

Remittances, institutional quality and investment in Sub-Saharan Africa

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Abstract

Purpose – This paper investigates the relationship between remittances, institutional quality and investment in Sub-Saharan African (SSA) countries using data from 2004 to 2018.

Design/methodology/approach – The two-stage least squares (2SLS) estimator is the main methodology used, while the system generalized method of moments (Sys-GMM) technique is employed to test the robustness of the results.

Findings – The results show a positive and significant impact of remittances on investment in SSA. The findings further reveal a substitutional linkage between remittances and institutions in promoting investment. In essence, remittances serve as investment capital in countries with poor institutions. The results also show that the marginal significance of remittances as a source of funds for investment decreases in countries with well-developed institutions.

Research limitations/implications – The sample excludes some of the SSA countries due to the unavailability of data.

Practical implications – In the face of current institutional weaknesses, there is a need for SSA countries to prioritize policies that encourage the effective use of remittances for business activities. Furthermore, SSA countries must improve their economic freedom and democratic practices by reducing government size, protecting property rights, and promoting respect for political and civil rights.

Originality/value – This is the first study to analyze the relationship between remittances, institutional quality and investment in SSA. It also provides a novel framework for future research on the remittance–investment nexus.

Keywords 2SLS, Generalized method of moments, Institutions, Investment, Remittances

Paper type Research paper

1. Introduction

Remittances, which are defined as international money transfers made by migrant workers to their home country, have increased dramatically in Sub-Saharan Africa (SSA) and are now one of the region's external sources of finance. The current flow of remittances is displaying an increasing trend, surpassing foreign direct investment (FDI) and approaching official development aid (ODA). [Figure 1](#) shows that remittances, for example, climbed by 13.8% from \$42 billion in 2017 to \$48 billion in 2018.

Remittances have been found to have a greater impact on some development indicators, such as savings and investment, than foreign aid in SSA ([Baldé, 2011](#)). Other studies have indicated that, contrary to ODA and FDI, remittances are not severely affected by the economic crisis, making remittances countercyclical ([Stojanov and Strielkowski, 2013](#)).

[Table 1](#) shows that Cape Verde received \$399 in remittances per person on average between 2014–2018, followed by Lesotho and Seychelles with \$238 and \$211, respectively.



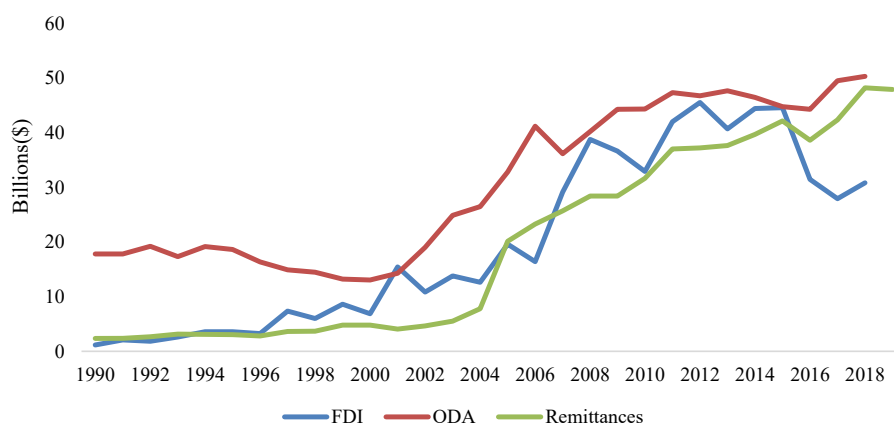


Figure 1. Trend of FDI, remittances, and ODA in Sub-Saharan Africa 1990–2018

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

Country	Remittances received-five-year average (USD M)	Country	Remittances per capita ^a -five-year average (USD)	Country	Remittances as % of GDP ^b -five-year average (%)
Nigeria	21,534	Cape Verde	399	Lesotho	20.6
Ghana	3,405	Lesotho	238	Liberia	16.2
Senegal	2,049	Seychelles	211	Comoros	13
Kenya	1,887	Mauritius	196	The Gambia	12.6
Zimbabwe	1,853	Comoros	177	Cape Verde	12
Uganda	1,088	Senegal	136	Senegal	10.1
Congo, Dem. Rep.	1,083	Zimbabwe	132	Zimbabwe	8.8
Ethiopia	897	Ghana	119	Togo	8.6
Mali	894	Nigeria	116	Guinea-Bissau	7.6
South Africa	859	Liberia	114	Ghana	6.2
SSA	961	SSA	62	SSA	4.1

Table 1. Remittance receiving countries by total average remittances, average remittances per capita, and share of average to GDP, 2014–2018

Note(s): ^a Average remittances per capita is measured by dividing the total value of remittances received in one year by the total population size in the same year, and subsequently the average over five years, from 2014 to 2018 is taken based on World Bank data

^b Average percentage of GDP is measured dividing the remittances received in one year by the current GDP in that year, and subsequently the average over five years, from 2014 to 2018, is taken based on World Bank data

Source(s): Authors’ computations based on World Bank remittance, population and GDP data

On average, the region’s remittances per person were US\$62. According to the United Nation definition of extreme poverty, there were around 433 million people in SSA living on less than \$1.90 per day in 2018. Remittances have the potential to raise the entire population out of extreme poverty in the region. Remittances per capita substantially outnumbered minimum wages in most SSA countries and are a significant source of income for many households.

