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Empowering Entrepreneurship: How Remittances Drive New Business Creation and in Africa's Top Recipient Nations

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Abstract

This study aims to investigate the relationship between remittances and new business creation in the top remittance-receiving countries in Africa (Nigeria, Ghana, Senegal, and Mali). To investigate the relationship between remittances and new business creation in the top remittance-receiving countries between 2006 and 2021, the study first applied the Autoregressive Distributed Lag (ARDL) model in a stepwise manner, followed by the use of the Panel Fully Modified Least Squares (FMOLS) method. The study's findings indicate that increased remittances lead to the creation of more new businesses, as evidenced by the statistically significant positive coefficient of remittances across all models. Control variables such as Gross Domestic Product (GDP) and institutional quality are statistically significant with positive coefficients, highlighting that economic growth and high-quality institutions promote new business creation. On the other hand, economic globalization has a negative coefficient and is statistically significant, indicating that economic globalization prohibits local business creation. The study concludes that increased remittances promote new business creation in top remittance-receiving African countries. These results present an opportunity for the government and policymakers to enact policies that promote the inflow of remittances and create a conducive environment for new business creation and entrepreneurial activities to flourish.

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1. Introduction

Entrepreneurship may offer a significant path to escape or reduce many socioeconomic pathologies such as poverty, food insecurity, unemployment, and income inequality. New Business creation/entrepreneurship is essential for innovation, productivity, economic growth, and employment creation, especially in developing countries (Alhassan, 2023; Amoros, Bosma, & Kolvereid, 2019). Furthermore, Ribeiro-Soriano (2017) and Adenutsi (2023) argue that new business creation is the catalyst for economic prosperity and development through job creation, income empowerment, and poverty alleviation in developing economies. Despite the significance of new business creation on economic growth, innovation, job creation, and reducing poverty, many

entrepreneurs are still battling with access to funding or capital. Small and new businesses face significant financial constraints even under the best of circumstances (Kakhkharov, 2019). Evidence from the World Bank (2012) suggests that entrepreneurs in developing countries are confronted with an inefficient credit market, with one-third of the surveyed individuals pointing to access to credit as a concern for entrepreneurship. According to Rusu, Roman, and Tudose (2022), access to finance or capital is an important determinant for deciding if they want to enter entrepreneurship.

In recipient nations, remittances[1] are seen as a significant source of capital that stimulates the growth of entrepreneurship and productive investments (Yavuz & Bahadir, 2022) and reduces poverty, especially in rural communities (Hagen-Zanker & Himmelstine, 2016; Masron & Subramaniam, 2018; Wang, 2010). Remittances have dramatically increased over the years from 50 billion USD (in 2018 dollars) to over 600 billion USD in 2018 (Cazachevici, Havránek, & Horvath, 2020). Remittance flows to Africa have also increased significantly, reaching over $90 billion in 2023, which the World Bank approximates to be much higher than the development assistance level.

In Nigeria, remittances are estimated to account for 6.1 percent of the GDP (Ngene, Nnaji, & Okerie, 2024; World Bank, 2023). International remittances in Ghana are estimated to be three times more than what the Bank of Ghana reported, bringing Ghana on par with large remittance-receiving countries like the Philippines and Mexico (Mazzucato, Van Den Boom, & Nsowah-Nuamah, 2008). Moreover, the inflow of remittances in Ghana has increased from 0.2 percent of Gross Domestic Product (GDP) in 2000 to about 1.5 percent of GDP in 2010 (Tuuli, 2015). Do remittance flows promote entrepreneurial behavior in these African countries? Can remittances offer a complementary source of funding for new businesses? Surprisingly, the relationship between remittances and entrepreneurship has received insignificant attention in these top-remittance-receiving countries. Yet, studies by Zheng and Musteen (2018) and the United Nations (Office of the Special Adviser on Africa) (2024) confirm that remittances promote entrepreneurial activities in the country of origin. On the other hand, Amuedo-Dorantes and Pozo (2006) find evidence to suggest that remittance receipt is associated with a lower likelihood of business entrepreneurship in the Dominican Republic, while Vasco (2011) did not find any significant role of remittances on the likelihood of remittance-receiving households venturing into entrepreneurship in rural Ecuador. Kakhkharov (2019), in a study conducted in Uzbekistan, confirms that the impact of remittances on new business creation requires a broader understanding of issues of economic development, household dynamics, economic activities, labor markets, gender issues, and community settings or dynamics (rural or urban). Furthermore, despite available literature on the relationship between remittances and new business creation/entrepreneurship at an international level, this issue has not been thoroughly investigated in the African context. Africa is battling with unique multiple socio-economic realities such as sluggish economic growth, high poverty levels, political instability, inequality, poor financial development, and a high unemployment rate (Beegle & Christiaensen, 2019; Bhorat, Naidoo, & Pillay, 2016; Sachs et al., 2004), hence the need for this study to close the gap.

A substantial amount of literature has started exploring the impact of remittances on poverty alleviation, financial institution development, and economic growth (Ajide & Osinubi, 2022; Hagen-Zanker & Himmelstine, 2016; Masron & Subramaniam, 2018; Yavuz & Bahadir, 2022). Most African countries are battling significant challenges in mobilizing remittances, including poor financial development and high transaction costs, which lead to informal channels. Moreover, aspiring entrepreneurs in Africa face many challenges, including sluggish economic growth, lack of adequate start-up capital, high costs and taxes, and lack of skills (Asongu, Biekpe, & Tchamyou, 2019; Legas, 2015; Sriram & Mersha, 2010). Furthermore, Vaaler (2011)and the United Nations (Office of the Special Adviser on Africa) (2024) argued that remittances are more resilient compared to other financial sources during times of economic uncertainty, as observed during COVID-19. In light of the much-needed capital and resilience of remittances during economic uncertainty, it is not very clear from the current literature how remittances affect new business creation, especially in the African context; hence, the need for this study. This study seeks to close the gap in the literature by investigating the impact of remittances on the creation of new businesses in the African context. Closing the gap in the literature will help policymakers enact policies that will enable a smooth flow of remittances at low transaction costs and assist with much-needed capital for those who want to start a business among most of the African population.

Firstly, this study identified the top remittance-receiving countries in Africa and used ARDL to capture short-run and long-run relationships. Secondly, an attempt is made to provide a theoretical framework based on the New Economics of Labor Migration theoretical framework by Lucas and Stark (1985) about the association between remittances and business creation, along with empirical evidence on these variables. Thirdly, this study controls for institutions, a variable that is usually omitted in many studies despite its important role in boosting entrepreneurial accomplishments in developing countries. According to Ajide and Osinubi (2022), strong institutional quality provides a sound and conducive financial environment for entrepreneurial attitudes.

Lastly, the results emphasize the significance of remittances in the establishment of businesses and offer insightful information to policymakers in the remittance-receiving nations. The structure of this study is as

[1] Remittance is defined as a portion of a migrant's labour earnings sent back from the country of employment to the home country (Russell, 1986). Moreover, Monsutti (2019) defined remittances as monetary or social transfers made by migrants to the members of their family in their home country, representing a significant capital flow at the international level.

follows: Recent literature is reviewed in Section 2, and the research technique and data used are described in Section 3. The results are presented in Section 4, and the study is concluded with insights into the implications for policy in Section 5.

