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The Crowding-in Impact of Remittance Inflows on Private Investment in Developing Economies: Does Institutional Setting Matter?

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Abstract

Remittance inflows play a vital role in fostering economic development in developing economies. They make substantial contributions by effectively addressing trade balance deficits, elevating the living standards of recipients, strengthening foreign exchange reserves, and reducing dependence on high-interest foreign capital. Moreover, institutional quality can further attract remittance inflows and enhance private investment. Does institutional quality harm the remittance inflows–private investment nexus? This study seeks answers by utilizing the two-step system GMM estimator and defactored instrumental variables estimators to examine the impacts of remittance inflows, institutional quality, and their interaction term on private investment in 91 developing economies from 2002 to 2020. The results present a counterintuitive

pattern: remittance inflows increase private investment while institutional quality decreases it. However, the interaction term promotes private investment. Furthermore, economic growth, labor force, and inflation positively influence private investment. These findings provide some implications for the policymaking strategies of governments in developing economies.

Keywords: remittance inflows, private investment, institutional quality, developing economies.

1. Introduction

Remittances are important in economic development and growth in several countries, especially developing ones, for their positive pass-through to the economy. They raise the living standard of households and reduce poverty in developing economies by paying daily living expenses and the cost of education and health care (Adams & Page, 2005). They promote economic growth through an expenditure multiplier effect. Remittances by households boost the retail market, which increases the demand for goods and services, thereby stimulating economic growth and creating employment (Ratha, 2003). Jawaid and Raza (2016) note the positive impact of remittance inflows on the growth rate in India, Bangladesh, Nepal, and Sri Lanka.

Developing economies have resource scarcity of foreign currency, underdeveloped financial markets, and limited access to credit. As an exogenous factor, remittance inflows are independent of domestic economic circumstances. Governments do not need to pay interest for them, so they are a stable capital source to support the balance of payments, especially in countries with current account deficits (Buch & Kuckulenz, 2010).

Despite their supportive role in the economy, remittances still create adverse effects. They reduce the trade competition of an economy by appreciating the real exchange rate—an example of the "Dutch disease" (Polat & Rodríguez Andrés, 2019). In several economies, governments implement some attractive policies to attract remittance inflows, e.g., remittance recipients do not pay taxes, regulations do not limit the amount of remittance, remittance recipients do not have to resell the foreign currency to the commercial banking system, and remittance recipients can use foreign currency to invest or spend, etc., which leads to the initial cause of the

dollarization of the economy (Luca & Petrova, 2008). Dollarization is often linked with illegal operations of the exchange market. The more the illegal exchange market develops in a country, the more informal remittance inflows move in because this market will support illegal business activities (Luca & Petrova, 2008). In addition, remittances create psychological dependence of remittance recipients on the migrants in the receiving countries. Recipients do not use remittances properly, so remittances are not necessarily a source of capital serving economic development (Chami et al., 2005).

Private investment is one of the endogenous inputs in economic growth models as a key to promoting economic growth and creating more jobs (Khan & Reinhart, 1990). Private sector development contributes to dynamic economic activities and improves the living standards of people. Greene and Villanueva (1991) note that private investment promotes real GDP growth and per capita income and reduces real interest rates, inflation, and debt/GDP in developing economies.

In terms of academic research, most studies typically incorporate domestic investment, encompassing both private and public sectors. However, this paper uniquely focuses solely on private investment. Furthermore, no prior research has delved into the impact of institutional quality on the relationship between remittance inflows and private investment. The paper focuses on this research gap as a novel contribution to the literature.

In summary, the significance of remittance inflows and private investment in developing economies cannot be overstated. Moreover, the nexus between remittance inflows and private investment in these countries can be influenced by institutional quality. For these reasons, the paper applies the two-step system-GMM Arellano-Bond (2SGMM) and defactored instrumental variables (DIVE) estimators to investigate the effects of remittance inflows,

governance/institutional quality, and their interaction with private investment in a group of 91 developing economies from 2002 through 2020.

