

Decomposing Remittances from International Migration over Human Capital Development: Lesson from Nigeria Experience

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Abstract

The aim of this study is to ascertain the distribution of international remittance inflow as opposed to the level attained in education before migration. The study uses the Gini coefficient decomposition analysis for the emigrants' remittances and the logistic regression model to ascertain the distribution of emigrants' remittances as opposed to the level of human capital development in education completed before migration. Evidence from the study shows that the level of education completed before migration contributes to the unequal distribution of remittances across the emigrating groups. The Gini coefficient for primary school or lower, secondary, technical, tertiary and other levels of education are 0.09, 0.08, 0.07 and 0.08 respectively with their corresponding Theil indices being 0.014, 0.011, 0.001 and 0.011 respectively. These statistics suggest that the advancement in human capital development in education before migration would reduce the inequality in remittance inflow. The policy implication of this finding supports the migration policies that encourage education before migration as it reduces the inequality in the remittances.

Keywords *Nigeria, remittance, human capital development.*

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Background to the Study

According to the International Organization for Migration (IOM), the United Nations (UN) migration agency, a migrant is any person moving or who has moved across international borders or within a state away from his or her habitual place of residence (IOM, 2017). This implies that migration is the overall movement of people between countries, which applies to both immigration and emigration. Immigration refers to people coming into a country while emigration refers to people leaving a country for a different country. According to Stalker (1997), International migration is one of the major keys that drives the globalization process. Likewise, IOM (2016) reveals that international migration is a force for development and international cooperation for both countries of origin and countries of destination. Since the late 1980s, migration across borders has been rapidly increasing and high to industrialized countries over time than the migration to developing countries. For example, the growth rate of the migrants' stock for industrialized countries between 1990 and 2015 rose to 3.0% from 2.9% during the period 1975 to 1990, while the migrants' stock for developing countries declined to 0.5% during the period 1990 to 2015, from 2.6% stock during the period 1975 to 1990 (UN, 2016 and Zlotnik,2004). The recent UN's 2017 International Migration Report also reveals that international migrant statistics have continued to grow rapidly over the past fifteen years, reaching 258 million in 2017, (UN, 2017). In terms of overall international migration, in 2015 two-thirds of all international migrants lived in Europe, estimated at 76 million (78 million in 2017), while 75 million lived in Asia (in 2017) this had increased to 80 million). In 2015 Northern America hosted the third largest international migrants, estimated at 54 million (58 million in 2017) followed by Africa with 21 million (up to 25 million in 2017), Latin America and the Caribbean with 9 million (up to 10 million in 2017) and Oceania remained steady at 8 million (UN, 2016, 2017). The percentage growth rate of international migrants from 2000-2010 is 23.69%, 2010-2013 is 8.411%, and 2013-2015 is 5.172%. Hence, over the period 1995-2017, the international migration growth rose to 93% and this demonstrates a significant growth in the global migration patterns, (UN, 2017).

Despite the fact that sub-Saharan Africa as a host, receives more refugees as caused by conflict and political instability, the region sends forth both skilled and unskilled labourers to the rest of the world, leading to a labour supply to other countries. Nigeria, Côte d'Ivoire and South Africa have emerged as the top recipients of intra-sub-Saharan migration with 0.9 million, 2.3 million and

2 million people as the stock of migrants respectively. In recent times, the majority of immigrants in Nigeria are from Economic Community of West African States (ECOWAS) countries, but not as refugees, since the refugees constitute a small proportion of the overall immigrants stock of 0.9% from 2007 to the present time (Afolayan, 2009). Nigeria as an important destination for migrants in the West African region, has increasing numbers of emigrants in return. Nigeria as a host country or country of origin to immigrants as well as a sending country for emigrants has experienced some economic improvement as a result of the migration through remittance. However, it is currently unclear if the inflow of foreign remittances is spread equally or unequally across the emigrants, especially considering the level of human capital development of the emigrants before migration.

