

Remittances and Institutions: What Effects on Economic Growth in Sub-Saharan Africa?

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Abstract

Migrant remittances are a major and stable source of finance for many developing countries. This study re-examines the relationship between migrant remittances and economic growth in Sub-Saharan Africa (SSA) over the period 2005-2020, taking into account the role of institutional governance. The results obtained by the FMOLS and DOLS estimators suggest that remittances have a negative effect on economic growth in sub-Saharan Africa. However, when the quality of institutions is taken into account, this effect is reduced. Consequently, governments and public decision-makers should implement transparent regulatory frameworks to effectively manage remittances and develop programs to raise awareness among remittance recipients of the need to invest in economic activities.

Keywords

Economic Growth, Institutions, Governance, Migrant Remittances

IEL Codes

F24, O43

1. Introduction

Migration flows are diverse and continuously increasing. According to the latest estimates from the Population Division, in 2020, the number of international migrants worldwide reached 281 million (IOM, 2020). There are different types of migration-voluntary or forced, temporary or long-term-which can be driven by various individual and societal factors. Regardless of the reasons for migrating, the desire to improve one's living conditions remains the fundamental cause for

any migrant leaving their country of origin. Additionally, there is the desire to contribute to the well-being of their family back home. As the number of migrants increased, so did the remittances sent by them.

It is estimated that remittances are more significant than official development aid and more stable than foreign direct investment globally. They represent a critical and stable source of external financing for Africa, as well as for African households, by helping to smooth consumption (UNCTAD, 2018). According to international statistics, remittance flows have significantly increased since 2000, accounting for 51% of private capital flows to Africa in 2016, compared to 42% in 2010. They increased from 29 billion dollars in 2009 to 48 billion dollars in 2019, before falling to 37 billion dollars in 2020 due to the Covid-19 pandemic. Remittances to Sub-Saharan Africa then rose by 6.1% in 2022, reaching 53 billion dollars. Migrant remittances have supported the current accounts of several African countries facing food insecurity, supply chain disruptions, severe droughts (Horn of Africa), floods (Nigeria, Chad, Niger, Burkina Faso, Mali, and Cameroon), and challenges related to debt servicing for many of them (World Bank, 2023).

In theory, remittances can stimulate economic growth through channels such as facilitating the development of the financial market, financing entrepreneurial activities, providing insurance against shocks, funding household expenditures, contributing to household capital formation, and bridging the savings gap and external financing deficit. This has been empirically proven by some of the literature, which found that remittance inflows lead to economic growth (Lartey et al., 2012). On the other hand, remittances can delay economic growth. This may occur if remittance recipients use the funds to reduce their labor supply to the economy (Chami et al., 2005). In this case, recipients who should be part of the active workforce automatically become dependent on the migrant for survival. When remittances lead to a strong appreciation of the local currency, this can also harm the country's economy by discouraging exports and reducing entrepreneurial competition in the recipient country (Lopez et al., 2007).

Thus, the results regarding the effect of remittances on growth are mixed and complex. According to Kapur (2003), the long-term effects of migration on development are poorly understood. Some authors emphasize the methodological approach, which should not ignore the endogeneity of remittances in an econometric estimation model (Catrinescu et al., 2009), the longitudinal aspect of the impact of remittances on development (Russell, 1986), and the influence of institutional factors related to governance in remittance-receiving countries (Adams & Klobodu, 2016).

The objective of this study is to analyze the ability of institutional quality to enhance the effect of remittance flows to developing countries on economic growth. Lartey & Mengova (2016), using a sample of 90 countries, showed that an improvement in the quality of institutions responsible for monetary policy has a positive impact on remittance inflows, and this impact increases with the quality of these institutions. These results suggest that migrants tend to send funds to countries with favorable macroeconomic environments for better economic performance. Thus, one can expect positive effects of migrant remittances on economic growth in countries with quality institutions. Ahouré (2008) showed that migrant remittances have a positive effect on economic growth in countries with institutional quality levels above the median. This study aims to reexamine the relationship between remittances, institutions, and economic growth using two new approaches for panel data, FMOLS (Fully Modified Ordinary Least Squares) and DOLS (Dynamic Ordinary Least Squares), to examine the long-term relationship between migrant remittances, economic growth, and institutional quality. Indeed, the FMOLS estimator accounts for disturbing parameters and potential autocorrelation and heteroscedasticity of the residuals. It also corrects the endogeneity of explanatory variables. Moreover, to ensure robust results, we adopt the DOLS approach to eliminate the correlation between regressions and the error term.

The next section highlights the main theoretical and empirical results regarding the relationship between remittances, institutions, and economic growth. The third section provides an overview of the evolution of these three variables in Sub-Saharan African countries. The fourth section presents the methodological description, the fifth section presents and discusses the results obtained, and the final section concludes.

