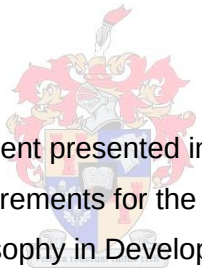
The Impact of Remittances on the Educational Attainment of Black South Africans

Lerato Lehoko



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Declaration

I, Lerato Lehoko, declare that the entire body of work contained in this research assignment is my own, original work; that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof 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.

L Lehoko 13 October 2015

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Abstract

This assignment studies the impact of remittance receipts on the educational attainment of Black South African children. Using the second wave of the National Income Dynamic Study and applying the instrumental variable econometric approach, the determinants of the following outcomes are studied: children aged zero to six years enrolling in early childhood development facilities, and the highest grade completed by children aged 14 to 25 years. Contrary to the theory and related literature, we find that the receipt of remittances does not have a statistically significant impact on the probability of young children being enrolled in early childhood development facilities, nor does it have a statistically significant effect on the probability of children achieving any levels of primary, secondary and tertiary educational attainment. Another finding that was inconsistent with the theory is that parental education and wealth do not have a significant effect on the probability of zero to six year olds being enrolled in early childhood development facilities, although early childhood development programs are funded privately in South Africa. The findings have also shown that the factor of people residing on farms and in areas under tribal authority has mixed effects on the educational attainment of children. Children aged zero to six residing on farms and in areas under tribal authority have significantly lower probabilities of being enrolled in early childhood development facilities. On the other hand, older children (22 to 25 year olds) residing on farms and in areas under tribal authority have higher probabilities of completing secondary schooling and obtaining tertiary qualifications than their urban counterparts.

Key words

South Africans, educational attainment, remittances, ordered probit, instrumental variable

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List of acronyms and abbreviations

NIDS	National Income Dynamic Study
ECD	early childhood development
SALDRU	Southern Africa Labour and Development Research Unit
StatsSA	Statistics South Africa
OECD	Organisation for Economic Cooperation and Development
IV	instrumental variable
Oprobit	Ordered Probit
UNESCO	United Nations Educational, Scientific and Cultural Organization
DFI	Development Finance International

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

Widespread urbanisation is one of the defining characteristics of the South African economy. Migration from rural to urban areas is largely a phenomenon amongst Black South Africans and has its genesis in the country's political history. The system of apartheid sought to keep Black people away from urban areas; however, when minerals were discovered in what is today known as Gauteng, mines were forced to import cheap labour in the form of Black migrants (Yudelman, 1984). To prevent large-scale relocation of entire Black families, mining companies made living conditions of labourers unfavourable to their wider families. The result of this system was an oscillating or circular migration pattern that typically involved Black males migrating to urban areas, leaving the rest of their families back in their rural homes (Wilson, 2001). Economic ties between migrants and their families remained in the form of remittances being sent to the families in the periods between the migrants' visits to their families. At the onset of democracy when South Africans of all races were free to relocate to any part of the country, the oscillating pattern of migration has remained (Posel & Casale, 2003; Posel, 2004). This suggests that remittances remain a key component of rural household incomes, and the evaluation of the impact of such remittances is therefore important. South African literature contains a considerable amount of studies on migration, however, very few studies have been dedicated to the study of the remittances that result from migration.

When one considers which aspect of the impact of remittances on households is useful to study in the South African context, educational attainment stands out as one of the key outputs because of the following reasons. First, South Africa faces a significant challenge of poverty and inequality that is driven mainly by earnings differentials and unequal access to the labour market (Branson and Leibbrandt, 2013). Educational attainment is a key determinant of labour market success and there has been a deterioration in educational outcomes of South African learners (Spaull, 2013). The second reason relates to expenditure on education and education outcomes. Two international benchmarks for government expenditure on education have been established. The first sets a target for government expenditure on education as a percentage of the total national budget of twenty percent and the second sets a target for government expenditure on education as a percentage of gross domestic product of 6 percent (DFI, 2015). In the past decade South Africa's expenditure on education has come close to these targets and in some years exceeded them (World Bank, 2014), yet , outcomes in the form of standardised international testing of learners remain among the worst in the world (OECD, 2013). The almost universal enrolment rates in primary schooling are succeeded by large dropout rates in secondary schooling (OECD, 2013).

Several studies (Taylor, 2011; Van der Berg, 2008; Crouch & Magoboane, 1998; Fleisch, 2008) related to education outcomes in South Africa focus on the impact of school level factors such as curriculum coverage, teacher competencies and school infrastructure. Taylor and Yu (2009) followed the seminal work of Coleman (1966) and studied household level factors, specifically the impact of socio-economic status on educational achievement which they measured by reading competence scores. Willms (2004: 7) defined socio economic status as the "relative position of a family or individual on an hierarchical social structure, based on their access to, or control over, wealth, prestige, and power." This study thus builds on this category of South African literature and considers remittance receipts as one of the components that influence the socio-economic status of recipient households. This study also builds on existing studies related specifically to remittances and educational attainment, none of which have been conducted in the South African context.

1.2 RESEARCH AIMS

In particular, this study aims to determine the impact that remittances have on the probability of children aged six years and below being enrolled in Early Childhood Development programs, and of children aged between 14 and 25 attaining primary, secondary and tertiary education. In order to achieve this, variables relating to household characteristics, household members' demographics and educational attainment from the cross sectional data set of the 2012 National Income Dynamic Study are used.

1.3 RESEARCH QUESTIONS

The main research question that this study seeks to answer is whether children belonging to households that receive remittances have higher educational attainment compared to children who do not belong to remittance receiving households. When considering categories of educational attainment, four sub-questions emerge:

1. Do children aged zero to six years old have a higher enrolment rates in Early Childhood Development programs?
2. Do children aged 14 to 22 years have higher primary school education attainment?
3. Do children aged 19 to 22 years have higher high school education attainment?
4. Do youths aged 22 to 25 years old have higher achievements of tertiary education?

1.4 OUTLINE OF THE REPORT

The rest of this report is organised as follows: Chapter 2 provides an overview of historical migration trends and the evolution of labour policies in South Africa. The chapter further provides an analysis of the current state of education in South Africa and the factors that have contributed

towards it. Chapter 3 provides a global perspective on remittances and then proceeds to examine the literature relating to remittances and educational attainment. It further summarises the literature that explores the determinants of remittances, the effects of remittances on recipient households and the processes by which individuals attain education. Chapter 4 provides a brief outline of the two theories that underpin the empirical analysis undertaken in this paper. The first theory is the human capital theory that often underlies studies on education investments, and the second theory relates remittances to educational attainment. Chapter 5 summarises the methodological and measurement issues related to analysing the relationship between remittances and educational attainment. The rest of the chapter details the empirical model used in the study and the variables involved. Chapter 6 provides a description of the data used in this study; it further summarises the descriptive statistics of the variables used in the statistical estimations. Chapter 7 presents the results of the empirical estimations run for the study and discusses the implications of the results. Finally, Chapter 8 concludes the study by providing a summary of the findings and the broad policy implications thereof.

CHAPTER 2
MIGRATION TRENDS AND THE STATE OF EDUCATION IN SOUTH AFRICA

2.1 INTRODUCTION

This chapter provides an overview of South Africa's political history that informed migration trends and the evolution of labour policies. This section will conclude with an analysis of the state of education in South Africa and the factors that have contributed towards it.

2.2 MIGRATION AND REMITTANCE TRENDS

South Africa has the second largest and most industrialised economy in Africa. Approximately two-thirds of its population of 52 million live in urban areas, which makes it one of the fourth most urbanised countries in sub-Saharan Africa after the small states of Reunion, Gabon and Dijibouti (Turok, 2012).

Urbanisation in South Africa was initiated in the 19th century through the discovery of diamonds and gold in the interior of the country in 1867 and 1884 respectively. The "Mineral Revolution" (Yudelman, 1984) stimulated rapid industrialisation that required large-scale cheap labour. The South African Chamber of Mines initiated a pattern of "oscillating" or "circular" migration by ensuring that Black labourers who were recruited to work in the mines were hired on short-term low wage contracts and housed in single sex residential compounds or hostels on the mines (Wilson, 2001). The nature of their employment meant that labourers could not migrate permanently with their families and were forced to return to their rural homes when their contracts ended and return to urban places of employment when they received new contracts (Wilson, 2001). The oscillating system of migration within South Africa was further entrenched by the passing of The Native Land Act in June 1913 which limited the supply of land that African farmers could legally own or rent for independent cultivation and restricted sharecropping arrangements between Africans and Whites on white-owned land. With reduced economic prospects in the agricultural sector of their rural homelands, many Africans (mostly men) were forced to search for employment in urban areas and remit money back to their families who remained in their rural homes (Walker, 1990; Posel & Casale, 2003).

The introduction of apartheid came with the implementation of an anti-urban regime that sought to restrict the number of Black people in cities. Resettlement operations forced people to move to their designated urban 'group areas' and rural 'homelands' (Posel, 1991). The anti-urban regime began to break down during the 1980s when businesses and local municipalities needed to build stable work forces. Urbanisation expanded rapidly with the urban population exceeding the rural population around 1986-87 (United Nations, 2014). Urbanisation continues to grow in South Africa

and is largely fuelled by high economic growth and employment opportunities in the five largest metros. Contrary to wide expectations, the oscillating system of migration in South Africa did not end with the onset of democracy when entire families were finally allowed to move (Posel & Casale, 2003; Posel, 2004). While there has been an increase in permanent migration, circular migration has remained substantial. Possible reasons for the continued circular migration include the prohibitively high cost of urban living, increasing labour market insecurity and limited decent housing in urban areas.

