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Remittance-Growth Nexus in the Developing Economies: Does Financial Sector Development Matter?

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Abstract

This research looks at how changes in the financial industry have affected the relationship between developing nations' economies and remittance inflows. While remittances constitute a vital external financing source, their growth-enhancing potential is contingent upon the structural characteristics, scale, and operational efficiency of the recipient countries' financial systems. Employing a comprehensive panel dataset from leading remittance-receiving countries, the analysis incorporates seven distinct indicators capturing three core aspects of monetary advancement: total size, breadth of institutions, and effectiveness of operations. The empirical results uncover a nuanced dynamic wherein the financial sector's size and depth primarily substitute for remittance effects by mitigating credit constraints, whereas financial efficiency amplifies the positive influence of remittances by enabling their more productive allocation. These findings challenge simplistic, one-dimensional views of financial development and underscore the necessity of adopting a multifaceted framework to fully comprehend how remittances stimulate economic growth. Policy implications emphasize the strategic enhancement and optimization of financial institutions to maximize the advantages for the growth and advancement of migrant remittances in emerging economies.

***Keywords*:** Remittances; Economic Growth; Financial Sector Development; Financial Efficiency; Developing Economies; Credit Constraint

Introduction

The term "remittances" most often used to describe the funds that emigrants transfer to their home nations, constitute one of the most robust flows of external financial assistance to developing nations, frequently exceeding or competing with official development assistance (Al-Asaf & Al-

Maliki, 2014). They are a primary driver of global financial transactions, particularly between nations that trade workers. In this context, the United Nations officially recognized remittances as an important financial avenue for promoting the Sustainable Development Goals (SDGs) were established at the 2015 Addis Abeba Third International Conference on Development Financing. The importance was highlighted by the UN of financial flows from private and public sources in developed nations for the attainment of 17 SDGs. This increasing prominence has generated greater research and policy interest in understanding the various aspects of remittance flows (Azizi, 2018). Remittances are a significant conduit for exchange of monetary funds from advanced economies to developing nations, economies effort for developing markets. As such, strengthening the financial infrastructure is crucial to guarantee that such inflows are absorbed effectively by increasing service accessibility while decreasing transport expenses. Money sent home by workers in low- and middle-income nations grew 9.6% in 2018, following 8.8% growth in 2017, to $529 billion, reliance on the World Bank's findings. The remittance of the average migrant also increased significantly from $668 in 1990 to $2,128 in 2015 even though these were officially recorded transactions only. The importance of remittances in developing economies is also underscored by their lofty total of $422 billion in 2015. In most instances, sending money back has become an important source of foreign currency for these nations. Notably, in the post-2000 era, six of the ten largest remittance recipients Asia is home to Vietnam, Bangladesh, China, Pakistan, the Philippines, and India. Roughly 43% of all remittances sent to developing nations come from these countries combined. (Ratha, De, Kim, Seshan, & Yameego, 2019). Such flows can serve to spur financial sector development, as long as recipients channel the funds into formal or semi-formal financial institutions and, as a result, expand the pool of available credit for business investment. If, however, remittances are spent immediately or simply retained without being funneled into financial systems, their ability to promote financial development is heavily impaired. Research conducted by Adams and Page (2005), Azam et al. (2016), Imai et al. (2014), and Vargas-Silva et al. (2009) presents compelling proof that remittances have a part in alleviating poverty in emerging markets.

Based on basic theoretical framework developed by Beck et al. (2000), a strong economic framework is anticipated to efficiently allocate remittance flows in a manner that stimulates progress in the economy nations in development. This means that politicians must in remittance-dependent countries to prioritize the development financial systems in an effort to boost the growth-inducing opportunities potential of these funds. Financial intermediaries are important in ensuring the efficient allocation of resources. However, studying how remittances, expansion of the economy and the financial sector affect one another is hindered by a shortage of data and a limited history for most developing nations (Sobech, 2019). Moreover, within academic circles, there is ongoing debate about the most suitable indicators of progress in the field of finance. In their 2009 study, Giuliano and Ruiz-Arranz employed four markers, highlighting the debt-ratios of M2 to GDP and to total production, which primarily be indicative of how big the banking industry is but provide a limited viewpoint. In contrast, Bettin and Zazzaro (2012) introduced bank inefficiency as an additional indicator; however, its application over extended time spans is limited by data. To deal with such problems, the present study employs a broad measure of economic growth that considers breadth, depth, and efficiency over a longer time period. It also takes into account the intermediary function of financial institutions in intermediating the remittance inflows-economic growth relationship. Conventional growth specifications founded on variables like credit or reserves as a proportion of GDP tend not to precisely capture the working effectiveness and efficiency in the banking sector. The primary the current study is to determine which dimension

