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# Examining the Relationship Between Received Remittances and Education in Malawi

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CLAREMONT MCKENNA COLLEGE

**EXAMINING THE RELATIONSHIP BETWEEN RECEIVED REMITTANCES  
AND EDUCATION IN MALAWI**

SUBMITTED TO

PROFESSOR JEFFREY A. FLORY

AND

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BY

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FOR

SENIOR THESIS

FALL 2014/SPRING 2015

APRIL 27, 2015



## Abstract

This thesis examines the relationship between received remittances and education using random samples from panel survey data from households in rural Malawi collected between 2008 and 2010. Past research as well as that conducted in this paper point to the fact that remittances and education share an important correlation. The results of this study indicate that on a microeconomic level, remittances have a highly significant and positive impact on household education. Other remittance-related factors such as the distance from agent, the remittance amount, and the type of account held by an individual also have a significant impact on the highest level of education attained by an individual, whereas the account type, age, gender, and marital status are important determinants in the probability of an individual ever having attended school. The results from this study raise questions as to whether the “brain drain” can actually have a positive impact on developing nations. The study also discusses policy implications for money transfer operators in Sub-Saharan Africa.

## Acknowledgements

First and foremost, I would like to thank Professor Jeffrey A. Flory for his guidance, feedback and unwavering support as my thesis reader. I would also like to thank him for teaching his Development Economics class with the passion and intensity with which he did, without which I would not have been inspired to write this thesis. I would like to thank my motherland, India, for being my other source of inspiration, and for constantly pushing me to think more critically about how to improve our great nation. Finally, I would like to thank my family for their support, and for making it possible for me to be here, exhibiting the grand culmination of my time at Claremont McKenna College.

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*“Education is the most powerful weapon which you can use to change the world.”*

- Nelson Mandela

## **I. Introduction**

The landlocked Republic of Malawi, known as Nyasaland until 1964, is located in southeast Africa, surrounded by Zambia, Tanzania, and Mozambique. With a population of 16 million and a land area of 118,484 km<sup>2</sup>, Malawi is one of Africa’s smallest countries, and is ranked the 8th poorest country in the world.<sup>1</sup> Various factors contribute to Malawi’s lack of development: a gross domestic product (GDP) of only \$3.705 billion, approximately 62% of the population living on less than US \$1.25 a day, lack of infrastructure, a large rural population, and vulnerability to natural disasters.<sup>2</sup> As a result, Malawi has undertaken various development projects in recent years in order to boost its growth. Arguably one of the most effective strategies has been the widespread introduction and development of formal banking services in its rural areas, particularly cash transfers and remittance services. These remittances oftentimes come from citizens of the home country who have migrated either to another village or city, or abroad, for job purposes. This thesis examines the role of remittances in alleviating poverty in Malawi, with a particular focus on its effects on education.

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<sup>1</sup> Pasquali, Valentina. “The Poorest Countries in the World.” *Global Finance Magazine*. Web. 12 November, 2014.

<sup>2</sup> Human Development Report 2014. “Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience.” United Nations Development Programme. Web. 12 November, 2014.

## *Remittances in Africa*

Due to the upward trend in remittances to Sub-Saharan Africa, extensive research has been conducted on the effects of remittances on economic development in this region.<sup>3</sup> After foreign direct investment (FDI), remittances are the next largest source of funding for developing countries, with an estimated \$581 billion in remittances from international migrants to home countries in 2014: a number which is expected to rise to \$681 billion by 2016.<sup>4</sup> In some countries, the total amount of incoming remittances has exceeded the earnings from exports, and has even covered the costs of importing certain goods. However, Sub-Saharan Africa (SSA) remains one of the few global regions where foreign development aid exceeds remittances, with Malawi itself receiving only \$28.7 million in remittances in 2013, the lowest remittance rate of its neighboring countries such as Zambia, which received \$72.8 million the same year.<sup>5</sup> A likely reason for this low value could be that Malawi happens to be one of the most expensive countries to make remittances to. The money transfer market in Africa is dominated by only two money transfer operators (MTOs), MoneyGram and Western Union, who benefit from regulating nearly two-thirds of remittances paid to the continent. As a result of this lack of competition, banks charge exorbitantly high remittance fees: Malawians pay an average of 12% on a \$200

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<sup>3</sup> According to the South African Policy Initiative, official remittances to Sub-Saharan Africa were expected to increase by 6.2% between 2012 and 2013. Suresh, JC. "Rising migrant remittances highly significant." *South African Foreign Policy Initiative*, 7 October, 2013. Web. 20 March, 2015.

<sup>4</sup> "Remittances to developing countries to stay robust this year, despite increased deportations of migrant workers, says WB." *World Bank Organization*, 11 April, 2014. Web. 20 March, 2015.

<sup>5</sup> Helema, Innocent. "Remittances on the rise, hits k13.5 billion." *Malawi Nation*, 5 February, 2015. Web. 20 March, 2015.



remittance, nearly twice the rate of the rest of the world.<sup>6 7</sup> This duopoly has also made remittances within the African continent one of the most expensive in the world.<sup>8</sup> The Overseas Development Institute estimates the total cost of this fee to be \$1.8 billion: money which could educate 14 million primary school children in Africa.<sup>9</sup>

### *Education as an Indicator of Poverty*

Although access to formal banking services in less developed countries (LDCs) is considered a sign of infrastructural and therefore economic development, it is viewed almost solely through the lens of increasing individual and overall wealth of the economy. While much research has been conducted on the overall monetary benefits of formal banking, this research is grounded in the assumption that income level is the most important indicator of poverty. Recent studies take a more multi-dimensional approach to the definition of poverty to include factors other than income level which are indicative of an impoverished life. To define poverty as solely a lack of financial means is far too simplistic a definition, as it fails to capture the various other aspects of life that poverty affects. While low or no income could be the source of poverty, this lack of funds tends to bleed into other areas of an individual or family's life, which cannot be remedied simply by an increase in income level. One of the most potent examples of this is education. If a young boy does not have the means to attend school, even if his family's income increases in a decade, he will be unable

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<sup>6</sup> Watkins, Kevin & Quattri, Maria. "Lost in intermediation: how excessive charges undermine the benefits of remittances for Africa." *Overseas Development Institute*, April, 2014. Web. 20 March, 2015.

<sup>7</sup> See Figure 1 in Appendix.

<sup>8</sup> See Figure 2 in Appendix.

<sup>9</sup> Watkins, Kevin & Quattri, Maria. "Lost in intermediation: how excessive charges undermine the benefits of remittances for Africa." *Overseas Development Institute*, April, 2014. Web. 20 March, 2015.

to provide much more for himself and his family because he would be missing the fundamental critical reading, thinking, and writing skills which are necessary for him to obtain a job that goes beyond menial labor and will pay him enough to live a comfortable life. Education is a critical tool in breaking this vicious cycle of poverty and improving the living standards of the poor, yet it is a right that is so commonly stripped from them in developing nations.