The paper's structure is shown as follows: Section 1 introduces the motivation, while Section 2 reports global remittance inflows in developing economies. Section 3 is the theoretical background, which consists of the theoretical framework and literature review, while Section 4 is the empirical model and research data. Finally, Section 5 notes the estimated results, and Section 6 is the conclusion.

2. Global remittance inflows in developing economies

An official report by the World Bank (2022) says that in 2021, remittances in middle-income and low-income economies reached 589 billion USD, with an increase of 7.3%. In 2020, remittances to these economies decreased by 1.7% due to a global recession caused by the COVID-19 pandemic. It is the second year in which remittance inflows in these economies (excluding China) were projected to surpass the total of FDI and ODA. These facts indicate the crucial role of remittance inflows in supporting families' spending on health, food, and education in the recipient countries. Migrants' support for their families in need is one of the factors contributing to growth in remittances. Economic recovery in the United States and Europe fueled by the employment support programs and fiscal stimulus triggers this support.

The distribution of remittance flows across worldwide regions is markedly different. Remittances in the Pacific and East Asia regions fell by 4% to 131 billion USD in 2021. Except for China, remittance flows to this region increased by 1.4% in 2021 and can rise by 3.3% in 2022. The top recipient countries in this region are Toga (43.9% GDP), Samoa (21.% GDP), and the Marshall Islands (12.8% GDP). Remittances in South Asia rose by 8% to 159

billion USD in 2021. High energy prices, stimulus programs, and economic recovery in the United States contributed to the growth in remittances in this region. Remittances in India and Pakistan increased by 4.6% to 87 billion USD and 26% to 33 billion USD, respectively.

Remittances in Central Asia and Europe increased by 5.3% to 67 billion USD in 2021 due to high energy prices and economic recovery in the European Union after reducing 8.6% in 2020. Remittance inflows to this region are expected to increase by 3.8% in 2022. They are equal and higher than the total portfolio investment, ODA, and FDI in 2020 and 2021. The top recipient countries in this region are Tajikistan and the Kyrgyz Republic (above 25% GDP).

Remittances in the Caribbean and Latin America increased by 21.6% to 126 billion USD in 2021. The top recipient countries in this region were El Salvador (26.2% GDP), Honduras (26.6% GDP), Jamaica (23.6% GDP), and Guatemala (18% GDP). Hurricanes Grace and Ida and the COVID-19 pandemic led to high remittances in Central America and Mexico. Other factors are social and fiscal assistance programs and recovery in employment in hosting economies. Remittances in 2022 are projected to increase by 4.4%.

Remittances in North Africa and the Middle East increased by 9.7% to 62 billion USD in 2021 due to surging oil prices and economic recovery in the European Union (notably Spain and France). Remittances reached 33 billion USD in Egypt (up 12.6%) and 9.3 billion USD in Morocco (up 25%). However, remittance flows fell in 2021 in some economies, such as Jordan (6.9% decline), Djibouti (14.8% decline), and Lebanon (0.3% decline). Remittances are the largest external financing source among debt flows, portfolio equity, FDI, and ODA. Remittances in 2022 can decline by 3.6% due to the COVID-19 pandemic. Remittances in Sub-Saharan Africa rose by 6.2% to 45 billion USD

in 2021. The top recipient countries in this region are the Gambia (33.8% GDP), Lesotho (23.5% GDP), Cabo Verde (15.6% GDP), and Comoros (12.3% GDP). In 2022, remittances in this region can increase by 5.5% due to economic recovery in the United States and Europe.

3. Theoretical background

3.1 Theoretical framework

The family and portfolio approaches are two theoretical arguments (Dash, 2020). The former argues that altruism leads to reasons that the immigrants send money to support their families in the recipient countries (Fullenkamp et al., 2008). Meanwhile, the latter recognizes remittances sent by the immigrants as investment capital in their own countries (Rao & Hassan, 2012). Therefore, remittances can boost economic development through consumption and production, which increases domestic investment. In particular, they can enhance investment in physical and human capital.

