Remittances, institutions and human development in Sub-Saharan Africa

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Abstract

Purpose – The purpose of this paper is to examine the relationship between remittances, institutions and human development (HD) in Sub-Saharan African (SSA) countries using data from 2004 to 2018. The study attempts to answer two critical questions: Do the increasing remittances inflow to the region have any effect on human capital development? and does the effect of remittances on human development vary depending on the level of institutional quality?

Design/methodology/approach – The analysis uses a dynamic model; system Generalized Method of Moments (Sys-GMM) as this approach controls for the endogeneity of the lagged dependent variable; thus, when there is a correlation between the explanatory variable and the error term, which is normally associated with remittances, it also controls for omitted variable bias, unobserved panel heterogeneity and measurement errors in the estimation.

Findings – The findings indicate a positive and significant impact of remittances on HD in SSA. The results further reveal a substitutional relationship between institutions and remittances in stimulating HD. The estimations mean that remittances promote HD in countries with a weak institutional environment. The findings also establish that the marginal significance of remittances as a source of capital for HD falls in countries with well-developed institutions.

Practical implications – To increase the flow of remittances, policymakers should implement policies that increase the likelihood of both skilled and unskilled migrants sending remittances.

Originality/value – Most empirical research on the impact of remittances on HD does not tackle the problem of endogeneity associated with remittances. This study, however, provides empirical evidence by using Sys-GMM that solves the problem. The current study also is the first work to examine the relationship between remittances, institutions and HD in SSA and provides a new guide for future research on the remittance and HD nexus.

Keywords Brain drain, Generalized method of moments, Institutions, Human development, Remittances

Paper type Research paper

1. Introduction

A remittance is money earned by citizens abroad that are sent back to their 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; Sikder and Higgins, 2017). 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. In SSA remittances flow reached 46 billion dollars in 2018 (World Bank Report, 2019). This amount could be higher as some migrants still use informal means of sending that are not captured officially.

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

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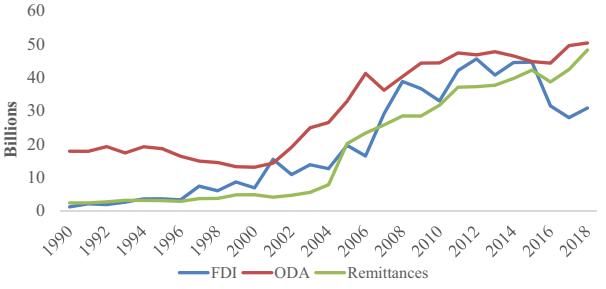
years and have now surpassed FDI as of 2018, and some economists, Ratha (2019), believe that remittances will soon become the largest external source of finance for developing countries. The increase in remittances to the region is largely due to a surge in economic migrants, especially high-skilled migrants and resilient economic conditions in most advanced economies. Bredtmann *et al.* (2018) found that high-skilled migrants from Sub-Saharan Africa have higher earnings and few liquidity constraints than low-skilled migrants as such turn to send more remittances.

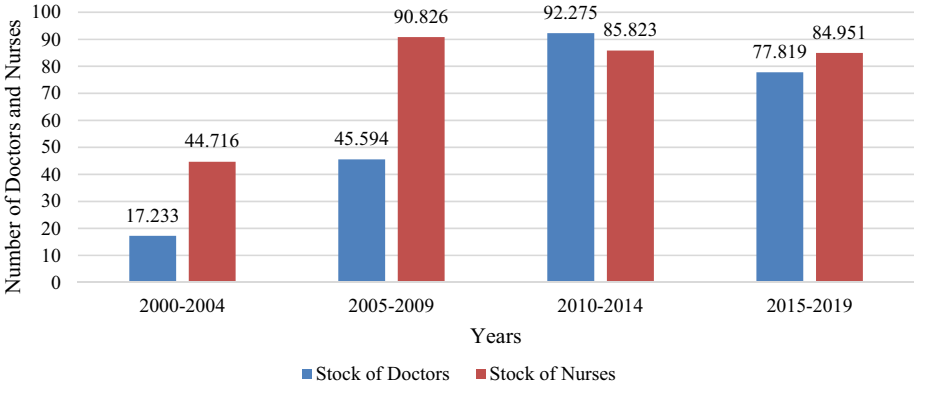
As remittances increase, so does the loss of human capital in the region. The share of high-skilled individuals in SSA is among the lowest in the world, while at the same time, it has the highest-skilled emigration rate among developing regions (UNESCO, 2016; Bredtmann *et al.*, 2018). A key example is the medical brain drain (thus, the emigration of doctors and nurses). Mills *et al.* (2011) survey 9 SSA countries and found that among these countries, more than $2 billion of investment was lost through the emigration of trained doctors. On average, it cost between $21000 and $59000 to train a medical doctor, who is eventually recruited by other countries.

It can be observed from Figure 2 that the number of migrant doctors and nurses from SSA employed in the OECD increased by 195% over the last two decades. Meanwhile, the ratio of physicians per 1,000 people in SSA was 0.234 in 2017, while the ratio of nurses and midwives per 1,000 people in 2018 was 0.987; this shows the lack of doctors and nurses in the region and the brain drain effect as the region is considered to have the lowest ratio of the healthcare workers to the population (WHO, 2006).