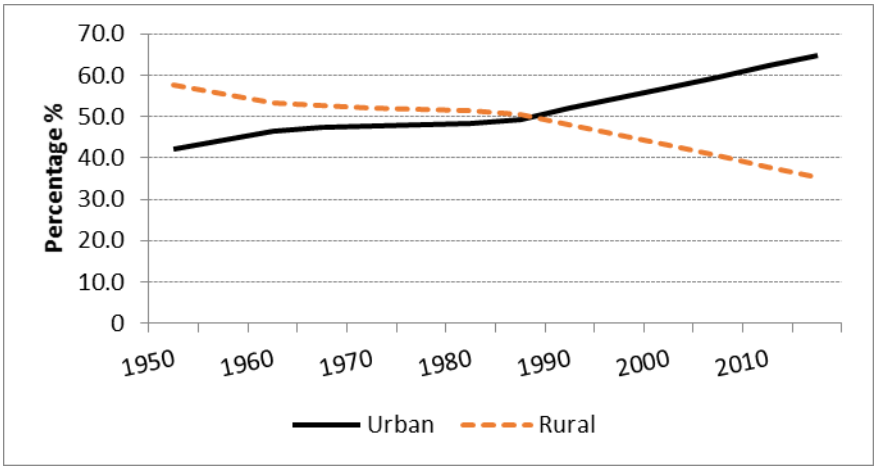

Figure 2.1: Proportion of population in urban and rural areas in South Africa, 1950–2050

Source: United Nations Population Division, World Urbanisation Prospects: The 2014 Revision

To date, it has been challenging to conduct analyses on remittance trends and predictors in South Africa due to data constraints. Existing studies used inadequate data sets and are dated. Most household surveys identify remittances only in the recipient household and do not match these to the households from which remittances are sent. Posel and Casale (2006) are prominent researchers of migration and remittances in South Africa and they show that in the September 2002 Labor Force Survey, remittances were identified as the main source of income for 36.3 percent of rural Black households with labour migrants. They also note that although data on remittances has not been collected consistently over time, the available data suggests that economic ties between migrants and their households of origin may be weakening. Since 1999, the proportion of households receiving remittances declined and the average value of remittances in real terms fell (Posel & Casale, 2006). Many economists have attributed the decrease in remittance receipts to the increase in social transfers by the government (Jenson 2003; Posel 2001).

2.3 EDUCATION IN SOUTH AFRICA

Prior to 1994, education in South Africa was characterized by institutional inequality that was enforced by the Apartheid regime. Separate education departments existed for schools attended by each race group. Schools attended by Black, Coloured and Indian pupils received considerably

fewer resources and as a result produced inferior educational outcomes (Taylor, 2011). The onset of democracy saw a marked increase and redistribution of the education budget under a unified Department of Education (Van der Berg, 2006; Gustafsson & Patel, 2006). South Africa's investment in education in the past decade has met global targets (UNESCO 2015). In the 2014/15 fiscal year, education received R265.7 billion of the country's R1.35-trillion National Budget (National Treasury, 2015). Under the National Norms and Standards of School Funding introduced in 2000, schools have been divided into poverty quintiles that determine the level of resources allocated to each school. Schools falling into the two lowest quintiles were classified as "no-fee school" in 2006, which means that they do not charge fees and receive greater funding from the fiscus (Taylor, 2011).

The increased and redistributive spending in education in the past two decades has produced mixed results. On the one hand, there are four key achievements: first, South Africa has achieved universal enrolment in primary and secondary education with corresponding enrolment rates of 101% and 111% in 2013 (World Bank, 2014). This is in line with the objective of the South African Schools Act of 1996 that made education compulsory from age seven until 15. Second, although the government historically did not provide Early Childhood Development (ECD) for children younger than 7, the acknowledgement that the effect of the pre-natal period and early years of ones life's can last a lifetime led the government to dedicate resources to increase the quantity and quality of ECD provision (Department of Education, 2011b). The government now funds Grade R for 5 and 6 year olds mainly through public schools and subsidizes community based centres for children 0 to 4 years. The former is funded by the Department of Education and the latter by the Department of Social Development (Department of Education, 2011a). As shown in Figure 2.2, the share of children under five enrolled in ECD and of children aged five attending educational institutions doubled between 2002 and 2009. Third, South Africa has broadly achieved gender parity in school enrolment while other emerging countries such as Brazil and India have not. Fourth, the gap between educational attainments of Black and white population groups has narrowed as seen in Figure 2.3.

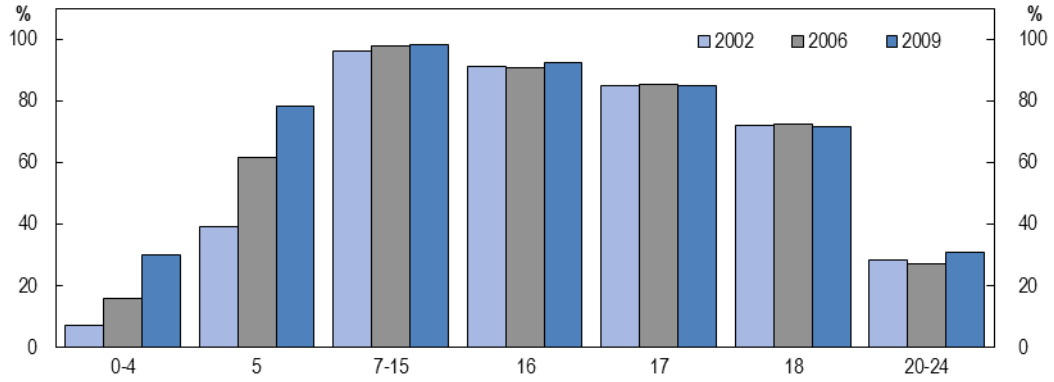

Figure 2.2: Share of population attending an educational institution by age group

Source: Education for All, Department of Basic Education (as cited in OECD 2013)

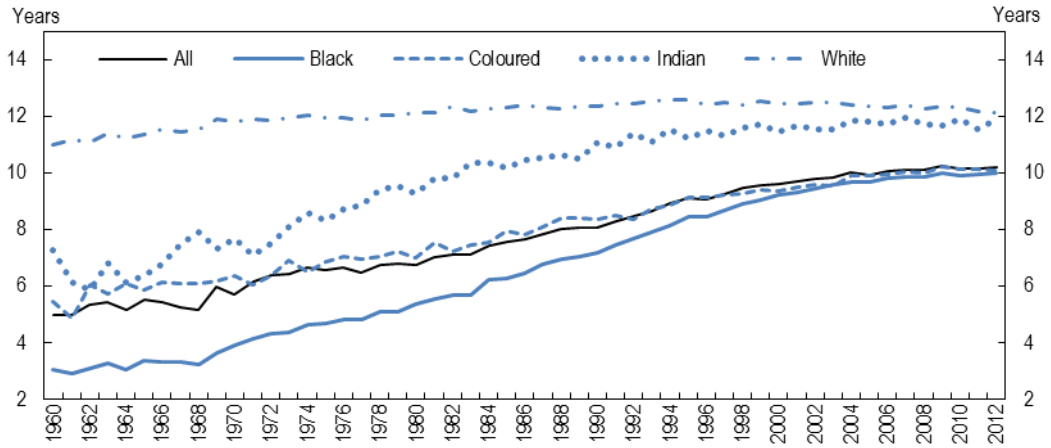

Figure 2.3: Mean years of schooling at age 27 by ethnic group

Source: South Africa data is based on Community Survey (Statistics South Africa, 2007) and calculations made by Louw, van der Berg and Yu (2006) (as cited in OECD 2013)

The achievements of the post 1994 Education Department are overshadowed by high repetition rates in grades 1, 10 and 11 (13.1%, 24,4%,24,3% respectively) and the fact that 58% of learners still leave the schooling system without completing either a National Senior Certificate or National Vocational Certificate obtained via the vocational training route (Department of Basic Education, 2012).

The low quality and high inequality of the South African education system are magnified by the results of the three international tests of educational attainment that South Africa participates in. SACMEC, TIMSS and PIRLS[1] show that most South African pupils cannot read, write and compute at grade-appropriate levels; this performance is below all middle-income countries and some low-income countries in Africa (Spaull, 2013). A notable insight from the results achieved by South African pupils in the international assessments is that the top quintile of pupils performs reasonably well; thus inequality in test scores is notably one of the highest observed in the samples (OECD, 2013). This insight is validated by the distribution observed in the National Senior Certificate pass rate where there are significant differences in performance between races and regions with white pupils and urban areas outperforming the rest. The outlook on higher education is also concerning; Figure 2.2 also shows that enrolment in higher education is relatively low, reaching 18% of 18-24 year olds in 2012.

The case for South Africa to improve educational attainment is supported by the work of Branson and Leibbrandt (2013) who find that the South African labour market strongly rewards educational

[1] TIMSS stands for Trends in International Mathematics and Science Study, PIRLS stands for Progress in International Reading and Literacy Studies, and SACMEQ stands for Southern and Eastern African Consortium for Monitoring Educational Quality.

attainment in terms of earnings and that employment prospects are improved by attaining a tertiary qualification.

2.5 SUMMARY

This chapter sought to provide an understanding of why a study relating to remittances in South African should focus only on Black South Africans as opposed to all race groups. It delved into South Africa's political history, which shaped the migration patterns of Black South Africans. The chapter showed that although South Africa has achieved democracy and its citizens are free to live anywhere in the country, the historical circular pattern of migration remains. Education outcomes in the form of quality and completion rates remain a great challenge in the country overall despite the large amounts of financial resources being dedicated to education by the government.

CHAPTER 3
LITERATURE REVIEW

3.1 INTRODUCTION

This chapter begins by providing a global perspective on remittances and then proceeds to examine the literature relating to the link between remittances and educational attainment. It further summarises the literature that explores the determinants of remittances, the effects of remittances on recipient households and the processes by which individuals attain education.

3.2 REMITTANCES IN THE DEVELOPING WORLD

Gupta *et al.* (2009) describe remittances as a private welfare system that plays a wealth redistribution role within families and communities. Whilst recorded remittances are those that are transferred through formal channels such as banks and money-transfer organizations, the low rates of financial inclusion in developing countries resulted in the creation of large informal channels to transfer remittances. Traditional networks such as hawalas of the Middle East, unlicensed money transfer operators, taxi and bus drivers and friends who serve as remittance channels are common features in the informal remittance channels. The growth of remittances globally has attracted considerable attention from researchers seeking to understand the impact that remittances have on economic development. The growth in migration to developed countries has underpinned the growth in remittances. The World Bank (2006) estimates that the number of immigrants has increased at an annual growth rate of about three percent between 1980 and 2000. Of particular interest to researchers is the impact that remittances have had in developing countries since remittance flows typically move from developed to developing countries and have become an increasingly important financial inflow into those countries. Most studies that have been conducted on the impact of remittances are panel studies conducted on a global scale using official numbers.

