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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- The present study aims to examine the growth effects of 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 policy makers 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

1. Introduction

The relationship between foreign direct investment (FDI) and economic growth has been the focus of most researchers and policy makers 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-Inani (2007) has suggested that FDI facilitates capital formation for developing countries so as to transfer knowledge and technology, and to 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 remains 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 increases 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 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, institutional quality and economic growth for the emerging economies. Given that these countries have in the last 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. Thus, the main research question of this paper is: How does FDI and institutional quality affect economic growth in the emerging economies? The specific research questions are as follows: (1) How does FDI influence economic growth in the selected emerging economies? (2) How does financial development affect economic growth in the selected emerging economies? (3) How does institutional quality affect economic growth in the selected emerging economies?

This paper differs from the previous studies in three 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 is 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

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 FDI 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 to 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 Gross Domestic Product (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 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 to 2016. The results of the study revealed among other things that economic growth responds positively to economic growth. Finally, Yahyaoui (2023) employed a panel vector autoregressive (PVAR) 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 exist 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 autoregressive distributed lags (TARDL) 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) employed 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 Ordinary Least Square (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 insignificant effect on economic growth. Similarly, Tran et al. (2021) used 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 the 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, Singn and Pradhan (2022) examined the impact of institutional quality on

economic growth in South Asia for the period 2002 to 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 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 West African region than 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 BRICS (Brazil, Russia, India, China and South Africa) 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 at exploring 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. Real GDP per capita (used as a proxy for economic growth) is the dependent variable. The variable of FDI is defined as foreign direct investment as a percentage of GDP. The data on institutional quality are collected from the World Bank's World Governance Index (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 World Development Indicators (WDI) published by the World Bank. Table 1 shows the descriptive statistics of the variables used.

<<Insert Table 1 here>>

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.

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 employed the following model

$$\ln RGDPPc_{it}(\tau \mid X_{i,t}) = \tau(\tau)' X_{it} + \tau_{it} \qquad i = 1,2,.....N \qquad t = 1,2,.....N \qquad (1)$$

Where $\ln RGDPPc_{it}$ is real GDP per capita, X_{it} represents a set of explanatory variables, $\tau(\tau)$ represents the unknown coefficients in the model, τ_{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:

$$\ln RGDPPc_{it} = \tau_{it} + \tau_1 FDI_{it} + \tau_2 FD_{it} + \tau_3 IQ_{it} + \tau_4 \ln GE_{it} + \tau_5 Inf_{it} + \tau_6 Popg_{it} + \tau_{it} \qquad (2)$$

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 inflation rate and $Popg_{it}$ is population growth. τ shows the direction and significance of the exogenous variables and τ_{it} is the disturbance or error term.

3.2 Justification of Variables used

3.3 Panel Quantile Regression Model

According to Larmarche (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.

$$Q_{y_{it}}(\tau \mid X_{it}) = X_{it}^{\tau} \tau_{\tau} \qquad (3)$$

Where $Q_{yit}(\tau|X_{it})$ shows the τ^{th} quantile of the economic growth variable, X_{it} 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;

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

Where i and t represent country and time respectively, $\ln RGDPPc_{it}$ is the indicator for economic growth. α_i is the slope intercept, $\beta_1, \beta_2, \beta_3$ and β_4 coefficients estimated the FDI, institutional quality, government expenditure, inflation and population growth respectively, while ε_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:

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

Where $\rho_\tau(u) = u(\tau - I(u < 0)), I(u < 0) = \begin{cases} 1, u < 0 \\ 0, u \geq 0 \end{cases}$ 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

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

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 2. 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 (Krammer 2010). As it can be seen from Table 2, all the coefficients are less than 0.85 implying that there is no problem of multicollinearity.

<<Insert Table 2 here>>

4.2 CD test results

The results of the Breusch-Pagan Lagrange Multiplier (LM) and Pesaran CD tests are reported in Table 3 and they show the existence of CD. The null hypothesis of cross-sectional independence for all the concerned variables is rejected at 1% significance level.

<<Insert Table 3 here>>

4.3 Panel unit root tests results

Given the CD tests results in Table 3, first generation unit root tests such as the Levine-Lin-Chu (LLC) and the Im-Pesaran-Shin(IPS) 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 4.

<<Insert Table 4 here>>

The results from the CIPS and 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 5.

<<Insert Table 5 here>>

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 6. The empirical results of the regression analysis show the heterogeneous effects of various factors on economic growth. 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 quantile, the coefficient is 0.025, and it becomes more than two and a half times higher in the 90th quantile with the coefficient of 0.068. It implies that higher levels of FDI inflows positively and significantly affect economic growth which is consistent with previous studies such as Rao et al. (2023), Yahyaoui (2023) and Osei and Kim (2020). This may be due to the fact that relevant spillovers arising from FDI help in achieving economic growth. Similarly, the results indicate a heterogeneous impact of financial development on economic growth. In all the quantiles there exists a positive and significant association between financial development and economic growth, which corroborates prior studies such as Čižo et al. (2020), Bibi (2022) and Anthony-Orji et al. (2023). The positive effect of financial development on economic growth may be as a result of innovations in the financial sector coupled with increased investment. 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. Furthermore, economic growth responds positively and significantly to institutional quality. The results reveal that with the exception of the 10th and 80th quantiles, there exists a positive association between institutional quality and economic growth in the rest of the other quantiles. It reaches the highest quantile in the 40th quantile with a coefficient of 0.096 and thereafter reduces to 0.073 in the 90th quantile. Therefore, the effect of institutional quality on economic growth varies across different classes of quantile. The result is consistent with studies such as Singn and Pradhan (2022) and Wandeda et al. (2021). Moreover, 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 but reduces in the higher quantiles. In the 10th quantile, the coefficient is 0.842 and reduces to 0.340 in the 90th quantile. Barro (1990) posits that the effect

of government expenditure on economic growth depends largely on the level of development. Thus, the impact of government expenditure on the economy changes as the economy expands.

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. It must be noted that for economies such as those of the 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 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 quantiles. In the 10th quantile, the coefficient is -0.283 but changes to -0. 109 in the 90th quantile.

<<Insert Table 6 here>>

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.

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 to 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 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 tests 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, policy makers and governments in the selected emerging economies should formulate and implement policies aimed at increasing FDI inflows, developing the financial sector and strengthening institutions in order to achieve sustained economic growth. Future research direction should be oriented toward examining the panel asymmetric Granger causality between (1) FDI inflows and economic growth and (2) institutional quality and economic growth in emerging economies.

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Appendix 1: List of selected emerging countries

Algeria	Eqypt	Kazakstan	Phillipines
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	