2. Literature Review

The economic theory of migrant remittances explores various schools of thought. Classical and neoclassical approaches emphasize the positive effects of migration. Classical theory (1950s and 1960s) argues that migration favors a North-South transfer of capital and modern ideas, stimulating development in the countries of origin (Ratha, 2005; Sander & Maimbo, 2005). Neoclassical theory maintains that free migration increases productivity and wages in the countries of origin, while remittances reinforce these effects by supporting economic development. However, criticisms from structuralist and neo-Marxist theories (Keely & Tran, 1989; Stahl & Arnold, 1986) highlight that these migrations amplify inequalities and reinforce dependence on systems dominated by wealthy countries, disrupting local economies and creating cultural disparities.

Contemporary approaches, such as the New Economics of Labor Migration (NELM) developed by Stark and Bloom (1985) and the social network theory, provide more nuanced perspectives. NELM views migration as a family strategy to share risks and diversify resources, especially in contexts where credit and insurance markets are imperfect (Giuliano & Ruiz-Arranz, 2009). Additionally, remittances also play a social role, strengthening community and cultural ties. These transfers, perceived as resource exchanges within social networks, allow migrants to increase their visibility and avoid social sanctions while providing implicit co-insurance for their families (Aggarwal et al., 2011).

The effect of remittances on economic growth has been the subject of debate, divided into three main views. The optimistic view highlights their stabilizing role on balance of payments and their ability to ease credit constraints in countries with underdeveloped financial systems (Ratha, 2005; Acosta et al., 2007). In contrast, the pessimistic view criticizes their negative effects, such as the Dutch disease syndrome, fostering dependence, and exacerbating inequalities (Faini, 2007; Russell, 1986). Finally, the neutral view, defended by León-Ledesma and Piracha (2004), considers that these transfers merely smooth consumption without having a significant impact on economic growth. These perspectives, confirmed by empirical studies, show that the impact of remittances varies according to the contexts and methodologies used.

Among the studies that found a positive relationship between remittances and economic growth, Faini (2002) stands out, conducted on a sample of 64 countries over the period 1980-2004. Using a sample of 39 developing countries during the period 1980-2004, Pradhan et al. (2008) estimated a standard growth model and concluded that remittances have a positive effect on economic growth. Similarly, Vargas-Silva et al. (2009) used data from 20 Asian countries to examine the potential of remittances to contribute to economic growth and poverty reduction from 1988 to 2007. Their results show that remittances have a positive effect on the per capita growth rate. Mundaca (2009) also reached the same conclusion by analyzing the effects of migrant remittances and financial intermediation on the economic growth of Latin American and Caribbean countries. In fact, the study indicates that a 10% increase in remittances contributes to a 3.49% increase in GDP per capita. Similarly, using annual panel data from 64 countries in Africa, Asia, and Latin America and the Caribbean from 1987 to 2007, Fayissa and Nsiah (2010) found that remittances stimulate growth in countries with less developed financial systems, providing an alternative means of financing investments and helping to overcome liquidity constraints. Goschin (2013), using multifactor regression models, found that remittances contribute to long-term economic growth in Romania from 1994 to 2011. On his side, Bucevska (2022) showed that remittances have a significant positive impact on economic growth using a fixedeffects model on a quarterly panel data set of six Southeastern European countries: Albania, Bosnia-Herzegovina, Croatia, Montenegro, North Macedonia, and Serbia from 2008Q1 to 2020Q2. Likewise, Abdillah (2022) studied the effects of remittances on economic growth in Comoros over a 35-year period from 1985 to 2019. The results obtained through ARDL estimation indicate that remittances have a significant and positive effect on economic growth.

Other works, however, have reached contrary conclusions. This is the case of Chami et al. (2005) who, on a sample of 113 countries studied over the period 1970-1998, found a negative correlation between remittances and growth. According to the authors, remittances encourage recipients to reduce their efforts or time devoted to work (moral hazard). Similarly, in the Philippines, using annual data from 1985 to 2002 and simple correlations with the Vector Autoregressive (VAR) method, Burgess and Haksar (2005) found that the long-term economic effects of remittances are ambiguous. In a related study, Singh et al. (2011) found that the effect of remittances on economic growth is negative, but that Sub-Sa-

