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Remittances and growth in Africa: Does financial development and institutional quality matter?

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Abstract

This paper examines the influence of financial development and institutional quality in the relationship between remittances and economic growth for African countries over the period 2000-2020. By using a dynamic panel threshold model, the results show that there is a statistically positive relationship between remittances and economic growth above the threshold of 5.86%, above which remittances increase economic growth in African countries. This paper supports the view that remittances have a positive effect on growth only when the financial sector is strong and when there is a good institutional quality

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1. Introduction

The classical and neoclassical tradition did not pay particular attention to human capital as a potential contributor to economic growth. In the 1980s, the seminal work of Romer (1986) and Lucas (1988) revolutionised neoclassical economic growth theory by presenting models of endogenous growth. These new neoclassical theories place the emphasis not on the direct sources of economic growth, but on the mechanisms and incentives linked to the actual dynamics of growth. One of the most distinctive features of the 'new' growth theories has been the increasing importance attributed to human capital, productive knowledge and the interaction between these two factors (Lucas 1988, and Mankiw 1995). In terms of regulations, these authors have given high priority to human capital and the accumulation of knowledge. Unfortunately, however, there are not many opportunities for skilled workers and, as a result, many of them prefer to move to other countries in order to improve their living conditions and those of their families. It is this movement of labour that is generally associated with the term "international migration", and the remittances sent home by migrants are the focus of our study. Interest in the subject of remittances and economic growth is not new. As far back as 1994, the International Conference on Population and Development (ICPD) concluded that it was better to control international migration in order to maximise its benefits and minimise its drawbacks.

Migrant remittances are the remittances of goods or financial assets made by migrants living and working in another economy, to residents of their former country of residence (IMF 2010). These funds cover personal transfers, compensation of employees and capital transfers between households. In addition, they constitute additional sources of financing for economic development and thus help to overcome liquidity constraints in the least developed countries. Disagreements, points of departure and differences exist among empirical studies on the remittances-growth nexus. There are over 287 million migrants in the world today. Many of them regularly send money to the families they leave behind, because they know what a difference this economic support can make. The money they send - remittances - has a powerful impact not only on the individuals and families who receive it, but also on entire economies, contributing significantly to the GDP of many developing countries. In fact, remittances have overtaken foreign direct investment as a source of finance for low- and middle-income countries since 2015, reaching \$669 billion last year (Ratha et al. 2023a).

The literature on the contribution of remittances to development falls into two camps: optimists and skeptics. Four groups emerge on these two fronts. First, Remittances contribute positively to economic growth (Golder et al. 2023, Imai et al. 2014, and Lartey 2013). Second remittances negatively affect economic growth (Roy 2023, and Nyamongo et al. 2012). Third, there is no relationship between remittances and economic growth (Ofori et al. 2023, Cazachevici et al. 2020, and Konté 2018). And fourth, Remittances only contribute to economic growth under certain conditions such as financial development and institutional quality (Islam and Alhamad 2022, Kadozi 2019 and Sobiech 2019). Chami et al. (2018) are, perhaps, the main skeptics of remittances, claiming that remittances show no clear positive link to faster economic growth.

The first reduced study, by Chami et al. (2005), analysing the effects of workers' remittances on economic growth in 113 countries over the period 1970-1998 develops a model of remittances based on the economics of the family. They found that whereas domestic investment and private capital flows were positively related to growth, the ratio of workers' remittances to GDP either was statistically insignificant or was negatively related to growth. This indicates that remittances may not be intended to serve as a source of capital for economic development. A key empirical question addressed by Barajas et al. (2009) is

whether remittances promote economic growth in the long term. The results show that, at best, workers' remittances have no impact on economic growth.

Clemens and McKenzie (2018) confirmed that macroeconomic studies have difficulty detecting the effect of remittances on economic growth. They have shown that migration and remittances have a clearly significant impact on poverty, migrant households' welfare and global Gross Domestic Product (GDP), but there are important challenges in detecting the impact of remittances on economic growth. Based on the economic complexity index as an indicator of the amount of productive knowledge embedded in each country and the stocks of bilateral migrants from 20 OECD destination countries, Valette (2018) finds that international migration is a powerful channel of technological transmission. His empirical results show that technology transfers are more likely to occur from more technologically advanced destinations and when emigration rates are particularly high. The empirical findings of Saadi (2020) in a sample of developing countries observed from 2002 to 2014, reveal that remittances in general and remittances used for investment purposes are positively linked to export complexity across a range of model specifications and estimation strategies.