of financial development, size, depth, or efficiency, impacts economic growth the most in remittance-dependent developing countries. The paper also examines whether financial sector improvement complements the positive effect of remittances or serves as a substitute by enabling resource mobilization, relaxing credit constraints, and enhancing the flow and use of migrants' funds.

Review Literature

The existing literature provides an in-depth examination of the roles that Business growth and remittances both contribute to the expansion of economies. Having said that, often reflect substantial heterogeneity and can even be contradictory. Some studies explore the bidirectional relationships among development of the banking sector, expansion of the marketplace, and remittances while others take a more focused strategy by disentangling the impacts of money transfers and the banking industry expansion on macroeconomic indicators. There is, nonetheless, widespread agreement among researchers and policymakers on the critical the role of remittances and the expansion of financial services in determining the paths of economic progress within various countries. For instance, Abidah and Sagheer (2014), Chaudhry (2016), Fromentin (2017), Anu (2018), and Larty (2013, 2019) reference Sabandi (2014), who established a cointegration relationship among these three elements, highlighting that remittances significantly influence growth without evidence of reverse causality. Acosta et al. (2008), Azam et al. (2016), Jawaid (420), Senmata and Raanmata (420), and Vargas-Silva et al. (2009) are just a few of the empirical research that show a positive and statistically significant association between workers' money sent home and GDP growth, especially in developing nations. Over the last 20 years, there has been a clear correlation between flourishing financial markets and expanding economies. been a standard topic in scholarly research and global policymaking (Arestis, Demetriades, & Luintel, 2001; Calderón & Liu, 2003; Demetriades & Hussein, 1996; Khalifa Al-Yousif, 2002; Patrick, Ram, & Teng, 2002). The literature stresses the critical contribution establishment of banking systems and stock exchanges in economic growth facilitation, and the growing significance of microfinance institutions in advancing financial inclusion and augmenting economic activity. Aside from traditional bank accounts, remittances might be a lifesaver in combination with borrowing to stimulate investment activities (Efobi, Asongu, Okafor, Tchamyou, & Tanankem, 2019). In this view, money sent back home affect economic development, as well as the development of financial markets as a facilitating channel. There are various channels that show how remittances affect growth. For example, remittance receipts bring in liquidity which is further invested by entrepreneurs in productive sectors (Asongu, Biekpe, & Tchamyou, 2019; Woodruff & Zenteno, 2007). Additionally, scholars contend that remittances drive industrialization by transferring technology, acquiring skills, and market-driven production arrangements (Brinkerhoff, 2006; Dzansi, 2013; Ssozi & Asongu, 2016; Syed & Miyazako, 2013). Further, remittances have been associated with higher performance in the manufacturing industry through exchange rate impacts (Barajas, Gapon, Chami, Montiel, & Flenkamp, 2009; Dzinski, 2013; Rajan & Subramanian, 2005; Celaya & Thili, 2010).

We need more study of the relationship between financial development and empirical data and remittance inflows to drive economic growth, since remittances are becoming increasingly important. A key area of focus has been whether foreign direct investment (FDI) serves as in this expansion process, either in place of or in addition to remittances. One aspect of this debate, represented by the alternative hypothesis, suggests that remittances boost the income of migrant families, which in turn alleviates liquidity constraints and mitigates inefficiencies in financial

markets (Bettin & Zazzaro, 2012). Conversely, the complementary hypothesis posits that a robust financial system reduces transaction costs, allowing emittances from migrant workers to invest in assets, thereby fostering economic growth in host countries. Empirical support for the alternative hypothesis is provided by studies such as those by Ramirez (2013), Ramirez and Sharma (2008), Bettin and Zazzaro (2012), and Giuliano and Ruiz-Arranz (2009). On other hand, research by Lartey and Nyamungo et al. (2012) lends credence to the complementary hypothesis. Overall, the specific function of financial development in enhancing effects of the impact of send-back funds on development remains a complex and pressing question.

