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Growth effects of FDI inflows, financial development and institutional quality in emerging economies: a panel quantile regression approach

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Abstract

Purpose – This study aims to examine the growth effects of foreign direct investment (FDI) inflows, financial development and institutional quality in emerging economies. The research covers 24 years of panel data of 33 selected emerging economies for the period spanning from 1996 to 2020.

Design/methodology/approach – The Pedroni and Westerlund panel cointegration tests were performed to ascertain a long run relationship among the studied variables while the panel quantile regression approach was applied to account for the heterogeneous effect of the exogenous variables on economic growth.

Findings – The study revealed among other things that FDI inflows, financial development and institutional quality all have positive effects on economic growth in the selected emerging economies. It further revealed that the growth effects of these explanatory variables are evidently heterogeneous.

Research limitations/implications – The implications of this study include the need to increase FDI inflows, especially environmentally friendly FDIs, establish a well-developed financial sector and improve institutional quality so as to accelerate growth in the selected emerging economies.

Originality/value – This paper contributes to extant literature by answering the question of whether the growth effects of FDI inflows, financial development and institutional quality can differ in sign and or magnitude depending on the performance of a country's growth. The findings of this study may help governments and policymakers to develop very good growth-promoting policies in accordance with the behavior of productivity growth.

Keywords Foreign direct investment, Financial development, Institutional quality, Economic growth, Quantile regression

Paper type Research paper

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1. Introduction

The relationship between foreign direct investment (FDI) and economic growth has been the focus of most researchers and policymakers over the past decades. One strand of literature posits that FDI inflows into a country lead to technology transfers, which may have considerable spillover effects for the economy as a whole (Carkovic and Levine, 2005; Yao, 2006). Moreover, Al-Iriani (2007) has suggested that FDI facilitates capital formation for developing countries so as to transfer knowledge and technology and provide employment which might have a positive impact on economic growth. This suggests that FDI has been a significant contributor to economic growth by providing external resources, new technologies and job opportunities. However, another strand of literature predicts that FDI adversely affects resource allocation and retards growth, especially, in the presence of financial and trade distortions (Brecher and Alejandro, 1977). These mixed results regarding the growth effects of FDI tend to suggest that it is only under certain conditions that FDI inflows can lead to economic growth.

Another factor that influences economic growth is financial development. Just like FDI, conclusions from empirical studies on the financial development-economic growth nexus remain mixed. One strand of literature shows evidence of an inverted U-shaped relationship suggesting that financial development only has a positive impact on economic growth up to a point after which its impact becomes negative (Rioja and Valev, 2004; Huang and Lin, 2009; Cecchetti and Kharroubi, 2012; Law and Singh, 2014). Other studies have found an S-shape relationship between financial development and economic growth suggesting that very low levels of financial development are detrimental to economic growth while high levels of financial development increase economic growth (see Favara, 2003).

Recent studies have also concluded that a sound institutional environment is the fundamental determinant of long-run economic growth (see Nawaz *et al.*, 2014). While factors such as good governance, rule of law and absence of corruption can lead to the accelerated rate of economic growth, corruption, lack of rule of law and property rights can hamper growth. Although the bulk of existing studies have focused on the linkages between either FDI and economic growth (Osei and Kim, 2020; Samborskyi *et al.*, 2020; Sarker and Khan, 2020; Okwu *et al.*, 2020; Nguyen, 2022; Wang *et al.*, 2022) or financial development and economic growth (Čižo *et al.*, 2020; Tariq *et al.*, 2020; Wu *et al.*, 2020; Matei, 2020; Zhang and Zhou, 2021; Shahbaz *et al.*, 2022; Bibi, 2022; Asante *et al.*, 2023) or institutional quality and economic growth (Abubakar, 2020; Radulović, 2020; Tran *et al.*, 2021; Wandeda *et al.*, 2021; Singh and Pradhan, 2022; Gasimov *et al.*, 2023), there is hardly any study on the dynamic linkages among FDI, financial development, institutional quality and economic growth for the emerging economies. Given that these countries have in the past three decades embarked on economic reforms and also opened up their economies, examining the dynamic linkages among FDI, financial development, institutional quality and economic growth would further strengthen the debate on the nexus among these variables.

For instance, the World Development Indicators (WDI) report that between 2000 and 2018, the average annual growth rate for developing economies was close to 5%, whereas the global average for the same period was 2.8% (Al-kasasbeh *et al.*, 2022). In addition, in 2023, the gross domestic product (GDP) of emerging economies was over $40tn, accounting for half of the global GDP in 2023 (Gizaw *et al.*, 2024). This increased economic growth in emerging countries is attributed to FDI inflows, improvement in institutional quality and sound and efficient financial systems or financial development, which includes capital markets and banks (Gizaw *et al.*, 2024; Hussen, 2023; Uddin *et al.*, 2023). This is especially true for emerging countries in Asia and Africa, where financial institutions are frequently fragmented and monopolized by the state, and they are still less competitive than those in

rich countries. Also, emerging countries have become the leading recipient of FDI inflows recently especially, China and India. Similarly, FDI in emerging economies has grown over the past three decades, from roughly 5% in 2000 to nearly 19% in 2020 (Xie and Sun, 2020). This growth in FDI inflows has been attributed to some factors, including increased market size, trade openness, human capital, low labor costs, financial development and increased productivity (Goswami *et al.*, 2019; Kumari and Sharma, 2017). However, the nature of FDI inflows determines how FDI affects economic growth. The main research question of this paper is as follows:

RQ1. How do FDI and institutional quality affect economic growth in emerging economies?

The specific research questions are as follows:

RQ2. How does FDI influence economic growth in the selected emerging economies?

RQ3. How does financial development affect economic growth in the selected emerging economies?

RQ4. How does institutional quality affect economic growth in the selected emerging economies?

This paper differs from the previous studies in four novel ways. First, this research creates an institutional quality index to measure different aspects of institutions. Six measures from the World Governance Indicators (WGI) data set are used to proxy for institutions: (a) voice and accountability, (b) political stability, (c) control of corruption, (d) rule of law, (e) government effectiveness and (f) regulatory quality. Second, unlike most existing research that supports traditional regression methodologies to establish determinants of economic growth, the panel quantile regression approach is applied to investigate the dynamic linkages among FDI, financial development, institutional quality and economic growth. The results given by this approach are efficient, reliable and robust because it stratifies the distributional influence of the explanatory variables on the outcome variable in different quantile ranges (Usman and Jahanger, 2021). The main advantage of this technique is that it can help us detect the heterogeneous effects of all the explanatory variables on economic growth in different quantiles. Finally, this study extends the body of literature on economic growth by examining the dynamic linkages among FDI, financial development, institutional quality and economic growth for emerging economies.