Indian economist Amartya Sen describes a free life as one in which an individual has “the capability to live really long (without being cut off in one’s prime) and to have a good life while alive (rather than a life of misery and unfreedom)”<sup>10</sup>. He addresses that this single-minded focus on economic development by increasing wealth does not account for the fact that wealth is not the sole factor of living a life of good quality. Rather, he argues that “development has to be more concerned with enhancing the lives we lead and the freedoms we enjoy.”<sup>11</sup>

Based on this reasoning, Sen defines poverty as “capability deprivation,”<sup>12</sup> wherein the “absence of such elementary opportunities as the capability to escape premature mortality or preventable morbidity or involuntary starvation.”<sup>13</sup> He defines this deprivation as the “unfreedom” to live a happy, healthy life devoid of poor health, education, employment, and social security. Sen therefore urges economists to stop studying development solely as a function of income inequality, but also economic inequality, which encompasses all of the factors mentioned above.

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<sup>10</sup> Sen, Amartya. *Development as Freedom*. New York: Anchor Books. (2000). Page 14.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

<sup>13</sup> Sen, Amartya. *Development as Freedom*. New York: Anchor Books. (2000). Page 17.

This thesis builds on this multi-faceted approach to poverty indicators by examining how cash remittances to household in Malawi has influenced education of members of 2200 households (HHs) comprising 11,000 individuals in Malawi.

To define poverty as solely a lack of financial means is far too simplistic a definition, as it fails to capture the various other aspects of life that poverty affects. While low or no income could be the source of poverty, this lack of funds tends to bleed into other areas of an individual or family's life, which cannot be remedied simply by an increase in income level. One of the most potent examples of this is education. If a young boy does not have the means to attend school, even if his family's income increases in a decade, he will be unable to provide much more for himself and his family because he would be missing the fundamental critical reading, thinking, and writing skills which are necessary for him to obtain a job that goes beyond menial labor and will pay him enough to earn a decent living. Education is a critical tool in breaking this vicious cycle and uplifting the poor from their poverty, yet it is a right that is so commonly stripped from the poor in developing nations.

## II. Literature Review

Due to the increasing attention on migration and the resulting large amounts of remittances flowing between countries, economists have conducted extensive research on the impact of remittances on various poverty measures. Since this thesis focuses on how remittances affect education, it is imperative to understand what past research has found on this relationship in order to better predict trends and policies to further improve education in LDCs.

Before presenting the existing literature on remittances and education, it is important to define the Human Capital Theory. As explained by the London School of Economics, human capital can broadly be defined as “any stock of knowledge or characteristics the worker has (either innate or acquired) that contributes to his or her “productivity.””<sup>14</sup> The most influential factors affecting human capital include innate ability, schooling, school quality and non-schooling investments, training, and pre-labor market influences.”<sup>15</sup> The more of these characteristics an individual possesses, the more productive he/she is likely to be in the labor market, and the more likely they are to earn a higher income than they would otherwise. Seeing as education is the most easily quantifiable and observable of these variables, and since this thesis focuses on education as a tool to alleviate poverty, this definition of the human capital

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<sup>14</sup> Acemoglu, Daron. “The Basic Theory of Human Capital.” *London School of Economics and Political Science*. (2001) Page 3. Web. 20 April, 2015.

theory is highly relevant, for it allows us to better understand why and how investing in human capital, particularly in education, can reduce poverty in developing nations.

Remittances have been proven to aid the growth of human capital in developing countries, particularly in the case of education. For instance, Cox-Edwards and Ureta (2003) examined how remittances from abroad impacted education levels for HHs in El Salvador. Using a model similar to the one used in the current study, where school enrollment was the dependent variable, they found that remittances have a sizeable and statistically significant impact on school retention and enrollment rates. They found that in rural areas of El Salvador, receiving the median remittance amount reduced the failure to enroll in school rate (which the authors refer to as the hazard of leaving school) by 14%. This effect was nearly 2.6 times higher than any other income effect. Interestingly, they also found that males are 27% more likely to drop out of school than females.

Hanson and Woodruff (2003) conducted a similar study in Mexico. Similar to Cox Edwards and Ureta (2003), they found that children belonging to HHs which received remittances from migrant members attained significantly more education than those from non-migrant, non-remittance HHs. These results were particularly prominent in HHs which had lower rates of education. Having an external migrant in the family, and gaining from the remittances sent by him/her resulted in an increase of 0.09 years of schooling for girls, and 0.10 for boys. This study also found that the number of years of schooling decreases with age, particularly for boys between the ages of 13 and 15 years. Furthermore, they found that children born to mothers who had received at least a basic education completed an extra 1.5 years of schooling

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<sup>15</sup> Acemoglu, Daron. "The Basic Theory of Human Capital." *London School of Economics and Political Science*. (2001) Page 6-7. Web. 20 April, 2015.

compared to children whose mothers had not been educated at all. Higher education rates in their data were also correlated with higher survival rate, suggesting that receiving an education also has health benefits for children. These results indicate that HHs with migrant members have a higher income, and can therefore afford to send more children to school for longer periods. They also suggest that an increase in education levels has positive externalities such as improved health.

Adams and Page (2003) used data from 71 developing countries in order to ascertain whether or not international migration and remittances reduce poverty in LDCs. One of the instrumental variables in their study was the percentage of population over the age of 25 years that had attained secondary education. This education variable, in addition to other variables such as government stability, etc. was used to estimate its effect on the international migration rate and receipt of international remittances of that region. Following this, they investigated how poverty in that region had been impacted by these factors.

This study found that the level of education was highly significant in predicting international migration for people above the age of 25 years who have completed secondary schooling. They assert that higher education levels are correlated with higher international migration, and therefore higher international remittances. This finding could be interesting when it is considered for its reverse causality as well, wherein higher international remittances actually create more opportunities for higher education for members of the home country to which migrants belong, which in turn, allow more members to migrate abroad.

Contrary to the human capital theory, studies have also found that countries which experience an outflow of high-skilled (educated) migrants actually experience

lower per capita remittances than countries which export low-skilled migrants.<sup>16</sup> Adams (2009) defined a high-skilled educated worker as someone who had received a minimum of 13 years of schooling, and a low-skilled worker as someone who had received 8 years of schooling or less. The results from this study indicated that a 10% increase in the number of high-skilled workers could result in an 11.2-19.7% decrease in remittances, whereas the same increase in the emigration of low-skilled workers could increase remittances received by 9.1-19.8%. This led the author to conclude that returns on investment in the home country was a significant factor in the amount of per capita remittances a country receives.

One of the most important aspects of education and remittances which must be addressed is the explicit and implicit cost of educating a child. Perotti (1996) draws attention to the fact that although primary and secondary education costs are relatively low even in developing countries as a result of heavy subsidization, the opportunity cost of spending even that small amount can be a significant amount of foregone income for the HH. In such cases, due to the high marginal utility of consumption, individuals are unable to invest in human capital such as education. As a result of their limited skills, they are unable to increase their income, and are in turn unable to send their children to school as well. Thus begins the perpetuation of the poverty trap.<sup>17</sup>

Much research has been conducted on how to escape this poverty trap, and whether or not remittances have a role to play in this. Acosta et al. (2008) investigated

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<sup>16</sup> Adams, Richard H. Jr. "The Determinants of International Remittances in Developing Countries." *World Development*. 37.1 (2009): 93-103. *Science Direct*. Web. 23 April, 2015.

