REVISITING THE NEXUS OF FOREIGN DIRECT INVESTMENT, FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: THE CASE OF EMERGING ECONOMIES

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Abstract

Foreign direct investment and financial development play a determinant role in the growth of an economy. Various studies have investigated the impact of FDI and financial development on economic growth separately and in perspectives of different countries and regions. However, the results are found to be in-conclusive yet. This study aims to analyze the connections between FDI, financial development, and economic growth in 30 emerging economies by using updated data from 1970 to 2020. We used the latest econometric models to estimate the panel data. The key findings of this study indicate that FDI and financial development are crucial factors for economic growth in emerging economies. Furthermore, the empirical results of this study were supported by various robustness checks. The outcomes of this study hold several practical recommendations for investors, government, and policymakers.

Keywords: Foreign Direct Investment, Financial Development, Economic Growth, Emerging Economies and Policy Makers

1. Introduction

In the last decades, foreign direct investment has been proven as a vital factor for economy's growth and development (Almfraji & Almsafir, 2014; Asongu & Odhiambo, 2020; Sokang, 2018). FDI inflows promote factor productivity by delivering improved managerial skill sets, improved technology, and more investment to countries, all of which contribute to economic growth (Baskoro et al., 2019). Economic integration improves the growth process in both developed and developing countries. Two dimensions of the openness of the economy are international capital flow in terms of FDI and free trade of goods and services.

FDI boosts labor efficiency and stimulates economic development by bringing advanced technology, new marketing techniques, better managerial skills, and human capital (Antwi et al., 2013). Since the 1970s oil price shocks, both developed and emerging economies have been trying to invite capital inflow through providing incentives by reliance on market forces and adopting deregulation policies (Oladosu et al., 2018). Most of the studies indicate that the effect of FDI on growth is highly dependent on the characteristics of the domestic economy like per capita GDP, advanced technology usage, and human capital skill. Trade openness is also an important factor to define the influence of FDI on growth because the overseas investor

demands unobstructed trade of intermediary products at all phases of the manufacturing course (Buhari et al., 2020).

In literature, the presence of a vague connection between FDI and growth is reported by several researchers (Greenaway, 2003). Some studies conclude that FDI has a negative impression on the economic growth of the domestic economy through the "market stealing influence" (Schoors & Tol, 2002). Whereas other studies claim a robust positive association between FDI and growth via the "productivity boost effect". Different researchers provide different explanations for this ambiguity; one possible explanation of the mixed linkages between both variables may be the failure to incorporate "contingency influences" in their relationships or potential errors in the estimation methods. Several economic models are reported in the literature which suggests that the FDI-Growth association may be reliant on dominant economic elements of the host country, for example, the financial development (Hermes & Lensink, 2003). Azman-Saini et al., (2010) mention that "well-functioning financial markets moderate the risks built-in in the investment made by native firms that seek to imitate new technologies and thereby expand the absorptive capacity of a country concerning FDI inflows". The development of the financial system can be characterized as the expansion of the size, efficiency, and stability of financial markets, as well as expanded access to financial markets, all of which can benefit the economy growth. Financial development boosting the savings rate, mobilizing and pooling funds, producing investment information, facilitating and encouraging foreign capital inflows, and optimizing capital allocation, it fosters economic growth through capital accumulation and technical progress (World Bank). This study is attempt to examine the impact of FDI and financial development on economic growth.

2. Literature Review

2.1. Impact of FDI on Economic Growth

Foreign direct investment (FDI) is a type of cross-border investment in which an investor from one country has a long-term stake in and significant influence over a company from another country, FDI facilitates the transfer of technology between countries, encourages international trade by providing access to new markets, and imrpve countries economic grwoth (OECD)

Zhang, (2001) FDI has a direct positive significant influence on economic growth in China by increasing productivity and exports. Adeolu, (2007) and Agrawal, (2015) foreign direct investment is positively associated with economic growth in many ways. Roman & Padureanu, (2012) the FDI association with economic growth depended on attaining a certain level of trade openness, capital market development, income level, and human capital.

Aitken & Harrison, (1999) conclude there is no technological spillover impact on domestic-owned firms from foreign-owned business companies. Alfaro et al., (2005) results show the ambiguous relationship between FDI and economic growth and FDI has a positive influence on the manufacturing sector, a negative impression on the primary sector, and an ambiguous impact on the service sector.

Azman-Saini et al., (2010), Yabi, (2010), Wu & Hsu, (2008), and Herzer, (2008) found no significant positive effect of FDI on growth. FDI's positive impact on growth can be only be observed if economic freedom in terms of market development.