The remittances can increase domestic investment by following channels: (i) they can stimulate domestic investment via the multiplier effect by smoothing household consumption (Ratha, 2013); (ii) they can help domestic enterprises mobilize money for investment by improving financial development in recipient countries (Aggarwal et al., 2011); (iii) they can promote human capital in recipient countries by enhancing household investment in healthcare and education (McKenzie & Rapport, 2011); (iv) they can enhance domestic investment by promoting domestic savings in recipient countries (Gani, 2016); and (v) they can provide foreign exchange to import intermediate goods and services for investment and production in recipient countries (Fullenkamp et al., 2008).

Enhancing institutional quality in developing countries is crucial, as it not only facilitates improved access to remittance flows through reduced costs and streamlined sending and receiving processes (Ajide & Raheem, 2016) but also plays a significant role in fostering the development of private investment during the economic growth and development phases in these nations (Su et al., 2021).

Unfortunately, according to Abbas (2019), the presumed positive impact of remittances on investment, known as the crowding-in effect, does not always hold. This is attributed to the shortcomings in government rules and policies, essentially the institutional quality, which may fail to channelize remittances effectively into domestic investment. In countries where households exhibit a high marginal propensity to consume, the influence of remittances on savings and investments is minimal, except for the indirect multiplier effect through increased consumption (Barajas et al., 2009). Moreover, remittances can spur the consumption of imported goods, contributing to a decrease in domestic investment (Glytsos, 2002). Additionally, there is a risk of fostering a dependency culture, where recipients rely on remittances, diminishing their inclination to engage in the local labor market and, consequently, hindering domestic investment (Chami et al., 2005).

3.2 Literature review

Most related papers have found that remittance inflows crowd in domestic investment, while a few papers find the opposite.

Regarding the crowding-in impact, most researchers recommend that governments should eliminate barriers to receiving more remittance inflows for investment. Bjuggren and Dzansi (2008) apply the pooled OLS regression, the fixed-effects model (FEM), the random-effects model (REM), and the one-step

difference GMM Arellano-Bond estimator for 79 developing economies from 1995 to 2005. Adams Jr. and Cuecuecha (2010) use the two-stage selection model for the 2000 ENCOVI Survey in Guatemala between July and December 2000, while Adams Jr. and Cuecuecha (2013) use the two-stage multinomial selection model for the 2005–06 Living Standards Survey in Ghana from September 2005 to September 2006. Meanwhile, Nurul Hossain and Hasanuzzaman (2013) employ the ARDL bounds approach for the time series data of Bangladesh from 1976 through 2010, and Okodua (2013) uses the system GMM Arellano-Bond estimator for a panel data of 31 Sub-Saharan African economies from 2000 through 2011. Gyimah-Brempong and Asiedu (2015) apply the fixed effects model and one-step difference GMM Arellano-Bond estimator for the Living Standards Survey in Ghana. They conclude that remittances bring prospects for economic development and reduce poverty via the human capital channel.

In the same vein, Manic (2017) employs the two-stage estimation process for an original survey he conducted in the Republic of Moldova. He notes that remittances promote investments in urban regions at the expense of rural regions. Recently, Abbas (2019) uses the ARDL bounds approach for four South Asian nations (Bangladesh, India, Pakistan, and Sri Lanka) between 1980 and 2017. He notes that remittances increase private investment in Bangladesh, India, and Sri Lanka but decrease it in Pakistan. Similarly, Khan et al. (2019) employ pooled OLS, FEM, REM, and PMG for five South Asian countries (Nepal, India, Sri Lanka, Pakistan, and Bangladesh) from 1990 through 2016. They suggest that governments should channelize remittances and eliminate barriers to business freedom to set up a conducive environment for investment. More recently, Dash (2020) applies the one-step system GMM Arellano-Bond estimator for a sample of six South Asian nations (Bangladesh, Sri Lanka, India,

Maldives, Pakistan, and Nepal) between 1991 and 2017. He concludes that remittances promote consumption and investment in physical and human capital development.