Previous empirical studies were limited to the linear relationship between remittances and economic growth. Following an in-depth analysis of previous research, the non-linear link between remittances and growth for the African countries has not been previously studied. Therefore, to fill this gap in the literature, we propose in this paper to determine the optimal level of remittances, which once attained, will make economic growth increase with remittances in African countries. Does the quality of institutions and financial development influence the relationship remittances-growth? Unlike previous studies, we use the dynamic panel threshold model proposed by Sea and Shin (2016) and developed by Seo et al. (2019).

The rest of the paper is organised as follows: the next section outlines the methodology. We present the results and discussion in Section 3, and the conclusion and policy recommendations in Section 4.

3. Methodology

3.1. Data and variables

The empirical analysis is based on annual data of 1092 observations for 52 African countries spanning the period 2000–2020. The selection of our variables was suggested by previous studies such as Golder et al. (2023), Saidi and Ochi (2023), Ofori et al. (2023), Gnangnon (2022), and Islam and Alhamad (2022). All variables are collected from the World Bank Development Indicators (WDI 2023), Worldwide Governance Indicators (WGI 2023) and International Monetary Fund (IMF 2023) database. The endogenous variable used in this study is economic growth. As indicator of the threshold variable, we use remittances inflows. The measures of the variables, their symbols and their sources are presented in Table 1.

Table 1. Variables and their measures

| Variables | Source | Symbol | Measures |
|---------------|--------|--------|---|
| Economic | WDI | Growth | Economic growth is measured by the annual GDP per |
| growth | (2023) | | capita growth rate (%) |
| remittances | WDI | RI | RI is measured as total personal transfers and |
| inflows | (2023) | | compensation of employees as a percentage of GDP |
| Financial | IMF | FD | FD is a composite index of country's relative rank of its |
| development | (2023) | | "financial market and institutions" on their "depth, |
| index | | | access and efficiency". (on a scale of 0-1) (<0.5 : less |
| | | | developed financial sector; ≥0.5 more developed |
| | | | financial sector) |
| Foreign | WDI | FDI | FDI is measured as total FDI inflow as a percentage of |
| direct | (2023) | | GDP |
| investment | | | |
| Domestic | WDI | GCF | GCF is measured by Gross capital formation as a |
| Investment | (2023) | | percentage of GDP |
| Institutional | WGI | IQ | IQ is measured as the average of six indicators: control |
| quality | (2023) | | of corruption, government effectiveness, political |
| | | | stability, regulatory quality, rule of law, voice and |
| | | | accountability $(-2.5 = \text{bad IQ to } 2.5 = \text{good IQ}).$ |

Table 2 provides detailed descriptive statistics on the data used in this analysis over the research period.

Table 2. Summary statistics

| | Table 2. Summary statistics | | | | | | | | |
|----------|-----------------------------|--------|----------|---------|---------|--|--|--|--|
| Variable | Obs | Mean | Std. Dev | Min | Max | | | | |
| Growth | 1092 | 1.932 | 6.617 | -62.378 | 121.779 | | | | |
| RI | 1092 | 3.079 | 5.427 | 0 | 53.826 | | | | |
| FD | 1092 | 0.142 | 0.109 | 0 | 0.643 | | | | |
| FDI | 1092 | 4.510 | 8.215 | -8.703 | 103.667 | | | | |
| GCF | 1092 | 22.286 | 9.134 | 0.292 | 79.461 | | | | |
| IQ | 1092 | -0.633 | 0.597 | -2.1 | 0.853 | | | | |
| TO | 1092 | 78.760 | 54.960 | 2.187 | 454.732 | | | | |

The mean of remittances inflows over the study period is 3.097% with a minimum of 0 % for South Sudan in 2008 and a maximum of 53.826 % for Lesotho in 2000. The FD registered an average value of 0.142 with a maximum value of 0.643 % relative to South Africa in 2018 and a minimum value of 0 relative to South Sudan in 2020. The IQ registered an average value of -0.632 with a minimum of -2.1 for Democratic Republic of the Congo in 2000 and a maximum of 0.853 for Mauritius in 2015. The majority of selected countries suffer from low Institutional quality, which is not expected to contribute to improving their economic growth. The GDP, FDI, GCF and TO registered on average a value of 1.93%, 4.51%, 22.28% and 78.76% respectively.

