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*Original Article*

# The Impact of Remittances on Economic Growth: Evidence from African countries

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***Abstract:*** *This study uses the panel ARDL model to estimate the relationship between remittances and economic growth in 25 African countries over the period of 1991–2020. Although the effect of remittances on economic growth is insignificant for the entire sample, the study finding shows that remittances have a positive and significant impact on the short-run economic growth in high-GDP per capita countries. This result supports the productive motives hypothesis for the effect of remittances. The study also finds a positive effect of remittances on the long-run economic growth of North African countries and on the short-run economic growth of South African economies. Finally, this study recommends that African policymakers adopt strategies such as pre-departure skill-building for migrant workers, streamlining remittance transfers, and incentivizing diaspora investments to boost the remittance inflows and contributions to their economies.*

***Keywords:*** *Remittances, Economic growth, Panel ARDL, Africa.*

## I. INTRODUCTION

The lack of domestic capital is a significant impediment to economic growth in developing countries. In these economies, external sources of financing, such as foreign direct investment and international trade, play a crucial role in supporting investment activities and serve as a catalyst for economic growth (Borensztein et al., 1998; Zahonogo, 2016). Similarly, most African states struggle to achieve the desired level of economic development due to the lack of domestic capital and are forced to attract funds from overseas. One of the significant external sources of capital in Africa is remittances and money transfers sent from abroad.

According to the World Bank (2018), remittances have become an important source of foreign currency and financing for most developing economies that demonstrate relatively stable and continuous growth over time. During the period between 2015 and 2021, remittance flows consistently increased from $447 billion to $597 billion in low- and middle-income countries and from $42 billion to 50 billion in sub-Saharan African countries (World Bank 2022). Despite the growing academic interest in the relationship between remittances and economic growth, the findings in the prior literature are mixed and remain inconclusive. Intuitively, growing remittances are expected to have a significant effect on the economic growth of the recipient country. Remittances may substitute inefficient credit markets by helping local entrepreneurs bypass the lack of collateral or high lending costs and start productive activities (Guiliano and Ruiz-Arranz 2009). Conditional on financial development, remittances can allocate more resources to productive projects and promote economic growth. Therefore, fluctuations in remittances are likely to impact the economic growth of the remittance recipient country significantly.

According to the productive motive's hypothesis, migrants prefer to increase their remittances when they observe growing economic opportunities back in their country of origin. Consistent with this hypothesis, several studies show that remittances support economic growth by easing access to capital and relaxing financial constraints both at macro and micro levels (Fayissa and Nsiah, 2010; Olayungbo and Quadr 2019; Ekanayake and Moslares 2020; Pal et al. 2022; Jawaid and Raza, 2012; Sutradhar, 2020; John et al. 2020; Nyasha and Odhiambo, 2020).

On the other hand, according to the altruism hypothesis, remittances may reflect the altruistic motivations of migrants who are willing to support their country, especially during economic downturns (Adekunle et al., 2022). Emigrants may specifically support their family members and relatives to minimize the effects of economic hardship. In this case, remittances do not incentivize productive economic factors, especially in countries with low absorptive capacity, and do not lead to economic growth. Consistent with this hypothesis, several studies find a negative relationship between remittances and economic growth (Jawaid and Raza 2012; Sutradhar 2020).

Considering the recent growth of remittances flows to Africa and mixed results in the prior literature, we are interested in examining the causal link between remittances and economic growth in African nations. We use a panel ARDL estimation

model on a sample from 25 African countries from 1991 to 2020. We control for other financing sources to isolate the effect of remittances on economic growth in Africa. We find that remittances have a positive and statistically significant effect on the long-run economic growth of North African countries and on the short-run economic growth of South African countries. Further analysis indicates that remittances lead to economic growth in countries with high GDP per capita, which supports the productive motives behind remittances. However, the effect is statistically significant only in the short run. This finding is consistent with Adekunle et al. (2022) that the effect of remittances on economic growth fades away quickly. We also find that across the regions of Africa, at least three-quarters of short-term misalignments in economic growth are corrected within a year.

## II. RESEARCH METHODOLOGY

This research collects a macroeconomic panel dataset from World Bank indicators for 25 African countries ranging from 1991 to 2020. The study specifies the following benchmark regression model for our study.

$$RGDPG_{i,t} = f(Remitt_{i,t}, FDI_{i,t}, Aid_{i,t}, EXC_{i,t}, Openness_{i,t}, DSI_{i,t}, M2_{i,t}) \quad 1$$

The dependent variable is economic growth proxied by the annual growth rate of real GDP ($RGDPG_{i,t}$). The explanatory variables are personal remittances received scaled by GDP ($Remitt_{i,t}$), foreign direct investment net inflows, scaled by GDP ($, FDI_{i,t}$), net ODA received per capita ($Aid_{i,t}$), official exchange rate ( $EXC_{i,t}$), trade ($Openness_{i,t}$), domestic saving rate ($DSI_{i,t}$), and broad money scaled by GDP ($M2_{i,t}$).