In terms of the crowding-out impact, researchers recommend that governments should channelize remittances through institutional improvement to promote private investment. Mallick (2012) uses the dynamic OLS regression and Error-Correction Model for a time series in India from 1966 to 2005. He suggests that some appropriate measures should be applied to transfer remittances from unproductive to productive sectors, which increases investment and economic growth. Meanwhile, Yiheyis and Woldemariam (2016) apply the ARDL bounds testing approach to four African economies (Burkina Faso, Kenya, Nigeria, and Senegal) between 1981 and 2013. Su et al. (2021) employ the cross-sectionally augmented ARDL approach for seven emerging countries (Brazil, Russia, China, India, Mexico, Indonesia, and Turkey) from 1990 to 2019.

The literature review shows that no existing papers study the impact of governance/institutional quality on the remittance inflows–private investment nexus in developing economies. Therefore, this paper will handle this issue as a new contribution to the literature.

4. Empirical model and research data

4.1 Empirical model

$$PINV_{mn} = \sigma_0 + \sigma_1 PINV_{mn-1} + \sigma_2 REMI_{mn} + \sigma_3 GOVE_{mn} + \sigma_4 (REMI \times GOVE)_{mn} + Z_{mn}\sigma' + \tau_m + \psi_{mn} \quad (1)$$

where *m* and *n* are country and time indexes, respectively. $PINV_{mn}$ is the private investment (% GDP), while $PINV_{mn-1}$ is the initial value of the private investment. $REMI_{mn}$ is personal remittances (% GDP), $GOVE_{mn}$ is one of six

governance dimensions, a proxy for institutional setting, and $(REMI \times GOVE)_{mn}$ is the interaction term between personal remittances and institutional quality. Z_{mn} is a vector containing economic growth, labor, and inflation. The unobserved country-specific, time-invariant term is τ_m, while the error term is ψ_{mn}.

Four serious issues occur from regressing Equation (1). First, inflation, economic growth, and labor force may be endogenous variables in the empirical equations. They correlate with τ_m to create the endogenous phenomenon. Second, some unobserved fixed effects like customs and culture may correlate with regressors. They may exist in τ_m. Third, the presence of $PINV_{mn-1}$ leads to a high serial autocorrelation. Fourth, the dataset contains a short length of observation (T = 19) and a large unit of countries (N = 91). These issues can make the OLS regression biased. FEM and REM may not tackle endogenous problems and serial autocorrelation, while the IV-2SLS estimator needs some suitable instruments out of regressors. Following Judson and Owen (1999), the paper employs 2SGMM and DIVE to estimate and check the robustness.

Holtz-Eakin et al. (1988) were pioneers in introducing the general method of moments (GMM), later refined by Arellano and Bond (1991). This GMM estimator has two variations: the difference between GMM and the system GMM. The challenge with the difference GMM arises when past values of persistent variables in the empirical model lack substantial information regarding their future changes, leading to weak instrumental variables. In response, the system GMM (SGMM), as demonstrated by Arellano and Bover (1995), proves to be a more effective alternative. The two-step system GMM (2SGMM) incorporates various tests, including the Arellano-Bond AR(2), Hansen, and Sargan tests, to assess the validity of instruments. Specifically, the Hansen and Sargan tests are applied to scrutinize potential

endogeneity issues, while the Arellano-Bond test AR(2) is utilized to examine serial autocorrelation.

For further robustness check, we use the defactored instrumental variables estimator (DIVE) developed by Norkutė et al. (2021) and introduced by Kripfganz and Sarafidis (2021). The main idea of this approach is to predict common factors through exogenous co-variates by analyzing principal components and performing IV regression in two stages by using defactored co-variates as instrumental variables.

4.2 Research data

The dataset contains gross fixed capital formation (private investment), personal remittances (% GDP), real GDP per capita, labor force, inflation, and six governance dimensions. The paper exacts it from the World Bank and International Monetary Fund database. The sample consists of 91 developing economies[1] between 2002 and 2020.