Maoguo and Wu, (2021) investigated the impact of FDI on economic development, find a strong positive association exists between FDI and economic openness. Liang et al., (2021) and Tunio et al., (2021) analyzed that FDI has a significantly positive influence on economic growth in developing countries. Arain et al., (2021) conclude inconsistent linkages between FDI and economic growth in Pakistan. The existing literature on FDI and economic growth linkages concludes diverse or erratic results This study is an attempt to evaluate the impact of FDI on economic growth in emerging economies.
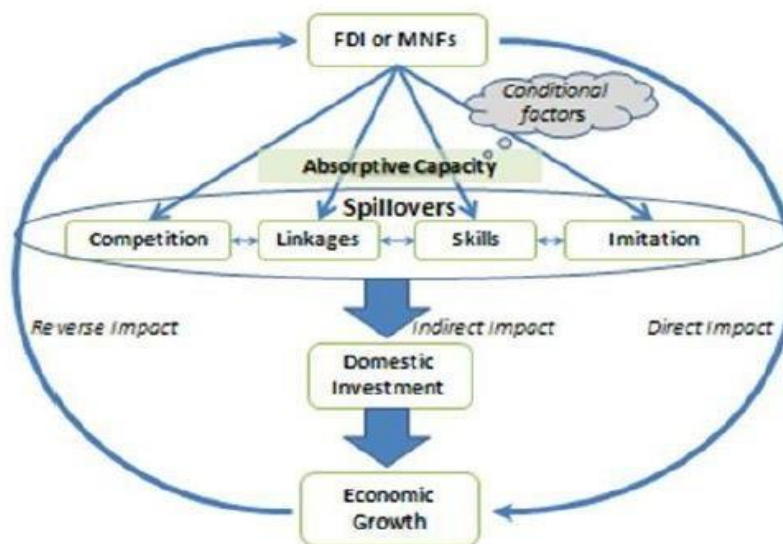

Figure 1 Absorptive Capacity, FDI and Economic Growth

Source: (Nowbutsing, 2009)

2.2.   Role of Financial Development

Financial development is essential for attaining economic growth in developing countries (Hassan et al., 2011). Shahbaz et al. (2015) study on the connections between financial development and growth rate concludes that financial developments and trade openness are the crucial factors of long-term growth in developing economies. Research finds that developed financial sectors increase the growth rate in emerging economies like China and India (Kandil et al., 2017). Asteriou & Spanos, (2019) and Tunio et al., (2021) found that, before the crisis, there is a strong association that exists between growth rate and financial development, but after the crisis, it hampers the growth rate. Moreover, Ibrahim and Alagidede, (2018) research on the effect of financial development on economic growth rate in African countries concluded that financial developments in these economies support growth but this growth is reliant on the

synchronized growths of financial and real sectors.

After evaluation of recent empirical and theoretical literature, we conclude that the growth rate of an economy is highly influenced by the FDI, foreign trade, and well-structured financial markets. In this study, we incorporate all these aspects to check the FDI impressions on growth rate in the case of emerging economies. Also, following empirical literature, we control some other variables in our analysis like exchange rate and infrastructure. This is the opening study of its nature that incorporates several dimensions of the emerging economies under the same umbrella to define the economic growth determinants.

3. Data, Variable Construction, and Methodology

3.1. Baseline Model

The unit of analysis in this research is emerging economies

The regression specification of our baseline model is presented below:

$$Growth_{it} = \alpha + \beta FDI_{it} + \gamma FD\ Index_{it} + \delta Infra_{it} + \partial trade_{it} + \tau ER_{it} + \varepsilon_{it} \tag{1}$$

