIDENCE¹⁵

5.1. Introduction

The National Treasury (2017) laments that although financial inclusion and access increased from 55% in 2005 to 85% in 2016, it has not been accompanied by an improvement in the quality of life for the poor. Neither has this translated into viable sources of finance or economic opportunities for SMEs. The assertion is in line with observations that the continent remains home to the world's largest proportion of people living in abject poverty (United Nations Economic Commission for Africa, 2016). This is worrying, given that the country has the most developed banking system on the continent. Therefore, reinvestigation of the influence of bank development on economic growth in Africa is necessary to identify factors which might be preventing the translation of increased financial inclusion and access to improved livelihoods for its people. This is the objective of this chapter.

It is well postulated in theoretical literature (Pagano, 1993), and tested in empirical literature (Levine, 2004), that banking sector development promotes economic growth. However, recent studies have shown that although depth of and access to banks in Africa have improved, there is still scope for improvement when compared to other regions (International Monetary Fund, 2016b). Figure 5.1 below shows that banks in African countries enjoy high interest rate spreads, which increase the cost of borrowing (Ahokpossi, 2013; Beck & Cull, 2013).

In addition, Demirgüç-Kunt and Klapper (2012) found that 80% of high-growth small and medium enterprises (SMEs) in Africa rely on internal sources of funds for new investments, and only 8% of such firms use bank funds to finance new investments.¹⁶ In 2015, the World Bank found that SMEs create four out of five of all new formal jobs created in emerging markets, yet 50% of them lack access to financing (World Bank, 2015d). This is worrying, given the potential of banks to spur economic growth through financing of SMEs.

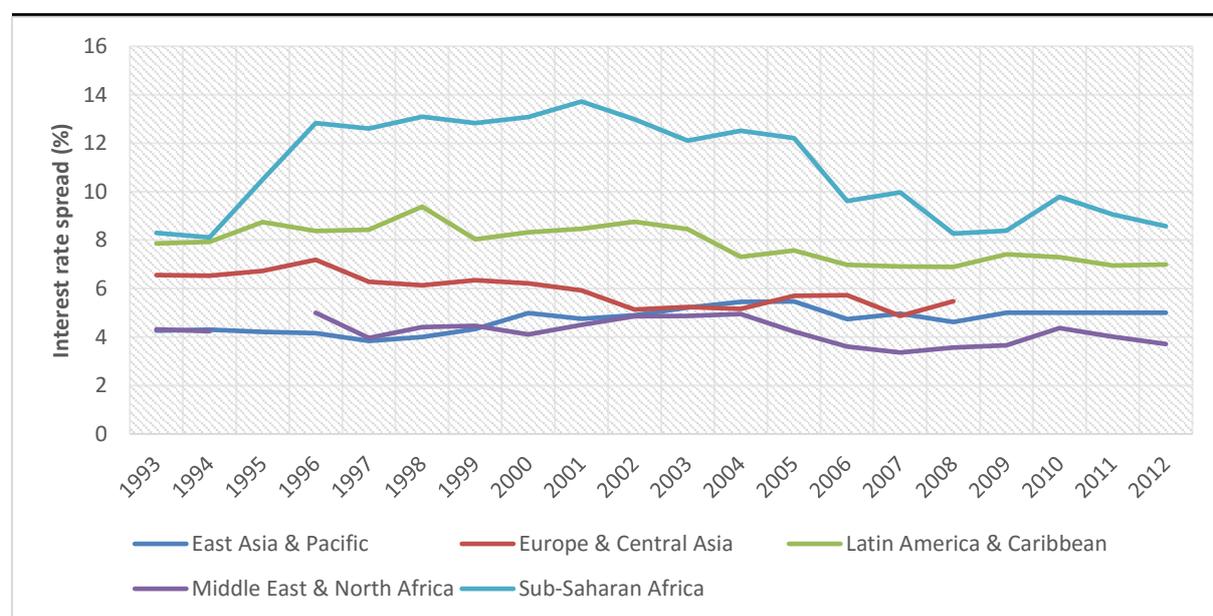
Also, results regarding the empirical linkage between bank development and economic growth suggest that more research is necessary on this aspect. Rousseau and Wachtel (2011) and

¹⁵ Part of this work was presented at the Economic Research and Policy Conference on Politics, Finance and Growth, South African Reserve Bank, Pretoria, South Africa, 30-31 March 2016.

¹⁶ The study found that only 70% of high-growth SMEs in developing countries outside Africa rely on internal financing, and 11% use bank financing to fund their new investments.

Demetriades and Rousseau (2015) argue that the relationship between bank development and economic growth is weakening. On the other hand, other studies focusing on emerging markets concluded that further financial development in African countries has enhanced economic stability and growth (Sahay, *et al.*, 2015; International Monetary Fund, 2016a & 2016b). This raises profound questions about the finance-growth relationship in Africa, which requires more studies to understand the true nature of this relationship to make well-informed recommendations to policymakers.

Figure 5.1: Comparison of interest rate spreads across different regions



Source: (World Bank, 2015e)

Therefore, in order to contribute to literature in respect of the relationship between banking development and economic growth in Africa, this study employs the Johansen cointegration technique using three measures of bank development, namely, credit to the private sector, bank deposits and the intermediation ratio. To make the results comparable, the study uses the same time series technique for Egypt, Nigeria and South Africa covering the same period, that is, 1971 to 2013. As indicated above, the choice of these countries was influenced by their dominance in terms of the size of the economy of Africa and its financial system.¹⁷

The remainder of the chapter is organised as follows: Section 5.2.1 provides the theoretical link between bank development and economic growth; Section 5.2.2 provides a selected literature

¹⁷ Nigeria, Egypt and South Africa constitute almost half (49%) of total GDP of Africa. In addition, with regard to banking, South Africa accounts for 51%, Egypt, 13% and Nigeria 9% of the total bank assets of the top 100 banks in Africa.

review, Section 5.3 presents the empirical results, Section 5.4 discusses the findings and Section 5.5 concludes.

5.2. Bank development and economic growth

5.2.1. *The theoretical framework*

There are a number of ways in which bank development can influence economic growth (Levine, 2004; Aziakpono, 2011). One of the channels through which banks can do this is through their impact on the savings rate (Pagano, 1993). Financial systems are more effective than individuals at mobilising savings in a manner that increases economic growth by overcoming transaction costs associated with collecting savings from disparate savers, exploiting economies of scale, and overcoming investment indivisibilities. Many projects require huge and risky capital investments, which are normally beyond the means of individual investors. Thus, with financial institutions, “good projects will not fail for lack of capital” (Levine, 2004: 23). In this way, financial intermediation promotes economic growth.

Demirgüç-Kunt and Levine (2008) concluded that through the function of mobilising savings, banks enhance liquidity and reduce liquidity risk to savers, while at the same time satisfying demand for illiquid and high-return investments. This, in turn, boosts economic growth. Therefore, the theoretical proposition is that liquid liabilities should be positively correlated to economic growth.

The other channel through which financial intermediation influences economic growth is through technological or productive efficiency of capital. Financial institutions have the ability to reduce information costs. This will improve ex-ante assessment of investment opportunities leading to the identification of the best production technologies and more efficient allocation of capital. Thus better information enables financial institutions to fund more promising projects. Identification of profitable projects boosts the rate of technological innovation, thus fostering economic growth (Levine, 2004: 8-9).

As indicated in Section 3.3 above, $1 - \phi$ is described as the cost of financial intermediation. Therefore, as financial systems develop, they gain experience and competition among service providers increases. Such competition is likely to lead to improved efficiency and reduced intermediation costs. Lower intermediation costs imply that a bigger proportion of the savings will be invested (Aziakpono, 2011: 25). Empirical studies have demonstrated that credit to the private sector has a statistically significant long-term relationship with economic growth and poverty reduction (Demirgüç-Kunt & Levine, 2008). Therefore efficient banks are expected to

have lower intermediation costs, which implies that more credit will be available for lending to the private sector for investment, which in turn promotes economic growth.

Furthermore, banks have the ability to screen potential borrowers and identify the most promising projects, thus promoting economic growth (Čihák, *et al.*, 2013). More specifically, banks have the ability to obtain information from firms and managers in poorly developed economies where information is incomplete (Levine, 2002). Empirical evidence supports this hypothesis. Using firm- and industry-level data, Beck, *et al.* (2001) found that banks have the capacity to enforce contracts even in countries with weak legal frameworks, arguing that banks can force firms to reveal information and pay debts, thus improving capital allocation. Improved capital allocation will, in turn, boost economic growth. Therefore the *a priori* expectation is that credit to the private sector is expected to be positively and statistically correlated with economic growth.

However, the *a priori* expectation between the intermediation ratio and economic growth is not straightforward. Intermediation ratio is measured as credit to the private sector divided by deposits of deposit money banks. A ratio that is more than one implies that banks are extending more loans to the economy than deposits that are mobilised. However, if the ratio is less than one, it implies that banks are lending out less funds compared to the deposits they mobilise.

The intermediation ratio can be indicative of the efficiency with which banks convert deposits into loanable funds. In addition, it can be used to assess the comparative efficiency of credit to the private sector and deposits in stimulating economic growth. Based on the formulation developed by Beck, *et al.* (2001) and Levine (2002), the relationship between bank intermediation ratio and economic growth can be expressed as:

$$Y_t = \alpha X_t + \beta BI_t + \varepsilon_t \quad 1$$

Where Y is economic growth, X is a set of control variables for economic growth, BI is the bank intermediation ratio and ε is the error term. The above representation has two possible hypotheses:

1. If the parameter β is positive and statistically significant, then it implies that the influence of credit to the private sector is stronger than that of deposits. Therefore, credit to the private sector is likely to stimulate economic growth compared to deposits of deposit money banks.

2. However, if the parameter β is negative and statistically significant, then it implies that the influence of deposits (bank liquid liabilities) is stronger than that of credit to the private sector. Therefore, deposits are likely to stimulate economic growth compared to credit to the private sector.

Therefore the question with regard to bank intermediation ratios is whether or not, and how, the relative size of credit to the private sector and deposits matter for economic growth.

Therefore bank development will be proxied by the following variables:

1. Liquidity: Measured by credit to the private sector
2. Size: Measured by bank deposits.
3. Intermediation: the ratio of bank credit to bank deposits.

In the following section, we present a brief overview of the context of bank development in Egypt, Nigeria and South Africa, which is followed by the empirical investigation of the relationship between bank development and economic growth in these countries.

5.2.2. Selected studies investigating the relationship between bank development and economic growth in Egypt, Nigeria and South Africa

Our review of literature shows there is still more work required to understand the nature of the relationship between financial development and economic growth in Africa. Overall, our review shows that most studies prefer using M2 and bank credit as measures of bank development. Bank deposits are often not included, yet mobilisation of deposits is an important aspect of financial intermediation. Secondly, the bank intermediation ration is also most often nor included in the studies, yet it is an important measure of how efficient the banks are in carrying out their intermediation function. In Egypt the studies predominantly use M2 and credit to the private sector. A similar trend was also observed for Nigeria and South Africa, wherein most of the studies use M2 and credit as measures of bank development.

In the following paragraphs, we provide a review of studies that previously attempted to investigate the influence of banks on economic growth in more detail; starting with Egypt, Nigeria and South Africa. The studies are selected on the basis that they applied time series estimation technique. This will provide us with an opportunity to highlight the gaps in literature that require further investigation. In addition, these are studies that cover the period of the

financial crisis. This will also enable us to understand how the financial crisis affected the ability of banks to stimulate economic growth.

Abu-Bader and Abu-Qarn (2005) use the VECM framework to investigate the causal relationship between financial development and economic growth in Egypt. The analysis was carried out using time series data over the period 1960-2001. Financial development was proxied by four measures, namely, M2, M2 (less currency in circulation), credit to the private sector and domestic credit to non-financial entities. The results from the study show that credit to the private sector and M2 (less currency in circulation) positively influences economic growth. There was no positive relationship between M2 and economic growth.

The findings by Abu-Bader and Abu-Qarn (2005) were also supported by Abosedra, *et al.* (2016), who employed the VECM causality approach to conclude that bank development measured by credit to the private sector (1975-2011) is positively associated with economic growth. Kamal (2013) employed a similar methodology, but covering a different period, 1988-2012. The study concluded that the relationship between credit to the private sector and economic growth is positive and bidirectional. Although these studies obtained the same effect of bank development on economic growth, they employed different measures of bank development; hence, comparability is difficult.

However, another study employing a similar methodology (the Johansen cointegration technique), but covering an almost similar period (1977-2012), found conflicting results (AbdelazizTouny, 2014). The study concludes that the long-run relationship between credit to the private sector and economic growth is negative. The source of the difference between Kamal (2013) and AbdelazizTouny (2014) is the composition of the conditioning set of variables. This suggests the need for a methodology that overcomes problems associated with selecting the set of control variables to include in the model.

In respect of Nigeria, we review four time series studies which recently investigated the link between financial development and economic growth (Adamu, *et al.*, 2015; Nkwede, 2015; Gabriel, *et al.*, 2016; Hassan, *et al.*, 2016). As indicated above, these studies are selected on the basis that they are the most recent studies that employed time series methodology, and covered the financial crisis period in order to investigate the influence of bank development on economic growth.

Adamu, *et al.* (2015) used time series data covering the period 1977-2014 to investigate the relationship between domestic credit to the private sector and economic growth. The study employed the ARDL estimation technique. When using contemporaneous levels, the results show that financial development is negatively associated with long-run economic growth. However, the relationship changes to positive when the lag of financial development is used. This study did not test for the direction of causality.

Nkwede (2015) is another study focusing on the relationship between banking development and economic growth in Nigeria. Bank development was proxied by bank credit to small-scale enterprises, bank credit by rural banks, deposits of rural bank branches, total number of bank branches in both urban and rural areas, and bank credit to the private sector. Data covered the period 1981 to 2013. The study employed the OLS technique, and found that bank credit to small enterprises and deposits of rural bank branches are negatively associated with economic growth. On the other hand, the total number of bank branches in both urban and rural areas and bank credit to the private sector showed a positive influence on economic growth. This suggests that different measures of bank development or a different estimation technique produce different results in respect of the relationship between bank development and economic growth in Nigeria.

Gabriel, *et al.* (2016) employed the parsimonious error correction model and the pairwise Granger causality approach to test the direction of causality between credit to the private sector and M2 and economic growth. Data used covered the period 1986 to 2014. The results show that credit to the private sector is positively related to economic growth, while M2 is negatively associated with economic growth. However, the Granger causality results shows that in all the variables, causality runs from economic growth to bank development.

Using similar measures of bank development to Gabriel, *et al.*'s (2016), Hassan, *et al.* (2016) employed the multivariate Johansen cointegration technique and obtained different results. Data used covered the period 1981-2014. Results from the study showed that M2 positively influences economic growth, while credit to the private sector exerts a negative influence on economic growth. While Gabriel, *et al.* (2016) and Hassan, *et al.* (2016) employed a technique similar to that employed in this study, they adopted a structural model, whereas this study adopts a trivariate model. A trivariate model will enhance the robustness of the results obtained by applying as many control variables as possible.

With regard to South Africa, we reviewed the three most recent empirical studies that used time series data to investigate the impact of bank development on economic growth (Ndako, 2010; Chibvongodze, *et al.*, 2014; Nyasha & Odhiambo, 2015). Despite using different methods, the studies conclude that bank development promotes economic development. However, they covered different time-periods, and mostly used M2 and bank credit as measures of bank development.

Chibvongodze, *et al.* (2014) employed the ARDL technique to conclude that there exists a positive bidirectional relationship between bank development and economic growth. Bank development was proxied by credit to the private sector using quarterly data over the period from 1996 to 2011.

Ndako (2010) employed the Johansen cointegration and VECM to investigate the effect of bank development on economic growth. Data used in the analysis covered the period 1983-2007. Bank development was measured by credit to the private sector. The empirical results show that the relationship between bank development and economic growth is positive and bidirectional.

Nyasha and Odhiambo (2015) employed the ARDL technique, similar to Chibvongodze, *et al.*'s (2014), to conclude that bank development promotes economic growth in South Africa. However, Nyasha and Odhiambo (2015) used annual data covering a different period, 1980-2012. They also used a different measure of bank development. Bank development was proxied by an index of M2, M3, and credit to the private sector.

Thus we observe that, despite the differences in methodologies, all the studies adopt a structural model to estimate the relationship. As indicated above, the weakness of such a model lies in the selection of control variables, which varies from study to study.

In addition, we observe that bank intermediation ratios and bank deposits are often not included in the studies. Exclusion of such indicators may have the effect of over or underestimating the influence of bank development on economic growth. The most used indicator of bank development is credit to the private sector and M2. The weakness of using M2 as an indicator of bank development is that it is not a good indicator of bank intermediation, especially in cases where the component of currency in circulation is significant.

Therefore it is the objective of this thesis to investigate how inclusion of two additional measures, bank deposits and the intermediation ratio, will help us understand the relationship between bank development and economic growth in these countries.

Bank deposits, as a proxy for size of the banking sector, are an indicator of the ability of banks to mobilise savings for investment. Secondly, the bank intermediation was significantly affected by the financial crisis (Gertler & Kiyotaki, 2010). Therefore it is important that we investigate if and how the level of financial intermediation still influences economic growth. The study used the cointegration and vector-error correction modelling technique, using the Johansen cointegration framework using time series data from Egypt, Nigeria and South Africa covering the same period, 1971 to 2013.

5.3. Estimation results

This section presents and discusses the results. The results are presented in four sections: (i) unit root test results, (ii) cointegration results; (iii) weak exogeneity test results, and (iv) the long-run relationship between bank development and economic growth.

5.3.1. Unit root test results

While the literature suggests a number of methods to test for the existence of unit root or stationarity, in this thesis we used the Augmented Dicky-Fuller (ADF) technique to test for stationarity. However, in order to compare the results and improve robustness, the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) was also employed. The tests were carried out for both the “intercept” and “trend and intercept” for robustness. The detailed results are presented in Table A1 and A2 in the Annexures.

The ADF unit root test results show that the majority of variables were stationary at first difference. This is in line with theoretical predictions that most macroeconomic variables are stationary at first difference (Geda, *et al.*, 2012). The results for Egypt show that all other variables were stationary at first difference, while electricity consumption, population and population density were stationary at first level.

In respect of Nigeria, the results show that all variables were stationary at first difference except population and population density. In addition, oil rents, CPI, government consumption and bank deposits were stationary at first difference, but with a trend and intercept. In South Africa, only NBFIs and electricity consumption were not stationary at first difference, while all other variables were stationary at first difference.

In terms of the KPSS, the results for Egypt and Nigeria show that most of the variables are first difference stationary, that is, I(1) series. The only exception was oil rents and interest rate spread that were stationary at level for both countries. Similarly, for South Africa, the unit root and stationarity test results also show that most of the variables were I(1) series. The only variables that were level stationary were interest rate spread, exports, imports and net taxes.

5.3.2. Cointegration test results between bank development and economic growth

Cointegration suggests the existence of a long-run equilibrium relationship between economic variables (Engle & Granger, 1987; Kennedy, 2003; Geda, *et al.*, 2012; Brooks, 2014). We use the Johansen cointegration technique to test for cointegration. In the table, “K” indicates the vector autoregression (VAR) order that produces a white noise residual, and “A” indicates the deterministic trend assumption for each model. For the models where cointegration is established, only those that produced meaningful results, that is, satisfied the serial correlation, heteroscedasticity and adjusted R² specifications stated above, are reported. The diagnostic tests and R² specifications are applied to the VECM regression.

A total of 22 models were estimated for each country using each of the measures of bank development, namely, credit to the private sector, liquid liabilities and bank intermediation ratios. The results are presented in Tables 5.1 - 5.3 below.

Table 5.1: Cointegration test results – bank credit and economic growth

	CV	Obs	K	A	Trace Statistic			Maximum Eigen Value		
					r<0	r<1	r<2	r<0	r<1	r<2
Egypt	Imports	40	2	4	53.32[0.00]	20.02[0.22]	3.73[0.78]	33.30[0.00]	16.29[0.13]	3.73[0.78]
	OilRents	40	2	4	65.00[0.00]	20.61[0.20]	3.61[0.80]	44.39[0.00]	17.00[0.11]	3.61[0.80]
	NetTaxes	40	2	4	50.32[0.01]	16.27[0.47]	2.97[0.88]	34.05[0.00]	13.30[0.30]	2.97[0.88]
Nigeria	GasRents	40	2	4	54.74[0.00]	13.23[0.72]	4.03[0.74]	41.51[0.00]	9.20[0.70]	4.03[0.74]
	NetTaxes	27	5	3	63.73[0.00]	13.96[0.08]	3.53[0.06]	49.77[0.00]	10.42[0.19]	3.53[0.06]
	OilRents	38	4	3	31.77[0.03]	10.34[0.26]	1.88[0.17]	21.43[0.05]	8.45[0.33]	1.88[0.17]
South Africa	Agric	39	3	4	49.80[0.01]	23.81[0.09]	6.19[0.44]	25.99[0.05]	17.62[0.09]	6.19[0.44]
	CPI	40	2	4	55.57[0.00]	23.12[0.11]	10.19[0.12]	32.45[0.01]	12.93[0.33]	10.19[0.12]
	DepositR	34	2	3	39.27[0.00]	14.57[0.07]	0.99[0.32]	24.70[0.02]	13.58[0.06]	0.99[0.32]
	GvtCons	39	3	2	41.84[0.01]	17.39[0.12]	5.07[0.28]	24.44[0.02]	12.32[0.17]	5.07[0.28]
	LendingR	39	3	4	51.55[0.01]	19.47[0.25]	4.60[0.65]	32.08[0.01]	14.87[0.20]	4.60[0.65]
	NetTaxes	38	4	4	45.82[0.02]	15.85[0.51]	6.08[0.45]	30.00[0.01]	9.77[0.64]	6.08[0.45]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Estimation by author

Table 5.2: Cointegration test results - bank liquidity and economic growth

		Trace Statistic						Maximum Eigen Value		
	CV	Obs	K	A	r<0	r<1	r<2	r<0	r<1	r<2
Egypt	Agric	39	3	2	54.23[0.00]	19.21[0.07]	3.75[0.45]	35.02[0.00]	15.45[0.06]	3.75[0.45]
	Elec	37	3	4	51.08[0.01]	23.84[0.09]	9.83[0.13]	27.24[0.03]	14.01[0.25]	9.83[0.13]
	Exports	39	3	3	45.19[0.00]	14.05[0.08]	0.14[0.71]	31.14[0.00]	13.91[0.06]	0.14[0.71]
	Industr	39	3	2	37.36[0.03]	15.00[0.23]	3.03[0.57]	3.04[0.57]	11.97[0.19]	3.03[0.57]
	OPP	39	3	3	36.73[0.01]	13.99[0.08]	0.17[0.68]	22.74[0.03]	13.82[0.06]	0.17[0.68]
	PDensity	39	3	3	33.77[0.02]	11.51[0.18]	1.41[0.23]	22.26[0.03]	10.10[0.21]	1.41[0.23]
	Pop	39	3	3	33.77[0.02]	11.51[0.18]	1.41[0.23]	22.26[0.03]	10.10[0.21]	1.41[0.23]
	Spread	33	4	3	42.22[0.00]	9.91[0.29]	0.38[0.54]	32.31[0.00]	9.53[0.24]	0.38[0.54]
UrbanPop	38	4	2	41.82[0.01]	16.79[0.14]	5.09[0.27]	25.03[0.02]	11.70[0.20]	5.09[0.27]	
Nigeria	Agric	28	4	4	59.88[0.00]	22.36[0.13]	6.79[0.37]	37.52[0.00]	15.56[0.16]	6.79[0.37]
	CPI	40	2	2	40.68[0.01]	15.05[0.22]	6.45[0.16]	25.63[0.02]	8.60[0.48]	6.45[0.16]
	GasRents	40	2	3	36.66[0.01]	10.87[0.22]	1.98[0.16]	25.79[0.01]	8.90[0.30]	1.98[0.16]
	UrbanPop	38	3	4	42.91[0.00]	12.46[0.14]	0.07[0.79]	30.45[0.00]	12.39[0.10]	0.07[0.79]
South Africa	Agric	39	3	2	37.41[0.03]	12.76[0.38]	4.62[0.33]	24.64[0.02]	8.14[0.53]	4.62[0.33]
	DepositR	34	2	3	40.08[0.00]	12.71[0.13]	0.14[0.71]	27.37[0.01]	12.57[0.09]	0.14[0.71]
	ER_end	38	4	3	49.46[0.00]	19.49[0.06]	7.25[0.11]	29.97[0.00]	12.24[0.17]	7.25[0.11]
	GvtCons	39	3	2	49.83[0.00]	19.24[0.07]	3.35[0.52]	30.59[0.00]	15.89[0.05]	3.35[0.52]
	Imports	37	5	4	43.42[0.04]	16.72[0.44]	4.94[0.61]	26.70[0.04]	11.78[0.44]	4.94[0.61]
	Industr	39	3	3	33.70[0.02]	7.57[0.51]	0.16[0.69]	0.16[0.69]	7.41[0.44]	0.16[0.69]
	LendingR	38	4	4	56.50[0.00]	21.31[0.17]	9.49[0.15]	35.19[0.00]	11.82[0.43]	9.49[0.15]
	NetTaxes	39	3	3	35.43[0.01]	13.91[0.09]	1.31[0.25]	21.52[0.04]	12.60[0.09]	1.31[0.25]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Estimation by author

Table 5.3: Cointegration test results between bank intermediation and economic growth

		Trace Statistic						Maximum Eigen Value		
	CV	Obs	K	A	r<0	r<1	r<2	r<0	r<1	r<2
Egypt	DepositR	35	2	3	33.58[0.02]	8.68[0.40]	0.74[0.39]	24.90[0.01]	7.94[0.39]	0.74[0.39]
	Exports	40	2	2	43.55[0.01]	13.49[0.33]	1.97[0.78]	30.05[0.00]	11.52[0.22]	1.97[0.78]
	GasRents	40	2	2	43.08[0.01]	15.32[0.21]	4.72[0.32]	27.76[0.01]	10.60[0.28]	4.72[0.32]
	Tel	27	5	3	49.57[0.00]	14.56[0.07]	4.18[0.04]	35.01[0.00]	10.38[0.19]	4.18[0.04]
	Tel100	27	5	3	48.03[0.00]	13.16[0.11]	4.58[0.03]	34.86[0.00]	8.58[0.32]	4.58[0.03]
Nigeria	Exports	39	3	4	49.91[0.00]	20.13[0.05]	6.31[0.17]	29.77[0.00]	13.82[0.10]	6.31[0.17]
	LendingR	38	4	3	30.90[0.03]	9.49[0.32]	2.58[0.11]	21.41[0.05]	6.92[0.50]	2.58[0.11]
	Spread	37	5	4	53.77[0.00]	20.83[0.19]	7.63[0.28]	32.94[0.00]	13.20[0.31]	7.63[0.28]
	UrbanPop	40	2	4	51.20[0.01]	22.52[0.12]	10.46[0.11]	28.68[0.02]	12.06[0.41]	10.46[0.11]
South Africa	DepositR	34	2	3	33.45[0.02]	12.08[0.15]	0.82[0.36]	21.36[0.05]	11.26[0.14]	0.82[0.36]
	ER_av	37	5	2	48.93[0.01]	11.62[0.84]	3.29[0.84]	37.30[0.00]	8.34[0.79]	3.29[0.84]
	LendingR	38	3	4	33.02[0.02]	10.45[0.25]	0.10[0.75]	22.57[0.03]	10.35[0.19]	0.10[0.75]
	NetTaxes	39	3	4	49.83[0.01]	17.82[0.36]	6.42[0.41]	32.02[0.01]	11.39[0.47]	6.42[0.41]
	Tel	34	4	4	48.06[0.01]	22.23[0.13]	7.70[0.28]	25.83[0.05]	14.53[0.22]	7.70[0.28]
UrbanPop	39	3	2	47.71[0.00]	19.06[0.07]	6.71[0.14]	28.65[0.01]	12.35[0.17]	6.71[0.14]	

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

Firstly, the results in Table 5.1 show that credit to the private sector is cointegrated with economic growth. However, the results are stronger in South Africa than in Egypt and Nigeria. Specifically, six models were reported for South Africa, while only three models each were reported for Egypt and Nigeria. These results are not surprising, given the significant difference in the levels of credit extended to the private sector by deposit money banks in the three countries as shown in Figure 2.4 above, which shows that banks in South Africa lend more to the private sector than those in Egypt and Nigeria. This suggests that the relationship between bank development and economic growth is likely to be stronger in countries with a higher level of financial development.

Secondly, the results in Table 5.2 show that the long-run equilibrium relationship between liquid liabilities of deposit banks and economic growth is stronger in Egypt and South Africa than in Nigeria. Nine and eight models were reported for Egypt and South Africa respectively, while only four were reported for Nigeria. These results were also predictable, given that the levels of deposit mobilisation are more than twice as much in Egypt and South Africa than in Nigeria.

Lastly, the results in Table 5.3 show that the ability of banks to extend surplus funds to deficit units in the form of credit to the private sector is comparable in all three countries. Four, five and six models were reported for Nigeria, Egypt and South Africa respectively, showing the existence of a long-run equilibrium relationship between bank intermediation and economic growth. The strength of the relationship between bank intermediation and economic growth appears to be linked to the level of financial development (measured by credit to the private sector) in each country. South Africa has the highest level of credit to the private sector and also the strongest relationship between economic growth and bank intermediation followed by Egypt, then Nigeria.

Overall, the results suggests that bank development is cointegrated with economic growth in all the three countries. However, such a relationship is strongest in South Africa, followed by Egypt and then Nigeria.

If cointegration exists between bank development and economic growth as demonstrated above, this implies that causality must run from at least one of the variables to the other. Therefore, to establish the direction of causality, we use the weak exogeneity test. We discuss the results of the test below.

5.3.3. Weak exogeneity test results

The relationship between bank development and economic growth can either be a demand-following or supply-leading one (Patrick, 1966), or a simultaneous vicious or virtuous cycle (Berthelemy & Varoudakis, 1996). However, given the conflicting views in respect of the causal link between financial development and economic growth, what prevails within a particular setting becomes an empirical issue.

The weak exogeneity results are reported in Tables 5.4-5.6, which report the Chi-square statistic and the probability value of the weak exogeneity test. Specifically, the causality results present three null hypotheses: (i) the two-way causality between economic growth and bank development ($Y \leftrightarrow FD$); (ii) causality running from economic growth to bank development ($Y \rightarrow FD$); and (iii) causality running from bank development to economic growth ($Y \leftarrow FD$). A “Yes” indicates that the null hypothesis could not be rejected, while a “No” accordingly indicates that the null hypothesis is rejected.

Table 5.4: Weak exogeneity test results between bank and economic growth

	CV	Obs	K	A	Y	PC	$Y \leftrightarrow PC$	$Y \rightarrow PC$	$Y \leftarrow PC$
Egypt	Imports	40	2	4	17.03[0.00]	0.20[0.66]	No	No	Yes
	OilRents	40	2	4	5.30[0.02]	1.40[0.24]	No	No	Yes
	NetTaxes	40	2	4	7.23[0.01]	1.66[0.20]	No	No	Yes
Nigeria	GasRents	40	2	4	1.11[0.29]	6.75[0.01]	No	Yes	No
	NetTaxes	27	5	3	3.51[0.06]	0.48[0.49]	No	No	Yes
	OilRents	38	4	3	4.90[0.03]	6.05[0.01]	Yes	Yes	Yes
South Africa	Agric	39	3	4	4.91[0.03]	1.24[0.26]	No	No	Yes
Africa	CPI	40	2	4	7.78[0.01]	3.04[0.08]	Yes	Yes	Yes
	DepositR	34	2	3	10.87[0.00]	0.66[0.42]	No	No	Yes
	GvtCons	39	3	2	3.60[0.06]	2.94[0.09]	Yes	Yes	Yes
	LendingR	39	3	4	6.17[0.01]	0.27[0.60]	No	No	Yes
	NetTaxes	38	4	4	0.18[0.67]	6.94[0.01]	No	Yes	No

Notes: CV – Control Variables. Y – Economic growth. PC – bank development proxied by credit to the private sector by deposit money banks. $Y \leftrightarrow PC$ implies bi-directional causality; $Y \rightarrow PC$ implies causality running from economic growth to bank development and $Y \leftarrow PC$ implies causality running from bank development to economic growth.

Source: Estimation by author

Table 5.5: Weak exogeneity test results- bank liquidity and economic growth

	CV	Obs	K	A	Y	LL	$Y \leftrightarrow LL$	$Y \rightarrow LL$	$Y \leftarrow LL$
Egypt	Agric	39	3	2	3.27[0.07]	3.93[0.05]	Yes	Yes	Yes
	Elec	37	3	4	2.71[0.10]	2.99[0.08]	Yes	Yes	Yes
	Exports	39	3	3	0.57[0.45]	6.54[0.01]	No	Yes	No
	Industr	39	3	2	0.24[0.62]	4.19[0.04]	No	Yes	No
	OPP	39	3	3	0.55[0.46]	8.85[0.00]	No	Yes	No
	PDensity	39	3	3	0.00[1.00]	8.58[0.00]	No	Yes	No
	Pop	39	3	3	0.00[1.00]	8.58[0.00]	No	Yes	No

	Spread	33	4	3	9.53[0.24]	0.38[0.54]	No	Yes	No
	UrbanPop	38	4	2	4.00[0.05]	0.01[0.92]	No	No	Yes
Nigeria	Agric	28	4	4	2.46[0.12]	4.82[0.03]	No	Yes	No
	CPI	40	2	2	0.74[0.39]	9.73[0.00]	No	Yes	No
	GasRents	40	2	3	3.71[0.05]	7.33[0.01]	No	Yes	No
	UrbanPop	0	0	0	2.42[0.12]	10.17[0.00]	No	Yes	No
South Africa	Agric	39	3	2	0.57[0.45]	9.47[0.00]	No	Yes	No
	DepositR	34	2	3	6.21[0.01]	0.12[0.73]	No	No	Yes
	ER_end	38	4	3	0.20[0.65]	4.33[0.04]	No	Yes	No
	GvtCons	39	3	2	0.78[0.38]	7.15[0.01]	No	Yes	No
	Imports	37	5	4	5.93[0.01]	2.38[0.12]	No	No	Yes
	Industr	39	3	3	4.18[0.04]	5.31[0.02]	Yes	Yes	Yes
	LendingR	38	4	4	0.52[0.47]	15.40[0.00]	No	Yes	No
	NetTaxes	39	3	3	0.05[0.82]	5.54[0.02]	No	Yes	No

Notes: CV – Control Variables. Y – Economic growth. LL – bank development proxied by deposits of deposit money banks. $Y \leftrightarrow LL$ implies bi-directional causality; $Y \rightarrow LL$ implies causality running from economic growth to bank development and $Y \leftarrow LL$ implies causality running from bank development to economic growth.

Source: Estimation by author

Table 5.6: Weak exogeneity test results- bank intermediation and economic growth

	CV	Obs	K	A	Y	BI	$Y \leftrightarrow BI$	$Y \rightarrow BI$	$Y \leftarrow BI$
Egypt	DepositR	35	2	3	10.88[0.00]	1.75[0.19]	No	No	Yes
	Exports	40	2	2	11.53[0.00]	0.08[0.77]	No	No	Yes
	GasRents	40	2	2	6.62[0.01]	0.91[0.34]	No	No	Yes
	Tel	27	5	3	0.15[0.70]	5.42[0.02]	No	Yes	No
	Tel100	27	5	3	0.15[0.70]	7.11[0.01]	No	Yes	No
Nigeria	Exports	0	0	0	0.03[0.87]	4.42[0.04]	No	Yes	No
	LendingR	38	4	3	0.08[0.78]	8.67[0.00]	No	Yes	No
	Spread	37	5	4	0.78[0.38]	10.34[0.00]	No	Yes	No
	UrbanPop	40	2	4	5.13[0.02]	4.034[0.04]	Yes	Yes	Yes
South Africa	DepositR	34	2	3	12.70[0.00]	4.17[0.04]	Yes	Yes	Yes
	ER_av	37	5	2	0.04[0.85]	14.70[0.00]	No	Yes	No
	LendingR	38	3	4	4.21[0.04]	3.05[0.08]	Yes	Yes	Yes
	NetTaxes	39	3	4	4.11[0.04]	0.04[0.85]	No	No	No
	Tel	34	4	4	5.10[0.02]	3.94[0.05]	Yes	Yes	Yes
	UrbanPop	39	3	2	6.11[0.01]	1.61[0.20]	No	No	Yes

Notes: CV – Control Variables. Y – Economic growth. LL – bank development proxied by deposits of deposit money banks. $Y \leftrightarrow LL$ implies bi-directional causality; $Y \rightarrow LL$ implies causality running from economic growth to bank development and $Y \leftarrow LL$ implies causality running from bank development to economic growth.

Source: Estimation by author

The weak exogeneity results in Table 5.4 show that causality between credit to the private sector and economic growth in all the three countries predominantly runs from banking development to economic growth. In Egypt, all the three models reported show that causality runs from bank development to economic growth. In Nigeria, the two models reported show that causality runs from both directions. Lastly, in South Africa, results in Table 5.4 show that five out of six models show causality running from bank development to economic growth, while three show causality running from economic growth to bank development. The weight

of the evidence presented in Table 5.4 shows that in all the three countries causality predominantly runs from bank development (measured by credit to the private sector) to economic growth.

When liquid liabilities is used as a measure of bank development, causality appears to be running predominantly from economic growth to bank development in all the three countries. In Egypt, eight of the nine models reported show that causality runs from economic growth to bank development. In Nigeria, evidence shows that all the three models reported in Table 5.5 show causality running from economic growth. Similarly, in South Africa, six of the eight models show that causality runs from economic growth to bank development, while only three show causality in the opposite direction.

This suggests that the relationship between liquid liabilities and economic growth is likely to be demand-following, wherein bank deposits grow in response to growth of the economy (Patrick, 1966). According to Demirgüç-Kunt and Klapper (2012), one of the barriers to opening a savings account in Africa is a lack of income, which can be proxied by GDP *per capita*. This suggests that the level of income within a particular country (GDP *per capita*) is likely to influence the amount of deposits mobilised by banks, and not the other way around (i.e. that deposits are likely to influence the level of income). Once the deposits are entrusted to the deposit money banks, they are transferred to the private sector as credit. However, the nature of this relationship will be further analysed in Tables 5.7-5.9 below.