<sup>17</sup> Perotti, Roberto. "Growth, Income Distribution, and Democracy: What the Data Say." *Journal of Economic Growth*. 1. 2 (1996): 149-187. *Science Direct*. Web. 23 April, 2015.

the impact of international remittances on poverty and inequality in Latin America using the average years of secondary education of the male population and the average years of secondary education of the female population as independent variables to determine the effect of these variables on per capita Gross Domestic Product (GDP) growth and reducing inequality.<sup>18</sup> They found that increases in secondary education levels for males have a marginally significant increase on the per capita GDP growth rate of Latin America. This study also found that Latin American countries which had the lowest per capita incomes experience a significantly larger reduction in poverty headcounts as a direct result of received remittances than richer countries. This indicates two things: (a) that poorer countries are more directly impacted by this extra inflow of cash and (b) if we consider education as a factor contributing to poverty headcount, then the sizeable reduction in poverty headcount in these poorer countries could indicate a high emphasis on, and demand for, education among these countries.<sup>19</sup> Gupta et al. (2009) also found that despite the relatively small proportion of the global remittance amount that is directed to SSA, remittances have a direct effect on reducing poverty and encouraging financial development.<sup>20</sup>

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<sup>18</sup> Acosta, Pablo et al. "What is the Impact of International Remittances on Poverty and Inequality in Latin America?" *World Development*. 36. 1 (2008): 89-114. *Science Direct*. Web. 23 April, 2015.

<sup>19</sup> Ibid.

<sup>20</sup> Gupta, Sanjeev, Pattillo, A. Catherine & Wagh, Smita. "Effect of Remittances on Poverty and Financial Development in Sub-Saharan Africa." *World Development*. 37.1 (2009): 104-115. *Science Direct*. Web. 23 April, 2015.



### III. Education in Malawi

Despite Malawi's poor economic condition, the Malawian government and other international organizations have developed a surprisingly thorough and structured educational system. The formal Malawian educational system has an 8-4-4 structure, which comprises primary school, secondary school, and higher education at the university level. Children start primary school at the age of six, and receive a Primary School Leaving Certificate (PSLC) upon completion of 8<sup>th</sup> grade, at which point they enter secondary school. At the end of 10<sup>th</sup> grade, students take exams to achieve a Junior Certificate Examination (JCE), followed by the Malawi School Certificate Examination (MSCE) upon completion of the 12<sup>th</sup> grade, at which point they are generally 17 years old.<sup>21</sup> The education system follows the trimester system, with each session lasting approximately three and a half months.<sup>22</sup>

Table 1. *Socioeconomic distribution of schooling for students between ages 5-24 years (all numbers in percent).*

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<sup>21</sup> See Figure 3 in Appendix.

<sup>22</sup> "Malawi." *Education Policy and Data Center*. Web. 23 April, 2015.

	Comparison Group (5–24 years old)	Highest Level of Education Attended				
		Never Attended School	Non-Formal Education	Primary	Secondary	Higher Education
<b>Gender</b>						
Boys	49	50	14	48	53	52
Girls	51	50	86	51	47	48
Total	100	100	100	100	100	100
<b>Location</b>						
Urban	12	5	11	11	33	76
Rural	88	95	89	89	67	24
Total	100	100	100	100	100	100
<b>Wealth Index</b>						
Q1	20	29	21	20	7	0.7
Q2	20	25	19	20	10	0.0
Q3	19	21	32	20	14	3.5
Q4	20	16	24	21	19	4.5
Q5	21	9	5	20	50	91.3
Total	100	100	100	100	100	100

Source: Calculation from MICS 2006 data.

Note: In this table, both individuals who are currently attending as well as those who have dropped out are considered. For instance, 89 percent of those who have reached primary education are rural: This proportion refers to those who are currently enrolled in primary (whatever the grade) and those who dropped out during primary.

Table 1 describes the socioeconomic distribution of schooling for individuals between the ages of 5 and 24 years in Malawi in the year 2006. The variables considered include gender, location, and wealth index. Although only marginally, more girls have completed only primary school than boys, while more boys complete secondary school. However, the most striking disparity among the genders is that 86% more girls attend non-formal education than boys.<sup>23</sup> Non-formal education in Malawi includes more vocational instruction which focus on providing individuals with the basic skills tailored to their interests needed to obtain a job to earn a livelihood. For instance, the Ministry of Agriculture and Natural Resources offers certification in fishing, forestry, etc.<sup>24</sup>

Table 2 outlines the trends in the enrollment for each education level between the years of 1998 and 2007. The table indicates a 17% average annual growth rate in private primary education, a 5% growth rate in private secondary education, and a

<sup>23</sup> “The Education System in Malawi.” *The World Bank*. Working Paper No. 182. Web. 22 April, 2015.

<sup>24</sup> “Malawi – Nonformal Education.” *State University*. Web. 25<sup>th</sup> April, 2015.

43% increase in private adult literacy programs. Although the specific reasons for these growth rates are not mentioned, it can be argued that one possible explanation in these growth rates in private educational programs could be the result of increased disposable HH income. This increased income could be a direct result of increased incoming remittances in Malawi.

Table 2. *Enrollment trends for each education level between the years of 1998 and 2007.*

	1998	2001	2004	2006	2007	Average Annual Growth Rate 2001–2004	Average Annual Growth Rate 2004–2007
<b>ECD</b>	38,166	72,760	229,823	615,478	683,826	47%	44%
<b>Primary Education</b>	2,805,785	3,187,835	3,166,786	3,280,714	3,306,926	0%	1%
public	n.a.	n.a.	3,140,440	3,242,483	3,264,594	n.a.	1%
private	n.a.	n.a.	26,346	38,231	42,332	n.a.	17%
Including:							
<b>Std1–Std4</b>	2,090,728	2,296,039	2,315,171	2,379,302	2,365,307	0%	1%
public	n.a.	n.a.	2,298,971	2,356,063	n.a.	n.a.	1%*
private	n.a.	n.a.	16,200	23,239	n.a.	n.a.	20%*
<b>Std5–Std8</b>	715,057	891,796	851,615	901,412	941,619	-2%	3%
public	n.a.	n.a.	841,469	886,420	n.a.	n.a.	3%*
private	n.a.	n.a.	10,146	14,992	n.a.	n.a.	22%*
<b>Secondary Education</b>							
<b>Form1–Form4</b>	59,636	176,252	180,157	218,310	210,325	1%	5%
Public	n.a.	153,119	137,822	166,307	161,575	-3%	5%
CDSS	n.a.	114,751	83,492	104,161	99,172	-10%	6%
conventional	n.a.	25,738	36,051	47,996	42,734	12%	6%
grant-aided	n.a.	8,764	16,322	9,717	12,730	23%	-8%
open school	n.a.	3,866	1,957	4,433	6,939	-20%	52%
Private	n.a.	23,133	42,335	52,003	48,750	22%	5%
<b>Adult Literacy</b>	63,035	88,240	103,965	146,301	n.a.	6%	19%*
state	63,035	85,807	95,515	128,967	n.a.	4%	16%*
non-state	n.a.	2,433	8,450	17,334	n.a.	51%	43%*
<b>University</b>	3,385	4,304	6,478	6,346	7,263	15%	4%
Public	3,385	4,304	6,478	6,346	6,458	15%	0%
Bunda	490	592	666	780	886	4%	10%
Chancellor	1,292	1,555	2,017	2,252	1,108	9%	-18%
Kamuzu Nursing	263	180	331	251	454	23%	11%
Polytechnic	1,031	1,239	2,345	1,980	2,147	24%	-3%
Medicine	93	88	179	n.a.	419	27%	33%
Mzuzu	n.a.	264	475	1,083	1,444	22%	45%
Board of Governors	216	386	465	n.a.	n.a.	6%	n.a.
Private	n.a.	n.a.	n.a.	n.a.	805	n.a.	n.a.
<b>TEVET</b>	n.a.	n.a.	n.a.	n.a.	4,807	n.a.	n.a.