Source(s): Authors' computations based on World Bank data (2020)

Figure 1.
Trend of FDI, remittances, and ODA in SSA, 1990–2018



Source(s): Authors' computations based on OECD data (2020)

Figure 2.
The stock of SSA trained medical professionals in OECD countries, 2000–2019

The question remains whether African countries should allow their skilled workers to leave the continent and, in return, enjoy the surge in remittances and does this increase in remittances to the continent contributes to HD. Also, what role does institutional quality play in facilitating the use of remittances for human capital development? Some studies have found that remittances impact HD through improved health and access to education (Amega, 2018; Alcaraz *et al.*, 2012). Batista *et al.* (2007), however, argue that the channel in which migration impacts human capital was neither through remittances nor returned migrants but through human capital acquired linked with the departure of educated individual migrants. In any case, if remittances can efficiently impact income and human capital development, this effectiveness could be daunted by ineffective resource allocation as a result of a poor institutional framework. According to Sen (1999), democracy, for example, offers a set of social, political and economic conditions for improving individual capability space. Economic freedom has been found to have a positive impact on human investment (Feldmann, 2017) as secure property rights, monetary stability, low level of taxation shields economics agents and provides incentives for human capital investment. Therefore, if such institutions are not well established, they may deter remittance recipients from investing in human capital or using remittances for a productive venture. Unfortunately, many countries in SSA have been linked to weak financial and governance systems and institutions (Table 1), and this serves as an impediment to development. Ajide and Aderemi (2014) opined that poor governance is considered one of the key problems hindering growth in Africa. Table 1 shows a yearly average of governance scores based on the World Bank's World Governance Indicators (WGIs) for SSA countries. Each composite indicator is calculated to yield a value-centered at zero and ranges from −2.5 (weak institution) to 2.5 (high institutions). It can be observed that, on average, SSA relatively scored low in all six dimensions of governance indicators.

Extant literature has explored the various channels (growth, investment, trade, etc.) in which remittances impact development, but few have looked at the human capital channel and the role of institutions. This study will, therefore, examine the relationship between remittances, institutions and human capital in SSA. We will, therefore, fill the gap in knowledge by contributing to the ongoing debate with new evidence on the remittances-HD nexus and the role of institutions in the case of SSA. Equally, we use two different measures of institutional quality seldomly used in the existing literature with HD, specifically, the Polity2 (democracy index), published by Polity IV, and the economic freedom index prepared by the Fraser Institute. The application of this distinct measure of institutions serves to contribute to a better understanding of the interaction impact of remittances and institutions on HD in SSA. The rest of the paper is organized as follows: Section 2 looks at the literature reviews, Section 3 is focussed on the sources of the data and methodology employed for the study. Section 4 points out the empirical analysis, results and Section 5 concludes with some policy implications.

Table 1.
Worldwide governance indicators in SSA based on a yearly average, 2015–2019

Year	Voice and accountability	Political stability	Government effectiveness	Regulatory quality	Rule of law	Control of corruption
2015	−0.54	−0.52	−0.75	−0.66	−0.62	−0.60
2016	−0.54	−0.55	−0.76	−0.68	−0.66	−0.60
2017	−0.54	−0.56	−0.77	−0.68	−0.65	−0.61
2018	−0.55	−0.56	−0.76	−0.67	−0.65	−0.60
2019	−0.54	−0.57	−0.75	−0.69	−0.66	−0.60

Source(s): Authors' computations based on World Bank Data (2020)

2. Literature review

2.1 Remittances and development: growth and investment channel

Empirically, a large part of the literature has focused on how remittance impacts development through 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). Jongwanich (2007) analyzed remittances' effect on growth and poverty reduction in Asia and Pacific nations over the period 1993–2003. The results reveal that a percent rise in remittances was associated with a 0.03% increase in economic growth. Other studies have found that remittances only impact growth in the presence of quality institutions. For instance, Zghidi *et al.* (2018) documented the causal relationship between remittances, economic freedom, and economic growth on panel data of four North African countries. Their estimation results establish that remittances have a positive and significant impact on development in the presence of quality institutions. Other researchers, however, have contended that remittances can have a negative effect on economic growth. Narayan *et al.* (2011), for example, argued that remittances may lead to inflationary pressure.

Another channel through which remittances impact development is through investment. Issifu (2018) provided evidence of remittances' effect on domestic investment by specifically looking at the function of financial institutional development in five SSA countries. Their work concludes that remittances' effect on domestic investment increased with well-developed financial institutions. However, Mallick (2012) showed a contrary result when he scrutinized the impact of remittance on private investment in India. The study found that remittances negatively impact 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). However, measuring development by economic growth and investment is not enough as it does not take care of social and public care, which is the key to enhancing well-being and impacting HD (Anand and Sen, 2000).

2.2 Remittances and development: human capital channel

Another key channel through which remittance impacts development is through HD (health and education), which is the focus of this study. Remittances increase family income, the quality and quantity of health and education, which are key to HD (Acosta *et al.*, 2008). Theoretically, pessimistic theorists (Rubenstein, 1992; Lipton, 1980) advanced that migration affects HD negatively through brain drain (the loss of intellectuals and technical personnel or skilled workers because of migration) and creates inequalities in the world (De Haas, 2010). However, the brain drain argument was challenged by the optimistic school of thought, which argued that brain drain may induce brain gain, which is beneficial to the sending countries (Lowell and Findlay, 2001; Stark *et al.*, 1997). Brain gain in the form of remittances is directly linked with migration in countries with net labor export.