As remittances continue to rise in the region, there is the pessimistic claim that remittances are channeled toward consumption rather than investment. Remittances are perceived

negatively because they are directed toward unproductive ventures, which can harm the economy by increasing inflation and decreasing households' incentives to work. However, other empirical evidence from Asia and Africa suggests that remittances assist migrants and families in investing in private businesses (Taylor, 1999; Plaza *et al.*, 2011). Furthermore, other scholars contend that remittances only influence investment in environments with sound economic policies and institutions (Acemoglu *et al.*, 2005; Lee *et al.*, 2011). Therefore, it is critical to scrutinize whether the increase in remittances to SSA encourages investment and to understand the role of institutional quality in facilitating the use of remittances for investment. Poor institutional quality may limit the effectiveness of remittances on income and investment. According to Sen (1999), democracy provides a set of social, political and economic conditions for improving individual capacity space. Similarly, economic freedom has been shown to positively impact investment (Feldmann, 2017) as it ensures property rights, monetary stability, and a low level of taxes shielding economic agents and creating incentives for investment. In effect, if such institutions are not well established, remittance senders and recipients may be discouraged from investing in productive companies. According to Ajide and Aderemi (2014), weak governance is a vital issue in Africa that deters growth.

Various literature has been conducted to investigate how remittances incentivize households to invest in agricultural machinery and boost entrepreneurial activity through the establishment of small and medium-sized businesses (Woodruff and Zenteno, 2001; Adams, 2006). However, extensive research has primarily focused on the direct consequences of remittances, ignoring the indirect or conditional effects. Furthermore, some of these estimates may suffer from endogeneity issues.

This paper examines the conditional effects of remittances in stimulating investment in SSA, by employing the two-stage least squares (2SLS) to address the endogeneity problem related to remittances and their direct and indirect effects. The 2SLS estimator is used because it addresses not only endogeneity problems and potential causality between remittances and investment but also non-linear and interaction terms effects, as well as other issues such as heteroscedasticity and specification errors (Pesaran and Taylor, 1999). Specifically, the paper contributes to academic research in two ways. First, it demonstrates how remittances influence investment. Second, it investigates the role of institutional quality in the remittances-investment nexus, intending to improve related studies on institutions, remittances and investment. Our study is the first to explore the interaction between remittances, institutional quality and investment in SSA. Fundamentally, this will help in better understanding the conditional effect of institutions in the remittances-investment linkage. The rest of the paper is organized as follows. Section 2 presents the empirical and literature reviews, and section 3 examines the data sources and methodology. Sections 4 and 5 present the empirical results and the robustness tests respectively, while Section 6 concludes with policy recommendations.

2. Theoretical and empirical literature review

2.1 Theoretical review

Theoretically, there are many different perspectives on the role remittances play in development. The altruistic motive theory, in which the migrant feels obliged to send money home to support their family, is one of the two theoretical justifications used to evaluate the impact of remittances on development (Chami *et al.*, 2008; Barajas *et al.*, 2009). Additionally, there is the investment or portfolio motive theory, according to which migrants send money for investment purposes (Lucas and Stark, 1985). According to some scholars, the majority of remittances sent with altruistic motives are primarily spent on consumption rather than investment. For instance, Lipton (1980) discovered that about

90% of remittances sent are used on items like the construction of luxurious homes, the payment for bride price, feasts and funerals, among other things. He added that very few remittances are allocated toward investment, which is a “consumptive investment” [1], such as buying land. Similarly, [Oberai and Singh \(1980\)](#) discovered that households receiving remittances spend approximately 75% on consumption and just 6.1% on productive ventures. When remittances are used for consumption, they can drive inflation and reduce recipients’ incentive to work, harming the economy.

In contrast, the investment motive views remittances as a source of funds for investment and as positive incentives for entrepreneurship and the launch of new businesses ([Yang, 2005](#); [Amuedo-Dorantes and Pozo, 2006](#)). For example, [Hassan and Chalmers \(2008\)](#) found that remittances account for 80% of start-up financing in Somalia. The portfolio motive postulates that remittances stimulate investment in human and physical capital, reducing poverty and unemployment over time ([Fajnzylber and Lopez, 2008](#)).

The theoretical examination reveals that there is an ambiguity on whether remittances are channeled toward consumption or investment. It may also be argued that the impact of remittances on development is dependent on the pattern of consumption and investment. If remittances are characterized by a high marginal propensity to consume (MPC) rate rather than a high marginal propensity to invest (MPI), then investment will be adversely affected. Thus, whether remittances have altruistic or portfolio effects on development depends on how much they are consumed or invested.