Table 1 reports the definition, while Table 2 indicates descriptive statistics for the dataset. The matrix in Table 3 shows that economic growth and labor are significantly and positively associated with private investment, while remittance inflows and inflation are insignificantly connected with it. Furthermore, the correlation coefficients between regressors are lower than 0.8, eliminating the co-linearity. Meanwhile, the matrix in Table 4 notes that the correlation coefficients among the six governance dimensions are high, so they are used separately in empirical models.

[1] Azerbaijan, Armenia, Argentina, Angola, Algeria, Burkina Faso, Burundi, Bulgaria, Bolivia, Brazil, Bhutan, Belize, Benin, Belarus, Bangladesh, Barbados, Croatia, Costa Rica, Côte d'Ivoire, Rep. Congo, Dem. Rep. Congo, Comoros, China, Colombia, Chile, Cambodia, Cameroon, Cabo Verde, Dominican, Ethiopia, Eswatini, Egypt, Ecuador, Fiji, Guinea, Ghana, Georgia, Gambia, Hungary, Honduras, Iran, India, Jordan, Jamaica, Kyrgyz, Kuwait, Kenya, Kazakhstan, Lesotho, Mozambique, Myanmar, Morocco, Mongolia, Montenegro, Moldova, Mexico, Mali, Mauritius, Namibia, Malaysia, Madagascar, North Macedonia, Nigeria, Niger, Nicaragua, Nepal, Oman, Poland, Philippines, Peru, Paraguay, Pakistan, Rwanda, Russian Federation, Romania, Sri Lanka, Solomon Islands, Sierra Leone, Serbia, Senegal, Saudi Arabia, Turkey, Tunisia, Togo, Thailand, Tajikistan, Ukraine, Uganda, Vietnam, Vanuatu, Zambia.

Table 1. Data description

Variable	Definition	Type	Source
Private investment (PINV)	Gross fixed capital formation (% GDP)	%	IMF
Remittance inflows (REMI)	Personal remittances consist of compensation of employees and personal transfers (% GDP)	%	World Bank
Economic growth (RGDP)	GDP per capita (constant 2010 US$)	log	World Bank
Labor force (LABO)	Labor force participation rate, total (% of total population ages 15–64) (modeled ILO estimate)	%	World Bank
Inflation (INFL)	Inflation, consumer prices (annual %)	%	World Bank
Institutional quality 1 (INS1)	Regulatory Quality	level	World Bank
Institutional quality 2 (INS2)	Rule of Law	level	World Bank
Institutional quality 3 (INS3)	Voice and Accountability	level	World Bank
Institutional quality 4 (INS4)	Control of Corruption	level	World Bank
Institutional quality 5 (INS5)	Government Effectiveness	level	World Bank
Institutional quality 6 (INS6)	Political Stability	level	World Bank

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
PINV	1,729	22.955	8.114912	4.179	80.817
REMI	1,729	5.043	6.777	0	50.101
RGDP	1,729	4776.775	5748.812	194.87	49578.36
LABO	1,729	66.681	10.483	41.47	90.34
INFL	1,729	6.327	7.292	-3.98	108.893

Table 3. The matrix of correlation

	PINV	REMI	RGDP	LABO	INFL
PINV	1				
REMI	0.016	1			
RGDP	0.084***	-0.217***	1		
LABO	0.048**	-0.252***	-0.195***	1	
INFL	-0.023	-0.042*	-0.128***	0.041*	1

Note: ***, ** and * are significance at 1%, 5%, and 10% levels,respectively.

Table 4. The matrix of correlation (six dimensions of governance)

	INS1	INS2	INS3	INS4	INS5	INS6
INS1	1					
INS2	0.797***	1				
INS3	0.628***	0.508***	1			
INS4	0.680***	0.835***	0.465***	1		
INS5	0.883***	0.858***	0.634***	0.799***	1	
INS6	0.574***	0.501***	0.492***	0.579***	0.600***	1

Note: ***, **, and * are significance at 1%, 5%, and 10% levels, respectively.

5. Empirical results

5.1 2SGMM estimates

The paper illustrates the 2SGMM estimates without the interaction term (baseline regressions) in Table 5 and the 2SGMM estimates with the interaction term in Table 6. Every column in the tables is an empirical model for a governance dimension. The paper finds that in each estimation procedure, inflation is endogenous while the remaining variables are not. Therefore, inflation is used as an instrument in the GMM style and remittance inflows, institutional quality, economic growth, and labor as instruments in the IV style.