haran African countries with good institutions are best able to leverage the potential of remittances to promote rapid economic growth. Similarly, Ahamada and Coulibaly (2013) demonstrated that there is no causality between remittances and growth in 20 Sub-Saharan African countries over the period 1980-2007: for the authors, these transfers do not affect physical capital investment. On the other hand, using a fixed-effects panel model, Kabungu et al. (2020) found that remittances positively affect growth but that this impact is not significant for a sample of twelve (12) Sub-Saharan African countries, three (3) from each sub-region, over the period 2005-2017. Likewise, the fixed-effects estimates for the 1990-2020 period by Diop (2022) reveal that remittances have no significant impact on economic growth in the UEMOA countries. Recently, using PSTR and GMM models, from panel data of six countries in the CEMAC region for the period 1990-2018, Tchekoumi and Nya (2023) found two main results. First, there is a nonlinear relationship between migrant remittances and economic growth, leading to the existence of two regimes, confirming a threshold effect. Second, under the first regime, remittances have a positive and significant impact on economic growth, while under the second regime, this effect is negative and significant. Likewise, Bouya and Ngah (2023) show, using the GMM System method in dynamic panels and the panel vector autoregressive model, that remittances have no significant effect on economic growth in 48 Sub-Saharan African countries over the period 1990-2020.

The studies mentioned above have analyzed the direct effect of remittances on economic growth. However, other authors have approached the topic from the perspective of the conditional effect. Among these studies, a few have focused on the inclusion of an interaction term between these remittances and institutional quality to complement the direct effect by stimulating growth.

Thus, Fainzylber and López (2008), who explored these effects on per capita growth in Latin American countries, included interaction terms between remittances, political institutions, and two other variables (human capital and financial development). They found a negative sign for the coefficient of remittances and a positive sign for the interaction term between remittances and institutions. The authors concluded that improving institutional quality strengthens the positive effect of remittances on economic growth. Similarly, Ahouré (2008) analyzed the role of governance in the relationship between remittances and economic growth in Sub-Saharan African countries using panel data for the period 2002-2006. Estimations using the Blundell and Bond dynamic panel method highlighted a negative effect of remittances on per capita GDP growth. However, political stability, control of corruption, and overall good governance emerged as necessary conditions to enhance the effect of remittances on economic growth. Catrinescu et al. (2009) used political and institutional variables in interaction with remittances over the period 1970-2003. Using the Anderson-Hsiao estimator, these authors found a positive relationship between remittances and growth. In the same vein, Adams and Klobodu (2016) examined the effect of remittances and regime durability on economic growth in 33 Sub-Saharan African countries over the period

1970-2012 using the Generalized Method of Moments (GMM) estimation technique. Empirical results showed that remittances did not have a significant impact on economic growth. However, regime durability was negatively and significantly related to economic growth, while the type of regime was positively and significantly correlated with growth. The interaction terms of regime durability and democracy with remittances were, however, found to be positively and significantly related to economic growth. This implies that the growth effect of remittances is enhanced in the presence of a democratic and stable government. El Hamma (2019) examined the conditional effects of remittances on economic growth in 14 Middle Eastern and North African (MENA) countries from 1982 to 2016. Using the two-stage least squares method, the author showed that remittances promote growth in countries with strong institutional environments. Similarly, Chitambara (2019) analyzed the relationship between remittances, institutions, and economic growth in a panel of 26 African countries over the period 1980-2014. Using, in addition to the two-step Generalized Method of Moments (GMM), the fixedeffects estimation method, he showed that there is a positive relationship between the three variables—remittances, institutions, and the interaction term—and economic growth. In the same perspective, Trpeski and Merdzan (2022), using the Generalized Method of Moments (GMM) method on 27 European Union member states from 1995 to 2019, found that institutions play a crucial role in how remittances affect economic growth.

However, Eddine Salhi (2020) reached contradictory results when assessing the effects of migrant remittances on the economic growth of Sub-Saharan African countries from 2000 to 2018, in interaction with governance. The results of the estimation via the dynamic panel (GMM, Arellano and Bond) showed that migrant remittances positively and weakly affect economic growth, but also that taking governance into account as an intermediate variable revealed that governance does not constitute a significant channel for the effect of remittances on economic growth. This result is similar to that of Habib (2023), who tested the hypothesis that better governance can improve the effect of remittances on economic growth. To do this, he used the Generalized Method of Moments (GMM) on a sample of 12 countries from the Middle East and North Africa (MENA) from 2002 to 2020. The results indicated that migrant remittances had a direct negative link with economic growth but that the interaction term between remittances and governance quality indicators was negative and not significant. Similarly, Panthi and Devkota (2023) showed, using an error correction model from 1993 to 2020, that remittances have a significant and positive influence on economic growth in Nepal, but the combined effect of remittances and institutional quality has a moderating effect on long-term economic growth.

The literature analysis above indicates that the effect of remittances on economic growth depends on the estimation method, the observation period, the quality of institutions in the country, observed and unobserved country-specific characteristics, and the endogeneity of the explanatory variables. This study aims to contribute to the literature by specifically referring to Sub-Saharan African countries and integrating an interaction variable between remittances and institutional quality in an ARDL panel model. This estimation method accounts for the potential endogeneity of migrant remittances by including lagged variables, which mitigates the problem of omitted variable bias.

