Re-examining the Impact of Remittances on Human Development: Evidence from Sub-Saharan Africa

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ABSTRACT: Sub-Saharan Africa (SSA) continues to lose its skilled workers through migration in a form of brain drain. In return remittances from these migrant workers to the region have been surging and now constitute a major external source of finance. Do these increasing inflow of remittances contribute to human development? This paper examines the impact of remittances on human development in 30 SSA countries using the system Generalized Method of Moments (sGMM) approach for the period 2004-2018. The empirical results show that remittance inflows impact positively on human development in SSA. Based on the empirical results, it is imperative for SSA countries to have a clear-cut policy framework and strategies on migration to attract, increase and harness the full benefit of remittances.

KEYWORDS: Brain drain, Generalized Method of Moments, Human development, Remittances

Introduction

Leveraging remittances for development is an important aspect of the migration-development nexus as remittances are considered as one of the major channels in which migration can lead to development through improved income distribution and quality of life (Keely and Tran 1989). Remittances are monies earned by citizens abroad that are sent back to the country of origin (Martin 2016). It plays a key role in social resilience and the advancement of household welfare in many developing countries (Quartey and Blankson 2004). Other scholars have argued that remittances rather fuel consumption and inflation in origin regions and that migrants rarely invest their money in productive enterprises (De Haas 2010; Roy and Rahman 2014). Despite these ongoing debates, remittances around the world have been increasing and now constitute more than thrice the volume of official development assistance in low- and middle-income countries (World Bank 2019). World Bank data further showed that, in low and middle-income countries, annual remittance flows reached $529 billion in 2018, depicting an increase of 9.6 percent over the 2017 figure of $483 billion. Also, in SSA remittances flow increased by almost 10 percent to $ 46 billion in 2018. (By ranking Comoros had the largest share of remittances to GDP in 2018 followed by Gambia, Lesotho, Cabo Verde, Liberia, Zimbabwe, Senegal, Togo, Ghana, and Nigeria. In terms of volume Nigeria was first).

Figure 1 indicates the flow of Foreign Direct Investment (FDI), remittances, and Official Development Aid (ODA) in SSA. It can be observed that remittances have been rising over the years and have now surpassed FDI as of 2018. Some economists, like Ratha (2019) believe that remittances will soon become the largest external source of finance for developing countries. This figure could be higher as some migrants still use informal means of sending money due to the high transaction cost involved in remitting to the continent. (It cost 9.1% on average to send an amount of $200 to SSA and it is above 10 percent across many Africa corridors (World Bank, 2020)). The reason for the upsurge in remittances to the region is due to the increasing number of economic migrants and strong economic conditions in advanced countries and it affirms the assertions that remittances may be a more prudent avenue for poverty reduction and economic growth than developmental aids that flow to developing countries (Kapur 2003). As remittances increase so is the loss of human capital in the region. It is estimated that the African continent loses $4.6 billion in training medical doctors who are eventually recruited by advanced countries such as the United Kingdom, the United States, Australia, and Canada. On average the UK saves $2.7 billion while the

US, Australia, and Canada save $486 million, $621 million, and $384 million respectively in training costs for recruiting African physicians (Mo Ibrahim Foundation 2018).
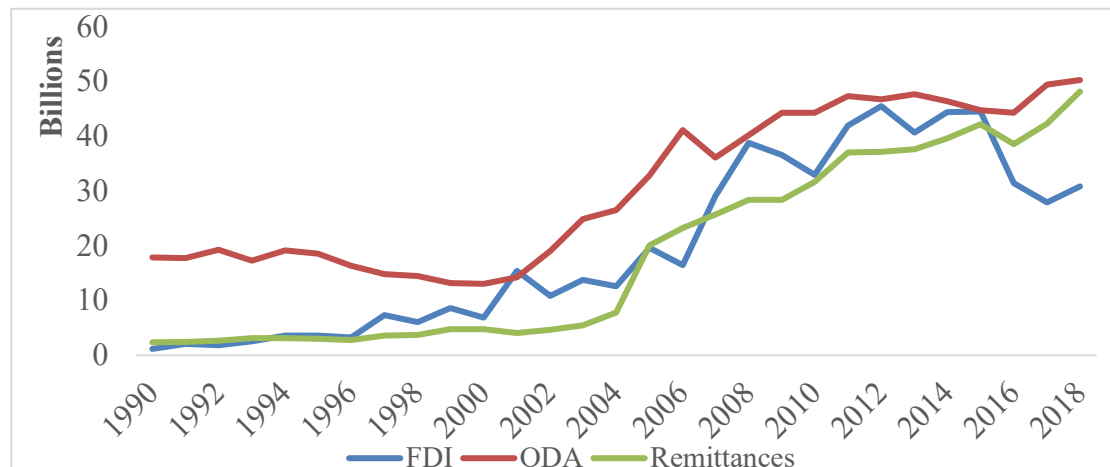