The remainder of this paper is organized as follows. Section 2 reviews the theoretical and empirical literature while Section 3 deals with the methodology. Sections 4 and 5 discuss the results and the paper's policy recommendations, respectively.

2. Literature review

2.1 Nexus between foreign direct investment and economic growth

Several empirical studies have investigated the nexus between FDI and economic growth from different perspectives. For instance, Osei and Kim (2020) used a dynamic panel threshold model on 62 middle- and high-income countries to examine the nonlinearity among finance, FDI and economic growth for the period covering 1887–2016. Overall, the results indicate that FDI has a positive effect on economic growth. However, the growth effect of FDI diminishes when the ratio of private sector credit to GDP is above 95.6%. Moreover, Sarker and Khan (2020) used the augmented autoregressive distributed lag (ARDL) bounds testing approach to investigate the nexus between FDI and economic

growth in Bangladesh for the period between 1972 and 2017. The authors found a long-run nexus between FDI and economic growth and the existence of a unidirectional causality that runs from economic growth to FDI. Furthermore, Dinh *et al.* (2019) used the vector error correction model (VECM) and fully modified ordinary least squares (FMOLS) techniques to examine the effect of FDI on economic growth in developing countries of the lower-middle-income group spanning from 2000 to 2014. The results indicate that FDI helps in increasing economic growth in the long run, but it has a negative impact in the short run. Also, Owusu-Nantwi and Erickson (2019) used the VECM technique to examine the impact of FDI and economic growth in 10 South American countries for the period 1980–2015. The authors found evidence that suggests that in the long run, there is a positive and significant impact of FDI on economic growth in the region. Again Rao *et al.* (2023) used alternative empirical estimations to investigate the interrelationship among foreign aid, FDI and economic growth in South East Asia and South Asia for the period 1980–2016. The results of the study revealed among other things that economic growth responds positively to economic growth. Finally, Yahyaoui (2023) used a panel vector autoregressive model to examine the role of corruption in FDI–growth nexus for Africa between 1996 and 2016. The empirical results showed that FDI has a positive effect on African growth.

2.2 Nexus between financial development and economic growth

Considering the nexus between financial development and economic growth, Čižo *et al.* (2020) found evidence that in Latvia, there exists a positive linear relationship between the two variables over the period from 1995 to 2017. Also, using the threshold regression model to examine the effect of financial development and economic growth in Pakistan for the period 1980–2017, a study by Tariq *et al.* (2020) revealed that financial development has a positive effect on economic growth when the level of financial development is above the threshold value of 0.151. However, when financial development is below the threshold value, its impact on economic growth is negative. Moreover, Ibrahim and Alagidede (2018) examined the nonlinearities in the financial development-economic growth nexus in sub-Saharan Africa from 1980 to 2014 using the system generalized method of moments (GMM) and concluded that below a certain threshold, finance does not influence economic growth but significantly influences economic activity for countries above the threshold. Again, Shahbaz *et al.* (2022) used a three-regime threshold ARDL model to examine the relationship between financial development and economic growth in 10 top financially developed countries. The results showed that in the upper regime, financial development increases economic growth in Singapore while it impacts negatively on economic growth in Finland. The results also revealed that in the middle regime, financial development boosts economic growth in Australia and Singapore. Finally, the results indicated that in the lower regime, financial development reduces economic growth in the USA, Malaysia and Singapore. Bibi (2022) examined the effect of bank-based financial development and stock markets on economic growth in four countries in South Asia from 1980 to 2017. The results revealed that financial development generally influences economic growth positively and significantly. Furthermore, Anthony-Orji *et al.* (2023) used the classical linear modeling technique to examine the nexus between financial development and economic growth in Nigeria for the period 1981–2019. The authors concluded that financial development enhances growth in Nigeria.

2.3 Nexus between institutional quality and economic growth

Most empirical studies have concluded that a good institutional framework leads to rapid economic growth. For instance, Abubakar (2020) used the Johansen Cointegration and OLS

techniques to examine the relationship between institutional quality (contract-intensive money and effective governance index) and economic growth in Nigeria for the period 1979–2018. The results revealed that contract-intensive money positively and significantly influences economic growth while effective governance index has an insignificant effect on economic growth. Similarly, Tran *et al.* (2021) used a panel quantile regression approach to investigate the impact of institutional quality on economic growth for 48 Asian countries spanning from 2005 to 2018. The results showed that in lower-income Asian countries, better-quality institutions influence economic growth more than in the higher-income countries. The authors further found evidence of an asymmetric relationship between institutional quality and economic growth. Furthermore, Singh and Pradhan (2022) examined the impact of institutional quality on economic growth in South Asia for the period 2002–2016 using fixed effects regression and FMOLS. The results revealed that in the long run, institutional quality has a positive impact on economic growth. However, the short-run results showed that institutional quality has no effect on economic growth.

Again, Gasimov *et al.* (2023) examined the effect of the institutional environment on economic growth for some post-Soviet economies between 1996 and 2021. The results showed a U-shaped link between institutional quality and economic growth. Wandeda *et al.* (2021) used the two-step system GMM to examine the effect of institutional quality on economic growth in sub-Saharan Africa for the period 2006–2018. The results revealed that economic growth responds positively to institutional quality in sub-Saharan Africa. The results further showed that institutional qualities are more effective in driving economic growth in the West African region than in Southern Africa, Eastern Africa and Central Africa. Furthermore, Appiah *et al.* (2020) employed the two-step system GMM approach to examine the effect of financial development and institutional quality on economic growth for 15 emerging countries in West Africa. The results found evidence that control of corruption lowers growth while regulatory quality enhances growth. Finally, Chhabra *et al.* (2023) applied the system GMM to examine the impact of institutions and trade openness on economic growth in Brazil, Russia, India, China and South Africa (BRICS) for the period 1991–2019. The results revealed that institutions have a positive effect on economic growth in the short run.

Conclusively, the reviewed literature demonstrates that there is no consensus among previous studies on the effect of FDI, financial development and institutional quality on economic growth. Thus, the conflicting results expose knowledge gaps and this paper contributes to the literature by using panel quantile regression methodology to examine the extent to which FDI, financial development and institutional quality heterogeneously influence economic growth for a panel of 33 emerging economies over the period 1996–2020.