3. Methodology

This section first presents the data used in the study and the estimation method, then highlights the econometric models used to analyze the impact of remittances on economic growth.

3.1. Data

The data for this study covers 36 Sub-Saharan African countries and spans from 2005 to 2020. The dependent variable in the estimated model is GDP per capita (in constant 2005 dollars), obtained from the World Bank's (2023) World Development Indicators. Remittances represent the main explanatory variable, while variables such as the domestic investment measured by the gross capital formation ratio to GDP, and the primary school enrollment rate (used to capture the level of human capital) are the control variables included in the model.

We use the governance indicators published by the World Bank (Worldwide Governance Indicators). These indicators range from -2.5 to +2.5, with a higher value indicating better governance efforts. The governance indicators considered in this study are:

- Control of corruption (CC) which measures the use of public power for private gain, including both large and small-scale corruption, and the "capture" of the state by elites and private interests.
- Rule of law (ROL) measuring citizens' confidence in the rules set by society and respect for institutions, including the quality of the social contract, through police and judiciary, as well as crime rates and violence.
- Voice and accountability (VA) to account for the participation of citizens in the choice of their rulers, whether through freedom of expression, association, or media.
- Government effectiveness (GE) capturing perceptions of the quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation, the credibility of the government's commitment to such policies.
- Political stability and absence of violence (PSAV) measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.
- Regulatory quality (RQ), which assesses perceptions of a government's ability to formulate and implement sound policies and regulations that facilitate and promote private sector development. This indicator reflects the extent to which regulations are conducive to business operations and economic growth. These variables help to account for the institutional factors that can either fa-

cilitate or hinder the productive use of remittances. Corruption constitutes a major barrier to the effectiveness of investments, including migrant remittances, by diverting resources toward unproductive uses. Remittances, often directed toward productive activities or community investments, may be compromised in an environment where corruption is prevalent. The rule of law, on the other hand, guarantees a solid institutional framework in which migrant funds can be used effectively. When citizens trust the rules and institutions, it fosters productive investments, business creation, and economic participation by households receiving remittances. In contrast, weak rule of law, characterized by legal insecurity or high crime rates, discourages investment and reduces the impact of remittances on economic growth. The indicator voice and accountability is included because citizen participation and the accountability of rulers directly influence how remittance funds are used to contribute to growth. A system where citizens can freely express themselves and where institutions are accountable favors the efficient allocation of resources, including those from migrant remittances. Furthermore, a strong rule of law ensures property rights, contract enforcement, and reduces corruption, creating a secure environment for economic transactions. In the context of remittances, a robust legal system can encourage recipients to invest funds in productive ventures, knowing that their investments are protected, thereby fostering economic growth. Effective governance ensures that public resources are utilized efficiently and that policies conducive to economic development are implemented, and high regulatory quality reduces bureaucratic obstacles and fosters a business-friendly environment. In such settings, remittances can be more effectively utilized for entrepreneurial activities and investments, contributing to economic growth.

3.2. Estimation Method

The estimation strategy involves first conducting unit root tests to identify the integration order of the variables. Then, cointegration tests were performed, specifically Pedroni and Westerlund tests. To estimate the model, FMOLS (Fully Modified Ordinary Least Squares) and DOLS (Dynamic Ordinary Least Squares) estimators were used. Specifically, FMOLS was chosen because it provides consistent parameters even in small samples in the short term (Stock & Watson, 1993). Furthermore, it helps resolve endogeneity and autocorrelation issues by allowing parameter heterogeneity (Mark & Sul, 2003). These methods estimate the long-term equilibrium parameters of cointegrated variables, accounting for endogeneity and serial correlation, thereby producing consistent and efficient parameters (Othman & Masih, 2015; Tugcu, 2018).

Cointegration equation estimates include the application of the DOLS and FMOLS approaches proposed by Kao and Chiang (2000) and Phillips and Moon (1999). These techniques aim to estimate or quantify the long-term relationship between variables. The DOLS technique solves the problem of endogeneity and eliminates serial correlation present in Ordinary Least Squares (OLS). In fact, OLS estimation is inconsistent in cointegrated panel data series (Dreger & Reimer, 2005). While the DOLS and FMOLS estimators address endogeneity and eliminate

small sample bias, applying the FMOLS approach essentially requires that all variables have the same order of integration and that regressors are not co-integrated. According to Kao and Chiang (2000), DOLS estimators outperform those obtained by the FMOLS method in terms of average bias.