Data

a. Participant Recruitment and Temporal Structure

The study employs a panel data set spanning 82 economies that are classified as emerging and developing. The nations in the study were chosen on the basis that there is available strong data of an 18-year span starting from the year 2000 up to 2017. This period allows one to carry out an in-depth longitudinal examination of the interplay between remittances, progress in financial services, and expansion in the economy.

b. Remittances Data

Personal remittances fall into three broad categories: current transfers by individuals, capital transfers between households of two countries, and income earned through work but not including tax and social security payments. This information is based on the database of the WDI maintained by the World Bank and is often expressed as a proportion in relation to the recipient country's GDP.

c. Financial Development Data

In the process of turning liquid assets into capital, the banking sector plays a crucial role, short-term deposits into less liquid, long-term investments. Formation and driving economic growth (World Bank, 2005). Huang (2011) emphasizes the important function of financial markets in the allocation of investment capital efficiently. This study, founded on various World Bank databases, assesses financial development using three interrelated dimensions: size, depth, and efficiency. Many of the widely recognized signs are used to depict these particular features in the finance industry.

d. Dimensions of the Financial System

In terms of financial system reserves in relation to GDP (percent) serves as an indicator of the total cumulative demand, time, and savings deposits held by banking institutions and other financial entities relative to the GDP. This metric provides valuable insight into the level of liquidity reserves within banking sector. In contrast,, the liquid liabilities to GDP percentage, commonly referred to as the broad money supply (M3), measures the share of total liquid liabilities compared to the gross domestic product. This includes various components such as currency in circulation, M0 refers to deposits held by central banks, M1 refers to deposits held by transferable and electronic institutions, M2 refers to repurchase agreements, traveler's checks, foreign exchange, certificates of deposit, and foreign currency reserves, and marketable securities traded in commercial markets, as well as regulatory reserves.

e. Scope of Financial Institutions

The entire amount of loans made by domestic banks to businesses and other organizations is reflected in the domestic private sector credit-to-GDP ratio. It has measure shows the extent to which private sector operators can access financing by including all receivables that are expected to be repaid, for example, debt, security acquisitions, trade credit, and so on.

Financial institutions' efficiency:

Providing high-quality financial products at the lowest transaction cost.

• Interest rate spread (loan rate minus deposit rate, %): The interest rate spread is the interest rate that banks charge private sector customers on loans, less the interest rate paid by commercial or similar banks on demand, time, or savings deposits.

Deposit interest rate (%): The deposit interest rate is the rate paid by commercial or similar banks on demand, time, or savings deposits.

• Bank overhead cost to total assets (%): The total cost of financial intermediation, including operating expenses, taxes, loan loss provisions, net profit.

Other variables

The analysis also accounts for additional variables using data collected from the World Bank's WDI dataset, which comprises:

- This metric tracks the investment in tangible assets and is expressed as relative to GDP: Total Investment in Fixed Assets, encompassing improvements to land (such as fencing and irrigation), the acquisition of powered tools, building materials, and of infrastructure, including transportation systems, schools, hospitals, residential buildings, and commercial properties.
- Population Growth (Annual %): This variable represents the annual percentage change in population size, calculated by determining the growth rate between the mid-year population of this year's (t) and last year's (t−1).
- Gross Enrollment in Secondary Schools: The enrollment ratio as a whole indicates the proportion of individuals of secondary education students currently enrolled in high school , regardless of their actual age. Secondary education is intended to build upon the foundational skills acquired in primary school and complete the basic education cycle.
- Government Spending on Consumption at Last as a Percent of GDP: This metric reflects government spending on consumption goods and services intended for final use, such as employee wages, to satisfy either individual or collective needs directly.