Source: Education Management Information System (EMIS) data from the Ministry of Education Science and Technology and from the Ministry of Women and Child Development.

n.a.: not available.

\*Due to the absence of 2007 data, the average annual growth rate is calculated for those levels from 2004 to 2006.

#### **IV. Sample Data and Regression Model**

The data used in this study is survey panel data collected in Malawi, Africa between 2008 and 2010. Over 2,200 HHs (HHs) comprising 11,326 individuals took part in a 2-hour interview during which they answered various questions about various aspects of their life. These areas include finances, health, education, marital status, occupation, and shocks or events that they had experienced in the previous year. Information for children under the age of 10 years was provided by their mothers or guardians, and information about education was only collected from HH members aged five years and older, since the Malawian education system stipulates that children only begin formal education at the age of five.

It is important to note that there are certain limitations of this data which could restrict the generalizability of the results of this study. . Since the current data was collected with the goal of understanding the general situation of Malawian households from a financial perspective in order to develop banking services in rural areas of the country, the questions concerning education are not particularly comprehensive. The questions about education were limited in nature and did not collect enough data to gain a comprehensive understanding of the educational information of the individuals in the current sample. With regard to school attendance, the survey only asked if the individual had attended school, and did not specifically ask if he/she was currently enrolled in school, had dropped out and when, or possible reasons for dropping out. Thus, there is no way to ascertain whether the individuals interviewed were married before or after receiving their highest level of education.

Since the current data was collected with the goal of understanding the general situation of Malawian households from a financial perspective in order to develop banking services in rural areas of the country, the questions concerning education are not particularly comprehensive.

### *Descriptive Data*

Since this thesis focuses on the relationship between remittances and levels of education, it will be focusing on the sections of the survey data which collected information on the education level of each individual between the ages of 5 and 18 years in each HH, details about any remittances they received, and informal cash transfers that occurred. Of the entire sample of 11,326 individuals, 1,092 reported receiving remittances—comprising nearly 9% of the sample size—with 495 being male and 527 female. Since this thesis examines the education level of each HH, the focus is on individuals of school-going age (5-18 years) which comprises 435 observations of those who received remittances. Of the 1,092 individuals who received a remittance, 440 were students, with 76 being students who were above the age of 18 years. This indicates that these individuals are pursuing higher education at a college or university.

The occupational distribution of the sample of individuals who received remittances can be seen in the table below:

Table 2. *Descriptive data for occupations of individuals who received remittances.*

Occupation	Frequency	Percent
Farming	377	34.65
Household business	28	2.57
Salaried profession	39	3.58
Wage labor	13	1.19
Student	440	40.44
Community-based childcare	2	0.18
Other	12	1.10
None	177	16.27
Total	1,088	100.00

The two most common occupations among individuals who received remittances were “farming” and “student”. Farmers comprised nearly 35% of the sample of individuals who received remittances, and students comprised an impressive 40%. Approximately 16% of the sample reported not having any occupation, 3% worked with the household business, 4% were salaried professionals.

Table 3 describes the marital status data for each individual who received a remittance:

Table 3. *Descriptive data for marital status of individuals who received remittances.*

Marital Status	Frequency	Percent
Married	324	45.96
Single	287	40.71
Widowed	55	7.8
Divorced or separated	39	5.53
Total	705	100

Only individuals above the age of 14 were asked about their marital status. Since the total observations for this variable are 705, it can be inferred that the remaining 387 individuals who reported receiving remittances were below the age of

14 years. The number of married females who received a remittance is 168, out of which 134 reported attending school.

The amount of remittances received by an individual ranged from 100 Kwacha, the national currency of Malawi (approximately \$0.22), to 72,000 MWK (approximately \$160), with a mean of 1,0470.8 MWK (\$23), and a median value of 5000 MWK (\$11.2).<sup>25</sup> Nearly 1.6% of the interviewees reported not knowing the amount of the remittance(s) they received. The number of times a remittance was received ranged from 1-12. Approximately 67% of individuals received a remittance only once. 14% received it twice, and 8.7% received it three times, and the frequency continues to decrease as the number of remittances increases. Only one individual reported receiving remittances 12 times. For each individual sample of individuals who received remittances a certain number of times, the majority of them had attended school.

### *Hypotheses*

Remittance and general demographic data from the household roster will be used to test the following hypotheses:

- (i). HHs which received remittances will have more individuals who attended school*
- (ii). HHs which received more than one remittance in the last twelve months will have more individuals who attended school than those who received just one remittance*
- (iii). HHs which received remittances will have more individuals who have graduated secondary/high school (i.e. received MSCE certificate)*

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<sup>25</sup> XE Currency Converter. Web. 26 April, 2015.

## *Variables*

A total of four Ordinary Least Squares (OLS) regressions will be run using the following variables:

### *Dependent Variables:*

$Y_i^1 / Y_j^{11}$ : binary variable for whether individual  $i$  has attended school (not attended school=0, attended school=1).

$Y_i^2 / Y_j^2$ : the highest level of education attained by individual  $i$  (none=1, PSLC=2, JCE=3, MSCE=4, Non-university diploma=5, university diploma degree=6, and post-graduate degree=7).<sup>26</sup>

### *Independent Variables:*

*Age*: the age of individual  $i$ . The values range from 0 to 99.

*Gender*: binary variable for individual  $i$ 's gender (female=0, male=1). The values for males and females were originally collected as female=2, male=1, but were recoded to equal 0 and 1 respectively in order to make them binary variables. Male therefore becomes the base variable against which the interpretation for the coefficients will be discussed.

*Marital status*: marital status of individual  $i$  (married=1, single=2, widowed=3, divorced or separated=4).

*Received remittance*: binary variable for whether or not individual  $i$  received at least one remittance (did not receive remittance=0, received remittance=1).

*Remittance amount*: the amount of money (in Malawian Kwacha) that individual  $i$  received via remittance. The values range from 100 MWK to 72,000 MWK.

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<sup>26</sup> See Figure 3 in Appendix.



*Distance from agent:* the distance in kilometers between individual  $i$ 's house and the agent or money transfer operator who received the remittance, indicating how far the individual had to travel to collect the remittance (and therefore an additional cost of collecting the remittance). The values range from 0 to 990 km.

*Remittance fee:* the amount of receipt fee individual  $i$  had to pay the agent or MTO for offering its remittance services. The values range from 0 MWK to 15,000 MWK (\$34).

*Account type:* the type of account held by individual  $i$  (savings=1, current=2, recurring flexible=4, none=5).