The FMOLS estimator of long-term coefficients is defined as follows:

$$\hat{\beta}_{i} = \left(\sum_{t=1}^{T} x_{i,t}' x_{it}\right)^{-1} \sum_{t=1}^{T} \left(x_{it}' y_{it}^{*} - T\hat{\lambda}_{i}\right)$$
(1)

where y_{it}^* represents the dependent variable corrected for covariance between the error term and the reference term, and Δx_t and $T\hat{\lambda}$ are the explanatory variables.

In order to obtain an unbiased estimator of long-term parameters, the DOLS parameter involves a parametric adjustment of errors in static regression. Consider a cointegrated regression for homogeneous panels as follows:

$$y_{it} = \alpha_i + \lambda_i t + \theta_t + \beta' x_{it} + u_{it}.$$

$$x_{it} = x_{it-1} + v_{it}$$
(2)

where $(i = 1, \dots, N)$ and $(t = 1, \dots, T)$. x_{it} is a vector of dimension $k \times 1$ composed of the regressors. α_i , $\lambda_i t$, et θ_t respectively represent the specific individual effect.

The second equation states that the independent variables are an integrated process of order one for all *i*, so that their first differences are stationary. The estimator is based on the error decomposition:

$$u_{it} = \sum_{j=-p}^{q} \gamma'_{j} \Delta x_{it-j} + \varepsilon_{it}$$
(3)

where p and q are the number of lags forward and backward respectively, and is orthogonal to all initial and lagged values of the first difference of the variables. Inserting Equation (6) into the regression of Equation (5) gives:

$$\mathbf{y}_{it} = \mathbf{\alpha}_i + \lambda_i t + \mathbf{\theta}_t + \beta' \mathbf{x}_{it} + \sum_{j=-p}^{q} \gamma'_j \Delta \mathbf{x}_{it-j} + \mathbf{\varepsilon}_{it}$$
(4)

The OLS estimator of β in Equation (4) is known as the dynamic panel OLS estimator.

We consider first the direct effect of remittances on economic growth and evaluate the following equation:

$$LGDP_{i,t} = \alpha_0 + \alpha_1 remit_{i,t} + \alpha_2 X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t}$$
(5)

where $LGDP_{i,t}$ is the logarithm of the level of GDP per capita in country *i* at the end of period *t*, $remit_{i,t}$ is the logarithm of remittances as a percentage of GDP, $X_{i,t}$ is the matrix of log control variables described earlier in the data section, μ_t is a time-specific effect, η_i is an unobserved fixed effect and $\varepsilon_{i,t}$ is the error term.

Finally, to assess whether there is a complementary relationship between remittances and institutional quality, an equation is estimated successively with interaction terms for remittances and control variables. This is done to avoid potential multicollinearity.

$$LGDP_{i,t} = \alpha_0 + \alpha_1 remit_{i,t} + \alpha_2 institutions_{i,t} + \alpha_3 remit \times institutions_{i,t} + \alpha_4 X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t}$$
(6)

These equations will be estimated sequentially using the FMOLS and DOLS methods.

4. Results and Discussion

4.1. Descriptive Analysis

The descriptive statistics for the study's variables are presented in Table 1. The results show that, on average, GDP per capita in Sub-Saharan Africa is around 2214, with a standard deviation of 2810.16. The minimum and maximum values are held by Burundi (263.36 in 2020) and Seychelles (16992 in 2019), respectively. Human capital, on the other hand, has an average value of 103.55 and a standard deviation of 18.70. Its minimum value is observed in Niger (48.35 in 2005) and its maximum value in Madagascar (149.32 in 2017). Domestic investment, for its part, shows the largest statistics in the study, with an average of 1.67E+10 and a standard deviation of 6.97E+10; the minimum value is 5.2E+7 and the maximum is 7.5E+11, observed in Guinea-Bissau (2006) and Sudan (2008), respectively. Regarding remittances, the average is 3.87% of GDP with a standard deviation of 5.38. However, while the maximum value of 37.94% of GDP is held by Lesotho in 2006, the minimum value, which is zero, is held by several countries across different periods (Angola (2017-2018), Burundi (2006), Comoros (2013), Gabon (2006), Mauritania (2013), and Rwanda (2005)). Finally, the institutional quality indicators generally have an average of -0.5 and a standard deviation of 0.6, with a minimum value of -2.67 and a maximum of 1.42.

Table 1 shows that variables such as GDP per capita, human capital, and domestic investment exhibit significant volatility, as evidenced by their standard deviations. Therefore, it is necessary to perform a logarithmic transformation to normalize these series.