Methodology

a. Dynamic data model for growth regression

This study employs the following estimation model to assess what effect financial development and remittance inflows have on emerging nations' GDP growth.

$$y_{it} = \alpha + \gamma y_{i,t-1} + \delta_1 Rem_{it} + \delta_2 FinDev_{it} + \delta_3 (Rem_{it} * FinDev_{it}) + \beta \boldsymbol{X_{it}} + \mu_i + \eta_t + \in_{it}$$

Where yity_{it}yit denotes real GDP per capita, and RemitRem_{it}Remit represents remittances received by country iii at time ttt, measured as a share of GDP. Vector $\boldsymbol{X_{it}}$ represent all other controlled regressors given in section 3.7. μ_i represents country fixed effect and η_t represents time specific effects. The remaining unobserved sources are represented in the error term $\in_{it}$.

The regressand is stated that is, keeping the 2010 USD natural log of GDP per capita constant, the other variables except secondary school enrolment and population growth, are transformed by applying log modulus transformation for smoothing the data to become normal while preserve the natural sign of the data. The transformation is denoted as:

$$lm(x) = sign(x) * \ln(abs(x) + 1)$$

Given the availability of a short-run time dimension the combination of (T) and many cross-sectional units The System GMM estimator, which consists of two stages, is utilized in this work

for (N) in the panel dataset. Arellano and Bover came up with this technique in 1995, and Blundell and Bond (1998) made some improvements is utilized in this study. The application of this dynamic panel data method satisfactorily deals with endogeneity issues, accounts for unobserved heterogeneity, and minimizes potential biases that may occur due to autocorrelation and omitted variables. In Stata, the xtabond2 command was used to make estimations after following the implementation procedure recommended by Roodman (2009), with an addition of Windmeijer-corrected standard errors to provide robustness in finite sample settings.

Estimation results and discussion

b. Descriptive Analysis

Descriptive analysis is extremely important for examining basic features as well as distribution patterns of the data before conducting more complex statistical modeling. The study's major variables are summarized in Table I, which also contains the sample size, range of values, average, and dispersion for every variable. The dataset covers a panel of 82 emerging and developing economies observed annually from 2000 to 2017, yielding up to 1,476 country-year observations. This descriptive overview offers insight into the data's range, central tendency, and variability, laying the groundwork for understanding the results of the regression study that follows.

Table I: Descriptive Statistics of Variables

Variables	Observations	Mean	Std. Dev.	Min	Max
Real GDP per Capita (USD)	1476	4167.833	3784.08	256.539	19408.63
Remittance inflows (% GDP)	1436	5.735	7.901	0	53.826
Financial systems deposits (% GDP)	1386	41.001	45.292	0.931	763.781
Liquid liabilities (% GDP)	1385	50.266	57.721	1.531	981.912
Private credit by deposit money banks and other financial institutes (% GDP)	1386	37.296	45.977	0.328	906.383
Domestic Credit to Private Sector (% GDP)	1467	36.715	30.027	0.491	160.125
Interest rate spread	1371	7.499	7.644	-22.523	72.4
Deposit interest rate	1404	6.846	4.803	0.0463	62.576
Overhead cost	1306	4.583	3.011	0.046	29.232
Gross Fixed Capital Formation (% GDP)	1416	22.997	7.548	1.097	68.023
Population growth (%)	1475	1.549	1.290	-2.851	7.061
Secondary School Enrollment (% Gross)	1119	70.914	25.470	6.112	126.054
Government General Expenditure (% GDP)	1431	15.245	8.017	0.952	135.809
Trade Openness (% GDP)	1462	81.277	39.433	0.167	311.354

c. Main system GMM results: Size proxies of Financial development

Table II: Independent Variables: Size proxies of financial development

	Financial System Deposits	Liquid Liabilities
L.Real GDP per capita (log)	0.9682***	0.9591***
	(0.0016)	(0.0016)