The study uses Levin et al. (LLC, 2002), Im et al. (IPS, 2003), and Augmented-Dickey Fuller (ADF, 1979) panel root test to check the stationarity of variables. In addition, we apply the cointegration test to see the long-run causal relationship between the variables. The study specifies the following panel ARDL model to estimate the long-run and short-run relationship between our study variables.

$$RGDPG_{i,t} = \sum_{\mathrm{j}=1}^{\mathrm{p}} \sigma_{i,j}\, RGDPG_{i,t} - \mathrm{j} + \sum_{\mathrm{j}=0}^{\mathrm{q}} \beta_{i,j}\, \mathrm{X_{i,t}} - \mathrm{j} + \varphi_i + \varepsilon_{i,t} \quad 2$$

Where X is a set of explanatory ($Remitt$, FDI, Aid, EXC, openness, DS and M2); $\sigma_{i,j}$ is the coefficient of lagged economic growth, $\beta_{i,j}$is the coefficient of the regressors. i=1, 2……, N: t=1, 2……., T: p q is the optima lag order: $\varepsilon_{i,t}$ is the error term. We specify the error correction model for the re-parameterized panel ARDL (p, q, q . . . . . q) as follows:

$$\Delta \mathrm{RGDPG_{i,t}} = \theta i(Y_{i,t} - 1 - \gamma_i X_{i,t}) + \sum_{j=1}^{p-1} \sigma_i\ \Delta \mathrm{RGDPG}_{i,t} - \mathrm{j} + \sum_{j=0}^{q-1} \omega_i\ \Delta \mathrm{X}_{i,t} - \mathrm{j} + \varphi_i + \varepsilon_{it} \quad 3$$

Where $\theta i$ represents the coefficient of the speed of adjustment to the long-run status, $\gamma i$ is the vector of long-run relationships, $Y_{i,t} - 1 - \gamma_i X_{i,t}$ is the error correction term; $\sigma i$ and $\omega i$ are short-run dynamic coefficients, and $\varphi i$ is the fixed effect.

## III. RESULTS AND DISCUSSION

### *A) Unit root test and cointegration test*

The study provides the unit root test results in Table 1 and confirms the stationarity of variables at I (0). The results confirm that the variables are suitable for the use of the panel ARDL model in our study.

Table 1. Unit root test

| variable | TEST | LLC | IPS | Fisher (ADF) | status |
|---|---|---|---|---|---|
| RDGP | At level | -3.4102 *** | -10.2772 *** | 28.4751 *** | I (0) |
| Remittance | At level | -4.5461 *** | -4.8449 *** | 2.9769 *** | I (0) |
| FDI | At level | -2.7499 *** | -8.6607 *** | 15.8499 *** | I (0) |
| Aid | At level | -1.5740 ** | -6.7200 *** | 6.1036 *** | I (0) |
| Log Exchange rate | At level | -4.3684 *** | -4.2573 *** | 4.1727 *** | I (0) |
| Trade openness | At level | -1.8434 ** | -4.2928 *** | 3.0631 *** | I (0) |
| Domestic saving | At level | -2.2497 ** | -6.2948 *** | 6.8485 *** | I (0) |
| Broad money | At level | -4.1133 *** | -4.0105 *** | 1.5972 *** | I (0) |

Where ***, **, * represents the 1%, 5%, and 10% level of significance, respectively.

***Source:*** *Authors computation (2024) using EViews.*

The study also performs the Johansen (1988) and Kao (1999) residual panel cointegration tests in Table 2 to estimate the relationship among the study variables and confirm that there is a cointegration relationship among the study variables at the 1% and 5% significance levels.

**Table 2. Cointegration test**

| Johansen Fisher Panel Cointegration Test | | | | | Kao Residual Cointegration Test | | |
|---|---|---|---|---|---|---|---|
| **Hypothesized No. of CE(s)** | **Fisher Stat.* (From trace test)** | **Prob.** | **Fisher Stat.* (From max-eigen test)** | **Prob.** | | **t-Statistic** | **Prob.** |
| None | 1563. | 0.0000 *** | 758.4 | 0.0000 *** | ADF | -5.548743 | 0.0000 *** |
| At most 1 | 701.6 | 0.0000 *** | 381.4 | 0.0000 *** | Residual variance | 30.97202 | |
| At most 2 | 392.5 | 0.0000 *** | 212.5 | 0.0000 *** | HAC variance | 8.163782 | |
| At most 3 | 213.9 | 0.0000 *** | 115.7 | 0.0000 *** | | | |
| At most 4 | 127.9 | 0.0000 *** | 71.91 | 0.0228 *** | | | |
| At most 5 | 84.14 | 0.0018 *** | 50.92 | 0.4371 | | | |
| At most 6 | 67.27 | 0.0520 * | 57.04 | 0.2298 | | | |
| At most 7 | 65.41 | 0.0706 * | 65.41 | 0.0706 * | | | |

Where ***, **, * represents the 1%, 5%, and 10% level of significance, respectively.