Lastly, Table 5.6 presents the causality test results between bank intermediation and economic growth in Egypt, Nigeria and South Africa. The results are mixed both across and within the countries. For instance, in Egypt three of the five models reported show that causality runs from bank intermediation to economic growth, while in Nigeria all four of the models reported show that causality runs in the opposite direction, that is from economic growth to bank development. In South Africa, the results are mixed regarding the direction of causality. Four models on each side show causality running in opposite directions.

In the next section, we explore the exact nature of these relationships, that is the sign and economic significance of the coefficients of the long-run relationship between bank development and economic growth.

5.3.4. Long-run relationship between bank development and economic growth

Once the direction of causality has been established using the weak exogeneity test as discussed above, the next step is to assess the nature of the long-run relationship that exists between bank development and economic growth, whether positive or negative, and the economic significance thereof. If causality runs from bank development to economic growth, it means economic growth is endogenous. Positive and significant long-run coefficients imply that bank development spurs economic growth.

On the other hand, if causality runs from economic growth to bank development, it means bank development is endogenous in the model. Positive and economically significant coefficients suggest that the growth of the economy leads to the development of the banking sector, suggesting a demand-following relationship as postulated by Patrick (1966).

Berthelemy and Varoudakis (1996) explained that the relationship can either be virtuous or vicious. A vicious cycle occurs when economic growth is too low – so low that it prevents the development of the financial sector, which, in turn, prevents economic growth. In this instance, the long-run coefficient of financial development on economic growth (or vice versa) is expected to be negative. On the other hand, a virtuous cycle arises when a high level of economic growth supports the development of the financial sector, which, in turn, stimulates further economic growth. Thus the long-run effect of financial development on economic growth (or vice-versa) is expected to be positive.

The long-run coefficients and the coefficients of the error correction term (ECM) are presented in Tables 5.7-5.9, separately for the three indicators of bank development used in this study. The coefficients of the ECM describe the “proportion of disequilibrium from one period that is corrected in the next period” after a shock (Engle & Granger, 1987). Therefore, a low ECM suggests inefficiencies in the banking sector in facilitating economic growth or structural rigidities within the economy to correct past disequilibrium (Rateiwa & Aziakpono, 2017). Thus the focus of policy intervention must be to improve the efficiency of the banking sector and to reduce existing rigidities within the economy. We discuss our findings below.

Table 5.7: Parameters of the long-run relationship between bank credit and economic growth

Long-run parameters: Slope Coefficients of PC on Y								
Egypt	CV	Y (Y→FD)	PC(Y←FD)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
	Imports		0.18[4.11]***	0.41[8.18]***	-0.23[-5.97]	0.76	6.88[0.65]	56.23[0.19]
	OilRents		0.09[2.74]***	0.06[5.92]***	-0.28[-4.22]	0.67	5.41[0.80]	56.64[0.18]
	NetTaxes		0.18[2.98]***	0.33[5.03]***	-0.19[-4.62]	0.69	5.20[0.82]	58.40[0.14]
Nigeria	GasRents	1.13[4.26]***		0.43[5.00]***	-0.46[-3.26]	0,32	16.95[0.06]	60.71[0.10]
	NetTaxes		0.41[3.70]***	-0.31[-3.84]***	-0.55[-3.11]	0,30	5.39[0.80]	159.03[0.42]
	OilRents	1.98[3.50]***		1.68[3.50]***	-0.33[-3.15]	0,34	8.22[0.51]	115.63[0.60]
South Africa	Agric		2.21[3.39]***	-3.51[-4.98]***	-0.03[-2.20]	0.30	8.97[0.44]	73.78[0.78]
	CPI		-0.15[-3.37]***	-0.38[-25.22]***	-0.44[-3.22]	0.46	10.30[0.33]	46.93[0.52]
	DepositR		0.03[0.36]	-0.38[-6.57]***	-0.14[-3.81]	0.59	10.31[0.33]	53.93[0.26]
	GvtCons		8.20[3.31]***	-14.34[-4.56]***	-0.00[-1.91]	0.34	4.83[0.85]	85.11[0.45]
	LendingR		-0.43[-1.45]*	-0.52[-5.38]***	-0.10[-3.05]	0.61	9.80[0.37]	86.09[0.42]
	NetTaxes		0.03[0.17]	-0.22[-1.29]	-0.90[-4.00]	0.30	11.48[0.24]	120.84[0.46]

Notes: Y (Y→PC) – the coefficient of Y when causality runs from economic growth to FD. PC (Y←PC) – coefficient of FD when causality runs from FD to economic growth. CV – Control variable. ECM – Error Correction Model. Ad.R² – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** - 1%; ** - 5%; and * - 10%

Source: Estimation by author

Egypt

In Egypt, the results presented in Table 5.7 show that the relationship between credit to the private sector and economic growth is positive and economically significant. Specifically, all three models reported for Egypt, in this case, are statistically significant at the 1% level, which suggests a strong positive influence of credit to the private sector on economic growth.

The elasticities ranging between 0.09 and 0.18 suggest that, on average, a 1% increase of credit advanced to the private sector will cause a 0.15% increase in the growth rate of the economy. Low elasticity may be reflective of high intermediation costs or inefficiencies within the banking sector in intermediating funds from savers to deficit units (International Monetary Fund, 2016b). The results also show that the influence of banks is positive when we controlled for petroleum crude oil rents, net taxes and imports. Crude oil and imports have a positive influence on economic growth in Egypt. Crude oil is an important source of revenue for the government through taxes, export earnings, job creation and other positive spillover effects.

The ECM coefficient in the case of Egypt ranges between 0.19 and 0.28, suggesting that, on average, it takes about five years to correct any disequilibrium in the economy. Overall, evidence in Egypt shows that credit to the private sector exerts a positive and significant influence on economic growth.

Nigeria

Table 5.7 shows that the relationship between credit to the private sector and economic growth in Nigeria is weak and mixed. The three models reported for Nigeria show that the relationship is significant, although causality runs in the opposite direction. Two models show causality running from economic growth to bank development, while the other model shows causality running from bank development to economic growth.

The results also show that economic growth promotes bank development when oil rents and gas rents are positively supporting economic growth. The importance of the oil and gas sector in Nigeria cannot be over-emphasised. At the same time, taxes are a drag to economic growth in that country, which may be a result of corruption and abuse of public resources.

However, given that only a few models were reported after controlling for the effect of other variables exhibited, long-run relationship shows that the results are not robust.

South Africa

Of the 22 models estimated for South Africa, only four show a significant relationship between credit to the private sector and economic growth. Of these four models, two show a negative relationship, while the other two show a positive effect. The weak evidence in South Africa is surprising, given that bank development in this country is the highest in Africa, and comparable to other developed countries. The weak influence of credit to the private sector on economic growth may be due to the “quality” of credit. Data released by the South African Reserve Bank shows that over the period 1994 to 2013, credit to households made up more than 52% of bank credit to the private sector (South African Reserve Bank, 2017). This suggests that the credit was being used to fund household consumption and mortgages. While ordinarily, an increase in household consumption should stimulate economic growth, the high cost of debt and over indebtedness seem to outweigh any additional consumption that should arise from households (National Treasury South Africa, 2016).

The results also show that for the models that were reported, all the control variables (inflation, output from the agricultural sector, the deposit and lending rates) have a negative impact on

economic growth. This suggests that there are other factors negatively affecting the economy, which then also weaken the relationship between bank development and economic growth.

In addition to the weak relationship between credit to the private sector and economic growth in South Africa, the coefficient of the ECM for models with a positive relationship is very low, averaging 0.15. This suggests that it will take more than six years to correct any disequilibrium in the economy, thus indicating rigidities within the economy.

Table 5.8: Parameters of the long-run relationship between bank liquidity and economic growth

Long-run parameters: Slope Coefficients of LL on Y								
	CV	Y (Y→FD)	LL(Y←FD)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Agric	0.22[0.32]		0.50[0.47]	-0.07[-2.68]	0.43	3.99[0.91]	105.07[0.06]
	Elec		1.26[3.48]***	-2.21[-3.10]***	-0.10[-3.20]	0.43	9.06[0.43]	102.44[0.08]
	Exports	-0.08[-0.18]		-0.86[-1.56]*	-0.06[-2.88]	0.38	3.37[0.95]	96.11[0.17]
	Industr	0.45[0.79]		-1.82[-1.65] *	-0.06[-2.18]	0.35	12.60[0.18]	99.95[0.11]
	OPP	-0.30[-0.60]		-1.61[-2.13] **	-0.05[-2.86]	0.39	2.06[0.99]	99.39[0.12]
	PDensity	8.54[3.71]***		-17.39[-4.03] ***	-0.06[-3.02]	0.42	11.37[0.25]	94.91[0.20]
	Pop	8.54[3.71]***		-17.39[-4.03] ***	-0.06[-3.02]	0.42	11.37[0.25]	94.91[0.20]
	Spread	-0.08[-0.37]		-0.49[-2.09] **	-0.20[-4.13]	0.58	13.59[0.14]	135.65[0.16]
UrbanPop		0.07[1.01]	0.89[6.96] ***	-0.25[-3.73]	0.53	5.11[0.82]	120.80[0.46]	
Nigeria	Agric	1.70[7.71]***		0.42[0.98]	-0.73[-2.13]	0,31	3.79[0.92]	118.85[0.51]
	CPI	0.29[0.66]***		0.06[1.41]*	-0.30[-4.08]	0,30	10.29[0.33]	40.523[0.77]
	GasRents	1.17[4.36]***		0.26[6.29] ***	-0.34[-3.32]	0,30	8.10[0.52]	42.54[0.70]
	UrbanPop	0.09[0.28]		1.06[3.87] ***	-0.46[-4.23]	0,31	5.70[0.77]	41.28[0.74]
South Africa	Agric	0.21[0.85]		0.11[2.51] **	-0.53[-3.62]	0.30	7.27[0.61]	87.40[0.38]
	DepositR		0.59[2.82]***	-0.36[-6.19] ***	-0.14[-3.82]	0.60	11.89[0.22]	54.13[0.25]
	ER_end	0.26[1.20]		-0.05[-3.45]***	-0.61[-3.26]	0.30	13.72[0.13]	117.54[0.55]
	GvtCons	-0.06[-0.24]		-0.11[-0.86]	-0.50[-3.88]	0.30	9.98[0.35]	104.61[0.06]
	Imports		1.13[2.76]***	0.24[1.36]*	-0.21[-2.83]	0.30	8.38[0.50]	141.84[0.78]
	Industr	1.74[0.44]		6.27[3.47] ***	-0.02[-2.41]	0.30	7.37[0.60]	99.94[0.11]
	LendingR	0.18[0.78]		-0.04[-0.44]	-0.76[-4.14]	0.30	7.77[0.56]	137.40[0.13]
NetTaxes	-0.05[-0.14]		-0.17[-1.72] *	-0.46[-3.26]	0.30	3.15[0.96]	94.83[0.20]	

Notes: Y (Y→FD) – the coefficient of Y when causality runs from economic growth to FD. PC (Y←FD) – coefficient of FD when causality runs from FD to economic growth. CV – Control variable. ECM – Error Correction Model. Ad.R² – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** -1%; ** - 5%; and * - 10%

Source: Estimation by author

Egypt

Despite Egypt having the highest level of deposits among the three countries used in this study, the results show a weak relationship between deposits and economic growth. A similar result was also observed for Nigeria and South Africa, where the relationship between deposits and economic growth is weak. This implies that deposits are not extended to the private sector for

investment in productive sectors, resulting in a weak relationship between deposits and economic growth. Figure 2.4 clearly demonstrates that over the period of study, only 55% of deposits were extended to the productive sectors in the form of credit. This may suggest supply-side constraints, wherein banks are not willing to lend more in this country owing to perceived risk, or they are constrained by regulatory requirements.

The results reported in Table 5.8 show that only three models exhibit a positive relationship between deposits and economic growth. Two of the models show causality running from economic growth to bank development, while the remainder shows causality in the opposite direction. As indicated above, these results suggest that in Egypt, the level of income is likely to influence the amount of deposits mobilised by banks, rather than the other way around. The coefficient of the ECM for the two models is around 0.05, suggesting that the banking sector would take around 20 years to correct any disequilibrium.

For the three reported models, the impact of the control variables on economic growth is negative. This suggests that the inability of the banks to channel savings to the productive sectors, thus promoting economic growth, may be affected by other structural challenges within the economy such as infrastructure overload owing to overcrowding, which has also been partly blamed for the uprising.

Nigeria

Like Egypt's, the results for Nigeria show that the relationship between deposits and economic growth is weak. Specifically, only three models were reported, and all show a positive and significant relationship between deposits and economic growth. Since causality in all the three models runs from economic growth to deposits, it suggests that the amount of deposits mobilised by banks is dependent on the performance of the economy.

A look at the control variables for the reported models shows that, the ability of the economy to promote savings (bank development) is enhanced by the positive influence of the agricultural and gas sector production. It is surprising that the influence of inflation on economic growth is positive. This aspect may require further investigation, which is outside the scope of this thesis.

South Africa

The relationship between deposits and economic growth is weak in South Africa. Only two models were reported in this regard, with both showing causality running from deposits to

economic growth. This suggests a supply-leading phenomenon: financial systems are able to mobilise savings, which are then supplied to the productive sector for investment, thus promoting economic growth. For the models reported in this section, the deposit rate has a negative effect on economic growth.

Table 5.9: Parameters of the long-run relationship between bank intermediation and economic growth

Long-run parameters: Slope Coefficients of BI on Y								
	CV	Y(Y→FD)	BI(Y←FD)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	DepositR		-0.16[-0.76]	-1.22[-5.18] ***	-0.04[-3.41]	0.33	6.48[0.69]	60.46[0.11]
	Exports		0.73[1.98]**	1.74[4.40] ***	-0.03[-5.10]	0.56	5.21[0.82]	57.45[0.16]
	GasRents		0.44[1.98]**	0.14[4.30] ***	-0.05[-4.67]	0.49	7.74[0.56]	54.46[0.24]
	Tel	2.59[3.11]***		-0.22[-1.36]*	-0.58[-2.97]	0.62	10.71[0.30]	167.38[0.25]
	Tel100	2.41[2.72]***		-0.24[-1.15]	-0.57[-3.18]	0.62	11.19[0.26]	167.25[0.25]
Nigeria	Exports	-0.57[-2.77]***		0.17[1.01]	-0.63[-4.09]	0,30	12.37[0.19]	151.15[0.59]
	LendingR	0.04[-0.22]		0.30[3.49] ***	-0.61[-3.32]	0,38	6.47[0.69]	126.31[0.33]
	Spread	-0.50[-2.83]***		0.04[0.65]	-0.65[-4.04]	0,31	4.76[0.85]	162.13[0.35]
	UrbanPop		0.19[0.70]	-3.88[-6.78] ***	-0.23[-3.54]	0,30	4.90[0.84]	57.28[0.17]
South Africa	DepositR		0.02[0.27]	-0.34[-6.17] ***	-0.15[-3.71]	0.59	9.73[0.37]	50.99[0.36]
	ER_av	-0.96[-2.77]***		-0.46[-3.18] ***	-0.74[-3.60]	0.30	8.88[0.45]	149.73[0.63]
	LendingR		-0.46[-2.70]***	-0.14[-1.08]	-0.08[-1.92]	0.57	2.36[0.98]	152.97[0.55]
	NetTaxes		-2.23[-3.55]***	-1.75[-4.24] ***	-0.07[-2.92]	0.32	10.22[0.33]	76.72[0.70]
	Tel		-0.79[-5.40]***	-0.33[-7.93] ***	-0.30[-2.39]	0.30	11.96[0.22]	104.79[0.84]
	UrbanPop		-1.33[-2.42]***	0.87[2.89] ***	-0.07[-2.81]	0.30	7.98[0.54]	79.074[0.63]

Notes: Y (Y→FD) – the coefficient of Y when causality runs from economic growth to FD. PC (Y←FD) – coefficient of FD when causality runs from FD to economic growth. CV – Control variable. ECM – Error Correction Model. Ad.R² – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** -1%; ** - 5%; and * - 10%

Source: Compiled by author

The interpretation of the relationship between the bank intermediation ratio and economic growth is based on the approach used by Levine (2002). Similarly, in this case, a positive relationship between the bank intermediation ratio and economic growth shows that growth in credit to the private sector is likely to stimulate economic growth more than growth in bank deposits. On the other hand, a negative relationship implies that an increase in bank deposits is likely to influence economic growth more than credit to the private sector.

Thus, the intermediation ratio is also a measure of the efficiency of banks in converting savings into loans to the deficit economic units.

Egypt

As mentioned earlier, the intermediation ratio indicates the efficiency of the banking sector in transferring funds from savers to deficit units. In this regard, the coefficients measure the comparative efficiency of credit to the private sector and deposits in stimulating economic growth. The results presented in Table 5.9 show that the relationship between bank intermediation and economic growth is positive and significant regardless of the direction of causality. Specifically, of the four models showing a positive and significant relationship between bank intermediation and economic growth, two of them show causality in the opposite direction.

Though the results are not very robust as only a few models, after controlling for other variables, are significant, they suggest a virtuous relationship between bank development and economic growth. A look at the results for the control variables shows that exports and gas rents are important to the Egyptian economy.

Nigeria

In Nigeria, the relationship between bank development and economic growth remains weak, regardless of the measure used. No model was reported showing the relationship between economic growth and bank development when causality runs from banks to economic growth. The results presented in Table 5.9 show that the relationship between bank intermediation and economic growth is negative, and causality runs from economic growth to bank development.

As indicated above, a negative coefficient when causality runs from economic growth suggests two likely outcomes. Firstly, growth of the economy will not stimulate an increase in efficiency of the banking sector. Such a negative relationship could signal inefficiencies in the macro-financial linkages within the Nigerian economy. Secondly, growth of the economy is likely to stimulate growth of deposits more than growth in credit to the private sector. This suggests that economic growth will encourage economic agents more to save than they are likely to borrow. These findings are in line with a study by Loayza, *et al.* (2000), which concluded that income positively influences the savings rate, and such influence is stronger in developing than developed countries. Specifically, they found that doubling per capita income will raise the savings rate by 10% of disposable income (Loayza, *et al.*, 2000: 399). None of the control variables for the models reported were significant.

South Africa

Table 5.9 shows that, in South Africa, the bank intermediation matters for economic growth more than in Egypt and Nigeria. Five models were reported in this regard as showing that the relationship between bank intermediation and economic growth is negative and significant. However, one of the five models shows causality running from economic growth to bank development.

When taken as a measure of efficiency, the results imply that the banking sector is inefficient in carrying out its intermediation, which is retarding economic growth. As indicated above, the inefficiencies may be arising from the fact that the bulk of credit in South Africa is consumed by households rather than firms, and also from the state of competition in the sector.

5.4. Discussion of findings

Our results show that in Egypt there is a stronger relationship between credit to the private sector and economic growth compared to bank deposits. This was also reflected in the intermediation ratio, which showed that credit to the private sector is likely to stimulate economic growth more compared to bank deposits. The positive influence, although small, of banks on economic growth in Egypt is likely to have emanated from successful financial sector reforms in the 1990s. Studies by Gebba and Ahmed (2013) and Elsayed (2015) on the performance of banks before and after privatisation concluded that implementation of bank privatisation in 1994 significantly improved the performance of banks regarding capital adequacy, earnings, liquidity, risk and quality of assets. This implies that improved bank performance enabled them to efficiently intermediate funds to productive sectors of the economy, thus enhancing economic growth.

As shown in Figure 2.4 above, Egypt has the highest level of savings. However, when such savings are compared to credit that is extended to the private sector, Egypt has the lowest intermediation ratio. The low level of lending shows that Egyptian banks are very conservative lenders, despite sitting on large sums of deposits. While the cautiousness of the Egyptian banks might have helped to insulate the banking sector from the financial crisis, it might have adversely affected investment in SMEs and SMMEs and the development of the financial sector, which ultimately affects their ability to promote economic growth (Egyptian Financial Supervisory Authority, 2017). This observation is in line with findings by Beck and Cull (2013), who concluded that banks in Africa have large sums of liquid funds, but are not willing

to lend to the private sector. Such unwillingness may be a result of both perceived and actual risks arising from information asymmetry, which is a major problem with most banks in Africa.

Furthermore, our analysis revealed that oil, natural gas, infrastructure, exports and the level of population growth matter for economic growth, which factors may also influence the relationship between bank development and economic growth. Therefore, given that these factors are currently hindering economic growth, there is need for policy commitment to improve the governance systems in the extractive industries, infrastructure and the macroeconomic environment in order to encourage lending to the private sector by banks.

In Nigeria, the evidence shows that neither credit to the private sector nor bank deposits positively influences economic growth. Rather, the evidence suggests that it is economic growth that stimulates savings and encourages banks to lend more. Analysis based on the bank intermediation ratio shows that neither bank credit nor deposits are likely to stimulate economic growth. Economic growth is likely to encourage mobilisation of deposits more than lending. This suggests that the relationship between bank development and economic growth in Nigeria is *demand-following*, wherein bank deposits grow only in response to the demand for financial assets by the real economy.

The weak results in respect of Nigeria are not surprising for a number of reasons. Firstly, as shown above, the Nigerian banking system has the lowest level of bank deposits, and also lends the least to the private sector in comparison with Egypt and South Africa. According to a threshold modelling study on the influence of banks' development on economic growth in Nigeria, Adeniyi, *et al.* (2015) explained that banks may only start influencing economic growth once they have reached a certain level of development. These findings suggest that Nigeria's banking system may not have reached the necessary threshold wherein the banks are capable of stimulating economic growth.

Secondly, the occurrence of banking crises in Nigeria during the periods 1991-1995 and 2009-2011 could have affected the ability of banks to promote economic growth. Banking crises create costs to the economy through fiscal outlays required to bail out distressed banks and output losses (Laeven & Valencia, 2012). During crisis periods, banks tend to reduce lending or to increase the interest rate spreads. Analysis showed that the highest interest rate spread in Nigeria was between the period 1989 and 1993, the period which coincided with the crisis. The two crisis periods were also associated with high levels of fluctuations of the amount of credit extended to the private sector.

Thirdly, the country suffered from weak regulatory systems and poor governance of the financial sector. Sanusi (2012: 2) explained that “*critical gaps in the regulatory framework and regulations, uneven supervision and enforcement, unstructured governance & management processes at the CBN*” were a major concern. Consequently, instead of facilitating intermediation of funds from depositors to borrowers, banks pursued arbitrage and rent-seeking activities such as stock exchange, foreign currency and commodities (Barros & Caporale, 2012; Sanusi, 2010). At the same time, non-performing loans significantly rose to more than 37% in 2009, affecting the sustainability of banks (Central Bank of Nigeria, 2016). Moreover, the adoption of universal banking also created a haven for speculative activities by banks, and made it difficult for the Central Bank of Nigeria to monitor and regulate banking activities. Banks ventured into private equity and venture capital at the expense of core banking functions (Sanusi, 2012).

Lastly, given the fact that one of the sectors consuming the bulk of bank credit to the private sector is the oil industry, which has a limited feedback effect on the economy, the relationship between bank development and economic growth is likely to be weak. This could be a result of the natural resource curse (Sala-i-Martin & Subramanian, 2003). This is supported by a study by Barajas, *et al.* (2016), who found that the effect of bank development on economic growth is weakest in oil-exporting countries. As mentioned above, the natural resource curse occurs when reliance on natural resources fails to promote economic growth, but inhibits it. This was further illustrated by the recent reports that the wellbeing of the biggest Nigerian banks is being threatened by bad loans to the oil industry. As a result, the stock of five of the top ten banks in Nigeria lost more than 40% in 2016, as their most attractive assets during the oil boom have turned into liabilities on their balance sheets (Fick, 2016).

In South Africa, evidence on the influence of bank credit to the private sector on economic growth is mixed, while that of bank deposits is weak, but positive and significant. A number of findings arise from the results in South Africa, namely, the quality of credit, over-indebtedness and the need to mobilise more deposits. Firstly, analysis has revealed that in South Africa, household credit, which is consumptive in nature, makes up more than 52% of bank credit to the private sector (South African Reserve Bank, 2017). Secondly, South African banks lend far more than the deposits they mobilise. This may suggest that the economy is living beyond its means, given that household debt is currently more than 77% of their disposable income (South African Reserve Bank, 2016). Such a situation may have adverse consequences for the economy if not properly managed. Lastly, analysis using bank intermediation ratios

show that bank deposits are likely to stimulate economic growth more than credit to the private sector, given the negative relationship between the bank intermediation ratio and economic growth. These results suggest that what South Africa needs is not extending more credit to the private sector, but mobilising more savings (bank deposits).

Our findings are in line with the recent observations by the National Treasury of South Africa that weaker growth of disposable income and high indebtedness are likely to retard economic growth (National Treasury South Africa, 2016). This implies that instead of households using their funds to buy more goods, which increases aggregate consumption, they use them to finance borrowing. These findings were also supported by the findings of the South African Reserve Bank in its financial stability report, that rising interest rates have put pressure on household finances (South African Reserve Bank, 2016). The report explained that this has resulted in deteriorating debt-servicing capabilities of households, which force financial institutions to increase provision for bad debts.

5.5. Summary of findings and conclusion

In this chapter, we have not only reinvestigated the long-debated question of the role deposit money banks play in contributing to economic growth, but also investigated which aspect of bank development is likely to stimulate economic growth more than the other. We summarise our findings below.

Firstly, in Egypt, although the relationship between bank development and economic growth is positive, it is not robust. The weak relationship may arise from the low volume of credit to the private sector, despite the banks' ability to mobilise deposits. While there is need for the authorities to improve the macro environment in order to encourage lending by banks, there is greater need for banks to reinforce their lending department to be able to screen potential borrowers and monitor approved loans. By doing this, banks will also be able to collect more information that is useful for the credit bureaus.

Secondly, in Nigeria, evidence shows that neither credit to the private sector nor bank deposits positively influence economic growth. One of the major reasons is a series of crises which affected the functioning of the sector, underlined by poor corporate governance. In this regard, there is need to improve the regulatory capacity of the central bank, both off-site and surveillance. The central bank should reinforce its regulatory capabilities and reach in line with the size (assets and branch network) of banks in Nigeria. There are also pointers for a need to

transform the oil sector through value addition, in order to increase positive linkages with other sectors of the economy.

Lastly, evidence obtained in respect of South Africa shows that bank deposits are likely to stimulate economic growth more than credit to the private sector. Two of the main factors affecting the ability of the banking sector in South Africa to effectively intermediate funds is the quality of debt and level of indebtedness. There is need for the central bank to provide guidelines to closely monitor development of household debt in the sector to avoid the risk of instability associated with overindebtedness. Secondly, the recently enacted credit assessment regulations seem not to abate the rise in unsecured and consumptive lending in the country. The authorities must improve credit regulation mechanisms in order to manage credit growth. Such regulation will improve the stability of the sector, and its contribution to the economy.

While the banking sector promotes economic growth through its intermediary role between borrowers and savers, empirical research has demonstrated that stock markets, by facilitating listing and trading of shares, are also important drivers of economic growth. The next chapter is therefore devoted to investigating the role of stock markets in promoting economic growth in Egypt, Nigeria and South Africa.

CHAPTER SIX

STOCK MARKET DEVELOPMENT AND ECONOMIC PERFORMANCE: EMPIRICAL EVIDENCE

6.1. Introduction

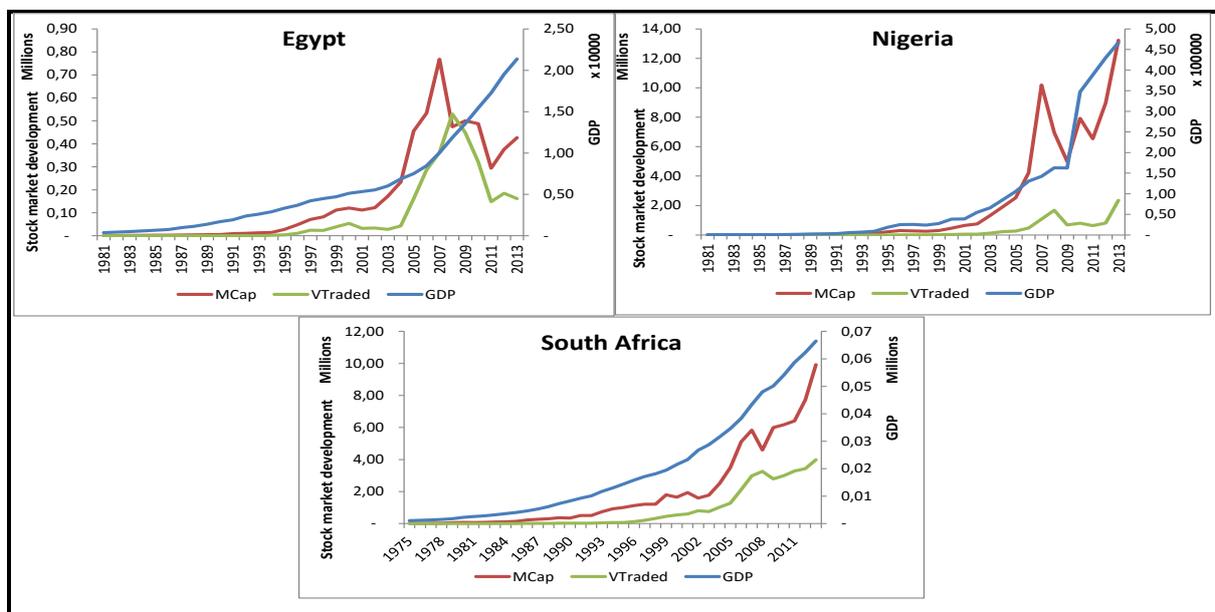
The primary channels through which finance promotes economic growth are banks and stock markets. In this chapter, we build on the analysis carried out in Chapter Five on how intermediation by banks promotes economic growth. This chapter will focus on whether the listing and trading of shares on the stock exchanges by firms promote economic growth.

The importance of stock markets as a source of funding for firms in Africa cannot be over-emphasised. In 2014, an unprecedented 24 Initial Public Offers (IPO) were recorded by stock markets in Africa, raising a record US\$1.7 billion (African Securities Exchange Association, 2015). Thus the role of stock markets as a source of funding for long-term investment becomes imperative, especially in an environment where traditional bank lending has become constrained (World Bank, 2013). Thus, there is a pronounced need to raise funds to support structural transformation of African economies and place them on a new growth trajectory. To contribute to finding solutions for Africa's financing problems, this paper reinvestigates the role of stock markets in promoting economic growth within a country-specific setting, using a time series econometric approach. Thus, from our findings, policy proposals should emerge for consideration and discussion with different stakeholders.

In Africa, the number of stock markets more than doubled during the last three decades of the 20th century, increasing from 7 in 1969 to 16 by 2000. Currently, there are 27 functioning stock exchanges, the latest *additions* being the Somali Stock Exchange, which traded its first shares on 15 September 2015 (*Somaliland Press*, 2015), and the Maseru Securities Market, which was launched on 22 January 2016 (Central Bank of Lesotho, 2016). Despite this phenomenal growth, stock markets in Africa have remained shallow and illiquid, both in absolute and relative terms, except the Johannesburg Stock Exchange (JSE). For instance, only three countries (Egypt, Nigeria and South Africa) have more than a hundred companies listed on their stock markets. At least five out of the 26 stock markets in Africa have fewer than ten companies listed on their stock markets. Moreover, most of the stock markets are dominated by a few big firms, as is the case in Nigeria, where the Dangote Group make up about a third of the stock market capitalisation (African Securities Exchange Association, 2015).

A cursory look at Figure 6.1 below suggests a correlation between stock market indicators and GDP. Such strong correlation suggests the need for rigorous econometric techniques to establish the true nature of such a relationship.

Figure 6.1: Selected indicators of stock market development and GDP for Egypt, Nigeria and South Africa: 1975-2013



Source: Compiled by author based on *World Development Indicators (2015)*, Central Banks of Nigeria, Egypt and South Africa

Furthermore, our selective review of the most recent cross-country studies, which included African countries, produced conflicting results (see Rioja & Valev, 2011; Jalloh, 2015). Given that differences in results may emanate from the heterogeneity of country characteristics, this thesis uses country-specific data to overcome that challenge. Even country-specific studies did not settle the issue.

In Egypt, the only study reviewed showed that stock markets do not stimulate economic growth (Badr, 2015). In South Africa, the three studies reviewed produced conflicting results (Ndako, 2010; Chipaumire & Ngirande, 2014; Nyasha & Odhiambo, 2015). With regard to Nigeria, five of the seven studies reviewed reported that stock markets do not have a significant positive impact on economic growth (Adefeso, *et al.*, 2013; Alajekwu, *et al.*, 2013; Oluwatosin, *et al.*, 2013; Osuala, *et al.*, 2013; and Okonkwo, *et al.*, 2014). On the other hand, the remaining two studies reported that stock markets have a significant influence on economic growth (Osamwonyi & Kasimu, 2013; Owolabi & Ajayi, 2013).

The major source of differences, in addition to the time coverage and methodologies, is the set of control variables used in the regression. As indicated above, the significance of coefficients is sensitive to the set of control variables applied. Therefore, this study will employ a trivariate approach wherein the relationship between stock market and economic growth is tested using 22 control variables. This approach is a more robust methodology. In addition to using updated data, applying the same estimation technique and data coverage for all the three will enable comparability of the results for robustness checks.

The analysis employs the cointegration and vector-error correction modelling technique based on the Johansen cointegration framework within a country-specific setting to empirically examine the long-run relationship between stock market development and economic growth over the period 1971-2013.

The remainder of this chapter is organised as follows: Section 6.2 will provide the theoretical link between stock market development and economic growth; Section 6.3 presents an empirical literature review; Section 6.4 presents the empirical results; Section 6.5 discusses the findings; and Section 6.6 concludes the chapter.

6.2. Theoretical linkage between stock markets and economic growth

6.2.1. *How stock markets influence economic growth*

Levine (2002) identified three primary channels through which stock markets can foster economic growth. These include (i) fostering greater incentives to search for information, thus improving allocative efficiency; (ii) facilitating takeovers in a manner that improves corporate governance and forces managers to improve the performance of the company, or risk being taken over by another; and (iii) providing mechanisms for risk management. Thus, in carrying out these functions, stock markets are expected to foster economic growth.

On the other hand, it has been suggested that highly developed and liquid stock markets can create myopic investor attitudes and free rider problems. Specifically, Singh (1997), Singh and Weisse (1998) and Levine (2002) found that although stock markets could be regarded as efficient in price discovery and facilitating takeover, it was observed that even the most organised stock markets do not satisfactorily perform their disciplinary and allocative roles. Their argument is based on the premise that (i) liquidity promotes investor myopia as they can easily sell their shares; (ii) stock prices are often dominated by noisy traders; (iii) the takeover principle thrives on size, rather than efficiency – hence the big and not the efficient survive hostile takeovers; and (iv) they argued that the high price volatility (which is a characteristic

of stock markets) renders stock markets a haven for speculative activities, thus giving inefficient signals for efficient resource allocation.

The model will be expressed as $Y = f(FD, \text{control variables})$, wherein FD is proxied by stock market value traded and stock market capitalisation. Stock market value traded measures liquidity, while capitalisation measures size of the stock market. The choice of variables is informed by literature and economic theory. We did not include stock market turnover because Levine explained that using stock market turnover will produce “similar results to those obtained with the total value traded ratio” (Levine, 2002: 408).

However, before we present findings from this thesis in the next section, we review some of the most recent studies that investigated the influence of stock markets on economic growth.

6.3. Empirical literature review on selected countries

The objective of this section is to review previous studies investigating the potential of stock markets in promoting economic growth in Africa.¹⁸ One of the most recent studies investigates the influence of stock markets on economic development, using data from African stock exchanges to conclude that an increase in stock market capitalisation stimulates economic growth (Jalloh, 2015). The study employed a dynamic panel estimation technique based on data covering the period 2001 to 2012. Findings from this study were in line with previous studies, which also concluded that stock markets are important for boosting economic growth in Africa (Levine & Servos, 1998; Adjasi & Biekpe, 2006; Cooray, 2010).

However, another study also employing a panel estimation technique, GMM procedure, found that in low-income countries (including nine African countries¹⁹ in the sample of 62 countries), there is no evidence suggesting that stock markets stimulate economic growth (Rioja & Valev, 2011). Data covered the period 1980-2009. On the contrary, Rioja and Valev found that, in high income countries, stock markets are positively correlated with economic growth. The differences in the results may be due to the differences in the time-period covered by the studies, and composition of samples.

¹⁸ Botswana, Côte d’Ivoire, Egypt, Ghana, Kenya, Mauritius, Morocco, Namibia, Nigeria, South Africa, Tanzania, Tunisia, Uganda, Zambia and Zimbabwe.

¹⁹ Botswana, Egypt, Ghana, Kenya, Mauritius, Nigeria, South Africa, Tunisia and Zimbabwe.

In the following paragraphs, we review country-specific studies that recently investigated the influence of stock markets on economic growth. We summarise findings from such studies in Egypt, Nigeria and South Africa.

The only study that was found and reviewed for Egypt did not help provide much-required insights into the relationship between stock markets and economic growth. The study employed the Johansen cointegration technique to conclude that there is no causal relationship between stock market development and economic growth in Egypt. Stock market development was proxied by stock market capitalisation covering the period 2002 to 2013 (Badr, 2015), which is very short to make the results meaningful. The period of the study did not cover a very important period in the economic reforms in Egypt, when stock markets started to significantly grow in both size and liquidity – that is, the period up to 1991. It will therefore be important that any study investigating the role of stock markets in Egypt also covers this period.

With regard to Nigeria, empirical studies suggest that stock markets do not stimulate economic growth. Specifically, five of the seven studies reviewed reported that stock markets do not have a significant positive impact on economic growth (Adefeso, *et al.*, 2013; Alajekwu, *et al.*, 2013; Oluwatosin, *et al.*, 2013; Osuala, *et al.*, 2013; and Okonkwo, *et al.*, 2014). On the other hand, the remaining two studies reported that stock markets have a significant influence on economic growth (Osamwonyi & Kasimu, 2013; Owolabi & Ajayi, 2013). The difference in results may have emanated from the difference in econometric methodologies, time-period covered and control variables used. However, none of the studies employed a trivariate approach. They all used a “structural form” equation. A trivariate approach allows the study to check how the relationship between stock market development and economic growth is affected by the control variables used.