3.3 THE DETERMINANTS OF REMITTANCES

The determinants of remittances have also received considerable research attention. Studies on the determinants of remittances have historically focused on either microeconomic (Lucas & Stark, 1985; Agarwal & Horowitz, 2002; Foster & Rosenzweig, 2001) or macroeconomic determinants. The first contribution to the study of microeconomic variables came from Lucas and Stark (1985) in which they built a theoretical model which states that migrant workers are motivated to remit by reasons ranging from pure altruism to pure self-interest. The findings of the researchers of macroeconomic variables have consistently found that competitive interest rates and exchange rates and a politically stable environment have a positive correlation with the level of remittances (El-Sakka & McNabb, 1999; Faini, 1994; Glytsos, 1997). More recently, however, Freund and

Spatafora (2007) enhanced the body of literature on the determinants of remittances by including migrant stocks and transaction costs in the estimation. While the transaction costs of remittances have been investigated (Sander, 2003; Swanson & Kubas, 2005; Orozco, 2003) and found to be generally higher in formal channels, their effect on the levels of remittances had not been studied prior to Freund and Spatafora's (2007) paper. The authors found that migrants refrain from remitting money when transaction costs are high, in which case they tend to use informal channels. Adams (2009) added poverty of the destination country and skills of the migrant to the estimations and found that high-skilled migrants send higher per capita remittances than low-skilled migrants do. There are also studies which are dedicated to the low pro-cyclicality and counter-cyclicality of remittances (Bugamelli & Paterno 2009; IMF, 2005; World Bank, 2006). For the South African context, Bowles and Posel (2005) show that migrants remit considerably more if their spouses and children are resident in the household that receives the remittances. The amount of remittances has also been found to be positively correlated to the poverty level of the recipient household (Maitra & Ray 2003; Posel 2001).

3.4 THE EFFECT OF REMITTANCES ON RECIPIENT HOUSEHOLDS

There is a substantial body of literature on the positive effects of remittances. Remittances have been found to be an effective coping mechanism against shocks in rural areas (Yang & Choi, 2007; Miller & Paulson, 2007). There is empirical evidence that remittances increase income, which in turn accelerates investment, productivity and employment (Lucas, 2005; Glytsos, 2002). It has been found that remittances serve as a source of capital to fund health (Anton, 2010), child schooling and education expenditures (Yang, 2008), and entrepreneurship (Yang, 2004; Woodruff & Zenteno, 2007) all of which have a positive impact on productivity, employment and economic growth.

Whilst positive effects of remittances have been shown, adverse effects have also been noted. First, some authors argue that remittances reduce the incentives of the recipient households to work, creating permanent dependency and thus slowing growth (Chami *et. al*., 2003; Funkouser, 1992; Taylor *et. al*., 1996). Second, Stahl (1982), cited in Jongwanich (2007), and Cattaneo (2005) argued that migration only favours households which are already better off and that poor households will not benefit from remittances which in turn increases inequality.

3.5 DETERMINANTS OF EDUCATIONAL ATTAINMENT

Studies that look at the processes by which individuals attain education emerged and grew since the earlier papers by Uzawa (1965) and Lucas (1988) which related human capital to economic growth. Most of these studies have empirically applied the human capital model which was developed by Becker (1965), Becker and Lewis (1973), and Becker and Tomes (1976). Studies have been conducted on the correlation between parental education and children's educational

attainment (Lillard & Willis, 1994; Woodruff & Binder, 1999). Van Eijck and de Graaf (1995), Biblarz and Raftery (1999), and Mahler and Winkelmann (2004) studied the impact of family structure and family size on children's schooling. Plug and Vijverberg (2001) looked at the relationship between family income and children's educational outcomes, while Alderman *et. al*. (2001) and Simonsen and Kessy (2006) studied the relationship between children's health and educational attainment.

3.6 REMITTANCES AND EDUCATIONAL ATTAINMENT

The main theoretical premise relating remittances to education is that remittances promote schooling investment and reduce child labour by reducing financial constraints, providing income diversification and alternative coping mechanisms for consumption smoothing during economic shocks (Calero *et. al.*, 2009). Although the literature that looks specifically at the impact of remittances on educational outcomes is relatively recent, a common insight that has emerged is that the relationship is nuanced. In one of the earliest studies concerning remittances and educational attainment, Hanson and Woodruff (2003) elude to a possible explanation of why there may not be a clear-cut relationship between remittances and educational attainment across different contexts. They propound the view that because households that receive remittances have a member who has migrated, this adversely affects the family structure and possibly the child's educational attainment. Most of the studies relating remittances to educational attainment have been conducted on Latin and Central American countries that have a high number of migrants in the USA.

Several researchers have found positive effects of remittances on educational attainment, for example Hanson and Woodruff (2003) who found that having a migrated family member has a positive effect on educational outcomes for 10 to 15 year old girls in Mexico whose mothers have a very low level of education. Similarly, Acosta (2011) found that remittances only have a significant impact on the enrolment of children in El Salvador when the interaction between gender and remittances is accounted for. His analysis showed that girls belonging to remittance receiving households have a 10.9% higher probability of staying in school than those who do not. The effect of remittances on boys remained insignificant. López-Córdova (2005) found that an increase in the proportion of households receiving remittances in a particular municipality in Mexico is associated with an increase of four percent in school attendance and a decrease in child illiteracy of almost 40 percent. Acosta *et. al.* (2008) found that in most Latin American countries children aged 10 to 15 belonging to remittance receiving households have more years of schooling and that the effect is stronger for children whose parents have low education.

Evidence for the nuanced nature of the relationship between remittances and educational attainment is borne out by research by Lopez-Cordoba (2005) which shows that school attendance of 15 and 17 year olds belonging to remittance receiving households drops by more than 7 percentage points. Further evidence supporting the deleterious impact of remittances on

educational attainment is given by the findings of McKenzie and Rapoport's (2006) that remittances have a negative impact on educational attainment for 16-18 year old girls and 12-18 year old boys. Few scholars have found no clear impact of remittances on educational attainment (Acosta in 2006 in El Salvador; Borraz in 2005 in Mexico).

This growing field of research has provided more questions than answers and it is therefore useful to advance our understanding by testing the theory in different contexts.

3.7 SUMMARY

This chapter began by summarising the importance of remittances in other developing countries. It was shown that remittances are considered an important financial flow to recipient countries and have received considerable scholarly attention. The chapter then showed that remittances are determined by two broad factors. Micro-economic factors such as altruism or self-interest and macro-economic factors such as interest rates, transaction costs and exchange rates. The chapter then concludes by providing a summary of literature that specifically studied the relationship between remittances and educational attainment. The two opposing mechanisms by which remittances may influence educational attainment of children were explained as follows: First, remittances increase household resources which allows families to increase investment into education and second, remittances are a result of an absent family member thereby disturbing the family structure and possibly reducing educational attainment of children. The findings of the various studies prove that the relationship between remittances and educational attainment is not clear-cut. Some studies found a positive relationship while others found a negative or no relationship at all. The relationship also varies depending on which age groups or gender of the children being considered. Finally, the literature review suggests that a research gap exists as to date there are no studies on the effect of remittances on educational attainment in the South African context.

CHAPTER 4
THEORETICAL FRAMEWORK

4.1 INTRODUCTION

This chapter provides a brief outline of the two theories that underpin the empirical analysis undertaken in this study. The first theory is the human capital theory, which often underlies studies on education investments, and the second theory is the theory relating remittances to educational attainment.

4.2 THE HUMAN CAPITAL THEORY

The human capital model was developed by Schultz (1960) and Becker (1965). In his seminal paper, Schultz (1960, 1) argues that certain “direct expenditures on education, health, and internal migration to take advantage of better job opportunities’’ are often considered to be consumption when in fact they constitute investments in human capital. Investment decisions in education are thus considered similarly to investments in other forms of capital where the direct and indirect costs of attaining the education are compared to the returns yielded by increased educational attainment. Holmes (1999) derived a model which evaluates the determinants of investments in schooling by integrating human capital within Becker’s (1981) household production model. Becker (1981) assumes that parents are altruistic and that they maximize the utility of the household as a whole. The utility of the household is in turn assumed to be a function of quality and quantity of children, market goods and leisure. Holmes thus estimates the demand determinants of schooling by the following equation:

$$S^* = F(W, Pm, Pn, Z, X, V) \quad (4.1)$$

where S* represents the number of schooling years completed; W is the current and expected earnings of the household; P_m represents a vector of market input prices incurred in borrowing for human capital investments, P_n represents non-market prices paid for human capital investments such as time taken to travel to school and studying; V is non-earned household income; X represents family and individual specific factors and characteristics; and Z represents community level factors and characteristics which are not included in P_m and P_n.

4.3 THE THEORETICAL FRAMEWORK OF THE RELATIONSHIP BETWEEN REMITTANCES AND EDUCATIONAL ATTAINMENT

McKenzie and Rapoport (2006) applied the principles established by Schultz (1960) and Holmes (1999) and developed a theoretical framework to relate migration and schooling of children. He articulates the investment decisions faced by households as follows: the household incurs financial and non-financial costs when sending child *i* to complete schooling year *s* (denoted as $c_{i,s}$ *and* $k_{i,s}$

respectively). Such costs are incurred at the moment of schooling and are thus met out of the household's current resources net of subsistence needs A_i. Completion of schooling year s by child i in turn yields an additional present discounted value return $r_{i,s.}$ The household's goal is then to choose $s \in \{0,1,2,\ldots,N\}$ such that the net present discounted value of schooling is maximised. That is,

$$S_i^* = \arg\max_{s \in \{0,1,2,\ldots,N\}} \sum_{j=1}^{S} (r_{i,j} - c_{i,j} - k_{i,j}) \qquad s.t \quad \sum_{j=1}^{S} c_{i,j} \leq A_i \tag{4.2}$$

McKenzie and Rapoport (2006) then incorporate the impact of migration and remittances into the framework by introducing two levels of schooling years: first, S_i^U that denotes the optimal level of education of child i and is achieved when credit constraints are not binding. S_i^U is expected to increase slightly with household resources, social capital and mother's education since more educated mothers reduce the non-financial costs of schooling. Second, S_i^P is the maximum number of schooling years a household can afford when facing budget constraints. S_i^P is expected to increase strongly with an increase in household wealth and maternal education since household resources are likely to be positively correlated with mother's schooling. Then:

$$S_i = \min(S_i^U, S_i^P) \tag{4.3}$$

Figure 4.1 shows the positive relationship between S_i and household wealth or maternal education. Household wealth increases child schooling by relaxing credit constraints and increasing the demand for education in richer households with educated mothers.

Migration and the remittances thereof increase household resources $A_{i,}$ thus increasing the maximum number of schooling, S_i^P. However, migration disrupts family structure and results in children possibly accumulating less family social capital. This negative effect of migration may be considered a non-financial cost of schooling $k_{i,s,}$ leading households to a lower unconstrained level of education.