3. Data source and methodology

The current paper aims to explore the effect of FDI, financial development and institutional quality on economic growth for 33 emerging economies (see the list of specified countries in Appendix 1 based on data availability) during the period from 1996 to 2020. This paper focuses on emerging countries because emerging countries have become the leading recipients of FDI inflows recently especially, China and India due to cheap labor costs, increased productivity and large market size. Similarly, FDI to emerging economies has grown to 19% in 2020 from 5% in 2000. Also, between 2000 and 2018, the average annual growth rate for developing economies was about 5% which is above the global average for the same period (2.8%). Furthermore, emerging countries have seen significant improvement in their institutional quality. Finally, the financial institutions in developing countries are

frequently fragmented and monopolized by the state, and they are still less competitive than those in rich countries. Real GDP per capita (used as a proxy for economic growth) is the dependent variable. Real GDP per capita is used as a measure of economic growth because captures the standard of living better than the economic growth rate which only captures changes in economic output. The variable of FDI is defined as foreign direct investment as a percentage of GDP. Financial development (FD) is measured by the financial development index. The data on institutional quality are collected from the World Bank's WGI. This database provides six different institutional quality indicators namely; voice and accountability, political stability, control of corruption, rule of law, government effectiveness and regulatory quality. These indicators are expected to be correlated and so an institutional quality index is constructed using the Principal Component Analysis (PCA) approach. One main advantage of the PCA is that the weights assigned to the variables are determined by the data itself (Nawaz *et al.*, 2014). Control variables used in the study include population growth and general government final consumption expenditure as a percentage of GDP (used as a proxy for government expenditure). The data on all the aforementioned variables are obtained from the WDI published by the World Bank. Summary of the regression variables is in Table 1. Table 2 shows the descriptive statistics of the variables used.

The descriptive statistics show that the annual average real GDP per capita is 4628.616 over the period 1996–2020. The annual average FDI as a percentage of GDP is 2.894966 over the same period. The annual average government expenditure is 13.53735 while the annual average inflation rate is 8.138374 over the same period. Finally, the annual population growth rate over the same period is 1.280183.

Table 1. Measurement units of the study variables

Variable	Measurement unit	Source
Real GDP per capita	Constant 2015 US dollar	World Development Index (WDI) (2022)
Institutional quality	Institutional quality index	WGI (2022)
Financial development	Financial development index	IMF (2022)
Foreign direct investment	Foreign direct investment as a percentage of GDP	WDI (2022)
Population growth rate	Population growth annual percentage	WDI (2022)
Government expenditure	General government final consumption expenditure as a percentage of GDP	WDI (2022)
Inflation rate	Consumer Price Index (2010 = 100)	WDI (2022)

Source: Authors' own work

Table 2. Descriptive statistics

Variable	Observations	Mean	SD	Min	Max
IQ	825	−0.007898	1.038502	−3.378062	3.850689
FD	825	0.319290	0.148967	0.067833	0.737203
FDI	825	2.814966	2.837463	−2.757440	31.22753
GE	825	13.53735	4.243636	0.911235	25.54844
Inf	825	8.138374	10.76254	−1.710337	154.7635
Popg	825	1.280183	1.050471	−2.170699	11.79402

Source: Authors' own computation

Given the socio-economic similarities of the 33 sampled emerging economies, we started by performing cross-sectional dependence (CD) tests. Disregarding the existence of CD may lead to biased estimates and forecasting errors. When it is established that CD exists in the series, it is recommended that the second generation unit root tests are performed to confirm that the data is stationary. In this study, the cross-sectional augmented Dickey–Fuller and cross-sectional Im–Pesaran–Shin unit root tests are conducted. After establishing that there is stationarity in the series, the Pedroni (1999, 2004) and Westerlund (2005) cointegration tests are performed to confirm the existence of a long-run relationship among the variables under study.

3.1 Econometric model

To examine the growth effect of FDI, financial development and institutional quality, we used the following model

$$ln\ RGDPPc_{it}\left(\beta|X_{i,t}\right) = \beta(\tau)^{'}X_{it} + \varepsilon_{it}\ i = 1, 2, \ldots\ldots N\ t = 1, 2, \ldots\ldots\ldots N \quad (1)$$

Where ln $RGDPPc_{it}$ is real GDP per capita, X_{it} represents a set of explanatory variables, $\beta(\tau)$ represents the unknown coefficients in the model, ε_{it} is the error or disturbance term, i denotes the selected emerging economies and t represents the year. More specifically, equation (1) is re-written as follows:

$$ln\ RGDPPc_{it} = \alpha_{it} + \beta_1 FDI_{it} + \beta_2 FD_{it} + \beta_3 IQ_{it} + \beta_4 lnGE_{it} + \beta_5 Inf_{it} + \beta_6 Popg_{it} + \varepsilon_{it} \quad (2)$$

For a country i and year t, ln $RGDDPc_{it}$ is the natural log of economic growth, FDI_{it}represents FDI, FD_{it} is financial development, IQ_{it} is institutional quality, ln GE_{it} is the natural log of government expenditure (proxy for government size), Inf_{it} is the inflation rate and $Popg_{it}$ is population growth. β shows the direction and significance of the exogenous variables and ε_{it} is the disturbance or error term.

3.2 Justification of variables used

3.3 Panel quantile regression model

According to Lamarche (2010), the use of traditional techniques such as OLS, ARDL and dynamic simultaneous equation models may result in the overestimation of the variables' coefficients thereby, providing wrong information. In such methods, unobserved heterogeneity is ignored (Khan *et al.*, 2020). Quantile regression was first introduced by Koenker and Bassett (1978) as an extension of the OLS method. The median of quantile regression to other quantiles takes the following general form.

$$Q_y i_t(\tau X_{it}) = X_{it}^{\tau}\beta_{\tau} \quad (3)$$

Where $Q_{yit}\ (\tau|X_{it})$ shows the τ^{th} quantile of the economic growth variable, X_{it}^{τ} represents the vector of explanatory variables for each country i for year t β_{τ} denotes the gradient of the exogenous factors for a τ^{th} quantile.