In respect of South Africa, the three most recent studies covering the period after the financial crisis were reviewed. However, they produced different results. The first concluded that there is no long-run relationship between stock market development and economic growth (Nyasha & Odhiambo, 2015). The second study concluded that such a relationship exists, wherein causality runs from economic growth to stock markets (Ndako, 2010). The third study found that stock market liquidity positively influences economic growth in South Africa (Chipaumire & Ngirande, 2014).

Nyasha and Odhiambo (2015) employed the ARDL technique to investigate the relationship between stock market development and economic growth using data for the period 1980 to

2012. Stock market development was measured as an index of growth in stock market capitalisation, value traded and turnover. On the other hand, Ndako (2010) employed Johansen cointegration technique using data for the period 1983 to 2007 to conclude that there is unidirectional causality from economic growth to stock market turnover and value traded. Lastly, Chipaumire and Ngirande (2014) applied the OLS technique to conclude that stock market liquidity is positively correlated with economic growth. Data used in the study by Chipaumire and Ngirande (2014) covered the period 1995 to 2010.

Analysis of these three studies in respect of South Africa suggests that the differences in results could be attributed to different econometric methodologies employed in the studies and the time-period covered. Ndako (2010), which employed a similar econometric technique to the one adopted in this study, used data covering the period 1983 to 2007. Thus the study did not cover the period after the financial crisis, which occurrence affected the functioning of stock markets. To this end, this thesis will not only employ the Johansen cointegration technique, but do so in a different (trivariate) approach, and also extend the data coverage to 2013, which sufficiently covers the aftermath of the financial crisis.

Given the need to understand the nature of the relationship between stock markets and economic growth in Egypt, Nigeria and South Africa, this chapter will employ a trivariate approach wherein the relationship between stock markets and economic growth is tested using 22 control variables. Our choice of this approach was informed by Levine and Renelt (1992) and Sala-I-Martin (1997), who explained that given the sensitivity of regression results to the information condition set, the researcher may decide on the number of control variables they wish to use based on economic theory. Thus, we adopted a trivariate approach. Using this method will enable us to add one control variable at a time, while economic growth and the stock market variables remain constant in the regression. This approach will enable us to understand how the relationship between stock markets and economic growth is affected by different control variables. This is a more robust methodology. In addition to using updated data, applying the same estimation technique and data coverage for all three will enable comparing the results for robustness.

6.4. Estimation results

This section presents and discusses the results. The results are presented in the following order: (i) cointegration results; (ii) weak exogeneity test results; and (iii) the long-run relationship between stock market development and economic growth. Stock market development is

measured by stock market capitalisation and stock market value traded. Unit root test results are presented in Chapter 5 above.

6.4.1. *Cointegration test results between size of the stock market and economic growth*

Table 6.1 below presents the cointegration test results. In the table, “K” indicates the vector autoregression (VAR) order that produces a white noise residual, and “A” indicates the deterministic trend assumption for each particular model. The models invariably produced meaningful results, that is, they satisfied the serial correlation, heteroscedasticity and adjusted R² specifications stated in Section 4.3 of Chapter 4 above.

The cointegration and weak exogeneity test results are presented in Table 6.1 and Table 6.2 below.

Table 6.1: Cointegration test results – size of the stock market and economic growth

	CV	Obs	K	A	Trace Statistic			Maximum Eigen Value		
					r<0	r<1	r<2	r<0	r<1	r<2
Egypt	CPI	30	2	4	50.30[0.01]	23.62[0.09]	9.32[0.16]	26.68[0.04]	14.31[0.23]	9.32[0.16]
	ElecPecapita	28	2	2	40.53[0.01]	17.70[0.11]	4.28[0.37]	22.84[0.04]	13.42[0.12]	4.28[0.37]
	ER_end	30	2	4	47.29[0.02]	12.78[0.76]	4.87[0.62]	34.51[0.00]	7.90[0.83]	4.87[0.62]
	Exports	29	3	2	54.60[0.00]	19.97[0.05]	4.61[0.33]	34.62[0.00]	15.36[0.06]	4.61[0.33]
	GasRents	29	3	4	58.75[0.00]	25.80[0.05]	11.24[0.08]	32.95[0.00]	14.56[0.22]	11.24[0.08]
	Imports	29	3	2	46.10[0.00]	19.20[0.07]	3.95[0.42]	26.89[0.01]	15.25[0.06]	3.95[0.42]
	Industr	28	4	3	53.58[0.00]	11.30[0.19]	2.07[0.15]	42.28[0.00]	9.22[0.27]	2.07[0.15]
	NetTaxes	28	4	3	36.42[0.01]	11.30[0.19]	0.03[0.86]	25.12[0.01]	11.28[0.14]	0.03[0.86]
	OPP	29	3	3	39.57[0.00]	10.11[0.27]	0.28[0.60]	29.47[0.00]	9.83[0.22]	0.28[0.60]
	PDensity	29	3	3	55.34[0.00]	11.20[0.20]	1.08[0.30]	44.14[0.00]	10.12[0.20]	1.08[0.30]
	Pop	29	3	3	55.34[0.00]	11.20[0.20]	1.08[0.30]	44.14[0.00]	10.12[0.20]	1.08[0.30]
	Spread	29	3	2	40.81[0.01]	17.94[0.10]	5.09[0.27]	22.87[0.04]	12.84[0.14]	5.09[0.27]
	Tel100	30	2	3	33.49[0.02]	9.33[0.34]	3.47[0.06]	24.17[0.02]	5.86[0.63]	3.47[0.06]
	UrbanPop	29	3	4	0.00[0.00]	25.71[0.05]	10.97[0.09]	30.75[0.01]	14.75[0.21]	10.97[0.09]
Nigeria	Exports	28	4	2	46.05[0.00]	16.93[0.14]	2.50[0.68]	29.12[0.00]	14.43[0.08]	2.50[0.68]
	GCF	29	3	3	35.20[0.01]	9.72[0.30]	2.19[0.14]	25.48[0.01]	7.53[0.43]	2.19[0.14]
	LendingR	28	4	2	44.31[0.00]	14.23[0.27]	2.43[0.69]	30.07[0.00]	11.80[0.20]	2.43[0.69]
	OilRents	29	3	2	37.45[0.03]	14.77[0.24]	2.76[0.63]	22.68[0.04]	12.01[0.19]	2.76[0.63]
South Africa	Elec	34	2	3	40.78[0.00]	13.20[0.11]	1.00[0.32]	27.58[0.01]	12.19[0.10]	1.00[0.32]
	ElecPecapita	34	2	4	55.48[0.00]	21.78[0.15]	8.40[0.22]	33.71[0.00]	13.38[0.30]	8.40[0.22]
	GvtCons	36	2	2	38.79[0.02]	15.11[0.22]	0.90[0.96]	0.90[0.04]	14.21[0.09]	0.90[0.96]
	Imports	36	2	4	60.71[0.00]	24.69[0.07]	8.48[0.21]	36.02[0.00]	16.21[0.14]	8.48[0.21]
	NetTaxes	36	2	4	53.55[0.00]	20.28[0.21]	6.82[0.36]	33.27[0.00]	13.45[0.29]	6.82[0.36]
	OPP	36	2	4	61.80[0.00]	24.52[0.07]	6.60[0.39]	37.29[0.00]	17.91[0.08]	6.60[0.39]
	Spread	34	2	2	52.23[0.00]	18.12[0.34]	3.96[0.75]	34.10[0.00]	14.16[0.24]	3.96[0.75]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

Table 6.2: Cointegration test results – liquidity of the stock market and economic growth

		Trace Statistic						Maximum Eigen Value		
CV	Obs	K	A	r<0	r<1	r<2	r<0	r<1	r<2	
Egypt	DepositR	30	2	3	30.01[0.05]	7.89[0.48]	0.45[0.50]	22.12[0.04]	7.44[0.44]	0.45[0.50]
	GasRents	29	3	4	50.90[0.01]	23.51[0.10]	9.74[0.14]	27.38[0.03]	13.77[0.27]	9.74[0.14]
	GvtCons	28	4	3	53.30[0.00]	13.91[0.09]	0.06[0.81]	0.06[0.81]	13.86[0.06]	0.06[0.81]
	NefTaxes	30	2	2	35.52[0.05]	11.93[0.46]	5.37[0.25]	23.59[0.03]	6.56[0.72]	5.37[0.25]
	OilRents	29	3	2	42.25[0.01]	17.63[0.11]	7.27[0.11]	24.61[0.02]	10.37[0.30]	7.27[0.11]
	Tel100	29	3	2	48.44[0.00]	17.59[0.11]	7.18[0.12]	30.86[0.00]	10.40[0.30]	7.18[0.12]
Nigeria	Elec	26	4	2	44.80[0.00]	19.62[0.06]	4.56[0.34]	25.18[0.02]	15.06[0.07]	4.56[0.34]
	ER_av	30	2	2	38.99[0.02]	16.20[0.17]	4.70[0.32]	22.80[0.04]	11.50[0.22]	4.70[0.32]
	ER_end	30	2	2	39.56[0.02]	16.52[0.15]	4.32[0.37]	23.05[0.04]	12.19[0.18]	4.32[0.37]
	Exports	28	4	2	40.44[0.01]	14.61[0.25]	4.39[0.36]	25.82[0.02]	10.22[0.31]	4.39[0.36]
	Imports	28	4	2	49.41[0.00]	15.71[0.19]	5.16[0.27]	33.71[0.00]	10.55[0.29]	5.16[0.27]
	LendingR	29	3	4	51.57[0.01]	25.32[0.06]	7.51[0.29]	26.25[0.04]	17.81[0.08]	7.51[0.29]
South Africa	DepositR	34	2	4	48.28[0.01]	21.12[0.17]	7.72[0.28]	27.15[0.03]	13.40[0.30]	7.72[0.28]
	ER_end	35	3	2	37.23[0.03]	14.82[0.24]	3.96[0.42]	22.41[0.05]	10.87[0.26]	3.96[0.42]
	LendingR	33	5	4	51.97[0.00]	15.06[0.22]	2.39[0.70]	36.91[0.00]	12.67[0.15]	2.39[0.70]
	Spread	32	4	3	34.04[0.02]	12.65[0.13]	4.31[0.04]	21.39[0.05]	8.34[0.35]	4.31[0.04]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Estimation by author

As shown in Table 6.1 above, the trace test and the max eigenvalue test show that there is cointegration between stock market capitalisation and economic growth in all the three countries. Egypt has the highest number of models reported showing the existence of a long-run relationship between stock market capitalisation and economic growth. 14 models were reported for Egypt, while seven were reported for South Africa and three were reported for Nigeria. This suggests that the relationship between stock market capitalisation and economic growth is strongest in Egypt, while that in Nigeria is weak.

When using stock market value traded as a measure of stock market development, our results show that six models were reported separately for Egypt and Nigeria, while four were reported for South Africa. Overall, evidence suggests that the influence of stock market development is stronger in Egypt than in Nigeria and South Africa.

In the next section, we report the weak exogeneity test results to determine the nature (direction) of causal link between the two variables. The results are reported in Tables 6.3 and 6.4 below.

6.4.2. *Direction of causality between stock market development and economic growth*

Given the conflicting views in respect of the causal link between stock market development and economic growth, what prevails within each particular setting becomes an empirical issue. In this chapter, we use the weak exogeneity approach to test the direction of causality between stock markets and economic growth. The weak exogeneity results and the direction of causality thereof are reported in Tables 6.3 and 6.4 below. The nature of causal effect (whether positive or negative) is presented in Table 6.5 and 6.6 in the section below.

Causality between size of stock market and economic growth

When using stock market capitalisation (see Table 6.3), the direction of causality between stock markets and economic growth is mixed across countries. For Egypt, causality runs mainly from stock markets to economic growth, while for Nigeria and South Africa, causality runs mainly in the opposite direction. All the 13 models reported for Egypt show causality running from stock market capitalisation to economic growth, and only three of those models show bi-directional causality. This implies that stock market development is important for economic growth in Egypt. In Nigeria, 3 of the four models reported show causality running from economic growth to stock market development. However, two of these models also show bi-directional causality between stock market development and economic growth. In respect of South Africa, causality strictly runs from economic growth to stock market development. This suggests that the level of economic activities in Nigeria and South Africa influences stock market development.

Table 6.3: Weak exogeneity test results between size of the stock market and economic growth

	CV	Obs	K	A	Y	SC	Y↔SC	Y→SC	Y←SC
Egypt	CPI	30	2	4	2.91[0.09]	9.94[0.00]	Yes	Yes	Yes
	ElecPecapita	28	2	2	3.45[0.06]	1.32[0.25]	No	No	Yes
	ER_end	30	2	4	3.59[0.06]	8.15[0.00]	Yes	Yes	Yes
	Exports	29	3	2	5.83[0.02]	1.51[0.22]	No	No	Yes
	GasRents	29	3	4	5.04[0.02]	1.82[0.18]	No	No	Yes
	Imports	29	3	2	7.18[0.01]	0.92[0.34]	No	No	Yes
	Industr	28	4	3	4.11[0.04]	1.74[0.19]	No	No	Yes
	NetTaxes	28	4	3	4.57[0.03]	3.79[0.05]	Yes	Yes	Yes
	OPP	29	3	3	3.60[0.06]	0.23[0.63]	No	No	Yes
	PDensity	29	3	3	9.90[0.00]	0.73[0.39]	No	No	Yes
	Pop	29	3	3	9.90[0.00]	0.73[0.39]	No	No	Yes
	Spread	29	3	2	7.05[0.01]	2.16[0.14]	No	No	Yes
	Tel100	30	2	3	16.01[0.00]	0.19[0.66]	No	No	Yes
UrbanPop	29	3	4	3.63[0.06]	5.22[0.02]	Yes	Yes	Yes	
Nigeria	Exports	28	4	2	0.01[0.93]	2.68[0.08]	No	Yes	No

	GCF	29	3	3	0.27[0.60]	8.53[0.00]	No	No	Yes
	LendingR	28	4	2	2.86[0.09]	13.37[0.00]	Yes	Yes	Yes
	OilRents	29	3	2	5.58[0.02]	3.24[0.072]	Yes	Yes	Yes
South Africa	Elec	34	2	3	0.04[0.84]	2.94[0.09]	No	Yes	No
	ElecPecapita	34	2	4	0.46[0.50]	3.48[0.06]	No	Yes	No
	GvtCons	36	2	2	0.04[0.85]	6.63[0.01]	No	Yes	No
	Imports	36	2	4	0.00[0.95]	8.32[0.00]	No	Yes	No
	NetTaxes	36	2	4	1.62[0.20]	4.80[0.03]	No	Yes	No
	OPP	36	2	4	0.15[0.70]	9.26[0.00]	No	Yes	No
	Spread	34	2	2	0.81[0.37]	8.67[0.00]	No	Yes	No

Notes: CV – Control Variables. Y – Economic growth. SC – stock market development proxied by stock market capitalisation. $Y \leftrightarrow SC$ implies bi-directional causality; $Y \rightarrow SC$ implies causality running from economic growth to stock market development and $Y \leftarrow SC$ implies causality running from stock market development to economic growth.

Source: Compiled by author

Causality between stock market liquidity and economic growth

The results presented in Table 6.4 show that causality between stock market development and economic growth in all the countries predominantly runs from stock market activity to economic growth. In Egypt, all the six models reported show that causality runs from stock market development to economic growth, while only two of those models show bi-causality between stock market value traded and economic growth. In Nigeria and South Africa, all the models reported show that causality runs from stock market development to economic growth. Six models were reported for Nigeria, while four models were reported for South Africa. Thus, the evidence shows that stock market liquidity is important for economic growth in the three countries.

Table 6.4: Weak exogeneity test results between stock market liquidity and economic growth

	CV	Obs	K	A	Y	VT	$Y \leftrightarrow VT$	$Y \rightarrow VT$	$Y \leftarrow VT$
Egypt	DepositR	30	2	3	9.49[0.00]	0.12[0.73]	No	No	Yes
	GasRents	29	3	4	3.19[0.07]	9.04[0.00]	Yes	Yes	Yes
	GvtCons	28	4	3	3.04[0.08]	6.16[0.01]	Yes	Yes	Yes
	NetTaxes	30	2	2	4.67[0.03]	0.63[0.43]	No	No	Yes
	OilRents	29	3	2	10.14[0.00]	0.20[0.66]	No	No	Yes
	Tel100	29	3	2	3.21[0.07]	2.44[0.12]	No	No	Yes
Nigeria	Elec	26	4	2	11.21[0.00]	1.47[0.22]	No	No	Yes
	ER_av	30	2	2	5.42[0.02]	0.15[0.70]	No	No	Yes
	ER_end	30	2	2	6.47[0.01]	0.36[0.55]	No	No	Yes
	Exports	28	4	2	8.70[0.00]	0.07[0.79]	No	No	Yes
	Imports	28	4	2	4.97[0.03]	2.43[0.12]	No	No	Yes
	LendingR	29	3	4	9.46[0.00]	0.34[0.56]	No	No	Yes
South Africa	DepositR	34	2	4	4.39[0.04]	0.00[0.98]	No	No	Yes
	ER_end	35	3	2	4.45[0.04]	0.21[0.64]	No	No	Yes
	LendingR	33	5	4	4.29[0.04]	0.59[0.44]	No	No	Yes
	Spread	32	4	3	6.39[0.01]	1.22[0.27]	No	No	Yes

Notes: CV – Control Variables. Y – Economic growth. SC – stock market development proxied by stock market capitalisation. $Y \leftrightarrow SC$ implies bi-directional causality; $Y \rightarrow SC$ implies causality running from economic growth to stock market development and $Y \leftarrow SC$ implies causality running from stock market development to economic growth.

Source: Compiled by author

Overall, the causality results based on both size and liquidity suggest that in Egypt and Nigeria, causality of the relationship runs from stock market development to economic growth. In South Africa, the direction of causality depends on the measure of stock market used. When stock market capitalisation is used, the direction of causality flows from economic growth to stock markets. However, when stock market value traded is used, causality runs from stock market development to economic growth. Although stock market capitalisation reports more models, the focus of our study is to establish the influence of stock market on growth, therefore, stock market value traded appears to be a more robust determinant of economic growth.

The next section reports on the nature (effect and economic significance) of the relationship between stock market development and economic growth.

6.4.3. Long-run relationship between stock markets and economic growth

Once the direction of causality has been established using the weak exogeneity test, the next task is to assess the nature (whether positive or negative, and the economic significance) of the long-run relationship that exists between stock market development and economic growth. If causality runs from stock markets to economic growth, it means economic growth is endogenous. We then normalise on economic growth to obtain the long-run coefficients (elasticities) of stock market development on economic growth.

On the other hand, if stock markets are endogenous in the model, we normalise the model to obtain the long-run coefficients of economic growth on the development of stock markets. Positive and economically significant coefficients suggest that the growth of the economy leads to the development of stock markets.

However, if the evidence showing the nature of the relationship is weak, it suggests that factors beyond stock markets and economic growth are at play. In this case, there will be an urgent need to create an enabling environment to support the development of stock markets which, in turn, stimulates economic growth (International Monetary Fund, 2016b).

The long-run coefficients are presented in Tables 6.5 and 6.6 below, and the tables also report the coefficients of the error correction term. The coefficients describe the speed of adjustment by the dependent variable back to equilibrium, after a shock in the short run.

The long-run coefficients and the error correction term for stock markets and economic growth are reported separately for the two variables measuring stock market development: (i) stock market capitalisation and economic growth; and (ii) stock market value traded and economic growth.

Long-run coefficient between stock market size and economic growth

This section presents the long-run parameters and the error correction term between stock market capitalisation and economic growth. We present the results in Table 6.5 below.

Egypt

Of the 13 models reported for Egypt, nine of them show that the relationship between stock market capitalisation and economic growth is significant. Specifically, eight models show that stock market capitalisation positively influences economic growth, and significantly so at 1% level of significance, while only one shows that the relationship is significant at 10%.

The coefficient for all the models that show a significant positive relationship at 1% level range from 0.10 to 0.44. The one model showing a positive relationship significant at 10% has a coefficient of 0.02. If we go by the positive and significant, the average coefficient is 0.23, suggesting that a one percent change in the size of the stock market will result in a 0.23% change in the growth of the economy.

Table 6.5: Long-run parameters and the error correction term – stock market size and economic growth: Egypt, Nigeria and South Africa

Long-run parameters: Slope Coefficients of SC on Y								
	CV	Y (Y→FD)	SC(Y←FD)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	CPI		0.00[0.43]	-0.03[-1.84] *	-0.25[-2.03]	0.39	8.58[0.48]	43.22[0.67]
	ElecPecapita		0.22[2.80]***	0.03[0.13]	-0.06[-2.30]	0.38	10.35[0.32]	57.50[0.16]
	ER_end		0.00[0.26]	-0.04[-3.83] ***	-0.28[-1.96]	0.43	12.32[0.20]	64.09[0.06]
	Exports		0.24[9.66]***	0.09[0.73]	-0.08[-3.06]	0.41	9.60[0.38]	85.44[0.44]
	GasRents		0.02[1.80]**	0.01[1.01]	-0.46[-3.17]	0.48	8.88[0.45]	66.20[0.92]
	Imports		0.27[9.48]***	0.22[1.00]	-0.07[-3.13]	0.49	8.13[0.52]	75.24[0.74]
	Industr		0.10[2.63]***	1.33[4.72] ***	-0.09[-2.17]	0.34	9.50[0.39]	116.56[0.57]
	NetTaxes		0.44[5.62]***	-0.77[-2.62] ***	-0.04[-2.10]	0.34	5.41[0.80]	120.76[0.46]
	OPP		0.26[11.33]***	0.16[1.06]	-0.08[-2.36]	0.43	8.35[0.50]	75.54[0.73]
	PDensity		-0.01[-0.60]	1.73[24.54] ***	-0.50[-3.07]	0.45	8.13[0.52]	92.15[0.25]
	Pop		-0.01[-0.60]	1.73[24.54] ***	-0.50[-3.07]	0.45	8.13[0.52]	92.15[0.25]
	Spread		0.25[11.32]***	0.16[1.62]*	-0.09[-3.55]	0.46	9.55[0.39]	85.62[0.43]
	Tel100		0.24[4.25]***	-0.07[-0.99]	-0.10[-4.70]	0.67	9.03[0.43]	50.12[0.39]
UrbanPop		0.01[0.64]	-0.42[-2.24] ***	-0.43[-2.26]	0.40	5.89[0.75]	83.48[0.50]	
Nigeria	Exports	1.32[5.54]***		0.47[2.78] ***	-0.75[-3.47]	0.44	10.38[0.32]	131.72[0.22]
	GCF	0.95[3.14]***		-0.83[-3.17] ***	-0.47[-3.02]	0.31	13.25[0.15]	97.47[0.15]

	LendingR	0.58[1.84]**		-0.16[-0.75]	-0.71[-3.90]	0,38	6.46[0.69]	124.69[0.37]
	OilRents		0.72[6.96]***	-0.36[-1.98]**	-0.19[-2.60]	0,3	13.74[0.13]	88.16[0.36]
South	Elec	0.20[0.40]		0.87[6.39]***	-0.79[-4.02]	0.30	7.04[0.63]	51.39[0.34]
Africa	ElecPecapita	-0.41[-0.69]		0.25[0.49]	-0.66[-3.80]	0.30	7.84[0.55]	51.60[0.34]
	GvtCons	1.63[2.46]***		3.20[6.33]***	-0.55[-4.76]	0.33	12.25[0.20]	36.74[0.88]
	Imports	1.41[2.39]***		-0.89[-3.03]***	-0.79[-5.18]	0.43	8.20[0.51]	46.85[0.52]
	NetTaxes	-0.47[-1.02]		0.61[1.48]*	-0.65[-3.60]	0.30	12.05[0.21]	49.41[0.42]
	OPP	1.94[3.06]***		-1.71[4.69]***	-0.55[-3.91]	0.30	9.25[0.41]	53.99[0.26]
	Spread	-0.49[-1.26]		-0.09[-0.87]	-0.80[-4.29]	0.34	9.13[0.43]	57.66[0.16]

Notes: $Y(Y \rightarrow FD)$ – the coefficient of Y when causality runs from economic growth to FD . $PC (Y \leftarrow FD)$ – coefficient of FD when causality runs from FD to economic growth. CV – Control variable. ECM – Error Correction Model. $Ad.R^2$ – Adjusted R^2 . $S.Cor.$ – Serial Correlation. $Hetero.$ – Heteroscedasticity. Significance: *** - 1%; ** - 5%; and * - 10%

Source: Compiled by author

The error correction terms for all the positive and significant models range from 0.04 to 0.46, giving an average of 0.12. This shows that, on average, about 10% of disequilibrium is corrected in a year, and thus it would take close to 10 years for full equilibrium to be restored after a shock. This evidence suggests that the efficiency of stock markets in facilitating economic growth is relatively low in Egypt.

A look at the control variables for the models that had a positive relationship between stock market development and economic growth shows that only two control variables are significant. Industrial output has a positive effect on economic growth, which suggests that as production increases, economic growth increases, and so does market capitalisation. However, taxes have a negative impact of economic growth. This is in line with findings that the tax system in Egypt before economic reforms discouraged private sector investments (World Bank, 1992; Omran, 2006).

In addition, the strong effect of stock markets on economic growth in Egypt may have been a result of the economic and financial sector reforms which were implemented at the beginning of 1990s. The reforms enhanced investor protection and encouraged private (both domestic and foreign) investors to invest in Egyptian stocks (World Bank, 1992; Omran, 2006). At the same time, the establishment of the EFSA also enhanced regulation of stock markets, which enhanced their linkage influence on economic growth.

Nigeria

All the four models reported for Nigeria show that the relationship between stock market development and economic growth is positive and significant at 1% regardless of the direction of causality. Specifically, three of the four models show that causality runs from economic

growth to stock market capitalisation, and the effect of economic growth on stock market development is positive and significant. Only one of the models show that causality flows from stock market capitalisation to economic growth, and the effect is positive and significant at 1%. This suggests that when the economy is performing well, firms are likely to list on the stock exchange to raise more funds, and those that are already registered will realise growth in the value of their shares (Ayopo, et al., 2016).

The error correction term ranges from 0.47 to 0.71, giving an average of 0.53. This shows that if disequilibrium occurs, more than half of the shock is corrected in two years. This evidence suggests that, despite being weak, any disequilibrium within the economy can be easily corrected within two years.

The weak influence of stock market development in Nigeria may be a consequence of the dominance of the stock markets by a single firm, namely the Dangote Group, and the fact that the structure of the Nigerian stock market is not reflective of the structure of the economy (San, 2013). Such misalignment suggests that activity at the stock market is not linked to the economy. Thirdly, the use of stock markets as a haven for speculative activities also led to the rapid growth of the stock markets, which was not in line with macroeconomic fundamentals (Sanusi, 2010; Njiforti, 2015).

South Africa

Despite having the biggest market capitalisation of all the three countries in this study, results for South Africa show a weak relationship between stock market capitalisation and economic growth. Of the seven models reported, only three models show that the relationship between economic growth and stock market capitalisation is positive and significant, wherein economic growth influences stock market capitalisation.

The surprisingly weak influence of stock markets on economic growth in South Africa may arise from the fact that corporate ownership and control of the economy has remained concentrated, leaving the market prone to abuse by such dominant firms (Roberts, 2004; Deloitte, 2014). By its own admission, the JSE stated in its Insider Trading Booklet 2016²⁰ that the current legal framework to prevent insider trading has become inadequate as the economy

²⁰ Accessed from <https://www.jse.co.za/content/JSERulesPoliciesandRegulationItems/Insider%20Trading%20Booklet%202016.pdf> on 31 December 2017

grew in sophistication (Johannesburg Stock Exchange, 2016). This illustrates that, although the country has one of the most developed regulatory systems, its enforcement and coordination among different regulators may create opportunities for regulatory arbitrage. In addition, the weaknesses of the regulatory system in preventing market abuses such as insider trading may have affected the ability of stock markets to stimulate economic growth in South Africa (Chitimira, 2014). A point in case is the recent Steinhoff scandal wherein the Chief Executive Officer was accused of manipulating the firm's financials²¹.

Long-run coefficient between stock market liquidity and economic growth

This section presents the long-run parameters and the error correction term between stock market value traded and economic growth. We present the results in Table 6.6 below.

Egypt

The relationship between stock market value traded and economic growth in Egypt is predominantly positive and significant. The four models showing a significant relationship between stock market value traded and economic growth show that the relationship is positive and significant at 1%.

If we go by the models that show a positive and significant relationship between stock market development and economic growth, the coefficient of stock market value traded on economic growth ranges from 0.07 to 0.19. This shows that, on average, a 1% change in the liquidity of the stock market will result in a 0.14% change in economic growth.

The error correction term for the models showing a positive and significant relationship between stock market value traded and economic growth ranges from 0.03 to 0.16. This shows that, on average, only 10% of disequilibrium in the economy is corrected each year, and thus it would take close to 10 years for full equilibrium to be restored after a shock. This evidence suggests that the ability of stock markets in correcting disequilibrium is relatively low in Egypt.

Analysis of the control variables shows that taxes and the deposit rate hinders economic growth in Egypt, while oil rents stimulate it.

²¹ Accessed from <https://www.dailymaverick.co.za/opinionista/2017-12-13-the-steinhoff-debacle-the-biggest-fraud-in-sa-history/#.WkZYPWiWbIU> on 29 December 2017

The strong and positive influence of stock market liquidity on economic growth could be a result of enhanced regulation and reforms of stock market in Egypt (World Bank, 1992; Omran, 2006)

Table 6.6: Long-run parameters and the error correction term – stock market liquidity and economic growth: Egypt, Nigeria and South Africa

Long-run parameters: Slope Coefficients of VT on Y							
	CV	VT(Y←FD)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	DepositR	0.07[6.70]***	-0.52[-5.09] ***	-0.16[-3.66]	0.52	9.99[0.35]	35.82[0.90]
	GasRents	-0.00[-0.60]	0.018[2.02] **	-0.31[-2.15]	0.39	7.79[0.56]	74.61[0.76]
	GvtCons	0.19[12.50]***	0.06[0.29]	-0.03[-1.54]	0.31	13.15[0.16]	123.54[0.39]
	NetTaxes	0.14[19.24]***	-0.39[-6.57] ***	-0.10[-2.70]	0.32	6.88[0.65]	45.85[0.56]
	OilRents	0.16[11.65]***	0.29[4.44] ***	-0.10[-3.67]	0.44	12.14[0.21]	69.71[0.87]
	Tel100	0.02[0.93]	0.18[2.86] ***	-0.19[-3.82]	0.52	8.23[0.51]	94.49[0.20]
Nigeria	Elec	0.20[3.55]***	0.70[6.32] ***	-0.30[-3.43]	0,39	2.16[0.99]	115.92[0.59]
	ER_av	0.14[3.10]***	0.08[2.69] ***	-0.19[-3.66]	0,3	10.81[0.29]	38.61[0.83]
	ER_end	0.14[3.07]***	0.08[2.48] ***	-0.19[-4.00]	0,33	12.12[0.21]	38.32[0.84]
	Exports	0.25[4.88]***	0.75[3.37] ***	-0.20[-4.11]	0,4	12.56[0.18]	111.06[0.71]
	Imports	0.38[5.42]***	0.32[1.03]	-0.11[-2.50]	0,31	10.15[0.34]	119.08[0.51]
	LendingR	0.41[2.55]***	1.07[1.94] *	-0.17[-3.92]	0,31	9.20[0.42]	71.56[0.83]
South Africa	DepositR	0.01[0.26]	-0.36[-6.25] ***	-0.15[-3.90]	0.61	8.96[0.44]	56.43[0.19]
	ER_end	0.26[6.55]***	-0.39[-6.32] ***	-0.11[-2.21]	0.39	10.81[0.29]	91.72[0.26]
	LendingR	-0.04[-1.85]*	-0.47[-3.26] ***	-0.10[-2.26]	0.62	4.99[0.84]	173.57[0.16]
	Spread	0.20[2.40]***	1.26[2.77] ***	-0.03[-2.59]	0.38	3.61[0.94]	125.71[0.34]

Notes: VT (Y←FD) – coefficient of FD when causality runs from FD to economic growth. CV – Control variable. ECM – Error Correction Model. Ad.R² – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** -1%; ** - 5%; and * - 10%

Source: Compiled by author

Nigeria

The relationship between stock market value traded and economic growth in Nigeria strictly runs from stock markets to economic growth. All the six models reported for Nigeria show that the relationship is positive and significant at 1%. These results show that liquidity of stock markets in Nigeria is important for stimulating economic growth.

The coefficient of stock market value traded in the model ranges between 0.14 and 0.41, which gives an average coefficient of around 0.24. This suggests that a 1% change in the liquidity of the stock markets will improve economic growth by 0.24%.

The error correction term for all the models reported for Nigeria in this section ranges from 0.11 to 0.30. These findings show that on average 20% of disequilibrium is corrected each year.

At this rate, it will take approximately five years to correct any shock that might have affected the equilibrium path in the economy.

While stock market capitalisation may not be important for economic growth in Nigeria, the results show that its liquidity is important. This is in line with empirical findings by Levine (2002), who argued that stock market liquidity is a more important determinant of economic growth than stock market capitalisation.

South Africa

As with stock market capitalisation, the relationship between stock market value traded and economic growth in South Africa is weak. Only three models reported a significant relationship between stock market development and economic growth. Of these three models, two show a positive relationship, and one shows a negative relationship. The two models showing a positive relationship show that the relationship is significant at 1%. The model showing a negative relationship show that such a relationship is significant at 10%.

If we go by the two models showing a positive relationship between stock market value traded and economic growth, the average coefficient is 0.23. A coefficient of this size suggests that a 1% change in stock market value traded will influence economic growth by 0.23%.

The error correction term for the models showing a positive and significant effect of stock market value traded on economic growth is between 0.03 and 0.11. On average, a 7% disequilibrium in the economy is corrected each year, implying that it will take approximately 15 years for the economy to return to equilibrium after a shock. This suggests that inefficiencies of stock markets and structural rigidities within the economy might be influencing the ability of the economy to correct any shocks within it.

The weak results in respect of South Africa may be a result of the stock market abuse by traders. A recent study by Chitimira (2014) found that although South Africa boasts a well-developed regulatory system, there are weaknesses within it which still allow stock market abuses such as insider trading and other trade manipulation activities. Such manipulation implies that stock market activity may be disconnected from real economic activity. Secondly, lack of sufficient coordination between regulators such as the JSE, FSB and the Competition Commission may create opportunities for regulatory arbitrage, thus impacting on the effectiveness of stock markets in promoting economic growth.

6.5. Discussion of findings

In Egypt, our results show that stock market development positively influences economic growth regardless of which measure is used. When using both stock market capitalisation and stock market value traded, our study shows that stock markets in Egypt significantly contribute to economic growth. Our results offer new evidence regarding the influence of stock markets on economic growth. Badr (2015) concluded that stock markets do not influence economic growth. Although, Badr (2015) used an estimation approach similar to one used in this study (Johannsen cointegration), two major differences emerge, which could explain the difference in our findings. Firstly, the study by Badr (2015) covered a period of 11 years over the period 2002 to 2013. Our study covers a much longer time frame, 1971 – 2013; and thus should be able to capture the structure, trend and pattern of the variables under study, which may not be captured in a shorter time series (Hyndman & Kostenko, 2007).

Secondly, our study used 22 control variables, compared to five used by Badr (2015). Using a greater number of control variables provides an opportunity to see how the relationship between stock market and economic growth changes when each control variable is entered independently into the model. Thus, we are confident that our results are robust, and provide new evidence on the influence of stock markets in Egypt.

Evidence obtained in respect of Nigeria show that stock market value traded is likely to positively influence economic growth more than stock market capitalisation. Our results provide additional evidence, contrary to previous studies, which shows that stock market value traded has a positive influence on economic growth in Nigeria (see Adefeso, *et al.*, 2013; Alajekwu, *et al.*, 2013; Oluwatosin, *et al.*, 2013; Osamwonyi & Kasimu, 2013) Osuala, *et al.*, 2013; Okonkwo, *et al.*, 2014;. This shows that stock market liquidity is more important to economic growth than stock market capitalisation, in line with previous studies, which concluded that stock market liquidity is a more efficient predictor of economic growth than stock market capitalisation (Levine, 2002).

The evidence for South Africa is surprisingly weak, given that this is the country with the deepest stock exchange, both regarding size and liquidity. The study revealed that the relationship between stock market development and economic growth is likely to be positive and bidirectional, wherein economic growth causes stock market capitalisation, and stock market value traded causes economic growth. Our findings add new evidence to the nature of the relationship between stock market development and economic growth in South Africa.

While Nyasha and Odhiambo (2015) found no evidence of a relationship between the two, Ndako (2010) only found causality running from economic growth to stock market development. The approach used by Chipaumire and Ngirande (2014) could not test for causality. However, the robust approach employed in this study of entering 22 control variables into different models shows that the direction of causality depends of the variable of stock market development used in the analysis. When stock market capitalisation is used, causality flows from economic growth to stock market development. However, when stock market value traded is chosen, causality runs from stock market development to economic growth. This suggests that stock market liquidity is a more robust measure of stock market development relevant for the finance-growth relationship.

6.6. Summary of findings and conclusion

The following key findings emerge from this chapter: Firstly, in Egypt, stock market development positively influences economic growth. Secondly, in Nigeria, evidence shows that stock market value traded positively influences economic growth rather than stock market capitalisation. Thirdly, in South Africa, the direction of causality depends on the variable of stock market development used in the analysis. Stock market value traded causes economic growth, while economic growth leads to stock market capitalisation. The results show that stock market liquidity is the more robust determinant of economic growth in line with findings by Levine (2002).

While the traditional approach to investigate the finance-growth link has been to investigate the influence of banks and stock markets on economic growth, this thesis extends the analysis to include NBFIs, which are often left out in the finance-growth debate. The next chapter extends the analysis of the finance-growth relationship to establish the influence of NBFIs on economic growth.