The mixed effects of migration thus raise an interesting research question to determine the net effect of migration in different contexts.

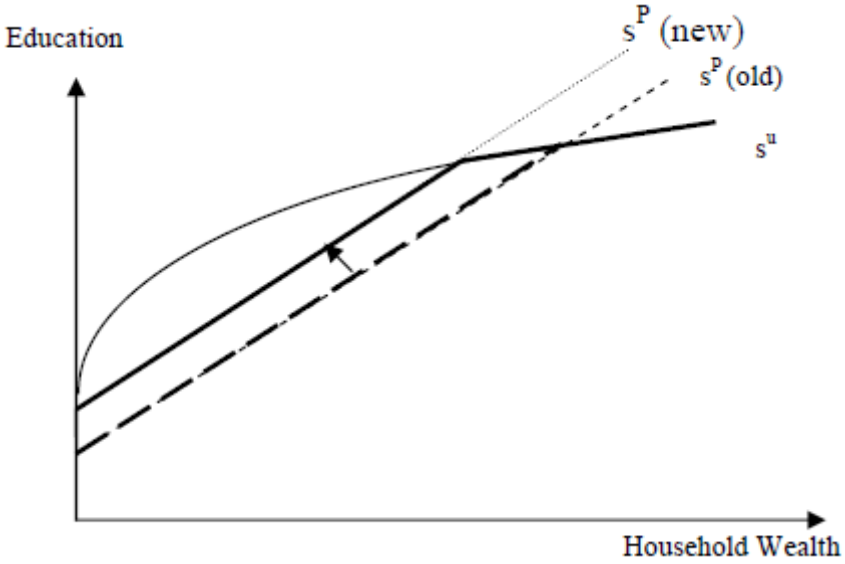

Figure 4.1: The effect of remittances on schooling

Source: McKenzie and Rapoport (2006, p.34)

4.3 SUMMARY

The theoretical framework relating remittances to educational attainment is relatively straight forward and has its genesis in the earlier established human capital theory. The theoretical framework initially allows one to conceptualise expenditures on education as investments and such expenditures are thus considered by households as conventional investments whose costs are compared to their expected return. The investment model of schooling therefore reduces years of schooling to be a function of financial and non-financial costs of sending children to school and household resources out of which financial costs are paid.

CHAPTER 5
RESEARCH METHODOLOGY

5.1 INTRODUCTION

This chapter summarises the methodological and measurement factors related to analysing the relationship between remittances and educational attainment. It then details the empirical model used in the study and the variables involved.

5.2 METHODOLOGICAL ISSUES

Most researchers who have studied the relationship between remittances and educational attainment have noted that such analyses may suffer from endogeneity, meaning that there may be variables which are not included in the estimation that affect both remittances and educational attainment. In their seminal paper, Hanson and Woodruff (2003) provide an example where in the event of sudden credit constraints, households will be less likely to invest in migration and education at the same time. In such instances, estimates obtained via regression models are biased. The most commonly used technique to correct for endogeneity as shown in the literature has been the instrumental variable (IV) technique. Researchers have predominantly used some variant of historical migration patterns as an instrument for remittances (Hanson & Woodruff, 2003; Acosta *et. al*., 2008; Lopez-Cardova, 2005; Acosta, 2011). Other variables which have been used as instrumental variables include: the variation in transaction costs incurred when sending remittances (Calero *et. al.*, 2009), labour market conditions in the most likely destination country (Amuendo-Dorantes, 2010) and the household's knowledge of a migrant (Avila & Schlarb, 2008).

In this study, the IV approach is followed and the proportion of migrants per municipality are used as an instrument. A suitable instrumental variable is one that is correlated with the endogenous explanatory variable and not correlated with the error in the original equation. Bound *et al.* (1995) explain that it is challenging to find instruments that meet these criteria and that often instruments that are used, are only weakly correlated with the endogenous explanatory variable in question. They further warn that in such instances, the instrumental variable estimations are likely to have large standard errors. In this study, I was unable to test the instrumental variable which I used for suitability however, I could not theoretically justify not using an instrumental variable. This challenge is therefore a limitation of this study.

5.3 MEASUREMENT ISSUES

Studies on remittances and educational attainment have also pointed to challenges relating to measuring the educational attainment of children. The challenge emanates when one includes children who are still enrolled in school into the sample because the eventual educational

attainment of such children is not known. Tansel (2002) suggests that only including older children who are expected to have attained a certain level of education by virtue of their age into the sample is an effective manner to overcome this challenge. This approach is followed in this study and four samples are created as follows: the early childhood development (ECD) sample consists of children aged zero to six years as these are the pre-school years when children are supposed to be enrolled in ECD facilities. The primary schooling sample consists of children aged 14 years to 22 years old as primary schooling is completed at the age of 13 in South Africa. The secondary schooling sample consists of children aged 19 to 22 years old as the National Senior Certificate is obtained at the age of 18, and the tertiary education sample consists of young adults aged 22 to 25 years old as an average three-year qualification would be completed at age 21. The samples in this study are very similar to Borromeo's (2012) samples except the tertiary sample was increased to include 23, 24 and 25 year olds to account for the high repetition rates recorded in undergraduate programs (CHET, 2013).

5.3 EMPIRICAL MODEL

A two-step IV-Probit regression model for enrolment rate of children is specified as follows:

$$Y^{*1} = \alpha + \beta_1 RMTT + \beta_2 \chi + \varepsilon$$

where:

- Y^* = binary outcome indicating the probability of a child being enrolled in an ECD facility
- RMTT = remittances (dummy variable taking value 1 if the household receives remittances)
- χ = control variables
- ε is a normally distributed error term

$$Y^* = \begin{cases} 0 \text{ if the child is not enrolled} \\ 1 \text{ if the child is enrolled} \end{cases} \qquad RMTT = \begin{cases} 0 \text{ if the household does not receive remittances} \\ 1 \text{ if the household receives remittances} \end{cases}$$

An IV-Ordered Probit model for the primary, secondary and tertiary level of educational attainment of children is specified as follows:

$$Y^{*1} = \alpha + \beta_1 RMTT + \beta_2 \chi + \varepsilon$$

where:

- Y^* = ordered categorical outcome indicating the probability of a child being enrolled in an ECD facility
- RMTT = remittances (dummy variable taking value 1 if the household receives remittances)
- χ = control variables
- ε is a normally distributed error term

Six categories of Y* are defined in this study:

$$Y^* \begin{cases} 0 \text{ if no grade completed} \\ 1 \text{ if highest grade completed is some primary school education?} \\ 2 \text{ if highest grade completed is primary school} \\ 3 \text{ if highest grade completed is some secondary school education?} \\ 4 \text{ if highest grade completed is secondary school} \\ 5 \text{ if tertiary education has been achieved} \end{cases}$$

5.3.1 Dependent variable

The dependent variable in the early childhood estimation is *enrolment*, which is a binary variable representing whether or not the child is enrolled in an ECD facility. For the primary, secondary and tertiary educational attainment estimations the dependent variable is *educational attainment* which is an ordinal categorical variable representing the highest grade that a particular child has completed. The primary schooling sample is assessed for three categories of educational attainment: *no grade completed, some primary schooling,* and *completed primary schooling.* The secondary schooling sample is assessed for five categories of educational attainment: *no grade completed, some primary schooling, completed primary schooling, some secondary schooling* and *completed secondary schooling.* The tertiary education sample is assessed for six categories: *no grade completed, some primary schooling, completed primary schooling, some secondary schooling, completed secondary schooling* and *completed tertiary qualification.*

5.3.2 Independent variables

The independent variables used in this study are similar to those used by Borromeo (2012) and the reasons for their inclusion emanate from the human capital theory discussed in Chapter 4.

Receipt of remittances. In this study, the choice was made to consider whether a household receives remittances or not rather than the amount reported in the survey; the reason was that such data may suffer from recall bias. The variable is thus a dummy variable taking the value of 1 if the household receives remittances and otherwise 0. The NIDS data asked respondents whether the contributions they receive from migrated household members are in cash or in kind. Both types of contributions were considered since it was believed that the form of the contribution is not relevant for this study. One would expect the receipt of remittances to have a positive impact on the educational attainment of children since remittance receipts should increase household resources and alleviate credit constraints.

Parent's educational attainment. The human capital model implies that children whose parents have a higher level of education are also expected to have higher educational attainment since educated parents increase family social capital and reduce the non-financial costs of attaining education. The educational attainment of each parent is included separately in these estimations as a dummy variable with six ordered categories as follows:

$$Y = \begin{cases} 0 \text{ if no grade completed} \\ 1 \text{ if highest grade completed is some primary school education?} \\ 2 \text{ if highest grade completed is primary school} \\ 3 \text{ if highest grade completed is some secondary school education?} \\ 4 \text{ if highest grade completed is secondary school} \\ 5 \text{ if highest grade completed is tertiary education} \end{cases}$$

When one level of education is observed in the model, other levels assume a value of 0. The *no grade completed* level is set as the base level.

Wealth. One expected children belonging to wealthier households to have higher educational attainment. Household assets and physical characteristics were considered and a wealth index constructed using principle component analysis. The wealth index was observed to have values of between -4.9 to 5.1

Age. The human capital model implies that as individuals get older they will gain more education.

Number of household members of school-going age. The resource dilution theories suggest that an increase in the size of the household leads to a decrease in the education of each individual as household resources are spread more thinly. In line with Borromeo (2012), two variables relating to the number of household members of schooling going age were constructed: one for children aged

zero to six and one for children aged seven to twenty-four. It is expected that the resources required for the two age groups will be different and thus have different effects on the educational attainment of children.

Location. We used the typology set by StatsSA in 2001 that classified areas as rural, traditional authority areas or urban areas. We would expect children residing in urban areas to have higher educational attainment than the rest due to the better economic prospects available to adults in urban areas of South Africa. The typology is included as a dummy variable with the urban category set as the reference category.

Social grant receipts. Parents and guardians of children aged zero to eighteen are eligible to receive a social grant from the South African government. We expect the receipt of grants to increase household resources and thus positively influence the educational attainment of children. The variable is included as a dummy variable taking the value of 1 if there is an adult receiving a grant for a child and otherwise 0. It should be noted that the social grant variable is only included in the ECD sample as the other samples consist of children who are above the eligible age to receive a grant.