This current study explores the effect of FDI, financial development and institutional quality on economic growth through the following model:

$$ln\ GDPPc_{it}(\tau\alpha_i\xi_t, X_{it}) = \alpha_i + \xi_t + \beta_{1\tau}FDI_{it} + \beta_{2\tau}FD_{it} + \beta_{3\tau}IQ_{it} + \beta_{4\tau}lnGE_{it} + \beta_{5\tau}Inf_{it} + \beta_{6\tau}Popg_{it} \quad (4)$$

Where i and t represent country and time respectively, ln $RGDPPc_{it}$ is the indicator for economic growth. α_i is the slope intercept, β_1, β_2, β_3 and $\beta_4$coefficients estimated the FDI, institutional quality, government expenditure, inflation and population growth respectively, while ξ_t represents the error term. Following Zhang *et al.* (2016), the estimation of the coefficients for the τ^{th} quantile of the conditional distribution can be obtained as follows:

$$\beta^{(\tau)} = arg\min \sum_{i}^{n} 1 = \rho\tau(Y_i = x_i^{\tau}\beta) \quad (5)$$

Where$\rho\tau(u) = u\left(\tau - I(u < 0), I(u < 0) = \left\{\frac{1, u \le 0}{0, u \ge 0}\right.\right.$ represents the check function, while $I(*)$ denotes an indicator function. It can be seen from equation (5) that the panel quantile regression is a weighted regression where different weights τ and $1 - \tau$ are set to positive and negative residuals, respectively. Most of the estimations of quantile panel data include the additive fixed effects (Koenker, 2004; Lamarche, 2010) and so the interpretations tend to differ from estimation to estimation. However, this study used the panel quantile regression estimator proposed by Powell (2016). This estimator is linear in nature and introduces the estimator for quantile panel data with no additive fixed effects. Thus, the model is stated as:

$$y_{it} = D_{it}\beta\left(U_{it}^{*}\right) \quad (6)$$

Where y_{it} is the dependent variable, economic growth, $D_{it} = (I_{it}, X_{it})$ is the vector of the explanatory variables for country i at time t The coefficient variable is represented by β, while U is the disturbance term.

4. Empirical findings and discussion

4.1 Correlation matrix

The correlation matrix of the variables used are displayed in Table 3. A fairly positive correlation (0.5011) is observed between ln *IG* and ln *GE*, while a relatively low negative correlation (–0.0083) is observed between IQ and Popg. There is no issue of multicollinearity when the correlation values of all the exogenous variables in a study are less than 0.85

Table 3. Correlation matrix

Variable	lnGDPPc	FDI	FD	IQ	lnGS	Inf	Popg
lnGDPPc	1						
FDI	0.2189***	1					
FD	0.3759***	0.0763**	1				
IQ	0.1112***	0.0037	0.0522	1			
lnGE	0.4636***	0.1251***	0.2260***	0.0541	1		
Inf	−0.0316	−0.0573	−0.1602***	−0.1870***	−0.11264***	1	
Popg	−0.3652***	−0.0851**	−0.0645*	−0.0083	−0.2356***	−0.0197	1

Note: ***, ** and * show the coefficients are significant at the 1, 5 and 10% levels of significance, respectively
Source: Authors' own computation

Table 4. Cross-sectional dependence tests

Variable	Breusch–Pagan LM	*p*-value	Pesaran CD	*p*-value
ln*RGDPPc*	10499.5***	0.0000	99.556***	0.0000
IQ	3547.528***	0.0000	4.777***	0.0000
FD	5343.057***	0.0000	47.976***	0.0000
FDI	1361.984***	0.0000	17.576***	0.0000
inGE	2741.664***	0.0000	13.266***	0.0000
Inf	1981.636***	0.0000	28.415***	0.0000
Pogn	3831.185***	0.0000	25.341***	0.0000

Note: *** Denotes a 1% level of significance
Source: Authors' own computation

(Krammer, 2010). As can be seen from Table 3, all the coefficients are less than 0.85 implying that there is no problem of multicollinearity.

4.2 Cross-sectional dependence test results

The results of the Breusch–Pagan Lagrange Multiplier (LM) and Pesaran CD tests are reported in Table 4 and they show the existence of CD. The null hypothesis of cross-sectional independence for all the concerned variables is rejected at a 1% significance level.

4.3 Panel unit root test results

Given the CD test results in Table 4, first-generation unit root tests such as the Levine–Lin–Chu and the Im–Pesaran-Shin unit root tests are not appropriate for this study. Thus, the second-generation unit root tests were performed and the results are presented in Table 5.

The results from the cross-sectional Im–Pesaran-Shin (CIPS) and cross-sectional augmented Dickey–Fuller (CADF) tests show that all the variables are stationary at their first difference.

4.4 Panel cointegration tests

After confirming the stationarity of the series, we conducted the Pedroni (1999, 2004) and Westerlund (2005) cointegration tests and the results are reported in Table 6. The paper uses both Pedroni (1999, 2004) and Westerlund (2005) to ensure the consistency of the results in

Table 5. Empirics for CIPS and CADF unit root tests

Variable	CIPS		CADF	
	Level	Difference	Level	Difference
ln*GDPPc*	−1.821	−3.099***	−2.091**	−2.389***
IQ	−1.976	−4.560***	−2.202**	−3.554***
FD	−2.568***	−5.141***	−2.621***	−3.528***
FD	−3.387***	−5.555***	−2.693***	−4.648***
ln*GE*	−2.001	−4.236***	−2.202**	−3.440***
Inf	−3.808***	−5.387***	−3.083***	−4.587***
Popg	−1.332	−1.2.630***	−1.643	−2.771***

Note: ***and ** denote 1 and 5% significance levels, respectively
Source: Authors' own computation

Table 6. Pedroni and Westerlund cointegration test results

Pedroni test	Statistic
Modified Phillips–Perron t	6.455***
Phillips–Perron t	1.669**
Augmented Dickey–Fuller t	1.997**
Westerlund test	
Variance ratio	8.229***

Note: *** and ** denote 1 and 5% significance levels, respectively
Source: Authors' own computation

determining whether a log-run relationship exists between the explanatory variables and the dependent variable.

In both the Pedroni and Westerlund tests, the null hypothesis of no cointegration has been rejected at 5% and 1%, respectively, implying that a long-run relationship exists among the variables under consideration.

4.5 Panel quantile regression results

The outcomes of the panel quantile regression are reported in Table 7.