Table 3. Correlation Matrix and VIF multicollinearity test

| Variable | GDP | RI | FD | FDI | GCF | IQ | Variable | VIF | 1/VIF |
|----------|-------|-------|-------|-------|-------|-------|----------|------|-------|
| Growth | 1.000 | | | | | | Growth | 1.79 | 0.558 |
| RI | 0.016 | 1.000 | | | | | RI | 1.07 | 0.931 |
| FD | 0.046 | 0.002 | 1.000 | | | | FD | 1.69 | 0.592 |
| FDI | 0.118 | 0.064 | 0.002 | 1.000 | | | FDI | 1.14 | 0.880 |
| GCF | 0.126 | 0.028 | 0.151 | 0.273 | 1.000 | | GCF | 1.21 | 0.825 |
| IQ | 0.093 | 0.166 | 0.623 | 0.009 | 0.247 | 1.000 | IQ | 1.79 | 0.558 |
| | | | | | | | Mean VIF | 1.35 | |

Table 3 presents the different correlation coefficients for the explanatory variables of economic growth. It appears, that the levels of correlation are very lower and the VIF values for all variables are of the order of 1, which justifie the absence of multicollinearity.

3.1. Dynamic panel threshold model

This study is based on the hypothesis that remittances will have a non-linear impact on economic growth for an optimal level of remittances relative to GDP. To detect this potential non-linear relationship, we apply the first-differenced generalized method of moments estimation (FD-GMM Estimator) of the dynamic panel threshold model proposed by Seo and Shin (2016), and further improved by Seo et al. (2019), who extended Hansen's PTR model (1999). We consider the following dynamic panel threshold regression model:

$$y_{it} = (1, x_{it}') \, \beta_1 I(q_{it} \leq \gamma) + (1, y_{it}') \, \beta_2 I(q_{it} > \gamma) + \varepsilon_{it} \, (1)$$

 $\{i=1,\ldots,n;\ t=1,\ldots,T_{,}\}$ Where N and T denote the cross-sections and time dimensions of the panel, respectively, i represents the country, t represents different time, $\varepsilon_{it}=\mu_i+\theta_{it}$ is the error components, where μ_i is an unobserved individual fixed effect and θ_{it} is a zero mean idiosyncratic random disturbance. In particular, θ_{it} is assumed to be a martingale difference sequence, $E(\theta_{it}|F_{t-1})=0$, where F_t is a natural filtration at time t.

We consider the following augmented dynamic growth model:

 $Growth_{it} = \beta_1 Growth_{it-1} + \alpha_1 RI_{it} + \alpha_2 FD_{it} + \alpha_3 IQ_{it} + \alpha_4 FDI_{it} + \alpha_5 GCF_{it} + \varepsilon_{it}$ (2) We then extend (2) into the dynamic panel data framework with threshold effects.

$$Growth_{it} = (\beta_1 Growth_{it-1} + \alpha_{11} RI_{it} + \alpha_{21} FD_{it} + \alpha_{31} IQ_{it} + \alpha_{41} FDI_{it} + \alpha_{51} GCF_{it})I(q_{it} \leq \gamma) + (\beta_2 Growth_{it-1} + \alpha_{12} RI_{it} + \alpha_{22} FD_{it} + \alpha_{32} IQ_{it} + \alpha_{42} FDI_{it} + \alpha_{52} GCF_{it})I(q_{it} > \gamma) + \mu_i + \theta_{it} \quad (3)$$

where I(.) is an indicator function, q_{it} the transition variable and γ the threshold parameter that divides equation (1) into regimes with coefficients α_1 and α_2 . We estimate (3) by the proposed FD-GMM, which allows for both (contemporaneous) regressors and the transition variable to be endogenous. On the other hand, existing studies (e.g. Hansen, 1999; González et al., 2005) employ the lagged values of RI ,FD, IQ, FDI and GCF to avoid the potential problem of endogenous regressors and transition variable.