5.4 SUMMARY

This chapter has provided summaries of two of the prominent methodological issues found in the literature relating remittances to educational attainment: potential endogeneity and measurement of educational attainment. This study follows the techniques that have been widely used to resolve the two issues, namely the IV technique and creating samples of children who are expected to have achieved certain education levels by virtue of their age. It was also acknowledged that a weakness to this study emerged from my inability to test the selected instrumental variable for suitability. The chapter provided details of the empirical estimations and the dependent variable, and finally the independent variables derived from the literature and the theoretical framework were presented.

CHAPTER 6
DATA DESCRIPTION

6.1 INTRODUCTION

This chapter provides a description of the data which was used in this study; it further summarises the descriptive statistics of the variables used in the statistical estimations.

6.2 DATA SOURCE

The data used in this study is derived from the third wave of the National Income Dynamic Study (NIDS). The NIDS is the first longitudinal household survey in South Africa and it tracks the livelihoods and resilience of individuals and households over time. The study is part of the South African government's efforts to understand the changing nature of poverty within the economy and is conducted by the Southern Africa Labour and Development Research Unit (SALDRU) based at the University of Cape Town. The first wave was conducted in 2008, the second and third in 2010 and 2012 respectively. At the time of this study, only the first three waves of the survey had been published.

6.3 DESCRIPTIVE STATISTICS

Table 6.1 shows the descriptive statistics of the variables used in this study. It can be seen that approximately 19 percent of zero to six year olds and fourteen to twenty-two year olds belong to households that receive remittances. In line with expectations the sample of twenty-two to twenty-four year olds has the least number of children belonging to remittance receiving households at 18%. A relatively large number of blank observations are found in the parental education statistics. The blank observations decrease as the age of the respondents decreases. Of concern is the 80 and 49 percent blank observations of the mother's and father's education in the zero to six year olds respectively. One explanation for this is that the child's survey is completed by an adult in the household who takes care of the child, which may mean that in a large number of instances such adults were not the parent of the child and thus did not know about the parent's level of educational attainment. It is also worth mentioning that the proportion of both mothers and fathers with no schooling increases significantly as the age of the respondent increases. Between one and four percent of parents of zero to six year olds have no schooling whilst close to half of parents of twenty-two to twenty-four year olds have no schooling.

The mean age in the first, second, third and fourth groups is 3, 18, 20 and 23 respectively. Approximately half the children in our sample are females with this proportion increasing slightly to 56% amongst the twenty-two to twenty-four year olds. The mean wealth score of each household is between -0.96 and -0.42, which places them in the third quintile of wealth. The standard

deviations of the wealth scores is relatively high at 2.3, indicating that the high levels of inequality in the country exist even amongst racial groups. The number of household members of school going age is constant across the four groups with the exception of zero to six year olds where there are on average two other children of similar age in the households.

Regarding the location of children, unexpectedly only about a third of children aged zero to six and fourteen to twenty-two reside in urban areas. The proportion increases significantly for older children to 41 percent and 47 percent respectively. This may be in line with suggestions in the literature that migration patterns in South African still indicate that parents do not migrate with their families and that youths in rural areas migrate to urban areas immediately when they finish school in search for better economic prospects. Seventy-six percent of children aged zero to six receive social grants.

Table 6.1: Descriptive Statistics of the Variables Used

	Aged 0 to 6		Aged 14 to 22		Aged 19 to 22		Aged 22 to 24	
Variable description	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Receipt of remittances	0.18565	0.38887	0.193886	0.39538	0.215852	0.411515	0.177482	0.382182
Mother's Education								
No schooling	0.01868	0.135476	0.101695	0.304841	0.241234	0.42813	0.309556	0.46262
Has some primary schooling	0.011414	0.106237	0.052494	0.223043	0.069791	0.254857	0.080976	0.272874
Completed primary school	0.007454	0.086024	0.019912	0.13971	0.024427	0.154408	0.032169	0.176497
Has some secondary	0.07058	0.256152	0.1072	0.309399	0.101196	0.301664	0.110372	0.313439
Completed secondary	0.078267	0.268623	0.056114	0.230165	0.051346	0.220757	0.043816	0.204742
Completed tertiary education	0.01584	0.12487	0.01609	0.125835	0.022931	0.149722	0.017194	0.130028
Father's Education								
No schooling	0.04283	0.202522	0.13043	0.33863	0.352645	0.47809	0.40964	0.49922
Has some primary schooling	0.026555	0.160797	0.058126	0.234004	0.062812	0.242684	0.06822	0.252192
Completed primary school	0.016772	0.128429	0.022124	0.147101	0.022433	0.148123	0.021076	0.143678
Has some secondary	0.137666	0.344589	0.086887	0.281697	0.087737	0.282982	0.093178	0.290762
Completed secondary	0.24109	0.427795	0.084674	0.278424	0.063809	0.244473	0.040488	0.197156
Completed tertiary education	0.04123	0.198845	0.022124	0.147101	0.019442	0.138106	0.021631	0.145515
Age	3.330771	1.888079	17.78037	2.562679	20.46461	1.117752	23.45757	1.114804
Female	0.511763	0.49992	0.515889	0.499798	0.530409	0.499199	0.557959	0.496767
Wealth	-0.6919	2.304091	-0.95988	2.286413	-0.58537	2.274087	-0.42314	2.231258
Number of household members aged six years and below	1.836245	1.17918	0.909502	1.044879	0.907730	1.132871	0.936772	1.135345
Number of household members aged seven to twenty four	2.467971	1.983908	3.15837	1.715513	2.983042	1.813046	2.566833	1.842388
Child resides on a farm	0.064058	0.244884	0.05752	0.232861	0.051845	0.221768	0.049362	0.216683
Child resides in an area under traditional authority	0.581878	0.493308	0.588294	0.492192	0.538385	0.498649	0.480865	0.499772
Child resides in an urban area	0.353161	0.478008	0.307692	0.462586	0.409771	0.491914	0.469773	0.499224
Proportion of households with a migrant per region	0.086936	0.049439	0.084442	0.044634	0.081406	0.0472	0.077553	0.047788
Child receives social grant	0.76054	0.426803						
N	4293		4972		2006		1803	

Source: Author's own calculations based on the third wave of the National Income Dynamic Study.

6.4 SUMMARY

The descriptive statistics reveal that about a fifth of respondents under consideration belong to households that receive remittances. The households in this study fall into the third quintile of wealth with a relatedly high standard deviation, and the geographical spread of the respondents is not consistent with the national spread. Only about a third of children aged zero to six and fourteen to twenty-two reside in urban areas. The proportion increases significantly for older children to 41 percent and 47 percent respectively.

CHAPTER 7
RESULTS AND DISCUSSION

7.1 INTRODUCTION

This chapter presents the results of the IV-Probit and IV-Ordered Probit models that were run for the four samples. The coefficients of probit models can not be directly interpreted (Greene & Hensher, 2009) and hence the marginal effects are included in the tables contained in this chapter. Marginal effects of an Ordered Probit estimation show the change in the probability of achieving one of the dependent variable outcomes when one of the independent variables changes by one unit (holding other independent variables constant). The effect on the dependent variable is presented in categories of the independent variables as follows: (i) remittance receipts, (ii) educational attainment of parents, (iii) demographic variables, (iv) household variables, and (iiv) location variables. The presentation of the marginal effects is preceded by a summary of the predicted probabilities of achieving each level of educational attainment.

7.2 RESULTS

Before discussing the results it is worth mentioning that based on the likelihood ratio test (the counterpart for the Chow Test used in linear regression), it was possible to reject the null hypothesis of group homogeneity for all four estimations that were run.

Table 7.1 shows a summary of the predicted probabilities of achieving each applicable level of educational attainment for each of the four samples in this study. It is useful to recapitulate at this stage that the early childhood development (ECD) sample consists of children aged zero to six years and is being considered for enrolment into ECD facilities. The 14 to 22 year old sample was considered for primary school education attainment. The 19 to 22 years old and the 22 to 25 years old samples were considered for secondary and tertiary education attainment respectively.

Table 7.1: Predicted probabilities of achieving different levels of Educational Attainment

	Aged 0 to 6	Aged 14 to 22	Aged 19 to 22	Aged 22 to 25
ECD Enrolment	0.397779			
No Schooling		0.021042	0.040317	0.078981
Some Primary Schooling		0.123382	0.034405	0.030469
Completed Primary school		0.855576	0.034847	0.028125
Some secondary schooling			0.610915	0.494074
Completed Secondary schooling			0.279517	0.252728
Tertiary Education				0.115622

Source: Author's own calculations based on the third wave of the National Income Dynamic Study.

Table 7.1 shows that as per the literature, the probability of zero to six year olds being enrolled in an ECD facility is relatively low at 40 percent. For the other three samples, it is interesting to note that the probability of having no schooling is very low for children aged 14 to 22 and 19 to 22 at two and four percent respectively. However, this probability increases for the 22 to 25 year old sample to around eight percent. Also in line with the literature are the high probability of 14 to 22 year olds of having completed primary schooling (86 percent), the probability of 19 to 22 year olds of having some secondary schooling at 61 percent and of completing secondary schooling at 28 percent. The probabilities of the 19 to 22 year old cohort confirm the national reports that high school dropout rates are particularly high. A look at the 22 to 25 year sample which represents youths entering the labour force shows that the probability of South African youth having obtained a tertiary qualification is only 12 percent and that this group have almost a 50 percent chance of only having some secondary schooling.

7.2.1 The impact of remittances

The analyses conducted in this study were split into two: first non-instrumental variable estimations and then instrumental variable estimations were run. In particular, for the sample of children aged zero to six, a Probit model was run followed by a Two-Step IV-Probit model. Ordered Probit models were initially run on the other three samples; thereafter IV-Ordered Probit models were run. This chapter shows the marginal effects; the Non-IV and IV estimation result can be found in Appendix A and B respectively.

Appendix A shows that the remittance variable is statistically significant at the one percent level and enters positively for all our estimations as expected. Appendix B shows that when applying the IV technique the remittance variable is not significant for any of the samples.

Table 7.2: Marginal Effects of IV Probit Estimation on the Early Childhood Development of Children Aged 0 to 6

Variables		Enrolment in ECD Facility
Receipt of remittances		15.59295
Mother's Education*		
Has some primary schooling		-0.8266502
Completed primary school		-2.220828
Has some secondary schooling		-1.422976
Completed secondary schooling		-0.6347537
Completed tertiary education		-2.417097
Father's Education*		
Has some primary schooling		-1.825566
Completed primary school		-1.994685
Has some secondary schooling		-1.31063
Completed secondary schooling		-1.386356
Completed tertiary education	***	-2.53014
Age		0.7215944

Female*		0.242685
Wealth		0.000061
Number of household members aged six years and below		-0.2788963
Number of household members aged seven to twenty-four	*	-0.1562395
Child resides on a farm*	**	-1.028501
Child resides in an area under traditional authority*	*	-1.695656
Child receives social grant*		0.21791

Source: Author's own calculations based on the third wave of the National Income Dynamic Study.