Remittances inflows	**0.0329*** **	**-0.0005**
	(0.0050)	**(0.0056)**
Financial development	0.0224***	0.0113***
	(0.0018)	(0.0020)
Remittance-Financial	**-0.0119*** **	**-0.0032** **
development interaction term	**(0.0012)**	**(0.0014)**
Gross Fixed Capital	0.0254***	0.0250***
Formation	(0.0016)	(0.0024)
Population growth	-0.0073***	-0.0079***
	(0.0003)	(0.0003)
Secondary School Enrolment	0.00067***	0.0009***
	(0.00004)	(0.00005)
Government General	-0.0103***	-0.0091***
Expenditure	(0.00127)	(0.0009)
Trade Openness	0.0057***	0.0078***
	(0.0011)	(0.0012)
Constant	0.0993***	0.1802***
	(0.0136)	(0.0106)
Observations	1386	1385
Countries	82	82
AR(1) in first differences	z = -2.87 Pr > z = 0.004	z = -2.89 Pr > z = 0.004
AR(2) in first differences	z = -1.71 Pr > z = 0.088	z = -1.71 Pr > z = 0.087
AR(3) in first differences	z = 0.62 Pr > z = 0.533	z = 0.69 Pr > z = 0.493

Note: Standard errors in parenthesis, ***shows significance at 1%, ** at 5% and * at 10% correlation. The coefficients to compute the marginal effect of remittances on economic at a given level of financial development are represented in bold.

The results are detailed in Table II. Considering the monetary system's development threshold, the study examines the predicted side impacts of remittance inflows on growing the economy. Liquid liabilities to GDP and financial system reserves to GDP are two key measures used to assess the size of the financial system. There is a positive and statistically significant association between remittances and real per capita GDP, even after accounting for banking system reserves. The evidence supports the findings of earlier works by Azam et al. (2016), Bang, Mitra, and Wunnava (2016), and Senbeta (2013). Moreover, it is also evident that financial system reserves, alone, bear a high positive correlation with economic growth and hence the arguments forwarded by Cooray (2012) and Giuliano and Ruiz-Arranz (2009) are proved right. Yet, the financial system's relationship between remittances and reserves is one with a negative coefficients that the Liquid liabilities to GDP and financial system can be replaced by improved financial development instead of supplemented by it reserves to GDP are two key measures used to assess the size of the financial system the financial system becomes more developed, it is better equipped to manage liquidity challenges and extend credit, the weaker it becomes the marginal contribution links remittances to a flourishing economy. This finding is in agreement with what Ramirez and Sharma (2008) called the substitutability theory. Using monetary obligations as a surrogate for economic growth yields a different result. In this scenario, remittance inflows do not significantly directly influence economic growth. This may imply that remittances are significant for consumption or unproductive expenditure, as indicated in previous studies by Rioja and Valev (2004). To further this perspective, Rao and Hassan (2012) and Senbeta (2013) posit while remittances will have no

direct impact on per capita GDP, they can indirectly affect economic growth through different channels covering investment activity, financial intermediation, stability of output, productivity gains, as well as exchange rate volatilityvariables which may cancel out one another. Despite this, liquid liabilities continue to show a strong and favorable correlation with the expansion of the economy, consistent with the findings of Bangake and Eggoh (2011), Hsueh, Hu, and Tu (2013), and McCaig and Stengos (2005). Additionally, the negative relationship between the coefficient on the remittances and liquid liabilities supports the substitution theory, indicating that as institutions evolve and mature, they provide financial services and credit access that remittances would otherwise deliver. The findings offered by Giuliano and Ruiz-Arranz (2009), Ramirez (2013), Bettin and Zazzaro (2012), and Ramirez and Sharma (2008) further support this viewpoint.

Main system GMM results: Depth proxies of financial development

Table III: Independent Variables: Depth proxies of Financial development

	Private credit by deposit money banks and other financial institutions	**Domestic Credit to Private Sector**
L.Real GDP per capita (log)	0.9736***	0.9701***
	(0.0015)	(0.0013)
Remittances inflows	**0.1048*** **	**0.0865*** **
	(0.0027)	**(0.0030)**
Financial development	0.0340***	0.0328***
	(0.0015)	(0.0016)
Remittance-Financial development interaction term	**-0.0328*** **	**-0.0275*** **
	(0.0006)	**(0.0008)**
Gross Fixed Capital Formation	0.0231***	0.0246***
	(0.0015)	(0.0017)
Population growth	-0.0041***	-0.0055***
	(0.0003)	(0.0004)
Secondary School Enrolment	0.0006***	0.0007***
	(0.00005)	(0.00004)
Government General Expenditure	-0.0100***	-0.0121***
	(0.0018)	(0.0015)
Trade Openness	0.0085***	0.0079***
	(0.0013)	(0.0015)
Constant	0.0059	0.0413***
	(0.0121)	(0.0094)
Observations	1386	1467
Countries	82	82
AR(1) in first differences	z = -2.78 Pr > z = 0.005	z = -2.81 Pr > z = 0.005
AR(2) in first differences	z = -1.70 Pr > z = 0.089	z = -1.86 Pr > z = 0.062
AR(3) in first differences	z = 0.54 Pr > z = 0.588	z = 0.61 Pr > z = 0.543