Figure 1. Trend of FDI, Remittances and ODA in Sub-Saharan Africa 1990-2018

Source: Authors' computations based on World Bank data (2019)

The question remains, whether African countries should allow their skilled workers to leave the continent and in return enjoy the surge in remittances, and do these remittances contribute to human development? The increasing flow of remittances has been considered a motivational factor for many skilled workers leaving the continent for better life and opportunities (Adenutsi 2010). The direct impact of these remittances at the micro-level is clear as it serves as a lifeline income for many families and lifting them out of poverty. At the macro level, it remains difficult to measure how this remittance impacts the economy as a whole and most importantly on human capital formation.

Even though many studies have explored the various channels in which remittances impact development at various levels, few have looked at the impact of remittance on human capital development. This study, therefore, examines the effect of migrant remittances on human development in SSA. We will therefore fill the gap in knowledge by contributing to the ongoing debate with new evidence on the remittances-human development nexus in the case of SSA.

Brief Review of the Literature

The pessimistic view such as the structuralist and the dependency theorists (Rubenstein 1992; Adams 1969) based their argument on brain drain (the loss of intellectuals and technical personnel or skilled workers because of migration from developing countries to developed countries) to establish the fact that migration negatively affected human development in the sending countries and rather contributed to global inequalities (De Haas 2010). The bleak and pessimistic view of brain drain was summarized by Todaro (1996, 199):

"*The irony of international migration today is that many of the people who migrate legally from poor to richer lands are the very ones that Third World countries can least afford to lose: the highly educated and skilled. Since the great majority of these migrants move on a permanent basis, this perverse brain drain not only represents a loss of valuable human resources but could prove to be a serious constraint on the future economic progress of Third World nations*".

According to Bhagwati and Hamada (1974), some specific effect of brain drain was attributed to social effect, thus the externalities in production lost due to migration of highly skilled workers and fiscal effect, which is income tax lost due to migration. Equally brain drain leads to distortion in the sending countries' labor market which may lead to a fall in GDP. Along the line emerged the

optimistic school of thought that challenged the daunting effect of migration on human development in developing countries. A very great incentive not considered by the earlier writers is that brain drain may induce brain gain, which is beneficial to the sending countries (Stark et al. 1997). It is now a fact that brain gain in form of remittances is directly linked with migration in countries with net labor export.

Empirically, a large portion of literature has focused on how remittance impacts economic growth. Remittances may spur economic growth by increasing entrepreneurial activity and investment by alleviating credit constraints, especially in developing countries where the credit market is less efficient (Giuliano and Ruiz-Arranz 2009). Remittances equally help promote economic growth through the multiplier effect. Other researchers, however, have contended that remittances can have a negative effect on economic growth. Ahlburg (1991) argued that in low-income countries, remittances impair growth and productivity because foreign goods may dominate household consumption over productive investment. Chami et al. (2005) argued that remittances retard economic growth, where active labor may rely solely on the migrant for survival, which may reduce labor supply to the economy. However, measuring development by economic growth is not enough as it does not take care of social and public care which are key in enhancing well-being and impacting human development (Anand and Sen 2000).

Another channel in which remittances impact development is through institutional channels. There is strong argument by many scholars to the effect that remittances impact on economic growth and ultimately on development depends most importantly on the home countries institutions and government policies (Acemoglu et al. 2001; La Porta et al. 1997). Zgidi et al. (2018) investigated the causal relationship between remittances, economic freedom, and economic growth on panel data of four North African countries between 1980-2012. The estimation was carried out using the generalized method of moments (GMM). Their result established that remittances have a positive and significant impact on development in the presence of quality institutions. Adams and Klabonu (2016) also confirmed a positive role of institutions when they examined the effect of regime durability and remittances on economies in 33 SSA countries over the period 1970-2012 by employing the GMM estimation process. They concluded that, while regime type is positively correlated to economic growth, regime durability significantly impacted negatively on economic growth. However, the interaction term of both regime types, durability, and remittances was found to be positively and significantly related to economic growth. Meaning a democratic and sound government incentivizes the remittances effect on a country's economic growth.