It is becoming evident that Nigeria as a developing country is traditionally an important destination for migrants in Africa, but Nigeria also sends forth emigrants to other countries. The implication of the rising emigration from Nigeria has resulted in a negative net migration rate per 1000 people to -0.3% in 2005 from -0.2% in 2000; the trend, as projected, got worse in 2010 to -0.4% and that, that about 1,041,284 Nigerian nationals lived abroad with 0.6% of the country's population to be emigrants (Afolayan 2009). The study further reveals that Nigerian emigrants majorly live in Sudan (24%), United States (14%), United Kingdom (9%), Cameroon (8%) and Ghana (5%), (Afolayan 2009) and that in 2013, two-thirds of emigrants from Nigeria, which is 64.4%, were residing in more developed regions,(UN, 2013). This conforms to the projection of the United Nations on the rising Nigerian emigration rate. Current estimates in 2017 shows that Nigerian international migration as a percentage of the total population is 0.6% from and this represent a rise from 0.4% in the year 2000, (UN, 2017). Likewise, IOM,(2018) report reveals that the international migration by major region of residence as at 2015 for Africa was 22million, Asia was 76million, Europe was 77million, Caribbean was 9million, America was 54million and Oceania was 8million.

It is not in doubt that there are wide-ranging impacts of migration on development such as human trafficking, social development, health, environment, employment and the labour force. The most common impact of emigration is on the remittance inflow into Nigeria. According to Afolayan (2009), the inflow of remittances into Nigeria prior to 2004 was under \$2.0 billion but rapidly rose to \$2.3 billion in 2004, \$6.5 billion in 2005, \$10.6 billion in 2006, and \$18.0 billion in 2007. In the recent time, the annual growth rate of remittance inflow in Nigeria for 2015, 2016, 2017 and 2018 were 1.69%, -

6.99%, 11.79% and 10.49% respectively, (World Bank 2017). However, a major factor to be considered here, is the impact of the level of human capital development in education acquired by the emigrants before migration, on the remittance inflow. A related factor is the distribution of the total remittance inflow over the level of human capital development in education acquired by emigrants before migration. In the light of Afolayan (2009), the propensity to migrate is particularly high among the highly skilled or educated and further reveals that in 2000 that 10.7% of the highly skilled population who were trained in Nigeria worked abroad, which is an example of the so-called 'brain drain', which impacted most severely on the medical sector.

Despite the gains from international migration, government policies had constantly tried either to maintain the current migration or to decline it. For example, among the 195 countries with Nigeria inclusive a large majority of governments (73%) either had policies to maintain the current level of immigration or they were not intervening to change it, while 16% had policies to lower and 11% had policies to raise it. It is on this premise that the following two key questions are raised. Firstly, what is the distribution of the total amount of remittance, as opposed to the level of human capital development in the education acquired before migration? Secondly, does the level of education acquired before migration have a significant effect on the total amount of remittance inflow?

Theoretical Literature Review

International migration is as old as human existence. It is difficult to discuss global integration without recognizing the role of migration (UN, 2013). Several theories have discussed migration with a variety of views and concepts both in economic, social and psychological concepts yet there is no unified model on what, why and how people migrate. Some of the theories of migration have both macroeconomic and microeconomic foundations and these are discussed below.

Early Theory of Migration and Neoclassical Macro-Theory

The early theory of migration is based on the economic analysis of Smith's (1776) "Inquiry into the nature and causes of the wealth of nations" and is further buttressed by the views of Lewis (1954), Hicks (1963) and Harris and Todaro (1970) on labour market theory, as cited by Olejarova (2007). While the early theory on migration focused on domestic migration, it was closely linked to the location model from regional economics and economic

geography. Smith emphasized that there is greater spatial dispersion of wages than commodity prices. This further suggests that migration is potentially a response to spatial disequilibrium in the labour markets. The formalized model of Smith's hypothesis to show that labour moves from location 'i' to location 'j' if the wage is higher in 'j' than in 'i' and that the volume of migration is related to the wage differential, as illustrated below:

$$M_{ij} = \beta_{ij}(W_j - W_i), \dots (1)$$

Where W is the wage, M is the number of migrants and β reflects barriers to migration, such as distance, policy restrictions, etc. that may reduce the speed at which wages adjust to migration. The parameter takes on higher value when the barriers to migration are reduced.