CHAPTER SEVEN

CAN NON-BANK FINANCIAL INSTITUTIONS STIMULATE ECONOMIC GROWTH? EMPIRICAL EVIDENCE FROM SELECTED AFRICAN COUNTRIES²²

7.1. Introduction

As indicated in Chapter 1, a lot of scholarship has been committed to investigating the influence of banks and stock markets on economic growth, whilst NBFIs have often been left out of the analysis (Fanta & Makina, 2017). In this chapter, we build on the analysis of the influence of banks and stock markets on economic growth to include NBFIs. Given that NBFIs are emerging as an alternative source of financing, this analysis will provide a fuller picture on the influence of the broader financial sector on economic growth.

For the post-2015 world development agenda – termed the Sustainable Development Goals (SDGs) – to succeed, there is a pronounced need to ensure that available financial resources be used more effectively, and that additional financing be accessed from the private sector (International Monetary Fund, 2015). However, given the lingering fragility of financial markets in the wake of the recent global financial crisis, the availability of long-term financing required to support productive investment has been constrained (World Bank, 2015a). Specifically, traditional bank lending has slowed down substantially as banks recover from the financial crisis and adjust to tighter regulatory controls – mostly emanating from the stricter Basel III capital and liquidity requirements. To this end, the development of non-bank financing has become imperative (World Bank, 2013). This chapter accordingly explores the role of non-bank financial institutions (NBFIs) as a source of long-term funding. In doing so, the paper investigates the linkage between NBFIs development and economic growth (the finance-growth nexus) data from Africa's three largest economies (Egypt, Nigeria and South Africa) over the period 1971 to 2013.

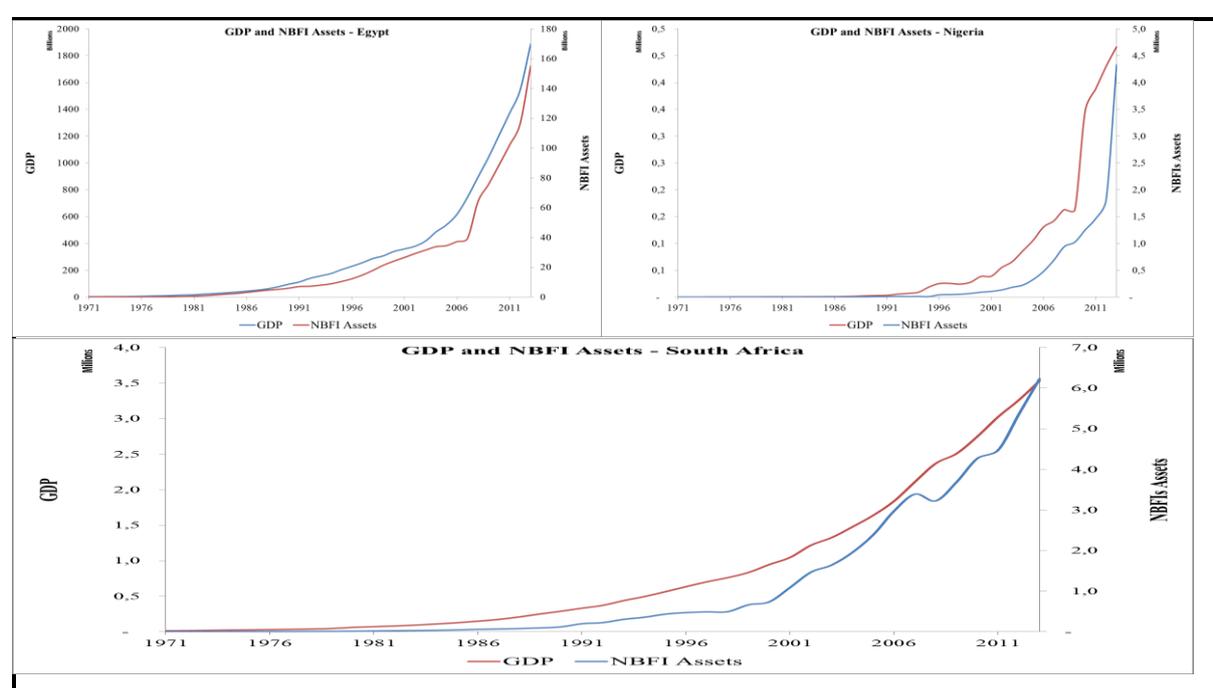
NBFIs are financial institutions that do not have a full banking licence, and thus cannot take deposits. However, they both compete with and complement traditional banking institutions by providing alternative financial services such as contractual savings (pension funds and insurance companies), investment intermediaries (finance companies, mutual funds and money market funds), microloan organisations and venture capitalists (Mishkin, 2007; World Bank,

²² Part of the work in this chapter has already been published in Rateiwa, R. & Aziakpono, M.J. (2017), 'Non-bank financial institutions and economic growth: Evidence from Africa's three largest economies', *South African Journal of Economic and Management Sciences*, 20(1), 1-11

2015c). The three main categories of NBFIs in Egypt (Egyptian Financial Supervisory Authority, 2017), Nigeria (Ndugbu, *et al.*, 2015) and South Africa (Faure, *et al.*, 2006) are insurance companies, pension funds and investment institutions.

A cursory look at Figure 7.1 below suggests a strong and positive relationship between the growth in NBFIs assets²³ and GDP growth. Thus this study is motivated to explore the actual relationship that exists between NBFIs development and economic growth using rigorous econometric methods.

Figure 7.1: Co-movement of NBFIs assets and GDP for Egypt, Nigeria and South Africa: 1971-2013



Source: World Development Indicators (2015), Central Banks of Nigeria, Egypt and South Africa

The recent global financial crisis clearly demonstrates that if the development of NBFIs is too rapid and is not properly regulated and monitored, it may create conditions susceptible to a financial crisis. Specifically, Liang & Reichert (2012) warned that if NBFIs are not properly regulated, they allow excessive risk appetite, which may have disastrous consequences for both the financial sector and the real economy. This was further emphasised by the shadow banking monitoring report at the end of 2015 (Financial Stability Board, 2015). The report argued that although NBFIs contribute to the financing of the real economy, they can become a source of

²³ Which includes pension fund assets to GDP, mutual fund assets to GDP, insurance company assets to GDP, insurance premiums (life) to GDP, and insurance premiums (non-life) to GDP

systemic risk when they perform “bank-like” functions, and also when their interconnectedness with banks is strong.

In respect of the countries under scrutiny, our survey of literature revealed a dearth of studies investigating the impact of NBFIs on economic growth. For the few that are available, some focused only on a certain component of NBFIs such as pension funds, which may have the effect of underestimating the influence of NBFIs on economic growth in these countries. Fanta & Makina (2017) combined bank and NBFIs credit to the private sector in their study. Some focused on the impact of regulations on stability and performance of NBFIs (Ofoeda, *et al.*, 2016), while others focused on the impact of NBFIs on access to credit (Kabia, *et al.*, 2015) and investment in certain sectors (Hamdi, 2015).

However, given the potential of NBFIs to fund long-term growth, and risks arising from the linkages between NBFIs and other financial institutions, this paper accordingly uses country-specific time series econometric techniques to reinvestigate whether or not NBFIs – as a source of long-term funding – matter for economic growth; and if so, how.

The three hypotheses to be tested are whether the relationship between NBFIs and economic growth is (i) demand-following, (ii) supply-leading (Patrick, 1966), or (iii) a simultaneous two-way causality which can be either a vicious or virtuous cycle (Berthelemy & Varoudakis, 1996). The analysis in this chapter will be carried out using the Johansen cointegration and vector-error correction modelling techniques within a country-specific setting. Analysis is restricted to the aggregate figure of NBFIs owing to the unavailability of data for the different categories of NBFIs such as pension funds, insurance companies and mutual funds for all three countries over the relevant period.

The remainder of this chapter is organised as follows: Section 7.2 provides the theoretical framework linking NBFIs development to economic growth; Section 7.3 presents empirical results from this study; Section 7.4 presents discussion of the results; and Section 7.5 concludes the chapter.

7.2. NBFIs development and economic growth

The traditional finance-growth debate focused on the role of banks and stock markets in facilitating and promoting economic growth. Specifically, only bank and stock market development indicators are generally used in the arguments about the finance-growth analyses. However, given the emergence of NBFIs as an alternative source of capital to increase the

productive capacity of an economy, it is imperative that effort be committed to understanding the role of NBFIs in the context of the finance-growth debate.

As indicated above, NBFIs are financial institutions that do not have a full banking licence, and thus cannot take deposits. Mishkin (2007) classifies NBFIs into two main categories, namely, contractual savings institutions and investment intermediaries.

Contractual savings institutions are financial intermediaries that obtain funds from individuals and institutions on a contractual basis and at regular intervals. They mostly invest in corporate bonds, stocks and mortgages. These institutions include life insurance companies, short-term insurance and pension funds. On the other hand, investment intermediaries are financial institutions that facilitate the purchasing of capital and money market instruments. These include finance companies, mutual funds and money market institutions. Table 7.1 below shows the characteristics of these institutions regarding the assets and liabilities they hold.

Table 7.1: Characteristics of NBFIs

Type of intermediary		Liabilities (Source of Funds)	Assets (Use of Funds)
Contractual savings institutions	Life insurance companies	Premiums for policies	Corporate bonds and mortgages
	Short-term insurance companies	Premiums for policies	Corporate bonds, stocks and government bonds
	Pension funds	Employer and employee contributions	Corporate bonds and stocks
Investment intermediaries	Finance companies	Commercial paper, stocks and bonds	Consumer and business loans
	Mutual funds	Shares	Stocks and bonds
	Money market	Shares	Money market instruments

Source: Mishkin (2007: 40)

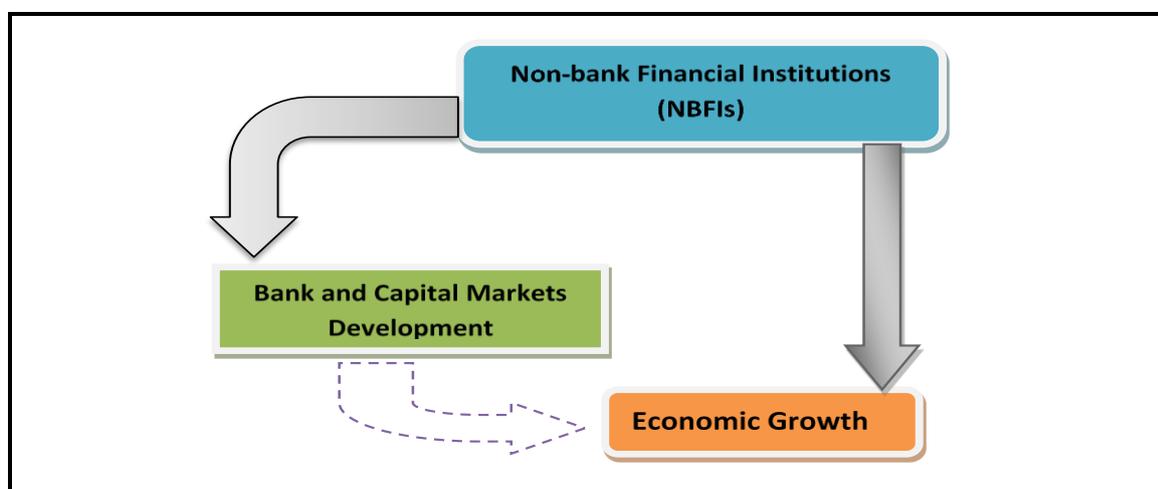
7.2.1. Theoretical framework linking NBFIs to economic growth

By intermediating funds between surplus and deficit units, NBFIs facilitate efficient allocation of capital, which leads to higher productivity and, ultimately, a growing economy.

The literature shows that the linkage between NBFIs and economic growth can be both direct and indirect (Holzmann, 1997; Vittas, 1997; Davis & Hu, 2008; Haiss & Sumegi, 2008; Sufian & Majid, 2009; Meng & Pfau, 2010; Liang & Reichert, 2012; Alderman & Yemtsov, 2013; Nassr & Wehinger, 2014). It can be direct in the sense that NBFIs can directly influence savings, investment, risk allocation and total factor productivity, thus enhancing economic growth. On the other hand, the linkage can be indirect through the influence of NBFIs on the

development of the bank and capital (stock and bond) markets, which, in turn, influences economic growth. We present this argument schematically in Figure 7.2 below.

Figure 7.2: The linkage between NBFIs and economic growth



Source: Author's analysis

As shown in the figure above, NBFIs can influence economic growth indirectly through their impact on other institutions of the financial markets. One way through which this could happen is by increasing the competition faced by traditional banks in the loanable funds markets. The rationale is that increased competition will force banks to increase the volume of loans by lowering interest rates to maintain their market shares (Sufian & Majid, 2009). In addition to increased competition, the presence of NBFIs will increase the absolute volume of loanable funds in the financial markets, thus generally improving the liquidity of the financial sector (Haiss & Sumegi, 2008). However, if the growth in the volume of loanable funds is too rapid and is not properly regulated and monitored, it may create conditions susceptible to a financial crisis. Liang and Reichert (2012) accordingly warn that if NBFIs are not properly regulated, they may allow excessive risk appetite which may have disastrous consequences for both the financial sector and the economy.

The other way in which NBFIs can influence economic growth indirectly is through the capital markets. Through their participation in capital markets, NBFIs can enhance the depth, liquidity and efficiency of these markets. Furthermore, institutional investors can also help improve governance and information disclosure as they become more actively involved in monitoring the performance of their investments (Vittas, 1997).

The direct linkage between NBFIs and economic growth occurs when NBFIs (a) facilitate mobilisation of savings; (b) provide for access to finance by small and medium enterprises

(SMEs), capital accumulation, risk management; and (c) provide an incentive for investing in long-term productive capital (Haiss & Sumegi, 2008; Alderman & Yemtsov, 2013). By improving access to finance by SMEs, NBFIs will help SMEs build resilience during economic shocks, thus enhancing their contribution to employment and poverty reduction. NBFIs also provide different insurance instruments, which may provide incentives for individuals and corporates to invest in long-term assets. Moreover, the long-term nature of the assets and liabilities of NBFIs generally lead to a longer investment horizon. In turn, a longer investment horizon is suitable for productive assets such as infrastructure, which enhance economic growth.

Based on the theoretical proposition, the model can be specified as $Y = f(FD, \text{control variables})$, wherein FD is the assets of NBFIs expressed as a percentage of GDP. The apriori expectation is that the coefficient of NBFIs should be positive. However, given that NBFIs can influence economic growth indirectly through banks and stock markets, coefficients that are not significant should not be strictly interpreted to mean that NBFIs is not influencing economic growth. The true position can be confirmed once the relationship between NBFIs, banks and stock markets has been investigated. Description of the control variables included in the estimation is contained in Table 4.1 and Table 4.2.

7.2.2. Empirical evidence on NBFIs development and economic growth

A cross-reading of literature revealed that very few studies investigated the effect of NBFIs development on economic growth within a specific country setting (Osuala & Odunze, 2014; Ndugbu, *et al.*, 2015; Fanta & Makina, 2017). However, Osuala & Odunze (2014) and Ndugbu, *et al.* (2015) did not investigate the causality between NBFIs development and economic growth in a country-specific setting. Fanta & Makina (2017) lumped NBFIs credit to the private sector together with that of deposit money banks. This is the point of departure with our study.

The two studies that attempted to investigate the relationship between NBFIs development and economic growth in the three countries focused on Nigeria and South Africa. No country-specific studies were found in respect of Egypt. The two studies for Nigeria (Osuala & Odunze, 2014; Ndugbu, *et al.* 2015) covered the period 1996-2010 and 1992 to 2012 respectively, using different indicators for finance companies, insurance companies and discount houses. Both studies found a positive relationship only between assets of insurance companies and economic growth, while there was no evidence of any relationship between assets of finance companies and discount houses, and economic growth. Osuala and Odunze (2014) used the Autoregressive

Distributive Lag (ARDL) model, while Ndugbu, *et al.* (2015) used the Ordinary Least Squares methodology in their study.

Fanta & Makina (2017) employed a similar technique as that adopted in this study to investigate the influence of NBFIs on economic growth. They used data over the period 1990-2011. However, the measure of NBFIs was lumped together with credit to the private sector by deposit banks. Their conclusion was that NBFIs do not influence economic activity in South Africa.

This chapter uses an econometric approach (that is the Johansen cointegration and vector-error correction model) which is different to that employed by Osuala & Odunze (2014) and Ndugbu, *et al.* (2015). Unlike Fanta & Makina (2017), this study isolates NBFIs from banks because these institutions are vastly different and policy frameworks governing the two are also different. In addition, instead of using only 4 control variables, this study uses 22 control variables to test the robustness of the relationship between NBFIs and economic growth in South Africa. Lastly, the study covers a longer period, 1971-2013 to investigate the relationship between NBFIs activity and economic growth.

Another empirical study including African countries showed that if NBFIs facilitate excessive risk appetite, their influence on economic growth can be negative. More specifically, a cross-country panel study which included Egypt, Nigeria and South Africa found a negative relationship between NBFIs development and economic growth for both developed and emerging market countries (Liang & Reichert, 2012). A possible reason provided for their finding was that NBFIs are not properly regulated, hence they allow excessive risk appetite, which may have disastrous consequences for both the financial sector and the economy.

Therefore, given the dearth of studies focusing on the effect of NBFIs development on economic growth in Africa, and the conflicting results from the few previous studies, it becomes imperative that the relationship be reassessed within a country-specific setting. This approach will minimise heterogeneity of country characteristics from influencing the results, thus improving the reliability of conclusions obtained therefrom. In the following section, we present the estimation results from our empirical analysis of the relationship between NBFIs development and economic growth.

7.3. Estimation results

This section presents and discusses the results. The results are presented in three sections: (i) cointegration results; (ii) weak exogeneity test results; and (iii) the long-run relationship between NBFIs development and economic growth. Unit root test results are presented in Section 5.3 in Chapter 5 above.

7.3.1. Cointegration test results between NBFIs and economic growth

Table 7.2 below presents the cointegration test results. In the table, ‘K’ indicates the vector auto-regression (VAR) order that produces a white noise residual, and ‘A’ indicates the deterministic trend assumption for each particular model. The models invariably produced meaningful results, that is, they satisfied serial correlation, heteroscedasticity and adjusted R² specifications stated above.

Of the 22 models estimated for each country, the trace test and the max eigenvalue test show that there is cointegration between NBFIs development and economic growth in five models each for Egypt and South Africa. However, only one model shows evidence of cointegration between these variables in Nigeria. This clearly shows that in Nigeria there is a weak relationship between NBFIs development and economic growth. These findings are, in fact, not surprising, given the low level of development of NBFIs in Nigeria. In contrast, there appears to be a stronger relationship between NBFIs development and economic growth in Egypt and South Africa. In the next section, we consider the weak exogeneity test results to determine the nature (direction) of the causal link between the two variables, as the existence of cointegration implies that causality must run from at least one of the variables to the other.

Table 7.2: Cointegration results: Egypt, Nigeria and South Africa

		Trace Statistic						Maximum Eigen Value		
	CV	Obs	K	A	r<0	r<1	r<2	r<0	r<1	r<2
Egypt	Industr	36	5	2	49.14[0.00]	17.91[0.10]	6.32[0.17]	31.23[0.00]	11.59[0.21]	6.32[0.17]
	LendingR	32	4	4	55.89[0.00]	23.06[0.17]	4.35[0.70]	32.83[0.01]	18.71[0.06]	4.35[0.69]
	NetTaxes	38	3	4	56.74[0.00]	21.51[0.16]	5.63[0.51]	35.23[0.00]	15.88[0.15]	5.63[0.51]
	Tel	31	2	2	36.37[0.04]	11.13[0.53]	2.268[0.72]	25.24[0.02]	8.86[0.45]	2.27[0.72]
	Tel100	31	2	2	36.99[0.03]	11.09[0.53]	2.44[0.69]	25.90[0.02]	8.65[0.47]	2.44[0.69]
Nigeria	ER_av	38	2	4	46.53[0.02]	20.12[0.22]	6.32[0.42]	26.41[0.04]	13.80[0.27]	6.32[0.42]
South Africa	CPI	38	4	4	59.36[0.00]	20.98[0.18]	9.47[0.15]	38.38[0.00]	11.52[0.46]	9.47[0.16]
	DepositR	34	2	4	48.88[0.01]	19.43[0.26]	8.44[0.22]	29.45[0.02]	10.99[0.51]	8.44[0.22]
	Exports	39	3	4	48.27[0.01]	16.67[0.44]	3.30[0.84]	31.60[0.01]	13.37[0.30]	3.30[0.84]
	GvtCons	40	2	2	37.59[0.03]	13.12[0.35]	5.49[0.23]	24.47[0.02]	7.63[0.59]	5.49[0.23]
	Imports	38	4	3	42.60[0.00]	14.75[0.06]	0.54[0.46]	27.85[0.00]	14.21[0.05]	0.54[0.46]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

7.3.2. Causality between NBFi development and economic growth

Given the conflicting views in respect of the causal link between financial development and economic growth, what prevails within each particular setting becomes an empirical issue. If cointegration exists, there must be causality running from at least one of the variables to the other. In this chapter, we use the weak exogeneity approach to test the direction of causality between NBFi development and economic growth. The weak exogeneity results and the direction of causality thereof are reported in Table 7.3. The nature of the causal effect (that is, whether positive or negative) is presented in Table 7.4 in the section below. The table reports the Chi-square statistic and the probability value of the test. Specifically, it presents three null hypotheses: (i) the two-way causality between economic growth and NBFi development; (ii) causality running from economic growth to NBFi development; and (iii) causality running from NBFi development to economic growth. A ‘Yes’ indicates that the null hypothesis cannot be rejected, while a ‘No’ indicates that the null hypothesis is rejected. The results are then discussed separately for each country.

Egypt

Results presented in Table 7.3 below show a two-way causality between economic growth and NBFi development in Egypt. This suggests that, at least in Egypt, the relationship between NBFi development and economic growth would appear to be a virtuous cycle if the two systems positively and significantly influence each other. In this case, the long-run coefficients are expected to be positive. However, if the long-run coefficients are negative, it implies that the relationship between NBFi development and economic growth in Egypt follows a vicious cycle. Thus the low level of economic growth leads to underdevelopment of NBFIs, which, in turn, hinders economic growth.

Table 7.3: Weak exogeneity test for Egypt, Nigeria and South Africa

	CV	Obs	K	A	Y	NBFi	Y↔NBFi	Y→NBFi	Y←NBFi
Egypt	Industr	36	5	2	16.28[0.00]	3.06[0.08]	Yes	Yes	Yes
	LendingR	32	4	4	4.12[0.04]	9.69[0.00]	Yes	Yes	Yes
	NetTaxes	38	3	4	3.56[0.06]	3.31[0.07]	Yes	Yes	Yes
	Tel	31	2	2	16.26[0.00]	12.63[0.00]	Yes	Yes	Yes
	Tel100	31	2	2	16.25[0.00]	12.42[0.00]	Yes	Yes	Yes
Nigeria	ER_av	38	2	4	5.01[0.03]	6.53[0.01]	Yes	Yes	Yes
South Africa	CPI	38	4	4	5.12[0.02]	0.31[0.58]	No	No	Yes
	DepositR	34	2	4	5.62[0.02]	0.27[0.60]	No	No	Yes
	Exports	39	3	4	4.10[0.04]	0.51[0.48]	No	No	Yes

GvtCons	40	2	2	5.11[0.02]	0.01[0.92]	No	No	Yes
Imports	38	4	3	3.55[0.06]	0.55[0.46]	No	No	Yes

Notes: CV – Control Variables. Y – Economic growth. NBF1 – NBF1 development proxied by assets of NBF1. $Y \leftrightarrow \text{NBF1}$ implies bi-directional causality; $Y \rightarrow \text{NBF1}$ implies causality running from economic growth to stock market development and $Y \leftarrow \text{NBF1}$ implies causality running from stock market development to economic growth.

Source: Compiled by author

Nigeria

In Nigeria, evidence of causality between NBF1 development and economic growth is both weak and mixed. The only model reported shows bidirectional causality between economic growth and NBF1 development. As indicated above, the weak results for Nigeria could be due to the fact that NBF1s are still underdeveloped. The underdevelopment of Nigerian NBF1s suggests that the country's financial system is not capable of providing products and instruments required by the real economy to facilitate the efficient allocation of capital to productive units.

South Africa

The weak exogeneity test results presented in Table 7.3 above show that causality between NBF1 development and economic growth in South Africa strictly runs from NBF1 development to economic growth. This suggests that the relationship is likely to be *supply-leading*, whereby the NBF1s create financial products required by the real economy in advance, thus facilitating economic growth. These results are not surprising, given the level of development of NBF1s in South Africa, which is the most developed in Africa, and comparable to developed countries. Well-developed NBF1s are expected to mobilise savings and provide mechanisms for risk management and the efficient allocation of capital, thus enhancing economic growth.

The concomitant question is: What is the nature (direction and significance) of the causal effect between NBF1 development and economic growth? We present our findings in respect of the nature of causality in the following section.

7.3.3. Long-run relationship between NBF1 development and economic growth

Once the direction of causality has been established using the weak exogeneity test, the next step is to assess the nature (whether positive or negative, and the economic significance) of the long-run relationship that exists between NBF1 development and economic growth. If causality runs from NBF1 development to economic growth, it means economic growth is endogenous. We then normalised on economic growth to obtain the effect of the long-run coefficients (elasticities) of NBF1 development on economic growth. If the long-run coefficients are

positive and significant, this is in the right direction, as NBFIs are expected to spur economic growth. Policies must, therefore, be implemented to strengthen the development and efficiency of the financial sector.

On the other hand, if causality runs from economic growth to NBFi development, it means NBFIs are endogenous. We would, therefore, need to condition the model to obtain the long-run effects of economic growth on the development of NBFIs. Positive and economically significant coefficients suggest that the growth of the economy leads to the development of the NBFIs. However, if the evidence shows that the nature of the relationship is weak, it suggests that factors beyond NBFi development and economic growth are at play. In this case, there is urgent need to create an enabling environment to support the development of NBFIs which, in turn, will stimulate economic growth.

The long-run coefficients and the coefficients of the error correction term (ECM) are presented in Table 7.4. The coefficients of the ECM describe the “proportion of disequilibrium from one period that is corrected in the next period”, after a shock (Engle & Granger, 1987). In this case, a low ECM suggests inefficiencies of NBFIs in facilitating economic growth or rigidities within the economy to correct past equilibrium errors. Thus, the focus on policy intervention must be to improve efficiency of NBFIs, and to reduce rigidities existent within the economy.

The long-run coefficients and the ECM for NBFi development and economic growth are reported separately for the two scenarios: (i) where causality runs from NBFi development to economic growth; and (ii) where causality runs from economic growth to NBFi development.

7.3.4. Parameters of the relationship between NBFi development and economic growth

This section presents the long-run parameters and the ECM when causality runs from NBFi development to economic growth. In this case, economic growth is normalised in the model to obtain the elasticity of economic growth in relation to changes in NBFi development.

Table 7.4: Long-run parameters of models with causality running from NBFIs to economic growth

	CV	Y(Y→FD)	NBFI(Y←NBFI)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Industr		0.36[5.57]***	2.05[14.78] ***	-0.12[-4.13]	0.55	7.49[0.59]	165.55[0.29]
	LendingR	-1.10[-0.23]		-3.98[-3.41] ***	-0.09[-3.19]	0.55	12.34[0.20]	121.70[0.44]
	NetTaxes		0.01[0.31]	-0.03[-0.90]	-0.25[-3.80]	0.47	7.47[0.59]	230.25[0.16]
	Tel		0.12[2.39]***	0.20[15.75] ***	-0.18[-4.47]	0.50	13.45[0.14]	58.36[0.15]
	Tel100		0.12[2.42]***	0.24[14.64] ***	-0.16[-4.45]	0.50	12.70[0.18]	58.18[0.15]

Nigeria	ER_av	-1.74[-2.50]**	-1.53[-6.05] ***	-0.32[-3.86]	0,30	6.57[0.68]	32.72[0.95]
South	CPI	-0.00[-0.12]	-0.35[-15.83] ***	-0.51[-2.48]	0.35	11.36[0.25]	114.37[0.63]
Africa	DepositR	0.18[1.28]*	-0.35[-6.02] ***	-0.15[-4.45]	0.64	14.23[0.11]	50.23[0.39]
	Exports	0.48[3.78]***	0.86[5.96] ***	-0.16[-3.52]	0.35	5.55[0.78]	93.99[0.21]
	GvtCons	0.87[3.10]***	-4.72[-3.50] ***	-0.02[-2.97]	0.42	7.61[0.57]	59.27[0.13]
	Imports	0.04[1.70]**	0.41[3.06] ***	-0.21[-2.53]	0.33	3.33[0.95]	100.95[0.90]

Notes: Y ($Y \rightarrow FD$) – coefficient of Y when causality runs from economic growth to NBFIs. $NBFI$ ($Y \leftarrow NBFI$) – coefficient of NBFIs when causality runs from NBFIs to economic growth. CV – Control variable. ECM – Error Correction Model. $Ad.R^2$ – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** - 1%; ** - 5%; and * - 10%

Source: Compiled by author

Egypt

Of the five models reported for Egypt, three of them show a significant positive effect of NBFIs development on economic growth. The coefficients of these models are significant at 1%. The long-run coefficients of NBFIs development on economic growth range from 0.12 to 0.36. Thus, the weight of the evidence shows that the effect of NBFIs development on economic growth in Egypt is both positive and significant.

In respect of the models that reported a positive and significant effect of NBFIs development on economic growth, the three models have coefficients of the error correction term ranging from 0.12 to 0.18. This suggests that on average about 16% of disequilibria are corrected in a year; thus it would take close to five years for full equilibrium to be restored after a shock. This evidence suggests that the efficiency of NBFIs in Egypt is relatively low (Rateiwa & Aziakpono, 2017).

A further look at the control variables shows that NBFIs positively influence economic growth when industrial output and the level of infrastructure is accounted for. In these models, industrial output and infrastructure positively influence economic growth. This suggests that NBFIs are likely to promote economic growth when industrial output is increasing, and sufficient infrastructure is in place.

Nigeria

Although the evidence of a relationship between NBFIs development and economic growth is weak for Nigeria, the only model reported in Table 7.4 above shows the existence of a negative relationship, and is very significant.

South Africa

Of the five models reported for South Africa, four show a positive and significant effect of NBF development on economic growth. Two of the four models that reported a positive relationship show that the effect of NBF development on economic growth is significant at a 1% significance level. The average coefficient for the models showing a positive relationship is around 0.36. This suggests that a 1% change in the development of NBF will result in a 0.36% change in the growth of the economy. Thus the weight of the evidence suggests that the effect of NBF development on economic growth in South Africa is positive.

The coefficient of the ECM for South Africa ranges between 0.02 and 0.16 for models that reported a positive and significant relationship between NBF development and economic growth. This shows that any disequilibrium in the economy will take at least eight years to correct. These results suggest that there is need to improve the efficiency of the NBFs if South Africa is to fully capitalise on the economic benefits emanating from the development of NBFs.

Further analysis of the results show that even when NBFs are promoting economic growth, the deposit rate and government expenditure will be dragging down the economy. An increase in the deposit rate is likely to incentivise NBFs to keep some of their funds in the bank as deposits rather than investing them in productive assets. An increase in government expenditure may also signal crowding out of private sector investors who invest in productive projects. The results show that exports and imports positively contribute to economic growth. Imports can contribute to economic growth if they are for capital projects or intermediate products which are used in the production sector.

7.4. Discussion of results

Overall, evidence presented above shows that there is potential for NBFs to influence economic growth in Egypt and South Africa. Our results provide new evidence on the relationship between NBFs and economic growth in South Africa, contrary to results obtained by Fanta & Makina (2017).

In Egypt, financial sector reforms enabled the development of the NBFs in a better-regulated environment. A study (United States Agency for International Development, 2004) which reviewed the progress of financial sector reforms in Egypt concluded that coordination between

the Central Bank, Capital Market Authority and the Egyptian Insurance Regulatory Authority²⁴ facilitated competition and innovation of new products in the sector which witnessed the launch of the First Eurobond issues in 2001. In addition, Egypt allows a bigger percentage of pension fund assets (25%) to be extended to the economic sectors as loans, while restricting the proportion that should be kept as bank deposits. Such restrictions may force NBFIs to search for promising and secure projects to lend money to, thus facilitating economic growth. One wonders if increasing the proportion of assets that can be invested in equities and real estate should also be increased. Increasing the participation of NBFIs in stock markets will increase their size and liquidity, which may lead to higher economic growth. Given increased level of urbanisation in Egypt, the proportion of assets invested in real estate can also be revised upwards.

In Nigeria, no evidence was found to show the influence of NBFIs on economic growth. Rather, the weak evidence that was found in respect of Nigeria suggests that economic growth negatively influenced the development of NBFIs. The lack of evidence on the relationship between NBFIs development and economic growth in Nigeria can be explained by the following developments in Nigeria: firstly, a fragmented and underdeveloped regulatory system. Currently, there are different regulatory bodies overseeing players in the NBFIs sector, unlike in Egypt and South Africa where regulation of such institutions is under one body. This creates a high risk of conflicting regulatory objectives between the regulatory bodies.

Secondly, the restriction in terms of equity investment and the prohibition to give loans would leave pension funds in Nigeria with government securities as their main investment option. Government securities are mainly used to sponsor government expenditure, and thus can be viewed as a leakage of resources that could have been invested in productive assets. Lastly, there is a lack of innovation in respect of long-term financial instruments to take advantage of life and long-term insurance products (International Monetary Fund, 2013). These findings are in line with previous empirical studies, which found that countries with relatively more developed financial systems exhibit evidence of a long-run relationship between NBFIs development and economic growth (Haiss & Sumegi, 2008; Cheng & Degryse, 2010; Meng & Pfau, 2010).

²⁴ The Capital Market Authority and the Egyptian Insurance Regulatory Authority have since been combined into one entity, the Egyptian Financial Services Authority

In South Africa, the positive influence of NBFIs on economic growth is likely to emanate from the high level of financial development in the country. A well-developed NBFIs sector can mobilise savings, provide mechanisms for risk management and the efficient allocation of capital, thus enhancing economic growth. However, based on the size of coefficients, the negative impact of deposit rate and government expenditure on economic growth may ultimately outweigh the positive effects that might have accrued from NBFIs. The negative effect of bank development indicators on economic growth is not surprising, given that evidence in Chapter 5 above shows that banks in South Africa are not promoting economic growth. At the same time, allowing 75% of pension funds to be invested in equities may result in a situation where the stock market becomes a haven for speculation with no investment in the real economy, and even more in a situation where evidence presented in Chapter 6 shows a weak positive effect of stock markets on economic growth.

7.5. Summary of findings and conclusion

This chapter investigated the long-run relationship between NBFIs development and economic growth in Egypt, Nigeria and South Africa – the three largest African economies. The study employs the Johansen cointegration and error correction modelling framework within a country-specific setting. Findings from this study show the existence of a long-run relationship between NBFIs development and economic growth in Egypt and South Africa. In Nigeria, there is no evidence to show that NBFIs stimulate economic growth.

To improve the robustness of the relationship between NBFIs and economic growth in Egypt, there is need to revise the asset allocation restrictions in line with the country's broader economic and social objectives. Revising the portfolio restrictions for NBFIs will allow them to play a greater role by investing other assets such as equities. This may also help improve liquidity and size of the stock markets also. In addition, this may enable NBFIs to invest in other sectors such as real estate, thus contributing to other aspects of the economy.

The discerning view in respect of Nigeria is that the weak regulatory architecture might be hindering the ability of NBFIs to promote economic growth in that country. The country must consolidate all regulatory institutions for NBFIs and related institutions into a stand-alone and well-capacitated body. Improved regulatory system for the sector will improve governance and public trust in the sector (Gam-Ikon, 2012). In addition, there is need to revise the regulatory restrictions to allow investment in the real sector and lend more in line with the vision of the NPC head:

We want to create an enabling environment for co-investments, where both pension funds and other investors have skin in the game. We have to make sure that when the money comes in, it is going somewhere. I am a big fan of doing things that people can see, like roads, bridges and houses. (Anohu-Amazu, 2016a)

Given the fact that bank loans do not have a robust effect on economic growth in South Africa, there is need to allow other institutions, the NBFIs to play a more pronounced role in lending to the productive sectors. This may require amendment of the relevant legislation to allow NBFIs to lend more on condition that the funds are being invested in productive sectors.

The next chapter extends the analysis from focusing on different financial institutions to the ‘mix’ and relative importance of different financial institutions within an economy, and how such ‘mix’ will influence economic growth.

CHAPTER EIGHT

FINANCIAL STRUCTURE AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE²⁵

8.1. Introduction

Financial systems across the globe come in different sizes and shapes. However, given the importance of the financial system – whether in the form of banks or stock markets – to economic growth and poverty reduction (Nguyen, *et al.*, 2015), the primary policy question confronting governments is: which financial structure is optimal, given each country's level of economic growth and circumstances (Beck, Demirgüç-Kunt, & Levine, 2001; Lin, Sun, & Jiang, 2009; Demirgüç-Kunt, Feyen, & Levine, 2011 & 2012). Put differently: do countries with market-based financial systems grow faster than those with bank-based financial systems, or is financial structure unrelated to economic performance (Demirgüç-Kunt & Levine, 2001)? Unfortunately, a cross-reading of the literature revealed that very little scholarship has been committed to understanding whether and, if so, how the financial structure of countries matters for economic growth (Čihák, *et al.*, 2013).

Some of the early studies to investigate whether financial structure matters for economic growth were Beck, *et al.* (2001) and Levine (2002). Based on the results of their studies, they concluded that financial structure (measured by the S-Activity and S-Size ratios) is not significantly associated with economic performance. These studies were followed by a series of other studies, using both cross-sectional and time series approaches (Beck & Levine, 2002; Tadesse, 2002; Bolbola, *et al.*, 2005; Arestis, *et al.*, 2010; Ahmed & Wahid, 2011; Demirgüç-Kunt, Feyen & Levine, 2011; Oima & Ojwang, 2013; Solo, 2013; Yeh, *et al.*, 2013; Mahonye & Ojah, 2014).