Remittances also impact development through investment channels. Theoretically, the pessimistic school of thought argues that remittances sent home are used for consumption rather than investment (Chami et al. 2005; Taylor et al. 1996). While the optimistic school sees remittances as means to enhance development (Yang 2005). Dash (2020) investigated the impact of remittances on domestic investment in southern Asian countries over the period 1991-2017. The estimation was carried out using advanced panel estimation and GMM system accounting for the potential country-specific heterogeneity and endogeneity problem. The findings reveal that remittances impacted domestic investment both in the short and the long run. Bjuggren et al. (2008) also confirmed the significant impact of remittances on investment when they analyzed the impact of worker's remittances on investment in 79 developing countries from 1995 to 2005 using a dynamic panel data approach. However, Mallick (2012) had a contrary result when he investigated the impact of remittance on private investment in India for the period between 1966–1967 and 2004–2005. Autoregressive Distributed Lag (ARDL) cointegration method was employed for the analysis. The study revealed that remittances impacted negatively on private investment. The mixed results show that the impact of remittances on development depends on the economic conditions prevailing in the country and the probable usage of the remittances (Clemens and McKenzie 2014).

Another key channel in which remittances impact development is through the human capital channel (health and education). The direct impact of migration on human capital has been based on brain drain and gain argument. The introduction of remittances as a means by which migration can

impact human capital gives a new dimension to the migration and development debate in terms of contribution to human development. Jongwanich (2007) established a positive link between remittances and human capital when he examined the effect of remittances on growth and poverty reduction in Asia and Pacific countries over the period 1993-2003. The study showed that increasing remittances by 1% is associated with a 0.008% increase in human capital.

Similarly, Irdam (2012) found a positive effect when he analyzed the impact of remittances on human development quantitatively using data on the human development index from 1990-2005 on 32 randomly selected countries. The estimation was carried out using ordinary least square and multiple regression. The findings indicated a positive impact of remittances on human development in countries where the government considers migration as an effective labor export strategy. Adenutsi (2010) also examined the impact of remittances on human development in 15 SSA countries using fixed balanced panel data estimation for the period 1987-2007. He concluded that remittances have a positive impact on human development in the long run.

Contrary, other studies have argued that remittances have a negative impact on human capital. Alcaraz et al. (2012) examined the impact of remittances on school attendance in Mexican migrant households from 2008 to 2009. An instrumental variable was employed for the estimation and difference-in-difference strategy, with the children under study aged 12-16 in a home receiving remittances. The study revealed that remittances had a negative effect on school attendance and rather increased child labor, therefore, affecting capital accumulation.

Based on the above-mentioned literature review, it is obvious that there are few studies on the impact of remittances on human development particularly in the case of SSA.

Methodology and Data

Empirical Model and Estimation Technique

The investigation will be carried out using panel data for a sample of 30 SSA countries across a basic time series of 15 years (2004-2018). These countries were selected based on the availability of data and average representation of a true reflection of SSA countries. Most of the macro data used in the analysis are collected from the World Bank development indicator. Data on the human development index and educational index were extracted from The United Nations Development Programme (UNDP). Our general equation framework is based on Adenutsi (2010) model with little modifications and takes the following dynamic form;

$$lnHDI_{it} = \alpha_0 \, lnHDI_{it-1} + \beta_1 REM_{it} + \beta_2 \, FD_{it} + \beta_3 \, INV_{it} + \beta_4 \, X_{it} + \delta_i + \mu_t + \varepsilon_{it} \ldots \ldots (1)$$

Where lnHDI is the natural logarithm of the human development index; $lnHDI_{it-1}$ is the natural logarithm of the lagged human development index, REM represents remittances as the explanatory variable, FD is financial development proxy by domestic credit to the private sector by banks, INV is investment proxy by gross fixed capital formation, X is the control variables, δ is the unobserved factors specific to the country, μ is the time trend; $\alpha \ and \ \beta$ are parameters; i is the number of cross-sections(=1,…, N); t is the number of time series(=1,…,N) and ε is the error term. Our analysis will start with the static model, thus pooled OLS and fixed-effect model. However, the pooled OLS estimation ignores unobservable heterogeneity and as such may become biased and the fixed effect estimation also may be biased because it ignores endogeneity. Thus, the static model will not capture the short and long-run impacts of the regressors on the dependent variable. We, therefore, employ the dynamic model and the system Generalized Method of Moments (Sys-GMM). The dynamic model panel is chosen in circumstances where some unobservable factors affect the dependent as well as the explanatory variables, and where some explanatory variables are related strongly to past values of the dependent variable. This is probably the situation in our regression of the impact of remittances on human development.