2. Literature Review

A focus of development economics has been the influence of remittances on economic development, especially through entrepreneurial activities. Defined as cash transfers sent by migrants to their home countries, remittances represent a unique and vital source of funding for many emerging economies. Unlike other financial inflows, remittances are personal transfers that tend to remain stable even during economic downturns, providing a reliable lifeline for recipient households (Vaaler, 2011; Yang, 2011). Their direct-to-household nature bypasses bureaucratic channels, ensuring that funds reach families swiftly with minimal administration overheads, which makes them uniquely important and impactful for small-scale investments (Naudé, Siegel, & Marchand, 2017; Vaaler, 2011). Moreover, these funds are sent for a specific purpose, unlike other aids from the government, which can be inconsistent at times. Remittances have proven to be resilient even during economic shocks, which can be a consistent source of capital for new business creation even during economic downturns in the home country (United Nations (Office of the Special Adviser on Africa), 2024).

A foundational theory that links migration, entrepreneurship, and remittances is the New Economics of Labor Migration (NELM). This theory views migration not just as an individual decision but as a strategic household decision aimed at maximizing income, risk diversification, and overcoming financial market constraints (Stark, 1991). Remittances play a pivotal role within this context by acting as a financial buffer that helps households to smooth their consumption, survive income shocks, and fund business ventures that might otherwise be unattainable due to credit limitations in developing countries (Lucas & Stark, 1985). Hence, the NELM theory underscores the idea that migration and remittances are potent tools of financial risk management and economic empowerment for families in emerging economies. Despite its critical insights, the NELM theory has been criticized for its assumption of rational decision-making on the side of both migrants and households; and its limited emphasis on social, cultural, and informal networks that can influence how households utilize remittances (Aslan, 2011; Hagen-Zanker, 2010).

Other theories suggest that remittances have a dual effect on economic development and the creation of new businesses. On one hand, they (remittances) provide liquidity that can be directed into human capital development and business ventures, aligning with theories of financial intermediation (Aggarwal, Demirgüç-Kunt, & Pería, 2011; Woodruff & Zenteno, 2007). If remittances have a positive effect on economic development, there are positive spillover effects on new business creation as a result of economic growth (Audretsch, Belitski, & Desai, 2015). This concept underscores the potential role of remittances in stimulating the creation and operation of new businesses by easing credit constraints, enabling investment into productive assets, and fostering small business growth (Giuliano & Ruiz-Arranz, 2009; Kim & Li, 2014). The role of the financial sector cannot be understated in this process, as remittance flows that are integrated into formal banking systems can enhance the availability of credit and bolster financial development (Aggarwal et al., 2011).

The institutional environment coupled with the economic conditions also plays an important role in mediating the effects of remittances on the creation of new businesses. In economies where institutions are strong and business regulations are supportive, remittances can translate into productive investments, contributing to economic growth with an indirect stimulation of new business creation and innovation (Hanusch & Vaaler, 2015; Vaaler, 2011). A standard deviation of one in institutional quality (political stability, regulatory quality, and voice and accountability) can lead to a 34 per cent increase in new business activities (Chambers & Munemo, 2019). However, in economies with poor institutions, regulatory frameworks, and extreme levels of informality, remittances may only be channeled into consumption or utilized to circumvent inefficient systems, thereby limiting their effect on entrepreneurial activities (Naudé et al., 2017). Furthermore, Tran (2019) argues that poor institutional quality jeopardizes and limits the survival and creation of new businesses. This underscores the importance of institutional quality as a determinant of how remittances contribute to entrepreneurial activities and the creation of new businesses.

Conversely, the counter-theoretical perspective suggests that remittances may not always foster productive investments, such as the creation of new enterprises. For example, Amuedo-Dorantes and Pozo (2006) argue that significant foreign currency inflows can lead to currency appreciation, which in turn undermines export competitiveness and decreases the growth of tradable sectors. Furthermore, the dependency hypothesis argues that remittances may cause recipients to choose to be outside the labor force, mainly because external income discourages active engagement in wage employment or entrepreneurial endeavors (Chami, Fullenkamp, & Jahjah, 2005). This duality highlights the complexity of the impact of remittances, particularly in situations where outcomes depend on the social, cultural, and economic context and the conditions under which remittances are received and used.

In summary, the theoretical discourse on remittances and the creation of new businesses highlights a multifaceted relationship influenced by household strategies, financial market conditions, institutional quality, and socio-cultural dynamics. This implies that although remittances might spur the establishment of new companies, their effects depend on a number of variables that affect how recipient households use them.

Comprehending this complex interplay provides an important foundation for exploring the empirical evidence across different contexts.

2.1. Empirical Review

Empirical studies that have investigated the impact of remittances on the creation of new businesses offer a mixed and varied picture, influenced by different national and regional contexts as well as methodological approaches. To begin with, single-country studies often yield mixed results, with some studies highlighting the significance of remittances on business creation while other studies show no importance. For instance, some studies offer less favorable insights. Amuedo-Dorantes and Pozo (2006) observed an adverse relationship between remittances and business ownership in the Dominican Republic, potentially due to the reduced labor force participation rate as remittance-seeking households become more dependent on external income. Vasco (2011) found that remittances had no significant impact on business ownership in Ecuador, suggesting that remittance inflows in this country are predominantly used for consumption rather than creating new businesses. In contrast, Devkota (2016) reported that although only 4.44% of the remittances in Nepal were utilized for entrepreneurial-related activities, remittances still contributed to the growth of small businesses. In a similar study, Kakhkharov (2019) used probit regression on household survey data in Uzbekistan and found that households receiving remittances were more likely to create a new business.

Broader cross-country empirical studies contribute additional layers of understanding by revealing the conditions under which remittances can lead to the creation of new businesses. For example, Vaaler (2011) used the feasible generalized least squares (FGLS) estimator on a sample of 61 developing nations from 2002 to 2007 and discovered that remittances had a positive effect when public sector interference with business was minimal but did not necessarily drive the creation of new businesses. This finding highlighted the importance of a conducive policy environment in order for remittance inflows to drive business creation. In a related study, Martinez, Cummings, and Vaaler (2015) examined this relationship in 38 economies for the 2001-2009 period. They found that remittance inflows can lead to the creation of new businesses in countries with high levels of informality, suggesting that remittances can serve as an alternative source of venture capital in economies where more formal venture capital is scarce. Echoing similar sentiments, Hanusch and Vaaler (2015) applied a system generalized method of moments (system GMM) on a sample of 47 countries and found that while remittances led to the creation of new firms, the effect declined as traditional forms of capital become more available. Further insights into this relationship are provided through differentiating the types of remittances. One study that does this is Zheng and Musteen (2018), who deployed a generalized least squares (GLS) estimator on a panel of 30 countries from 2001 to 2009. They found that remittances positively affected necessity-driven entrepreneurship, which requires minimal capital, but had a negative effect on opportunity-driven entrepreneurship, which is more innovation-dependent and requires large volumes of capital.