***Source:*** *Authors computation (2024) using EViews.*

### *B) Estimation results of short-term and long-term panel ARDL model*

In Table 3, the study reports the results for the long-run and short-run relationship between remittances and economic growth in Africa using Pooled Mean Group (PMG) estimators. The optimal lag length of our panel ARDL is equal to one year for all variables based on the Schwarz criterion (SIC) model selection method. The study finds that remittances have a positive (negative) effect on short-run (long-run) economic growth; however, these effects are statistically insignificant. It is possible that the effect of remittances is offset by other control variables, and regional differences may play a significant role. In addition, the transaction costs associated with remittances, the low absorptive capacity of the economy, and the cross-country differences in economic development may diminish the significance of the impact of remittances on the economy. The study also finds that the error correction term is negative and statistically significant, indicating that 71% of the short-term misalignment in economic growth is corrected within a year. This finding indicates the volatile nature of economic activities

**Table 3. Remittances and economic growth in Africa using PMG estimation.**

| **Variables** | **Long-run model** | | **Variables** | **Short-run model** | |
|---|---|---|---|---|---|
| **D1. RGDPG** | **Coefficient** | **P-value** | | **Coefficient** | **P-value** |
| ECT | | | ECT | -0.7095*** | (0.000) |
| Remittance | -0.0260 | (0.733) | Remittance D1. | 1.2473 | (0.330) |
| FDI | 0.3216*** | (0.000) | FDID1. | -0.1138 | (0.175) |
| Aid | -0.0064 | (0.265) | Aid D1. | 0.0040 | (0.802) |
| Log Exchange rate | 0.0681 | (0.899) | Log Exchange rate D1. | -3.7251 | (0.267) |
| Trade openness | 0.0387 *** | (0.005) | Trade openness D1. | -0.0243 | (0.562) |
| Saving | 0.0693** | (0.011) | Saving D1. | 0.1678 *** | (0.001) |
| Broad money | -0.0491*** | (0.001) | Broad money D1. | -0.1298** | (0.022) |
| _cons | -0.5498 | (0.167) | | | |

Where ***, **, * represents the 1%, 5%, and 10% level of significance, respectively.

***Source:*** *Authors computation (2024) using EViews.*

### *C) Regional heterogeneity analysis*

In Table 4, the study tests the relationship between remittances and economic growth across the regions, and we confirm that remittances have a positive and significant impact on the long-run economic growth of North African countries and the short-run economic growth of South African countries. The relationship is insignificant for Central, Eastern, and Western Africa regions.

**Table 4. Remittances and economic growth in sub-regional PMG estimation**

| Variables | Central Africa | East Africa | North Africa | South Africa | West Africa |
|---|---|---|---|---|---|
| D.RGDPG | Coef. | Coef. | Coef. | Coef. | Coef. |
| Long-run model | | | | | |
| ECT | | | | | |
| Remittance | 3.2985<br>(0.221) | 0.001<br>(0.997) | 0.2742**<br>(0.029) | -0.3282<br>(0.272) | -0.0507<br>(0.616) |
| FDI | -0.0107<br>(0.872) | 0.534**<br>(0.035) | 0.7012***<br>(0.000) | 0.4182**<br>(0.010) | 0.5264***<br>(0.000) |
| Aid | 0.0195**<br>(0.043) | 0.017<br>(0.339) | -0.0170<br>(0.191) | 0.0022<br>(0.779) | -0.0523***<br>(0.000) |
| Log EXC | 4.4328<br>(0.436) | 3.657**<br>(0.019) | -5.9003***<br>(0.000) | 1.5048<br>(0.135) | -0.6321<br>(0.353) |
| Trade | -0.0410<br>(0.271) | -0.011<br>(0.691) | -0.0904**<br>(0.026) | 0.0205<br>(0.300) | 0.0396*<br>(0.056) |
| Saving | 0.1327***<br>(0.004) | -0.070*<br>(0.056) | -0.0148<br>(0.730) | 0.1578***<br>(0.008) | -0.0643<br>(0.167) |
| M2 | -0.4273***<br>(0.000) | -0.139<br>(0.133) | 0.0407*<br>(0.062) | -0.1175***<br>(0.003) | 0.0420<br>(0.429) |
| Short-run model | | | | | |
| ECT | -0.7894***<br>(0.000) | -0.813***<br>(0.000) | -0.8239 ***<br>(0.001) | -0.7142***<br>(0.000) | -0.7579***<br>(0.000) |
| RemittanceD1. | 8.9211<br>(0.287) | 0.589<br>(0.487) | -0.3275<br>(0.483) | 1.1681**<br>(0.044) | -0.1380<br>(0.727) |
| FDI D1. | -0.1258<br>(0.306) | 0.060<br>(0.792) | -0.4945*<br>(0.056) | 0.1680<br>(0.337) | -0.3839***<br>(0.002) |
| Aid D1. | -0.0044*<br>(0.100) | -0.075**<br>(0.027) | 0.1014<br>(0.175) | -0.0358<br>(0.211) | 0.0563**<br>(0.011) |
| Log EXC D1. | 7.1929***<br>(0.001) | -12.720*<br>(0.062) | 3.5434<br>(0.511) | -14.7294***<br>(0.000) | -1.1374<br>(0.904) |
| Trade D1. | -0.0467<br>(0.304) | -0.056<br>(0.748) | 0.0354<br>(0.494) | 0.0324<br>(0.728) | -0.0213<br>(0.653) |
| Saving D1. | -0.0928***<br>(0.000) | 0.047<br>(0.554) | 0.2907**<br>(0.021) | 0.0497*<br>(0.062) | 0.3294 ***<br>(0.004) |
| M2 D1. | 0.6180***<br>(0.000) | -0.247**<br>(0.031) | -0.1274<br>(0.121) | -0.1164<br>(0.177) | -0.2444***<br>(0.003) |
| _cons | -5.4473***<br>(0.000) | -3.407***<br>(0.006) | 5.4850**<br>(0.011) | -0.6244<br>(0.352) | 1.7352***<br>(0.003) |