*Number of remittances received:* the total number of times individual  $i$  has received a remittance. The values range from 1 to 12.

### *Regression Models*

In order to test hypothesis (i), first I will use a Fisher's exact test to determine whether or not the effect of remittances on school attendance rate is statistically significant. Next, I will use a linear probability model to determine the magnitude of the effect of the following variables on the rate of school attendance in HHs which received remittances:

$$Y_i^1 = \beta_0 + \beta_1 (\text{Received remittance})_i + \beta_2 (\text{Age})_i + \beta_3 (\text{Gender})_i + \beta_4 (\text{Marital status})_i + \varepsilon_i$$

#### *Regression Model 1.1*

where  $Y_i^1$  is a binary variable taking the value of 0 if individual  $i$  has never attended school, and one if he/she has attended school. Each of the coefficients for the variables on the right side of the equation provide an estimate for the probable

magnitude and direction of the effect of that variable on  $Y_i^1$ .  $\beta_1$  is the coefficient for the binary variable for whether or not HH  $i$  received a remittance (yes=1, no=0),  $\beta_2$  is the coefficient for the age of HH  $i$  (5 years onwards),  $\beta_3$  is the coefficient for the binary variable for gender (female=0, male=1), and  $\beta_4$  is the coefficient which measures marital status (married=1, single=2, widowed=3, divorced or separated=4). For comparison purposes, the same regressors were used to run an OLS regression for the estimated highest level of education,  $Y_i^2$ :

$$Y_i^2 = \beta_0 + \beta_1 (\text{Received remittance})_i + \beta_2 (\text{Age})_i + \beta_3 (\text{Gender})_i + \beta_4 (\text{Marital status})_i + \varepsilon_i$$

### *Regression Model 1.2*

Next, an OLS regression will be conducted in order to examine how the following remittance-related variables are estimated to impact the school attendance rate of a HH.

$$Y_j^1 = \beta_0 + \beta_2 (\text{Age})_j + \beta_3 (\text{Gender})_j + \beta_4 (\text{Marital status})_j + \beta_5 (\text{Remittance amount})_j + \beta_6 (\text{Distance from agent})_j + \beta_7 (\text{Remittance fee})_j + \beta_8 (\text{Account type})_j + \beta_9 (\text{Number of remittances received})_j + \varepsilon_j$$

### *Regression Model 2.1*

In Regression Model 2.1,  $\beta_5$  is the coefficient for the total amount of remittance(s) received by individual  $i$ , and  $\beta_6$  is the coefficient for the distance of individual  $j$  from the agent to whom the remittance is transferred.  $\beta_7$  is the coefficient for the amount of the fee the individual must pay to the agent upon receipt of the remittance.  $\beta_8$  is the coefficient for the type of account the individual has (savings=1, current=2, recurring flexible account=4, none=5), and  $\beta_9$  is the coefficient for the number of times individual  $j$  received a remittance (ranges from 1 to 12). The

*received remittance* variable is omitted in this model to avoid collinearity between the *received remittance* binary variable and the *remittance amount* variable. Similar to Regression Model 1.2, the same regressors are used to compute the estimated highest level of education for each individual who has received a remittance, represented by the dependent variable,  $Y_j^2$ :

$$Y_j^2 = \beta_0 + \beta_2 (\text{Age})_j + \beta_3 (\text{Gender})_j + \beta_4 (\text{Marital status})_j + \beta_5 (\text{Remittance amount})_j + \beta_6 (\text{Distance from agent})_j + \beta_7 (\text{Remittance fee})_j + \beta_8 (\text{Account type})_j + \beta_9 (\text{Number of remittances received})_j + \epsilon_j$$

*Regression Model 2.2*

## V. Results

The results from the Fisher's test examining the relationship between attending school and receiving a remittance indicate that there exists a statistically significant correlation between the two variables, with the Fisher's exact value being 0.000, indicating significance at the 0.01 significance level.<sup>27</sup> Thus, it has been established that HHs which receive remittances have significantly more household members who attend school as a direct result of them receiving the remittance.

The results from Regression Model 1.1 yielded highly significant effects of all the independent variables in the equation: age, gender, marital status, and received remittance at the 0.01 significance level. Recall that the dependent variable for this regression was the binary variable for whether or not the individual  $i$  had attended school. The fact that all of these variables are highly significant in their estimated impact suggests that these variables had a direct impact on the probability that individual  $i$  has attended school in the given sample.<sup>28</sup>

Regression Model 1.2, where the dependent variable was the highest level of education attained by individual  $i$ , yielded highly significant results for all the same variables mentioned above, with the exception of marital status. These results were also significant at the 0.01 significance level, indicating that they are important factors in determining the highest level of education attained by an individual in the given data.

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<sup>27</sup> See Table 4 in Appendix.

<sup>28</sup> See Table 5 in Appendix.

The coefficient for *age* in Model 1.1 is -0.187, indicating that for a one year increase in individual *i*'s age, his/her probability of attending school decreases significantly by 18.7 percentage points. The direction of this coefficient is expected and consistent with previous research conducted by Hanson and Woodruff (2003), which indicated that boys between the ages of 12-12 years attend 0.2 years more of schooling for each additional year than 13-15 year old boys. However, the size of this coefficient is larger than expected. In Model 1.2, this coefficient maintains its negative sign, but increases in value, suggesting that for each additional year, the estimated highest level of education attained by individual *i* decreases by 31.2%.

Recall that the most common occupation in the current sample was farming. This could explain the above results: the older the child gets, the more mentally and physically able he/she is to help at the farm, so in particularly financially restricted HHs, parents might pull their children out of school in order to have more help at the farm, which is the family's source of sustenance.

The *gender* variable has a coefficient of -0.108 in Model 1.1. This coefficient suggests that a female individual has a 10.8 percentage point lower probability of attending school than a male. Interestingly, however, the *age* coefficient for Model 1.2 has a coefficient of 0.21, indicating that while females are less likely to attend school than males, they are 21 percentage points more likely to have higher educational qualifications than males.

One plausible reason for this could be that beyond a certain point, parents stop investing in education as human capital, but instead enlist the help of their sons as manual labor on the farm in order to help sustain a livelihood for the family. Since women are not generally considered as efficient at manual labor as men, parents might decide to keep their daughters in school in order to allow them to achieve the

highest level of qualification they can so that they can support the family by working an administrative job rather than by physically helping around the house.

The effect of *marital status*, as depicted in Model 1.1, is 0.0235, suggesting that a married individual is 2.35 percentage points more likely to have attended school than an unattached individual. There are several exogenous factors that could cause this to happen. For instance, being married could allow an individual to share the burden of handling household tasks and return to school in order to attain a degree which will allow him/her to earn more income for the family. Another such factor could be that getting married could bring more wealth into the household, thereby allowing individuals to pursue an education, even if it is at a later stage. As described in Table 1, 89% of individuals in rural areas in Malawi enroll in non-formal education, and being married could simply make it easier for them to pursue this, since there are likely to be other adults of all ages in the same position.

The *marital status* coefficient did not prove to be statistically significant in Model 1.2, indicating that having a partner had no direct correlation with the level of education attained by an individual. Since the survey only asked if the individual had attended school, and did not specifically ask if he/she was currently enrolled in school, there is no way ascertaining whether the individuals were married before or after receiving their highest level of education. Therefore, this finding is not surprising.