Additional empirical research sheds light on the ways in which remittances' influence on the establishment of new enterprises is greatly influenced by other policy and nation-specific factors. For instance, Cummings and Gamlen (2019) utilized a negative binomial model for a panel of 35 countries spanning 2001 to 2010. They found that diaspora engagement policies amplified the positive effects of remittances on entrepreneurship. Their findings indicate that proactive government involvement in fostering connections with the diaspora can channel remittances more effectively toward entrepreneurial activities. Yavuz and Bahadir (2022) reinforced this notion with their study using instrumental variable (IV) estimation techniques on data from 64 countries (2006–2016), which showed that remittances positively influenced new business creation, with ethnic diversity further enhancing this relationship. This finding points to the role of social structures in shaping the utilization of remittances. This further highlights the importance of a conducive economic environment coupled with a quality of institution and financial development in enabling remittances to promote new business creation.

More recent studies continue to highlight the context-specific nature of this impact. Nanyiti and Sseruyange (2022) utilized the system GMM estimator and found that remittances led to enhanced levels of entrepreneurial activities, with the effect being stronger in low-income countries. Piras (2023), utilizing a negative binomial estimator on a sample of 78 countries from 2006 to 2020, found that while remittances and economic complexity generally had negative effects on new business creation, the negative impact of remittances was mediated by economic complexity. Alhassan (2023) further contributed by demonstrating, through the FGLS and Driscoll–Kraay estimators, that e-government initiatives enhanced the positive impact of remittances on formal business creation, emphasizing the importance of digital governance in leveraging remittance flows for the creation of new businesses.

Empirical studies focusing on Africa, while scarce, offer critical regional insights. For instance, Asongu et al. (2019) deployed the GMM to a panel of 49 Sub-Saharan African countries. They found that remittances had a net negative impact on business facilitation when paired with information and communication technology (ICT). This suggests that the benefits of remittances may be undermined in contexts where infrastructure or policy support is lacking. In addition, Ajide and Osinubi (2022) utilized the GLS estimator in their study of 19 African countries. Their findings revealed that while remittances alone negatively impacted entrepreneurship, the interaction term of remittances and foreign aid had a positive effect, illustrating that the synergy between

different financial flows can boost entrepreneurial development. These studies also highlight the unique circumstances within the African continent, such as very high levels of poverty, unemployment, and poor financial development which might limit the remittance's ability to promote new business creation as observed in other regions globally, hence the need for this study to investigate the relationship in the African context. A summary of all cross-country empirical studies that investigate the impact of remittances on the creation of new businesses and entrepreneurship is presented in Table 1.

In conclusion, the empirical research that has tried to look into how remittance inflows affect the establishment of new companies strongly suggests that, although they have the potential to create a large number of new companies, their actual impact varies greatly depending on the institutional, policy, social, and economic context. However, gaps remain in the literature. Firstly, there is a shortage of studies that investigate this relationship specifically within the African context. Secondly, studies that have explored this relationship in Africa often focus on larger samples and ignore how this relationship plays out in the top remittance-receiving African countries. Hence, by investigating the impact of remittance inflows on the creation of new businesses and the role of institutions in modifying this relationship in Africa's top remittance-receiving countries, this study aims to fill these gaps and offer deeper insights into the relationship.

Table 1. Summary of cross-country studies that investigate the remittance-new business creation nexus.

Study	Methodology	Key findings
Vaaler (2011)	FGLS on 61 developing countries (2002-2007)	Remittances positively impact business creation when the public sector is small.
Martinez et al. (2015)	FGLS on 38 developing countries (2001-2009)	Remittances facilitate firm creation in high-informality economies.
Hanusch and Vaaler (2015)	System GMM on 47 countries (2002-2007)	Remittances boost new firm births; impact weakens with increased capital access.
Zheng and Musteen (2018)	GLS on 30 countries (2001-2009)	Positive impact for necessity-driven, negative for opportunity-driven entrepreneurship.
Cummings and Gamlen (2019)	Negative binomial model on 35 countries (2001-2010)	Diaspora engagement policies amplify the positive effects of remittances on entrepreneurship.
Yavuz and Bahadir (2022)	IV estimation on 64 countries (2006-2016)	Remittances positively impact business creation; effect enhanced by ethnic diversity.
Nanyiti and Sseruyange (2022)	System GMM on 63 countries (timeframe unspecified)	Positive influence on entrepreneurship, more significant in low-income countries.
Piras (2023)	Negative binomial model on 78 countries (2006-2020)	Remittances and economic complexity negatively affect business creation; mediated by economic structure.
Alhassan (2023)	FGLS & Driscoll–Kraay on 55 developing countries (biennial panel data)	E-government initiatives strengthen remittances' positive impact on formal business creation.
Asongu et al. (2019)	GMM on 49 Sub-Saharan African countries	Net negative impact of remittances on business facilitation with ICT.
Ajide and Osinubi (2022)	GLS on 19 African countries	Remittances alone negatively impact entrepreneurship; when mediated with foreign aid, the impact is positive.

3. Methodology and Data

This study employs panel data from four of the top 20 remittance-receiving countries in Africa from 2006 to 2021. The composition of the sample is based not only on the amount of remittances that these countries receive but also on the fact that remittances appear to contribute substantially to influencing their socio-economic activities. Due to the data availability of the chosen variables and the need to draw on the most complete and consistent dataset, the study covers the period from 2006 to 2021. The variables were chosen based on the extant literature. The data on entrepreneurship, remittances, financial development, and GDP per capita are gathered from the World Bank's World Development Indicators database. The other data on the economic globalization index is sourced from the Swiss Federal Institute of Technology, while data on institutional quality is obtained from the Worldwide Governance Indicators.

The majority of the studies that have investigated the relationship between remittances and entrepreneurship/new business creation using panel data have employed GMM and GLS (*see* Table 1). Despite GMM and GLS having their strengths and capabilities in handling panel data and heteroskedasticity, this study

opted for an ARDL in line with the data and study's objectives to assess the relationship between remittances and business creation. ARDL was employed because of its ability to examine the short-term and long-term relationship between variables providing a clearer understanding of the dynamics between variables (Herzer, Vollmer, & Martínez-Zarzoso, 2011; Kripfganz & Schneider, 2023; Sam, McNown, & Goh, 2019). Furthermore, ARDL does not require pre-testing the time-series data for unit root and can be used regardless of the variable integration order (Murthy & Okunade, 2016; Nkoro & Uko, 2016; Sam et al., 2019).

The empirical model of this study is premised on the well-known New Economics of Labor Migration theoretical framework by Lucas and Stark (1985) about the association between remittances and business creation. This study also borrows from the most recent model used by Alhassan (2023).

$$lnNBD = f(lnR_{it}, lnFD_{it}, EGL_{it}, GDPpc_{it}, INST_{it}) \quad (1)$$

The variables in the equation represent the following in order: new business density (a proxy for formal entrepreneurship) in country i at time t, remittances as a percentage of GDP, financial development (proxied by domestic credit to the private sector as a percentage of GDP), the economic globalization index (which includes trade flows, foreign direct investment, and portfolio investment), GDP per capita (in constant 2015 US$), and the institutional quality index (derived from six governance indicators: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption), with the index created using Principal Component Analysis (PCA).