3.2. Testing for threshold effects

To test for linearity or the presence of the threshold effects, we consider the null hypothesis of no threshold effect :

$$H_0 = \delta_0$$
 for any $\gamma \in \Gamma$

Where Γ denotes the parameter space for γ , against the alternative hypothesis

$$H_1 \neq \delta_0$$
 some $\gamma \in \Gamma$

Then, a natural test statistic for the null hypothesis, H_0 is:

$$\sup W = \sup_{\gamma \in \Gamma} W_n(\gamma)$$

where $W_n(\gamma)$ is the standard Wald statistic for each fixed γ , that is

$$W_{n}(\gamma) = n\hat{\gamma}(\gamma)' + \sum_{\delta} \widehat{(\gamma)^{-1}} \widehat{\delta(\gamma)}$$

Where $\widehat{\delta(\gamma)}$ is the FD-GMM estimate of δ , given γ , and $\Sigma_{\delta}(\gamma)$ is the consistent asymptotic variance estimator for $\widehat{\delta(\gamma)}$, given by $\widehat{\Sigma}_{\delta}(\gamma) = R(\widehat{V}_{\delta}(\gamma)\widehat{V}_{\delta}(\gamma))^{-1}R'$ is a consistent asymptotic variance estimator, where $R = 0_{(k_1+1)*k_1}, I_{k_1+1}$.

4. Empirical results and discussion 4.1. Panel unit root test

All asymptotic theories for threshold panel models are applied to stationary regressors. For this reason, the threshold specification procedures for dynamic panels are based on the hypothesis that all the variables in equation (3) are I (0) stationary in level.

Table 4. Panel-data unit-root tests

| Tuble 4. Lunci data dini 100t tests | | | | | | | | |
|-------------------------------------|------------|------------|------------------------|----------|-------------------|----------|--|--|
| | | First gene | Second generation test | | | | | |
| Variavles | Levin, Li | n, and Chu | Im, Pesaran, and Shin | | Pesaran test CIPS | | | |
| | LLC (2002) | | IPS (2003) | | (2007) | | | |
| | statistic | prob | statistic | prob | statistic | prob | | |
| Growth | -8.561 | 0.000*** | - | 0.000*** | -10.011 | 0.000*** | | |
| | | | 12.700 | | | | | |
| RI | -1.804 | 0.035** | -1.730 | 0.000*** | -1.988 | 0.023** | | |
| FD | -3.282 | 0.000*** | -1.626 | 0.002*** | 1.386 | 0.006*** | | |
| FDI | -5.982 | 0.000*** | -8.700 | 0.000*** | -8.310 | 0.000*** | | |
| GCF | -5.319 | 0.000*** | -2.251 | 0.012** | -3.718 | 0.000*** | | |
| IQ | -4.742 | 0.000*** | -1.311 | 0.094* | 1.677 | 0.050** | | |

p-value: * p < 0.1; ** p < 0.05 and *** p < 0.01.

Results of panel unit root tests are reported in Table 4. Both types of tests reject the null hypothesis of non-stationary which indicates that all the variables are I(0) stationary in level.

4.2. Dynamic panel threshold estimation

Table 5 summarizes the estimation results for the dynamic threshold model of growth, (3), with remittances inflows, financial development and Institutional quality used as the transition variable. The FD-GMM estimation results are reported respectively in the low and the upper regimes. The low regime refers to values of independent variables below the threshold parameter and the upper regime refers to values of independent variables above the threshold parameter.

When remittances is used as the transition variable, the results for (3) show that the threshold estimate is 5.86% such that about 79% of observations fall into the lower remittances regime. The coefficient on lagged growth is significantly higher for countries with high remittances, suggesting that the accelerator effect of growth is stronger for countries with high remittances RI > 5.86%. The coefficient on remittances reveals an expected finding that below the threshold of 5.86%, there is no significant effect of remittances on economic growth in African countries. The positive and significant impact of remittances on economic growth would begin to manifest once RI reaches a threshold level of 5.86%. When the value of RI exceeds the threshold of 5.86%, an increase of 1% of remittances inflows increases economic growth by 9.8%. If remittances received increase and exceed the rate of 5.86% of GDP, these funds received will help beneficiary households to create or develop a productive activity, which will have positive effects on the country's economic growth. In addition, above this threshold, remittances reduce poverty, improve nutritional outcomes and are associated with higher birth weights and higher school enrolment rates for children from disadvantaged households. Remittances therefore generate human capital, which is an important factor of economic growth. Next, the results indicate that there is no significant relationship between FD, IQ and economic growth in the upper and lower remittances regimes. Finally, the findings show that only in the upper regime there is a positive and significant relationship between FDI, GCF and economic growth. When the value of remittances exceeds the threshold of 5,86%, an increase of 1 % of FDI and GCF increases economic growth by 9.3 % and 8.5 %, respectively.