Without the interaction term, the results across all models indicate that remittance inflows crowd in private investment, while institutional quality reduces it. With the presence of the interaction term, these results are still consistent in that the effects of remittance inflows and institutional quality on private investment remain unchanged, but their interaction term increases private investment. Concretely, across all columns in Table 6, the remittances coefficient exhibits a consistent significance at the 1% level, ranging from 0.065 to 0.093. Similarly, the interaction coefficient demonstrates a comparable pattern, fluctuating between 0.052 and 0.095, consistently significant at the 1%

level. In contrast, the coefficient associated with institutional quality varies from -0.475 to -0.700. Notably, it attains a 1% significance level in columns INS3, INS4, INS5, and INS6, while registering a 10% significance level in columns INS1 and INS2. Therefore, the main finding in this paper is that remittance inflows crowd in private investment, and this positive effect is amplified by institutional quality. Furthermore, economic growth, labor force, and inflation increase remittance inflows in developing economies.

Table 5. Remittances and private investment: 2SGMM estimates, 2002–2020 (baseline regression)

Variables	INS1	INS2	INS3	INS4	INS5	INS6
Private investment (-1)	0.863***	0.862***	0.976***	0.870***	0.871***	0.869***
	(0014)	(0014)	(0016)	(0014)	(0014)	(0014)
Remittances	0.030***	0.024***	0.031***	0.026***	0.022**	0.027***
	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)
Institutional quality	-0.304	-0.340**	-0.258***	-0.387***	-0.299*	-0.337***
	(0.209)	(0.160)	(0.116)	(0.133)	(0.176)	(0.135)
Economic growth	0.002***	0.002***	0.001***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Labor force	0.013**	0.011*	0.014**	0.012**	0.013**	0.015***
	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
Inflation	0.031**	0.036***	0.026**	0.029***	0.033***	0.030**
	(0.013)	(0.012)	(0.013)	(0.012)	(0.013)	(0.013)
Instrument	41	42	41	40	43	40
Country/Observation	91/1456	91/1547	91/1547	91/1547	91/1547	91/1547
AR(2) test	0.715	0.731	0.731	0.732	0.732	0.734
Sargan test	0.173	0.108	0.134	0.270	0.156	0.128
Hansen test	0.273	0.338	0.465	0.489	0.468	0.378

Note: Dependent variable: Private investment (% GDP); ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Table 6. Remittances and private investment: 2SGMM estimates, 2002–2020

Variables	INS1	INS2	INS3	INS4	INS5	INS6
Private investment (-1)	0.788***	0.788***	0.797***	0.798***	0.797***	0.790***
	(0014)	(0015)	(0018)	(0016)	(0017)	(0016)
Remittances	0.090***	0.083***	0.080***	0.065***	0.087***	0.093***
	(0.029)	(0.030)	(0.024)	(0.017)	(0.030)	(0.021)
Institutional quality	-0.586*	-0.507*	-0.572***	-0.516***	-0.475**	-0.700***
	(0.307)	(0.278)	(0.204)	(0.207)	(0.242)	(0.227)
Remittances*Inst. quality	0.087***	0.068*	0.092***	0.052***	0.087***	0.095***
	(0.033)	(0.038)	(0.028)	(0.020)	(0.035)	(0.029)
Economic growth	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Labor force	0.019**	0.020**	0.021***	0.017**	0.020**	0.017**
	(0.009)	(0.009)	(0.007)	(0.008)	(0.009)	(0.007)
Inflation	0.036***	0.032***	0.027**	0.037***	0.035***	0.035***
	(0.012)	(0.013)	(0.012)	(0.013)	(0.013)	(0.013)
Instrument	42	41	42	41	42	40
Country/Observation	91/1547	91/1547	91/1547	91/1547	91/1547	91/1547
AR(2) test	0.729	0.726	0.732	0.723	0.730	0.742
Sargan test	0.140	0.109	0.128	0.160	0.116	0.156
Hansen test	0.567	0.497	0.614	0.541	0.572	0.553

Note: Dependent variable: Private investment (% GDP); ***, **, and *denote significance at 1%, 5%, and 10% levels, respectively.