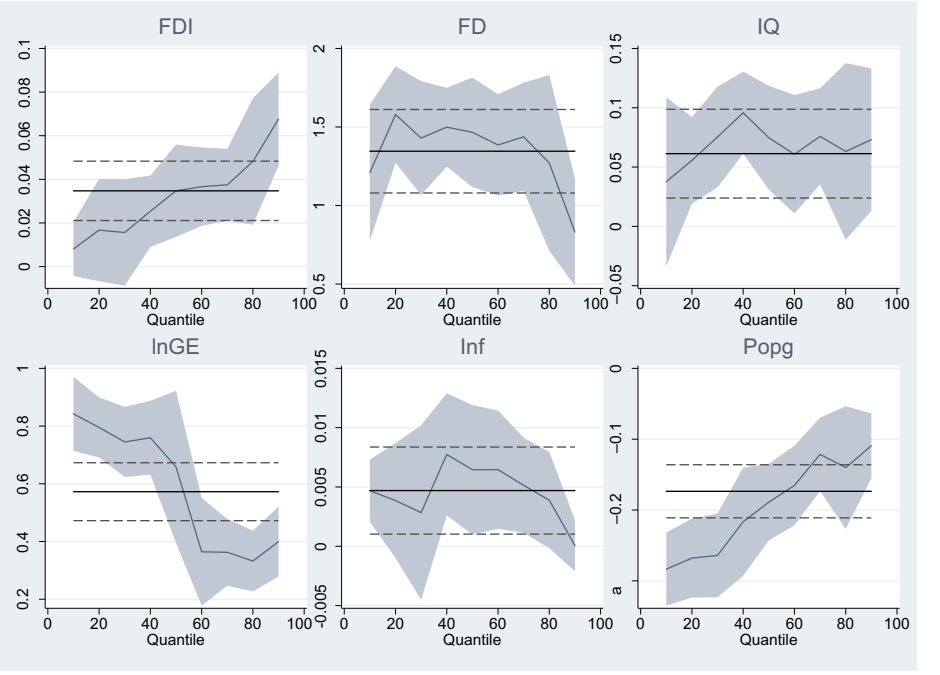
The empirical results of the regression analysis show the heterogeneous effects of various factors on economic growth. FDI has a positive effect on economic growth but it is only significant from the 40th percentile to the 90th percentile. It is observed that FDI's effect on economic growth is heterogeneous. Specifically, in higher quantiles, the magnitude of the coefficient tends to be much higher. In the 40th percentile, the coefficient is 0.025, and it becomes more than two and a half times higher in the 90th percentile with a coefficient of 0.068. It implies that higher levels of FDI inflows positively and significantly affect economic growth. Financial development (FD) showed a significant positive effect on economic growth across all the quantiles (percentiles). Similarly, the results indicate a heterogeneous impact of financial development on economic growth as the magnitude decreases as the quantiles increase. Furthermore, economic growth responds positively and significantly to institutional quality. The results reveal that with the exception of the 10th and 80th percentiles, there exists a positive association between institutional quality and economic growth in the rest of the other quantiles (percentiles). It reaches the highest quantile in the 40th percentile with a coefficient of 0.096 and thereafter reduces to 0.073 in the 90th percentile. Therefore, the effect of institutional quality on economic growth varies across different classes of quantile.

On the controls, the results show that the effect of government expenditure on economic growth is positive and significant but varies across different classes of quantile. The magnitude of the coefficient is higher in the lower quantiles (percentiles) but reduces in the higher quantiles (percentiles). In the 10th percentile, the coefficient is 0.842 and reduces to 0.340 in the 90th percentile. Furthermore, the regression results indicate that inflation has a positive and significant relationship with economic growth. The positive effect of inflation on economic growth is at a moderate level of 0.005 in the 10th percentile but becomes insignificant in the 20th and 30th percentile. In the 40th percentile, it rises to 0.008 but reduces to 0.007, 0.005 and 0.004 in the 60th, 70th and 80th percentiles, respectively. Finally, the results show a heterogeneous effect of population growth on economic growth. Specifically, there exists a negative and significant effect of population growth on economic growth. However, the negative effect is higher in the lower quantiles than in the higher

Table 7. Panel quantile regression results

Dependent variable: ln*GDPPc*	Percentiles								
	10th	20th	30th	40th	50th	60th	70th	80th	90th
FDI	0.008	0.017	0.016	0.025**	0.035***	0.037***	0.038***	0.048**	0.068***
	(0.009)	(0.012)	(0.012)	(0.011)	(0.010)	(0.010)	(0.011)	(0.023)	(0.015)
FD	1.209***	1.579***	1.429***	1.499***	1.466***	1.386***	1.437***	1.271***	0.831***
	(0.267)	(0.153)	(0.172)	(0.119)	(0.178)	(0.166)	(0.159)	(0.326)	(0.199)
IQ	0.028	0.056**	0.075***	0.096***	0.075**	0.061*	0.076***	0.063	0.073***
	(0.034)	(0.023)	(0.023)	(0.025)	(0.033)	(0.034)	(0.029)	(0.052)	(0.022)
ln*GE*	0.842***	0.795***	0.745***	0.760***	0.659***	0.365***	0.363***	0.333***	0.340*
	(0.053)	(0.045)	(0.053)	(0.072)	(0.124)	(0.100)	(0.069)	(0.057)	(0.239)
Inf	0.005***	0.003	0.003	0.008***	0.007**	0.007***	0.005***	0.004**	0.000
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)
Popg	−0.283***	−0.268***	−0.264***	−0.217***	−0.189***	−0.165***	−0.121***	−0.0.140**	−0.109**
	(0.039)	(0.277)	(0.039)	(0.048)	(0.039)	(0.037)	(0.036)	(0.055)	(0.045)

Note: ***, ** and * denote 1, 5 and 10% significance levels, respectively
Source: Authors' own computation



Source: Authors' own work

Figure 1. Panel quantile regression coefficients

quantiles. In the 10th percentile, the coefficient is −0.283 but changes to −0. 109 in the 90th percentile.

The empirical estimates of the quantile regression results are further depicted graphically in Figure 1. It can be clearly seen from Figure 1 that all the explanatory variables have crossed the significance level after a certain level of percentile, confirming the existence of a heterogeneous feature in all the variables.