Table 5. A dynamic threshold panel data model of growth

| | Remittances | | Financial de | velopment | Institutional quality | | |
|--|-------------|------------|--------------|------------|-----------------------|------------|--|
| Variables | Coefficient | t-tatistic | Coefficient | t-tatistic | Coefficient | t-tatistic | |
| Lower regime α | 1 | | | | | | |
| Growth -1 | 0.017 | 2.13** | 0.116 | 2.10** | 0.123 | 3.27*** | |
| RI | 0.069 | 1.08 | 0.135 | 0.58 | 0.075 | 1.41 | |
| FD | -0.031 | -0.83 | 0.057 | 1.20 | -0.155 | -0.33 | |
| IQ | -0.061 | -0.17 | -0.203 | -0.60 | -0.064 | -0.51 | |
| FDI | 0.029 | 1.16 | 0.055 | 1.27 | 0.055 | 1.27 | |
| GCF | 0.016 | 0.62 | 0.031 | 0.49 | 0.023 | 1.18 | |
| Upper regime α_2 | 2 | | | | | | |
| Growth -1 | 0.484 | 6.83*** | 0.594 | 27.05*** | 0.378 | 14.94*** | |
| RI | 0.098 | 3.79*** | 0.289 | 2.24** | 0.251 | 2.01** | |
| FD | 0.020 | 1.41 | 0.304 | 1.98** | 0.488 | 7.08*** | |
| IQ | 0.079 | 0.83 | 0.143 | 1.66* | 0.547 | 2.44** | |
| FDI | 0.093 | 1.71* | -0.247 | -2.14** | 0.259 | 1.78* | |
| GCF | 0.085 | 1.86* | 0.318 | 2.03** | 0.168 | 1.74* | |
| Difference δ | | | | | | | |
| Growth -1 | 0.467 | 4.04*** | 0.478 | 13.22*** | 0.255 | 4.52*** | |
| RI | 0.029 | 2.27** | 0.154 | 1.99** | 0.176 | 1.68* | |
| FD | 0.051 | 0.89 | 0.247 | 1.54 | 0.643 | 1.66* | |
| IQ | 0.140 | 0.99 | 0.346 | 1.06 | 0.611 | 1.69* | |
| FDI | 0.294 | 1.71* | -0.302 | -1.72* | 0.204 | 1.54 | |
| GCF | 0.175 | 1.41 | 0.287 | 1.41 | 0.145 | 1.66* | |
| Threshold | 5.86 | (5.43)*** | 0.12 | (3.17)*** | -1.04 | (9.91)*** | |
| Upper regime | 21.1 | 12 | 24.33 | | 20.09 | | |
| (%) | | | | | | | |
| Linearity | (0.000)*** | | (0.000)*** | | (0.000)*** | | |
| (p-value) | | | | | | | |
| J-test | 72 | | 78 | | 76 | | |
| (p-value) | (0.003)*** | | (0.001 | (0.001)*** | | (0.005)*** | |
| Observations | 1092 | | 109 | 1092 | | 1092 | |
| $n \text{ volume} * n < 0.1 \cdot ** n < 0.05 \text{ and } *** n < 0.01$ | | | | | | | |

p-value: * p < 0.1; ** p < 0.05 and *** p < $\overline{0.01}$.