Unfortunately, there is no conclusive finding from these studies. However, we observe that, in addition to differences arising from the differences in econometric methodology employed, sample of countries used, and time coverage, each study applied a different set of control variables. According to Levine and Renelt (1992) and Sala-I-Martin (1997), employing different sets of control variables to the same variables of interest will affect the size and significance of the coefficients. This is because there are a number of control variables, which

²⁵ Part of the work in this chapter has already been published in Rateiwa, R. & Aziakpono, M. J. (2016). "Financial structure and economic performance in selected African countries: Time series evidence". *Banks and Bank Systems*, 11(2). doi:10.21511/bbs.11(2), pp. 45-60.

cannot be included in one regression if we are using a structural model. Therefore, to avoid running into the same problems associated with using structural models as used in previous studies, we adopt a trivariate methodology to test the influence of financial structure on economic growth. This will allow us to apply one of the 22 control variables at a time, thus being able to test the robustness of the relationship between financial structure and economic growth under different conditions. In addition, we also carry out the study at country level to avoid problems associated with cross-country studies. The trivariate modelling is based on the Johanssen and error correction framework as described in Chapter 4.

We used time-series data from Egypt, Nigeria and South Africa over the period 1971 to 2013 to investigate the relationship between financial structure and economic performance in each country. Financial structure is measured by structure-activity (S-Activity) and the structure-size (S-Size) ratios, which capture different aspects of both the banking industry and the stock markets (Beck, Demirguc-Kunt, Levine, & Maksimovic, 2001; Levine, 2002). Based on the counsel of Levine (2002) that using stock market value traded or turnover will obtain the same result, we therefore do not include the turnover ratio in our analysis.

In the light of the above, our study will provide a new perspective on the financial structure-economic growth debate in an African context in the following ways:

- (i) This is the first comparative assessment of how the financial structure of a country influences economic performance in the three largest economies of Africa.
- (ii) The study will assess the relationship between a country's financial structure and economic performance using comprehensive measures of financial structure based on updated (i.e. 2015) data. Furthermore, the study will also investigate the causality thereof. To the best of our knowledge, this is the first time-series study on this subject specifically focusing on African countries using pre- and post-global crisis data. The need to cover both the pre- and post-global crisis data was highlighted in the study by Nguyen, Islam and Ali (2013) on equity price indices in Asian countries.

We hope that the results from our study of these countries will stimulate policy discussion in other countries in Africa.

The remainder of this chapter is organised as follows: Section 8.2 describes how financial structure is measured; Section 8.3 provides the theoretical link between financial structure and economic performance; Section 8.4 presents the estimation model; Section 8.5 contains a

review of previous studies; Section 8.6 presents the empirical results; Section 8.7 discusses the findings and Section 8.8 concludes.

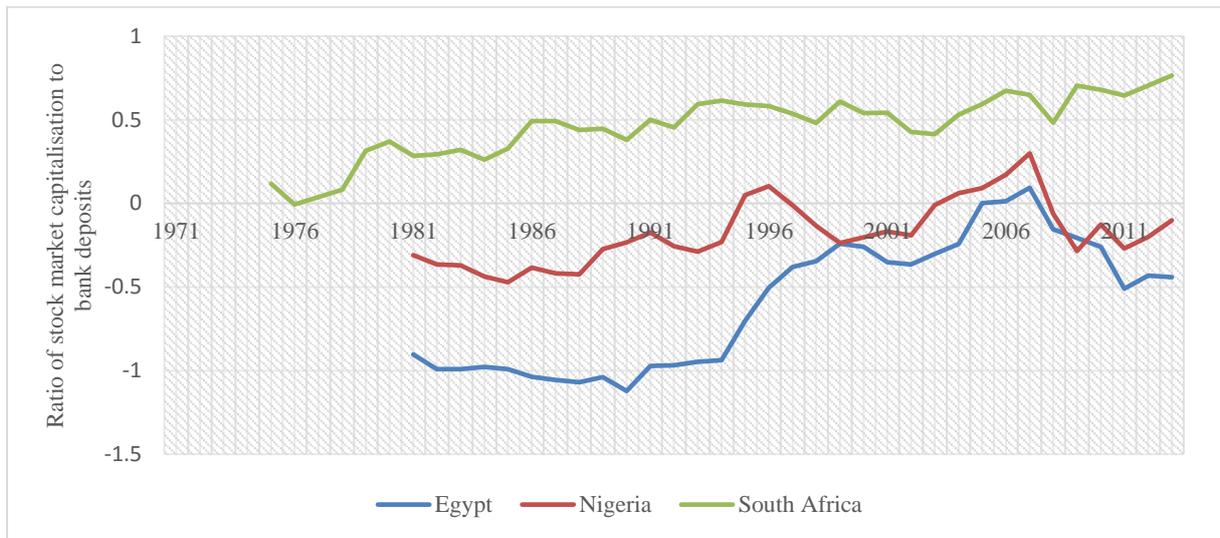
8.2. Measuring financial structure

To measure the relationship between financial structure and economic performance, the first step is to find a way to measure financial structure empirically. However, there is no universally accepted definition of financial structure (Levine, 2002), thus posing an added challenge in measuring it. Čihák, Demirgüç-Kunt, Feyen and Levine (2013) suggest that financial markets come in different shapes and sizes. Specifically, they argue that there is massive disparity between financial systems around the globe. This implies that focusing on only one aspect – for instance, financial system depth, or stability – means missing out on other equally important aspects such as access and efficiency.

In this study, we use the S-Activity and S-Size ratios which capture the liquidity and size of both banks and stock markets as defined earlier. The S-Activity ratio measures the activity of the stock market relative to that of banks. It is calculated as the logarithm of the ratio of total stock market value traded and deposit money bank credit extended to the private sector. Credit to the private sector measures the activity of deposit money banks in channelling savings to investors, while stock market value traded measures liquidity of the stock market. A positive ratio implies a market-based financial system where the stock market dominates the banking sector, while a negative value indicates a bank-based financial system. On the other hand, the S-Size ratio measures the size of the stock market relative to that of banks. It is calculated as the logarithm of the ratio of total stock market capitalisation and deposits of banks. In this case, we use liquid liabilities as being reflective of the size and ability of the banking system to mobilise savings. Positive values of the ratio imply a market-based financial system (i.e. where the stock market dominates the banking sector), while negative values indicate a bank-based financial system.

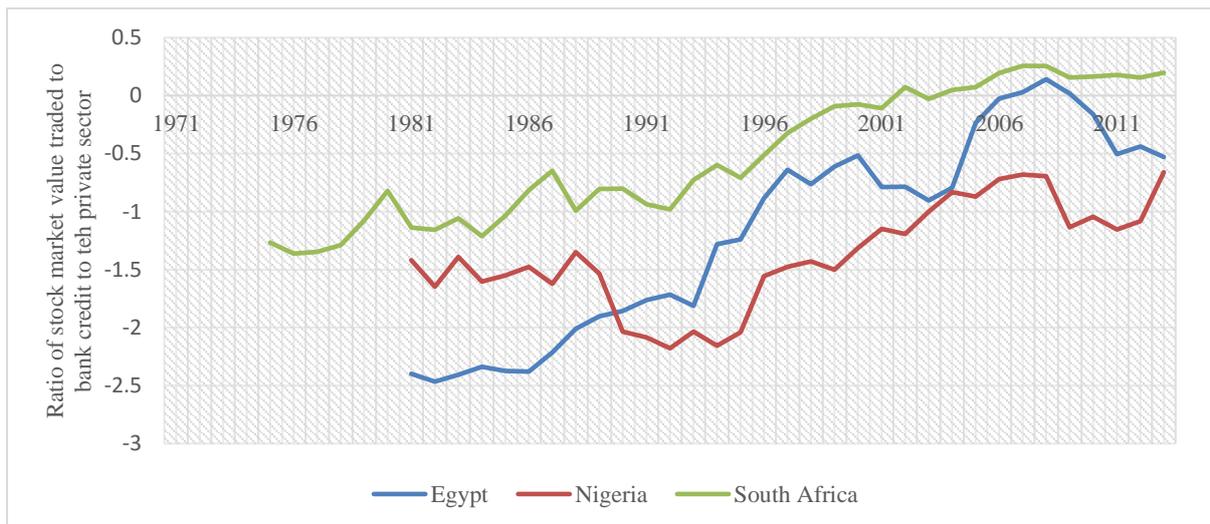
Figures 8.1 and 8.2 below show the changes in the structure of financial systems in Egypt, Nigeria and South Africa over the period 1971 to 2013.

Figure 8.1: S-Size ratios for Egypt, Nigeria and South Africa



Source: Global Financial Development Database (2013), World Development Indicators (2015), Central Banks of Nigeria, Egypt and South Africa

Figure 8.2: S-Activity ratios for Egypt, Nigeria and South Africa



Source: Global Financial Development Database (2013), World Development Indicators (2015), Central Banks of Nigeria, Egypt and South Africa

Figure 8.2 above shows that South Africa has a financial system that is dominated by stock markets, compared to that of Egypt and Nigeria, whose financial systems are dominated by banks. Unlike South Africa, the size of Egypt and Nigeria’s banking sectors is bigger than the size of their stock markets. However, over the periods 1993-97 and 2003-2008, the size of the banking sectors and stock markets in Egypt and Nigeria were almost equal in size. The S-Activity ratio in Figure 8.3 shows that although financial systems in Egypt and Nigeria are predominantly bank-based over the period under review, the figure shows a significant increase

in stock market activity. In South Africa, from the year 2001, the activity of stock markets is greater than that of banks.

Given the changing structure of the financial sectors as shown by the ratios presented above, it would have been interesting to also investigate how the influence of such structure changes over time as the economy grows (Demirgüç-Kunt, *et al.*, 2011). Unfortunately given the econometric methodology adopted in this thesis, that aspect is not to be pursued. This provides opportunity for further research.

8.3. Financial structure and economic performance

A cross-reading of the literature suggests that financial structure can be defined using various terms such as the mix, composition, organisation, balance or the relative importance of various financial institutions and the services they offer in each economy at a particular point in time (Stulz, 2000; Cuadro-Sáez & García-Herrero, 2007; Lin, *et al.*, 2009; Cull, *et al.*, 2013). However, as the debate around the finance-growth nexus continued into the new millennium, competing theories emerged regarding which financial structure is more suitable in promoting economic performance.

Specifically, some observers have argued that financial systems dominated by banks (i.e. bank-based financial systems) perform better than those that are dominated by stock markets (i.e. market-based systems). Proponents for the bank-based financial systems argue that banks have the ability to obtain information from firms and managers better than in market-based financial systems, more specifically in poorly developed economies, where information is very incomplete. By doing this, banks improve capital allocation and corporate governance (Beck, *et al.*, 2001; Levine, 2002).

In direct contrast to the bank-based view, proponents of the market-based financial system argue that stock markets are superior to banks in promoting economic growth in a number of ways; namely: (i) fostering greater incentives to search for information, thus improving allocative efficiency; (ii) facilitating takeovers in a manner that improves corporate governance and forces managers to improve the performance of the company or risk being taken over by another; and (iii) providing mechanisms for risk management (Levine, 2002).

On this basis, proponents of market-based financial systems argue that stock markets have the ability to overcome inefficiencies associated with bank-based financial systems, and thus are superior in promoting economic growth.

A third group, assuming the financial services view, argues that neither banks nor stock markets are superior in promoting per capita GDP, but that it is rather the complementary development of both banks and stock markets that is required. This view does not attempt to diminish the capabilities of banks or stock markets in fostering economic growth, but rather diminishes the importance of the debate on the superiority of banks or stock markets over the other. Merton and Bodi (1995) and Levine (1997) argued that what is important is not whether a financial system is bank- or market-based, but the function of the whole financial system in reducing market imperfection and providing financial services. The argument, therefore, is that policy and resources should not be focused on promoting a bank- or market-based financial system, but on creating better functioning banks and stock markets.

Lastly, the law and finance view sees the historical development of law in a specific region as being influential on the effectiveness of financial systems in supporting a country's economic performance (La Porta, *et al.*, 1996; Levine, 1999).

Given the divergent theories presented above, the concomitant question is: does the financial structure of a country (whether bank-based or market-based) matter for economic performance? Before we present empirical evidence on this question, we discuss the different measures of financial structure below.

8.4. *A priori* expectation between financial structure and per capita GDP

Based on Beck, *et al.* (2001) and Levine (2002), the relationship between financial structure (measured by the indicators stated above) and economic performance can be expressed as:

$$Y_t = \alpha X_t + \gamma FS_t + \varepsilon_t \quad 1$$

where Y is the real *per capita* GDP, X is a set of control variables for *per capita* GDP, FS is the financial structure ratio, and ε is the error term. The above representation has two possible hypotheses:

1. Firstly, the market-based view predicts that stock markets grow faster than banks and their influence on economic performance is, therefore, more significant, implying that β and γ should be greater than zero. Thus, if the parameter γ is positive and statistically significant, then the financial structure is market-based (Beck, *et al.*, 2001).

2. Secondly, the bank-based view predicts that banks' influence on economic performance is stronger than that of stock markets. This implies that γ is negative and significant (Beck, *et al.*, 2001).

Therefore, it is the objective of this study to establish the existence of a long-run equilibrium between financial structure and economic performance.

8.5. Review of empirical studies on financial structure and Growth

Empirical investigation into understanding whether a bank-based or stock market-based financial system is superior in promoting economic performance remains ongoing. Evidence from market-based financial systems (typically the United States, the United Kingdom and Canada) and bank-based financial systems (typically Germany, France and Japan) show that both types of financial system provide different services to the economy in different ways. Specifically, a study by Allen and Gale (1995) shows that despite vast differences in the structure of their financial systems, all these countries enjoyed significant improvement in economic performance.

Beck, *et al.* (2001) and Levine (2002) are among the early studies based on cross-country analysis to conclude that financial structure (measured by the S-Activity and S-Size ratios) is not significantly associated with economic performance. Furthermore, Beck and Levine (2002) also used the structure-aggregate ratio (the first principle component of S-Activity and S-Size ratios) to illustrate that financial structure is not significantly associated with industrial growth or the efficiency of capital allocation".

Another study supporting the hypothesis that financial structure does not influence economic performance is Mahonye and Ojah (2014). The study was based on cross-country evidence from 15 African countries, and used the S-Activity ratio as a measure of financial structure. Egypt, Nigeria and South Africa were covered in all the studies mentioned above.

By contrast, a cross-country study by Tadesse (2002) concluded that financial structure matters for a country's economic performance. Specifically, the study used a composite measure of financial structure (the principal component of S-Activity, S-Size and S-Efficiency²⁶), concluding that in countries with higher levels of financial development, market-based financial systems outperform bank-based financial systems in stimulating economic

²⁶ S-Efficiency was measured as total stock market value traded divided by the ratio of a bank's overheads costs to total assets.

performance. Furthermore, the study found that in countries dominated by small firms, bank-based financial systems stimulate economic growth faster than market-based financial systems, which are more efficient in promoting economic performance in countries dominated by larger firms.

In addition, using a financial structure ratio measured as credit to the private sector divided by stock market value traded, Demirgüç-Kunt, Feyen and Levine (2011) concluded that as the economy grows, its sensitivity to the development of a market-based financial system increases, while sensitivity to the development of a bank-based financial system decreases. Thus they conclude that different financial institutions offer different services to the economy, and as the economy grows, it requires different *mixtures* of these institutions.

Another study arguing that financial structure matters for economic performance is that of Yeh, *et al.* (2013). The study used S-Activity, S-Size and S-Efficiency ratios to demonstrate that long-run coefficients of financial structure on economic growth and its volatility are positive and statistically significant. The results support the notion that a market-based financial system is better in promoting long-run economic growth than a bank-based one. It is also important to note that Egypt, Nigeria and South Africa were also part of the sample countries included in all these studies.

In order to improve on the weaknesses of cross-country approaches used in the studies reviewed above, which ignore heterogeneity in financial structure and economic dynamics, Bolbola, *et al.* (2005), Arestis, *et al.* (2010), Ahmed and Wahid (2011), Oima and Ojwang (2013) and Solo (2013) apply time series techniques to investigate the relationship between financial structure and economic performance in certain African countries. Egypt, Nigeria and South Africa were included in the sample of countries that were covered by all these studies. We explore each of the studies in detail below, specifically in respect of the three countries being investigated in this study.

Bolbola, *et al.* (2005) focus on Egypt to conclude, based on linear regression, that financial structure is positively associated with total factor productivity (TFP). S-Size and S-Activity measure financial structure²⁷ over the period 1980-2002. However, in a more recent study, Solo (2013) used the VECM framework to conclude that financial structure (S-Size, measured over the period 1990-2008) is negatively associated with growth in Egypt. The two studies suggest

²⁷ S-Size was measured as market capitalisation/commercial bank assets, while S-Activity was measured as stock market value traded/domestic credit to the private sector.

that the financial structure of Egypt matters for economic performance, although results indicate the opposite effect. The different results may be due to the different periods covered by the study, and different estimation methodology. In this study, while we use the same estimation methodology as Solo (2013), we extend the period of study to sufficiently cover the period after the financial crisis, which has affected the functioning and regulation of markets.

The second body of literature focuses on Nigeria (Ahmed & Wahid, 2011; Oima & Ojwang, 2013; Solo, 2013), with these studies concluding that the relationship between financial structure and *per capita* GDP is positive and significant. Ahmed and Wahid (2011) employed the VECM framework wherein financial structure was measured as the first principle component of S-Activity and S-Size over the period 1987-2007. Oima and Ojwang (2013) applied the ordinary least squares methodology (OLS) to assess the relationship between financial structure (S-Size) and *per capita* GDP over the period 1976-2008.

The next group of time series studies included South Africa in the sample of countries investigated (Arestis, *et al.*, 2010; Ahmed & Wahid, 2011; Solo, 2013). These studies produced conflicting results regarding the relationship between financial structure and economic growth. Arestis, *et al.* (2010) and Solo (2013) used the S-Size as a measure of financial structure, and found that the relationship between financial structure and economic performance is negative. Arestis, *et al.* (2010) employed the VAR framework and covered the period 1969-1999, while Solo (2013) employed the VECM framework over the period 1990 to 2008. On the other hand, Ahmed and Wahid (2011) employed the VECM framework wherein financial structure was measured as the first principal component of S-Activity and S-Size over the period 1987-2007 to conclude that the relationship between financial structure and economic performance is positive.

Given the complex empirical relationship between financial structure and economic growth, this study adds a new dimension to literature by investigating the relationship based on a trivariate methodology wherein we apply one of the 22 control variables at a time, thus being able to test the robustness of the relationship between financial structure and economic growth under different conditions. In addition, we also carry out the study at country level to avoid problems associated with cross-country studies. The trivariate modelling is based on the Johansen and error correction framework.

We believe that recommendations from this study should assist policymakers in coming up with appropriate financial sector policies that promote economic performance in Africa, especially at a time when countries work towards the Africa Agenda 2063 and the SDGs.

8.6. Estimation results

This section presents and discusses the results. The results are presented in three sections: (i) cointegration results; (ii) weak exogeneity and causality test results; and (iii) the long-run relationship between financial structure and economic performance.

8.6.1. Cointegration test results between financial structure and economic growth

We use the Johansen cointegration technique to test for cointegration. Tables 8.1 and 8.2 below present the cointegration test results. In the table, “K” indicates the vector auto-regression (VAR) order which produces a white noise residual, and “A” indicates the deterministic trend assumption for each particular model. These models invariably produced meaningful results, that is, they satisfied serial correlation, heteroscedasticity and adjusted R² specifications (30%).

At least 22 models for each measure of financial structure were estimated for each country.

Table 8.1: Cointegration test results for Egypt, Nigeria and South Africa: S-Activity and per capita GDP

CV	Obs	K	A	Trace Statistic			Maximum Eigen Value			
				r<0	r<1	r<2	r<0	r<1	r<2	
Egypt	Agric	29	3	4	53.43[0.00]	25.40[0.06]	6.30[0.43]	28.02[0.03]	19.12[0.05]	6.28[0.43]
	ElecPecapita	28	3	2	57.32[0.00]	25.48[0.06]	10.93[0.09]	31.84[0.01]	14.55[0.22]	10.93[0.09]
	GasRents	29	3	4	48.46[0.01]	22.52[0.12]	6.46[0.40]	25.94[0.05]	16.06[0.14]	6.46[0.40]
	GvtCons	28	4	3	48.04[0.00]	12.46[0.14]	0.23[0.63]	35.58[0.00]	12.23[0.10]	0.23[0.63]
	LendingR	29	3	4	48.84[0.01]	22.65[0.12]	7.94[0.26]	26.19[0.04]	14.71[0.21]	7.94[0.26]
	NetTaxes	29	3	4	46.73[0.02]	19.23[0.27]	5.51[0.52]	27.50[0.03]	13.72[0.27]	5.51[0.52]
	PDensity	29	3	3	32.71[0.02]	8.76[0.39]	0.81[0.37]	23.95[0.02]	7.95[0.38]	0.81[0.37]
	Pop	29	3	3	32.71[0.02]	8.76[0.39]	0.81[0.37]	23.95[0.02]	7.95[0.38]	0.81[0.37]
Nigeria	ER_end	30	2	2	42.14[0.01]	17.08[0.13]	4.18[0.39]	25.06[0.02]	12.91[0.14]	4.18[0.39]
	Imports	28	4	2	42.86[0.01]	12.49[0.41]	5.50[0.23]	30.38[0.00]	6.99[0.67]	5.50[0.23]
	NetTaxes	30	2	2	37.13[0.03]	10.02[0.64]	1.92[0.79]	27.11[0.01]	8.10[0.54]	1.92[0.79]
South Africa	ElecPecapita	32	4	3	46.44[0.00]	14.80[0.06]	0.56[0.45]	31.65[0.00]	14.23[0.05]	0.56[0.45]
	ER_av	35	3	2	37.61[0.03]	14.18[0.28]	3.56[0.48]	23.43[0.03]	10.62[0.28]	3.56[0.48]
	ER_end	35	3	2	38.73[0.02]	14.17[0.28]	3.94[0.42]	24.56[0.02]	10.24[0.31]	3.94[0.42]
	GCF	34	4	4	52.14[0.00]	14.25[0.64]	5.29[0.56]	37.89[0.00]	8.96[0.73]	5.29[0.56]
	LendingR	35	3	4	43.57[0.04]	14.88[0.58]	3.13[0.86]	28.70[0.02]	11.75[0.44]	3.13[0.86]
	MRents	34	4	4	42.56[0.00]	13.40[0.10]	1.48[0.22]	29.16[0.00]	11.92[0.11]	1.48[0.22]
	NetTaxes	33	5	3	47.42[0.00]	12.44[0.14]	1.91[0.17]	34.97[0.00]	10.54[0.18]	1.91[0.17]
	OPP	35	3	2	39.44[0.02]	16.80[0.14]	4.73[0.31]	22.63[0.04]	12.07[0.18]	4.73[0.31]
	Tel100	35	3	3	34.46[0.01]	12.56[0.13]	2.57[0.11]	21.89[0.04]	9.99[0.21]	2.57[0.11]
	UrbanPop	34	4	4	46.46[0.02]	18.62[0.30]	7.72[0.28]	27.84[0.03]	10.90[0.52]	7.72[0.28]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Estimation by author

Table 8.2: Cointegration test results for Egypt, Nigeria and South Africa: S-Size and *per capita* GDP

	CV	Obs	K	A	Trace Statistic			Maximum Eigen Value		
					r<0	r<1	r<2	r<0	r<1	r<2
Egypt	Exports	30	2	3	54.58[0.00]	19.11[0.07]	4.93[0.29]	35.47[0.00]	14.18[0.09]	4.93[0.29]
	Imports	29	3	3	32.56[0.02]	8.43[0.42]	0.00[1.00]	24.15[0.02]	8.43[0.34]	0.00[1.00]
	Industr	29	3	2	35.78[0.04]	13.24[0.34]	4.02[0.41]	4.02[0.41]	9.22[0.41]	4.02[0.41]
	NetTaxes	28	4	2	54.75[0.00]	19.11[0.07]	6.59[0.15]	35.64[0.00]	12.52[0.16]	6.59[0.15]
	OPP	29	3	3	38.78[0.00]	9.31[0.34]	0.11[0.74]	29.47[0.00]	9.21[0.27]	0.11[0.74]
	PDensity	29	3	3	54.50[0.00]	13.58[0.10]	1.11[0.29]	40.91[0.00]	12.48[0.09]	1.11[0.29]
	Pop	29	3	3	54.50[0.00]	13.58[0.10]	1.11[0.29]	40.91[0.00]	12.47[0.09]	1.11[0.29]
	Spread	29	3	2	40.54[0.01]	18.00[0.10]	5.86[0.20]	22.54[0.05]	12.14[0.18]	5.86[0.20]
	Tel	30	2	2	41.49[0.01]	13.72[0.31]	5.13[0.27]	27.77[0.01]	8.60[0.48]	5.13[0.27]
	Tel100	30	2	2	40.87[0.01]	13.90[0.30]	5.06[0.28]	26.96[0.01]	8.85[0.45]	5.06[0.28]
Nigeria	Agric	28	4	4	49.46[0.01]	11.82[0.82]	4.52[0.67]	37.64[0.00]	7.31[0.88]	4.52[0.67]
	CPI	29	3	3	39.49[0.00]	9.56[0.32]	0.55[0.46]	29.93[0.00]	9.01[0.29]	0.55[0.46]
	Elec	26	4	3	44.67[0.00]	9.76[0.30]	0.02[0.88]	34.91[0.00]	9.74[0.23]	0.02[0.88]
	ER_end	28	4	3	41.48[0.00]	9.10[0.36]	0.11[0.74]	32.38[0.00]	8.99[0.29]	0.11[0.74]
	Exports	27	5	4	71.29[0.00]	22.16[0.14]	6.46[0.40]	49.13[0.00]	15.70[0.16]	6.46[0.40]
	Imports	28	4	4	65.09[0.00]	22.86[0.11]	6.57[0.39]	42.23[0.00]	16.29[0.13]	6.57[0.39]
	Industr	28	4	4	55.02[0.00]	25.85[0.05]	9.11[0.17]	9.11[0.01]	16.73[0.12]	9.11[0.17]
	NetTaxes	29	3	2	44.95[0.00]	16.96[0.13]	5.90[0.20]	27.99[0.01]	11.06[0.25]	5.90[0.20]
South Africa	ER_av	35	3	4	47.03[0.02]	19.29[0.26]	6.96[0.35]	27.74[0.03]	12.33[0.39]	6.96[0.35]
	GvtCons	36	2	4	33.57[0.02]	11.56[0.18]	0.00[0.97]	22.01[0.04]	11.56[0.13]	0.00[0.97]
	Imports	36	2	4	56.05[0.00]	25.44[0.06]	8.61[0.21]	30.61[0.01]	16.83[0.11]	8.61[0.21]
	OPP	36	2	4	57.61[0.00]	24.46[0.07]	6.63[0.38]	33.15[0.00]	17.83[0.08]	6.63[0.38]
	UrbanPop	36	2	4	48.59[0.01]	17.32[0.39]	4.25[0.71]	31.27[0.01]	13.07[0.32]	4.25[0.71]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

Egypt

For Egypt, the trace and the max eigenvalue tests show the existence of a long-run equilibrium between financial structure and *per capita* GDP. Cointegration showed such a relationship in at least 18 models. Of these 18 models, eight show cointegration between S-Activity and economic performance, while the remaining 10 show cointegration between S-Size and economic performance. This suggests a strong long-run relationship between financial structure and economic performance, implying that the degree to which bank or stock markets dominate the financial system may matter for economic performance in Egypt.

Nigeria

In Nigeria, the trace and the max eigenvalue tests show that although financial structure is cointegrated economic performance, the evidence is not as strong as in Egypt and South Africa. Specifically, only 11 models show the existence of a long-run relationship between economic performance and financial structure (both S-Activity and S-Size). Of the 11 models reported in this regard, three show a relationship between S-Activity and economic performance, while the remaining eight represent the relationship between S-Size and economic performance.

South Africa

The trace and the max eigenvalue tests show that financial structure is cointegrated with economic performance in 15 models in South Africa. Specifically, 10 models show that the S-Activity ratio has a long-run relationship with economic performance, while the other represent the relationship between S-Size ratio and economic performance. The evidence suggests that in South Africa, unlike Egypt and Nigeria, the relative activity of both banks and the stock market is more strongly cointegrated with economic performance than their relative sizes.

Overall, evidence shows that there exists a relationship between financial structure and economic performance in all the three countries. Moreover, the evidence shows that in Egypt and Nigeria, the relative size of these countries' stock markets to that of banks matters more to economic performance than their relative activity.

The exact nature of the relationship between financial structure and economic performance in the three countries will be established in the following sections, wherein the direction of causality and statistical significance of the results will be tested. The next section presents the weak exogeneity test results to determine the nature (direction) of the causal link between economic performance and the financial structure ratios used in this study.

8.6.2. Causality between financial structure and economic performance

Given the conflicting views in respect of the causal link between financial structure and economic performance, what prevails within each particular setting becomes an empirical issue. In this paper, we use the weak exogeneity approach to test the direction of causality between financial structure and economic performance. The detailed weak exogeneity results and the direction of causality thereof are reported in Tables 8.3 and 8.4 below.

Table 8.3: Weak exogeneity test results for Egypt, Nigeria and South Africa: S-Activity and per capita GDP

CV	Obs	K	A	Y	SA	Y↔SA	Y→SA	Y←SA
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Egypt	Agric	29	3	4	0.12[0.73]	9.65[0.00]	No	Yes	No
	ElecPecapita	28	3	2	1.54[0.21]	13.12[0.00]	No	Yes	No
	GasRents	29	3	4	3.14[0.08]	12.66[0.00]	Yes	Yes	Yes
	GvtCons	28	4	3	1.41[0.24]	6.65[0.01]	No	Yes	No
	LendingR	29	3	4	1.09[0.30]	13.70[0.00]	No	Yes	No
	NetTaxes	29	3	4	4.17[0.04]	0.01[0.93]	No	No	Yes
	PDensity	29	3	3	6.61[0.01]	1.05[0.31]	No	No	Yes
	Pop	29	3	3	1.45[0.23]	10.36[0.00]	No	Yes	No
Nigeria	ER_end	30	2	2	6.06[0.01]	0.87[0.35]	No	No	Yes
	Imports	28	4	2	3.11[0.08]	2.25[0.13]	No	No	Yes
	NetTaxes	30	2	2	6.65[0.01]	0.18[0.67]	No	No	Yes
South Africa	ElecPecapita	32	4	3	3.11[0.08]	3.91[0.05]	Yes	Yes	Yes
	ER_av	35	3	2	5.03[0.02]	0.17[0.68]	No	No	Yes
	ER_end	35	3	2	4.05[0.04]	0.74[0.39]	No	No	Yes
	GCF	34	4	4	0.09[0.77]	7.44[0.01]	No	Yes	No
	LendingR	35	3	4	5.75[0.02]	2.92[0.09]	Yes	Yes	Yes
	MRents	34	4	4	0.29[0.59]	6.37[0.01]	No	Yes	No
	NetTaxes	33	5	3	2.81[0.09]	1.78[0.18]	No	No	Yes
	OPP	35	3	2	0.02[0.88]	5.65[0.02]	No	Yes	No
	Tel100	35	3	3	4.72[0.03]	0.09[0.77]	No	No	Yes
	UrbanPop	34	4	4	10.86[0.00]	0.49[0.49]	No	No	Yes

Notes: CV – Control Variables. Y – Economic growth. SA – Financial Structure proxied by the Structure-Activity ratio = [Stock market value traded/Credit to the private sector]. $Y \leftrightarrow SA$ implies bi-directional causality; $Y \rightarrow SA$ implies causality running from economic growth to financial structure and $Y \leftarrow SA$ implies causality running from financial structure to economic growth.

Source: Compiled by author

Table 8.4: Weak exogeneity test results for Egypt, Nigeria and South Africa: S-Size and per capita GDP

	CV	Obs	K	A	Y	SS	$Y \leftrightarrow SS$	$Y \rightarrow SS$	$Y \leftarrow SS$
Egypt	Exports	30	2	3	6.20[0.01]	1.82[0.18]	No	No	Yes
	Imports	29	3	3	5.89[0.02]	1.21[0.27]	No	No	Yes
	Industr	29	3	2	4.70[0.03]	5.97[0.01]	Yes	Yes	Yes
	NetTaxes	28	4	2	3.53[0.060]	0.00[0.96]	No	No	Yes
	OPP	29	3	3	4.04[0.04]	0.33[0.57]	No	No	Yes
	PDensity	29	3	3	9.74[0.00]	0.49[0.48]	No	No	Yes
	Pop	29	3	3	9.74[0.00]	0.49[0.48]	No	No	Yes
	Spread	29	3	2	12.14[0.18]	5.86[0.20]	No	No	Yes
	Tel	30	2	2	22.33[0.00]	0.86[0.35]	No	No	Yes
	Tel100	30	2	2	21.58[0.00]	0.83[0.36]	No	No	Yes
Nigeria	Agric	28	4	4	1.48[0.22]	8.70[0.00]	No	Yes	No
	CPI	29	3	3	0.32[0.57]	5.52[0.02]	No	Yes	No
	Elec	26	4	3	7.86[0.01]	0.59[0.44]	No	No	Yes
	ER_end	28	4	3	0.02[0.88]	10.87[0.00]	No	Yes	No
	Exports	27	5	4	5.22[0.02]	0.16[0.69]	No	No	Yes
	Imports	28	4	4	0.22[0.64]	9.84[0.00]	No	Yes	No
	Industr	28	4	4	0.00[0.97]	8.85[0.00]	No	Yes	No
	NetTaxes	29	3	2	0.67[0.41]	3.12[0.08]	No	Yes	No
South Africa	ER_av	35	3	4	4.25[0.04]	9.39[0.00]	Yes	Yes	Yes
	GvtCons	36	2	4	0.00[0.98]	6.20[0.01]	No	Yes	No
	Imports	36	2	4	0.13[0.72]	9.61[0.00]	No	Yes	No
	OPP	36	2	4	0.32[0.57]	6.83[0.01]	No	Yes	No

UrbanPop	36	2	4	0.01[0.94]	6.18[0.01]	No	Yes	No
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Notes: CV – Control Variables. Y – Economic growth. SS – Financial Structure proxied by the Structure Size ratio = [Stock market capitalisation/Deposits of commercial banks]. $Y \leftrightarrow SA$ implies bi-directional causality; $Y \rightarrow SA$ implies causality running from economic growth to financial structure and $Y \leftarrow SA$ implies causality running from financial structure to economic growth.

Source: Compiled by author

The tables report the Chi-square statistic and the probability value of the test. Specifically, it presents three null hypotheses: (i) the two-way causality between economic performance and financial structure; (ii) causality running from economic performance to financial structure; and (iii) causality running from financial structure to economic performance. A “Yes” indicates that the null hypothesis cannot be rejected, while a “No” indicates that the null hypothesis is rejected. The results are discussed separately for each country.

Egypt

Results presented in Table 8.3 show that when using the S-Activity ratio, causality predominantly runs from economic growth to financial structure in six of the models, compared to only three in the opposite direction (i.e. from financial structure to *per capita* GDP). However, when the S-Size ratio is used, causality runs from financial structure to economic growth. All the ten models show that causality runs from financial structure to economic growth. The weight of the evidence suggests that the relative size of financial markets and not their liquidity is likely to influence economic growth in Egypt.

Nigeria

With regard to Nigeria, evidence of causality between financial structure and economic performance is mixed. The evidence shows that when using the S-Activity ratio, all the three models reported show causality running from financial structure to *per capita* GDP. On the other hand, models based on the S-Size ratio show that causality runs predominantly from economic growth to financial structure. Six models based on the S-Size ratio show that causality runs from economic growth to financial structure, while only three show causality in the opposite direction. Thus, the performance of the Nigerian economy is likely to influence the size of financial structure, while liquidity of the financial structure influences economic activity.

South Africa

The weak exogeneity test results show that the causality between financial structure and economic performance in South Africa predominantly runs from financial structure to *per capita* GDP when using the S-Activity ratio. A total of seven models was reported in this regard, while five show causality running in the opposite direction. This suggests that the activity of the stock markets and banks is important in influencing economic performance in South Africa. However, when we consider the S-Size ratio, all the five models show causality running from economic growth to financial structure, while only one model shows bi-directional causality. Overall, this suggests that the activity of financial markets is more likely to influence economic performance in South Africa than its size.

The next section presents the economic and statistical significance of the relationship between financial structure and economic performance. The objective of this section is to show the nature of the long-run relationship between financial structure and economic performance. As noted earlier, a positive and statistically significant coefficient supports the market-based argument, while a negative and statistically significant coefficient supports the bank-based argument (Beck, *et al.*, 2001).

8.6.3. Long-run relationship between financial structure and economic performance

The coefficients of the long-run relationship between financial structure and *per capita* GDP are presented in Tables 8.5 and 8.6 below, which also report the coefficients of the error correction term. The coefficient of the error correction term describes the speed of adjustment by the dependent variable back to equilibrium, after a shock in the short run. The third column in the table presents the long-run coefficient and its corresponding t-statistic, while the fourth column reports the coefficients of the error correction term.

Egypt

The results presented in Table 8.5 show that the relationship between financial structure and economic performance runs from economic growth to financial structure, and is negative and significant. Results suggest that growth of the economy is likely to promote the growth of banks more than stock markets. In this case, as the economy grows, banks are likely to lend credit to the private sector more quickly than the change in stock market value traded. These results are in line with the bank-based argument indicated above.

However, when the S-Size variable is considered, causality runs from financial structure to economic growth, and is positive. Findings from this analysis show that the development of stock markets is likely to stimulate economic growth more than the development of banks. Thus the increase in stock market capitalisation (or the listing of new firms) is likely to stimulate economic growth more than an increase in the level of savings in the Egyptian financial sector. This is in line with the market-based argument.