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Marginal Effects for dummy variables is the discrete change from the base level

7.2.2 Educational attainment of parents

Table B1 in Appendix B shows that none of the parent's education dummy variables is statistically significant in the ECD estimation. For children aged 14 to 22 years, the completed secondary schooling level for mothers is significant whilst for fathers only some primary schooling, completing secondary schooling and obtaining a tertiary qualification have a significant effect. Table 7.3 shows the marginal effects of the estimations run for children aged 14 to 22. It can be seen that relative to the base case of a mother having no schooling, having a mother who has completed secondary schooling increases the probability of a child completing primary school by approximately four percentage points. Similarly, increases of about six and three percentage points are observed for children whose fathers have completed secondary schooling and obtained a tertiary qualification respectively.

Table 7.3: Marginal Effects of IV-Ordered Probit Estimation on the Primary Schooling Attainment of Children Aged 14 to 22

Variables		No Schooling	Some Primary Schooling	Completed Primary school
Receipt of remittances		-0.0199363	-0.069052	0.0889883
Mother's Education*				
Has some primary schooling		0.0043661	0.0142529	-0.018619
Completed primary school		0.0091531	0.0284134	-0.0375665
Has some secondary schooling		-0.0045	-0.0163975	0.0208975
Completed secondary schooling	*	-0.0078325	-0.0299994	0.0378319
Completed tertiary education		-0.0008875	-0.003082	0.0039695
Father's Education*				
Has some primary schooling	*	0.0087606	0.0267852	-0.0355459
Completed primary school		-0.0038926	-0.0137313	0.0176238
Has some secondary schooling		-0.0056856	-0.0205518	0.0262373
Completed secondary schooling	***	-0.0138093	-0.0571166	0.0709259
Completed tertiary education	*	-0.0124328	-0.0500714	0.0625042
Age	***	-0.0059084	-0.0204645	0.0263729

Female*	***	-0.0128401	-0.0453121	0.0581522
Wealth	***	-0.00000866	-0.00003	0.0000387
Number of household members aged six years and below		0.0013755	0.0047642	-0.0061396
Number of household members aged seven to twenty four		0.00000921	0.0000319	-0.0000411
Child resides on a farm*		0.0005694	0.0018147	-0.002384
Child resides in an area under traditional authority*		-0.0050757	-0.0173048	0.0223804

Source: Author's own calculations based on the third wave of the National Income Dynamic Study.

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Marginal Effects for dummy variables is the discrete change from the base level

Table B.3 in Appendix B shows that for children aged 19 to 22, only the completed secondary schooling dummy variable of parent's education is statistically significant. It can be noted in Table 7.4 that the related probabilities of having either a mother or a father who has completed secondary schooling are negative for all levels of education below the tertiary level. Relatively large increases in the probability of obtaining a tertiary qualification are observed for children whose mothers and fathers have completed secondary schooling at 13 and 9 percentage points respectively.

Finally, for children aged 22 to 25 years the completed secondary schooling variable for mothers is significant, and the 'some primary schooling' and 'some secondary schooling' variables for fathers are also significant. The marginal effects for this age group shown in Table 7.5 are similar to those of the 19 to 22 group in that reductions in probabilities of obtaining lower levels of education are observed for children whose parents have completed secondary schooling. The increase in probabilities of attaining higher levels of education are more notable for children whose mothers have completed high school. Relative to children of mothers with no schooling, children of mothers who have completed high school have an increase in probabilities of completing high school and obtaining a tertiary qualification of close to six and nine percentage points respectively. An increase in about four percentage points in completing high school and obtaining a tertiary qualification is associated with having a father who has achieved some level of primary schooling.

Table 7.4: Marginal Effects of IV-Ordered Probit Estimation on the Secondary Schooling Attainment of Children Aged 19 to 22

Variables		No Schooling	Some Primary Schooling	Completed Primary school	Some Secondary schooling	Completed Secondary schooling
Receipt of remittances		0.0170959	0.0107119	0.0091163	0.0291355	-0.0660597
Mother's Education*						
Has some primary schooling		-0.0014707	-0.0009232	-0.0007854	-0.0024295	0.0056088
Completed primary school		0.0069819	0.0042231	0.0035308	0.0091943	-0.0239301
Has some secondary schooling		-0.0025344	-0.0015987	-0.0013632	-0.0043107	0.009807
Completed secondary schooling	***	-0.0233109	-0.016455	-0.0148302	-0.0758135	0.1304097

Completed tertiary education		-0.0018883	-0.0011876	-0.0010112	-0.0031551	0.0072421
Father's Education*						
Has some primary schooling		-0.0022115	-0.0013916	-0.0011843	-0.0036653	0.0084526
Completed primary school		0.0233609	0.0132373	0.0107319	0.0195499	-0.0668801
Has some secondary schooling		-0.0092159	-0.0059982	-0.0051878	-0.0186321	0.0390339
Completed secondary schooling	**	-0.0184071	-0.0125921	-0.011161	-0.0495423	0.0917024
Completed tertiary education		-0.0021298	-0.0013397	-0.0011399	-0.0035218	0.0081311
Age	***	-0.0054854	-0.003437	-0.0029251	-0.0093485	0.0211961
Female*	***	-0.0176932	-0.011073	-0.0094114	-0.0294221	0.0675996
Wealth	**	-0.0098112	-0.0061475	-0.0052318	-0.0167207	0.0379112
Number of household members aged six years and below		0.0047597	0.0029823	0.0025381	0.0081117	-0.0183919
Number of household members aged seven to twenty four		0.0006949	0.0004354	0.0003706	0.0011843	-0.0026852
Child resides on a farm*		-0.0013583	-0.0008227	-0.00069	-0.0019683	0.0048393
Child resides in an area under traditional authority*		-0.0059783	-0.0036973	-0.0031316	-0.0098295	0.0226368

Source: Author's own calculations based on the third wave of the National Income Dynamic Study.

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Marginal Effects for dummy variables is the discrete change from the base level

7.2.3 Demographic variables

The demographic variables used in all estimations include age and gender of the children under consideration. The age variable has a statistical significance at the 1 percent level for all our estimations except the 22 to 25 year olds estimation where it is insignificant. The gender variable is statistically significant for all estimations except the ECD estimation.

Turning to the marginal effects shown in Tables 7.2, 7.3, 7.4 and 7.5, every year increase in age of children aged zero to six increases their probability of being enrolled in an ECD facility by relatively large 72 percentage points. Although the impact of age in the other estimations are marginal, it can be noted that a one year increase in age decreases the probability of attaining lower levels of education and increases the probability of achieving higher levels of education. This profile is observed for the gender variable too where relative to male children, female children have a reduced probability of achieving lower levels of education and an increased probability of achieving higher levels of education.

7.2.4 Household variables

Household variables included in the estimations are wealth, number of household members aged six years and below and number of household members aged seven to twenty-four years and the receipt of children's social grants specifically for the ECD sample. As expected, the wealth variable is statistically significant for the 14 to 22, 19 to 22 and 22 to 25 samples and it enters positively. Contrary to expectations, the wealth variable is not significant for the ECD sample.

Table 7.5: Marginal Effects of IV-Ordered Probit Estimation on the Tertiary Education Attainment of Children Aged 22 to 25

Variables		No Schooling	Some Primary Schooling	Completed Primary school	Some secondary schooling	Completed Secondary schooling	Completed Tertiary Qualification
Receipt of remittances		-0.0285496	-0.0077677	-0.0063032	-0.0301576	0.0352851	0.037493
Mother's Education*							
Has some primary schooling		0.0120812	0.0031693	0.0025395	0.0103742	-0.0145592	-0.013605
Completed primary school		0.0079305	0.0021044	0.0016922	0.0071833	-0.0096757	-0.0092346
Has some secondary schooling		-0.0092629	-0.0025828	-0.0021092	-0.0105014	0.0118943	0.012562
Completed secondary schooling	***	-0.0427514	-0.0133225	-0.0112796	-0.0788093	0.0597434	0.0864194
Completed tertiary education		-0.0510621	-0.0164411	-0.0140768	-0.1086957	0.0718267	0.1184489
Father's Education*							
Has some primary schooling	**	-0.0277354	-0.0080184	-0.0066287	-0.0377564	0.0363426	0.0437963
Completed primary school		-0.0165596	-0.0046211	-0.0037773	-0.019292	0.0210402	0.0232098
Has some secondary schooling	*	-0.0194269	-0.0054695	-0.0044834	-0.0235378	0.0248845	0.028033
Completed secondary schooling		-0.0039387	-0.0010586	-0.0008552	-0.0038769	0.0048247	0.0049048
Completed tertiary education		-0.0222787	-0.0063288	-0.0052026	-0.0280799	0.0287654	0.0331246
Age		-0.0046129	-0.0012551	-0.0010184	-0.0048727	0.0057012	0.0060579
Female	*	-0.0122228	-0.0033142	-0.0026863	-0.0126933	0.0150601	0.0158565
Wealth	***	-0.0140318	-0.0038177	-0.0030979	-0.0148221	0.0173422	0.0184273
Number of household members aged six years and below		0.0044086	0.0011995	0.0009733	0.0046569	-0.0054487	-0.0057897
Number of household members aged seven to twenty four		-0.0011936	-0.0003248	-0.0002635	-0.0012608	0.0014752	0.0015675
Child resides on a farm*		-0.0085857	-0.0022242	-0.0017795	-0.0074504	0.010051	0.0099889
Child resides in an area under traditional authority*	**	-0.0216	-0.005813	-0.0047065	-0.0223793	0.0262361	0.0282627

Source: Author's own calculations based on the third wave of the National Income Dynamic Study.

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Marginal Effects for dummy variables is the discrete change from the base level

Of the two variables related to the household size, the number of household members aged between seven and twenty-four is significant and negative in the ECD estimation, whilst the number of household members aged six years and below is significant and negative in the 19 to 22 year olds sample. The social grant variable in the ECD estimation is not statistically significant.

Tables 7.3, 7.4 and 7.5 show that the marginal effects of wealth on educational attainment are largely small and changes in probabilities are mostly below zero. The largest impact of wealth on educational attainment is observed in the 19 to 22 year olds sample where a unit increase in the wealth index is associated with a 4 percentage point increase in the probability of completing secondary schooling.