4.6 Discussions

FDI drives growth through increased productivity, provision of employment, transfer and adoption of new technologies, creation of new markets and development of new infrastructure. The positive effect of FDI on economic growth at a decreasing rate at higher quantiles may be explained by the diminishing marginal returns of capital and labor inputs associated with FDI. This is consistent with previous studies such as Rao *et al.* (2023), Yahyaoui (2023) and Osei and Kim (2020) who found a positive effect of FDI on economic growth. The positive effect of financial development on economic growth may be a result of innovations in the financial sector coupled with increased investment. Also, financial development drives growth through employment, mobilization of savings, efficient resource allocation and enhanced productivity. The results on financial development and economic growth are consistent with prior studies such as Čižo *et al.* (2020), Bibi (2022) and Anthony-Orji *et al.* (2023). Erdoğan *et al.* (2020) have argued that a developed financial system

strengthens the relationship between natural resources and the real sector and this in turn, encourages production activities. Raghutla and Chittedi (2020) also concluded that financial development drives the economic growth of emerging economies of BRICS. Institutional quality drives economic growth by economic growth by encouraging investment and consumption, increasing productivity, more effectively allocating resources, defending property rights and promoting individual freedom of choice. In addition, better institutional quality encourages foreign investment into innovative industries and reduces competition with indigenous enterprises, which helps to decrease the crowding-out effect of FDI and improve FDI–growth benefits. The result is consistent with studies (Ngo and Nguyen, 2020; Nguyen *et al.*, 2018; Singh and Pradhan, 2022; Wandeda *et al.*, 2021) who argued that institutional quality drives growth in emerging markets. Moreover, through budgetary expansion that increases private sector spending and creates a multiplier effect, government spending propels economic growth.

On the controls, during economic downturns, when labor market rigidities prevent the forces of free markets from maintaining equilibrium, government expenditure increases domestic consumption which drives economic growth. In addition, Barro (1990) posits that the impact of government expenditure on the economy changes as the economy expands. This may explain the decreasing magnitude of the effect of government expenditure on economic growth as the quantiles increase. The positive effect of government expenditure on economic growth is consistent with Ahuja and Pandit (2020) who found a positive effect of government expenditure on economic growth in emerging countries. It must be noted that for economies such as those of emerging countries, moderate inflation rates are required to drive consumption. Burdekin *et al.* (2004) have noted that at low rates, higher inflation increases economic growth. Finally, the negative effect of population growth on economic growth may be explained by the increased competition for limited resources such as food, water and housing may result from a population that is expanding quickly. This may lead to poverty and low living conditions. Additionally, a growing population may strain the labor market, increasing underemployment and unemployment which would result in economic inefficiency and reduced productivity. Increased population density can also result in worsening environmental conditions when more people strain infrastructure and natural resources which may also result in economic inefficiency. This finding contradicts Aye and Edoja (2017) and Ahuja and Pandit (2020) who found a positive effect of population growth on economic growth.

5. Conclusion and policy recommendations

This paper examines the heterogeneous effect of FDI, financial development and institutional quality on economic growth in emerging countries over the period 1996–2020. To reinforce our analysis, we also incorporated government expenditure, inflation rate and population growth as control variables in our model. The Breusch–Pagan LM and Pesaran CD tests were

Table 8. Results of panel Granger non-causality test

Null hypothesis	HPJ Wald test	Results for half-panel jackknife estimation coefficient
$IQ \neq \ln RGDPPC$	4.173**	−0.0052287**
$\ln RGDPPC \neq IQ$	0.350	0.1029572

Notes: The BIC selection criterion shows that the optimal number of lags is one; ** denotes a significance level of 5%
Source: Authors' own computation

performed and the results showed the existence of CD in the data. We proceeded to perform the CIPS and the CADF unit root tests as well as the Pedroni and Westerlund cointegration tests so as to estimate the long-run relationship among the variables. The outcomes of the unit root tests indicate that all the variables are stationary at first difference. The panel cointegration test results show the existence of a long-run relationship among all the variables. Applying the panel quantile regression, we found that the growth effects of FDI, financial development, institutional quality, government expenditure and inflation are evidently heterogeneous. In particular, these regressors have a positive relationship with economic growth over the selected emerging economies, whereas the relationship is negative for population growth. This implies that higher FDI, financial development, institutional quality, government expenditure and inflation will lead to higher economic growth. On the other hand, if population growth increases, it will impact negatively on economic growth. The empirical analysis of this study corroborates most of the previous studies on economic growth.

Our findings lead to a conclusion that sustained economic growth is realizable when sustainable FDI, sustainable financial development and improved institutional framework are allowed to play significant roles in the efforts and practices of the selected emerging economies. Thus, policymakers and governments in the selected emerging economies should formulate and implement policies aimed at increasing FDI inflows, developing the financial sector and strengthening institutions to achieve sustained economic growth. Future research direction should be oriented toward examining the panel asymmetric Granger causality between FDI inflows and economic growth and institutional quality and economic growth in emerging economies.

References

Abubakar, S. (2020), "Institutional quality and economic growth: evidence from Nigeria", *African Journal of Economic Review*, Vol. 8 No. 1, pp. 48-64.

Ahuja, D. and Pandit, D. (2020), "Public expenditure and economic growth: evidence from the developing countries", *FIIB Business Review*, Vol. 9 No. 3, pp. 228-236.

Al-Iriani, M. (2007), "Foreign direct investment and economic growth in the GCC countries: a causality investigation using heterogeneous panel analysis", *Topics in Middle Eastern and North African Economies*, Vol. 9.

Al-kasasbeh, O., Alzghoul, A. and Alhanatleh, H. (2022), "The impact of fiscal policy and trade liberalization on economic growth: evidence from structural breaks for Jordan", *International Journal of Professional Business Review*, Vol. 7 No. 6, p. e0850.

Anthony-Orji, O.I., Orji, A., Ogbuabor, J.E. and Uka, L.C. (2023), "Money matters a lot: empirical analysis of financial development, financial inclusion and economic growth in Nigeria", *International Journal of Economic Policy in Emerging Economies*, Vol. 17 No. 1, pp. 100-117.

Appiah, M., Li, F. and Frowne, D.I. (2020), "Financial development, institutional quality and economic growth: evidence from ECOWAS countries", *Organizations and Markets in Emerging Economies*, Vol. 11 No. 1, pp. 6-17.

Asante, G.N., Takyi, P.O. and Mensah, G. (2023), "The impact of financial development on economic growth in Sub-Saharan Africa. Does institutional quality matter?", *Development Studies Research*, Vol. 10 No. 1, p. 2156904.

Aye, G.C. and Edoja, P.E. (2017), "Effect of economic growth on CO_2 emission in developing countries: evidence from a dynamic panel threshold model", *Cogent Economics and Finance*, Vol. 5 No. 1, p. 1379239.