The introduction of remittances as a means by which migration can impact human capital provides a new dimension to the migration and development debate in terms of contribution to HD. Jongwanich (2007) uses data from Asia and Pacific countries to examine the effect of remittances on growth and poverty reduction. The study shows that increasing remittances by a percentage is associated with a 0.008% increase in human capital. Similarly, Acosta *et al.* (2008) confirm the importance of remittance in improving health and education by using survey data from eleven countries in Latin American countries and found that remittances indeed increase education and improve health. Irdam (2012) also corroborates the positive impact of remittances on HD in 32 randomly selected countries. The findings reveal that remittances positively impacted HD in countries where the government considers migration

as an effective labor export strategy. Adenutsi (2010), using data from 15 SSA countries from the period of 1987–2007, affirms that remittances have a positive impact on HD 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. The study concludes 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, there are few studies on the impact of remittances on HD, particularly in the case of SSA; moreover, none have examined the relationship between remittance, institutions (economic freedom and democracy) and HD. This study will, therefore, contribute to the empirical literature on how remittances impact HD in SSA considering the institutional quality.

2.3 Institutions and human development

There is a 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 (La Porta *et al.*, 1997; Acemoglu *et al.*, 2005). According to North (1990), an institution is the human craft barriers that mold human interplay, forming social, economic and political incentives in human exchange. Since institution alters the settings where individuals function, they act out a leading function in a household's decision on the use of remittance. Law and order and a safe environment with secured property rights have been identified as key to the development of many Western countries. Equally, economic institutions are significant in increasing and allocating remittances for productive purposes. Our measure of institutional framework is based on economic freedom and democracy.

2.3.1 Democracy and human development. The concept of human development (HD) includes a multidimensional aspect of life. The extant work has contributed to our understanding of democracy and HD. Scholars (Boix, 2001; Franco *et al.*, 2004) have stressed the significance of paying attention to how a democratic government can increase the welfare of its citizenry through improvement in public health, education and income, which conforms to a better level of HD.

Gerring *et al.* (2012) assessed the relationship between democracy and HD in several countries using cross-national estimation based on data from 1960–2000. Their result concludes that the decrease in infant mortality rate rested on both the stock of accumulated democracy over the years and the level of electoral competition, which encourages governments to increase public good to their citizens. In effect, countries with long democratic practices exhibit a better level of HD. Annaka and Higashijimal (2017) confirmed the positive effect of democracy on HD using data from 1800 to 2015. Their study shows that democratization reduces infant mortality only in the long run. Liotti (2018) equally examined the impact of democracy on HD using 18 socialist countries from 1990 to 2014 and found a positive relationship between democracy and HD. Some scholars (Gauri and Khaleghian, 2002; McGuire, 2004), however, have questioned the valid relationship between HD and democracy. Ross (2006) opines that even though public expenditure on health and education in democratic countries may be higher than in autocratic countries, it does not necessarily impact lower-income groups.

2.3.2 Economic freedom and human development. Economic freedom is regarded as the set of rules that primarily manage the interactions of people within the institution of a marketplace. A key aspect of economic institutions is how they enforce and promote economic activity harmonized by "personal choice, voluntary exchange, open markets, and clearly defined and enforced property rights," which is economic freedom (Gwartney, 2009,

p. 939). Few studies have established the linkage between economic freedom and HD (health and education).

Schofer and Meyer (2005) investigated the relationship between economic freedom and education utilizing data from 1972–2011 across 109 countries. The study shows a positive relationship between human capital and economic freedom. Thus, economic freedom facilitates the use of credit for investment in education. In the same line of study, Stroup (2007) provided evidence of the positive effect of economic freedom on HD using panel data of 104 countries over five periods. The results found that economic freedom is positively linked to health. In effect, he asserts that a rise in marketplace effectiveness because of economic freedom will lead to a longer and healthier life, achieve a greater human capital and create better public goods for the benefit of everyone. Similarly, Gezer (2020) analyzed the impact of economic freedom on HD in European transition economies for the period 1996–2018, and the results reveal that economic freedom had a positive effect on HD both in the short and long run.

3. Methodology and data

3.1 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 for being the top emigration countries in the region and for which relevant data on remittances inflows are available and equally reflect the true average representation of SSA countries. Most of the macro data used in the analysis are collected from the World Bank development indicator. Data on the HDI and educational index were extracted from The United Nations Development Programme (UNDP). Institution's data are sourced from Fraser Institute and Polity IV.

Our general equation framework is based on Adenutsi's (2010) model with few modifications and takes the following dynamic form:

$$\ln HDI_{it} = \alpha_0 \ln HDI_{it-1} + \beta_1 REM_{it} + \theta X_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (1)$$

where lnHDI is the natural logarithm of the human development index; $\ln HDI_{it-1}$ is the natural logarithm of the lagged human development index, REM represents remittances as the explanatory variable, X is the control variables, δ is the unobserved factors specific to the country, μ is the time trend; α and β 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.