Most developing countries are poor and have low income levels. The standard of living for the people is not high. Migration is mainly caused by political instability/war in these countries (countries of origin) or looking for jobs in countries of destination with higher income and living standards. Access to many resources, such as knowledge, improved infrastructure, money, economic opportunities, and lifestyles elsewhere, provide incentives for people in countries of origin to migrate to countries of destination (De Haas et al., 2019). Labor force demand in countries of destination is arguably the most important driver of international migration, especially family migration, which is often an indirect consequence of labor migration. Migrants do not refuse to

do manual low-level service, industrial, and agricultural jobs (poor working environments and low salaries) until communities of origin are still their main social reference groups (De Haas et al., 2019). When they have a relatively stable life with a good income, migrants often send remittances to help relatives in their countries of origin. A portion of remittances are spent on consumption and developing human capital through education and health. The remaining is used for job creation to improve income by the establishment of small businesses. Business establishments are created from remittances to create jobs for the relatives of the migrants.

Family ties (particularly in Asian countries) motivate migrants to send remittances to help their relatives in their countries of origin. They want their relatives in their countries of origin to have a good and stable life. Orozco (2002) shows that one of the consequences of migration in Latin America is the establishment of linkages or ties between migrants and their countries of origin. Azam and Gubert (2006) emphasize that individuals in Africa do not make their own decisions about immigration; instead, it comes from the extended family. Education and health (human capital) and jobs are the targets on which migrants focus. Remittance inflows are used to invest in and develop businesses. Therefore, remittance inflows crowd in private investment in developing economies, supporting the family approach, which is similar to other research findings (Bjuggren & Dzansi, 2008; Adams Jr & Cuecuecha, 2010; Adams Jr & Cuecuecha. 2013; Okodua, 2013; Gyimah-Brempong & Asiedu, 2015; Manic, 2017; Abbas, 2019; Khan et al., 2019; Dash, 2020). Notably, Bjuggren & Dzansi (2008) find it for 79 developing countries, while Okodua (2013) notes it for 31 Sub-Saharan African economies.

The negative impact of institutional quality on private investment in developing economies can stem from the following reasons. Most developing

economies have relation-based governance (Li & Filer, 2007), meaning that institutional quality in developing economies is poor. Indeed, the design and formulation of policies and laws are less transparent. The implementation of these policies and rules is less accountable. For these reasons, public officials have some opportunities for rent seeking. They often harass and cause difficulties in the investment and production activities of private enterprises. In particular, it is often difficult for start-ups in these countries when young businesses face harassment from corrupt officials. Therefore, reform and improvement in institutional settings are not strong enough to create incentives for the development of the private sector, especially when the threshold value of institutional quality has not yet been reached to boost private investment.

Despite the negative impact of institutional quality on private investment, the interaction term between remittance inflows and institutional quality enhances it. At a macroeconomic level, most developing economies lack investment capital for economic growth and development. In addition to FDI and ODA, governments in these economies often formulate and enforce policies and laws to facilitate remittance inflows and channelize them into domestic consumption and investment. In particular, these inflows can enter the economy in the form of physical capital to enhance economic growth, provide more jobs, and thus improve people's living standards. Hence, improving institutional quality will attract more remittance inflows to host developing economies. Ajide and Raheem (2016) show that institutional improvement attracts more remittance inflows in 14 developing economies in the ECOWAS sub-region, while Lartey and Mengova (2016) find that reforming governance structure enhances remittance inflows in 90 developing countries. Bjuggren and Dzansi (2008) and Su et al. (2021) note a positive impact of institutional quality on remittance inflows. Therefore, improvement in an institutional setting in

developing economies will attract more remittance inflows, which will lead to an increase in private investment.