Barro, R.J. (1990), "Government spending in a simple model of endogeneous growth", *Journal of Political Economy*, Vol. 98 No. 5, Part 2, pp. S103-S125.

Bibi, R. (2022), "The effect of financial development on economic growth: evidence from South Asian developing countries", *Journal of Environmental Science and Economics*, Vol. 1 No. 1, pp. 1-17.

Brecher, R.A. and Alejandro, C.F.D. (1977), "Tariffs, foreign capital and immiserizing growth", *Journal of International Economics*, Vol. 7 No. 4, pp. 317-322.

Burdekin, R.C., Denzau, A.T., Keil, M.W., Sitthiyot, T. and Willett, T.D. (2004), "When does inflation hurt economic growth? Different nonlinearities for different economies", *Journal of Macroeconomics*, Vol. 26 No. 3, pp. 519-532.

Carkovic, M. and Levine, R. (2005), "Does foreign direct investment accelerate economic growth", *Does Foreign Direct Investment Promote Development*, Vol. 195, p. 220.

Cecchetti, S.G. and Kharroubi, E. (2012), "Reassessing the impact of finance on growth", *Bank for international settlements. No. 381*.

Chhabra, M., Giri, A.K. and Kumar, A. (2023), "What shapes economic growth in BRICS? Exploring the role of institutional quality and trade openness", *Economic Papers: A Journal of Applied Economics and Policy*, Vol. 42 No. 4, doi: 10.1111/1759-3441.12378.

Čižo, E., Lavrinenko, O., Ignatjeva, S., Danilevica, A. and Tvaronavičienė, M. (2020), "Financial development and its impact on economic growth (the case of Latvia)", *Journal of Security and Sustainability Issues*, Vol. 10 No. 2.

Dinh, T.T.-H., Vo, D.H., The Vo, A. and Nguyen, T.C. (2019), "Foreign direct investment and economic growth in the short run and long run: empirical evidence from developing countries", *Journal of Risk and Financial Management*, Vol. 12 No. 4, p. 176.

Erdoğan, S., Yıldırım, D.Ç. and Gedikli, A. (2020), "Natural resource abundance, financial development and economic growth: an investigation on next-11 countries", *Resources Policy*, Vol. 65, p. 101559.

Favara, M.G. (2003), *An Empirical Reassessment of the Relationship between Finance and Growth*, International Monetary Fund, Washington DC.

Gasimov, I., Asgarzade, G. and Jabiyev, F. (2023), "The impact of institutional quality on economic growth: evidence from post-Soviet countries", *Journal of International Studies*, Vol. 16 No. 1.

Gizaw, T., Getachew, Z. and Mancha, M. (2024), "Financial development and economic growth: evidence from emerging African and Asian countries", *Cogent Economics and Finance*, Vol. 12 No. 1, p. 2398213.

Goswami, A.G., Medvedev, D. and Olafsen, E. (2019), *High-Growth Firms: Facts, Fiction and Policy Options for Emerging Economies*, World Bank Publications.

Huang, H.-C. and Lin, S.-C. (2009), "Non-linear finance–growth nexus: a threshold with instrumental variable approach", *Economics of Transition*, Vol. 17 No. 3, pp. 439-466.

Ibrahim, M. and Alagidede, P. (2018), "Nonlinearities in financial development–economic growth nexus: evidence from Sub-Saharan Africa", *Research in International Business and Finance*, Vol. 46, pp. 95-104.

Khan, H., Khan, I. and Binh, T.T. (2020), "The heterogeneity of renewable energy consumption, carbon emission and financial development in the globe: a panel quantile regression approach", *Energy Reports*, Vol. 6, pp. 859-867.

Koenker, R. (2004), "Quantile regression for longitudinal data", *Journal of Multivariate Analysis*, Vol. 91 No. 1, pp. 74-89.

Koenker, R. and Bassett, G., Jr. (1978), "Regression quantiles", *Econometrica*, Vol. 46 No. 1, pp. 33-50.

Krammer, S.M. (2010), "International R&D spillovers in emerging markets: the impact of trade and foreign direct investment", *The Journal of International Trade and Economic Development*, Vol. 19 No. 4, pp. 591-623.

Kumari, R. and Sharma, A. K. (2017), "Determinants of foreign direct investment in developing countries: a panel data study", *International Journal of Emerging Markets*, Vol. 12 No. 4, pp. 658-682.

Lamarche, C. (2010), "Robust penalized quantile regression estimation for panel data", *Journal of Econometrics*, Vol. 157 No. 2, pp. 396-408.

Law, S.H. and Singh, N. (2014), "Does too much finance harm economic growth?", *Journal of Banking and Finance*, Vol. 41, pp. 36-44.

Matei, I. (2020), "Is financial development good for economic growth? Empirical insights from emerging European countries", *Quantitative Finance and Economics*, Vol. 4 No. 4, pp. 653-678.

Nawaz, S., Iqbal, N. and Khan, M.A. (2014), "The impact of institutional quality on economic growth: panel evidence", *The Pakistan Development Review*, pp. 15-31.

Ngo, M.N. and Nguyen, L.D. (2020), "Economic growth, total factor productivity, and institution quality in low-middle income countries in Asia", *The Journal of Asian Finance, Economics and Business*, Vol. 7 No. 7, pp. 251-260.

Nguyen, L.T.H. (2022), "Impacts of foreign direct investment on economic growth in Vietnam", *Journal of Economic and Banking Studies*, Vol. 4, pp. 1-15.

Nguyen, C.P., Schinckus, C., Su, T.D. and Chong, F. (2018), "Institutions, inward foreign direct investment, trade openness and credit level in emerging market economies", *Review of Development Finance*, Vol. 8 No. 2, pp. 75-88.

Okwu, A.T., Oseni, I.O. and Obiakor, R.T. (2020), "Does foreign direct investment enhance economic growth? Evidence from 30 leading global economies", *Global Journal of Emerging Market Economies*, Vol. 12 No. 2, pp. 217-230.

Osei, M.J. and Kim, J. (2020), "Foreign direct investment and economic growth: is more financial development better?", *Economic Modelling*, Vol. 93, pp. 154-161.

Owusu-Nantwi, V. and Erickson, C. (2019), "Foreign direct investment and economic growth in South America", *Journal of Economic Studies*, Vol. 46 No. 2.

Pedroni, P. (1999), "Critical values for cointegration tests in heterogeneous panels with multiple regressors", *Oxford Bulletin of Economics and Statistics*, Vol. 61 No. s1, pp. 653-670.