3.1. Estimation Method

Following many studies in the field, we first employed a set of unit root tests based on Breitung (2001), Levin, Lin, and Chu (2002), and Pesaran, Shin, and Smith (1997) ADF-Fisher (Maddala & Wu, 1999; Phillips & Perron, 1988). After that, we employed cointegration analysis using the Pedroni Cointegration Test. Once the unit root and cointegration tests were conducted, we employed the Panel Autoregressive Distributed Lag (PARDL) method. PARDL is quite handy as it can easily cope with variables that are of mixed order — stationary (I(0)) or non-stationary (I(1)), thereby making it suitable for small sample sizes. The PARDL method uncovers useful information about the short-run and long-run relationships, with the lagged Error Correction Term (ECT) signaling how swiftly the model returns to long-run equilibrium after a shock. Equation 1 is converted into the following PARDL model for this study.

$$\Delta lnNBD_{it} = \alpha_0 + \sum_{i=1}^{n} \Psi_1 \Delta lnNBD_{t-i} + \sum_{i=1}^{n} \Psi_2 \Delta lnR_{t-i} + \sum_{i=1}^{n} \Psi_3 \Delta lnFD_{t-i} + \sum_{i=1}^{n} \Psi_4 \Delta EGL_{t-i} + \sum_{i=1}^{n} \Psi_5 \Delta GDPpc_{t-i} + \sum_{i=1}^{n} \Psi_6 \Delta INSTQ_{t-i} + \xi_1 lnNBD_{t-1} + \xi_2 lnR_{t-1} + \xi_3 lnFD_{t-1} + \xi_4 EGL_{t-1} + \xi_5 GDPpc_{t-1} + \xi_6 INSTQ_{t-1} + e_{it} \quad (2)$$

Where $\Psi_1, \Psi_2, \Psi_3, \Psi_4, \Psi_5, \Psi_6$ and $\Psi_1$signify the short-run coefficients, while the long-run coefficients are portrayed by and $\xi_1, \xi_2, \xi_3, \xi_4, \xi_5,$ and ξ_6. Δ denotes the first difference operator, and e_{it} is the error term. The lag length was determined using the Akaike Information Criterion (AIC) prior to the application of the ARDL model.

$$\Delta lnNBD_{it} = \alpha_0 + \sum_{i=1}^{n} \Psi_1 \Delta lnNBD_{t-i} + \sum_{i=1}^{n} \Psi_2 \Delta lnR_{t-i} + \sum_{i=1}^{n} \Psi_3 \Delta lnFD_{t-i} + \sum_{i=1}^{n} \Psi_4 \Delta EGL_{t-i} + \sum_{i=1}^{n} \Psi_5 \Delta GDPpc_{t-i} + \sum_{i=1}^{n} \Psi_6 \Delta INSTQ_{t-i} + \vartheta_1 ECT_{t-i} + \in \quad (3)$$

Equation 3 resembles Equation 2 in that α_0 still represents the intercept, Δ is the first difference and $\Psi_1, \Psi_2, \Psi_3, \Psi_4, \Psi_5,$ and Ψ_6 represent the short-run effects coefficients on entrepreneurship. The only difference between the two equations is the ϑ_1 representing the coefficient for the speed of adjustment to equilibrium. For robustness checks, we also used Fully modified OLS (FMOLS) advanced by Phillips and Hansen (1990). The FMOLS estimator is appropriate not only for dealing with issues related to endogeneity but also for dealing with issues of omitted variables, serial correlation, and small sample size bias (Alhassan, 2023).

4. Results and Discussion

4.1. Principal Component and Descriptive Statistics Results Analysis

A number of factors, such as political stability, regulatory quality, rule of law, voice and accountability, control of corruption, and government effectiveness, were used to create an index that was utilized to measure the quality of the institutions.

Table 2. Principal component and correlation matrix results for institutional quality.

Eigenvalues: (Sum = 6, Average = 1)						
Number	**Value**	**Difference**	**Proportion**	**Cumulative Value**	**Cumulative Proportion**	
1	5.478	5.288	0.913	5.478	0.913	
2	0.189	0.068	0.031	5.667	0.944	
3	0.121	0.008	0.020	5.788	0.964	
4	0.112	0.050	0.018	5.901	0.983	
5	0.062	0.026	0.010	5.963	0.994	
6	0.036	---	0.006	6.00	1.000	
Eigenvectors (Loadings):						
Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
Political stability	0.405	-0.384	0.726	-0.056	-0.330	0.219
Regulatory quality	0.405	0.461	0.023	-0.679	0.302	0.262
Rule of law	0.418	-0.247	-0.026	-0.145	0.214	-0.834
Voice and accountability	0.404	-0.550	-0.518	0.128	0.256	0.426
Control of corruption	0.411	0.282	-0.400	0.056	-0.762	-0.071
Government effectiveness	0.404	0.442	0.203	0.702	0.324	0.026
Ordinary correlations:						
Variables	Political stability	Regulatory quality	Rule of law	Voice and accountability	Control of corruption	Government effectiveness
Political stability	1.000					
Regulatory quality	0.867	1.000				
Rule of law	0.933	0.913	1.000			
Voice and accountability	0.889	0.847	0.943	1.000		
Control of corruption	0.872	0.917	0.922	0.896	1.000	
Government effectiveness	0.872	0.889	0.896	0.853	0.914	1.000

Table 2 presents a correlation analysis to assess if a correlation exists between the indicators of institutional quality. The indicators have a robust positive correlation with each variable having a correlation coefficient greater than 0.8 with each other.