2.2 Empirical literature review

The impact of remittances on economic growth has been the subject of empirical studies at the macroeconomic level ([Faini, 2005](#); [Saidu and Salisu, 2020](#)). Certain studies have investigated remittances and human capital ([Zhunio *et al.*, 2012](#); [Amakom and Iheoma, 2014](#); [Mohammed, 2022](#)), while others have looked at remittances and poverty ([Adams and Cuecuecha, 2013](#)). However, most of these studies have solely focused on the direct effect of remittances and have not considered the indirect effect. Our paper contributes by explicitly examining the relationship between remittances and investment as well as the moderating role of institutional quality.

The relationship between remittances and investment in previous studies is inconclusive. According to [Docquier and Rapoport \(2005\)](#), the propensity of remittances to influence economic growth largely depends on whether these remittances are channeled toward consumption or private investment. On one side, remittances are found to positively affect investment. [Adams \(2006\)](#) noted that, on average, household members typically use remittances as start-up capital for new businesses, as savings, or as investments in other productive economic activities. Using panel data analysis, [Khan *et al.* \(2019\)](#) supported the positive impact of remittances on private investment in five major Asian countries. They contended that remittance inflows help to expand the economy and provide the required level of capital for investment. [Nwokolo *et al.* \(2021\)](#) also corroborated the positive effect of remittances on investment in 28 SSA countries.

On the other side, different studies have depicted a negative relationship between remittances and investment. Within this framework, [Durand *et al.* \(1996\)](#) analyzed the relationship between remittances and investment in Mexico. According to their findings, only 10% of remittances are spent on productive investments, 14% on housing and the remaining 76% on consumption. [Eftimoski and Josheski \(2020\)](#) also stated that remittance cannot be considered a source of capital for investment. Similarly, [Tung \(2018\)](#), using data from 1980 to 2015, agreed that remittances have a detrimental effect on investment in 19 Asia–Pacific countries. In summary, neither theoretical research nor empirical findings have provided

conclusive answers on the specific impact of remittances on investment. These conflicting results call for more research to ascertain the impact of remittances on investment.

Furthermore, it is important to consider the possibility that corruption, political instability and economic bureaucracies could harm remittances transferred for investment purposes. In this regard, [Rodrik \(2000\)](#) argued that sound economic policies and institutions prevent corruption and encourage individuals to invest. The presence of poor institutions and political instability might discourage migrants to send remittances for investment as it may be difficult for them to discover safe and profitable ventures. However, according to [Barajas et al. \(2009\)](#), in the presence of poor governance, households send more family members overseas and use remittances to cover the costs of any services not offered by the government. These arguments imply that remittances can substitute weak institutions by providing funds or can complement sound institutions by lowering the cost of capital and promoting investment. Based on these statements, [Bjuggren and Dzansi \(2008\)](#) analyzed the role of institutions in stimulating remittances' impact on investment in 79 developing economies from 1995 to 2005 using a dynamic panel data approach. They found that institutional quality and the level of financial development are substitutes in the remittances-investment nexus. Using data from 1986 to 2017, [Githaiga \(2020\)](#) investigated the relationship between remittances, banking sector development and private sector investment in SSA. The results denoted that financial development is complementary to the remittances-investment relationship. In a similar line, [Adams and Klobodu \(2016\)](#) confirmed the complementary role of institutions by analyzing the effect of regime durability and remittances on the economy of 33 SSA countries from 1970 to 2012.

In summary, the available literature on institutions aims to investigate the relationship between remittances, institutional quality and economic growth. Few studies focus on institutional quality, remittance and investment, with inconclusive results, requiring further investigation. As a result, this paper aims to examine the role of institutional quality in moderating the remittances-investment nexus. Our study is similar to [Adams and Klobodu \(2016\)](#) and [Githaiga \(2020\)](#) but differs by choosing investment as the dependent variable and by including nonfinancial variables.

3. Methodology and data

3.1 Empirical model and estimation technique

The empirical estimation is performed using panel data for a sample of 30 SSA countries across a 15-year basic time series (2004–2018). The countries are chosen as the leading emigration countries in the region, for which key data on remittance inflows are available and accurately capture the average remittances of SSA countries. Variables are collected from the World Bank development database, while institutional data are obtained from the Fraser Institute, Freedom House and Polity IV databases.

Our model is specified as:

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

where $\ln INV$ is the natural logarithm of investment; $\ln INV_{it-1}$ is the natural logarithm of the lagged investment, REM is the explanatory variable, measured as remittances, X is the list of control variables, δ is the unobserved country component, μ is the time trend; α and β are parameters; i is the number of cross-sections ($i = 1, \dots, 30$); t is the number of time series ($t = 1, \dots, N$) and ε is the error term.