As a starting point, in Eqn (1), the institutional variables are not included. In the second set of regression, we test the hypothesis of whether institutions determine the capacity of remittances to impact HD. Thus, we investigate how the level of the institutional quality of the recipient country affects the impact of remittances on human capital development. In that regard, we introduce the interaction term between remittances and the level of institutional quality into Eqn (1). The modified equation with the interaction term is represented as

$$\ln HDI_{it} = \alpha_0 \ln HDI_{it-1} + \beta_1 REM_{it} + \beta_2 INS_{it} + \beta_3 (Rem_{it} * INS_{it}) + \theta X_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (2)$$

In Eqn (2), we are interested in β_1 and β_3, which provides information on the marginal impact of remittances on HD based on its interplay with institutions, meaning the distinctive effect of remittances on HD is not limited to remittances but also the interaction between remittances and institutional quality level. These two parameters will help us to evaluate if remittances have different influences on human capital in countries with low or high institutions. A positive interaction ($\beta_3 > 0$) would mean that institutions improve the positive effect of remittances on HD when ($\beta_1 > 0$). Thus, a well-established institution complements remittance in enhancing human capital. On the other hand, when the interaction is negative

($\beta_3 < 0$), it means remittances serve as a substitute in impacting human capital when there are low or distorted institutions.

Taking the differentiation of Eqn (2) with respect to remittances, we would be able to examine if remittances affect HD differently based on the institutions of the countries. In effect, Eqn (3) shows the marginal effect of remittances on HD for different levels of institutions. Also, per Eqn (2), the threshold (minimum) degree of institutions where the impact of remittance on HD is equal to zero is $(-\beta_1/\beta_3)$.

$$vinst = \frac{\partial HDI}{\partial Rem} : \beta_1 + \beta_3 \times INS_{it} \tag{3}$$

Our analysis will use the dynamic model-system Generalized Method of Moments (Sys-GMM) as against the static model- OLS and the fixed effect model-as these models ignore unobservable heterogeneity and endogeneity, which are likely problems normally associated with remittances, which will result in biased estimation. 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 HD.

Blundell and Bond (1998) introduced the system GMM and provided a solution to the endogeneity problem by using a number of moment conditions (internal instruments) variables subject to lagged values of both the dependent and independent variables. In this regard, the instruments for the regression in difference are lagged level with as those for the regression in level are lagged differences of the related variables. The use of lags is to ensure the non-correlation with the current error term. The system GMM equally allows for individual fixed effects, heteroskedasticity and autocorrelation within individuals. It most importantly addresses the problems of omitted variables, measurement error, endogeneity and country-specific heterogeneity. The model is commonly known as the solution to measurement errors and omitted variable biases (Guillaumont and Kpodar, 2006). 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 provides validity to the model (Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Bond, 1998).

3.2 Data and descriptive statistics

The 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 range between 0 and 1, where very high human development is scored 0.800 and above, high is scored between 0.700 and 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 HD 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 (% GDP) and extracted from the World Bank. 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 HD. The control variables are also sourced from the World Development Indicators (WDI) of the World Bank (2019).

To capture the role of institutions on the effect of remittances on HD, we use two different measurements seldomly used in the extant literature. First, we apply the economic freedom index published by the Fraser Institute. The index measures institutional quality based on economic freedom using five benchmarks; (1) size of government (2) legal system and security of property rights (3) access to sound money (4) liberty to trade internationally based on tariffs, trade barriers, exchange rate, and flow of capital and people (5) regulation on the credit market, labor and business. The data ranges between 0 and 10, with 10 showing a high degree of economic freedom. Additionally, we employ the Polity2 rating based on the democracy index issued in polity IV. The index shows the competitiveness and openness of the political system and institution that encourages political involvement. It ranges from 0 to 10, where a higher range signifies good democracy. We expect both institutional variables to exhibit a positive impact on HD.

The control variables include the ratio of domestic credit to the private sector by banks (% of GDP) used as a proxy for financial development. It consists of credit to the private sector by another depository corporation other than the central bank. It demonstrates 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 HD. Gross fixed capital formation (% of GDP) used as a proxy for investment in physical capital 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. The inflation rate as a proxy for monetary discipline and macroeconomic stability is expected to exert a negative effect on HD. 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 HD. 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 HD. GDP growth rate shows the annual growth rate in the economy and is expected to exert a positive effect on HD.

From Table 2, a random look at the data shows that countries in Southern Africa recorded the highest HDI. 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,

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	+
Economic freedom	6.3	0.7	4.6	8.2	+
Democracy	4.7	3.3	0	10	+

Source(s): Authors' computations

Table 2. Descriptive statistics and a-priori expectations

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. Also, most of the countries in SSA performed poorly on institutional quality, mostly on democracy. Countries like Cameroon, DR. Congo, Eswatini, the Gambia, Guinea Rwanda and Uganda score even lower marks between zero and one.

The correlation matrix (Table 3) 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 economic freedom, democracy government final consumption, domestic credit to the private sector by banks and gross fixed capital formation show a positive correlation with HDI.

4. Empirical results

4.1 Results and discussion

The results from the empirical estimation are presented in Table 4 (Model A.1−A.5) with the application of the system GMM. We first estimate the baseline equation without institution indicators and then add each institution indicator and their interaction with remittances. The results reveal that our main variable of interest, remittance has a positive and statistically significant relationship with HD in all the columns. The coefficient of remittances is between 0.0022 and 0.0190, meaning a percentage change in remittances is associated with between 0.0022 and 0.0190% increase in HD ceteris paribus. This suggests that remittances are a key contributor to HD in SSA. This result conforms to earlier studies (Adenutsi, 2010; Irdam, 2012; Huay *et al.*, 2019).