The GMM model was introduced by Arellano and Bond (1991) and later Arellano and Bover (1995), Blundell and Bond (1998) introduced the augmented version called the system GMM.

It provides a solution by using both the difference lags of the endogenous variables as an instrument in the estimation equation. It equally allows for individual fixed effects, heteroskedasticity, and autocorrelation within individuals (Roodman 2009). The system GMM most importantly addresses the problems of omitted variables, measurement error, endogeneity, and country-specific heterogeneity. For the endogenous variables, we will use internal instruments. The precision of the system GMM estimator depends on the validity of the instruments. The diagnostic test for these is done using two tests. The first is the Hansen test of over-identifying restrictions test and the second test investigates the null hypothesis that there is no serial correlation in the error term. Accepting the null hypothesis in both cases gives validity to the model (Arellano and Bond 1991; Arellano and Bover 1995; Blundell and Bond 1998).

Data and Descriptive Statistics

The human development index (HDI) measures health, education, and gross national income and it is sourced from UNDP. The HDI was established to stress that economic growth alone is not enough to measure development but rather people and their capabilities should be the endmost criteria for evaluating the development of a country. The index is ranged between 0 and 1, where very high human development is scored 0.800 and above, high is scored between 0.700-0.799, the medium is 0.550-0.699 and low human development is blown 0.550 (UNDP 2014). The HDI has been established as a standard measure of human development because of its composite index that considers economic growth, health, and education (Klugman *et al.* 2011). The main variable of interest remittances which is the explanatory variable is denoted by personal remittance received (% of GDP) and extracted from the World Bank (2019). It includes transfers and compensation to employees; the transfers are made of current transfers either in cash or in-kind received by the resident household to or from the non-resident household. We expect remittances to have a positive impact on human development. The financial development, investment, and control variables are also sourced from the World Bank Development Indicators (WDI).

Financial development is proxy by domestic credit to private sector by banks (% of GDP), it consists of credit to the private sector by another depository corporation other than the central bank. It shows the intermediation role play by banks and the performance of the financial sector. It includes loans, purchase of nonequity securities and trade credit and other accounts receivable account that requires repayment. It shows how banks transform their deposits to credit into household credits, this allows individuals to have easy access to credit to fund education and health. Therefore, we expect it to exert a positive impact on human development.

Investment is proxy by gross fixed capital formation (% of GDP) which encompasses purchase of plant, machinery, and equipment also improvement of land quality such as irrigation channels, fences, etc. It also includes expenditure on the construction of roads, schools, private residents, commercial and industrial buildings. It is expected to exert a positive impact on human capital development. Control variables include; inflation rate which measures the annual percentage in the consumer price index (CPI) is expected to exert a negative effect on human development. Population growth rate shows the annual growth rate of population in the home countries. Higher population exerts demand on the financial sector and equally the flow of remittances. The expectation could be positive or negative. Household final consumption expenditure (% of GDP) is the market value of goods and services purchased by the household and it is expected to have a positive or negative impact on human development. Government final consumption expenditure (% of GDP) includes all purchases of goods and services made by the Government, it, however, excludes expenditure on national defense and security. We expect it to have a positive or negative impact on human development. GDP growth rate shows the annual growth rate in the economy and is expected to exert a positive effect.

Table 1. Variables Statistics and A- Priori Expectations

Variables	Mean	SD	Min	Max	a priori
HDI	0.51	0.11	0.28	0.80	N/A
Remittances	3.71	5.67	0.00	41.50	+
Gross Fixed Capital Formation	15.41	6.70	4.40	41.89	+
Household Final Consumption	73.56	22.98	23.71	228.36	-/+
Domestic Credit by Banks	20.47	18.65	0.93	106.26	+
Gov't Final Consumption.	22.56	8.58	5.89	79.46	-/+
Inflation rate	6.04	5.56	-3.10	36.96	-
Population Growth	2.39	0.92	-2.63	4.38	-/+
GDP Growth rate	4.56	3.49	-20.60	20.72	+

Source: Authors' computations

From Table 1, a random look at the data shows that countries in Southern Africa recorded the highest human development index. Mauritius recorded the highest HDI in the sample; 0.801 in 2018 indicating a very high rank in the HDI. This was followed by Seychelles and Botswana scoring 0.79 and 0.73 respectively in the same year. The country with the lowest HDI in the region was Niger with a score of 0.28 in 2004 followed by Burkina Faso and Sierra Leon with an index of 0.32 and 0.34, respectively.