In [equation \(1\)](#), the institutional variables are initially excluded. In the second set of regression, we test the hypothesis of whether institutional quality influences remittances' ability to affect investment. Fundamentally, we investigate how the recipient country's

institutional quality affects the impact of remittances on investment. In this context, we include an interaction term between remittances and institutional quality in equation (1). The modified equation with the interaction term is shown as follows:

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

The coefficient β_1 and the coefficient β_3 which measures the marginal impact of remittances on investment based on their interaction with the institutional framework are of particular relevance in equation (2). Essentially, remittances alone do not fully account for their effects on investment as they interact with institutional frameworks. These two coefficients will be vital in determining whether remittances affect investment in countries with low or high institutions. A positive interaction ($\beta_3 > 0$) indicates that the institutional framework improves the positive effect of remittances on investment when β_1 is positive. Intrinsically, a well-built institution complements remittance in promoting investment. However, a negative interaction term ($\beta_3 < 0$) suggests that remittances serve as a substitute for improving investment in a weak institutional environment.

To investigate whether remittances impact investment differently depending on the level of institutional quality, we take the differentiation of equation (2) with respect to remittances. Thus, equation (3) demonstrates the marginal effect of remittances on investment at various levels of institutions. According to equation (3), the lowest institutional level (threshold) at which the impact of remittance on investment equals zero is $(-\beta_1/\beta_3)$.

$$vinst = \frac{\partial INV}{\partial Rem} : \beta_1 + \beta_3 \times INS_{it} \quad (3)$$

Given that our explanatory variable, remittances, might have an endogeneity problem, leading to bias estimation, this study uses the two-stage least squares (2SLS). This regression analysis is a statistical technique used when the dependent variable's error terms correlate with the independent variables (Wooldridge, 2013). The model, according to Wooldridge (2013), solves the endogeneity by employing instrumental variables that are uncorrelated with the error terms to compute the estimated values of the problematic predictor and then using those computed values to estimate the regression model of the dependent variable.

The lagged values of the independent variables are used as the instrumental variables. The use of lags ensures the non-correlation with the current error term. The accuracy of our estimation depends on the validity of the instruments, which is tested using two diagnostic tests: Cragg and Donald's (1993) weak instrument test and Sargan's overidentifying restriction test for endogeneity.

3.2 Data and descriptive statistics

The dependent variable, investment, is proxied by gross fixed capital formation as a percentage of GDP and is extracted from the World Bank. Gross fixed capital formation is a broad definition of investment that includes the purchase of plants, machinery and equipment, as well as land quality improvements such as irrigation channels, fences and so on. It also covers money spent on roads, schools, private residences, and commercial and industrial buildings. However, inventories are excluded from the study's definition of investment. This broad definition of investment will make it easier to capture the direct and indirect impact of remittances on investment. The explanatory variable of interest is remittances, denoted by personal remittances received as a percentage of GDP and sourced from the World Bank. It includes transfers and employee compensation; transfers are current

cash transfers or in-kind transfers received by the resident household to or from the non-resident household. Remittances are expected to have a positive impact on investment.

Institutions are measured using three different metrics. First, we employ the Fraser Institute's economic freedom index. The index measures institutional quality using five criteria: (1) government size, (2) legal system and property rights security, (3) access to sound money, (4) freedom to trade internationally based on tariffs, trade barriers, exchange rate, and the flow of capital and people and (5) credit market, labor and business regulation. The index ranges from 0 (low degree of economic freedom) to 10 (high degree of economic freedom). The economic freedom index was chosen because it represents a composite score of many components. People are also becoming increasingly aware of the importance of economic freedom in measuring the quality of institutions (De Haan, 2003). Second, we employ the Polity2 rating, based on the Polity IV democracy index. This index measures the competitiveness and openness of the political system and institutions that promote political participation. It ranges from 0 to 10, with a higher score indicating a sound democracy. The democracy index was chosen as a measure of institutions because democracy is required for countries to attain positive economic and political outcomes (Acemoglu *et al.* (2019). Finally, we employ the Freedom House's political and civil rights data to obtain the freedom rating. The freedom index was selected because political and civil rights are relevant to preventing social and political processes that can lead to poverty and other economic problems (Abramovich, 2006). The index ranges from 1 to 7. While a score of 1 implies the presence of competent parties, the critical roles of the opposition parties and their power, a score of 7 indicates a suppression or the nonexistence of opposition parties in the political discourse. To have the three measurements on the same scale, we normalize and transform the three indices to be between 0 and 1, with 1 indicating high-standard institutions while 0 signaling low-standard institutions.