Also, the introduction of institution indicators (economic freedom and democracy) reveals a positive and significant impact on HDI, meaning that economic freedom and democracy are important in influencing the HDI. The results are consistent with other works (Annaka and Higashijima, 2017; Liotti, 2018; Gezer, 2020). The interaction of remittances with the two institutions' indicators reveals a negative and significant impact on HD (the coefficient −0.0024 and −0.0025). This denotes that there is an inverse relationship between institutions and remittances in impacting HD. This indicates that, indifferently to the institution indicator used to evaluate institutional quality, remittance inflows play the role of a substitute to the distorted or weak performing institutions. For instance, economic freedom stimulates investment in education and health by advancing the operation of the credit market. Therefore, countries with weak economic freedom will exhibit a poor credit market, making individuals and households rely on remittances to advance human capital. Thus, remittance inflows are key to HD where the very institutions that give life to capital for HD are absent.

The validity of our model and the use of instrumental variables are affirmed by diagnostic statistics regarding the Hansen test and the second-order serial correlation of the error terms (AR statistics). Based on the diagnostic test, we conclude that our model does not suffer from serial correlation, endogeneity and the instruments are strictly exogenous. In essence, a good conjecture inference can be made from our results.

Looking at the control variables, government final consumption expenditure reveals a negative and statistically significant effect on HDI (model A1, A2 and A4), meaning government expenditure does not contribute to human capital development in the region. This confirms the work of Omodero (2019), who found that government expenditure impacts HD negatively. However, this contradicts the work of Adenutsi (2010). Credit to the private sector by banks exhibited a positive but insignificant impact on the HDI. The financial indicator is important in explaining variation in the HDI. Gross fixed capital formation, as expected, showed a significant and positive effect on HDI (A1 and A5), meaning investment is the key to explaining variation in HDI. This is consistent with the work of Sharma and Gani (2004). The population growth exhibited a negative and significant effect on HDI (A1 and A3). This outcome was anticipated as population growth put pressure on available resources, and

Variables	HDI	REM	GFCF	HFC	DCP	GFC	INF	POP	GDP	EF	DR
HDI	1										
Remittances	−0.193	1									
Gross fixed capital forma	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		
Economic freedom	0.617	0.028	−0.003	0.139	0.48	0.1	0.121	0.366	0.066	1	
Democracy	0.338	0.15	−0.028	0.092	0.442	0.249	0.053	−0.271	0.050	0.274	1

Source(s): Authors' computations

Table 3.
Correlation matrix

Table 4.
Results on remittances, institutional quality and human development

Model	A.1	A.2	A.3	A.4	A.5
Variables					
Constant	−1.543*** (−29.68)	−1.712*** (−10.90)	−1.810*** (−20.50)	−1.610*** (−23.24)	−1.534*** (−23.40)
lnHDI	1.740*** (19.05)	1.632*** (11.13)	1.848*** (11.63)	1.865*** (17.12)	1.815*** (18.70)
Remittance_GDP	0.00220*** (3.50)	0.0024*** (2.99)	0.0160* (1.99)	0.0027*** (3.05)	0.0190* (1.84)
Government final consumption	−0.0030*** (−3.23)	−0.0027** (−2.09)	0.0013 (1.29)	−0.0023** (−2.26)	0.00004 (0.02)
Dom. Crdt by banks	0.0014 (1.53)	0.0015 (1.34)	−0.0008 (−0.81)	0.0013 (1.42)	0.0006 (1.03)
Household final consumption	−0.0001 (−0.57)	−0.0005 (−1.45)	−0.00034** (−2.11)	0.00006 (0.44)	0.0003 (1.02)
Gross fixed capital formation	0.0007* (1.89)	0.0006 (0.99)	−0.0006 (−0.96)	0.0004 (1.40)	0.00098* (1.80)
Inflation	0.0009*** (2.92)	0.0007* (1.76)	0.0006 (1.07)	0.0011*** (3.14)	0.0007 (0.69)
Population	−0.0143* (−1.74)	−0.0062 (−0.57)	−0.0221** (2.42)	−0.0104 (−1.23)	0.0006 (0.08)
GDP growth rate	0.0011* (1.91)	0.0002 (0.21)	0.0004 (0.42)	0.0018** (2.75)	0.0062*** (3.79)
Economic freedom		0.0365* (1.16)	0.0253*** (3.17)		
Democracy				0.0059** (2.55)	0.0124*** (3.22)
Rem*Economic freedom			−0.0024* (−1.84)		
Rem*Democracy					−0.0025* (1.87)
Test					
No. of observation	420	420	420	420	420
No. Country	30	30	30	30	30
No. Instruments	22	22	22	22	22
AR(2)	0.847	0.296	0.301	0.246	0.304
Hansen test	0.199	0.702	0.502	0.481	0.154

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

the population in SSA has been on the increase at the expense of limited resources. Interestingly, inflation was found to have a positive and significant impact on HDI (A1, A2 and A4); this was not foreseen but is consistent with the works of Yolanda (2017) and Huay *et al.* (2019). Finally, annual GDP growth impacted positively and significantly on HDI (A1, A4 and A5), In essence, GPD growth is the key to promoting HDI in SSA.

The calculation of the marginal effect of remittances on HDI considering the threshold of the institutional framework is based on the result in Table 4. The required thresholds $(-\beta_1/\beta_3)$ for institutional indicators are

Economic freedom index: 6.7.

Democracy index: 7.6.