On the other hand, the contributions of British geographer, Ravenstein (1889) and American economist, Jerome (1926) added to the formulation of a set of migration laws:

- a) most migrants move only a short distance and usually to large cities;
- b) cities that grow rapidly tend to be populated by migrants from proximate rural areas and gaps arising in the rural population generate migration from more distant areas;
- c) out-migration is inversely related to in-migration;
- d) a major migration wave will generate a compensating counter-wave;
- e) those migrating long distance tend to move to large cities;
- f) rural persons are more likely to migrate than urban persons; and
- g) women are more likely to migrate than men.

The highlighted laws were jointly summarized, using the gravity model of migration, which states that the product of the population of the origin and destination are inversely proportional to the distance between the two, as illustrated below:

$$Y_p = P(1)P(2)/D, \dots (2)$$

Where Y_p is the product of migration, $P(1)$ is the origin population and $P(2)$ is the destination population and D is the distance between origin and destination.

Dual Labour Market Theory

The dual labour market theory, like other macroeconomic theories, queries the rational choice in decision-making about migration made by individuals and argues that international migration stems from the intrinsic labour from modern industrial societies. Piore (1979) laid the claim that the lasting demand for immigrant labour is associated with the economic structure of developed countries. The sub-sectors of the economic structure include: a high wage-level sector and a low wage-level sector. The high wage-level sector comprises a capital-intensive method of production while the low wage-level sector is characterized by the labour-intensive method of production.

Empirical Literature

Despite migrants being the most vulnerable members of a society, evidence has shown that there are both positive and negative sides of international migration, which are determined by a number of factors. Naude (2009) lists conflicts, environmental and economic factors as the key determinants of migration. The paper stresses further that conflict is a major cause of forced migration in sub-Saharan Africa. The environmental degradation, desertification and deforestation along with other natural disasters like floods or drought are all factors that force migrants into migration as a coping strategy. African as an agro-based region records increased migration of labour in the face of the existing environmental pressure (Grote and Warner, 2009). Similarly, Adepoju (2005) sheds light on migration in West Africa, stating that migration in this region is caused by population pressure, inequality, poverty, poor economic performance and economic conflicts during pre-colonial and colonial era. Zoomers and Naerssen (2007) also state that the high rate of migration in Africa is a consequence of increasing problems with the multi-cultural society in the receiving area, combined with a fear of invasion. Lidak's (2014) empirical evidence on the impacts of migration shows that migration brings a large number of problems to European countries, that fundamentally influences the policies of liberal democratic nation states.

The literature analyses international migration on two dimensions, namely the micro and the macro levels. The macro theories explain the structural conditions that influence the international migration flow, including economic, political and cultural factors. The micro theories, on the other hand, approach it from an individual level of decision-making. The statistics of study from Darkwah and Verter (2014), reveals that Europe received about half a million

people illegally, who were mostly economic migrants from Asia and Africa. Regarding the determinants of international migration, unemployment and population pressure are among the key determinants of migration in Nigeria. In the work of Darkwah and Verter (2014), the linear regression model result showed that the log of unemployment, the log of remittances and the log of population were the significant factors determining emigration from Nigeria with 0.15%, 0.05% and 11.3% positive magnitudes respectively. The study tends to mirror migration and remittance situation in the Nigerian context, although the use of time series data for the analysis limits the knowledge on the patterns of emigration and inequality in the households in Nigeria.