Table 2. Correlation Matrix

Variables	HDI	REM	GFCF	HFC	DCPB	GFC	INF	POP	GDP
HDI	1								
Remittances	-0.193	1							
Gross Fixed Capital formation	0.234	0.376	1						
Household Final Consump.	-0.338	0.392	-0.122	1					
Domestic Credit by Banks	0.654	-0.166	0.258	-0.18	1				
Gov't Final Consump.	0.218	-0.068	0.27	-0.38	0.024	1			
Inflation	-0.028	-0.025	-0.093	0.202	-0.133	-0.06	1		
Population Growth	-0.537	-0.235	-0.547	0.072	-0.532	-0.01	-0.05	1	
GDP Growth Rate	-0.112	-0.070	-0.11	0.056	-0.082	-0.02	0.005	0.139	1

Source: Authors' computations.

The correlation matrix (Table 2) shows the potential relationship between HDI and other variables. Remittances, inflation, household final consumption, population, and annual gross domestic rate exhibit a negative correlation with HDI while government final consumption, domestic credit to the private sector by banks and gross fixed capital formation show a positive correlation with HDI.

Empirical Results and Discussion

The results from the static and dynamic models are reported in Table 3. Model A.1 and A.2 show the static model while model A.3 shows the dynamic model. In the case of the pooled OLS, remittances were found to have a positive and significant impact on HDI while the fixed effect showed a negative and significant effect on HDI. Since these two models suffer from endogeneity, we proceed and examine the model using the sGMM which controls for the endogeneity. As can be observed from model A.3, as expected remittance showed a positive and significant impact on the human development index which is the same as the pooled OLS model. The coefficient of remittances suggests that a percentage increase in remittances is associated with a 0.0022% increase

in HDI at a 1% significant level ceteris paribus. This affirms the important role of remittances in influencing human capital development in SSA. In effect, remittances flow impacts both health and education. This result is consistent with the works of (Adenutsi, 2010 and Huay et al., 2019) who established that remittance indeed impacts human development.

Table 3. Results on the Impact of Remittances on Human Development

Variables			
Model ID	**A.1**	**A.2**	**A.3**
Methodology	**Pooled OLS**	**Fixed effect**	**sGMM**
Variables			
Constant	-1.6264***	-1.6657***	-1.543***
	(-87.91)	(-116.73)	(-29.68)
lnHDI	1.8926***	1.9055***	1.740***
	(61.20)	(59.11)	(19.05)
Remittance GDP	0.0010***	-0.0005**	0.0022***
	(6.20)	(-1.97)	(3.5)
Gov't Final Consumption	-0.0008***	0.0009***	-0.0030***
	(-2.78)	(2.82)	(-3.23)
FD (Dom. Credit by banks)	-0.0003***	0.0001	0.0014
	(-6.17)	(0.67)	(1.53)
Household Final Consumption	-0.00007	-0.0002***	-0.0001
	(-1.48)	(-4.89)	(-0.57)
INV (Gross fixed capital forma.)	-0.0001	0.0005***	0.0007*
	(-0.61)	(3.73)	(1.89)
Inflation	0.0004*	0.0003	0.0009***
	(1.87)	(1.55)	(2.92)
Population	-0.0015	0.0004	-0.0143*
	(-0.72)	(0.21)	(-1.74)
GDP growth rate	0.0007***	0.0010***	0.0011*
	(3.28)	(3.85)	(1.91)
Test			
No. of observation	420	420	420
F-statistic(P-value)	0	0	
R-square	0.98	0.99	
Adjusted R-square	0.98	0.99	
No. Country	30	30	30
No. Instruments			22
AR(1)			0.027
AR(2)			0.847
Hansen test			0.199

Note: t-statistics in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ show significance at 1%, 5% and 10% respectively.
Source: Authors' computations

Financial development proxied by credit to the private sector by banks exhibited a positive but insignificant impact on the human development index, meaning it is important in explaining variation in human development. Investment proxied by gross fixed capital formation as expected showed a significant and positive effect on HDI, that is a percentage increase in investment is associated with a 0.0007% increase in human development all things being equal. This is consistent with the work of Sharma and Gani (2004). Looking at the control variables, government final consumption expenditure showed a negative effect on HDI, in effect government expenditure does not contribute to human capital development in the region. This affirms the work of Omodero (2019) who found that government expenditure impact human development negatively. However,

this contradicts the work of Adenutsi (2010) who found that government expenditure plays a role in human development.