Table 5 compares the calculated threshold with the level of institutional quality based on the two indicators in each country of our sample. Out of the 30 SSA countries under consideration, ten countries (Botswana, Gambia, Ghana, Kenya, Liberia, Mauritius, Rwandan, Seychelles, South Africa and Uganda) had their economic freedom index (EF) above the threshold. On the democracy index (DR), six countries (Botswana, Ghana, Kenya, Lesotho, Mauritius and South Africa) had their index above the threshold. This shows that most of the countries in SSA exhibited a distorted and weak institutional framework. For

Marginal effects $\gamma = \beta_1 + \beta_3 \times INS_{it}$	EF	DR	Model A.3	Model A.4
			β_1 0.0160 β_3 −0.0024	β_1 0.0190 β_3 −0.0025
			Threshold	
Benin	0.0014	0.0018	6.7	7.6
Botswana	−0.0014	−0.0010	Countries that are above the threshold	
Burkina Faso	0.0018	0.0107	Botswana	Botswana
Cameroon	0.0021	0.0165	The Gambia	Ghana
Congo, rep	0.0044	0.0190	Ghana	Kenya
Cote d'Ivoire	0.0020	0.0123	Kenya	Lesotho
Eswatini	0.0008	0.0190	Liberia	Mauritius
Gabon	0.0024	0.0123	Mauritius	South Africa
Gambia, the	−0.0010	0.0177	Rwanda	
Ghana	−0.0001	−0.0010	Seychelles	
Guinea	0.0034	0.0125	South Africa	
Guinea-bissau	0.0034	0.0048	Uganda	
Kenya	−0.0009	−0.0015		
Lesotho	0.0007	−0.0022		
Liberia	−0.0006	0.0050		
Madagascar	0.0011	0.0050		
Mali	0.0018	0.0037		
Mauritius	−0.0028	−0.0060		
Mozambique	0.0025	0.0055		
Namibia	0.0002	0.0040		
Niger	0.0026	0.0037		
Nigeria	0.0006	0.0063		
Rwanda	−0.0006	0.0190		
Senegal	0.0018	0.0010		
Seychelles	−0.0016	0.0037		
Sierra Leone	0.0016	0.0005		
South Africa	−0.0004	−0.0035		
Tanzania	0.0003	0.0127		
Togo	0.0020	0.0165		
Uganda	−0.0016	0.0167		

Source(s): Authors' computations

Table 5. Institutional quality threshold and marginal effect

instance, in Uganda, when institutions are measured by democracy, the marginal effect is ∂INST/∂REM: 0.0190 + (−0.0025 × 0.93): 0.0167. This means that a percentage change in remittances causes a 0.0167% gain in HDI in a weak institutional environment (Uganda) ceteris paribus. However, in Mauritius, a percentage surge in remittances is associated with a 0.0060% marginal fall in HDI. This implies that, in countries where institutions are well developed, the importance of remittances flow as a source for HD decreases. Most of the countries in the sample exhibited weak institutions, and as such, the remittances flow serves as a key predictor and a substitutional role in advancing HD on average.

5. Conclusion and policy implications

Although there is extant literature on the relationship between remittances and human capital development, the literature that examines remittances, institutions, and HD is scant. This paper contributes to knowledge in this line. Our results show a positive and significant impact of remittances on human capital development in SSA. In essence, remittances are vital in fostering HD in SSA as it helps families to live in decency and provide other necessities of life such as education and health, which are key factors in HD. The interactions between remittances and institutions establish that remittances play a substitutional role in impacting HD in countries with poor institutional quality as seen in most countries in SSA. Thus, in the absence of key institutions, remittances serve as a lifeline to human capital by providing the needed capital for HD. A plausible explanation is where the households depend on remittances from friends and relatives as means in funding education and health. This is consistent with the work of Amega (2018), who establish the use of remittances in funding education and health in SSA. The findings further indicate that the marginal significance of remittances as a source of capital for HD falls with well-developed institutions. Equally, other factors such as investment and financial development are also key to enhancing human capital formation.

Our results provide significant insight from a policy standpoint. There is a need to change the current substitution relationship between remittance, institutions and HD. Weak institutions undermine property rights and investors' confidence and the flow of remittances for development. In respect of that, the region needs a policy regime geared toward sound macroeconomic policies and quality institutions. This will create a conducive environment for these institutions to support human HD while the remittances received could be channeled to other productive sectors for development and hence stimulating complementary (as against the current substitution) linkage between institutions and remittances inflow in advancing HD.

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 skilled workers from migrating or allow them to migrate and enjoy the surge in remittances to compensate for the brain drain. A clear policy will help address this issue. To increase the flow of remittances, policymakers should implement policies that increase the likelihood of both skilled and unskilled migrants sending remittances. However, policies that favor skilled migration are the key to stimulating the amount of remittances received in the sending country (Bredtmann *et al.*, 2018). One prudent measure to achieve this is to step up cooperation between the receiving and sending countries through sharing of information about labor market needs and conditions in the destination countries, while at the same time providing better recognition to foreign qualification (Mattoo *et al.*, 2008).

References

Acemoglu, D., Johnson, S. and Robinson, J.A. (2005), "Institutions as a fundamental cause of long-run growth", *Handbook of Economic Growth*, Vol. 1, pp. 385-472.

Acosta, P., Calderon, C., Fajnzylber, P. and Lopez, H. (2008), "What is the impact of international remittances on poverty and inequality in Latin America?", *World Development*, Vol. 36 No. 1, pp. 89-114.