Table 8.5: Long-run parameters: S-Activity and *per capita* GDP

	CV	Y (Y→SA)	SA (Y←SA)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Agric	-23.97[-4.54]***		1.77[0.72]	-0.63[-4.43]	0.42	5.44[0.79]	85.34[0.44]
	ElecPecapita	-28.28[-3.86]***		4.53[1.07]	-0.55[-4.54]	0.44	4.63[0.87]	85.12[0.45]
	GasRents	-50.98[-4.84]***		0.81[1.74] *	-0.34[-4.84]	0.46	5.93[0.75]	76.23[0.71]
	GvtCons	6.02[15.19]***		-0.58[-0.84]	-0.39[-2.16]	0.38	11.17[0.26]	128.34[0.28]
	LendingR	-26.94[-3.91]***		-0.18[-0.12]	-0.55[-4.84]	0.46	4.21[0.90]	96.18[0.17]
	NetTaxes	-8.06[-1.81]**		1.07[2.63] ***	-0.81[-4.15]	0.45	4.76[0.86]	81.99[0.54]
	PDensity	-41.26[-6.53]***		158.38[7.87] ***	-0.48[-4.65]	0.42	5.64[0.77]	99.95[0.11]
	Pop	-55.26[-6.90]***		102.10[7.64] ***	-0.50[-6.65]	0.62	10.19[0.34]	95.63[0.18]
Nigeria	ER_end		0.17[2.70]***	0.08[2.12] **	-0.16[-3.68]	0.30	12.59[0.18]	34.67[0.93]
	Imports		0.46[4.55]***	-0.01[-0.03]	-0.09[-2.27]	0.33	8.47[0.49]	116.15[0.58]
	NetTaxes		0.09[1.48]***	-0.38[-3.91] ***	-0.20[-3.21]	0.30	13.09[0.16]	51.07[0.35]
South Africa	ElecPecapita		0.21[3.95]***	-0.92[-3.10] ***	-0.13[-2.68]	0.35	6.51[0.69]	131.12[0.23]
	ER_av		0.30[5.48]***	-0.38[-5.24] ***	-0.11[-2.43]	0.44	10.12[0.34]	74.06[0.77]
	ER_end		0.31[6.62]***	-0.41[-6.40] ***	-0.10[-2.06]	0.37	11.80[0.22]	92.90[0.24]
	GCF	-11.41[-4.16]***		4.84[3.66] ***	-0.83[-4.82]	0.41	8.19[0.52]	127.06[0.31]
	LendingR		0.20[3.55]***	-0.53[-6.64] ***	-0.12[-3.35]	0.63	6.01[0.74]	95.34[0.19]
	MRents	33.57[6.97]***		-3.39[-7.74] ***	-0.11[-2.35]	0.30	6.23[0.72]	135.46[0.16]
	NetTaxes		0.30[2.51]***	-1.55[-2.12] ***	-0.08[-2.33]	0.31	16.76[0.06]	166.42[0.27]
	OPP	-18.97[-0.82]		1.12[0.08]	-0.04[-4.00]	0.30	12.93[0.17]	74.12[0.77]
	Tel100		0.14[8.67]***	-0.55[-9.24] ***	-0.32[-4.24]	0.54	8.21[0.51]	90.40[0.30]
	UrbanPop		0.10[5.39]***	-2.93[-8.99] ***	-0.75[-4.19]	0.56	8.90[0.45]	121.54[0.44]

Notes: Y (Y→SA) – coefficient of Y when causality runs from economic growth to financial structure. SA (Y←SA) – coefficient of financial structure when causality runs from financial structure to economic growth. CV – Control variable. ECM – Error Correction Model. Ad.R² – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** - 1%; ** - 5%; and * - 10%

Source: Compiled by author

Table 8.6: Long-run parameters: S-Size and *per capita* GDP

	CV	Y (Y→SS)	SS (Y←SS)	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Exports		0.26[7.48]***	0.24[1.56] *	-0.07[-3.27]	0.43	11.57[0.24]	86.32[0.41]
	Imports		0.33[10.40]***	0.54[2.39] **	-0.07[-2.65]	0.53	8.27[0.51]	72.09[0.82]
	Industr		0.13[2.91]***	1.12[3.83] ***	-0.06[-2.39]	0.40	6.90[0.65]	69.85[0.87]
	NetTaxes		0.41[5.65]***	-0.67[-2.61] ***	-0.06[-2.94]	0.35	5.99[0.74]	120.88[0.46]
	OPP		0.29[10.19]***	0.32[1.78] *	-0.08[-2.59]	0.47	8.54[0.48]	73.62[0.78]
	PDensity		-0.01[-0.49]	1.74[26.34] ***	-0.47[-3.06]	0.46	7.27[0.61]	89.31[0.33]
	Pop		-0.01[-0.49]	1.74[26.34] ***	-0.47[-3.06]	0.46	7.275[0.61]	89.31[0.33]
	Spread		0.29[10.26]***	0.31[2.64] ***	-0.08[-3.82]	0.50	9.65[0.38]	88.13[0.36]

	Tel		0.17[4.63]***	0.03[0.93]	-0.14[-6.60]	0.67	9.49[0.39]	46.01[0.55]
	Tel100		0.18[4.51]***	0.03[0.82]	-0.14[-6.56]	0.68	9.05[0.43]	45.73[0.57]
Nigeria	Agric	-0.79[-2.38]***		0.46[0.74]	-0.90[-4.09]	0.35	3.43[0.95]	111.99[0.69]
	CPI	-0.27[-0.61]		0.12[2.12]**	-0.60[-3.10]	0.30	6.89[0.65]	75.14[0.74]
	Elec		0.32[1.03]	0.89[2.41]**	-0.15[-2.77]	0.30	2.57[0.98]	109.47[0.74]
	ER_end	-0.95[-3.14]***		0.10[2.66]***	-0.84[-4.07]	0.35	16.17[0.06]	99.96[0.91]
	Exports		-0.12[-0.84]	-0.76[-7.64]***	-0.26[-2.17]	0.30	12.99[0.16]	163.04[0.33]
	Imports	-1.52[-2.07]**		-0.26[-0.63]	-0.78[-4.64]	0.44	7.11[0.63]	101.81[0.88]
	Industr	-0.94[-1.91]**		0.05[0.12]	-0.88[-4.63]	0.38	6.28[0.71]	110.31[0.73]
	NetTaxes	-1.60[-4.06]***		-0.95[-5.63]***	-0.75[-2.94]	0.40	8.23[0.51]	104.80[0.84]
South Africa	ER_av	-1.32[-1.82]**		-0.07[-0.28]	-0.73[-3.61]	0.30	2.80[0.97]	83.93[0.48]
	GvtCons	0.97[1.35]*		3.76[6.91]***	-0.53[-3.69]	0.30	11.62[0.24]	34.55[0.93]
	Imports	1.60[2.69]***		-1.03[-3.47]***	-0.85[-5.66]	0.50	10.56[0.31]	51.24[0.35]
	OPP	2.35[3.54]***		-2.23[-5.85]***	-0.49[-3.22]	0.30	10.26[0.33]	50.99[0.36]
	UrbanPop	-5.35[-4.54]***		-21.79[-4.99]***	-0.78[-4.49]	0.44	6.21[0.72]	52.80[0.29]

Notes: $Y (Y \rightarrow SS)$ – coefficient of Y when causality runs from economic growth to financial structure. $SS (Y \leftarrow SS)$ – coefficient of financial structure when causality runs from financial structure to economic growth. CV – Control variable. ECM – Error Correction Model. $Ad.R^2$ – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** - 1%; ** - 5%; and * - 10%

Source: Compiled by author

The results in respect of Egypt suggest that there are two dynamics at play in the relationship between financial structure and economic growth. Firstly, the liquidity of the financial system is influenced by the growth of the economy, and does not in itself influence economic growth. When taken together with results presented in Chapters 5 and 6, the results show that the positive influence of stock market liquidity and credit to the private sector on economic growth is overridden by the influence of economic growth on liquidity of the financial markets.

Secondly, when one considers financial structure from the perspective of relative size of different institutions, the evidence suggests that the increase in stock market capitalisation matters for economic growth more than an increase in deposits. This is in line with results presented in Chapter 5, wherein bank deposits do not influence economic growth in Egypt. In Chapter 6, results show that stock market capitalisation is an important determinant of economic growth in Egypt.

These results provide new insights into the importance of financial structure on economic growth. By using updated data covering the financial crisis period and employing a more robust econometric approach, we find that it is financial structure size measure, not liquidity, that matters for economic growth in Egypt. These results add additional insights to Bolbola, *et al.* (2005), who found a positive relationship between S-Activity and S-Size measures with TFP. Results from this study are opposite to those obtained by Solo (2013), who concluded that the financial structure is negatively associated with economic growth.

Nigeria

Similar to the scenario in Egypt, when causality runs from financial structure to economic growth, the relationship is positive. However, in the case of Nigeria, the S-Activity is positively associated with economic growth. These results suggest that an increase in the liquidity of the stock markets is likely to influence economic growth more than an increase of credit that is extended to the private sector. This supports the market-based argument. These results are in line with findings in Chapter 6 which showed that stock market liquidity is a stronger predictor of economic growth. Results presented in Chapter 5 show that bank credit does not influence economic growth.

However, when the S-Size ratio is used, the relationship between financial structure and economic performance is predominantly negative, and runs from per capita GDP to financial structure. This suggests that in this regard, it is the growth of the economy that promotes the development of banks more than stock markets, a finding which supports the bank-based argument. In this case, growth of the economy should lead more to the mobilisation of deposits than stock market capitalisation.

Overall, the weight of the evidence suggests that causality runs from economic growth to a bank-based financial structure. This implies that, in Nigeria, it is the growth of the economy that influences the structure of the financial sector. There is also some evidence to suggest that the liquidity of the stock market has a positive influence on economic growth in the country.

Results presented above provide new evidence that liquidity of financial systems in Nigeria matters for economic growth more than the size thereof. Previous studies (Ahmed & Wahid, 2011; Oima & Ojwang, 2013; Solo, 2013) found a positive influence of S-Size ratio on economic growth. This study, which covers a longer period and employs a more robust method, shows that it is the S-Activity, not the S-Size measure of financial structure, that matters for economic growth.

South Africa

In South Africa, seven models were reported based on the S-Activity ratio, which models show a positive and significant relationship between financial structure and economic performance. As indicated above, a positive and significant relationship between financial structure and economic performance supports the market-based argument, regarding which the marginal benefit arising from the development of stock markets is greater than that of banks. In this case,

the results suggest that an increase in the liquidity of the stock market will spur greater economic growth compared to increasing credit to the private sector. These results have to be taken in the light of the results presented in Chapters 5 and 6, which showed that both bank credit and stock market value traded do not positively influence economic activity. However, what the financial structure results show is that when comparing the two, stock market value traded and bank credit, stock market liquidity has a stronger effect on economic growth than bank credit.

On the other hand, when using the S-Size ratio, evidence on the relationship between financial structure and economic performance shows causality running from *per capita* GDP to financial structure and is mixed. Of the five models reported based on the S-Size ratio, three show a positive relationship, and the remaining two show that such a relationship is negative. When the results are positive, it implies that an increase in economic growth has a stronger influence on stock market capitalisation than bank deposits. On the other hand, when the relationship is negative, it shows that economic growth has a stronger marginal effect on growth in bank deposits than stock market capitalisation. However, the weak and mixed results in respect of S-Size ratio and economic growth are not surprising, given that both bank deposits and stock market capitalisation do not have a positive and significant influence on economic growth, as shown in Chapters 5 and 6 respectively.

The results presented in respect of South Africa are different from Arestis, *et al.*'s (2010), who concluded that the relationship between S-Size and economic growth in South Africa is negative.

8.7. Discussion of results

With regard to Egypt, two dynamics emerge relating to the relationship between financial structure and economic growth. Firstly, the liquidity of the financial system is influenced by the growth of the economy, and does not in itself influence economic growth. These findings show that the positive influence of stock market liquidity and bank credit on economic growth is dominated by the stronger influence of economic growth on liquidity of the financial markets. However, when taken independently, stock market value traded positively influences economic growth. The dominating effect of economic growth on financial structure may arise from the fact that the level of lending and bank credit relative to the size of the economy is still very low in Egypt. Thus while regulatory and economic reforms might have greatly enhanced

the efficiency of both banks and stock markets, there is now a need to focus on growing the level of bank lending and stock market trading relative to the size of the economy.

The intermediation ratios show that banks in Egypt lend far less compared to the deposits they mobilise. The EFSA submitted that, while the cautiousness of the Egyptian banks might have helped to insulate the banking sector from the financial crisis, it might have adversely affected investment in SMEs and SMMEs and the development of the financial sector, which ultimately affects their ability to promote economic growth (Egyptian Financial Supervisory Authority, 2017). This suggests that, in order for financial structure to matter for economic growth, there is need to enhance liquidity of both the stock markets and the banking sector, up to a level that such liquidity starts to influence economic growth.

Secondly, when one considers financial structure from the perspective of relative size of different institutions, evidence suggests that the size of institution matters for economic growth. Specifically, stock market capitalisation has a stronger effect on economic growth compared to bank deposits. Such findings were corroborated by the conclusion in Chapter 6, which showed that increase in stock market capitalisation is a strong determinant of economic growth in Egypt. The strong effect of stock market capitalisation can arise from the fact that regulatory and economic reforms enabled more firms to list on the stock exchange. However, results in Chapter 5 show that bank deposits do not significantly influence economic growth. The lack of positive influence of bank deposits on economic growth might arise from the fact that Egyptian banks are conservative lenders, and thus deposits are not intermediated into productive projects. Thus, understanding the different relationships that exist between economic growth and the different financial institutions provides insightful information on which policy initiatives to pursue, and why.

In Nigeria, the results were different depending on the measure of financial structure used. When the S-Activity measure is used, financial structure positively influences economic growth. In this regard, an increase in stock market value traded is likely to lead to more economic growth compared to an increase in bank credit. These results are in line with findings in Chapter 5, which show that bank credit is not an important determinant of economic growth in Nigeria, while the findings presented in Chapter 6 show that stock market value traded positively influences economic growth.

The influence of banks on economic growth in Nigeria might have been hampered by the occurrence of bank crises, poor governance and the weak regulatory system (Sanusi, 2012). On

the other hand, the influence of stock market value traded is in line with theoretical predictions by Levine (2002), who argued that stock market liquidity is a more important determinant of economic growth than stock market capitalisation. This implies that in Nigeria, there is a need to focus more effort and resources to improve the liquidity of stock markets, without necessarily making them a haven for speculative activity.

The financial structure results based on the S-Size ratio shows that financial structure does not matter for economic growth. The lack of evidence arising from the influence of stock market capitalisation on economic growth can be explained by the dominance of the stock markets by the Dangote Group, which accounts for 43% of the total market capitalisation (Egene, 2016). Furthermore, the Nigerian economy is dominated by oil companies, yet oil companies are not fully listed on the stock exchange (Oke & Adeusi, 2012). At the same time, deposits are not an important determinant of economic growth in Nigeria, a scenario which may be underlined by the challenges faced by the banking sector in Nigeria.

The weight of the evidence in respect of South Africa suggests that liquidity of the financial institutions positively and significantly influences economic performance in South Africa. Specifically, an increase in stock market value traded is likely to spur economic growth more than an increase in credit to the private sector. This is in line with findings by the National Treasury (2016) and the Reserve Bank of South Africa (2016), that over-indebtedness of the South African households poses a threat to economic growth. Also, more than 52% of bank credit to the private sector is household consumption debt (South African Reserve Bank, 2017), which is currently more than 77% of households' disposable income (South African Reserve Bank, 2015).

We pause to mention that, based on results presented in Chapters 5 and 6, both bank credit and stock market value traded do not positively influence economic activity. However, what the financial structure results show is that when using the S-Activity ratio, stock market liquidity has a stronger effect on economic growth than bank credit. Therefore there is need, nonetheless, for authorities to monitor the liquidity of both the stock markets and banks, because when taken together, they matter for economic growth.

8.8. Summary of findings and conclusion

Theory posits that in countries with less developed financial systems, the impact of financial structure should be negative, signifying that banks are likely to promote economic growth more than stock markets in those countries. The results show that financial structure matters for

economic growth, and it is positively related to economic growth. This is in support of market-based financial structure, contrasting with theory which predicts that because of the relatively low level of financial development in the three countries, such relationship must be bank-based.

When considering the S-Activity ratio, our findings show that in Egypt, causality runs from economic growth to financial structure. The evidence shows that economic growth promotes a bank-based financial structure based on the S-Activity ratio. However, when the S-Size ratio is applied, evidence shows that in Egypt a market-based financial structure will spur economic growth more than a bank-based one.

In Nigeria, evidence shows that when causality runs from financial structure (S-Activity) to economic growth, the relationship is positive. Thus liquidity of stock markets is expected to promote economic growth. However, when the S-Size ratio is employed, the relationship between financial structure and economic performance is predominantly negative, and runs from per capita GDP to financial structure. This implies that, in Nigeria, it is the growth of the economy that influences the development of banks more than stock markets.

In South Africa, evidence based on the S-Activity ratio suggests that an increase in the liquidity of the stock market will spur greater economic growth compared to increasing credit to the private sector. On the other hand, when using the S-Size ratio, evidence on the relationship between financial structure and economic performance shows causality running from economic growth to financial structure, and is mixed. However, the weight of the evidence suggests that liquidity of the stock markets positively influences economic performance in South Africa. Specifically, an increase in value traded will spur economic growth more than an increase in credit to the private sector.

CHAPTER NINE

THE INTERLINKAGE BETWEEN NBFIS, BANK AND STOCK MARKET DEVELOPMENT: EMPIRICAL EVIDENCE²⁸

9.1. Introduction

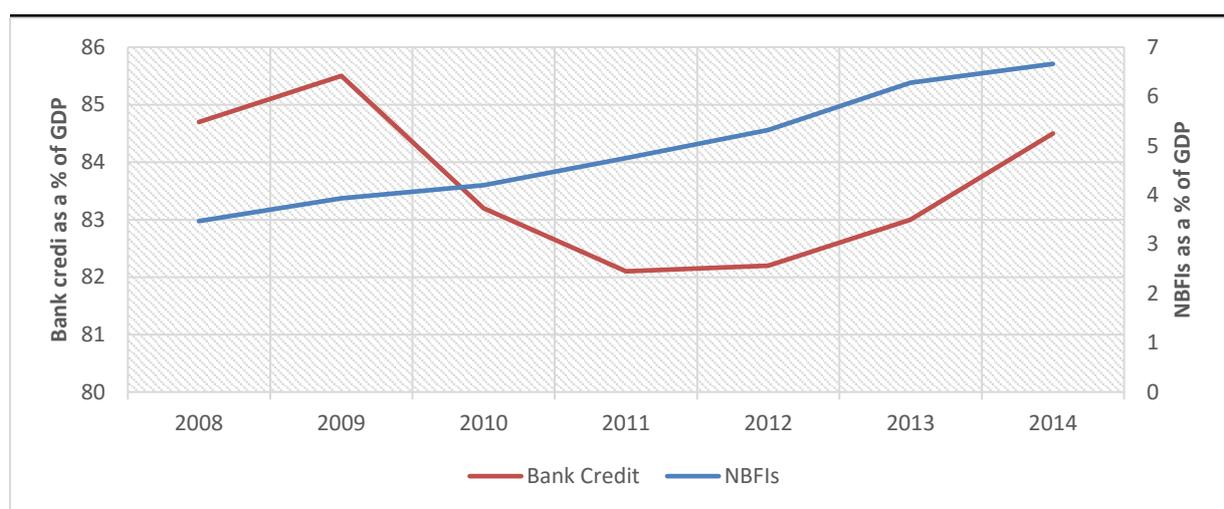
Although literature is replete with studies investigating the role of financial systems in stimulating economic growth, our review shows that very little scholarship, if at all, has been committed to understanding how the different financial institutions are interconnected. Literature suggests that NBFIs both compete with and complement traditional banking institutions such as deposit money banks, and in scenarios, NBFIs foster the development of banking institutions. At the same time, banks can also foster the development of NBFIs (Impavido & Musalem, 2000). In a similar manner, NBFIs and stock markets complement each other, thus fostering financial development. NBFIs influence stock markets when they list and/or trade shares, thus improving the size and liquidity of stock markets.

On the other hand, as stock markets develop, more opportunities occur for NBFIs to trade in listed shares, thus reinforcing NBFIs development as well. Thus, we pause to mention that stock markets and banks also influence the development of NBFIs, implying that causality can flow from either direction. The nature and strength of such interconnectedness may influence the channels through which the different financial institutions influence economic growth. Therefore, the objective of this chapter is to investigate the interlinkages between different financial institutions in the countries under study.

The figure below illustrates the development in NBFIs compared to bank credit by deposit money banks over the period 2008 to 2014. Although banks remain the dominant source of finance, Figure 9.1 shows that traditional bank lending has slowed down notably as banks recover from the financial crisis and adjust to tighter regulatory requirements – mostly emanating from the stricter Basel III capital and liquidity requirements. To this end, the development of non-bank financing in both developed and developing countries has become imperative (World Bank, 2013). The figure shows that, although the value remains low, NBFIs almost doubled over the period 2008 to 2014, highlighting the emergence of NBFIs.

²⁸ Part of this work is currently under review by the *International Journal of Economics and Finance*

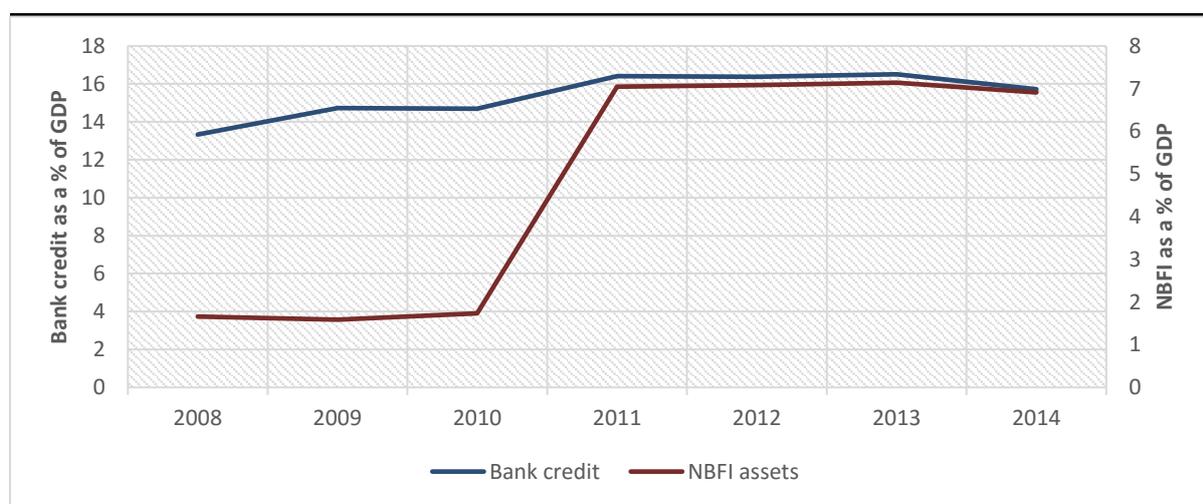
Figure 9.1: Growth in bank credit and NBFIs after the financial crisis for all countries



Source: World Bank (2017)

A similar trend was also observed in sub-Saharan African countries, where NBFIs significantly grew, while bank credit remained relatively stagnant (see Figure 9.2 below).

Figure 9.2: Bank credit and NBFIs assets for sub-Saharan Africa

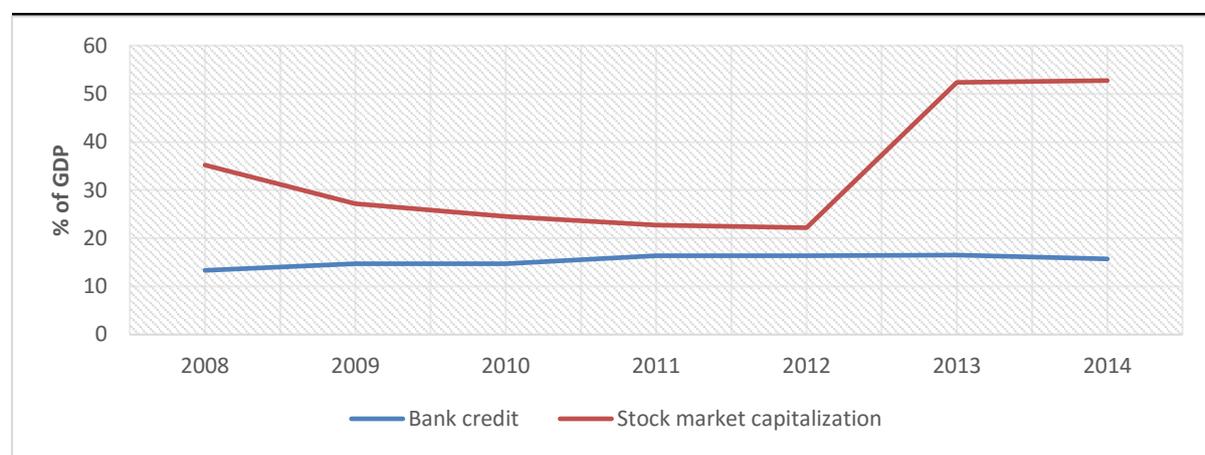


Source: World Bank (2017)

Moreover, when bank credit slowed down in both developed and developing countries (see Figure 9.2 above), global stock markets appear to have significantly recovered. In Africa, in 2014 stock markets experienced a record increase in IPOs, raising more than US\$1.7 billion. 24 IPOs were recorded (African Securities Exchange Association, 2015). The figures below also provide a context of the development in stock market capitalisation compared to bank credit over the period 2008-2014. Figure 9.3 shows that while bank credit has remained

subdued, stock market activity appears to be recovering at a much faster rate over the same period.

Figure 9.3: Bank credit and stock market capitalisation for sub-Saharan African countries



Source: World Bank (2017)

Consequently, this study has been motivated to investigate the relationship between NBFIs and their linkage with stock market and bank development in Africa. The investigation focuses on Africa's three biggest economies, namely Egypt, Nigeria and South Africa. The choice of these countries has also been partly influenced by the fact that they have the oldest capital markets, implying that longer time series data is available to enable us to carry out an analysis of the long-term relationship between NBFIs, bank and stock market development in these countries.

To investigate this relationship, we use the Johansen cointegration and vector-error correction modelling techniques within a country-specific setting. The remainder of this chapter will start by reviewing literature on the theoretical linkage between NBFIs and other financial institutions, continue by reviewing empirical literature on the relationship, and then present the empirical results.

9.2. Theoretical linkage between NBFIs and other financial institutions

In this section, we review this linkage to provide a theoretical framework for the analysis that follows in the chapter.

The first proposition about the relationship between NBFIs and other financial institutions is that the relationship between the two is competitive (Catalan, *et al.*, 2000). In this case, NBFIs and other financial institutions, such as banks, compete for the household and corporate savings and financing opportunities.

- Firstly, the development of NBFIs provides more opportunities for reallocation of savings from “risky” intermediaries to “safer” ones. For instance, savers will transfer their savings from financial intermediaries with a higher risk of bank crises, such as deposit money banks, to other financial intermediaries facing a lower risk of bank-run such as pension funds and life insurance products. In this case, the relationship between NBFIs and other financial institutions in respect of savings or liquid liabilities is likely to be negative as savings are moved from “risky” deposit money banks to “safer” NBFIs.
- Secondly, when lending, banks and NBFIs try to match the maturity of their assets and liabilities. Therefore, it naturally follows that because of the short-term nature of their liabilities, banks will be forced through competition to concentrate on and increase the supply of short-term loans. At the same time, because of the long duration of their liabilities, although they can also offer short-term loans, NBFIs have comparative advantage on long-term loans and securities. In this case, the relationship between NBFIs and other financial institutions can either be positive or negative, depending on which institution is able to use its comparative advantage more effectively.

The outcome of the competitive relationship between NBFIs and other financial institutions is expected to increase the efficiency of the banking sector in that (i) interest margins and other bank intermediation costs are expected to decline; and (ii) by concentrating on areas in which they have comparative advantages, banks will reduce interest rates and liquidity risks arising from the mismatch between the maturity of their assets and their liabilities, thus improving the stability of the financial sector (Impavido, *et al.*, 2001). Consequently, competition between NBFIs and other financial institutions, namely banks, in this case, is likely to lead to increased supply of credit at lower costs for both long-term and short-term credit, leading to further growth of the financial sector.

The second proposition is that NBFIs and other financial institutions complement each other in a way that fosters financial development (Catalan, *et al.*, 2000).

- The first channel in which NBFIs complement the development of other financial institutions is that its instruments are completely illiquid from the depositors’ point of view. They can only be liquidated in the long run upon the occurrence of a certain event such as retirement, disability or death.²⁹ This implies that in order for depositors to restore

²⁹ However, it also has to be noted that owing to changes in regulation and financial innovation (derivatives), the liquidity of NBFIs has significantly improved.

their liquidity, they should hold more liquid securities such as short-term deposits with banks, behaviour which reinforces financial developments. This may also lead to financial innovation as banks try to meet the need of more liquid assets by depositors. Thus the relationship between the development of NBFIs and other financial institutions is expected to be positive.

- Secondly, NBFIs also use banks to facilitate their transactions. This has the effect of contributing to deepening of the banking system (Impavido, *et al.*, 2003). Thus, in this case, the NBFIs and banks complement each other, and the relationship is expected to be positive and significant.
- Thirdly, NBFIs complement other financial institutions through their effect on stock markets. Catalan, *et al.* (2000) argue that the development of NBFIs leads to more depth and liquidity of stock markets. Specifically, they explain that NBFIs with access to savings with a long maturity are likely to invest in more risky assets such as stocks, leading to an increase in market capitalisation and value traded. The development of NBFIs may also lead to improvements in financial innovation, regulation, transparency, corporate governance and competition among listed firms owing to increased demands from NBFIs investors for more disclosures. However, in some jurisdictions, the share of funds that can be invested in certain types of security may be restricted to thresholds set in terms of the prevailing regulatory regime.
- Lastly, NBFIs can list and trade their shares on the stock market exchange (Impavido, *et al.*, 2003). By doing so, NBFIs contribute to the deepening and liquidity of stock markets.

However, as indicated above, causality can run from either direction because all the institutions have the potential to influence the development of the other. For instance, stock markets and banks can influence NBFIs, but at the same time, NBFIs can also influence the development of stock markets and banks. In addition, stock markets and banks can influence the development of each other in a potentiall virtuous relationship.

On the basis of the above, the theoretical proposition relating to the relationship between the development of NBFIs and other financial institutions can be summarised as follows, depending on the measure of financial development that is being used:

1. The relationship between the development of NBFIs and stock market capitalisation is expected to be positive;

2. The relationship between the development of NBFIs and stock market value traded is expected to be positive;
3. The relationship between the development of NBFIs and credit extended to the private sector by deposit money banks is expected to be positive or negative; and
4. The relationship between the development of NBFIs and liquid liabilities of deposit money banks is expected to be positive or negative depending on whether the negative effect of transfer of savings from “risky” banks to “safer” NBFIs is greater than the positive effect of increased demand for more liquid assets from deposit money banks by depositors.

In the following section, we review some of the studies that have investigated some of the relationships above.

9.3. Empirical literature review of African studies

Our survey of the empirical literature revealed that there is a dearth of studies investigating the relationship between NBFIs, stock markets and economic growth. Specifically, we found very few studies that investigated the influence of NBFIs on banks and stock markets. These studies only investigated the impact of certain components of NBFIs such as pension funds or assets, and premiums of insurance companies on bank and stock market development (Mesike & Ibiwoye, 2012; Madekwe, 2014; Sawadogo & Guérineau, 2015). Focusing on only one component of NBFIs may imply that the actual influence of NBFIs on banks and stock markets is underestimated.

Mesike and Ibiwoye (2012) relied on time series data over the period 1981-2009 to investigate the influence of pension sector reforms on financial development in Nigeria. The study employed an OLS estimation technique. Results from the study show that the impact of pension reforms on M2 was negative and significant, while that on credit to the private sector was positive, but not significant.

The second study reviewed also focused on Nigeria (Madukwe, 2014). The study investigated the impact of pension assets and local ordinary shares (LOS) of contributory pension schemes on stock market capitalisation over the period 2006-2012. The analysis in the study was carried out using a Pearson’s Product Movement Correlation Coefficient technique to conclude that pension assets do not have a significant impact on stock market capitalisation.

The third study reviewed was a cross-country one which covered 47 developing countries including Egypt, Nigeria and South Africa (Sawadogo & Guérineau, 2015). The study covered the period 1987-2001, and used the system GMM estimator. Financial development was measured by stock market value traded. Results from the study show that insurance premiums positively influence stock market value traded.

Other studies investigating the relationship between NBFIs, stock markets and bank development did not use any econometric approaches, but only carried out a qualitative review: for instance, Sogunle (2014) and Sourial and Amico (2015). Sogunle (2014) concluded that institutional investors in West Africa can promote the development of capital markets through their influence on liquidity, reduction of information asymmetry, reduction in commission and transaction costs, and improving corporate governance. Sourial and Amico (2015) found that in Egypt, engagement of institutional investors to influence corporate governance and performance of listed companies is not as positive as expected. This finding was based on the presumption that the bulk of institutional investments were controlled by the state, which does not face an incentive to engage actively with corporates.

The review of empirical studies above shows that all studies that econometrically investigated the relationship between NBFIs, stock markets and bank development (i) focused on only one component of NBFIs, suggesting that the results obtained therefrom might underestimate the role of NBFIs; and (ii) focused only on certain aspects of financial development, such as credit to the private sector and stock market capitalisation, leaving out other measures such as stock market value traded and bank deposits.

Therefore, to improve on earlier studies to establish the interlinkages between different financial institutions, this thesis employs the Johansen cointegration and vector-error correction techniques, using time series data to investigate the relationship between NBFIs, stock markets and banks. Our objective is not only to establish the impact of NBFIs on banks and stock markets, but also the impact of banks and stock markets on NBFIs development. Understanding these relationships will help us determine the channels through which financial institutions influence economic growth in Egypt, Nigeria and South Africa.

9.4. Estimation results

This section presents and discusses the results. The results are presented in three sections: (i) cointegration results; (ii) weak exogeneity test results; and (iii) the long-run relationship between NBFIs development and financial development. Financial development is measured by

four proxies, namely, stock market capitalisation, stock market value traded, credit to the private sector by deposit money banks, and liquid liabilities of deposit money banks measured by deposits. NBF development is proxied by assets of NBF expressed as a percentage of GDP.

Unit root test results are presented in Section 5.3.1 above.

9.4.1. Cointegration test results between NBFIs, stock market and bank development

Table 9.1 below presents the cointegration test results. In the table, “K” indicates the vector auto-regression (VAR) order that produces a white noise residual, and “A” indicates the deterministic trend assumption for each particular model. The models reported are those that satisfied serial correlation, heteroscedasticity and adjusted R² specifications stated above.

The cointegration test results are presented in Tables 9.1 to 9.4 below.