On the other hand, the presence of an additional child aged seven to twenty-four reduces the probability of zero to six year olds being enrolled in an ECD facility by 15.6 percentage points. The impact of an additional household member aged six and below on the probabilities associated with having no schooling, some primary schooling, completing primary school and having some secondary schooling are all positive but below zero percentage points for 19 to 22 year olds.

Notably, an additional child aged six years and below reduces the probability of 19 to 22 year olds obtaining a tertiary qualification by approximately 2 percentage points.

7.2.5 Location variables

Both location dummy variables (residing on a farm on in an area under tribal authority) are statistically significant in the ECD estimation. The residing in an area under tribal authority dummy variable is also significant in the 22 to 25 year olds sample.

The largest impact of any variables are seen in the impact of location on the probability of children being enrolled in ECD facilities. Relative to children residing in urban areas, residing on farms and in areas under tribal authority decreases the probabilities of children to be enrolled in an ECD facility by more than 100 percentage points. 22 to 25 year olds residing in areas under tribal authority are associated with increased probabilities of completing secondary schooling and obtaining a tertiary qualification of close to 3 percentage points relative to those residing in urban areas. They have reduced probabilities of obtaining all other levels of educational attainment.

7.3 DISCUSSION

The main finding in the IV estimates is that contrary to our expectations, remittances do not have a statistically significant impact on the educational attainment of all our samples. This finding is contrary to the literature that relates remittances to educational attainment in other developing countries. A re-consideration of the theoretical framework and the South African context may be useful to suggest explanations for this finding. The theory of remittances posits that since remittances arise from migration of a household member, they may have two opposing and simultaneous effects on educational attainment. First, they relax household liquidity constraints and increase household resources which can be invested in education and thus increase schooling, and second, the effect of the absence of a parent disrupts the family structure, increases the non-financial costs of schooling and may therefore reduce schooling (McKenzie & Rapoport, 2006). Applying the South African education and migration context to the theoretical framework suggests reasons why the theory may not hold true for South Africa. One may assume that migrants who do not migrate with their children fall into the lower quintiles of socio-economic status. Since public schools in poorer areas of South Africa are free and some even provide meals to students through the National School Feeding Program, households in those communities do not face the same investment decisions regarding schooling as those in other countries. The cost of education in these contexts is thus not the usually large cash outlay of paying school fees but rather the opportunity cost of attending school. Employment statistics suggest that this opportunity cost is relatively low for those who have not completed secondary school nor attained a tertiary qualification (Bhorat, 2015). However, the signals that Black South Africans may be getting about the benefits of completing schooling may be negative due to the high youth unemployment rate even amongst those who have completed school. The policy implications of this finding are varied

and relate to the widely acknowledged need to increase the employability of young South Africans whilst growing opportunities for economic activity within the economy.

Regarding the educational attainment of parents, a result contrary to our expectations was also found in the ECD sample. At first glance, the result may appear erroneous considering that as discussed earlier, ECD provision is private until Grade R, which is the year preceding the first year of school. However, when one considers that the reason that parents enrol their children in ECD facilities is not always because of the benefits of ECD programs on children's development. Often parents enrol their children in ECD facilities due to the need for supervision when the adults in the household are working during the day. It therefore appears plausible that the educational attainment of parents may not be a statistically significant driver of ECD enrolment. Children being looked after by day mothers and grandmothers were also considered to be enrolled in an ECD facility in this study because such facilities form a large component of the ECD provision amongst Black South Africans. For the other samples, it is interesting to note that children whose parents have completed high school have higher probabilities of achieving higher levels of educational attainment. The finding suggests that the social capital benefits of having educated parents only set in once parents complete secondary schooling. This finding has implications for the signalling effects of educational attainment and is consistent with the employment statistics that show that employment prospects improve significantly by completing secondary schooling (Bhorat, 2015). Therefore, parents who have enjoyed the economic gains of completing secondary schooling will invest more and encourage their children to achieve higher levels of education. Finally, the finding emphasises the need for rapid and effective action to be taken in dealing with the high secondary school dropout rates recorded in South Africa.

It was shown that except for zero to six year olds, female children have lower probabilities of attaining lower levels of education and higher probabilities of attaining higher levels of education. This finding suggests that families approach education decisions differently for female and male children and that the opportunity costs of attending school are higher for male children than they are for female children. Male children perhaps are more often expected to look after their families than female children do, and their probabilities of entering into unskilled manual jobs is higher than it is for female children.

Consistent with the theoretical framework and expectations for this study is the finding that the wealth variable is statistically significant for all our samples except for the ECD sample. The reasons that wealth may not have a statistically significant effect on the enrolment of children in ECD facilities are similar to those discussed relating to the educational attainment of parents. The second largest impact of all the variables was observed in one of the sibling variables on the ECD sample. The presence of an additional child aged seven to twenty-four reduces the probability of zero to six year olds being enrolled in an ECD facility by 15.6 percentage points. This finding points to anecdotal evidence that in poorer communities older children often look after their younger

siblings. It may also suggest that the presence of school going children places high resource constraints on the household, which results in younger ones being kept out of ECD programs. Further relating to sibling variables, it was shown that an additional child aged six years and below reduces the probability of 19 to 22 year olds obtaining a tertiary qualification by approximately 2 percentage points and marginally increases their probability of achieving all other levels of education. It may be that since both tertiary education and ECD programs are funded privately, households prioritise the younger children over the older ones who should have completed secondary schooling and can thus theoretically become economically active.

Finally, both findings relating to the location variables imply that the increased economic prospects enjoyed by adults residing in urban areas have mixed results for their children. Children aged zero to six residing on farms and in areas under tribal authority have significantly lower probabilities of being enrolled in ECD facilities, suggesting that higher unemployment levels in these areas mean that there is often a child minder available within the household to look after young children. On the other hand, older children (22 to 25 year olds) residing on farms and in areas under tribal authority have increased probabilities of completing secondary schooling and obtaining tertiary qualifications than their urban counterparts. This too suggests that the increased opportunities for economic activity in urban areas negatively affect educational attainment by increasing the opportunity costs of pursuing higher education.

7.4 SUMMARY

This chapter has presented the empirical findings of the estimations that were run. The findings are in the form of marginal effects that accompanied the interpretation. The most notable findings are that remittances do not have a statistically significant effect on the educational attainment of children and that parental education, child support grants and wealth do not have a statistically significant effect on the probability of children being enrolled in ECD programs. The findings that are inconsistent with the theory of educational attainment and remittances are well explained by the South African context that are different to other contexts where the theory has held.

CHAPTER 8
CONCLUSION

8.1 INTRODUCTION

This final chapter summarises the findings of the empirical estimations done in this study. It further provides some guidance on broad policy implications of the findings and suggests related areas of further research.

8.2 SUMMARY OF FINDINGS

This paper aimed to contribute to the body of knowledge related to remittances and education with specific application to the less studied context of South Africa. Although South Africa is often considered a remittance sending rather than receiving country, the high internal and oscillating migration rates by Black South Africans from urban to rural areas make the study of the impacts of such migration patterns interesting. The study was further motivated by the widely acknowledged negative state of educational outcomes in South Africa particularly low completion rates of secondary schooling.

Using the Instrumental Variable technique, it was found that the receipt of remittances does not have a statistically significant impact on the probability of young children being enrolled in ECD facilities nor does it have a statistically significant effect on the probability of achievement of any levels of primary, secondary and tertiary educational attainment. This finding is contrary to the theoretical framework and can potentially be explained by South Africa's idiosyncratic factors related to the education system. The fact that poorer households have access to free education in South African makes the investment decisions related to education unique compared to other countries where households have to pay for education out of limited household resources. Therefore, the cost of education is the opportunity cost of having a child attending school. There may be a misleading perception that this opportunity cost is higher than in reality and it is thus important for signals regarding education to be understood and influenced positively.

Another finding that was inconsistent with the theoretical framework is that parental education and wealth do not have a significant effect on the probability of zero to six year olds being enrolled in ECD facilities although these are privately funded. The finding suggests that ECD may largely be a necessity (for parents requiring child-minding services when they are at work) as opposed to a service purchased because of the benefits it provides. The presence of an additional child aged seven to twenty-four reduces the probability of zero to six year olds being enrolled in an ECD facility by 15.6 percentage points, suggesting that older siblings may have the responsibility of looking after younger ones at home or that limited resources are directed at older children over younger ones. It was also shown that an additional child aged six years and below reduces the

probability of 19 to 22 year olds obtaining a tertiary qualification by approximately 2 percentage points whilst increasing their probability of achieving all other levels of education. All the findings related to ECD provision emphasise the need for the government to expedite the expansion of ECD provision and improve its quality as there is a latent demand for these programs.

It was shown that the social capital gains of having educated parents only set in when parents complete secondary school or achieve a tertiary qualification and is applicable only for samples of children aged 14 years and above. The high secondary school dropout rates do not bode well for this finding. Wealth was found to be statistically and positively related to educational attainment of 14 to 22, 19 to 22 and 22 to 25 year olds. The findings have also shown that residing on farms and in areas under tribal authority has mixed effects on the educational attainment of children. Children aged zero to six residing on farms and in areas under tribal authority have significantly lower probabilities of being enrolled in ECD facilities, suggesting that higher unemployment levels in these areas mean that there is often a child minder available within the household to look after young children. On the other hand, older children (22 to 25 year olds) residing on farms and in areas under tribal authority have increased probabilities of completing secondary schooling and obtaining tertiary qualifications than their urban counterparts. This suggests that the increased opportunities for economic activity in urban areas negatively affect educational attainment by increasing the opportunity costs incurred by older children in pursuing higher education.

8.3 FURTHER RESEARCH

Further research in the field of educational attainment of Black South Africans can aim at studying the impact of community level factors such as social capital. Social capital functions at the community level in form of networks, access to information and resources which can be used to either accumulate human capital or provide positive signals that encourage youths to complete schooling.