The coefficient for *received remittance* in Model 1.1 indicates that a one unit increase in received remittance for individual  $i$  will increase the probability of that individual attending school by approximately 10 percentage points. Since *received remittance* is a binary variable which takes a value of one if the person received a remittance and 0 if they didn't receive it, this estimate implies that for each individual

who receives a remittance, his/her probability of attending school increases by 10 percentage points, thereby supporting hypothesis (iii). This finding is comparable to that found in the study by Cox- Edwards and Ureta (2003) which asserts that receiving a median remittance lowers the hazard of a child dropping out of school by 14%. This finding is also in accordance with the education enrollment trends which reveal an annual growth rate of 44% between 2004 and 2007, and is likely to be correlated with the increase in incoming remittances to SSA.<sup>29</sup>

Conversely, the *received remittance* coefficient becomes -0.359 in Model 1.2, indicating that an individual who receives a remittance is likely to be 35.9 percentage points less educated than an individual who does not receive a remittance. While this result is unexpected when seen in light of the human capital investment theory, it is possible that the HHs in this sample were so direly in need of money that they chose to spend their received remittance money on investing in their household business or in increasing the number of crops they grow on their farms. While the coefficient for *received remittance* is negative in Model 1.2, it is still statistically significant at the 0.01 significance level in Model 1.1, thereby supporting hypothesis (i).

Model 2.1 revealed that out of the new regressors introduces (*remittance amount, distance from agent, amount of receipt fee, account type, and number of remittances received*), only the *account type* variable was significant at the 0.05 significance level, indicating that it had some direct correlation with the probability that individual *j* had attended school. While the questionnaire offered various account types that the interviewee could report holding, the data indicates that individuals who received remittances only either had a savings account or none at all: 29% of the

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<sup>29</sup> According to the South African Policy Initiative, official remittances to Sub-Saharan Africa were expected to increase by 6.2% between 2012 and 2013. Suresh, JC. "Rising migrant remittances highly significant." South African Foreign Policy Initiative, 7 October, 2013. Web. 20 March, 2015.

sample had a savings account. This finding is not surprising: it is likely that an individual who has planned for the future, or even has parents who have planned for the future and opened a savings account for him/her will understand the importance of having a savings account. This correlation could also be a result of reverse causation: *because* the individual had attended school and received some form of schooling, he/she could be more knowledgeable about the benefits of formal banking systems and the concept of saving money for the future. Thus, he/she could have a savings account as a result of having attended school.

In Model 2.2, the coefficient for *account type* was significant at the 0.01 significance level, and had a negative value of 0.288. This implies that having a savings account was correlated with an estimated 28.8 percentage point probability of being less qualified than an individual who did not have a savings account. This coefficient is unexpected in both sign and magnitude, as intuitively, one would assume that the correlation between having a savings account and being highly educated.

Model 2.2 also yielded significant results for *remittance amount* and *distance from agent*. The coefficient for *remittance amount* is small in magnitude, yet highly significant at the 0.01 level, with a value of 0.0000167. This indicates that the sum of remittances received by individual *j* is highly correlated with the highest level of education that he/she attained, with a 1000 MWK (\$0.23) increase in the sum of remittance(s) received leading to a 0.167 percentage point increase in the probability that individual *j* is more highly educated than his/her peer who received 1000 MWK less in remittances.

The *distance from agent* variable, which was not statistically significant in Model 2.1, was unexpectedly significant at the 0.01 level in Model 2.2. While it is not



surprising that the coefficient is negative with a value of approximately -0.0012, it is unexpected for it to be so highly statistically significant. This coefficient indicates that with each added kilometer individual  $j$  has to travel to collect his/her remittance, their probability of being equally or more educated than another individual decreases by 0.12 percentage points. This finding could follow from the logic that the agent could be too far away for the individual to be able to afford to travel to collect his/her remittance, and so they fail to collect that money, which makes it more difficult for them to pursue their education.

The *amount of receipt fee* was not significant at all in Model 1.1, and only marginally significant in Model 2.2 at the 0.10 significance level, suggesting that it is not particularly expensive for recipients of remittances to collect a remittance. It is highly likely that most of the remittance fee burden is incurred by the sender. As seen in Figures 1 and 2 (Appendix), the remittance fee in SSA tends to be higher than the global remittance fees, and presuming that the sender of the remittance is more financially secure than the recipient, it seems reasonable that the burden of the fee would be shifted to the sender rather than the recipient. The fact that this coefficient is even marginally significant reveals that the recipients of these remittances are so financially unstable that even though only 9% of remittance recipients in this sample had to pay a fee upon collection of their remittance, the cost of doing so was high enough for this variable to be somewhat statistically significant.

Since the number of remittances received did not prove to be statistically significant for the current data in any of the regressions, hypothesis (ii) is rejected.

## **VI. Conclusion**

Past research as well as that conducted in this paper point to the fact that remittances and education share an important correlation. The results of this study indicate that on a microeconomic level, remittances have a highly significant and positive impact on household education. Other remittance-related factors such as the distance from agent, the remittance amount, and the type of account held by an individual also have a significant impact on the highest level of education attained by an individual, whereas the account type, age, gender, and marital status are important determinants in the probability of an individual ever having attended school.

However, the causality of this relationship remains unclear. While the current study examined the causal effect of remittances on education, past studies have found a reverse causation between the two variables. Adams and Page (2005) found that education is an important factor in determining migration and remittances, indicating that countries with higher literacy rates tend to give rise to more international migrants who send remittances to their home countries from abroad. The results of this study therefore imply that the cycle of remittances and increased education could continue to multiply, as more highly-educated people start to migrate out of their home countries, and send more remittances which have mitigating effects on the poverty in developing nations. These implications raise questions as to whether the “brain drain” is necessarily as bad a phenomenon as economists seem to think, since there are clearly some positive externalities associated with it.

An important policy implication from the results of this study is government intervention in the money transfer operator market. Recall that the Overseas Development Institute estimated the total cost of this fee to be \$1.8 billion: money which could educate 14 million primary school children in Africa.<sup>30</sup> Clearly, remittance fees in Sub-Saharan Africa are far higher than global rates, and this is likely to be a major hindrance in the amount of incoming remittances to the region. The results presented in this study clearly demonstrate significantly positive impacts of received remittances on education with the limited remittance sum entering Malawi. Government intervention could reduce the remittance fee drastically, allowing a more unrestricted flow of remittances into SSA which could in turn reduce poverty in this region by considerable amounts.

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<sup>30</sup> Watkins, Kevin & Quattri, Maria. "Lost in intermediation: how excessive charges undermine the benefits of remittances for Africa." *Overseas Development Institute*, April, 2014. Web. 20 March, 2015.