Variables	Observations	Mean	Std Dev	Min	Max
GDP per capita	549	2214.993	2810.156	263.361	16992.00
Human capital	549	103.551	18.701	48.356	149.316
Migrant remittances	549	3.867	5.380	0.000	37.94
Domestic investment	549	1.67E+10	6.97E+10	5.2E+7	7.50E+11
GE	549	-0.644	0.631	-1.809	1.161
PSAV	549	-0.519	0.896	-2.665	1.201
ROL	549	-0.580	0.624	-1.870	1.024
RQ	549	-0.557	0.593	-2.201	1.197
VA	549	-0.463	0.719	-1.851	0.974
CC	549	-0.527	0.672	-1.575	1.420

Table 1. Descriptive statistics of variables.

Source: Author's calculations.

Table 2 presents the correlation matrix for the study variables. Overall, the correlation coefficients between the variables are relatively weak, except for the correlations among the institutional quality variables, which in some cases exceed 0.80. Therefore, to avoid potential multicollinearity among these variables, they will be introduced into the estimations one at a time.

Table 2. Correlation matrix.

	GDP per capita	Migrant remittances	Domestic investment	Human capital	CC	VA	ROL	GE	PSAV	RQ
GDP per capita	1.000									
Migrant remittances	-0.194	1.000								
Domestic investment	0.026	-0.076	1.000							
Human capital	0.030	0.099	-0.249	1.000						
CC	0.557	0.100	-0.162	0.192	1.000					
VA	0.423	0.109	-0.188	0.035	0.712	1.000				
ROL	0.547	0.025	-0.164	0.116	0.898	0.800	1.000			
GE	0.423	0.109	-0.170	0.214	0.780	0.780	0.650	1.000		
PSAV	0.354	0.120	-0.159	0.132	0.850	0.800	0.85	0.790	1.000	
RQ	0.410	0.131	-0.172	0.158	0.790	0.890	0.652	0.750		1.000

Source: Author's calculations

4.2. Unit Root Tests in Panel

The properties, such as the presence of a unit root in the panel data, were checked using appropriate stationarity tests (Table 3). Then, a cross-sectional dependence test was performed since many cross-sections are grouped in panel data (Table 4). The null hypothesis of cross-sectional independence that prevails in the use of first-generation unit root tests is an extreme assumption. It assumes that countries are independent, while admitting some heterogeneity among them. Indeed, first-generation panel unit root tests can yield misleading results when there is cross-dependence. The null hypothesis of the cross-dependence test is that there is cross-sectional independence. The results in Table 4 show that the null hypothesis is rejected for almost all variables, indicating the existence of cross-sectional dependence. Subsequently, cointegration tests for the data were performed (Table 5 and Table 6).

Table 3. Results of unit root tests on panel data.

	Levin, Lin a	nd Chu (LCC)	ADF-Fishe	r Chi-square
	Level	First diff.	Level	First diff.
GDP per capita	0.87	0.000***	0.99	0.000***
Migrant remittances	0.64	0.000***	0.94	0.000***
Human capital	0.00	0.000***	0.00	0.000***

Continued				
Domestic investment	0.88	0.000***	0.98	0.000***
CC	0.80	0.000***	0.57	0.000***
ROL	0.89	0.000***	0.80	0.000***
VA	0.99	0.000***	0.76	0.000***
GE	0.80	0.000***	0.57	0.000***
PSAV	0.89	0.000***	0.80	0.000***
RQ	0.99	0.000***	0.76	0.000***

Notes: ***, **, *: significance at 1%, 5%, and 10%. Source: Author's calculations.

Table 4. Cross-sectional dependence test.

	Log GDP per capita	Log Remittances	Log Human Capital	Log Dom. invest.	СС	ROL	VA	GE	PSAV	RQ
CD test	45.90	3.91	7.09	48.11	0.29	3.60	2.91	5.02	4.33	3.25
<i>p</i> -value	0.000***	0.000***	0.000***	0.000***	0.774	0.000***	0.004***	0.000***	0.002***	0.000***

Notes: ***, **, *: significance at 1%, 5%, and 10%. Source: Author's calculations.

Table 5. Second-generation Pesaran stationarity test.

	PES-C	CADF
	I(0)	I(1)
GDP per capita	0.365	0.001***
Remittances	0.887	0.003***
Human capital	0.731	0.010**
Domestic investment	0.413	0.000***
CC	0.961	0.000***
ROL	0.486	0.000***
V.A	0.996	0.012**
GE	0.621	0.010**
PSAV	0.489	0.000***
RQ	0.699	0.000***

Notes: ***, **, *: significance at 1%, 5%, and 10%. Source: Author's calculations.

4.3. Cointegration Tests in Panel

The long-term relationship between the variables was then analyzed using the cointegration tests of Pedroni (1999, 2004) and Westerlund (2005) (see Table 6 and Table 7). These two tests have a common null hypothesis of no cointegration. The alternative hypothesis of the Pedroni test is that the variables are cointegrated across all panels. All test statistics rejected the null hypothesis of no cointegration, demonstrating the existence of a long-term relationship between migrant remittances, economic growth, and the control variables included in the model.