The control variables are also obtained from the World Bank. The first variable is the inflation rate, measured as the annual percentage change in the consumer price index (CPI) and is expected to have a negative influence on investment. The second variable is the interest rate on demand deposits paid by commercial or similar banks on time, savings, or demand deposits. A higher interest rate encourages people, firms and governments to deposit money in banks, hence promoting more investment. This also implies that individuals receiving remittances will be encouraged to save most of the remittances at the bank to earn a high rate of return rather than spending them. The reverse is also true; thus, the *a priori* expectation could be either negative or positive, depending on the rate. The third variable is the household final consumption expenditure (as a % of GDP), defined as the market value of goods and services purchased by households and is expected to have a positive or a negative impact on investment. Trade openness (as a % of GDP), defined as the sum of the exports and imports of goods and services expressed as a percentage of GDP, is the fourth variable. We anticipate a positive impact on investment since this measure represents the openness of the economy to the international market. Moreover, the GDP growth rate measured as the annual growth rate in the economy is expected to exert a positive impact on investment. Finally, human capital is proxied by the human development index (HDI) and measures health, education and gross national income, and it is sourced from UNDP. Human capital is expected to exert a positive effect on investment.

The correlation matrix, shown in Table 2, displays the potential relationship between investment and other variables. The deposit interest rate and household final consumption are negatively correlated with investment, while trade manifests a positive correlation. However, none of the institutional indicators are significantly correlated with investment, which may be due to diverging computational dynamics employed by various data sources.

Variables	GFCF	REM	INF	INT	HFC	TD	POP	GDP	HDI	EF	DR	FR
Gross fixed Cap. Form.	1											
Remittances	-0.07	1										
Inflation rate	-0.03	-0.03	1									
Dep. Interest rate	-0.17	-0.07	0.37	1								
Household Fina. Consp.	-0.38	0.39	0.20	0.12	1							
Trade Openness	0.32	0.24	0.06	-0.41	0.20	1						
Populations	0.02	-0.24	-0.05	0.25	0.07	-0.47	1					
GDP Growth Rate	0.03	-0.07	0.01	0.10	0.06	-0.07	0.14	1				
Human capital	0.14	-0.19	-0.03	-0.28	-0.34	-0.33	-0.54	-0.11	1			
Economic Freedom	-0.06	0.03	0.12	0.01	0.14	0.17	-0.37	0.07	0.62	1		
Democracy index	0.08	0.01	0.02	0.09	-0.11	0.05	-0.30	0.11	0.34	0.32	1	
Freedom Index	-0.02	0.15	0.05	-0.03	0.09	0.11	-0.27	0.05	0.34	0.27	0.78	1

Source(s): Authors' computations

Table 2.
Correlation matrix

4. Empirical results

The empirical results obtained from 2SLS are depicted in Table 3 (Model A.1–A.4). We first estimate the baseline equation without institution indicators, and then add each institutional variable and its interaction with remittances.

Model	A.1	A.2	A.3	A.4
<i>Variables</i>				
Constant	0.694*** (5.31)	0.176 (0.63)	0.919*** (5.69)	0.850*** (6.27)
lnINV_GDP	0.743*** (23.99)	0.759*** (24.86)	0.779*** (22.62)	0.755*** (25.02)
Remittances	0.012** (2.31)	0.162** (2.12)	0.064** (2.26)	0.036*** (2.84)
<i>Institutional Variables</i>				
Economic freedom		0.171*** (2.72)		
Democracy			0.296** (2.37)	
Freedom				0.258*** (3.27)
<i>Interaction terms</i>				
Rem*Economic freedom		-0.248** (-2.08)		
Rem*Democracy			-0.079* (-2.13)	
Rem*Freedom				-0.052** (-2.55)
<i>Control Variables</i>				
Inflation	0.002 (0.96)	0.003 (1.23)	0.006 (1.84)	0.002 (0.96)
Deposit int. rate	0.004 (1.40)	0.002 (0.45)	-0.009 (-1.29)	0.001 (0.38)
Household final. Con	-0.004*** (-5.36)	-0.004*** (-6.04)	-0.005*** (-4.87)	-0.005*** (-5.77)
Trade openness	0.001*** (4.33)	0.002*** (5.28)	0.001*** (3.72)	0.002*** (4.68)
Population	0.058*** (3.24)	0.058*** (3.53)	0.025 (1.41)	0.035** (2.37)
GDP growth rate	0.007*** (2.64)	0.003** (2.21)	0.008*** (2.52)	0.007** (2.48)
Human Capital	0.054 (0.37)	0.458*** (2.61)	0.482** (2.29)	0.315** (2.29)
<i>Tests</i>				
No. of observation	420	420	420	420
Number of countries	30	30	30	30
R ²	0.344	0.445	0.304	0.315
Endogeneity test (<i>p</i> -value)	0.031	0.021	0.044	0.026
Cragg-Donald <i>F</i> -statistics	38.239	28.923	10.505	13.957
Overidentification Test	0.413	0.167	0.532	0.476
Note(s): <i>z</i> -statistics in parentheses; *** <i>p</i> < 0.01, ** <i>p</i> < 0.05, * <i>p</i> < 0.1 show significance at 1, 5 and 10% respectively				
Source(s): Authors' computations				

Table 3. Empirical results on remittances, investment, and Institutions(2SLS)