A study by Ratha, Mohapatra and Scheja (2010) reveals that international migration is a channel of remittance access with positive impacts on the development of an economy, in both sending and receiving countries. Ratha et al. (2010) draw attention to the social impacts of international migration on poverty, inequality and human capital development, despite the negative impacts and social costs of international migration. A study on Nigeria by Fonta, Onyukwu and Nwosu (2011) reveals that remittance income could play an important role in mitigating poverty and income inequality. It also found that the impact of remittances is unevenly distributed across the different regions by gender and by levels of educational attainment. The evidence from the study using the Foster-Greer-Thorbecke (FG 1984) model states that a scenario where the head of the household without formal education, who receives remittances, reduces poverty by 0.07%. On the other hand, if the head of the household had attained a tertiary-level education and receives remittances, the poverty rate declines by over 0.22% (Fonta et al., 2011). Although the findings from this study seem interesting, the findings do not take into consideration the knowledge and the skills-level attained by the emigrants prior to migration, who send remittances to their home countries – which is the focus of this study. That knowledge could mirror the welfare status of the households back home, thereby validating the level of significance of the findings.

The decision to migrate varies from individual to individual. According to King (2012), the phenomenon of the immobility of people raises a series of questions on migration adventure. For example, if about 97% of the world's population does not migrate, does the 3% of the world's population who are migrants, have a peculiar reason for doing so? Is immobility linked to the lack of access to travel resources? Is it a choice of the population of a country to choose to be immobile? What are the factors that can determine the patterns

of international migration? Are there common drivers of international migration? Which patterns of international migration best explain the migration patterns in Africa?

Yaro (2017) posits that West Africa has a long history of population mobility, both in the continent and internationally. On the African continent, with its 54 countries, 35.7% of migration is from central Africa, 5.8% is from Southern Africa and 44.6% is from West Africa.

Analytical framework

This study uses the Gini decomposition technique to analyze the extent of equal and unequal distribution of the international remittances in relation to some level of human capital development in education attained before migration. According to Stark et al. (1986) as cited in Fonta et al. (2011), the Gini coefficient is a measure of inequality of a distribution and it is defined as the ratio with values between 0 and 1. The income inequality, G, is calculated as follows:

$$G_t = \sum_{i=1}^k R_k G_k S_k, \dots (3)$$

Where S_k = household share of income source k on total income, G_k = the source Gini and R_k = Gini correlation of income from source k with the distribution of total income. Following the equation (3), we are therefore allowed to decompose, firstly, the total remittance income upon distribution or inequality as a function of the level of skills that the emigrants attained before migration (S_k); secondly, the extent of the equal or unequal remittance distribution (G_k); thirdly, how remittance inflow sources and the distribution of total remittances are correlated (R_k). This determines the extent to which the level of human capital development in education influences the odds of remittance inflow.

In the second experiment estimating the impact of the level of human capital development in education acquired before migration, on the odds of emigrants' remittance inflow, this study uses a logistic regression model.

Logistic Regression Model

Logistic regression is a mathematical model used to describe the relationship of several Xs to a dichotomous dependent variable. The functional form of the

logistic regression model as stated by Kleinbaum and Klein (2010) is as follows:

$$F(z) = \frac{1}{1 + e^{-z}} \dots\dots\dots(4)$$

$$F(Z) = \text{for } 0 \leq f(z) \leq 1$$

Z is the vector of the explanatory variables and coefficients. Below is an illustration of the prediction of the probability of a logistic regression model.

$$\text{Prob}(Y = 1) = 1 - L(-\sum_{k=1}^k \beta_k x_k) = L(\sum_{k=1}^k \beta_k x_k) = \frac{e^{\sum_{k=1}^k \beta_k x_k}}{1 + e^{\sum_{k=1}^k \beta_k x_k}} \dots\dots\dots(6)$$

The Prob(Y = 1) is the probability of an occurrence or treatment as opposed to the event not occurring or not being treated. Below is an illustration of the model, in a compact and linear form:

$$P(W_i / X_i = x) = E(W_i) = \text{Log}\left(\frac{P}{1-P}\right) = X_i \beta_i \dots\dots\dots(7)$$

The dependent variable W_i is a linear function of the vector of conditioning

$\frac{p(w)}{1-p(w)}$

variable X_i while the $\log \frac{p(w)}{1-p(w)}$ is the natural log of the treatment odds.