Economic growth raises capital accumulation for the economy under savings–investments. The private sector uses this capital to expand production, so economic growth increases private investment (Su et al., 2021; Dash, 2020; Khan et al., 2019; Abbas, 2019; Yiheyis & Woldemariam, 2016; Bjuggren & Dzansi, 2008. Meanwhile, a high ratio in the labor force is a basic input to promoting domestic investment, production, and economic growth. The labor force is one of the necessary conditions for expanding the private sector's production, which increases private investment. As inflation rises, investment cash flow tends to decline while savings cash flow sees an uptick. Despite a delay, this surge in savings ultimately finds its way into the private sector's investment stream, thereby contributing to an increase in private investment amid inflation.

5.2 Robustness test

The paper applies DIVE to check the robustness of 2SGMM estimates. In line with 2SGMM estimates, DIVE estimates note that remittance inflows crowd in private investment, while institutional quality reduces it, but their interaction term boosts it. Additionally, economic growth and labor force promote private investment.

Table 7. Remittances and private investment: DIVE estimates, 2002–2020

Variables	INS1	INS2	INS3	INS4	INS5	INS6
Private investment (-1)	0.501***	0.487***	0.472***	0.523***	0.479***	0.467***
	(0.029)	(0.025)	(0.017)	(0.018)	(0.020)	(0.019)
Remittances	0.509***	0.268**	0.107**	0.075	0.352***	0.364***
	(0.187)	(0.120)	(0.054)	(0.091)	(0.148)	(0.127)
Institutional quality	-5.735*	-6.666***	-0.881**	-1.582**	-7.114***	-6.577***
	(3.273)	(1.971)	(0.394)	(0.758)	(1.783)	(1.716)

Remittances*Inst. quality	0.507***	0.276**	0.123***	0.018	0.514***	0.658***
	(0.174)	(0.133)	(0.030)	(0.090)	(0.148)	(0.136)
Economic growth	0.089***	0.151***	0.111***	0.100***	0.129***	0.108***
	(0.029)	(0.028)	(0.019)	(0.019)	(0.017)	(0.016)
Labor force	0.395***	0.285***	0.180**	0.142**	0.234***	0.180**
	(0.098)	(0.088)	(0.084)	(0.063)	(0.080)	(0.078)
Inflation	-0.623	-0.437	0.039	-0.326	0.017	0.013
	(0.198)	(0.187)	(0.039)	(0.191)	(0.017)	(0.016)
Instrument	27	30	36	36	30	30
Country/Observation	91/1365	91/1365	91/1365	91/1456	91/1365	91/1365
Sargan test	0.283	0.645	0.140	0.108	0.107	0.147

Note: Dependent variable: Private investment (% GDP); ***, ** and *denote significance at 1 percent, 5 percent and 10 percent levels respectively.

6. Conclusion and policy recommendations

Remittance inflows and private investment play a crucial role in developing economies through their significant contribution to economic development and growth. In particular, institutional settings can significantly affect the remittance inflows–private investment nexus in these countries. For these reasons, the paper studies the impact of remittance inflows on private investment for a balanced sample of 91 developing economies from 2002 through 2020. It employs 2SGMM and DIVE for estimation and robustness checks. The counter-intuitive results indicate that remittance inflows crowd in private investment, while institutional quality decreases it, but their interaction term increases it. Meanwhile, economic growth, labor force, and inflation promote private investment.

The findings of this paper advocate the importance of remittances in enhancing the private sector's investment in developing economies. In particular, enhancing institutional quality is crucial for improving confidence in the private sector and encouraging increased investments in production

activities. It, in turn, plays a pivotal role in fostering economic development and driving overall economic growth. A favorable institutional environment not only ensures the security of private sector investments but also facilitates the smooth flow of remittances within the domestic landscape. To catalyze private investment further, we strongly advocate for governments in these nations to prioritize and actively improve their institutional quality.

Future research should consider the different roles of institutional setting/governance environment in the remittance inflows–private investment nexus between advanced and developing economies. The difference in institutional setting/governance environment between them can lead to their different roles in this relationship.

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