The results demonstrate that remittances have a positive and statistically significant impact in all models, suggesting that remittances significantly contribute to investment in SSA. Moreover, the impact increases when the institutional quality variables are incorporated into the model. For example, the coefficient in column (A.1) indicates that a one percent increase in remittances is associated with a 0.012% increase in investment. Column (A.2) suggests that a one percent increase in remittances leads to a 0.162% in investment, *ceteris paribus*. This supports the argument that remittances are an essential source of funding for SSA investment. Our findings are in contrast with [Eftimoski and Josheski \(2020\)](#)'s results but in line with those of [Bjuggren and Dzansi \(2008\)](#) and [Nwokolo *et al.* \(2021\)](#). According to our findings, SSA receives remittances that serve as a source of capital for investments. This effectively reduces the moral hazard of remittances on the economy, such as dependency culture and labor supply decrease.

We also investigate whether the institutional quality of the country of origin affects the utilization of remittances and their ability to impact investment. Accordingly, we estimate [Equation \(2\)](#), which allows the effect of remittances on investment to vary across degrees of institutional quality. The introduction of institutional indicators reveals a positive and significant impact on investment in all columns, with a coefficient ranging from 0.171 to 0.296. For example, column (A.2)'s coefficient indicates that *ceteris paribus*, a one percent increase in the economic freedom index leads to a 0.171% increase in investment, in tandem with [d'Agostino *et al.* \(2016\)](#). The link between the institutional variables and investment is positive, suggesting that SSA countries with high institutional quality foster an environment that is more likely to stimulate investment than those with weak institutions.

To investigate whether remittances and the level of institutional quality are complementary or substitute in promoting economic growth in SSA, [Equation \(2\)](#) incorporates the interaction term. Columns A2–A4 in [Table 3](#) display the regression results based on the interaction between remittances and institutional variables. The estimated coefficient of the interaction term is negative and significant, denoting that remittances and the level of institutional quality operate as substitutes in influencing investments. Remittance inflows, regardless of the institutional indicator used to assess the institutional framework, essentially serve as a substitute for countries with weak-performing institutions. This evidence supports the argument that remittance flows to SSA indirectly contribute to investment by compensating distorted institutions and providing the relevant funding for investment, through their substitutional role. The findings contradict several studies that found the institutional quality to be a complement to remittance in the development process ([Catrinescu *et al.*, 2009](#); [Adams and Klobodu, 2016](#); [Githaiga, 2020](#)). The discrepancy in findings could be explained by the fact that the moderating effect of institutions on the remittances-investment and remittances-growth nexuses differed and the majority of the existing literature employed growth as the dependent variable.

Our results are critical when considering the role of institutions and entrepreneurship in a broader context. Entrepreneurs are “social change agents who, despite the radical uncertainty we all necessarily confront in the world, notice, cultivate and exploit opportunities to bring about economic, social, political, institutional, ideological and cultural transformation” ([Elerter and Henrekson, 2020](#)). According to [Elerter and Henrekson \(2020\)](#), entrepreneurial responses occur in an institutional sphere that provides both opportunities and impediments, and they are more significant and relevant when institutional quality is weak. The presence of weak institutions gives rise to unfavorable incentive structures which are not beneficial to any capitalist community ([Easterly *et al.*, 2006](#)) as capital is non-existent and entrepreneurs can abide, alter, or bypass existing institutions ([Oliver, 1991](#)). According to [Bjuggren and Dzansi \(2008\)](#), in such an environment, where institutions are weak and cannot support or safeguard third-party interests, entrepreneurs' medium of capital is provided by their immediate associates. This is the

case in many SSA countries where funds needed for investments are raised through self-financing, friends, and most importantly, relatives living abroad. For example, Plaza *et al.* (2011) found that businesses in some African countries are funded through remittances, suggesting that remittance flows are SSA investment's lifeblood in the presence of weak institutions.

The validity of our model and the use of instrumental variables are supported by Cragg and Donald's (1993) diagnostic statistics for weak instrument tests and Sargan's overidentifying restriction test. Based on the diagnostic tests, we conclude that our model does not suffer from serial correlation and endogeneity and that the instruments are strictly exogenous. Our findings can theoretically be used to draw plausible conclusions.

Based on the result in Table 3, the marginal effect of remittances on investment is calculated while keeping the threshold of the institutional framework. The required threshold ($-\beta_1/\beta_3$) for institutional indicators are 0.65, 0.81 and 0.70 for the economic freedom index, democracy index and freedom index, respectively.

Table 4 shows the calculated threshold with the levels of the three institutional indicators in each of our sample countries.