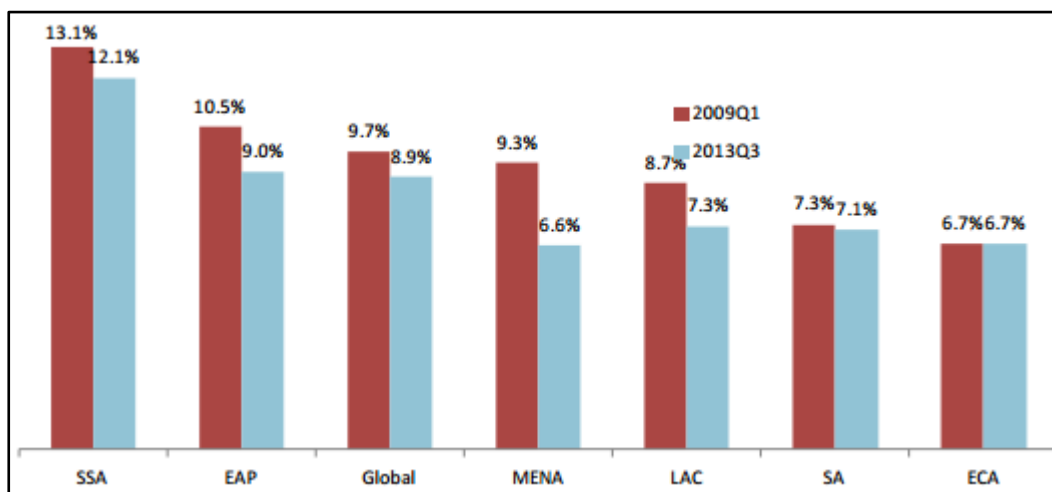
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## VIII. Appendix

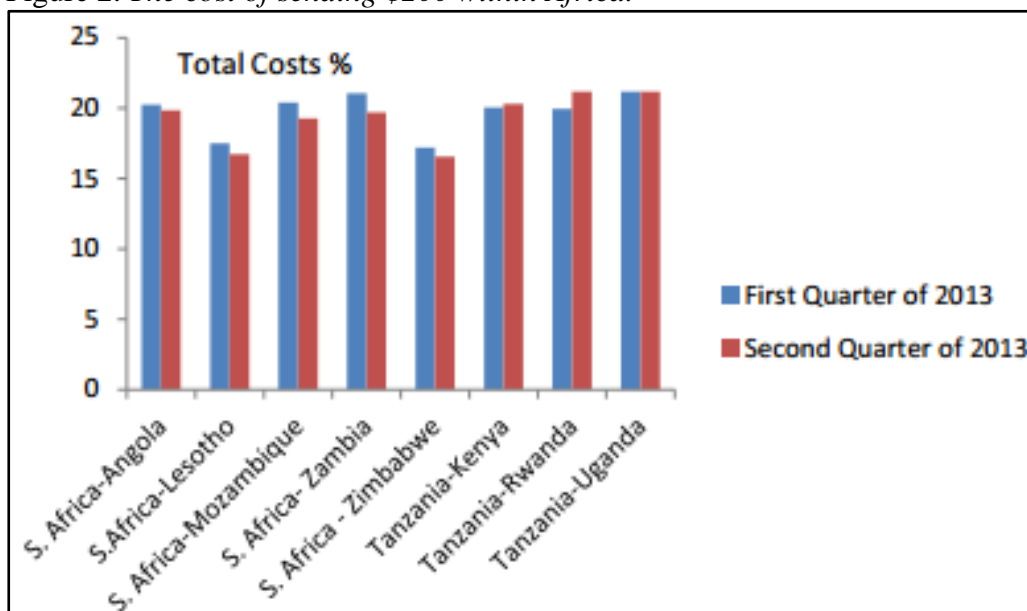
Figure 1. *The cost of sending \$200 across various regions.*



Source: Remittance Prices Worldwide, World Bank.

[[http://remittanceprices.worldbank.org/sites/default/files/RPW\\_Analysis\\_Q2\\_2013\\_final.pdf](http://remittanceprices.worldbank.org/sites/default/files/RPW_Analysis_Q2_2013_final.pdf)]

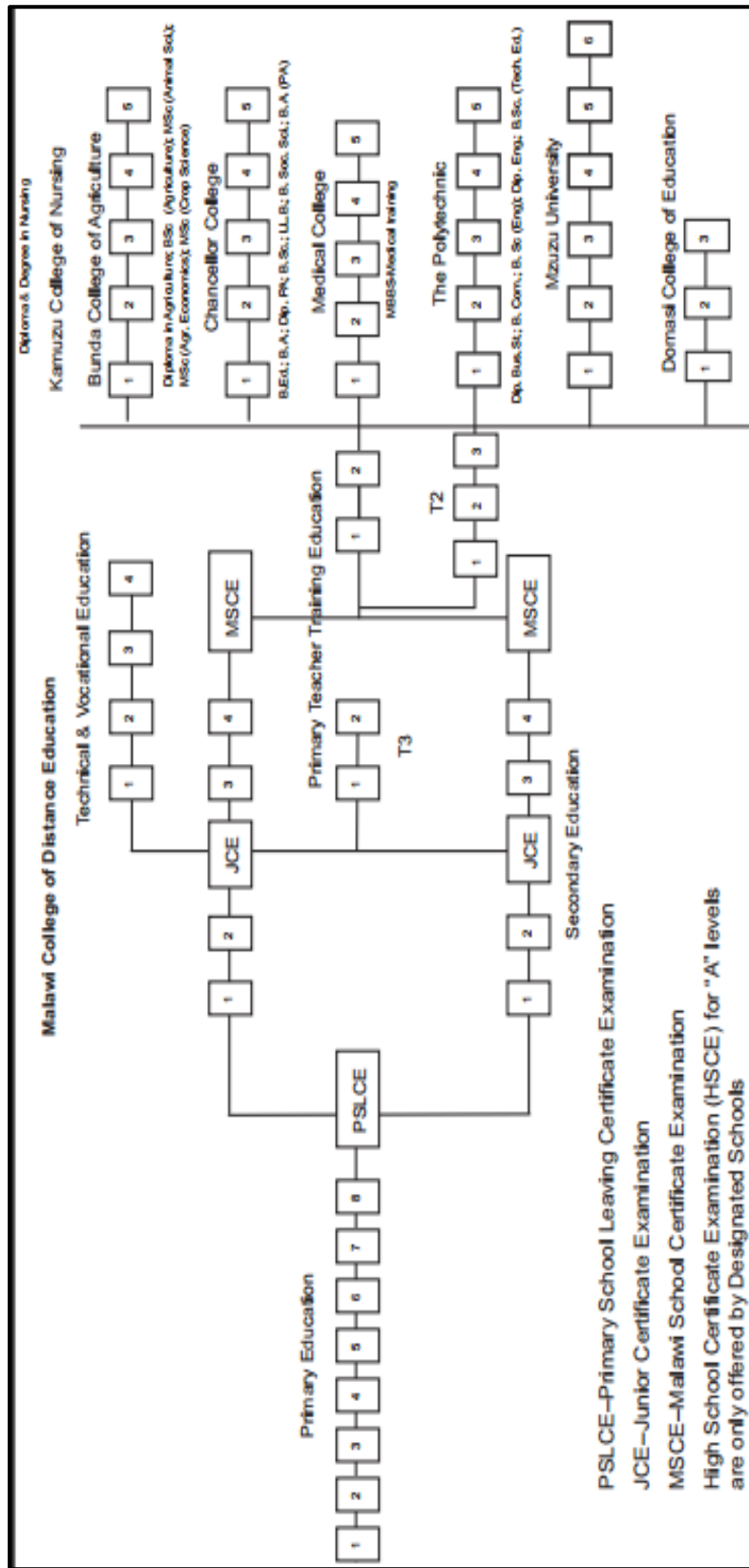
Figure 2. *The cost of sending \$200 within Africa.*



Source: Remittance Prices Worldwide, World Bank.