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APPENDIX A:

RESULTS OF NON-INSTRUMENTAL VARIABLES PROBIT ESTIMATIONS

Table A.1 Non-IV Probit Estimates of Early Childhood Development, Children Aged 0 to 6 Years

Variables	Coefficient		SE
Receipt of remittances	0.2216146	***	0.0618785
Mother's Education			
Has some primary schooling	-0.1394022		0.2048493
Completed primary school	-0.5628467	**	0.2533514
Has some secondary schooling	-0.0506054		0.0870885
Completed secondary schooling	0.0670094		0.0845597
Completed tertiary education	-0.2581883		0.186913
Father's Education			
Has some primary schooling	-0.044851		0.1436507
Completed primary school	-0.155452		0.1785663
Has some secondary schooling	-0.0884511		0.0710488
Completed secondary schooling	-0.1193482	**	0.0582389
Completed tertiary education	0.2998091	***	0.1198939
Age	0.5351983	***	0.0154159
Female	0.0299199		0.0461616
Wealth	0.0002293	***	0.0000547
Number of household members aged six years and below	-0.0360729	*	0.0222655
Number of household members aged seven to twenty four	-0.0602693	***	0.0133681
Child resides on a farm	-0.7685451	***	0.1042166
Child resides in an area under traditional authority	-0.3843483	***	0.0549807
Child receives social grant	-0.0420275		0.0607072
Log likelihood	-1941.664		
Number of obs	4293		
LR chi2(19)	1885.11		
Prob > chi2	0.000		
Pseudo R2	0.3268		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Table A.2 Non-IV Ordered Probit Estimates of Primary Schooling Attainment, Children Aged 14 to 22 Years

Variables	Coefficient		SE
Receipt of remittances	0.1918615	***	0.0621076
Mother's Education			
Has some primary schooling	-0.0837451		0.0994375
Completed primary school	-0.1647367		0.1537454
Has some secondary schooling	0.1028207		0.0769966
Completed secondary schooling	0.1993472	*	0.1111261
Completed tertiary education	0.0176106		0.2084424
Father's Education			
Has some primary schooling	-0.1520983	*	0.0911634
Completed primary school	0.0870019		0.1540924
Has some secondary schooling	0.1281509		0.0833483
Completed secondary schooling	0.3994416	***	0.0959434
Completed tertiary education	0.343739	*	0.1869925
Age	0.1259673	***	0.0090652
Female	0.2769579	***	0.0454419
Wealth	0.0001855	***	0.0000484
Number of household members aged six years and below	-0.0295097		0.0210483
Number of household members aged seven to twenty four	-0.0001649		0.0095746
Child resides on a farm	-0.0083643		0.0981115
Child resides in an area under traditional authority	0.1098811	**	0.0540451
/cut1	0.4114806		
/cut2	1.464608		
Log likelihood	-2162.7946		
Number of obs	4972		
LR chi2(18)	314.54		
Prob > chi2	0.000		
Pseudo R2	0.068		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Table A.3 Non-IV Probit Estimates of High Schooling Attainment, Children Aged 19 to22 Years

Variables	Coefficient		SE
Receipt of remittances	0.221745	***	0.063935
Mother's Education			
Has some primary schooling	0.020112		0.103113
Completed primary school	-0.08571		0.166749
Has some secondary schooling	0.032297		0.088253
Completed secondary schooling	0.385869	***	0.12488
Completed tertiary education	0.034037		0.181329
Father's Education			
Has some primary schooling	0.026251		0.108283
Completed primary school	-0.22993		0.171551
Has some secondary schooling	0.122152		0.093204
Completed secondary schooling	0.272176	**	0.11039
Completed tertiary education	0.02991		0.196343
Age	0.066806	***	0.023302
Female	0.216671	***	0.053178
Wealth	0.1206	***	0.013435
Number of household members aged six years and below	-0.05883	**	0.024513
Number of household members aged seven to twenty four	-0.00856		0.01053
Child resides on a farm	0.015301		0.123351
Child resides in an area under traditional authority	0.070951	**	0.063437
/cut1	-0.5456		
/cut2	-0.21902		
/cut3	0.008215		
/cut4	1.947334		
Log likelihood	-1945.72		
Number of obs	2006		
LR chi2(18)	179.04		
Prob > chi2	0.000		
Pseudo R2	0.044		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Table A.4 Non-IV Probit Estimates of Tertiary Education Attainment, Children Aged 22 to 25 Years

Variables	Coefficient		SE
Receipt of remittances	0.204504	***	0.067272
Mother's Education			
Has some primary schooling	-0.07858		0.094551
Completed primary school	-0.05243		0.145516
Has some secondary schooling	0.066569		0.084499
Completed secondary schooling	0.384548	***	0.129217
Completed tertiary education	0.498443		0.210013
Father's Education			
Has some primary schooling	0.215823		0.102554
Completed primary school	0.120639		0.178508
Has some secondary schooling	0.143705		0.088538
Completed secondary schooling	0.026937	**	0.130636
Completed tertiary education	0.167689		0.184791
Age	0.032382	***	0.023354
Female	0.085257	***	0.052837
Wealth	0.098513	***	0.012965
Number of household members aged six years and below	-0.03104	**	0.025277
Number of household members aged seven to twenty four	0.008258		0.015981
Child resides on a farm	0.056311		0.124106
Child resides in an area under traditional authority	0.150925	**	0.060837
/cut1	-0.53412		
/cut2	-0.34548		
/cut3	0.008215		
/cut4	1.947334		
/cut5	2.170878		
Log likelihood	-2386.57		
Number of obs	1803		
LR chi-square(19)	114.35		
Prob > chi-square	0.000		
Pseudo R-square	0.023		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

APPENDIX B:

RESULTS OF INSTRUMENTAL VARIABLES PROBIT ESTIMATIONS

Table B.1 IV Probit Estimates of Early Childhood Development, Children Aged 0 to 6 Years

Variables	Coefficient		SE
Receipt of remittances	15.59295		12.02687
Mother's Education			
Has some primary schooling	-0.82665		1.024719
Completed primary school	-2.220828		1.676704
Has some secondary schooling	-1.422976		1.132857
Completed secondary schooling	-0.634754		0.649448
Completed tertiary education	-2.417097		1.854662
Father's Education			
Has some primary schooling	-1.825566		1.510511
Completed primary school	-1.994685		1.609839
Has some secondary schooling	-1.31063		0.997859
Completed secondary schooling	-1.386356		1.015804
Completed tertiary education	-2.53014		2.264816
Age	0.7215944	***	0.151822
Female	0.242685		0.248283
Wealth	0.000061		0.000257
Number of household members aged six years and below	-0.278896		0.209826
Number of household members aged seven to twenty four	-0.15624	*	0.091564
Child resides on a farm	-1.028501	**	0.454238
Child resides in an area under traditional authority	-1.695656	*	1.046304
Child receives social grant	0.2179094		0.308325
Number of obs =	4293		
Wald chi2(19)	131.69		
Prob > chi2 =	0.0000		
Wald test of exogeneity:			
chi2(1)	25.98		
Prob > chi2	0.0000		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Table B.2 IV-Ordered Probit Estimates of Primary Schooling, Children Aged 14 to 22 Years

Variables	Coefficient		SE
Receipt of remittances	0.4242279		2.25307
Mother's Education			
Has some primary schooling	-0.084137		0.099271
Completed primary school	-0.163725		0.15371
Has some secondary schooling	0.1034031		0.077396
Completed secondary schooling	0.1962972	*	0.112326
Completed tertiary education	0.0188371		0.20759
Father's Education			
Has some primary schooling	-0.151653	*	0.091705
Completed primary school	0.0838959		0.153584
Has some secondary schooling	0.1276288		0.083653
Completed secondary schooling	0.3969721	***	0.102703
Completed tertiary education	0.3391462	*	0.187962
Age	0.1257255	***	0.013618
Female	0.276231	***	0.050616
Wealth	0.0001843	***	5.03E-05
Number of household members aged six years and below	-0.029269		0.021091
Number of household members aged seven to twenty four	-0.000196		0.009557
Child resides on a farm	-0.010664		0.099927
Child resides in an area under traditional authority	0.1057231		0.071547
/cut1	0.4572481		
/cut2	1.506777		
Log likelihood	-4600.623		
Number of obs	4972		
LR chi-squared (19)	306.28		
Prob > chi-squared	0.000		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Table B.3 IV-Ordered Probit Estimates of Secondary Schooling, Children Aged 19 to 22 Years

Variables	Coefficient		SE
Receipt of remittances	-0.20791		0.916926
Mother's Education			
Has some primary schooling	0.017697		0.101606
Completed primary school	-0.07767		0.164379
Has some secondary schooling	0.030829		0.08697
Completed secondary schooling	0.378432	***	0.125586
Completed tertiary education	0.022818		0.178561
Father's Education			
Has some primary schooling	0.026676		0.106723
Completed primary school	-0.22888		0.169553
Has some secondary schooling	0.120116		0.092202
Completed secondary schooling	0.272286	**	0.110037
Completed tertiary education	0.025668		0.193354
Age	0.066709	***	0.023457
Female	0.213429	***	0.054296
Wealth	0.119316	***	0.015359
Number of household members aged six years and below	-0.05788	**	0.024477
Number of household members aged seven to twenty four	-0.00845		0.010391
Child resides on a farm	0.015553		0.121646
Child resides in an area under traditional authority	0.071619		0.062766
/cut1	-0.61664		
/cut2	-0.2943		
/cut3	-0.06981		
/cut4	1.847212		
Log likelihood	-3010		
N	2006		
LR chi2(20)	166.95		
Prob > chi2	0.0000		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively

Table B.4 IV-Ordered Probit Estimates of Tertiary Education, Children Aged 22 to 25 Years

Variables	Coefficient		SE
Receipt of remittances	0.200376		2.19752
Mother's Education			
Has some primary schooling	-0.0786		0.094556
Completed primary school	-0.05251		0.145652
Has some secondary schooling	0.066514		0.084507
Completed secondary schooling	0.384417	***	0.129344
Completed tertiary education	0.498354		0.210029
Father's Education			
Has some primary schooling	0.215753	**	0.102602
Completed primary school	0.120604		0.178561
Has some secondary schooling	0.14376	*	0.088596
Completed secondary schooling	0.026914		0.130644
Completed tertiary education	0.167603		0.184791
Age	0.032376		0.02337
Female	0.085237	*	0.052838
Wealth	0.098482	***	0.012978
Number of household members aged six years and below	-0.03094		0.025278
Number of household members aged seven to twenty four	0.008378		0.015982
Child resides on a farm	0.05632		0.125887
Child resides in an area under traditional authority	0.150776	**	0.069457
/cut1	-0.53421		
/cut2	-0.34559		
/cut3	-0.20273		
/cut4	1.2760		
/cut5	2.17106		
Log likelihood	-3209		
N	1803		
LR chi-square(19)	106.23		
Prob > chi-square	0		

***, **, and * denote statistical significance at the one, five and ten percent levels respectively