Table 9.1: Cointegration test results: NBFIs and stock market capitalisation

CV	Obs	K	A	Trace Statistic			Maximum Eigen Value			
				r<0	r<1	r<2	r<0	r<1	r<2	
Egypt	Agric	29	2	2	40.21[0.01]	11.18[0.53]	3.05[0.57]	29.04[0.00]	8.13[0.53]	3.05[0.57]
	DepositR	29	2	2	41.98[0.01]	19.67[0.06]	6.99[0.13]	22.30[0.05]	12.69[0.15]	6.99[0.13]
	Elec	28	2	3	33.29[0.02]	10.03[0.28]	1.90[0.17]	23.26[0.02]	8.13[0.37]	1.90[0.17]
	ElecPecapita	28	2	2	34.65[0.01]	10.25[0.26]	1.39[0.24]	24.41[0.02]	8.86[0.30]	1.39[0.24]
	ER_end	28	3	4	50.32[0.01]	22.17[0.14]	3.87[0.76]	28.15[0.02]	18.30[0.07]	3.87[0.76]
	Exports	29	2	4	49.38[0.01]	23.16[0.11]	6.90[0.35]	26.23[0.04]	16.25[0.13]	6.90[0.35]
	GasRets	29	2	4	46.28[0.02]	18.54[0.31]	6.57[0.39]	27.75[0.03]	11.96[0.42]	6.57[0.39]
	GvtCons	28	3	4	55.69[0.00]	25.73[0.05]	7.83[0.27]	29.96[0.01]	17.90[0.08]	7.83[0.27]
	Imports	29	2	3	34.61[0.01]	13.43[0.10]	3.27[0.07]	21.19[0.05]	10.15[0.20]	3.27[0.07]
	LendingR	29	2	2	43.69[0.00]	19.94[0.06]	5.62[0.22]	23.75[0.03]	14.32[0.09]	5.62[0.22]
	NetTaxes	27	4	4	47.12[0.02]	21.05[0.18]	8.58[0.21]	26.07[0.05]	12.47[0.37]	8.58[0.21]
	OPP	27	4	4	50.31[0.01]	23.00[0.11]	8.68[0.20]	27.31[0.02]	14.32[0.23]	8.68[0.20]
	Spread	28	3	2	46.52[0.00]	17.86[0.10]	4.44[0.35]	28.66[0.01]	13.42[0.12]	4.44[0.35]
	Nigeria	ER_av	29	3	4	47.47[0.02]	19.97[0.23]	5.30[0.55]	27.50[0.03]	14.67[0.21]
ER_end		29	3	4	44.56[0.03]	18.50[0.31]	5.53[0.52]	26.06[0.05]	12.97[0.33]	5.53[0.52]
Exports		29	3	4	49.86[0.01]	17.01[0.41]	5.23[0.56]	32.85[0.01]	11.78[0.44]	5.23[0.56]
NetTaxes		29	3	4	64.23[0.00]	23.20[0.10]	6.51[0.40]	41.03[0.00]	16.69[0.12]	6.51[0.40]
South Africa	DepositR	34	3	3	34.32[0.01]	11.89[0.16]	1.37[0.24]	22.43[0.03]	10.51[0.18]	1.37[0.24]
	Elec	34	2	4	52.57[0.00]	23.11[0.11]	7.13[0.33]	29.46[0.02]	15.98[0.15]	7.13[0.33]
	ElecPecapita	34	2	4	54.31[0.00]	23.39[0.10]	7.01[0.34]	30.91[0.01]	16.39[0.13]	7.01[0.34]
	ER_end	35	3	3	33.79[0.02]	12.24[0.15]	1.83[0.18]	21.55[0.04]	10.41[0.19]	1.83[0.18]
	Exports	36	2	3	30.69[0.04]	7.55[0.51]	0.50[0.48]	23.13[0.03]	7.06[0.48]	0.50[0.48]
	GCF	36	2	3	53.66[0.00]	25.14[0.06]	6.21[0.43]	28.52[0.02]	18.93[0.06]	6.21[0.43]
	GvtCons	36	2	3	35.24[0.01]	5.53[0.75]	0.97[0.33]	29.71[0.00]	4.56[0.80]	0.97[0.33]
	Imports	36	2	3	43.95[0.00]	8.91[0.37]	1.21[0.27]	35.04[0.00]	7.70[0.41]	1.21[0.27]
	MRents	36	2	3	32.82[0.02]	5.46[0.76]	0.84[0.36]	27.36[0.01]	4.62[0.79]	0.84[0.36]
	NEREEExRate	30	4	4	51.89[0.00]	20.14[0.22]	3.78[0.77]	31.75[0.01]	16.36[0.13]	3.78[0.77]
NetTaxes	30	4	4	40.54[0.01]	17.97[0.10]	8.61[0.06]	22.56[0.05]	9.36[0.40]	8.61[0.06]	

OPP	30	4	4	34.40[0.01]	7.47[0.52]	0.86[0.35]	26.93[0.01]	6.61[0.54]	0.86[0.35]
Spread	32	2	2	35.48[0.05]	12.09[0.44]	3.38[0.51]	23.39[0.04]	8.71[0.46]	3.38[0.51]
UrbanPop	36	2	4	47.71[0.02]	21.56[0.16]	4.39[0.69]	26.16[0.05]	17.17[0.10]	4.39[0.69]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

Table 9.2: Cointegration test results: NBFIs and stock market value traded

CV	Obs	K	A	Trace Statistic			Maximum Eigen Value			
				r<0	r<1	r<2	r<0	r<1	r<2	
Egypt	Agric	29	2	4	51.90[0.01]	15.83[0.51]	5.86[0.48]	36.07[0.00]	9.97[0.62]	5.86[0.48]
	DepositR	29	2	2	43.35[0.01]	17.69[0.11]	5.27[0.25]	25.66[0.02]	12.41[0.16]	5.27[0.25]
	Elec	28	2	3	33.64[0.02]	8.53[0.41]	1.97[0.16]	25.11[0.01]	6.57[0.54]	1.97[0.16]
	ElecPecapita	28	2	3	32.18[0.03]	9.14[0.35]	1.65[0.20]	23.04[0.03]	7.49[0.43]	1.65[0.20]
	ER_end	29	2	4	57.69[0.01]	21.87[0.15]	9.60[0.15]	35.82[0.00]	12.27[0.39]	9.60[0.15]
	Exports	29	2	3	40.36[0.00]	7.84[0.48]	3.47[0.06]	32.52[0.00]	4.37[0.82]	3.47[0.06]
	GasRents	29	2	4	44.26[0.04]	14.77[0.59]	4.43[0.68]	29.49[0.02]	10.34[0.58]	4.43[0.68]
	GvtCons	28	3	4	51.92[0.01]	21.33[0.17]	8.16[0.24]	30.59[0.01]	13.16[0.32]	8.16[0.24]
	Industr	28	3	2	56.04[0.00]	19.17[0.07]	5.75[0.21]	5.75[0.21]	13.41[0.12]	5.75[0.21]
	NetTaxes	27	4	4	53.41[0.00]	24.92[0.07]	5.80[0.49]	28.49[0.02]	19.12[0.05]	5.80[0.49]
	OPP	28	3	2	44.15[0.00]	13.88[0.30]	4.08[0.40]	30.26[0.00]	9.81[0.35]	4.08[0.40]
	Spread	29	2	4	55.91[0.00]	25.45[0.06]	8.50[0.21]	30.45[0.01]	16.95[0.10]	8.50[0.21]
	Tel	29	2	3	41.29[0.00]	13.26[0.11]	3.36[0.07]	28.03[0.00]	9.91[0.22]	3.36[0.07]
	Tel100	29	2	2	40.61[0.01]	13.40[0.33]	3.36[0.52]	27.21[0.01]	10.04[0.33]	3.36[0.52]
	UrbanPop	29	2	4	54.82[0.00]	25.02[0.06]	8.58[0.21]	29.80[0.01]	16.44[0.13]	8.58[0.21]
Nigeria	Exports	29	3	4	46.43[0.02]	19.62[0.25]	7.37[0.31]	26.82[0.04]	12.24[0.39]	7.37[0.31]
	GCF	28	4	4	52.17[0.00]	16.30[0.47]	6.50[0.39]	35.87[0.00]	9.70[0.65]	6.60[0.39]
South Africa	None									

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

Table 9.3: Cointegration test results: NBFIs and bank credit to the private sector

CV	Obs	K	A	Trace Statistic			Maximum Eigen Value			
				r<0	r<1	r<2	r<0	r<1	r<2	
Egypt	Agric	39	3	3	48.13[0.01]	20.73[0.19]	7.58[0.29]	27.39[0.03]	13.15[0.32]	7.58[0.29]
	Exports	38	3	2	53.07[0.00]	19.78[0.06]	4.25[0.38]	33.29[0.00]	15.53[0.06]	4.25[0.38]
	GasRents	38	3	4	59.91[0.00]	20.23[0.21]	5.52[0.52]	39.68[0.00]	14.71[0.21]	5.52[0.52]
	Industr	37	4	3	33.35[0.02]	12.02[0.16]	1.10[0.30]	1.10[0.30]	10.93[0.16]	1.10[0.30]
	OilRents	37	4	3	38.29[0.00]	12.86[0.12]	2.28[0.13]	25.43[0.01]	10.58[0.17]	2.28[0.13]
	Tel	31	2	2	36.44[0.04]	9.11[0.73]	1.81[0.82]	27.33[0.00]	7.30[0.63]	1.81[0.82]
	Tel100	31	2	2	35.92[0.04]	8.22[0.81]	1.70[0.82]	27.70[0.01]	6.53[0.73]	1.70[0.84]
Nigeria	Agric	28	4	2	46.20[0.00]	13.18[0.35]	1.22[0.92]	33.01[0.00]	11.96[0.19]	1.22[0.92]
	NetTaxes	28	4	3	36.55[0.01]	9.36[0.33]	0.01[0.92]	27.19[0.01]	9.35[0.26]	0.01[0.92]
	OPP	37	5	2	46.23[0.00]	16.26[0.16]	7.04[0.12]	29.96[0.00]	9.22[0.41]	7.04[0.12]
	UrbanPop	38	4	2	61.05[0.00]	16.88[0.14]	6.63[0.15]	44.17[0.00]	10.25[0.31]	6.63[0.15]
South Africa	CPI	39	3	2	53.70[0.00]	19.123[0.07]	7.67[0.10]	34.58[0.00]	11.45[0.22]	7.67[0.10]
	Exports	39	3	4	50.59[0.01]	13.99[0.66]	4.85[0.62]	36.61[0.00]	9.14[0.71]	4.85[0.62]

GvtCons	39	3	4	45.05[0.00]	15.83[0.24]	4.78[0.20]	29.23[0.00]	11.05[0.51]	4.78[0.20]
Industr	39	3	3	41.28[0.00]	18.46[0.68]	5.35[0.88]	5.35[0.88]	13.11[0.60]	5.35[0.88]
OPP	39	3	4	39.74[0.00]	16.86[0.64]	4.38[0.63]	22.89[0.00]	12.48[0.68]	4.38[0.63]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

Table 9.4: Cointegration test results: NBFIs and deposit bank liquid liabilities

CV	Obs	K	A	Trace Statistic			Maximum Eigen Value			
				r<0	r<1	r<2	r<0	r<1	r<2	
Egypt	Agric	39	2	2	48.06[0.00]	15.54[0.20]	7.41[0.11]	32.51[0.00]	8.14[0.53]	7.41[0.11]
	OilRents	38	3	2	49.61[0.00]	14.85[0.24]	4.58[0.33]	34.76[0.00]	10.27[0.31]	4.58[0.33]
	PDensity	38	3	3	49.62[0.00]	8.05[0.46]	1.56[0.21]	41.57[0.00]	6.50[0.55]	1.56[0.21]
	Pop	38	3	3	49.62[0.00]	8.05[0.46]	1.56[0.21]	41.57[0.00]	6.50[0.55]	1.56[0.21]
	Spread	31	5	2	46.58[0.00]	18.03[0.10]	5.00[0.28]	28.55[0.00]	13.03[0.13]	5.00[0.28]
	Tel	31	2	3	39.74[0.00]	6.78[0.60]	1.84[0.17]	32.95[0.00]	4.94[0.75]	1.84[0.17]
	Tel100	31	2	2	42.97[0.01]	8.38[0.79]	1.77[0.82]	34.59[0.00]	6.61[0.72]	1.77[0.82]
Nigeria	DepositR	37	5	4	57.52[0.00]	21.24[0.17]	8.75[0.20]	36.29[0.00]	12.49[0.37]	8.75[0.20]
	OPP	36	6	4	61.13[0.00]	25.64[0.05]	7.60[0.30]	35.48[0.00]	18.08[0.08]	7.60[0.29]
South Africa	Imports	36	6	4	44.52[0.04]	19.45[0.43]	6.68[0.52]	25.08[0.03]	12.77[0.48]	6.68[0.52]
	LendingR	38	4	2	48.69[0.02]	19.31[0.17]	8.44[0.12]	29.38[0.03]	10.87[0.44]	8.44[0.12]

Notes: See Table 4.1 for definition of control variables. CV – Control variables. Obs – observations. Parentheses [] are used to denote the relevant probability values for the corresponding number of cointegrating vectors for each model.

Source: Compiled by author

Egypt

Of the 88 models estimated to establish the existence of a long-run relationship between NBFIs, stock markets and bank development, almost half of them show the existence of such a relationship. Specifically, 13 models show the existence of cointegration between NBFIs and stock market capitalisation, 16 models show the existence of cointegration between NBFIs and stock market value traded, and seven models show the existence of cointegration both between NBFIs and bank credit to the private sector, and between NBFIs and bank liquid liabilities. The results suggest that the long-run relationship between NBFIs and stock market development is much stronger than that between NBFIs and bank development in Egypt.

Nigeria

For Nigeria, only 12 models showing the relationship between NBFIs, stock market and bank development were reported. Four models show the existence of cointegration between NBFIs and stock market capitalisation. Two models show the existence of cointegration between NBFIs and stock market value traded, four models show the existence of cointegration between

NBFIs and bank credit to the private sector, and two models show the existence of cointegration between NBFIs and bank liquid liabilities. Overall, although the evidence is weak, it suggests a stronger relationship between NBFIs, stock market capitalisation and credit to the private sector than that between NBFIs, stock market value traded and bank liquid liabilities.

South Africa

In South Africa, a total of 21 models were reported as showing the existence of a long-run relationship between NBFIs, stock market and bank development. There is no evidence suggesting a relationship between NBFIs and stock market value traded. The relationship between NBFIs and stock market capitalisation is the strongest, with 15 models reported. Five models show the existence of cointegration between NBFIs and bank credit to the private sector, and two models show the existence of cointegration between NBFIs and bank liquid liabilities.

9.4.2. Weak exogeneity test results: causality between NBFIs, stock market and bank development

In this section, we assess the direction of causality between the variables of interest based on the weak exogeneity test results.

Table 9.5: Weak exogeneity test results: NBFIs and stock market capitalisation

	CV	Obs	K	A	SC	NBFI	SC↔NBFI	SC→NBFI	SC←NBFI
Egypt	Agric	29	2	2	0.08[0.78]	17.01[0.00]	No	Yes	No
	DepositR	29	2	2	0.09[0.77]	3.29[0.07]	No	Yes	No
	Elec	28	2	3	0.14[0.71]	14.33[0.00]	No	Yes	No
	ElecPecapita	28	2	2	0.24[0.62]	14.40[0.00]	No	Yes	No
	ER_end	28	3	4	1.77[0.18]	6.74[0.01]	No	Yes	No
	Exports	29	2	4	0.52[0.47]	13.66[0.00]	No	Yes	No
	GasRets	29	2	4	0.02[0.88]	12.13[0.00]	No	Yes	No
	GvtCons	28	3	4	0.15[0.70]	6.76[0.01]	No	Yes	No
	Imports	29	2	3	2.97[0.08]	8.64[0.00]	No	Yes	No
	LendingR	29	2	2	0.10[0.75]	12.28[0.00]	No	Yes	No
	NetTaxes	27	4	4	2.76[0.10]	8.54[0.00]	No	Yes	No
	OPP	27	4	4	1.19[0.27]	14.49[0.00]	No	Yes	No
	Spread	28	3	2	0.25[0.62]	12.60[0.00]	No	Yes	No
Nigeria	ER_av	29	3	4	0.02[0.89]	5.39[0.02]	No	Yes	No
	ER_end	29	3	4	0.06[0.81]	6.05[0.01]	No	Yes	No
	Exports	29	3	4	0.04[0.83]	11.46[0.00]	No	Yes	No
	NetTaxes	29	3	4	0.36[0.55]	13.59[0.00]	No	Yes	No
South Africa	DepositR	34	3	3	10.04[0.00]	1.19[0.27]	No	No	Yes
	Elec	34	2	4	11.36[0.00]	0.57[0.45]	No	No	Yes
	ElecPecapita	34	2	4	12.25[0.00]	0.50[0.48]	No	No	Yes
	ER_end	35	3	3	9.51[0.00]	0.80[0.37]	No	No	Yes
	Exports	36	2	3	15.88[0.00]	0.17[0.68]	No	No	Yes
	GCF	36	2	3	2.82[0.09]	0.11[0.74]	No	No	Yes

GvtCons	36	2	3	22.78[0.00]	0.38[0.54]	No	No	Yes
Imports	36	2	3	17.33[0.00]	0.15[0.70]	No	No	Yes
MRents	36	2	3	15.372[0.00]	0.00[0.98]	No	No	Yes
NEREEExRate	30	4	4	11.28[0.00]	1.01[0.31]	No	No	Yes
NetTaxes	30	4	4	8.67[0.00]	1.44[0.23]	No	No	Yes
OPP	30	4	4	18.11[0.00]	0.16[0.69]	No	No	Yes
Spread	32	2	2	16.66[0.00]	1.14[0.29]	No	No	Yes
UrbanPop	36	2	4	10.56[0.00]	0.05[0.82]	No	No	Yes

Notes: CV – Control Variables. SC – Stock market capitalisation. NBF \leftrightarrow SC implies bi-directional causality; NBF \rightarrow SC implies causality running from NBF \rightarrow stock market capitalisation and NBF \leftarrow SC implies causality running from stock market capitalisation to NBF \leftarrow .

Source: Compiled by author

Table 9.6: Weak exogeneity test results: NBFIs and stock market value traded

	CV	Obs	K	A	VT	NBFI	VT \leftrightarrow NBFI	VT \rightarrow NBFI	VT \leftarrow NBFI
Egypt	Agric	29	2	4	0.55[0.46]	17.46[0.00]	No	Yes	No
	DepositR	29	2	2	2.64[0.10]	11.73[0.00]	No	Yes	No
	Elec	28	2	3	0.95[0.33]	13.98[0.00]	No	Yes	No
	ElecPecapita	28	2	3	1.28[0.26]	12.91[0.00]	No	Yes	No
	ER_end	29	2	4	0.08[0.78]	11.32[0.00]	No	Yes	No
	Exports	29	2	3	0.56[0.45]	4.69[0.03]	No	Yes	No
	GasRents	29	2	4	0.82[0.36]	10.11[0.00]	No	Yes	No
	GvtCons	28	3	4	0.44[0.51]	6.31[0.01]	No	Yes	No
	Industr	28	3	2	0.36[0.55]	4.81[0.03]	No	Yes	No
	NetTaxes	27	4	4	8.36[0.00]	5.55[0.02]	Yes	Yes	Yes
	OPP	28	3	2	1.91[0.17]	5.10[0.02]	No	Yes	No
	Spread	29	2	4	1.54[0.21]	9.84[0.00]	No	Yes	No
	Tel	29	2	3	1.70[0.19]	7.34[0.01]	No	Yes	No
	Tel100	29	2	2	1.21[0.27]	7.23[0.01]	No	Yes	No
UrbanPop	29	2	4	0.24[0.62]	10.42[0.00]	No	Yes	No	
Nigeria	Exports	29	3	4	6.26[0.01]	4.26[0.04]	No	Yes	No
	GCF	28	4	4	3.30[0.07]	2.18[0.14]	No	Yes	No
South Africa	None								

Notes: CV – Control Variables. VT – Stock market value traded. NBF \leftrightarrow VT implies bi-directional causality; NBF \rightarrow VT implies causality running from NBF \rightarrow stock market value traded and NBF \leftarrow VT implies causality running from stock market value traded to NBF \leftarrow .

Source: Compiled by author

Table 9.7: Weak exogeneity test results: NBFIs and bank credit to the private sector

	CV	Obs	K	A	PC	NBFI	PC \leftrightarrow NBFI	PC \rightarrow NBFI	PC \leftarrow NBFI
Egypt	Agric	39	3	3	0.22[0.64]	18.92[0.00]	No	Yes	No
	Exports	38	3	2	2.89[0.09]	3.71[0.05]	No	Yes	No
	GasRents	38	3	4	3.06[0.08]	2.85[0.09]	No	Yes	No
	Industr	37	4	3	2.75[0.10]	1.49[0.22]	NO	No	Yes
	OilRents	37	4	3	1.86[0.17]	15.35[0.00]	No	Yes	No
	Tel	31	2	2	5.46[0.02]	0.00[1.00]	No	No	Yes
	Tel100	31	2	2	5.53[0.02]	0.01[0.91]	No	No	Yes
Nigeria	Agric	28	4	2	11.85[0.00]	0.68[0.41]	No	Yes	No
	NetTaxes	28	4	3	12.71[0.00]	0.37[0.54]	No	Yes	No
	OPP	37	5	2	2.78[0.09]	1.52[0.22]	No	Yes	No

	UrbanPop	38	4	2	4.04[0.04]	2.97[0.09]	Yes	Yes	Yes
South Africa	CPI	39	3	2	4.54[0.03]	0.04[0.83]	No	No	Yes
	Exports	39	3	4	5.79[0.02]	0.76[0.38]	No	No	Yes
	GvtCons	39	3	4	7.76[0.01]	0.14[0.70]	No	No	Yes
	Industr	39	3	3	8.12[0.00]	2.19[0.14]	Yes	No	Yes
	OPP	39	3	4	3.90[0.05]	0.02[0.88]	No	No	Yes

Notes: CV – Control Variables. PC – credit to the private sector. NBF \leftrightarrow PC implies bi-directional causality; NBF \rightarrow PC implies causality running from NBF \rightarrow credit to the private sector and NBF \leftarrow PC implies causality running from credit to the private sector to NBF \leftarrow .

Source: Compiled by author

Table 9.8: Weak exogeneity test results: NBFIs and deposit bank liquid liabilities

	CV	Obs	K	A	LL	NBFI	LL \leftrightarrow NBFI	LL \rightarrow NBFI	LL \leftarrow NBFI
Egypt	Agric	39	2	2	4.44[0.04]	5.13[0.02]	No	Yes	No
	OilRents	38	3	2	0.26[0.61]	7.07[0.01]	No	Yes	No
	PDensity	38	3	3	2.91[0.09]	0.85[0.36]	No	No	Yes
	Pop	38	3	3	2.91[0.09]	0.85[0.36]	No	No	Yes
	Spread	31	5	2	4.72[0.03]	0.86[0.35]	No	No	Yes
	Tel	31	2	3	15.15[0.00]	0.04[0.84]	No	No	Yes
	Tel100	31	2	2	14.55[0.00]	0.03[0.86]	No	No	Yes
Nigeria	DepositR	37	5	4	4.66[0.03]	2.08[0.15]	No	Yes	No
	OPP	36	6	4	8.68[0.00]	9.42[0.00]	Yes	Yes	Yes
South Africa	Imports	36	6	4	6.69[0.01]	5.38[0.02]	No	Yes	No
	LendingR	38	4	2	12.50[0.00]	0.46[0.50]	No	No	Yes

Notes: CV – Control Variables. LL – bank deposits. NBF \leftrightarrow LL implies bi-directional causality; NBF \rightarrow implies causality running from NBF \rightarrow credit to the private sector and NBF \leftarrow PC implies causality running from credit to the private sector to NBF \leftarrow .

Source: Compiled by author

Egypt

The evidence reported in Tables 9.5 to 9.8 suggest that the causality predominantly runs from stock market and bank development to NBFIs. All the models based on stock market capitalisation and those based on stock market value traded show that causality strictly runs from stock market development to NBFIs.

However, when we consider the relationship between NBFIs and bank development, causality appears to run predominantly from NBFIs to bank development. With regard to bank credit and NBFIs, evidence slightly suggests that causality runs from bank credit to NBFIs. However, when bank deposits are used, evidence strongly shows that causality runs from NBFIs to bank development. Thus, overall, the weight of the evidence suggests that causality runs from NBFIs to bank development.

Nigeria

Although the evidence in respect of Nigeria is weak, it shows that causality runs from both stock markets and banks to NBFIs. All the three models based on stock market capitalisation, stock market value traded and bank credit show that causality strictly runs from banks and stock market to NBFIs. The model based on bank deposits also shows causality running from bank development to NBFIs, although one of the two models show bidirectional causality. Overall, the evidence suggests that the direction of causality in Nigeria predominantly runs from stock market and bank development to NBFIs.

South Africa

Evidence in respect of South Africa shows that causality predominantly runs from NBFIs development to stock market and bank development. Specifically, all the models in respect of stock market capitalisation and bank credit show that causality strictly runs from NBFIs to stock markets and bank development. However, no model was reported to show causality between NBFIs and stock market value traded. Only two models reported causality between bank deposits and NBFIs in South Africa, which shows that the evidence is weak and mixed.

The following section reports on the coefficients and economic significance of the long-run parameters of the relationship between NBFIs, stock markets and bank development.

9.4.3. Long-run relationship between NBFIs, stock market and bank development

The coefficients of the long-run relationship between NBFIs, stock markets and bank development are presented in Tables 9.9 to 9.12 below, which also report the coefficients of the error correction term. The coefficient of the error correction term describes the speed of adjustment by the dependent variable back to equilibrium, after a shock in the short run. The third column in the table presents the long-run coefficient and its corresponding t-statistic, while the fourth column reports the coefficients of the error correction term.

Table 9.9: Long-run parameters between NBFIs and stock market capitalisation

	CV	SC	NBFI	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Agric	0.20[4.60]***		1.65[4.16] ***	-0.48[-4.92]	0.47	9.76[0.37]	50.72[0.37]
	DepositR	0.12[1.29]		0.24[0.58]	-0.35[-3.87]	0.40	8.87[0.45]	59.95[0.12]
	Elec	0.28[2.16]**		-0.51[-2.07] **	-0.32[-4.26]	0.42	9.37[0.40]	53.41[0.27]
	ElecPecapita	0.32[2.35]***		-0.84[-2.33] **	-0.30[-4.23]	0.42	9.89[0.36]	52.77[0.29]
	ER_end	0.20[1.98]**		-0.19[-1.54] *	-0.52[-3.74]	0.36	9.35[0.41]	93.21[0.23]
	Exports	0.11[2.10]**		-0.34[-4.25] ***	-0.55[-4.65]	0.58	7.13[0.62]	31.74[0.97]
	GasRets	0.25[2.24]***		-0.11[-1.36] *	-0.38[-4.54]	0.46	7.76[0.56]	33.80[0.94]
	GvtCons	0.28[2.27]**		0.17[0.54]	-0.49[-3.79]	0.32	6.97[0.64]	71.14[0.84]

	Imports	0.01[0.27]	-0.61[-4.67] ***	-0.45[-3.37]	0.35	10.31[0.33]	32.66[0.96]
	LendingR	-0.08[-1.77]**	2.09[5.46] ***	-0.53[-5.53]	0.56	8.28[0.51]	36.52[0.89]
	NetTaxes	0.11[1.08]	-0.01[-0.09]	-0.56[-4.07]	0.47	11.34[0.25]	125.15[0.36]
	OPP	0.11[1.96]**	-0.49[-4.78] ***	-0.53[-4.46]	0.52	9.38[0.41]	33.87[0.94]
	Spread	0.04[3.02]***	-0.43[-5.84] ***	-0.89[-5.41]	0.60	5.98[0.74]	87.16[0.39]
Nigeria	ER_av	-0.51[-1.00]	-0.92[-3.36] ***	-0.56[-3.83]	0.32	8.00[0.53]	72.83[0.80]
	ER_end	-0.69[-1.19]	-1.00[-3.19] ***	-0.50[-3.85]	0.30	9.37[0.40]	79.42[0.62]
	Exports	-0.58[-0.95]	-1.92[-3.24] ***	-0.44[-4.05]	0.41	8.34[0.50]	34.56[0.77]
	NetTaxes	-0.44[-1.05]	-1.69[-4.01] ***	-0.56[-4.33]	0.40	3.00[0.96]	43.76[0.38]
South Africa	DepositR	0.50[10.60]***	0.27[2.88] ***	-0.98[-3.90]	0.36	15.56[0.08]	84.27[0.47]
	Elec	0.56[1.69]**	0.92[2.35] ***	-0.77[-5.13]	0.43	6.22[0.72]	56.28[0.19]
	ElecPecapita	0.65[1.97]**	1.22[2.78] ***	-0.80[-5.20]	0.44	6.83[0.65]	58.03[0.15]
	ER_end	0.34[2.05]**	0.13[0.97]	-0.77[-3.88]	0.32	11.57[0.24]	96.30[0.17]
	Exports	0.47[8.74]***	-0.82[-2.89] ***	-0.54[-4.36]	0.34	5.27[0.81]	59.30[0.13]
	GCF	0.18[0.63]	-0.34[-1.54] *	-0.68[-4.70]	0.37	15.80[0.07]	40.48[0.77]
	GvtCons	0.34[5.64]***	1.62[3.91] ***	-0.67[-5.32]	0.44	9.07[0.43]	38.02[0.85]
	Imports	0.57[11.25]***	-0.61[-3.21] ***	-0.63[-4.77]	0.37	13.58[0.14]	48.02[0.47]
	MRents	0.50[7.92]***	-0.02[-0.36]	-0.53[-4.12]	0.30	8.68[0.47]	49.04[0.43]
	NEREEExRate	0.25[1.09]	-0.18[-1.44] *	-0.84[-4.43]	0.37	7.35[0.60]	58.43[0.14]
	NetTaxes	0.25[3.20]***	1.11[3.76] ***	-0.81[-5.23]	0.44	12.17[0.20]	56.41[0.19]
	OPP	0.53[10.87]***	-0.72[-3.10] ***	-0.60[-4.69]	0.37	10.31[0.33]	49.35[0.42]
	Spread	0.44[10.55]***	-0.14[-1.43] *	-0.82[-5.52]	0.45	11.90[0.22]	43.32[[0.66]
	UrbanPop	1.02[4.01]***	-3.72[-2.41] **	-0.80[-4.38]	0.36	5.37[0.80]	37.14[0.87]

Notes: SC – coefficient of stock market capitalisation when causality runs from NBFI. NBFI – coefficient of NBFI when causality runs from stock market capitalisation to NBFI. CV – Control variable. ECM – Error Correction Model. Ad.R² – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** -1%; ** -5%; and * -10%

Source: Compiled by author

Table 9.10: Long-run parameters between NBFIs and stock market value traded

	CV	VT	NBFI	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Agric	0.15[2.67]***		-0.31[-0.46]	-0.42[-5.82]	0.57	9.00[0.44]	44.92[0.60]
	DepositR	-0.01[-0.23]		-0.24[-0.82]	-0.38[-4.28]	0.43	12.38[0.19]	54.01[0.26]
	Elec	0.14[1.96]**		-0.56[-1.83] *	-0.35[-4.62]	0.47	10.82[0.29]	45.08[0.60]
	ElecPecapita	0.12[1.73]**		-0.67[-1.65] *	-0.35[-4.39]	0.45	10.77[0.29]	45.05[0.59]
	ER_end	0.14[2.97]***		-0.31[-3.69] ***	-0.45[-5.82]	0.62	8.92[0.45]	47.56[0.49]
	Exports	0.02[1.80]**		-0.07[-0.54]	-0.43[-2.79]	0.36	13.38[0.15]	84.41[0.47]
	GasRents	0.10[1.47]*		0.05[0.71]	-0.38[-4.35]	0.44	9.74[0.37]	34.17[0.93]
	GvtCons	0.20[2.49]***		-0.26[-0.75]	-0.34[-3.77]	0.32	15.53[0.08]	99.08[0.12]
	Industr	0.16[6.24]***		-2.91[-6.08] ***	-0.27[-3.54]	0.50	9.81[0.37]	80.36[0.59]
	NetTaxes	0.83[4.15]***	1.20[1.99]**	1.68[5.79] ***	-0.15[-2.21]	0.30	13.16[0.16]	125.04[0.36]
	OPP	0.01[1.14]		-0.14[-0.96]	-0.41[-2.51]	0.31	11.21[0.26]	77.82[0.67]
	Spread	0.05[1.04]		-0.25[-1.94] *	-0.45[-4.40]	0.53	9.88[0.36]	53.04[0.29]
	Tel	2.56[5.86]***		-6.15[-6.20] ***	-0.04[-3.45]	0.32	7.76[0.56]	41.94[0.72]
	Tel100	1.99[5.65]***		-5.56[-5.98] ***	-0.05[-3.52]	0.34	8.62[0.47]	43.07[0.67]
	UrbanPop	0.12[1.56]*		-0.76[-0.35]	-0.42[-5.13]	0.50	9.69[0.38]	41.24[0.74]
Nigeria	Exports	0.06[0.53]		-0.39[-1.22]	-0.65[-3.32]	0.37	11.92[0.22]	[0.22][0.73]
	GCF	0.20[2.34]***		-0.67[-1.49] *	-0.99[-3.18]	0.37	9.39[0.40]	117.64[0.54]
South Africa	None							

Notes: VT – coefficient of stock market value traded when causality runs from NBFI. NBFI – coefficient of NBFI when causality runs from stock market value traded to NBFI. CV – Control variable. ECM – Error Correction

Model. $Ad.R^2$ – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** -1%; ** - 5%; and * - 10%

Source: Compiled by author

Table 9.11: Long-run parameters between NBFIs and bank credit

	CV	PC	NBFI	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Agric	0.61[3.19]***		-2.19[-4.72] ***	-0.33[-5.58]	0.59	10.57[0.31]	61.53[0.09]
	Exports	0.81[3.57]***		1.33[2.84] ***	-0.13[-3.09]	0.36	8.82[0.45]	96.21[0.17]
	GasRents	0.70[1.85]**		0.30[3.52] ***	-0.19[-3.52]	0.41	7.37[0.60]	105.15[0.06]
	Industr		1.06[6.30]***	10.93[2.60] ***	-1.10[-1.78]	0.32	11.13[0.27]	138.00[0.13]
	OilRents	0.72[6.67]***		0.18[2.10] **	-0.40[-4.95]	0.53	3.84[0.92]	132.14[0.22]
	Tel		-0.47[-3.58]***	0.41[10.65] ***	-0.11[-2.40]	0.54	5.33[0.80]	54.87[0.23]
	Tel100		-0.41[-3.36]***	0.46[11.05] ***	-0.12[-2.41]	0.54	5.29[0.81]	55.39[0.22]
Nigeria	Agric	1.38[4.80]***		1.15[1.19]	-0.60[-3.61]	0.56	3.25[0.95]	125.12[0.36]
	NetTaxes	1.39[3.47]***		0.02[0.16]	-0.63[-3.89]	0.54	15.62[0.08]	109.54[0.74]
	OPP	2.21[12.07]***		0.17[0.79]	-0.47[-2.88]	0.51	9.66[0.38]	156.01[0.48]
	UrbanPop	3.64[7.29]***		-2.40[-3.14] ***	-0.24[-2.50]	0.30	9.23[0.42]	116.20[0.58]
South Africa	CPI		0.15[1.76]**	0.04[1.06]	-0.66[-3.96]	0.31	15.91[0.07]	86.42[0.41]
	Exports		0.18[1.97]**	0.01[0.05]	-0.58[-3.19]	0.32	10.86[0.29]	95.79[0.18]
	GvtCons		0.09[0.81]	-0.05[-0.22]	-0.71[-4.13]	0.32	15.77[0.07]	64.13[0.95]
	Industr		0.23[3.27]***	0.03[0.11]	-0.52[-3.00]	0.31	7.81[0.55]	90.63[0.29]
	OPP		0.11[1.17]	0.05[0.44]	-0.65[-3.72]	0.30	9.18[0.42]	91.44[0.27]

Notes: PC – coefficient of credit to the private sector when causality runs from NBFI. NBFI – coefficient of NBFI when causality runs from credit to the private sector to NBFI. CV – Control variable. ECM – Error Correction Model. $Ad.R^2$ – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** -1%; ** - 5%; and * - 10%

Source: Compiled by author

Table 9.12: Long-run parameters between NBFIs and bank deposits

	CV	LL	NBFI	CV	ECM Term	Ad. R ²	S.Cor.	Hetero.
Egypt	Agric	1.03[4.24]***		0.05[0.10]	-0.20[-2.66]	0.35	10.71[0.30]	58.52[0.14]
	OilRents	1.09[4.72]***		0.22[1.83]	-0.19[-3.63]	0.37	5.23[0.81]	92.41[0.25]
	PDensity		0.65[2.29]***	-1.62[-2.16]	-0.05[-1.71]	0.33	13.37[0.15]	97.07[0.16]
	Pop		0.65[2.29]***	-1.62[-2.16]	-0.05[-1.71]	0.33	13.37[0.15]	97.07[0.16]
	Spread		0.34[3.21]***	-0.62[-5.00]	-0.43[-5.31]	0.65	14.34[0.11]	143.98[0.75]
	Tel		0.29[2.29]***	0.07[1.63]	-0.18[-4.72]	0.61	10.38[0.32]	52.20[0.31]
	Tel100		0.29[2.40]***	0.08[1.78]	-0.18[-4.97]	0.63	11.22[0.26]	52.28[0.31]
Nigeria	DepositR	1.46[8.02]***		0.72[4.27]	-0.77[-2.26]	0.30	10.94[0.28]	173.48[0.16]
	OPP	1.06[2.34]***		1.36[2.26]	-0.62[-4.70]	0.50	16.41[0.06]	193.62[0.45]
South Africa	Imports	2.42[3.42]***		-0.52[-1.80]	-0.62[-2.03]	-0.34	9.54[0.39]	198.85[0.35]
	LendingR		-0.04[-1.91]**	-0.26[-4.73]	-0.77[-4.11]	0.31	7.90[0.54]	117.43[0.55]

Notes: LL – coefficient of bank deposits when causality runs from NBFI. NBFI – coefficient of NBFI when causality runs from bank deposits to NBFI. CV – Control variable. ECM – Error Correction Model. $Ad.R^2$ – Adjusted R. S.Cor. – Serial Correlation. Hetero. – Heteroscedasticity. Significance: *** -1%; ** - 5%; and * - 10%

Source: Compiled by author

Egypt

Evidence on long-run parameters presented above shows that the relationship between NBFIs, stock markets and bank development is positive and significant in Egypt, regardless of which measure is used. Evidence presented in Tables 9.9 and 9.12 show that the influence of stock market capitalisation and stock market value traded on NBFIs is positive and significant. The results in respect of Egypt suggest that NBFIs follow the development of stock markets. Thus NBFIs develop instruments in response to investment opportunities, or the need to satisfy the needs of stock markets. The causality of the relationship between NBFIs and stock markets can be influenced by portfolio restrictions on investments by NBFIs (pension funds). In Egypt, pension funds are allowed to invest only up to 20% of their assets in equities (OECD, 2015). Such restriction may influence the nature of the relationship between NBFIs and stock markets.

The relationship between NBFIs and bank credit is positive and significant, but mixed regarding the direction of causality. However, with regard to bank deposits, the evidence shows that NBFIs positively influence growth of bank deposits. The positive influence of NBFIs on bank deposits could be explained by the fact that pension funds in Egypt are allowed to keep up to 25% of their assets as bank deposits (OECD, 2015). Given the restriction on investment in equities, these portfolio restrictions are likely to see pension funds keeping a significant portion of their assets as bank deposits.

Overall, results presented show that stock market development positively influences NBFIs, while NBFIs influence the mobilisation of bank deposits in Egypt.

Nigeria

Although the evidence between NBFIs, stock markets and bank development is weak in Nigeria, it shows that a positive relations exists. The evidence shows that the influence of stock market value traded, bank credit and bank deposits on NBFIs is positive and significant. However, evidence in respect of stock market capitalisation shows that such a relationship is not statistically significant.

There are four factors, among others, that may explain the weak relationship between stock markets, banks and NBFIs. Firstly, portfolio restrictions limit the amount of pension fund assets that can be invested in equities to 25% in Nigeria (OECD, 2015). Secondly, the low level of financial development in respect of stock markets, banks and NBFIs may suggest that such institutions are still below a certain threshold, after which they will start to positively reinforce

each other. Of the three countries in this sample, Nigeria has the least developed financial system. Thirdly, the weak and fragmented regulation of the financial sector in Nigeria may create opportunities for regulatory arbitrage, which may lead to poor corporate governance in the sector (FSRCC, 2017). Lastly, weaknesses inherent in the banking sector (bank crises) and the stock market (dominance by a few companies) may also affect the nature and significance of interlinkages between stock markets, banks and NBFIs.

South Africa

In South Africa, the impact of NBFIs on stock market capitalisation is positive and significant. The strong relationship between stock markets and NBFIs can be a result of regulatory restrictions which allow NBFIs to invest a significant portion (up to 75%) of their assets in equities (National Treasury, 2010).

The results presented above show that NBFIs positively influence the amount of bank credit that is extended to the private sector. The positive influence of NBFIs on bank credit might arise from both the competitive and complementary effect of NBFIs on banks. Firstly, NBFIs are allowed to invest up to 20% of their assets in real estate and 5% as loans (National Treasury, 2010). This suggests that by investing in these assets, NBFIs might be entering into space in which traditional banks used to operate comfortably. Such competition may have led banks to start lending more aggressively, which has led to over-indebtedness of borrowers in the country. The complementary relationship between NBFIs and bank credit might arise from the fact that NBFIs funds that are kept as bank deposits increase the liquidity of the banks, thus enabling them to lend more (Catalan, *et al.*, 2000).

However, evidence in respect of bank deposits is weak and mixed. The weak relationship between NBFIs and bank deposits may be a result of factors outside the interaction between the two, such as constrained consumers' disposable income (South African Reserve Bank, 2015 & 2017). Less disposable income implies that once consumers have paid their monthly commitments, which include pension and life cover policies, they remain with very little in the bank to spend, thus affecting growth of bank deposits. Lastly, no model was reported showing a relationship between stock market value traded and NBFIs.