Also, household final consumption showed a negative and insignificant impact on development. The population growth showed a negative and significant effect on HDI. This result was expected as increased population put pressure on available resources. Annual GDP growth as expected impacted positively and significantly on HDI. Quite surprisingly, inflation showed a positive and significant impact on human development, this was not expected but is consistent with the work of Huay et al. (2019). The robustness and validity of our model and the use of instrumental variables are affirmed by the Hansen test and the second-order serial correlation. The p-value for the Hansen test was 0.19, suggesting a well-specified model, in essence, the instrument used are not over-identified. The AR (2) value of 0.8 shows the absence of serial correlation in the error terms, therefore a good inference can be made with our results.

Robustness Checks

To further test for the robustness of our results we estimate the same model as explained above by using different dependent variables; educational index and health index (current expenditure on health). Education index is the mean and expected years of schooling and sourced from the UNDP. The health index is proxy by estimated current health expenditure which included health care, goods, and services consumed during the year and is sourced from the WDI.

Table 4. Robust Results of the Impact of Remittances on Human Development

Variables	Education index (sGMM)	Health index (sGMM)
Constant	-1.660***	6.273***
	(-16.81)	(3.31)
*ln*Education	2.052***	
	(10.51)	
*ln*Health		0.0050***
		(2.99)
Remittance GDP	0.0071**	0.102**
	(2.22)	(2.53)
Gov't final Consumption	-0.0063*	-0.0624**
	(-1.78)	(-2.18)
FD (Dom. Credit by banks)	-0.00005	0.00697
	(-0.03)	(0.76)
Household Final Consumption	-0.0004	-0.0406**
	(-0.94)	(-2.55)
INV (Gross fixed capital forma.)	0.0035*	0.0375
	(1.82)	(0.78)
Inflation	0.0020*	0.0337*
	(1.96)	(1.88)
Population	-0.0361	-0.151
	(-1.34)	(-0.64)
GDP growth rate	0.00046	0.0192
	(0.45)	(1.07)
Test		
No. of observation	420	420
No. Country	30	30
No. Instruments	22	23
AR(1)	0.028	0.026
AR(2)	0.759	0.253
Hansen test	0.42	0.153

Note: t-statistics in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ show significance at 1%, 5% and 10% respectively.
Source: Authors' computation

The results from Table 4 confirm the positive and significant effect of remittances on human development and meets the robust condition of the sGMM. The robustness of the empirical evidence shows the contribution of remittance flows in improving education and health in SSA. These important effects are key in boosting the human capital channel which in the long run leads to development in SSA.

Conclusion and Recommendations

In conclusion, our results confirm the optimistic view on migration and remittance on human capital development. Remittances are a lifeline that helps families to live in decency and provide other necessities of life such as education, health, and housing which are a key focus of the UN's sustainable development goals (UNDESA, 2020). Though most SSA countries lose most of their highly skilled workers through migration which results in brain drain, they in return benefit from remittances these migrants send home which in effect help in human development. Equally, other factors such as investment and financial development are also key in enhancing human capital formation. The governments in the region need to have a policy framework and strategies to increase the flow of remittances to compensate for the brain drain effect in the region.

To increase the inflow of remittances and harness its full benefits, the region must have a clear-cut policy on migration. The conundrum will remain whether the region must fight brain drain by putting policies to deter its professional and skilled workers from migrating or allow them to migrate and enjoy the surge in remittances. A clear policy will solve this dilemma. Also, the region must find means of reducing transaction costs on remittances which remain the highest in the world. The use of mobile money and digital remittances could be explored thereby reducing the informal means of sending remittances.

Remittances only lead to human development when they are used for productive ventures by the receiving households. Therefore, productive investment and consumption at the individual and community levels must be encouraged. Governments in SSA should also continue to explore policies that enhance health and education which are key in human development.

Finally, the region must have sound macroeconomic policies and quality financial and non-financial institutions. This will create a conducive environment for investment internationally and locally and increase the inflow of remittances.

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List of Countries in the Sample

Benin, Botswana, Burkina Faso, Cameroon, Congo Rep., Cote d'Ivoire, Eswatini, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Tanzania, Togo and Uganda.