Note: Standard errors in parenthesis, ***shows significance at 1%, ** at 5% and * at 10% correlation. The coefficients to compute the marginal effect of remittances on economic at a given level of financial development are represented in bold.

Table III presents the estimated the small yet significant impact of remittances on GDP growth consider how much money is depth. Financial depth is measured using two indicators: (i) the percentage of private loans made by banks and other financial organizations as a percentage of gross domestic product, and (ii) the ratio of household loans allocated to businesses as a percentage of GDP. The findings indicate that remittance inflows, when measured through private credit as a proxy, have a discernible and favorable effect on the expansion of the economy. It is borne out by earlier results from research conducted Azam et al. (2016), Bang et al. (2016), and Senbeta (2013). Furthermore, the analysis reveals that private credit itself is also positively and significantly linked to economic performance, corroborating the conclusions of earlier research by Ibrahim (2018), Levine (2005), Phiri (2015), and Sehrawat and Giri (2016). Remittances' relationship with private credit reveals an adverse and substantial coefficient, indicating that as the financial system enhances its credit provision, the additional remittances' effect on GDP expansion diminishes. This discovery is consistent with the substitutability hypothesis, which posits that a more developed financial system lessens dependence on remittances by effectively addressing liquidity and credit constraints on its own (Ramirez & Sharma, 2008; Sharma, 2008).

The domestic debt to private sector debt ratio, which is an alternative measure of financial depth, also shows similar patterns. Remittances continue to have a positive and statistically significant impact on economic growth, which supports previous empirical evidence. In addition, research by Ibrahim (2018) and Levine (2005) indicates that domestic loans to private companies are positively associated with economic growth. But the remittance-domestic private-sector interaction phrase debt once more reveals a negative coefficient, suggesting that advancements in the financial sector may replace the need for remittance flows. Essentially, as the financial system enhances its ability to provide credit to both businesses and individuals, the incremental growth benefits derived from remittances tend to decrease. This trend is supported by studies conducted by Ramirez (2013) and Ramirez and Sharma (2008).

d. Main system GMM results: Efficiency proxies of Financial development

Table IV: Independent Variables: Efficiency proxies of Financial development

	Interest rate spread	**Deposit interest rate**	**Bank overhead costs to total assets**
L.Real GDP per capita (log)	0.9544***	0.9495***	0.9598***
	(0.0016)	(0.0021)	(0.0015)
Remittances inflows	**-0.0416*** (0.0027)**	**-0.0221*** (0.0031)**	**-0.0375*** (0.0013)**
Financial development	-0.0199***	-0.0176***	-0.0306***
	(0.0020)	(0.0026)	(0.0018)
Remittance-Financial development interaction term	**0.0151*** (0.0014)**	**0.0039** (0.0018)**	**0.0159*** (0.0008)**
Gross Fixed Capital Formation	0.0233***	0.0271***	0.0212***
	(0.0011)	(0.0014)	(0.0016)
Population growth	-0.0066***	-0.0088***	-0.0080***
	(0.0004)	(0.0002)	(0.0003)
Secondary School Enrolment	0.0011***	0.0012***	0.0009***
	(0.00006)	(0.00007)	(0.00005)

Government General Expenditure	-0.0021 (0.0020)	-0.0086*** (0.0019)	-0.0062** (0.0029)
Trade Openness	0.0074*** (0.0015)	0.0062*** (0.0015)	0.0066*** (0.0013)
Constant	0.2716*** (0.0116)	0.3163*** (0.0123)	0.2766*** (0.0051)
Observations	1371	1404	1306
Countries	82	82	82
AR(1) in first differences	z = -2.84 Pr > z = 0.005	z = -2.87 Pr > z = 0.004	z = -4.12 Pr > z = 0.000
AR(2) in first differences	z = -1.90 Pr > z = 0.057	z = -1.73 Pr > z = 0.084	z = -1.43 Pr > z = 0.153
AR(3) in first differences	z = 0.82 Pr > z = 0.410	z = 0.49 Pr > z = 0.626	z = 0.64 Pr > z = 0.521

Note: Standard errors in parenthesis, ***shows significance at 1%, ** at 5% and * at 10% correlation. The coefficients to compute the marginal effect of remittances on economic at a given level of financial development are represented in bold.