Adenutsi, D.E. (2010), "Do international remittances promote human development in poor countries? Empirical evidence from Sub-Saharan Africa", *The International Journal of Applied Economics and Finance*, Vol. 4 No. 1, pp. 31-45.

Ajide, F.M. and Aderemi, A.A. (2014), "The effects of corporate social responsibility activity disclosure on corporate profitability: empirical evidence from Nigerian commercial banks", *IOSR Journal of Economics and Finance*, Vol. 2 No. 6, pp. 17-25.

Alcaraz, C., Chiquiar, D. and Salcedo, A. (2012), "Remittances, schooling, and child labor in Mexico", *Journal of Development Economics*, Vol. 97 No. 1, pp. 156-165.

Amega, K. (2018), "Remittances, education and health in sub-saharan Africa", *Cogent Economics and Finance*, Vol. 6 No. 1, p. 1516488.

Anand, S. and Sen, A. (2000), "Human development and economic sustainability", *World Development*, Vol. 28 No. 12, pp. 2029-2049.

Annaka, S. and Higashijima, M. (2017), "Democratization and human development", Winpec Working Paper Series No. E1712, Faculty of Political Science and Economics, Waseda University, Tokyo, pp. 17-18.

Arellano, M. and Bond, S.R. (1991), "Some tests of specification for panel data: monte Carlo evidence and an application to employment equations", *The Review of Economic Studies*, Vol. 58 No. 2, pp. 277-297.

Arellano, M. and Bover, O. (1995), "Another look at the instrumental-variable estimation of error components models", *Journal of Econometrics*, Vol. 68, pp. 29-52.

Batista, C., Lacuesta, A. and Vicente, P.C. (2007), "Brain drain or brain gain? Micro evidence from an African success story", Economics Series Working Paper no 343, University of Oxford, Oxford.

Blundell, R. and Bond, S. (1998), "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics*, Vol. 87 No. 1, pp. 115-143.

Boix, C. (2001), "Democracy, development and the public sector", *American Journal of Political Science*, Vol. 45 No. 1, pp. 1-17.

Bredtmann, J., Martínez Flores, F. and Otten, S. (2018), "Remittances and the brain drain: evidence from microdata for sub-saharan Africa", *The Journal of Development Studies*, Vol. 55 No. 7, pp. 1455-1476.

Clemens, M. and McKenzie, D. (2014), "Why don't remittances appear to affect growth?", Policy Research Working Paper No. WPS6856, The World Bank, Washington, District of Columbia.

De Haas, H. (2010), "Migration and development: a theoretical perspective 1", *International Migration Review*, Vol. 44 No. 1, pp. 227-264.

Feldmann, H. (2017), "Economic freedom and human capital investment", *Journal of Institutional Economics*, Vol. 13 No. 2, pp. 421-445.

Franco, A.C., Dardet, C.Á. and Ruiz, M.T. (2004), "Effect of democracy on health: ecological Study", *British Medical Journal*, Vol. 329 No. 7480, pp. 1421-1423.

Gauri, V. and Khaleghian, P. (2002), "Immunization in developing countries: its political and organizational determinants", *World Development*, Vol. 30 No. 12, pp. 2109-2132.

Gerring, J., Thacker, S.C. and Alfaro, R. (2012), "Democracy and human development", *The Journal of Politics*, Vol. 74, pp. 1-17.

Gezer, M.A. (2020), "The impact of economic freedom on human development in European transition economies", *Economic Computation and Economic Cybernetics Studies and Research*, Vol. 54 No. 3, pp. 161-178.

Giuliano, P. and Ruiz-Arranz, M. (2009), "Remittances, financial development, and growth", *Journal of Development Economics*, Vol. 90 No. 1, pp. 144-152.

Guillaumont, S.J. and Kpodar, K. (2006), "Développement financier, instabilité financiére et croissance économique", *Economie Prevision*, Vol. 3, pp. 87-111.

Gwartney, J. (2009), "Institutions, economic freedom, and cross-country differences in performance", *Southern Economic Journal*, Vol. 75 No. 4, p. 937.

Huay, C.S., Winterton, J., Bani, Y. and Matemilola, B.T. (2019), "Do remittances promote human development? Empirical evidence from developing countries", *International Journal of Social Economics*, Vol. 46 No. 10, pp. 1173-1185.

Irdam, D. (2012), "The impact of remittances on human development: a quantitative analysis and policy implications", *Sociology*, Vol. 5 No. 1, pp. 74-95.

Issifu, I. (2018), "The impact of remittance on domestic investment: the role of financial and institutional development in five countries in Sub-Saharan Africa", *International Development Studies*, Vol. 48 No. 9, pp. 1-20.

Jongwanich, J. (2007), "Workers' remittances, economic growth and poverty in developing Asia and the Pacific countries", Working paper wp/07/01, United Nations Economics and Social Commission for Asia and Pacicifc, Bangkok.

Klugman, J., Rodríguez, F. and Choi, H.J. (2011), "The HDI 2010: new controversies, old critiques", *The Journal of Economic Inequality*, Vol. 9 No. 2, pp. 249-288.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (1997), "Legal determinants of external finance", *Journal of Finance*, Vol. 52 No. 3, pp. 1131-1150.

Liotti, G., Musella, M. and D'Isanto, F. (2018), "Does democracy improve human development? Evidence from former socialist countries", *Eastern Journal of European Studies*, Vol. 9 No. 2, p. 69.