Table 6. Pedroni cointegration tests.

Statistic	Statistic	<i>p</i> -value
Modified Phillips-Perron t	4.5712	0.000***
Phillips-Perron t	-4.7861	0.000***
Augmented Dickey-Fuller t	-5.9994	0.000***

Notes: ***, **, *: significance at 1%, 5%, and 10%. Source: Author's calculations.

Table 7. Westerlund cointegration test.

Statistic	Statistic	<i>p</i> -value
Variance ratio	-1.7170	0.0430**

Notes: ***, **, *: significance at 1%, 5%, and 10%. Source: Author's calculations.

4.4. Estimation Results of FMOLS and DOLS

Table 8. Results obtained using the FMOLS estimator.

FMOLS Dependent Var	iable: Log	GDP per c	apita									
Log remittances	-0.010*** (0.002)	-0.005*** (0.002)	-0.010*** (0.002)	-0.007*** (0.002)	-0.022*** (0.001)	-0.003 (0.003)	-0.021*** (0.005)	-0.037 (0.151)	-0.023 (0.486)	-0.328 (0.330)	-0.026*** (0.001)	0.017 (0.750)
Log domestic invest.	0.110*** (0.015)	0.110*** (0.014)	0.106*** (0.014)	0.113*** (0.014)	0.208*** (0.000)	0.106*** (0.014)	0.205*** (0.000)	0.206*** (0.000)	0.158*** (0.000)	0.172*** (0.000)	0.225*** (0.000)	0.217*** (0.000)
Log hum. capital	0.132* (0.066)	0.129* (0.065)	0.141* (0.065)	0.132*** (0.014)	0.008 (0.167)	0.132* (0.063)	0.013 (0.810)	0.001 (0.992)	0.142*** (0.000)	0.237*** (0.000)	0.136** (0.025)	0.077 (0.164)
Control of corr.	-0.034** (0.027)	-0.064** (0.028)										
Log remittances *control de corr.		0.009*** (0.003)										
Voice and account.			0.019** (0.022)	-0.041** (0.027)								
Log remittances *voice and account.				0.010*** (0.003)								
Rule of law					0.024 (0.298)	0.004** (0.034)						
Log remittances*ru le of law						0.011*** (0.004)						
Gov. effectiveness							0.078*** (0.000)	-0.006 (0.946)				
Log remittances*go v. effectiveness								0.117 (0.145)				

Continued

Pol. stability									0.025 (0.332)	0.007 (0.773)		
Log remittances*po l. stability	D									0.020 (0.318)		
Regulatory quality											0.052*** (0.005	0.060 (0.542)
Log remittances* regulatory quality												0.004 (0.941)
Observations	510	510	510	510	510	510	510	510	510	510	510	510

Notes: Values in brackets are standard deviations. *, **, *** indicate significance level at 10%, 5% and 1%, respectively. Source: authors' calculations.

 Table 9. Results obtained using the DOLS estimator.

DOLS Dependent vari	able: Log	GDP per ca	apita									
Log remittances	-0.005 (0.003)	-0.005*** (0.002)	-0.008*** (0.002)	-0.006*** (0.002)	-0.008*** (0.002)	-0.003*** (0.003)	-0.007*** (0.002)	-0.007** (0.003)	-0.008*** (0.002)	-0.007*** (0.002)	-0.001 (0.002)	0.001 (0.006)
Log domestic invest.	0.151** (0.014)	0.097*** (0.013)	0.094*** (0.013)	0.096*** (0.013)	0.091*** (0.013)	0.094** (0.013)	0.088*** (0.013)	0.088*** (0.013)	0.094*** (0.013)	0.094*** (0.013)	0.113*** (0.009)	0.136*** (0.020)
Log hum. capital)	0.164* (0.088)	0.119** (0.056)	0.118** (0.057)	0.115** (0.055)	0.117** (0.056)	0.119** (0.055)	0.094* (0.055)	0.094* (0.055)	0.116* (0.056)	0.116** (0.056)	0.0109*** (0.021)	0.057 0.050)
Control of corr.	0.101** (0.038)	-0.039 (0.025)										
Log remit * Control of corr.		0.005*** (0.003)										
Voice and account.			0.022** (0.020)	-0.017** (0.025)								
Log remittances * Voice and account.				0.007*** (0.002)								
Rule of law					0.053** (0.028)	0.023** (0.030)						
Log remit*rule of law						0.007*** (0.003)						
Gov. effectiveness							0.098 (0.026)	0.097*** (0.028)				
Log remittances*go v. effectiveness								0.001 (0.002)				
Pol. stability									0.022* (0.012)	0.015 (0.014)		

Log remittances*po l. stability)									0.001 (0.001)		
Regulatory quality											0.109*** (0.021)	0.147*** (0.024)
Log remittances*re gulatory quality												0.010* (0.005)
Observations	510	510	510	510	510	510	510	510	510	510	510	510

Continued

Notes: Values in brackets are standard deviations. *, **, *** indicate significance level at 10%, 5% and 1%, respectively. Source: authors' calculations.