Marginal effects $\gamma = \beta_1 + \beta_3 \times INS_{it}$				Model A.2		Model A.3		Model A.4	
	EF	DR	FR	β_1	β_3	β_1	β_3	β_1	β_3
				0.162	-0.248	0.064	-0.079	0.036	-0.052
				Threshold					
Benin	0.011	0.010	-0.004	0.65		0.81		0.70	
Botswana	-0.018	0.001	-0.001	Countries that are above the threshold					
Burkina Faso	0.015	0.038	0.011	Botswana		Kenya		Benin	
Cameroon	0.018	0.056	0.028	The Gambia		Lesotho		Botswana	
Congo, Rep.	0.042	0.064	0.024	Ghana		Mauritius			
Cote d'Ivoire	0.018	0.043	0.022	Kenya		South Africa		Ghana	
Eswatini	0.005	0.064	0.029	Liberia				Mauritius	
Gabon	0.021	0.043	0.023	Mauritius				Namibia	
The Gambia	-0.013	0.060	0.021	Namibia				South Africa	
Ghana	-0.004	0.001	-0.008	Rwanda					
Guinea	0.032	0.043	0.022	Seychelles					
Guinea-Bissau	0.032	0.019	0.016	South Africa					
Kenya	-0.013	-0.001	0.009	Uganda					
Lesotho	0.004	-0.003	0.002						
Liberia	-0.010	0.020	0.025						
Madagascar	0.008	0.020	0.011						
Mali	0.016	0.016	0.007						
Mauritius	-0.032	-0.015	-0.009						
Mozambique	0.022	0.021	0.009						
Namibia	-0.002	0.017	-0.003						
Niger	0.023	0.016	0.009						
Nigeria	0.003	0.024	0.013						
Rwanda	-0.009	0.064	0.026						
Senegal	0.015	0.007	0.000						
Seychelles	-0.020	0.016	0.004						
Sierra Leone	0.013	0.006	0.005						
South Africa	-0.007	-0.007	-0.005						
Tanzania	0.000	0.044	0.007						
Togo	0.017	0.056	0.017						
Uganda	-0.020	0.057	0.019						

Table 4.
Institutional quality
threshold and
marginal effect

Source(s): Authors' computations

Results show that eleven SSA countries (Botswana, Gambia, Ghana, Kenya, Liberia, Mauritius, Namibia, Rwanda, Seychelles, South Africa and Uganda) had an economic freedom index (EF) above the threshold, only four countries (Kenya, Lesotho, Mauritius and South Africa) had a democracy index (DR) above the threshold and six countries (Benin, Botswana, Ghana, Mauritius, Namibia and South Africa) had a freedom index (FR) above the threshold. This result suggests that most SSA countries show a distorted and weak institutional quality. For instance, in Uganda, when the democracy index is used to measure institutional quality, the marginal effect is $\partial \text{INST} / \partial \text{REM}$: $0.162 + (-0.248 \times 0.093) = 0.057$. The results suggest that a one percent increase in the proportion of remittances causes a 0.057% increase in investment in a weak institutional environment, *ceteris paribus*. In practice, most SSA countries depend on remittances as investment capital as a result of the lack of institutions that can provide the means to obtain funds. However, using the same democracy measurement in the case of Kenya, a one percent surge in remittances is associated with a 0.001% marginal drop in investment. The result is that, in SSA countries, as institutions are more developed, the importance of remittances flow as a source of capital decreases. It is suggested that some SSA countries do not rely on remittances to make investment decisions as the quality of institutions provides alternate means of funding investment. The majority of the countries exhibit weak institutions. As a result, remittance flow is a primary predictor and a substitute in impacting investment on average, implying that remittances assist most SSA countries in promoting investment.

Turning to our control variables, household final consumption reveals a negative and significant coefficient on investment across all models, indicating that most SSA household expenditures are not geared toward investment. As expected, trade openness has a positive and significant effect in all models, implying that any improvement in trade openness will lead to an increase in investment in SSA countries, consistent with [Mohammed and Hayewa's \(2020\)](#) findings. Population growth has a positive and significant coefficient in the models, which could be due to the region's growing population and the desire to consume capital goods. The finding is consistent with [Asongu \(2013\)](#). As expected, annual GDP growth has a positive and significant coefficient on investment in all models, confirming the positive contribution of GDP to investment growth. Similarly, the human capital coefficient has a positive and significant effect on investment, implying that the large endowment of human capital in SSA countries would incentivize both existing and new investors due to higher returns, particularly for activities requiring skilled workers. This is consistent with [Lopez-Bazo and Moreno's \(2008\)](#) study.

5. Robustness checks

To check the robustness of our results, we re-estimated the model using the system Generalized Methods of Moments (GMM) estimator developed by [Blundell and Bond \(1998\)](#). This model addresses the endogeneity issue by using a larger number of moment conditions (internal instruments) variables subject to lagged values of both the dependent and independent variables. The precision of the system GMM estimator is dependent on the validity of the instruments used for the endogenous variables, which is assessed using two diagnostic tests. The first is the Hansen test for over-identifying restrictions, while the second evaluates the null hypothesis that there is no serial correlation in the error term. Accepting the null hypothesis in both cases ensures the model's validity ([Arellano and Bover, 1995](#); [Blundell and Bond, 1998](#)).