When the financial development is used as the transition variable, the threshold parameter is estimated at 0.12, with more than 75% of observations falling into the lower financial development regime. The coefficient on lagged growth is significantly for lower and upper regime, but past growth has a much higher positive impact on current growth for upper financial development regime than the lower regime. It should be noted, according to the results of our estimates, that there is no significant impact of remittances on economic growth in the lower financial development regime. Whereas, for the higher financial development regime, remittances are positively correlated with economic growth and are statistically significant at the 5% significance level. The rest of the variables have positive and significant effects only in the higher financial development regime. A well-developed financial system plays a fundamental role in monitoring financial flows and channelling savings. It facilitates diversification and risk management by reducing liquidity risks, and facilitates the allocation of financial resources to productive investments. In this regard, financial development may encourage remittance recipients to invest part of their remittances in economic activities (Gnangnon, 2023). We therefore consider that an improvement in the level of financial development stimulates investment-oriented remittance inflows and subsequently improves economic growth.

When using institutional quality as the transition variable, the threshold is estimated at 1.04 with 80% of observations falling into the lower institutional quality regime. The past growth has a highly strong positive effect on current growth in the both regimes of institutional quality. The results show that below the threshold of -1.04, there is no significant impact of remittances on economic growth in African countries. The positive and significant effect of remittances on economic growth would begin to manifest once institutional quality reaches a threshold level of -1.04. The results show that the positive and significant impact of all the explanatory variables on economic growth becomes apparent once institutional quality reaches a threshold level of -1.04.

In order to verify the validity of the final specifications employed above, we also make reference to the results of the tests for the absence of threshold effects and the validity of the overidentifying moment conditions in Table 5. First, we find that the bootstrap p-values of the supW test are all close to zero, providing strong evidence in favor of threshold effects. Next, the J-test results indicate that the null of valid instruments is not rejected for the cases with the remittances, financial development and the institutional quality used as the transition variable. The empirical method used in this investigation to check the robustness of our estimation is the Generalized Method of Moments (GMM) with orthogonal forward deviations (Asongu et al. 2017; Asongu and Acha-Anyi, 2019; Tchamyou et al. 2019). The estimated results from system-GMM estimates are reported in Table 6.

Table 6. Estimation results of system-GMM

| Variables | Coefficient | | Prob. |
|---------------------------------|----------------|------------|----------|
| Growth -1 | 0.948 | | 0.000*** |
| RI | 0.203 | | 0.082* |
| FD | 0.088 | | 0.240 |
| IQ | -0.086 | | 0.033** |
| FDI | 0.077 | | 0.318 |
| GCF | 0.059 | | 0.182 |
| _cons | | | |
| AR (1) | | 0.654 | |
| AR (2) | | 0.722 | |
| Hansen OIR | | 0.788 | |
| Sargan OIR | | 0.067 | |
| DHT for instrument (a) Instrume | ents in levels | | |
| H excluding group | | 0.756 | |
| Dif(null, H = exogenous) | | 0.732 | |
| (b) IV (years, eq (diff)) | | | |
| H excluding group | | 0.842 | |
| Dif (null, $H = exogenous$) | | 0.556 | |
| Fisher | | 524,712*** | |
| Instruments | | 46 | |
| Countries | | 52 | |
| Observations | | 1092 | |

^{*} p < 0,1; *** p < 0,05 and **** p < 0,01 (P-values) are in parenthesis. DHT: Difference in Hansen Test for Exogeneity of Instruments' Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients and the Wald statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) & AR(2) tests and; b) the validity of the instruments in the Sargan and Hansen OIR tests. Sargan p value must not be less < 5% and > 10%. H0: over identifying restrictions are valid. For Sargan's test, p value = 8%, we accept the Ho; that is, all instruments are valid.

There are several main reasons for choosing this technique: First, the number of countries (N = 52) is higher than the number of periods in each cross section (T = 21 years). Second, the economic growth variable is persistent because its respective correlation with its first lag is higher than 0.800 which is the rule of thumb for establishing persistence (0.948). Third, the GMM technique which uses a panel data structure does not eliminate cross-country variations.

According to Table 6, it is noted that the signs of all coefficients in the estimate of the sample are consistent with those of the dynamic threshold regression estimates. Furthermore, the results show that there is no autocorrelation in our System-GMM estimate, which means that our result is not biased.

In order to investigate the influence of the portion of remittance inflows that is used as investment in domestic economic activities, it would be more relevant to include an additional estimation using a new variable that combines data on remittances and domestic investment rates, referred to as 'investment-oriented remittance' inflows. Therefore, in the following, we will re-estimate the model using the variable 'investment-oriented remittances (RINV)' inflows instead of 'remittances inflows'.