Table IV illustrates the marginal impacts impact of remittances on GDP growth, taking into account the effectiveness of the economic system. Three key indicators are utilized to assess institutional efficiency: bank operational expenditures as a proportion of total assets, interest rate spread, and deposit interest rate. The research concludes that the interest rate spread and remittance inflows significantly slow economic growth. Chami et al. (2005) and Barajas et al. (2009) found that inefficient financial intermediation leads to excessive interest rate spreads, which in turn prevents capital from being allocated effectively. Additionally, research by Agapova and McNulty (2016) supports the notion that the interest rate spread hinders GDP growth. It is worth noting that remittances are positively and statistically associated with interest rate spreads. The narrowing of interest spreads is indicative of a more efficient financial system, which in turn enhances the growth-inducing power of remittances. The complementarity theory, which this result supports, proposes that efficient financial systems let remittances be turned into investments that produce a return. This hypothesis is supported by empirical study conducted by Abida and Sghaier (2014), Lartey (2013), and Nyamongo et al. (2012).

A similar trend emerges when considering deposit interest rates. Evidence suggests that both remittances and deposit rates have an unfavorable correlation with rising GDP, which supports the results of prior research by Chami et al. (2005) and Barajas et al. (2009), which suggests that efficient savings instruments can impede the benefits of financial intermediation. Additionally, the deposit rate alone demonstrates a negative correlation with growth, reinforcing earlier findings by Coivio (2002). The positive association observed between remittances and deposit interest rates implies that higher returns on savings may encourage the use of formal remittance channels and promote investment, ultimately fostering economic development. Concerning the overhead expenses of banking organizations, the results detect a significant negative correlation between remittances and these charges as well as economic performance overall. This pattern is consistent with the existing literature dealing with cost inefficiency (Chami et al., 2005; Barajas et al., 2009; Tan & Floros, 2012), which argues that high operating costs lower the availability of credit for productive activities. Nonetheless, the significant and positive interaction term indicates that

reducing overheads which connotes increased institutional efficiency can augment the effect effects of remittances on GDP expansion.

Finally, these findings imply that although remittances might not have much of an immediate effect in environments with inefficient financial systems, their role in promoting economic growth enhances as institutional efficiency improves. This supports the idea that money sent back by and the effectiveness on the money system work together to facilitate economic development in certain conditions.

Concluding Remarks

The persistent flow of remittances into developing nations has generated rising interest in their capabilities to stimulate economic growth, and consequently, there has been research in various fields of economic studies. One question under this debate concerns the financial sector's development role, and whether it acts as a substitute for remittances by alleviating credit constraints, or as a complementary channel through which remittance capital transfer and utilization are made viable by institutionalized financial structures.

While previous studies have primarily relied on a limited range of indicators, often focusing solely on the overall size in the banking sector. By using a more unconventional approach, this study addresses a need in the existing literature comprehensive and multidimensional approach. It utilizes seven distinct indicators that encompass three fundamental dimensions of financial development: how large the financial system is, how deeply it intermediated is, and how efficiently financial institutions run their day-to-day operation.

Empirical evidence provides mixed dynamics of interaction between remittances and the mentioned aspects in the realm of economic growth. When it comes to the metrics that show how much money is in the bank and how deep intermediation, substitutability is supported by the findings, indicating that as financial systems deepen and become larger, the marginal growth contribution of remittances diminishes. But in financial efficiency measurement, as captured in narrower interest rate spreads, reduced banking operational costs, and increased deposit interest rates, the findings indicate a complementary relationship. This means that institutional efficiency promotes remittances' capacity to enhance economic growth.

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