The functional form of the regression model above allows this study to estimate the impact of skills and the duration of stay of the emigrants on the odds of remittance inflow into Nigeria as specified below:

$$\text{Log}\left(\frac{P(R)}{1-P(R)}\right) = \alpha + \beta_1 \text{skilled_level} + \beta_2 \text{duration_stay} + \beta_3 \text{migration_group} + \beta_4 \text{sex} + \beta_5 \text{location} + \epsilon_i \dots\dots\dots(8)$$

Where $\log(P(R)/1 - P(R))$ is the odds ratio of the emigrants ever sending money as opposed to not sending money. If the emigrant ever sends money, the probability $P(R)$ of response takes yes or 1, but if the emigrant never sends money $1 - P(R)$, the outcome takes no or 0. The skills level of the emigrant is the level of skill attained by the emigrant before migration. The level of skills of the emigrants is classified as ‘primary school or lower’, ‘secondary level

technical/vocational school', 'tertiary/university', 'others' and 'people that don't know'. The duration of stay is defined as the length of period the emigrant lived abroad since migration. Sex is classified into male or female. Although the level of skills attained by the emigrants before migration is primarily the variable of interest for this study, the other variables are used to check for interaction effects.

Data Source and Scope of the Study

The scope of this study is limited to Nigeria, using survey data on migration from Nigeria by the International Organization for Migration (IOM) in 2009. The performance of emigrants is measured by the dichotomous outcome of whether the emigrants ever send money to the home country or not. The level of skills of the emigrants is measured in terms of education levels attained before migration, taking into consideration primary education, secondary education, tertiary education and other unspecified training, as well as socio-economic characteristics of the emigrants, including gender, location and duration of stay.

Analysis and Discussion

Inequality Decomposition

The inequality aversion shows how sensitive income difference is to inequality aversion. The more positive $e > 0$ is, the more sensitive $A(e)$ is to income difference at the bottom. Table 1 shows that remittances are less sensitive to the inequality on the emigrant level of human capital development. For example, $A(1) = 0.01383$, which is very close to zero.

Table 1: Atkinson indices, $A(e)$, where $e > 0$ is the inequality aversion parameter			
All Obs	A(0.5)	A(1)	A(2)
	0.00676	0.01383	0.02906

Computed by authors using Stata 12.

Inequality Decomposition of Remittances by Sub-Groups

The Gini coefficient is the aggregate numerical measure of income inequality ranging from 0, which is perfect equality, to 1 for perfect inequality. The higher the value of the coefficient, the higher the inequality of income distribution; the lower it is, the more equal the distribution of income. Table 2 below shows

that emigrants' remittances across the levels of human capital development in education attained before migration, are generally close to equal distribution. But from the groups of the level of human capital development, the Gini coefficient for primary school or lower, secondary and technical, tertiary and others are 0.09, 0.08, 0.07 and 0.08 respectively with their corresponding Theil indices at 0.014, 0.011, 0.001 and 0.011 respectively. These statistics suggest that the advancement in human capital development (education) before migration reduces the inequality in remittance inflow. The policy implication of these findings is that migration policies with human capital development can reduce the inequality in the remittances. This is supported by the Gini coefficient of the primary or lower level of human capital development (0.09414) which remained higher than other levels of human capital development.

Table 2: Sub-groups indices GE_{k(a)} and Gini_k

Highest schooling level attained before migration	Pop.Share	Income share	GE(-1)	GE(0)	GE(1)	GE(2)	Gini
Primary or lower	0.13842	0.12050	0.01677	0.01555	0.01475	0.01425	0.09414
Secondary and technical	0.36299	0.35583	0.031346	0.01249	0.01182	0.01137	0.08385
Tertiary	0.48376	0.51064	0.01068	0.01011	0.00975	0.00954	0.07552
Other	0.01483	0.01302	0.01074	0.01086	0.01105	0.01134	0.08311

Computed by authors using Stata 12.