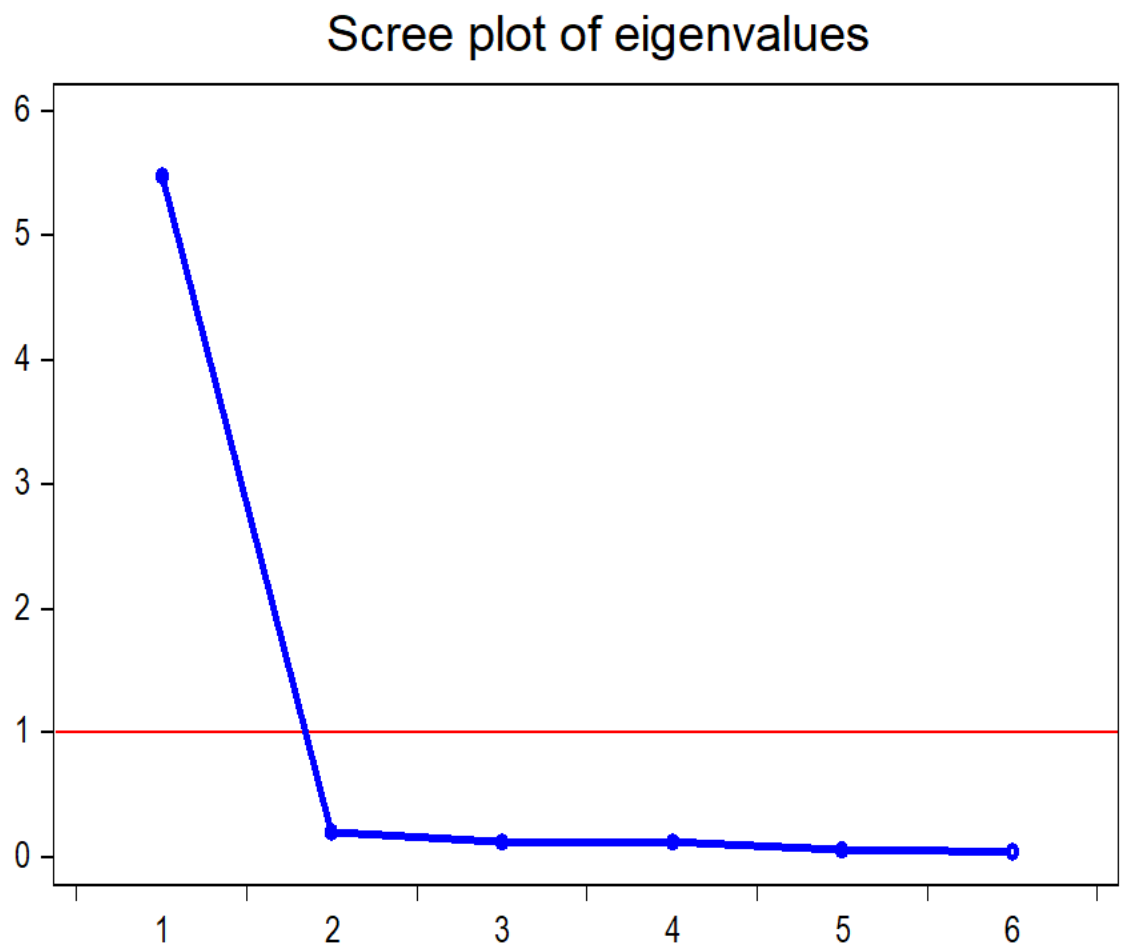

Figure 1. Scree plot eigenvalue.

Given the strong correlation between the indicators of institutional quality, we then proceeded to estimate the principal component analysis to obtain institutional quality variables. We retain the eigenvector > 1 and those eigenvectors associated with variables whose loading value exceeded 0.40 in absolute value (Chen, 2014). Hence, we retained component 1 for institutional quality. In the graph this is shown by the red horizontal line --eigenvalue threshold or a reference line indicating the point at which the eigenvalues begin to level off. Our choice of component 1 is backed by Figure 1. The elbow line (blue line) in a scree plot shows the point where the eigenvalues (or the amount of variance explained by each principal component) start to level off. The elbow point is at component number 2 indicating that the optimal component is component 1. Hence component 1 was retained in line with the other tests.

4.2. Descriptive Statistics

The variables utilized in this study's descriptive statistics are shown in Table 3. According to statistics, the dependent variable, New Business Creation, has a mean value of -0.5428 and a standard deviation of 0.7781. The minimum value for new business creation is -3.1856 and the maximum of 0.4434. Table 3 shows that the independent variable, remittances, has a mean of 1.6018 with a standard deviation of 0.7814. Remittances have a minimum value of -0.8629 and a maximum value of 2.4205. The control variables include finance development, economic globalization, GDP, and institutional quality with mean values of 2.8697, 3.7694, 7.2166, and 1.73E-17 respectively with a standard deviation of 0.3294, 0.0973, 0.4575, and 0.4387 respectively.

Table 3. Descriptive statistics of variables.

	New business creation	Remittances	Financial development	Economic globalization	GDP	INST-Q
Mean	-0.542	1.601	2.869	3.769	7.216	1.73E-17
Median	-0.268	1.759	2.851	3.780	7.213	0.055
Maximum	0.443	2.420	3.398	3.949	7.893	0.654
Minimum	-3.186	-0.862	2.094	3.547	6.514	-1.176
Std. dev.	0.778	0.781	0.329	0.097	0.457	0.438
Skewness	-1.431	-2.137	-0.003	-0.174	-0.149	-0.728
Kurtosis	4.783	7.264	2.067	2.150	1.779	2.712
Jarque-Bera	26.524	97.211	2.322	2.247	4.206	5.882
Probability	0.000	0.000	0.313	0.325	0.122	0.053

A positive linear relationship between the number of new business registrations and the amount of personal remittances received (in current US dollars) is depicted in Figure 2.

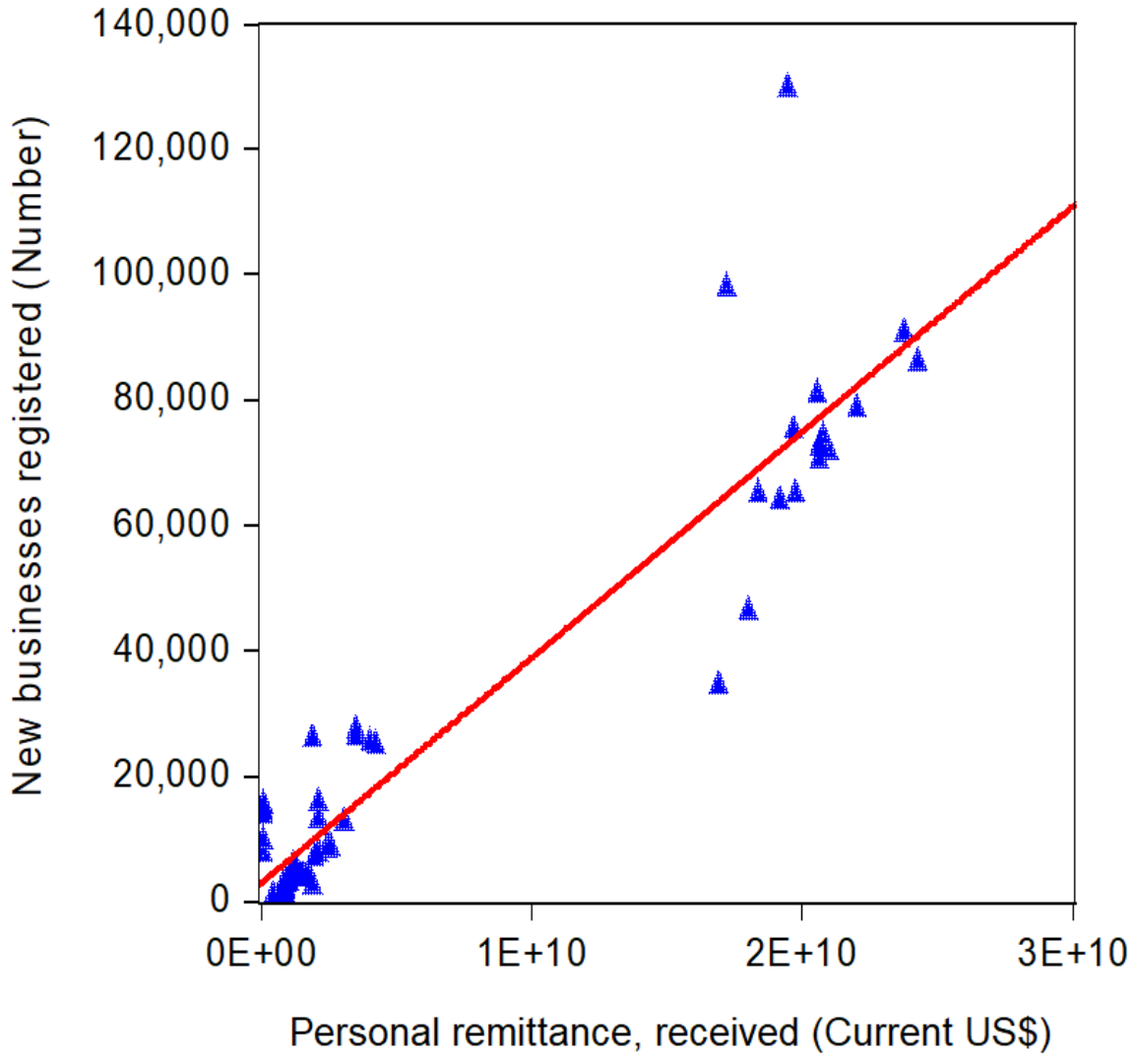

Figure 2. New Business registration and personal remittances.