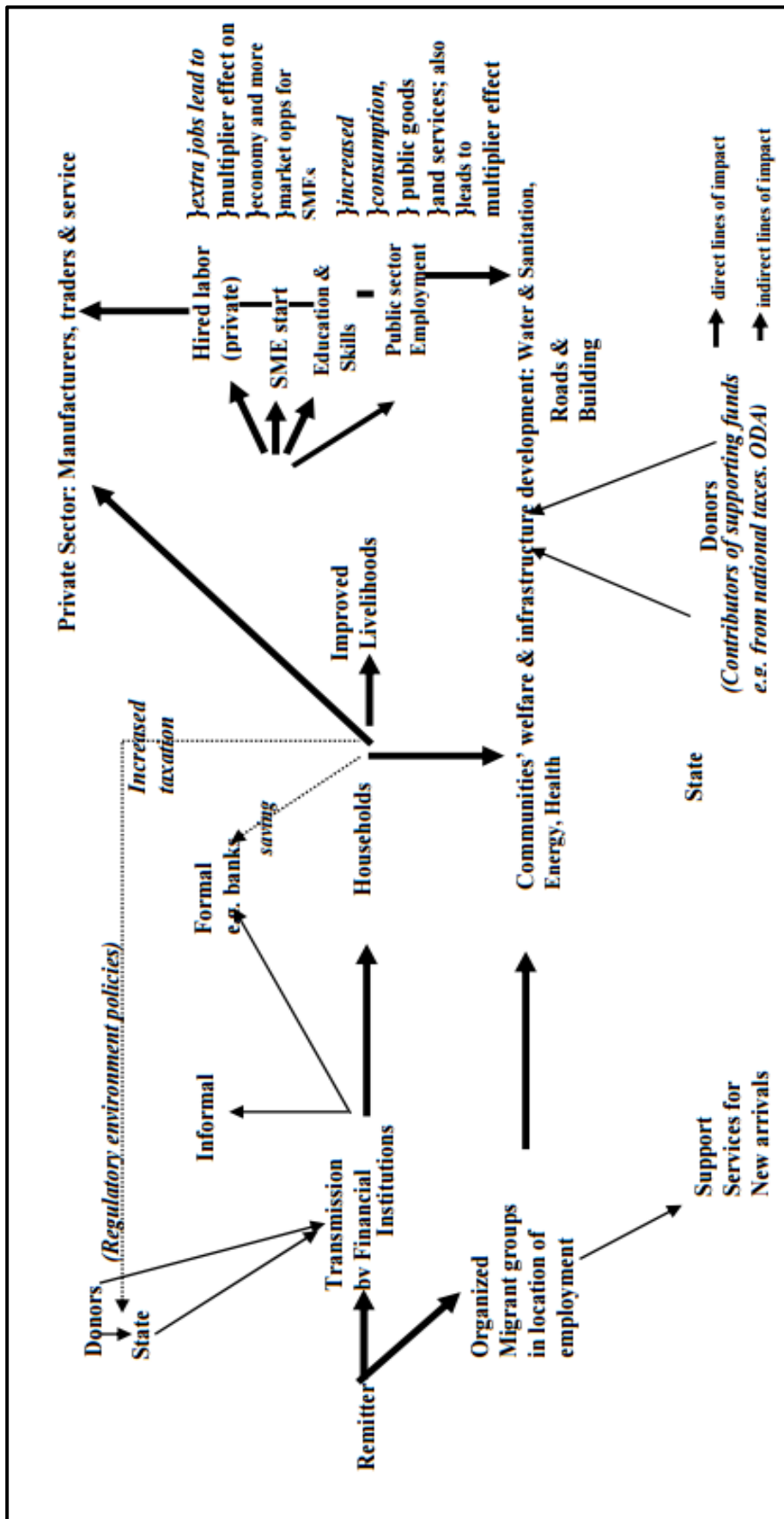
[[http://remittanceprices.worldbank.org/sites/default/files/RPW\\_Analysis\\_Q2\\_2013\\_final.pdf](http://remittanceprices.worldbank.org/sites/default/files/RPW_Analysis_Q2_2013_final.pdf)]

Figure 3. Structure of the Education System in Malawi



Source: Education Statistics 2007, Department of Planning, the Ministry of Education, Science and Technology

Figure 4. A framework for assessing the impact of remittance flows on household wellbeing



Source: Adapted from Chimhowu, A, J. Piesse and C. Pinder (2003, 2005)



Table 4. *Two-tailed Fisher's exact test measuring the correlation between received remittance and household school attendance*

Attended School	Received Remittances		Total
	Yes	No	
Yes	821	7,008	7,829
Percentage	90.02	81.40	82.23
No	91	1,601	1,692
Percentage	9.98	18.60	17.77
Total	912	8,609	9,521
	100.00	100.00	100.00

Fisher's exact = 0.00

Table 5. Results of Model Regression 1.1 and 1.2: OLS estimates of the probability of attending school compared to OLS estimate of highest level of education with regressors received remittance, age, gender, and marital status

Variables	(1) Probability of Attending School	(2) Highest Level of Education
Age	-0.187821*** (.0117312)	-0.3123595*** (.0266002)
Gender	-0.1083564*** (.0095577)	0.2103855*** (.0223453)
Marital Status	0.0234769*** (.0064941)	0.073609 (.0166507)
Received Remittance	0.1007286*** (.0151057)	-0.3598774*** (.0339487)
Constant	1.057399*** (.0316126)	1.939577*** (.0721362)
Observations	6347	5159
R <sup>2</sup>	0.0661	0.0617

\*\*\* 0.01 significance level

\*\* 0.05 significance level

\* 0.10 significance level

Table 6. Results of Model Regression 2.1 and 2.2: OLS estimate of the probability of attending school compared to OLS estimate of highest level of education with regressors age, gender, marital status, remittance amount, distance from agent, amount of receipt fee, account type and number of remittances received.

Variables	(1) Probability of Attending School	(2) Highest Level of Education
Age	-0.1092694*** (.035824)	-0.483255*** (.1420825)
Gender	-0.0974544*** (.0317814)	0.1951986 (.1276172)
Marital status	0.0441984** (.0198557)	0.0281455 (.0867528)
Remittance amount	4.33e-06 (1.24e-06)	0.0000167*** (4.90e-06)
Distance from agent	5.97e-06 (.0001036)	-0.0011615*** (0.0004296)
Amount of receipt fee	-0.0001535 (.0001685)	-0.0012057* (0.0006479)
Account type	0.0286315** (.0119061)	-0.2875823*** (.0471851)
Number of remittances received	-0.0120449 (.0129173)	-0.0605114 (.050781)
Constant	1.021162*** (.0658356)	2.855211*** (0.2711549)
Observations	329	298
R <sup>2</sup>	0.2272	0.2168

\*\*\* 0.01 significance level

\*\* 0.05 significance level

\* 0.10 significance level