Overall, evidence shows that in South Africa, NBFIs positively influence stock market capitalisation and the level of bank credit extended to the private sector.

9.5. Discussion of results

The weight of the evidence obtained from this study shows that the relationship between NBFIs, stock markets and banks is predominantly positive in all the three countries, regardless of the direction of causality. This implies that as each of the institutions develops it will support the growth of the other. This is in line with literature which proposes that banks, stock markets and NBFIs complement each other in a way that fosters financial development (Catalan, *et al.*, 2000).

The complementary relationship arises when banks facilitate transactions by NBFIs, with positive effects on both banks and NBFIs. Secondly, stock markets provide a vehicle through which NBFIs are listed and trade their shares on the stock exchanges. While this facilitates the growth of NBFIs, it also improves the depth and liquidity of stock markets. Lastly, financial innovation arises as a result of depositors demanding more liquid securities such as short-term deposits with banks to restore their liquidity.

In Egypt, evidence shows that the influence of stock market capitalisation and stock market value traded on the development of NBFIs is very strong and positive. This suggests that stock markets in Egypt are providing NBFIs with an opportunity to list or trade their shares (or of other companies), and invest their funds on the stock exchange. With regard to bank deposits, the evidence shows that NBFIs positively influence growth of bank deposits. This suggests that the 25% of pension funds which is allowable for keeping as bank deposits may be having a significant influence on the level of deposits in Egypt. According to Catalan, *et al.* (2000), in such a case, economic agents are motivated to demand more of liquid liabilities from banks to restore their liquidity, which is adversely affected by illiquid long-term assets offered by NBFIs.

In respect of Nigeria, although the evidence shows that the influence of stock market value traded, bank credit and bank deposits on NBFIs is positive and significant, such evidence is weak. In this case, stock markets provide NBFIs with opportunities to list and trade their shares on the stock exchange. Also, to the extent allowed by regulation, they also invest in shares of other companies. With regard to banks, it suggests that the 35% of pension funds that can be kept with the banks might be increasing the supply of loanable funds to the banks, thus resulting in a positive influence on bank credit. NBFIs can also benefit from instruments supplied by banks to facilitate transactions. However, the weaknesses in the bank and stock markets may impact on the nature and significance of their influence on economic growth.

What emerges from the evidence in respect of Egypt and Nigeria is that NBFIs are developing in response to the development of banks and stock markets. However, given that the level of bank and stock market development in these countries is low, it may suggest that these sectors are not generating sufficient impetus to cause significant growth of NBFIs. This may be explained by the lower level of development of NBFIs in these countries. On the other hand, it may also imply that NBFIs are not yet at a level where they can influence the development of other financial institutions, but are only responding to their needs.

In respect of South Africa, the evidence shows that NBFIs positively influence stock market capitalisation and the amount of bank credit that is extended to the private sector. In this case, NBFIs can list and/or facilitate listing on the stock exchanges by firms, thereby enhancing market capitalisation. For instance, Old Mutual and Sanlam are in the top 15 JSE firms by market capitalisation. In terms of Regulation 28 of the Pension Funds Act 1956, NBFIs are allowed to invest up to 75% of their assets in equities. Therefore, given the size of NBFIs in South Africa, such investments will have a significant impact on the stock market. With regard to bank credit, the results suggest that owing to the competitive effect of NBFIs towards banks, banks tend to lend more in order to fight off competition from NBFIs. On the other hand, given that NBFIs are allowed to keep up to 100% of their assets as bank balances, it implies that NBFIs are increasing the supply of loanable funds by banks, thus enabling banks to lend more.

9.6. Summary of findings and conclusions

Results obtained from this study show that the relationship between NBFIs, stock markets and banks is positive in all the three countries regardless of the direction of causality. Specifically, analysis shows that in Egypt, it is stock market capitalisation, stock market value traded and bank deposits that positively influence the development of NBFIs

In Nigeria, results show that stock markets and bank development positively influence the development of NBFIs. However, the direction of causality suggest that NBFIs are only developing in response to the development of stock markets and banks. Such a scenario may be explained by the low level of NBFIs development.

In South Africa, NBFIs positively influences stock development through capitalisation. On the other hand, NBFIs also influence bank development by enhancing credit to the private sector. This outcome can be explained by the fact that NBFIs in South Africa are so well developed that they can stimulate the development of other financial institutions such as stock markets and banks.

CHAPTER TEN

SUMMARY AND CONCLUSION

10.1. Introduction

Traditional bank lending has slowed down substantially as banks recover from the financial crisis, and adjust to tighter regulatory controls (International Monetary Fund, 2015; World Bank, 2015a). At the same time, the call to mobilise financial resources for the attainment of the SDGs and the Africa Agenda 2063 has grown louder (International Monetary Fund, 2015). Consequently, the need for more research to identify and understand untapped and underused sources of economic growth has become even more urgent (World Bank, 2013a; International Monetary Fund, 2015).

Unfortunately, although research on the finance-growth link is substantial, there seems to be no agreement on the channels and magnitude through which different institutions influence economic growth. Some of the previous results were obtained based on structural models, which results can be easily overturned by changing the information conditioning set (Levine & Renelt, 1992; Sala-I-Martin, 1997). In addition, researchers adopted a piecemeal approach wherein each study focuses on only one or two types of financial institution. Such a piecemeal approach suggests that other types of financial institution and the relationships among them, which are also central to understanding the finance-growth link, are omitted from the analysis. Omitting other types of institution and the relationships among them implies that the finance-growth link is either exaggerated or underestimated. Furthermore, research on the interlinkages has not received significant scholarship to shed more light on the finance growth link.

To this end, this thesis employs 8 measures of financial development covering banks, stock markets, NBFIs and the relative importance and size of banks and stock markets (financial structure) in the respective economies to understand both the direct and indirect linkages between financial development and economic growth. In order to improve robustness of the results, control variables are added one at a time to establish how the relationship between finance and economic growth changes under different conditions. Thus, altogether, we estimated 264 models for each country, thus 792 in total.

We summarise our findings from this study below.

The remainder of this chapter provides a summary and synthesis of the results, and proffers policy recommendations.

10.2. Summary of results

Firstly, results from our analysis show that the link between bank development and economic growth in all the three countries is weak and mixed. However, the underlying factors influencing such links are different for each country. This gives further support to the need for country-specific studies. Egypt is the only country to report overall results, though weak, which show some positive relationship between bank development and economic growth. The results for Nigeria and South Africa are not only mixed, but weak.

Secondly, analysis in respect of the relationship between stock market development and economic growth shows that such a relationship is positive in all the three countries, albeit with differing degrees of statistical significance. In Egypt, our results show that stock market development positively influences economic growth regardless of which measure is used. When using both stock market capitalisation and stock market value traded, our study concluded that stock markets in Egypt significantly contribute to economic growth. Results obtained in respect of Nigeria show that stock market value traded is likely to positively influence economic growth more than stock market capitalisation. The results for South Africa are surprisingly weak, given that this is the country with the deepest stock exchange in Africa, both regarding size and liquidity. In these circumstances, the study revealed that the relationship between stock market development and economic growth is likely to be positive and bidirectional, wherein economic growth causes stock market capitalisation, and stock market value traded causes economic growth.

Thirdly, results from this thesis show that there is potential for NBFIs to influence economic growth in Egypt and South Africa. In Nigeria, no evidence was found to show the influence of NBFIs on economic growth. Rather, the weak evidence that was found in respect of Nigeria suggests that economic growth will hinder the development of NBFIs.

Fourthly, in respect of financial structure, results show that in Egypt, the liquidity of the financial system is influenced by the growth of the economy, and does not in itself influence economic growth. However, when one considers financial structure from the perspective of relative size of different institutions, evidence suggest that size of institutions matters for economic growth in Egypt. In Nigeria, the weight of the evidence suggests that causality runs from economic growth to a bank-based financial structure, based on the S-Size measure. However, when the S-Activity ratio is used, results show that the liquidity of the stock markets strongly influences economic growth more than that of banks. The results based on the S-

Activity ratio in South Africa suggest that an increase in the liquidity of the stock market will spur greater economic growth compared to increasing credit to the private sector. On the other hand, when using the S-Size ratio, results show causality running from economic growth to financial structure, and is mixed.

Lastly, results obtained from this study show that the relationship between NBFIs, stock markets and banks is positive in all the three countries. In Egypt, it is stock market capitalisation, stock market value traded and bank deposits that positively influence the development of NBFIs. In respect of Nigeria, results show that stock market and bank development positively influence the development of NBFIs. Thus the direction of causality in Egypt and Nigeria suggests that NBFIs are developing in response to the development of stock markets and banks. Lastly, in South Africa, NBFIs positively influence stock development through capitalisation. NBFIs also influence bank development by enhancing credit to the private sector.

10.3. Synthesis of results

The results obtained in this thesis show that, given the different country characteristics and the level of financial development, the nature and significance of the relationship between financial development and economic growth is different in Egypt, Nigeria and South Africa. Moreover, the results showed that the channel through which financial development influences economic growth is different in each country.

10.3.1 Bank development and economic growth

Results and analysis presented above show that in all three countries, bank development is not the main channel through which financial development influences economic growth. Even in Egypt, where the results show a positive influence of bank development on economic growth, such influence is very weak. However, the factors explaining the weak influence of bank development on economic growth seem different in all three countries. The weak link between bank development and economic growth in all three countries suggests the need for policymakers to commit effort and resources to address all the structural factors which might be preventing finance from stimulating economic growth in their economies.

Although economic and financial sector reforms in Egypt might have helped to improve the efficiency of banks (Gebba & Ahmed, 2013; Elsayed, 2015), there are still a host of factors that prevent banks from fully promoting economic growth in that country. Firstly, despite being able to mobilise more deposits than Nigeria and South Africa, banks in Egypt are very

conservative when it comes to lending. The EFSA explained that, while the cautiousness of the Egyptian banks might have helped to insulate the banking sector from the financial crisis, it might have adversely affected investment in MSMEs, which ultimately affects their ability to promote economic growth (Egyptian Financial Supervisory Authority, 2017). This observation is in line with the findings by Beck and Cull (2013), who concluded that banks in Africa have large sums of liquid funds, but are not willing to lend to the private sector.

In Nigeria, a number of factors were identified as possible causes of the weak relationship between bank development and economic growth: firstly, weak regulatory systems and poor governance of the financial sector. Levine (2002) explained that a well-functioning legal system facilitates effective bank intermediation. In Nigeria, Sanusi (2012) explained that gaps in the regulatory framework, uneven supervision, and enforcement by the CBN were a major impediment to the effective functioning of the banking sector in Nigeria.

Secondly, the occurrence of banking crises in Nigeria during the periods 1991-1995 and 2009-2011 could have affected the ability of banks in promoting economic growth (Laeven & Valencia, 2012). Such crises could be a result of, among other factors, weak regulatory systems in Nigeria. During crisis periods, banks tend to reduce lending or increase the interest rate spreads, which might affect the ability of banks to efficiently intermediate funds between savers and lenders.

Lastly, the Nigerian banking system is the least developed in terms of bank deposits and bank credit to the private sector, in comparison to Egypt and South Africa. This suggests that Nigeria's banking system may not have reached the necessary threshold wherein the banks are capable of stimulating economic growth. Therefore policymakers should consider programmes that create a conducive environment that encourages the public to deposit money into the banking system, and incentivise banks to lend more to the productive sectors.

In South Africa, the weak influence of bank development is not a result of a low level of development of the sector, as in many African countries, but a result of over-indebtedness and poor quality of lending. More than half of credit to the private sector from banks goes to households, and makes up more than 52% of bank credit to the private sector (South African Reserve Bank, 2017). While credit to households should improve aggregate demand, it should be noted that when the households are over-indebted, the increase in aggregate demand may actually decline as the cost of credit becomes very high. Secondly, over-indebtedness may also affect the efficiency of the banking system. Currently, households' debt is more than 77% of

their disposable income (South African Reserve Bank, 2016). This may have adverse consequences for the economy if not properly managed.

Given the central role that banks played during the industrialisation of European countries (Bagehot, 1874), policymakers in Africa should be worried as to why their economies cannot reap similar benefits from banks in their countries. In this thesis, we call for a renewed resolve and determination by policymakers to address all the factors potentially impeding banks from promoting economic growth in their countries.

The next assessment focused on the relationship between stock market development and economic growth.

10.3.2 Stock market development and economic growth

The results from our analysis show that stock markets are an important channel through which financial development influences economic growth in Egypt. In Nigeria, liquidity of stock markets plays a significant role in stimulating economic growth, while stock market capitalisation does not matter for economic growth. In South Africa, neither stock market liquidity nor capitalisation matters for economic growth. The two main reasons behind the differences in the importance of stock markets to economic growth in the three countries may be explained by effectiveness of regulation and domination of the stock markets by only a few players.

In Egypt, the consolidation and streamlining of stock market regulation after the reforms improved their efficiency and hence their contribution to economic growth. The EFSA's mandate is to ensure stability of stock markets and promote both local and foreign investors. However, what still remains a challenge is that the level of stock market development in terms of both size and liquidity in Egypt is still low compared to other comparable countries. Therefore, in order to enhance the positive influence of stock markets on economic growth in Egypt, there is need to adopt policies that encourage the listing and trading of more firms, both domestic and foreign.

In respect of Nigeria, only liquidity of stock markets matters for economic growth. Stock market capitalisation is not a significant determinant of economic growth. Though these findings may be in line with propositions by Levine (2000) that only stock market liquidity should matter for economic growth, the results show that if it were not for the dominance of stock markets in Nigeria by one firm, the results could have been different. As has been stated,

the Nigerian stock exchange is dominated by the Dangote Group, which accounts for 43% of the total market capitalisation. Secondly, while the Nigerian economy is dominated by oil or petroleum companies, most of them are not fully listed on the stock exchange. This suggests that the stock market capitalisation is not reflective of the true structure of the underlying economy, hence could be disconnected from real economic activity. Rhetorically, one would ask, what use are the stock markets if they are not reflective of economic activity in the country? Therefore, there is need to encourage listing on the stock exchange by firms in all sectors of the economy, in line with their contribution to aggregate economic activity in the country. This will improve size, liquidity and competition on the stock exchange, which would enhance the influence of stock market development on economic growth.

The results in respect of South Africa show that the influence of stock market development on economic growth is surprisingly weak, despite the country having the continent's biggest stock market. The weak link between the stock market and economic growth might arise from dominance of the stock market by only a few firms, some of which have been accused of abusing their dominance in the sectors in which they operate (Roberts, 2004). Such dominance limits the effectiveness of stock markets in promoting economic growth as growth and profitability of listed firms may not be linked to the real economy owing to unorthodox business practices. In addition, the prevalence of market abuses³⁰ by traders may result in the performance of the stock market being largely disconnected from developments in the real economy, thus explaining the weak link between the stock market and economic growth in South Africa. Thus there is need to capacitate regulatory authorities such as the Competition Commission to dismantle cartels and prosecute those listed firms that are abusing their dominance.

10.3.3 NBFIs and economic growth

The results in respect of NBFIs show that NBFIs are an important determinant of economic growth in Egypt and South Africa. In Nigeria, the influence of NBFIs on economic growth is weak. The main factors underlying the difference in the effectiveness of NBFIs as a facilitator of economic growth in the three countries include investment regulation and the level of NBFI development.

³⁰ Between 2009 and 2014, 77 cases of insider trading were investigated and firms fined a total of R99 million. Accessed from <https://mg.co.za/article/2014-09-29-insider-trading-tops-jses-laundry-list-of-white-collared-crimes> on 31 December 2017.

Although NBF development in Egypt is still very low, regulatory reforms guiding which assets NBFs must invest in could have enhanced the ability of NBFs to promote economic growth (United States Agency for International Development, 2004). Of the three countries, Egypt has the highest proportion of assets (25%) that can be in the form of loans. In Nigeria, NBFs are not allowed to extend loans, while such restriction is 5% in South Africa (OECD, 2015). Thus a higher proportion of assets in the form of loans instead of equities (as is the case with South Africa) enables the NBFs to stimulate economic growth by financing projects in the productive sectors. In this regard, the main challenge to policymakers in Egypt is to adopt policies to grow the NBF sector.

We identified three factors that may explain the absence of a significant relationship between NBFs and economic growth in Nigeria. Firstly, there is a fragmented and underdeveloped regulatory system (FSRCC, 2017). Secondly, prohibiting loans or investment in real estate by NBFs in Nigeria implies that the bulk of their funds will be invested mostly in government securities. Government securities are mainly used to sponsor government expenditure, and thus can be viewed as a leakage of resources that could have been invested in productive assets. Lastly, there is the low level of NBF development and lack of innovation in respect of long-term financial instruments to take advantage of life and long-term insurance products (International Monetary Fund, 2013)

In South Africa, the positive influence of NBFs on economic growth emanates from the level of financial development and enhanced regulation of the NBFs in the country. A well-developed and regulated NBF sector can mobilise savings, and provide mechanisms for risk management and the efficient allocation of capital, thus enhancing economic growth. In the next paragraph, we assess if and how financial structure matters for economic growth in each of the countries.

10.3.4 Financial structure and economic growth

In Egypt, only S-Size matters for economic growth, while liquidity (S-Activity) is influenced by economic growth. However, in Nigeria and South Africa, liquidity of the financial structure (S-Activity) matters for economic growth, while the size thereof (S-Size) is influenced by economic growth.

Although one of the most referenced works concluded that financial structure does not matter (Levine, 2000), in this thesis we found that financial structure matters for economic growth in all the three countries. This implies that there is need for policymakers to understand that any

policy in the financial sector will affect the relative size, liquidity and importance of other financial institutions, thus affecting how they impact on economic growth. In addition, this highlights the need for ensuring that there is policy and regulatory coordination in the financial sector, lack of which will affect its ability to promote economic growth.

10.3.5 Interconnectedness of NBFIs, stock markets and banks

The weight of the evidence obtained from this study shows that in Egypt and Nigeria, stock markets and banks are influencing the development of NBFIs. On the other hand, in South Africa, NBFIs positively influence stock market and bank development.

These results show that in Egypt and Nigeria, where the level of NBFIs development is low, causality runs from stock markets and banks to NBFIs. However, in South Africa, where the NBFIs are fully developed, NBFIs influence the development of stock markets and banks.

These results highlight the different channels through which financial development influences economic growth in the three countries.

In Egypt, given that the direct influence of banks on economic growth is weak, it shows that banks in that country influence economic growth through NBFIs. Secondly, stock markets influence economic growth through both direct and indirect channels. Indirectly, stock markets influence economic growth through NBFIs, which in turn influence economic growth.

In Nigeria, the link between stock markets and economic growth is stronger than that between banks and economic growth. At the same time, the link between banks and NBFIs is stronger than that between stock markets and NBFIs. This suggests that, while stock markets directly influence economic growth, banks do so indirectly through NBFIs. Unfortunately, given that the link between NBFIs and economic growth is non-existent in Nigeria, NBFIs then become the broken link between bank development and economic growth. Therefore, in order to improve the influence of banks on economic growth in Nigeria, policymakers should work to increase the functioning of the NBFIs. Such intervention will bring a two-fold benefit whereby NBFIs can directly influence economic growth, and banks can influence economic growth through NBFIs.

In South Africa, NBFIs influence economic growth both directly and indirectly through their influence on stock market and banks. However, given that the influence of both stock markets and banks on economic growth in South Africa is weak, it implies that these two institutions also act as an impediment to the influence of NBFIs on economic growth. There is therefore

need for interventions to improve the functioning of stock markets and banks in South Africa. This will not only improve their influence on economic growth, but also on NBFIs, thus enhancing the impact of financial development on economic growth.

10.4 Conclusion and policy recommendations

In summary, this thesis finds that financial systems matter for economic growth. Specifically, the results show that banks, stock markets and NBFIs are important for economic growth in Egypt, Nigeria and South Africa. In addition, the thesis also finds that financial structure matters for economic growth. Lastly, analysis of the interconnectedness of stock markets, banks and NBFIs shows that the link between financial development and economic growth in all the three countries is both direct and indirect. The indirect channel occurs when one type of financial institution influences the development of another, which in turn influences economic growth.

However, the results show that the nature and significance of the impact of different financial institutions is varied across the three countries. Firstly, the impact of different institutions on economic growth is different across the three countries. Secondly, the evidence on the nature of the relationship between financial development and economic growth is weak or mixed in certain countries.

The variation in results across the countries can be explained by differences in regulation, effectiveness of regulation, structure of the economy, occurrence of bank crises, quality of lending, level of indebtedness, dominance of certain sectors of the economy by a few firms, and the level of financial development in each country.

In his foreword to the inaugural *Global Development Finance Report*, the World Bank President, Jim Yong Kim, propounded that “fostering sustainable financial development and improving the performance of financial systems depends on numerous institutional factors and stakeholders” (World Bank, 2012: xi). Thus he implored the policymakers, the banks, the regulators and the financial consumers to play an active role in order to ensure financial systems contribute to economic growth and poverty eradication.

In the same way, in order to enhance the role of financial development in promoting economic growth in each of the three countries, we recommend the following policy considerations:

Egypt: While the Central Bank of Egypt’s mandate is to ensure soundness of the banking system, that objective should be balanced with the need for banks to lend more to the productive

sectors. Banks in Egypt currently lend far less compared to the amount of deposits they raise, and consequently, their impact on economic growth is weak. Therefore the policymakers should create an environment that will encourage banks to lend more to the private sector. Such initiatives may include improving the capacity of the public credit information bureaux to track information about borrowers. Secondly, given that both banks and stock markets influence economic growth through NBFIs, our recommendation is for policies that encourage the development of NBFIs, a sector which is currently very small. Results from our analysis show that not only size of financial institutions matters for economic growth, but the efficiency and regulations thereof. Therefore, without compromising financial stability, efforts should be aimed at improving the ability and efficiency of the financial system to promote economic growth in Egypt.

Nigeria: The weak link between financial development and economic growth in Nigeria is due to poor regulatory oversight, which has resulted in bank crises and poor corporate governance in the financial sector. We recommend that the central bank reinforces its supervisory capabilities. Secondly, we recommend that the regulation of NBFIs be consolidated and streamlined by setting up an agency similar to the FSB in South Africa or the EFSA in Egypt; or alternatively, by adopting the Twin-Peak model. Currently, the NBFIs in Nigeria are being regulated by separate regulators, namely, the NPC and the Insurance Commission of Nigeria. Such a fragmented approach is likely to produce suboptimal results. Thirdly, there is need to review the current portfolio restrictions for NBFI investments to allow more investments in sectors such as real estate and lending to productive sectors. Current portfolio restrictions are not aligned with the need to encourage NBFIs to invest more funds into infrastructure of the productive sector. Fourthly, there is need to encourage listing on the stock exchange by firms from all sectors of the economy to ensure that the stock exchange is reflective of the structure of the economy. At the moment, the stock market is dominated by cement manufacturers, yet the economy is dominated by oil producers. Such a mismatch makes it no wonder that the stock exchange in Nigeria minimally contributes to economic growth. Lastly, there is need to promote growth in the size and liquidity of the financial sector, given that financial development in that country is still very low. Of the three countries investigated, Nigeria has the least developed financial system by any measure.

South Africa: In South Africa, the weak link between bank development and economic growth is overindebtedness and poor quality lending. There is need to review the effectiveness of the affordability assessment regulation set out by the NCR to ensure that the excessive growth in

credit is curbed. Secondly, there is need to improve regulation of the stock markets to curb stock market abuses such as insider trading. There is also need to capacitate regulatory authorities such as the Competition Commission to dismantle cartels and prosecute firms abusing their dominance. Lastly, the portfolio investment regulation should be revised, mostly in respect of investments in equities. The proportion of investments allowable in equities should be revised downwards, and allow more loans to the productive sectors. At the moment, NBFIs can invest up to 75% of their assets in equity, thus taking away the incentive for them to search for other investments which are likely to be more productive, and contribute to economic growth. The stock exchange may be turned into a haven of speculation which takes resources away from productive sectors.

Ultimately, we recommend that other African countries should consolidate regulation of the financial sector into one agency for NBFIs and the central bank for banking institutions. Furthermore, there is need to invest in public credit information bureaus to encourage lending by banks. We are confident these recommendations will help Africa mobilise the additional resources required for the attainment of the SDGs and the Africa Agenda 2063.

10.5 Limitations of the study and areas of future research

Our study focused on only three countries, which are the biggest economies in Africa. This makes generalisation of the results to other countries difficult, especially the smaller ones. Therefore, we recommend that future research should expand our study to include more countries. Results from a bigger group of countries may also bring out challenges common to more countries, which may be approached at a regional level. This may provide another opportunity to enhance regional integration, which is also central to the attainment of the Africa Agenda 2063 and the SDGs.

Secondly, emerging theories are suggesting that what matters for economic growth is not only the structure or level of development of the financial sector, but how much less or more developed it is than what should be the optimal financial sector for each country. There is need for research that can investigate how deviation from the optimal financial structure (the financial structure gap) influences economic growth.

Thirdly, literature suggests that the role of financial markets evolve as the economies grow. Therefore the next study should endeavour to adopt a methodology that allows investigation of the evolving influence of financial institutions as the economy grows.

Lastly, our analysis did not split the pre- and post-reform analysis. Given that there is evidence to suggest that the influence of financial markets on economic growth is greatly influenced by reforms that have occurred in many African countries, we therefore recommend that future research should employ econometric techniques that allow for splitting the analysis between pre- and post-reform periods for each of the countries investigated.

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ANNEXURES

Table A 1: ADF stationarity test results

Egypt			Nigeria			South Africa		
Series	Model	I(I)	Series	Model	I(I)	Series	Model	I(I)
Y	Intercept	-3.712***	Y	Intercept	-5.53***	Y	Intercept	-4.201***
	Intercept and Trend	-3.604***		Trend and Intercept	-6.22***		Trend and Intercept	-4.265***
FDPC	Intercept	-7.945***	FDPC	Intercept	-2.819*	FDPC	Intercept	-2.638*
	Intercept and Trend	-4.364***		Trend and Intercept	-2.819*		Trend and Intercept	-4.505***
FDLL	Intercept	-7.865***	FDLL	Intercept	-0,388	FDLL	Intercept	-5.418***
	Intercept and Trend	-8.045***		Trend and Intercept	-4.608***		Trend and Intercept	-6.513***
Mcap	Intercept	-6.247***	Mcap	Intercept	-5.435***	Mcap	Intercept	-3.829***
	Intercept and Trend	-6.158***		Trend and Intercept	-5.943***		Trend and Intercept	-5.056***
VT	Intercept	-3.435**	VT	Intercept	-3.712***	VT	Intercept	-3.295**
	Trend and Intercept	-3.374*		Trend and Intercept	-3.930**		Trend and Intercept	-4.094*
NBFI	Intercept	-4.420***	NBFI	Intercept	-4.479***	NBFI	Intercept	
	Trend and Intercept	-4.519***		Trend and Intercept	-4.371***		Trend and Intercept	
S-A	Intercept	-3.932***	S-A	Intercept	-5.091***	S-A	Intercept	-6.783***
	Trend and Intercept	-3.886**		Trend and Intercept	-5.065***		Trend and Intercept	-6.86***
S-S	Intercept	-6.123***	S-S	Intercept	-6.155***	S-S	Intercept	-8.154***
	Trend and Intercept	-6.077***		Trend and Intercept	-6.096***		Trend and Intercept	
Agric	Intercept	-8.213***	Agric	Intercept	-3.235**	Agric	Intercept	-4.251***
	Trend and Intercept	-8.861***		Trend and Intercept	-5.395***		Trend and Intercept	-4.680***
CPI	Intercept	-8.762***	CPI	Intercept	-0,913	CPI	Intercept	-3.337**
	Trend and Intercept	-8.821***		Trend and Intercept	-6.98***		Trend and Intercept	-5.817***
DepositR	Intercept	-3.027**	DepositR	Intercept	-7.88***	DepositR	Intercept	-3.96***
	Trend and Intercept			Trend and Intercept	-7.958***		Trend and Intercept	-4.003***
Elec	Intercept	-1,1001	Elec	Intercept	-4.333***	Elec	Intercept	-0,927
	Trend and Intercept	-1,054		Trend and Intercept	-4.026**		Trend and Intercept	-1,311
ElecPecapita	Intercept	-3.908***	ElecPecapita	Intercept	-8.631***	ElecPecapita	Intercept	-4.851***
	Trend and Intercept	-5.864***		Trend and Intercept	-8.52***		Trend and Intercept	-5.392***
ER_av	Intercept	-3.850***	ER_av	Intercept	-5.957***	ER_av	Intercept	-4.945***
	Trend and Intercept	-3.937**		Trend and Intercept	-6.118***		Trend and Intercept	-4.95***

ER_end	Intercept	-4.991***	ER_end	Intercept	-5.648***	ER_end	Intercept	-6.578***
	Trend and Intercept	-5.076***		Trend and Intercept	-5.736***		Trend and Intercept	-6.558***
Exports	Intercept	-4.914***	Exports	Intercept	-4.860***	Exports	Intercept	-5.612***
	Trend and Intercept	-5.604***		Trend and Intercept	-4.931***		Trend and Intercept	-7.422***
FDI	Intercept	-5.502***	FDI	Intercept	-9.718***	FDI	Intercept	-8.577***
	Trend and Intercept	-5.401***		Trend and Intercept	-11.057***		Trend and Intercept	
Gasrents	Intercept	-6.506***	Gasrents	Intercept	-7.625***	GCF	Intercept	-2.645*
	Trend and Intercept	-6.44***		Trend and Intercept	-7.625***		Trend and Intercept	-3.933*
GCF	Intercept	-3.815***	GCF	Intercept	-3.292***	GvtCons	Intercept	-7.960***
	Trend and Intercept	-4.550***		Trend and Intercept	-4.621***		Trend and Intercept	-8.051***
GvtCons	Intercept	-9.362***	GvtCons	Intercept	-2,071	Imports	Intercept	-5.079***
	Trend and Intercept	-10.922***		Trend and Intercept	-3.391*		Trend and Intercept	-6.491***
Imports	Intercept	-3.622***	Imports	Intercept	-7.914***	Industr	Intercept	-10.012***
	Trend and Intercept	-4.710***		Trend and Intercept	-8.532***		Trend and Intercept	-5.205***
		-						
Industr	Intercept	11.775***	Industr	Intercept	-4.147***	LendingR	Intercept	-5.179***
	Trend and Intercept	-13.541***		Trend and Intercept	-5.560***		Trend and Intercept	-5.285***
LendingR	Intercept	-2.912*	LendingR	Intercept	-7.168***	MRents	Intercept	-7.604***
	Trend and Intercept	-6.491***		Trend and Intercept	-7.177***		Trend and Intercept	-7.506***
OilRents	Intercept	-5.389***	OilRents	Intercept		NetTaxes	Intercept	-7.247***
	Trend and Intercept	-5.458***		Trend and Intercept	-7.416***		Trend and Intercept	-3.853**
NetTaxes	Intercept	-3.252**	NetTaxes	Intercept	-6.380***	PDensity	Intercept	-3.255**
	Trend and Intercept	-5.511***		Trend and Intercept	-7.41***		Trend and Intercept	-3.221*
PDensity	Intercept	-1,4126	PDensity	Intercept	4,1408	Pop	Intercept	-3.255**
	Trend and Intercept	-1,402		Trend and Intercept	-1,583		Trend and Intercept	-3.221*
Pop	Intercept	-1,413	Pop	Intercept	4,1408	Spread	Intercept	-6.585***
	Trend and Intercept	-1,402		Trend and Intercept	-1,5833		Trend and Intercept	-6.489***
Spread	Intercept	-4.262***	Spread	Intercept	-6.574***	Tel	Intercept	-6.240***
	Trend and Intercept	-4.24*		Trend and Intercept	-6.502***		Trend and Intercept	-6.358***
Tel	Intercept	-8.502***	Tel	Intercept	-3.724***	Tel100	Intercept	-6.688***
	Trend and Intercept	-8.790***		Trend and Intercept	-3.837**		Trend and Intercept	-3.625**
Tel100	Intercept	-8.455***	Tel100	Intercept	-3.743***	UrbanPop	Intercept	-3.462**
	Trend and Intercept	-8.726***		Trend and Intercept	-3.919**		Trend and Intercept	
UrbanPop	Intercept	-3.985***	UrbanPop	Intercept	-4.861***			
	Trend and Intercept	-3.934*		Trend and Intercept	-4.922**			

Notes: See Table 4.1 for definition of variables.

Source: Estimation by author

Table A 2: KPSS unit root test results

Egypt			Nigeria			South Africa		
	Model	I(I)	Series	Model	I(I)	Series	Model	I(I)
Y	Intercept		Y	Intercept		Y	Intercept	
	Trend and Intercept	0.07***		Trend and Intercept	0.11***		Trend and Intercept	0.14*
FDPC	Intercept	0.73**	FDPC	Intercept	0.53**	FDPC	Intercept	0.66**
	Trend and Intercept			Trend and Intercept	0.11***		Trend and Intercept	0.13*
FDLL	Intercept	0.69**	FDLL	Intercept	0.55**	FDLL	Intercept	0.73**
	Trend and Intercept	0.23***		Trend and Intercept	0.20**		Trend and Intercept	0.13*
Mcap	Intercept	0.09***	Mcap	Intercept	0.45*	Mcap	Intercept	0.67**
	Trend and Intercept	0.07***		Trend and Intercept	0.05***		Trend and Intercept	0.12*
VT	Intercept	0.11***	VT	Intercept	0.42*	VT	Intercept	0.61**
	Trend and Intercept			Trend and Intercept	0.21**		Trend and Intercept	0.12*
NBFI	Intercept	0.06***	NBFI	Intercept	0.07***	NBFI	Intercept	0.70**
	Trend and Intercept			Trend and Intercept	0.07***		Trend and Intercept	0.21**
S-A	Intercept	0.09***	S-A	Intercept	0.14***	S-A	Intercept	0.14***
	Trend and Intercept			Trend and Intercept	0.05***		Trend and Intercept	0.05***
S-S	Intercept	0.12***	S-S	Intercept	0.07***	S-S	Intercept	0.07***
	Trend and Intercept			Trend and Intercept			Trend and Intercept	
Agric	Intercept	0.58**	Agric	Intercept	0.59**	Agric	Intercept	0.57**
	Trend and Intercept	0.16**		Trend and Intercept	0.17**		Trend and Intercept	
CPI	Intercept	0.59**	CPI	Intercept	0.72**	CPI	Intercept	0.69**
	Trend and Intercept	0.12**		Trend and Intercept	0.19**		Trend and Intercept	0.05***
DepositR	Intercept		DepositR	Intercept	0.21***	DepositR	Intercept	
	Trend and Intercept	0.17**		Trend and Intercept	0.07***		Trend and Intercept	

Elec	Intercept	0.19***	Elec	Intercept	0.18***	Elec	Intercept	0.37*
	Trend and Intercept	0.12*		Trend and Intercept			Trend and Intercept	0.13*
ElecPecapita	Intercept	0.71**	ElecPecapita	Intercept	0.10***	ElecPecapita	Intercept	0.48**
	Trend and Intercept	0.12*		Trend and Intercept			Trend and Intercept	0.07***
ER_av	Intercept	0.23***	ER_av	Intercept	0.26***	ER_av	Intercept	0.25***
	Trend and Intercept	0.07***		Trend and Intercept	0.07***		Trend and Intercept	0.14*
ER_end	Intercept	0.17***	ER_end	Intercept	0.22***	ER_end	Intercept	0.26***
	Trend and Intercept	0.06***		Trend and Intercept	0.08***		Trend and Intercept	
Exports	Intercept	0.43*	Exports	Intercept	0.32***	Exports	Intercept	
	Trend and Intercept	0.07***		Trend and Intercept			Trend and Intercept	0.16***
Gasrents	Intercept	0.07***	Gasrents	Intercept	0.13***	GCF	Intercept	
	Trend and Intercept			Trend and Intercept			Trend and Intercept	0.15*
GCF	Intercept	0.48**	GCF	Intercept	0.53**	GvtCons	Intercept	0.70**
	Trend and Intercept	0.07***		Trend and Intercept	0.17**		Trend and Intercept	
GvtCons	Intercept	0.63**	GvtCons	Intercept	0.52**	Imports	Intercept	
	Trend and Intercept	0.19**		Trend and Intercept	0.16**		Trend and Intercept	0.18**
Imports	Intercept	0.75	Imports	Intercept	0.41*	Industr	Intercept	0.71**
	Trend and Intercept	0.13*		Trend and Intercept			Trend and Intercept	0.21**
Industr	Intercept	0.61**	Industr	Intercept	0.65**	LendingR	Intercept	
	Trend and Intercept	0.18**		Trend and Intercept			Trend and Intercept	
LendingR	Intercept		LendingR	Intercept	0.14***	MRents	Intercept	
	Trend and Intercept	0.12*		Trend and Intercept	0.07***		Trend and Intercept	0.05***
OilRents	Intercept		OilRents	Intercept		NetTaxes	Intercept	
	Trend and Intercept			Trend and Intercept			Trend and Intercept	
NetTaxes	Intercept	0.71**	NetTaxes	Intercept	0.39*	PDensity	Intercept	0.29***
	Trend and Intercept	0.14*		Trend and Intercept	0.08***		Trend and Intercept	0.15**
PDensity	Intercept	0.49**	PDensity	Intercept	0.79	Pop	Intercept	0.29***
	Trend and Intercept	0.09***		Trend and Intercept	0.19**		Trend and Intercept	0.15**

Pop	Intercept	0.49**	Pop	Intercept	0,79	Spread	Intercept	
	Trend and Intercept	0.09***		Trend and Intercept	0.19**		Trend and Intercept	
Spread	Intercept		Spread	Intercept		Tel	Intercept	0.51**
	Trend and Intercept			Trend and Intercept			Trend and Intercept	0.18**
Tel	Intercept	0.16***	Tel	Intercept	0.16***	Tel100	Intercept	0.62**
	Trend and Intercept	0.15**		Trend and Intercept			Trend and Intercept	0.13*
Tel100	Intercept	0.18***	Tel100	Intercept	0.17***	UrbanPop	Intercept	0.72**
	Trend and Intercept			Trend and Intercept			Trend and Intercept	0.15**
UrbanPop	Intercept	0.63**	UrbanPop	Intercept	0,76			
	Trend and Intercept	0.11***		Trend and Intercept	0.15*			

Notes: See Table 4.1 for definition of variables.

Source: Estimation by author