The results aligned with the United Nations (Office of the Special Adviser on Africa) (2024) observation that remittances play a pivotal role in many African countries, providing an important source of funding for business creation and addressing important socio-economic challenges. Moreover, Alhassan (2023) and United Nations (Office of the Special Adviser on Africa) (2024) argue that the relative stability of migrant remittances to developing countries could be essential in fostering formal entrepreneurship development even during economic uncertainty. Figure 3 presents the remittance trend from the four top remittances-receiving countries in Africa from 2006 to 2021. According to the World Migration Report 2022, there are over 150 million African

diasporas globally, with around 19.5 million in 2020 lives in other African countries. Amuedo-Dorantes and Pozo (2006) and Ambler, DeLong, and Patterson (2015) argued that households will consider investing remittances in businesses once their consumption needs have been met. The top four remittances-receiving countries include Nigeria, Ghana, Senegal, and Mali. Migrant remittances have become an important source of external finance for the African continent (Mohapatra & Ratha, 2010). Moreover, households in rural areas, which are home to 75% of the world's impoverished and food-insecure population, receive more than 50% of remittances (Yeboua & Cilliers, 2024).

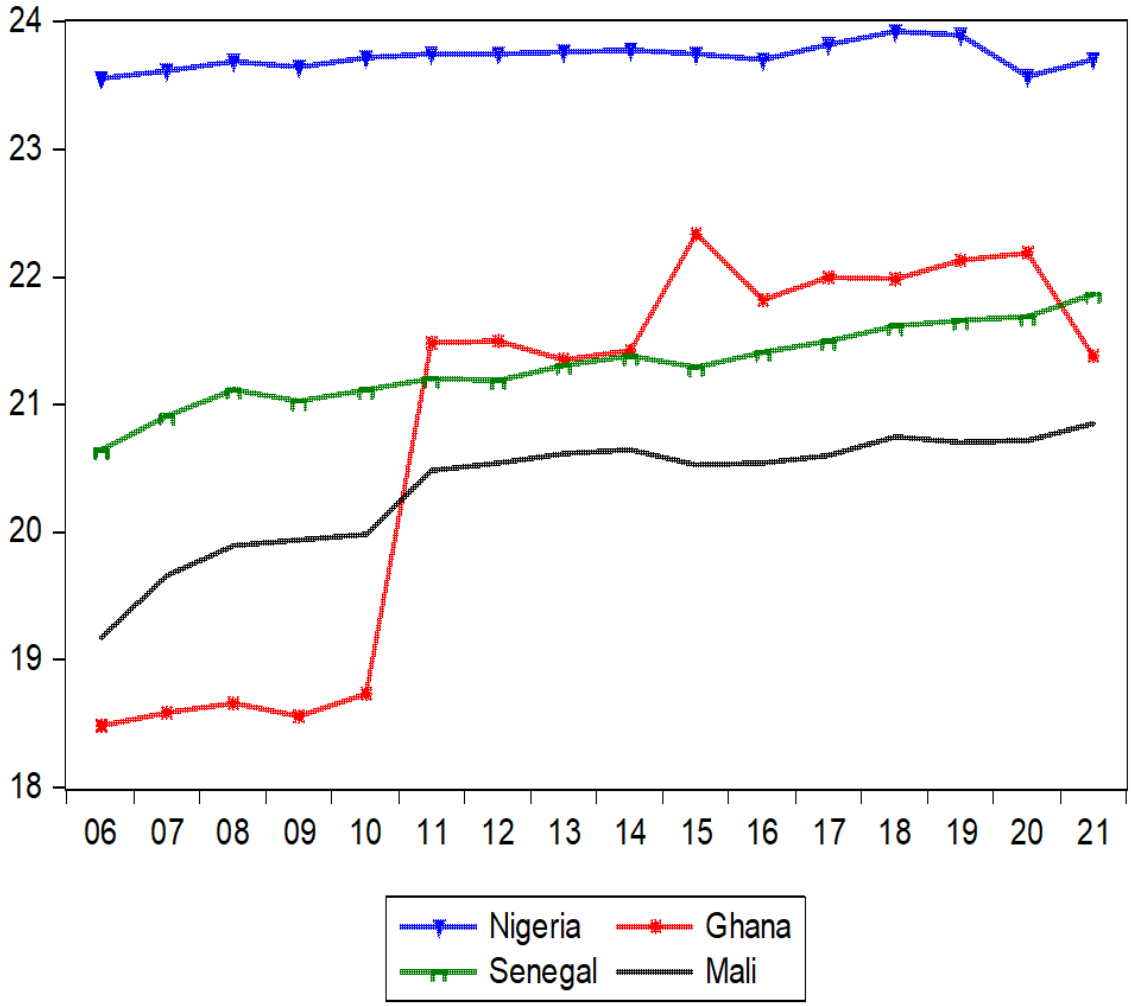

Figure 3. Top 4 remittance receiving countries in Africa.

Nigeria is Africa's top recipient of remittances, according to the findings in Figure 3. Remittances from Nigerians living abroad, which are predicted to make up 6.1% of the country's GDP, have grown to be a significant contributor to both socioeconomic development and GDP (Ngene et al., 2024; World Bank, 2023). According to Darkwah and Verter (2020), remittances from the diaspora to Nigeria outpaced inflows of both Net Office Development Assistance (ODA) and Foreign Direct Investment (FDI). The Federal Government's 2022 budget was made up of 83 percent remittances to Nigeria, which is 11 times larger than foreign direct investment over the same period (Ngene et al., 2024). Based on the results in Figure 3, Ghana was the second-largest recipient of remittances in sub-Saharan Africa in 2011, surpassing Senegal, which currently holds the third position. According to the Bank of Ghana, improved remittance data collection, a rise in migrant financial transfers, and greater use of formal channels are all responsible for the sharp rise in remittances since 2010 (Teye, Badasu, & Yeboah, 2017).