Pedroni, P. (2004), "Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis", *Econometric Theory*, Vol. 20 No. 3, pp. 597-625.

Powell, D. (2016), "RAND corporation from the selected works of David Powell quantile regression with non-additive fixed effects".

Radulović, M. (2020), "The impact of institutional quality on economic growth: a comparative analysis of the EU and non-EU countries of southeast Europe", *Economic Annals*, Vol. 65 No. 225, pp. 163-181.

Raghutla, C. and Chittedi, K.R. (2020), "Financial development, energy consumption, and economic growth: some recent evidence for India", *Business Strategy and Development*, Vol. 3 No. 4, pp. 474-486.

Rao, D.T., Sethi, N., Dash, D.P. and Bhujabal, P. (2023), "Foreign aid, FDI and economic growth in South-East Asia and South Asia", *Global Business Review*, Vol. 24 No. 1, pp. 31-47.

Rioja, F. and Valev, N. (2004), "Finance and the sources of growth at various stages of economic development", *Economic Inquiry*, Vol. 42 No. 1, pp. 127-140.

Samborskyi, O., Isai, O., Hnatenko, I., Parkhomenko, O., Rubezhanska, V. and Yershova, O. (2020), "Modeling of foreign direct investment impact on economic growth in a free market", *Accounting*, Vol. 6 No. 5, pp. 705-712.

Sarker, B. and Khan, F. (2020), "Nexus between foreign direct investment and economic growth in Bangladesh: an augmented autoregressive distributed lag bounds testing approach", *Financial Innovation*, Vol. 6 No. 1, pp. 1-18.

Shahbaz, M., Nasir, M.A. and Lahiani, A. (2022), "Role of financial development in economic growth in the light of asymmetric effects and financial efficiency", *International Journal of Finance and Economics*, Vol. 27 No. 1, pp. 361-383.

Singh, B.P. and Pradhan, K.C. (2022), "Institutional quality and economic performance in South Asia", *Journal of Public Affairs*, Vol. 22 No. 1, p. e2401.

Tariq, R., Khan, M.A. and Rahman, A. (2020), "How does financial development impact economic growth in Pakistan?: new evidence from threshold model", *The Journal of Asian Finance, Economics and Business*, Vol. 7 No. 8, pp. 161-173.

Tran, O.K.T., Le, H.D. and Nguyen, A.H.V. (2021), "Role of institutional quality in economic development: a case study of Asian countries", *Problems and Perspectives in Management*, Vol. 19 No. 2, pp. 357-369.

Usman, M. and Jahanger, A. (2021), "Heterogeneous effects of remittances and institutional quality in reducing environmental deficit in the presence of EKC hypothesis: a global study with the application of panel quantile regression", *Environmental Science and Pollution Research*, Vol. 28 No. 28, pp. 37292-37310.

Wandeda, D.O., Masai, W. and Nyandemo, S.M. (2021), "Institutional quality and economic growth: evidence from Sub-Saharan Africa countries", *African Journal of Economic Review*, Vol. 9 No. 4, pp. 106-125.

Wang, X., Xu, Z., Qin, Y. and Skare, M. (2022), "Foreign direct investment and economic growth: a dynamic study of measurement approaches and results", *Economic Research-Ekonomska Istraživanja*, Vol. 35 No. 1, pp. 1011-1034.

Westerlund, J. (2005), "New simple tests for panel cointegration", *Econometric Reviews*, Vol. 24 No. 3, pp. 297-316.

Wu, C.-F., Huang, S.-C., Chang, T., Chiou, C.-C. and Hsueh, H.-P. (2020), "The nexus of financial development and economic growth across major Asian economies: evidence from bootstrap ARDL testing and machine learning approach", *Journal of Computational and Applied Mathematics*, Vol. 372, p. 112660.

Xie, Q. and Sun, Q. (2020), "Assessing the impact of FDI on PM2. 5 concentrations: a nonlinear panel data analysis for emerging economies", *Environmental Impact Assessment Review*, Vol. 80, p. 106314.

Yahyaoui, I. (2023), "How corruption mitigates the effect of FDI on economic growth?", *Journal of the Knowledge Economy*, Vol. 15 No. 1, pp. 1-19.

Yao, S. (2006), "On economic growth, FDI and exports in China", *Applied Economics*, Vol. 38 No. 3, pp. 339-351.

Zhang, B. and Zhou, P. (2021), "Financial development and economic growth in a microfounded small open economy model", *The North American Journal of Economics and Finance*, Vol. 58, p. 101544.

Zhang, Y.-J., Jin, Y.-L., Chevallier, J. and Shen, B. (2016), "The effect of corruption on carbon dioxide emissions in APEC countries: a panel quantile regression analysis", *Technological Forecasting and Social Change*, Vol. 112, pp. 220-227.

Further reading

Challe, E., Lopez, J.I. and Mengus, E. (2019), "Institutional quality and capital inflows: theory and evidence", *Journal of International Money and Finance*, Vol. 96, pp. 168-191.

Demetriades, P. and Hook Law, S. (2006), "Finance, institutions and economic development", *International Journal of Finance and Economics*, Vol. 11 No. 3, pp. 245-260.

Hermes, N. and Lensink, R. (2003), "Foreign direct investment, financial development and economic growth", *Journal of Development Studies*, Vol. 40 No. 1, pp. 142-163.

King, R. and Levine, R. (1993), "Finance and growth: Schumpeter might be right", *The Quarterly Journal of Economics*, Vol. 108 No. 3, pp. 717-737.

World Bank (2013), "Global financial development report: rethinking the role of the state in finance", *Washington DC: World Bank Group*, available at: http://documents.worldbank.org/curated/en/853761468326979957/Global-Financial-Development-Report-2013-rethinking-the-role-of-the-state-in-finance

World Bank (2022), "World development indicators", available at: www.worldbank.org/data/onlinedatabases.html

Appendix 1

Table A1. List of selected emerging countries

Algeria	Egypt	Kazakhstan	Philippines
Argentina	Eswatini	Kenya	Romania
Bangladesh	Ghana	Malaysia	Russia Federation
Brazil	India	Mauritius	South Africa
Bulgaria	Indonesia	Morocco	Sri Lanka
China	Iran	Nigeria	Thailand
Columbia	Jamaica	Pakistan	Mexico
Costa Rica	Jordan	Turkey	
Tunisia	Vietnam	Peru	

Source: Authors' own computation

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