The results presented in [Table 5](#) in all columns (B1–B4) corroborate our findings shown in [Table 3](#). The diagnostic statistics affirm our model's validity and the use of the instrumental variables. According to the diagnostic tests, our model is free of serial correlation or endogeneity, and the instruments are strictly exogenous, confirming the robustness of our findings.

Model	B.1	B.2	B.3	B.4
<i>Variables</i>				
Constant	2.201*** (6.85)	0.007 (0.01)	1.838*** (12.90)	2.344*** (5.79)
lnINV_GDP	0.026*** (6.22)	0.041*** (8.39)	0.049*** (9.67)	0.039*** (6.31)
Remittances	0.007** (2.33)	0.305*** (3.07)	0.035*** (3.27)	0.056** (2.85)
<i>Institutional Variables</i>				
Economic freedom		4.664*** (3.61)		
Democracy			0.127* (1.94)	
Freedom				0.260* (1.41)
<i>Interaction terms</i>				
Rem*Economic freedom		-0.471*** (-3.00)		
Rem*Democracy			-0.039*** (-2.88)	
Rem*Freedom				-0.080** (-2.58)
<i>Control Variables</i>				
Inflation	0.003 (0.81)	0.005 (0.86)	0.023*** (2.80)	0.008** (2.06)
Deposit int. rate	0.006 (1.09)	-0.006 (-0.55)	-0.014 (-1.97)	0.003 (0.50)
Household final. Con	-0.003*** (-2.85)	-0.006** (-2.27)	-0.001 (-0.41)	-0.008* (-1.96)
Trade openness	0.001* (1.62)	0.002* (1.24)	0.002** (2.68)	0.001* (0.48)
Population	0.0327 (0.78)	0.132 (1.41)	0.00588 (0.26)	0.0201 (0.52)
GDP growth rate	0.012* (1.86)	0.003* (0.41)	0.011 (1.37)	0.038*** (2.85)
Human Capital	0.412 (1.06)	1.667** (2.55)	0.098* (0.45)	0.223* (0.78)
<i>Tests</i>				
No. of observation	420	420	420	420
Number of countries	30	30	30	30
Number of Instruments	23	26	26	26
AR (1)	0.005	0.016	0.008	0.012
AR (2)	0.987	0.820	0.851	0.971
Hansen test	0.433	0.583	0.253	0.357

Table 5. Empirical results on remittances, investment, and institutions (Sys-GMM)

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

6. Conclusion and policy recommendations

Remittances to the SSA have increased to reach an all-time high in recent years, and their importance cannot be underestimated. Although there is abundant literature on the relationship between remittances and economic growth, studies examining the relationship

between remittances, investments and institutions are rare. This paper adds to the body of knowledge, by focusing on the role of institutions as a channel via which remittances may impact investment. Using 2SLS and GMM estimations, our findings show a positive and significant impact of remittances on investment, suggesting that remittances directly promote investment in SSA. The empirical analysis further highlights the importance of institutional quality in SSA for encouraging investment. Our findings also show that remittances play an indirect substitutional role by providing capital for investment in the absence of institutions that are supposed to create a conducive environment for capital. Thus, low institutional quality (weak economic freedom, undemocratic practices and restricted freedom of expression) might discourage investors from investing in SSA countries. In such an environment, the capital needed for investment will be predominantly financed through self-finance, friends, and mostly relatives living abroad. As institutions become more established, remittances become less significant as a source of investment capital. Our study bridges the gap between practice and theory. Finally, our empirical findings are consistent with the portfolio or investment motive theory, which argues that remittances serve as a source of capital for investments.

Our study suggests that remittances are also directed toward investment activities such as the growth of human and physical capital in SSA countries. Additionally, remittances serve as a substitute for the inefficient or non-existent credit market caused by poor institutions by providing local entrepreneurs in SSA with an alternative source of credit or capital for investment. However, the study's data have some limitations. First, some countries were excluded from the analysis due to a lack of data on remittances and the quality of institutions. Second, due to the complex, multi-dimensional nature of institutions, not all institutional variables were considered in this paper. Third, social remittances such as the transfer of skills, knowledge and practices that may affect investment were not considered. In light of these limitations, we recommend that SSA countries seek to enhance policies that promote economic freedom and democratic practices by respecting legal states, political and civil rights, contract enforcement and property rights protection, and reducing government size. Additionally, policies that guarantee sufficient transparency for potential investors must be improved, for instance, by reducing the administrative burden associated with getting business licenses, removing restrictions on new businesses and reducing the cost of starting a business. These actions will foster a favorable investment climate and increase trust among investors and migrants, leading to a surge in the flow of remittances. Similarly, sound institutions create good financial markets that facilitate capital acquisition for investment. As it becomes easier to obtain finance for investment, remittances will be directed to other productive areas for development. Finally, in light of the current institutional weaknesses, SSA countries must prioritize policies that support the effective use of remittances for business activities.

Notes

1. This is capital transfer rather than capital creation.

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