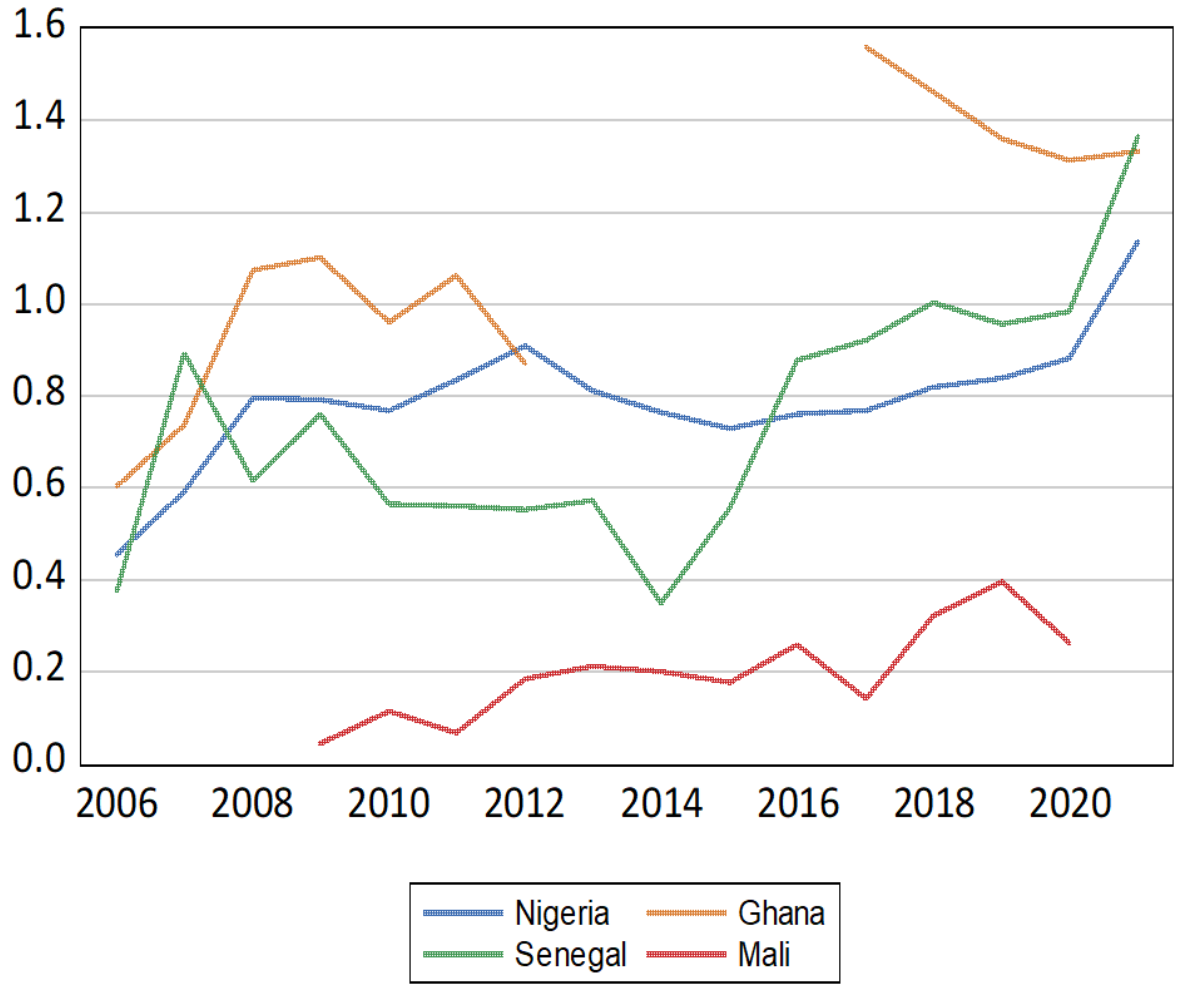

Figure 4. New business trends for the top remittance receiving countries.

Figure 4 shows that despite Nigeria being the top remittance receiver, it is third in the number of new business creations as of 2020. It is worth noting that there was a disconnect in Ghana's data between 2012 and 2017. Even though Ghana had the highest number before the disconnect between 2006 and 2012, the number spiked in 2017 when Ghana resumed its new business creation data reporting. Since 2014, Senegal has shown a steep upward trend in the new business creation, overtaking Nigeria in 2015. Based on Figure 3, Mali has shown a steady to flat increase in new business formation.

4.3. Stationarity Test and Cointegration Test

The association between remittances and new business development (NBD) is estimated by the ARDL model. The occurrence of unit roots in the time series data has far-reaching consequences for multivariate econometric modelling and the interpretation of the results (Jurgen & Uwe, 2005). Hence, unit root testing is the starting point for most of the empirical time series and panel data studies. The are multiple unit root tests available, such as Phillips and Perron (1988), Breitung (2001), and Levin et al. (2002). This study employed a Phillips and Perron test for its robustness to general forms of heteroskedasticity. On the other hand, the Autoregressive Moving Average (ARMA) is estimated using the parametric model in the ADF test, and Im-Pesaran-Shin decreases significantly if a significant percentage has a unit root.

Table 4. Phillips-Perron (PP) unit root tests.

At level							
		NBD	**Remittance**	**Financial development**	**Economic globalization**	**GDP**	**Inst-Q**
With constant	t-statistic	18.784	15.074	12.073	12.451	1.357	6.657
	Prob	0.016	0.057	0.147	0.132	0.995	0.574
		**	*	----	---	---	---
At first difference							
With constant	t-statistic	38.640	41.151	55.843	35.231	32.346	27.220
	Prob	0.000	0.000	0.000	0.000	0.000	0.000
		***	***	***	***	***	***

Note: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1% and (—) Not significant.
Lag length on AIC.
Probability based on Mackinnon (1996) one-sided p-values.

The results presented in Table 4 show that at level, new business development is statistically significant at a 5 percent level of significance and remittances significant at 10 percent, this indicates that new business development and remittances are stationary at 5 and 10 percent significant levels respectively while the rest of the variables are stationary at first difference. Moreover, the Pedroni (1999) and Pedroni (2004) test is employed with seven test statistics to determine whether a cointegrating relationship exists. The test compares the alternative hypothesis of cointegration with the null hypothesis of no cointegration using three-group-panel and four-panel statistics (Ramirez, 2006).

Based on Table 5 results, panel, and group statistics indicate that there is evidence of cointegration according to both Augmented Dickey-Fuller (ADF) and Phillips and Perron (PP) statistics. In contrast, variance ratios (v) and rho statistics indicate that we cannot reject the null hypothesis indicating no cointegration.

Table 5. Pedroni cointegration test.

Within-dimension				
	Statistic	**Prob.**	**Weighted Statistic**	**Prob.**
Panel v-statistic	-0.601	0.726	-0.581	0.719
Panel rho-statistic	0.501	0.691	1.196	0.884
Panel PP-statistic	-7.446	0.000***	-2.479	0.007***
Panel ADF-statistic	-6.813	0.000***	-2.376	0.009***
Between-dimension				
	Statistic	**Prob.**		
Group rho-statistic	1.721138	0.9574		
Group PP-statistic	-9.182143	0.0000***		
Group ADF-statistic	-6.031711	0.0000***		

Note: (***) Significant at the 1%

4.4. ARDL Results

The results for the Autoregressive Distributed Lag (ARDL) in Tables 6 and 7 present the results in a stepwise fashion. Table 6 represents the panel-ARDL results excluding one variable, which is the quality of the institutions (INST Q). According to the findings in Table 6, the estimated coefficient for remittances is statistically significant at the significance level of 1%. The positive coefficient of 2.041 indicates that remittances have a positive relationship with new business development. More specifically, a 1 per cent increase in remittances leads to a 2.041 per cent increase in new business development. These results corroborate the findings by Vaaler (2011) and Alhassan (2023), which confirmed that remittances have a positive relationship with formal entrepreneurship development in developing countries. Financial development is statistically insignificant with a negative coefficient, highlighting that the advanced financial sector constrains new business development.

Table 6. ARDL estimates of effect the of remittances on the creation of businesses.