Logistic Regression Result

Table 3 below with the results, shows the estimated odds of the logistic model for the study after 4 iterations. The odds of the emigrants sending money home is categorized as the probability of the emigrants sending money home (yes or 1) as opposed to the emigrants not sending money home after migration (no or 0). The odds ratio column represents the odds of Y = 1 (sending money

home) with the change in the independent variables. If the odds ratio is greater than one, then the odds of $Y = 1$ increase but if the odds ratio is less than 1, the odds of sending money decreases. With the focus on the level of human capital development in education attained by the emigrants before migration, the increase in the education levels of the emigrants increases the odds of the emigrants sending money, is higher than the emigrant with primary school education only. The tertiary education level proved significantly different from the other levels of education or skills attained before migration. The increase in the duration of stay by the emigrants also increases the odds of the emigrants' remittances. The presence of the emigrants from the rural areas also increases the odds of the remittance. On the other hand, the presence of female emigrants decreases the odds of the remittances, showing them to be lower than with the presence of males. Additionally, the presence of emigrants from African and other countries decreases the odds of emigrant remittance, making them lower than those of the Organization of Economic Cooperation and Development (OECD).

The variation explained in the model of the emigrants sending money home with the presence of the level of human capital development in education of the emigrants before migration, is 14.67%, but the model is significant with a probability value of 0.000 and the L-R Chi2(8) is 147.50.

Number of iteration = 4

Number of Observation = 769

LR Chi2(8) = 147.50

Prob > Chi2 = 0.0000

Pseudo R2 = 0.1467

Log likelihood = -428.82172

Table 3: Odds ratio result

Odds-Remittance	Odds Ratio	Std.Error	Z	P>/Z/	95% Conf.	Interval
Education group:_Secondary	1.427838	0.4721536	1.08	0.281	0.7468028	2.729933
Education group:_Tertiary	3.573276	1.20584	3.77	0.000	1.84425	6.923306
Education group:_Others	0.2211937	0.1843808	-1.81	0.070	0.0431753	1.13321
Females	0.4488508	0.0827441	-4.35	0.000	0.3127418	0.6441961
Duration of stay	1.090695	0.0205603	4.61	0.000	1.051133	1.131746
Location:_Rural	1.298179	0.2227823	1.52	0.128	0.9273825	1.817233
Int.migration:_Africa	0.4140167	0.0798218	-4.57	0.000	0.2837314	0.6041272
Int.migration:_Others	0.2509643	0.1200782	-2.89	0.004	0.0982516	0.6410385

Computed by authors using stata 12.

Policy Recommendations

Although the inequality in emigrants’ remittances as opposed to the level of human capital development (education) before migration is not quite pronounced, there is still no perfect equality.

Migration policies that promote human capital development in education before migration will significantly improve the unequal distribution of international remittances, as opposed to the level of human capital development. The promotion of human capital development in education before migration will also increase the odds of the inflow of international remittances in Nigeria. In order to achieve a perfect distribution in international remittances as opposed to the level of human capital development in education, the government could introduce and implement a policy mandating the attainment of specified levels of education, for emigration control in the country. Furthermore, human capital development

in education would balance the effects the emigration of a high-skilled labour force – the so-called ‘brain drain’ – with the high inflow of international remittances into the country.

Conclusion

This study has established the impact of human capital development in education before migration, on the unequal distribution of international remittances. It was the aim of this paper to study the international remittance distribution as opposed to the level of the human capital development attained before migration. It applied a logistic-based regression model to determine the effects of the level of human capital development on the odds of sending money back to the households. Further study is required to investigate the decomposition of remittances to the households, both for the emigrants and non-migrants, as opposed to the level of human capital development. This will ascertain if there is a difference in the effects of human capital development as a treatment variable on remittances to the households, if data were available.

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