The variable 'RINV' is the share of investment-oriented remittance inflows in GDP. It is not expressed in percentage. It is measured by the share of total remittances received by a given country (in a given year) in GDP, multiplied by the annual investment rate (investment as a share of GDP, not expressed in percentage) (see Gnangnon 2023, Le and Bodman 2011, Saadi 2020). Total remittances received in GDP collected from the from the World Development Indicators (WDI) and Data on the annual investment rates (investment as a share of GDP) are drawn from the Penn World Table (version 10.01). Table 7 summarizes the estimation results for the dynamic threshold model of growth, (3), with 'investment-oriented remittances' used as the transition variable.

Table 7. A Dynamic threshold effect of investment-oriented remittances on growth.

| | | | | | 0 | | |
|---------------------|---|---|---|-------------|------------|--|--|
| | Investment-Oriented Remittances (RINV) | | | | | | |
| Lower re | gime α_1 | Upper regime α_2 | | Differe | nce δ | | |
| Coefficient | t-tatistic | Coefficient | t-tatistic | Coefficient | t-tatistic | | |
| 0.015 | 2.80*** | 0.469 | 4.49*** | 0.454 | 3.06*** | | |
| 0.083 | 1.62 | 0.097 | 2.76*** | 0.014 | 2.06** | | |
| -0.034 | -1.58 | 0.050 | 1.62 | 0.084 | 1.60 | | |
| -0.025 | -0.45 | 0.051 | 0.77 | 0.076 | 0.61 | | |
| 0.033 | 1.33 | 0.087 | 1.83* | 0.054 | 1.81* | | |
| 0.052 | 1.25 | 0.221 | 2.09** | 0.168 | 1.57 | | |
| | 2.98 | | | | | | |
| | (2.76) *** | | | | | | |
| Upper regime (%) | | | | | | | |
| Linearity (p-value) | | k | | | | | |
| J-test | | | | | | | |
| (p-value) | | k | | | | | |
| | Lower re Coefficient 0.015 0.083 -0.034 -0.025 0.033 0.052 | Lower regime $α_1$ Coefficient t-tatistic 0.015 2.80*** 0.083 1.62 -0.034 -1.58 -0.025 -0.45 0.033 1.33 0.052 1.25 2.98 (2.76) *** (b) 23.54 (a) (0.001) *** 74 | Investment-Oriented Investment-Oriented Investment Investment Oriented Investment Oriented Investment Investment Oriented Investment Invest | | | | |

p-value: * p < 0.1; ** p < 0.05 and *** p < 0.01.

The mean of 'investment-oriented remittances' over the study period is 0.700% with a minimum of 0% for Angola in 2000 % and a maximum of 12.52 % for Lesotho in 2000. When 'investment-oriented remittances' is used as the transition variable, the results for (3) show that the threshold estimate is 2.98% such that about 76.46% of observations fall into the lower remittances regime. Like the previous estimate, we note that the positive and significant impact of 'investment-oriented remittances' on economic growth would begin to manifest

once RINV reaches a threshold level of 2.98% of GDP. We find that all coefficients sign of this estimate are consistent with those of the estimate presented in Table 5.

Conclusion

This paper explores the relationship between remittance inflows and economic growth for the African countries over the period 2000–2020. Results from dynamic panel threshold estimates reveal that remittances has a positive and significant effect on economic growth above the threshold level of 5.86%. When remittances exceed this threshold, the portion of remittances oriented towards investment in economic activities increases. This, in consequence, contributes to improved growth. It was proved; too, that the positive and significant effect of remittances begins to manifest itself once financial development and institutional quality reach some threshold level. Our results support the idea of the conditional positive impact of remittances on economic growth, and that their impact depends on their volume, the development of the financial sector, the good governance of the State and the economic environment of the migrants' countries of origin.

Good governance is the solution to Africa's problems. In Africa, good governance facilitates everything, otherwise there are bottlenecks. The financial systems of African countries are shallow and underdeveloped. They rely mainly on an immature and concentrated banking sector, offering mainly short-term financing. Governments have a major role to play in developing and deepening financial systems and institutional quality.

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