Lipton, M. (1980), "Migration from rural areas of poor countries: the impact on rural productivity and income distribution", *World Development*, Vol. 8 No. 1, pp. 1-24.

Lowell, B.L. and Findlay, A. (2001), "Migration of highly skilled persons from developing countries: impact and policy responses", *International Migration Papers*, Vol. 44, p. 25.

Mallick, H. (2012), "Inflow of remittances and private investment in India", *The Singapore Economic Review*, Vol. 57 No. 1, p. 1250004.

Martin, P.L. (2016), "Migration, trade and remittances: low-and high-skilled workers", *Remittances Review*, Vol. I No. 1, pp. 37-52.

Mattoo, A., Neagu, I.C. and Özden, Ç. (2008), "Brain waste? Educated immigrants in the US labor market", *Journal of Development Economics*, Vol. 87 No. 2, pp. 255-269.

McGuire, J.W. (2004), *Democracy, Health Care, and Under-5 Mortality: A Cross-National Study of Developing Countries*, Unpublished manuscript, Wesleyan University, Connecticut.

Mills, E.J., Kanters, S., Hagopian, A., Bansback, N., Nachega, J., Alberton, M. and Ford, N. (2011), "The financial cost of doctors emigrating from sub-Saharan Africa: human capital analysis", *British Medical Journal*, Vol. 343, p. d7031.

Narayan, P.K., Narayan, S. and Mishra, S. (2011), "Do remittances induce inflation? Fresh evidence from developing countries", *Southern Economic Journal*, Vol. 77 No. 4, pp. 914-933.

North, D.C. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge and New York.

Omodero, C.O. (2019), "Government general spending and human development: a case study of Nigeria", *Academic Journal of Interdisciplinary Studies*, Vol. 8 No. 1, p. 51.

Quartey, P. and Blankson, T. (2004), "Do migrant remittances minimize the impact of macro-volatility on the poor in Ghana?", Final Report Submitted to the Global Development Network, IMF, Washington, District of Columbia, available at: https://www.imf.org/external/np/res/seminars/2005/macro/pdf/quarte.pdf (accessed 30 January 2021).

Ratha, D. (2019), "Remittances on track to become the largest source of external financing in developing countries", available at: https://blogs.worldbank.org/peoplemove/remittances-track-become-largest-source-external-financing-developing-countries (accessed 17 July 2020).

Ross, M. (2006), "Is democracy good for the poor?", *American Journal of Political Science*, Vol. 50 No. 4, pp. 860-874.

Rubenstein, H. (1992), "Migration, development and remittances in rural Mexico", *International Migration*, Vol. 30 No. 2, p. 127.

Schofer, E. and Meyer, J.W. (2005), "The worldwide expansion of higher education in the twentieth-century", *American Sociological Review*, Vol. 70 No. 6, pp. 898-920.

Sen, A.K. (1999), "Democracy as a universal value", *Journal of Democracy*, Vol. 10 No. 3, pp. 3-17.

Sharma, B. and Gani, A. (2004), "The effects of foreign direct investment on human development", *Global Economy Journal*, Vol. 4 No. 2, pp. 1-20.

Sikder, M.J.U. and Higgins, V. (2017), "Remittances and social resilience of migrant households in rural Bangladesh", *Migration and Development*, Vol. 6 No. 2, pp. 253-275.

Stark, O., Helmenstein, C. and Prskawetz, A. (1997), "A brain gain with a brain drain", *Economics Letters*, Vol. 55 No. 2, pp. 227-234.

Stroup, M.D. (2007), "Economic freedom, democracy, and the quality of life", *World Development*, Vol. 35 No. 1, pp. 52-66.

UNDP (2014), *Human Development Report 2014: Sustaining Human Progress - Reducing Vulnerabilities and Building Resilience*, New York, available at: http://hdr.undp.org/en/content/human-development-report-2014 (accessed 13 December 2020).

UNESCO (2016), "Educational attainment of the population aged 25 years and older", available at: http://www.uis.unesco.org/Education/Pages/educational-attainment-data-release.aspx (accessed 20 December 2020).

World Bank (2019), "Migration and remittances recent developments and outlook", available at: https://www.knomad.org/sites/default/files/201904/Migrationanddevelopmentbrief31.pdf (accessed 15 December 2019).

World Health Organization (2006), "The world health Report 2006", available at: https://www.who.int/whr/2006/06_chap1_en.pdf (accessed 16 January 2020).

Yolanda, Y. (2017), "Analysis of factors affecting inflation and its impact on human development index and poverty in Indonesia", *European Research Studies Journal*, Vol. XX No. 4B, pp. 38-56.

Zghidi, N., Sghaier, I.M. and Abida, Z. (2018), "Remittances, institutions, and economic growth in North African countries", *Journal of the Knowledge Economy*, Vol. 9 No. 3, pp. 804-821.

Further reading

Chami, M.R., Fullenkamp, C. and Jahjah, S. (2003), "Are immigrant remittance flows a source of capital for development?", *IMF Staff Papers*, Vol. 52 No. 1, pp. 55-81.

Gwartney, J. (2019), *Economic Freedom of the World*, The Fraser Institute, Vancouver, British Columbia.

United Nations Development Program (2020), "Human development index data", available at: http://hdr.undp.org/en/data (accessed 19 December 2020).

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