Variable	Coefficient	Std. error	t-statistic	Prob.
	Long-run (Pooled) coefficients			
REM_PERC	2.041	0.413	4.935	0.000
FD_TPS	-0.495	0.648	-0.763	0.448
EGLOB	-5.598	1.756	-3.187	0.002
GDPPPPCONST$	2.587	0.888	2.911	0.005
Short-run (Mean-group) coefficients				
COINTEQ	-0.414	0.240	-1.719	0.092
D(REM_PERC)	-1.605	1.499	-1.070	0.289
D(FD_TPS)	-0.857	0.789	-1.086	0.282
D(EGLOB)	0.511	1.479	0.345	0.731
D(GDPPPPCONST$)	-2.429	1.565	-1.551	0.127
Log-likelihood:	27.051			

Table 7. ARDL estimates of effect the of remittances on the creation of businesses (Controlling for institutional quality).

Variables	Coefficient	Std. error	t-statistic	Prob.
	Long-run (Pooled) coefficients			
REM_PERC	1.043	0.501	2.079	0.043
FD_TPS	-0.344	0.332	-1.035	0.305
EGLOB	-4.721	1.539	-3.066	0.003
GDPPPPCONST$	2.791	0.587	4.749	0.000
INST-Q	0.593	0.213	2.774	0.008
C	-3.386	3.336	-1.014	0.315
Short-run (Mean-group) coefficients				
COINTEQ	-0.577	0.335	-1.721	0.092
D(REM_PERC)	-1.174	1.119	-1.049	0.299
D(FD_TPS)	-0.455	0.698	-0.653	0.517
D(EGLOB)	0.305	1.430	0.213	0.832
D(GDPPPPCONST$)	-0.513	0.766	-0.670	0.505
D(INST-Q)	-0.061	0.220	-0.280	0.780
Log-likelihood:	36.508			

This is contrary to the findings by Arif and Khan (2019), Alhassan (2023), and Saidi (2024), who found that remittance, together with financial development, is complementary to fostering formal entrepreneurship development and economic growth. The third variable, which is economic globalization, is statistically significant at a 1 per cent significance level. Economic globalization has a negative coefficient (-5.598), indicating that a 1 per cent increase in economic globalization leads to a 5.598 per cent decrease in new business development. The fourth variable, GDP, is significant at a 1 per cent level of significance with a positive coefficient. The positive coefficient indicates that a 1 per cent increase in GDP leads to a 2.588 per cent increase in new business development.

The results in Table 7 are consistent with Table 6 regarding the coefficient signs. Based on Table 7, remittances are statistically significant at a 5 per cent significance level and have a positive coefficient. The positive coefficient indicates that a 1 per cent growth in remittances leads to a 1.043 per cent increase in new business development. The second variable, which is financial development, is still insignificant and has a negative coefficient. In contrast to the findings of this study, the creation of businesses largely depends on a well-developed and efficient market (Naudé et al., 2017; Woodruff & Zenteno, 2007). Furthermore, Ajide and Osinubi (2022), Nanyiti and Sseruyange (2022), and Alhassan (2023) contended that remittances alleviate the capital constraints of prospective entrepreneurs and enable them to enter self-employment or start new businesses. Economic globalization is statistically significant at a 1 per cent level of significance and has a negative coefficient. This means that a 1 per cent increase in economic globalization will result in a 4.7215 decrease in new business development. GDP and institutional quality are both statistically significant at a 1 per cent level of significance with a positive coefficient. The results of this study are in line with the findings by Toma, Grigore, and Marinescu (2014), who concluded that GPD and entrepreneurship are interconnected. Audretsch et al. (2015) concluded that economic development positively impacts new firm start-ups. GDP and new business development have a bidirectional relationship, there is a body of literature that confirms that new business has a positive relationship with economic growth (Hessels & van Stel, 2011; Klapper, Love, & Randall, 2015; Ribeiro-Soriano, 2017). Lastly, the results of this study are upheld by the studies by De Clercq, Danis, and Dakhli (2010); Chowdhury, Audretsch, and Belitski (2019) and Agostino, Nifo, Trivieri, and Vecchione (2020) who concluded that the quality of the institutions are important and has a positive impact on new business

creation. Furthermore, Chambers and Munemo (2019) argue that a one standard deviation increase in institutional quality is associated with a 34 per cent increase in new business activity.

We estimate the same model using the fully modified least squares technique to evaluate the consistency of the results in order to enable satisfaction with the baseline results, which indicated that an increase in remittances will result in an increase in the creation of new businesses. The selection of fully modified least squares is based on their ability to accommodate endogeneity and serial correlation when cointegration is present. The results of estimating the fully modified least squares are shown in Table 8, and they agree with the outcomes of the ARDL (Tables 6 and 7).

Table 8. Robustness test (Fully modified least squares).

Variable	Coefficient	Std. error	t-statistic	Prob.
REM_PERC	0.575	0.041	13.989	0.000
FD_TPS	-0.745	0.044	-16.643	0.000
EGLOB	-1.306	0.075	-17.276	0.000
GDPPPPCONST$	0.785	0.027	28.726	0.000
INST-Q	0.855	0.004	172.926	0.000
R-squared	0.118	Mean dependent var		-0.530
Adjusted R-squared	0.044	S.D. dependent var		0.797
S.E. of regression	0.778	Sum squared resid		29.123
Long-run variance	0.038			

Although the coefficient has considerably decreased, the remittances are still statistically significant and have a favourable effect on the establishment of new businesses. All the other variables used to estimate new business development were found to be statistically significant, except for financial development, which was statistically insignificant in Tables 6 and 7. The original signs of the coefficient are also consistent with the ARDL models (Tables 6 and 7).

5. Conclusion

This study examines the relationship between remittances and new business creation in Africa's top four remittance-receiving countries from 2006 to 2021, contributing to the limited literature on this topic. It finds a positive link between remittances and business formation, indicating that higher remittances can stimulate entrepreneurship, improve household income, and address unemployment and other socioeconomic challenges.

The study also constructs an institutional quality index and uses advanced methodologies, including FMOLS and stepwise panel-ARDL models. Results show that remittances positively affect new business creation. Economic globalization negatively impacts entrepreneurship, while GDP and institutional quality both promote business formation. Financial development was not found to significantly influence new business creation.

This study highlights the potential of remittances as a source of funding or capital for start-ups in many African countries. Furthermore, it presents an opportunity to incorporate remittances into policies that stimulate entrepreneurship by creating an efficient and cost-effective flow of remittances. A 1 percent increase in transaction cost leads to about a 1.6 percent decrease in remittances (Ahmed, Mughal, & Martínez-Zarzoso, 2021), while a 1 percent decrease in remittances leads to an approximately 4 percent drop in GDP per capita in Ghana (Agyei, 2021). This also highlights the need for the government to focus on economic growth and good-quality institutions to create a conducive environment for business creation. According to Özcan (2020), these institutional obstacles and high transaction costs severely restrict new business creation. At the back of the findings of this study, which clearly shows that remittances positively impact new business creation, the government and policymakers need to enact policies that attract remittances through formal channels and at a low cost. Future could investigate if a fintech solution could address the issue of high transaction costs while attracting more remittances through formal channels. Future studies could investigate the mechanisms by which remittances affect new business creation and how households make choices between increasing their spending and investing in new businesses using remittances. Moreover, future research can compare the new business creation with the net receiver and net sender of remittances.

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