Where ***, **, * represents the 1%, 5%, and 10% level of significance, respectively.

***Source:*** *Authors computation (2024) using EViews.*

### *D) Productive resources effect*

In this section, the study tests whether the effect of remittances on economic growth is driven by productive motives or altruistic intentions of migrants. We split the sample based on countries with low GDP per capita and high GDP per capita and examined the relationship between remittances and economic growth. We find (Table 5) a significant and positive impact of remittances on the short-run economic growth in high-GDP per capita countries. In contrast, the effect of remittances on economic growth is negative but statistically insignificant in low-GDP per capita countries. These findings provide evidence to support the productive motives hypothesis of the relationship between remittances and economic growth. However, the results also indicate that the impact of remittances on economic growth is short-lived, which is consistent with (Adekunle et al. 2022).

Table 5. Remittances and economic growth in low and high GDP per capita

| Variables | Low GDP per capita | | High GDP per capita | |
|---|---|---|---|---|
| D.RGDPG | Coefficient | p-value | coefficient | p-value |
| Long-run model | | | | |
| Remittances | 0.3476 | (0.123) | -0.0907 | (0.476) |
| FDI | -0.0125 | (0.910) | 0.0265 | (0.795) |
| Aid | 0.0116 | (0.544) | -0.0153 | (0.096) |
| Log EXC | -0.8327 | (0.259) | 2.2346*** | (0.000) |

| | | | | |
|---|---|---|---|---|
| Trade | -0.0043 | (0.878) | 0.0299 * | (0.094) |
| Saving | 0.0287 | (0.668) | -0.0622* | (0.111) |
| M2 | -0.1677*** | (0.000) | -0.0650** | (0.011) |
| Short-run model | | | | |
| ECT | -0.7078*** | (0.000) | -0.8418*** | (0.000) |
| Remittances D1 | -0.3610 | (0.257) | 0.3063** | (0.042) |
| FDI D1. | 0.0197 | (0.758) | 0.0058 | (0.932) |
| Aid D1. | -0.0149 | (0.309) | 0.0119** | (0.051) |
| Log EXC D1. | 1.3072 | (0.471) | -0.3015 | (0.870) |
| Trade D1. | -0.0767** | (0.025) | -0.0099 | (0.611) |
| saving D1. | -0.0213 | (0.698) | 0.0420 | (0.285) |
| M2 D1. | 0.0600* | (0.056) | 0.0113 | (0.777) |
| _cons | 2.3635 | (0.277) | 2.4096* | (0.095) |

Where ***, **, * represents the 1%, 5%, and 10% level of significance, respectively.

***Source:*** *Authors computation (2024) using EViews.*

## IV. CONCLUSION

This study employs a panel ARDL model to examine the relationship between remittances and economic growth in African countries. The findings suggest that remittances and economic growth in Africa have a cointegration relationship in the long run. The relationship between remittances and economic growth is statistically insignificant for the entire sample. However, the study found that remittances significantly promote long-run economic growth in North African countries and short-run economic growth in South African countries. Lastly remittances positively drive the short-run economic growth of high GDP-per-capita countries. This finding confirms that remittances with productive motives support economic growth significantly.

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