Remittances have a negative and significant effect on economic growth in the countries of the sample across the models (see Table 8 and Table 9). A 1% increase in remittances would lead to a decrease in GDP per capita ranging from 0.005% to 0.01%, according to the FMOLS model estimations, and from 0.003% to 0.008% using the DOLS method. This finding corroborates the work of Chami et al. (2005) and Ahoure (2008), who emphasize the potential impact of remittances in reducing the labor supply and productive efficiency. It is likely that they benefit entrepreneurship less, serve more to support the consumption of the poorest households and create dependency, which reduces labour supply and productivity (Ahouré, 2008). Azam and Gubert (2002) attribute this effect to the increased dependence of recipients on external resources, favoring immediate consumption rather than productive investment. Furthermore, the funds received are often allocated to the purchase of imported goods, which could exacerbate the Dutch disease (Lopez et al., 2007).

The coefficients of domestic investment measured by the gross fixed capital formation and that of the primary school enrolment rate used to capture the human capital level, were found to be positive and significant in all estimated models, indicating the important role that domestic investment plays in economic growth, in line with economic theory. Physical and human capital are key drivers of growth in Sub-Saharan Africa.

However, the negative effect of remittances on economic growth is reduced when introducing an interaction term between remittances and governance indicators changes the dynamics. The coefficient of this interaction term is positive and significant in many cases. This is observed when we add together the value of the coefficient on migrant transfers and that on the interaction variable in the models. When institutional quality is considered, the negative effect of remittances is mitigated. This finding is similar to Catrinescu et al. (2009), who showed that remittances are more likely to stimulate sustained growth in countries with strong institutions, and Singh et al. (2011) highlighting that countries with good institutions are better able to leverage the potential of remittances.

These results underline the importance of institutions in improving the benefits of remittances. Lartey and Mengova (2016) emphasize that migrants tend to send more funds to countries with favorable institutional environments, which enhances recipients' trust in the viability of productive investments. Similarly, El Hamma (2019) and Trpeski and Merdzan (2022) stress the role of institutions as catalysts for the positive effects of remittances on growth. Awad et al. (2024) investigated the joint influence of remittances and institutional quality on environmental quality across 44 Sub-Saharan African (SSA) economies between 2000 and 2022. Employing a PMG-ARDL analysis, their findings indicate that remittances exert a negative long-term effect on environmental quality. However, the study also demonstrates that enhancements in institutional quality over time alleviate the detrimental impact of remittances on the environment within the sampled SSA countries. Similarly, Owotemu et al. (2024) examined the economic effects of remittances using both qualitative data—collected through interviews and questionnaires-and quantitative data from external sources, focusing on a sample of 387 Nigerians in the diaspora between 2000 and 2023. Their findings suggest that remittances positively influence economic growth by augmenting household income, thereby fostering commercial activity and investment. Furthermore, the study highlights that remittances contribute to economic development, particularly in countries with well-structured, open markets and policies that promote economic and institutional growth.

Thus, governments in Sub-Saharan African countries should not only improve regulatory frameworks and transparency but also strengthen institutional capacities to channel remittances toward productive investments. For example, implementing awareness programs to encourage recipients to invest in income-generating activities could enhance the economic impact of remittances. Additionally, policies targeting the reduction of transfer costs could increase the volume of funds available for investment. Finally, policymakers must pay special attention to macroeconomic management to minimize negative effects such as excessive local currency appreciation and encouragement of non-productive consumption.

5. Conclusion

This study aims to reexamine the impact of remittance flows on economic growth in Sub-Saharan African countries. Using FMOLS and DOLS estimators, there is a negative effect of remittances on economic growth, however this effect is mitigated when an interaction term between remittance and different governance indicators is introduced in the models. This indicates that remittances are much less of a vector for growth in sub-Saharan African countries. The study confirms that governance plays an essential role in analyzing the relationship between remittances and economic growth. The quality of institutions is a necessary condition for attracting remittances and enabling them to make a greater contribution to growth and development in sub-Saharan African countries. This finding aligns with evidence indicating that remittances are more likely to foster sustained economic growth in regions characterized by strong political and economic institutions. These results underscore the importance of prioritizing transparent and high-quality governance systems, as such measures can enhance public trust and stimulate greater investment in economic development. Further studies should adopt a more microeconomic approach to better understand how the funds are used in each country and to identify the mechanisms that need to be put in place to make them more useful for economic growth and poverty alleviation.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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