Where $Growth_{it}$ is economic growth which proxied by the GDP per capita growth, FDI_{it} is the Foreign Direct Investment, $FD\ Index_{it}$ is Financial Development Index, $Infra_{it}$ is the Infrastructure, $trade_{it}$ shows the Trade Openness, and ER_{it} is the Exchange Rate for the county "i" in the period "t". While ε_{it} is the disturbance term of the model.
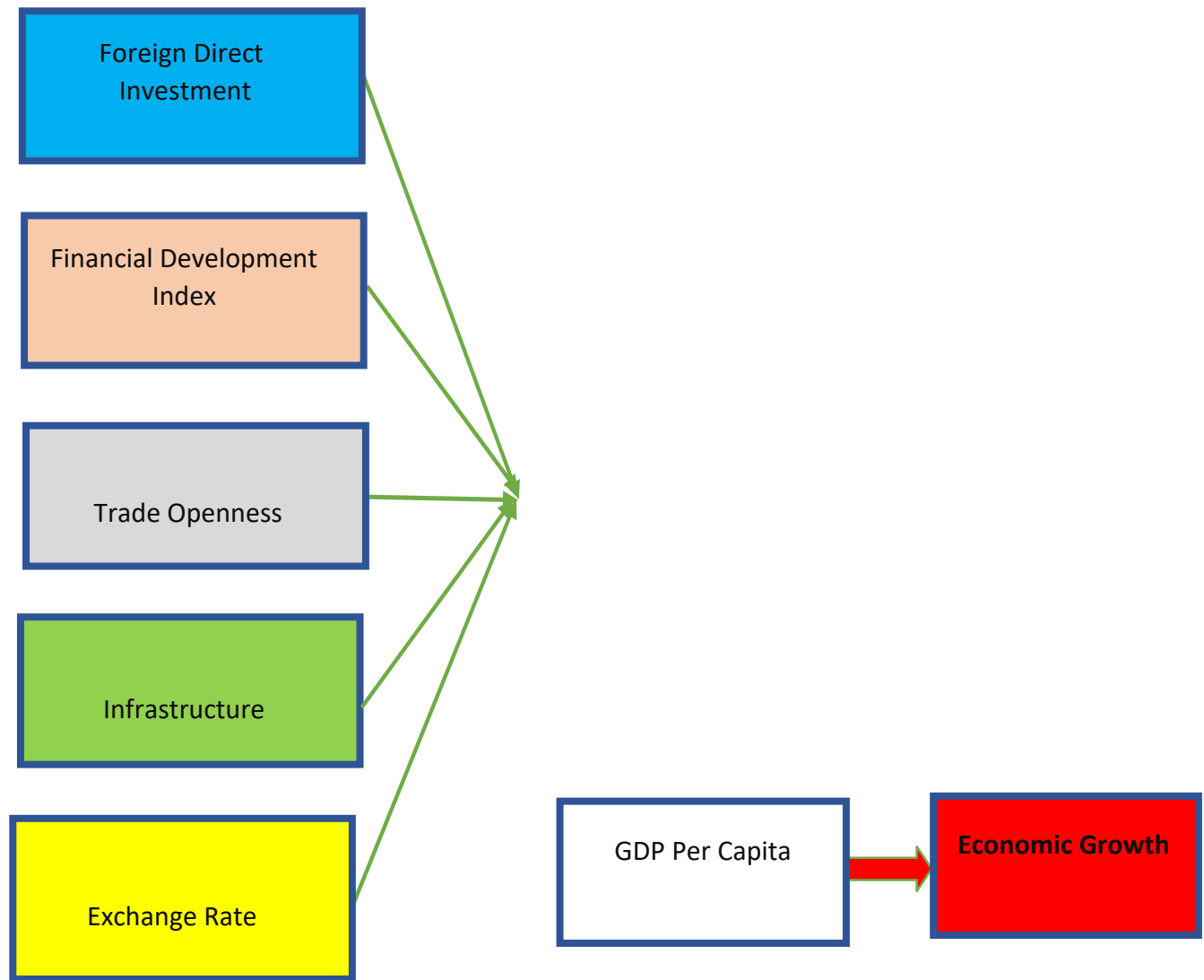
Figure 2 Block Chart of Research Model

3.2.　　Static Model of Economic Growth

Firstly, the static framework of the growth rate model is used to specify the economic growth equation;

$$Growth = \mu_i + \delta_t + \beta\,(X_{it}) + \varepsilon_{it} \qquad (2)$$

Where $Growth_{it}$ is growth rate which proxified by the growth in per capita GDP, μ_i represents the country-specific time-invariant effect, δ_t is the time-specific country invariant effect, and X_{it} is explanatory variables vector including FDI, financial development index, trade openness, exchange rate, and infrastructure.

1.1.   Data and Variable Construction

Table 1 provides the variable list used in these analyses including descriptions and data sources.

Table 1 Variable Description and Data Source

Variable Name	Description	Data Source
Economic Growth	Growth in GDP Per Capita	WDI, 2020
FDI	Foreign Direct Investment as a percentage of GDP	WDI, 2020
Financial Development Index	Following (Beck et al., 2000; Levine et al., 2000; Ang, 2009), several financial development measures are used to develop a composite index: "(1) domestic credits by the banking sector (as a percent of GDP); (2) domestic credits provided to the private sector (as a percent of GDP); and (3) broad money supply." A *principal component factor* analysis is applied for the construction of this index.	WDI, 2020
Infrastructure	Following (Anitha, 2012; Quyoom et al., 2012), the proxy that will be used for this variable is "Electricity Production from oil, gas and coal sources in percent of the total"	WDI, 2020
Trade Openness	Following (Shah, 2010; Quyoom et al., 2012; Anyanwu, 2012), trade openness is proxified by the "Trade as a percentage of GDP".	WDI, 2020
Exchange Rate	Exchange rates in local currency per unit of US dollars.	WDI, 2020
GDP Growth	For robustness checking of baseline results, GDP growth is used to define economic growth.	WDI, 2020

The selection of the economies is based on two key sources; 1) classification of MSCI, and 2) list of IMF economies. The reason behind the selection of these economies for the empirical analysis is the lack of research on the connections between FDI and growth rate after incorporating financial development index, infrastructure, trade, and exchange rate.
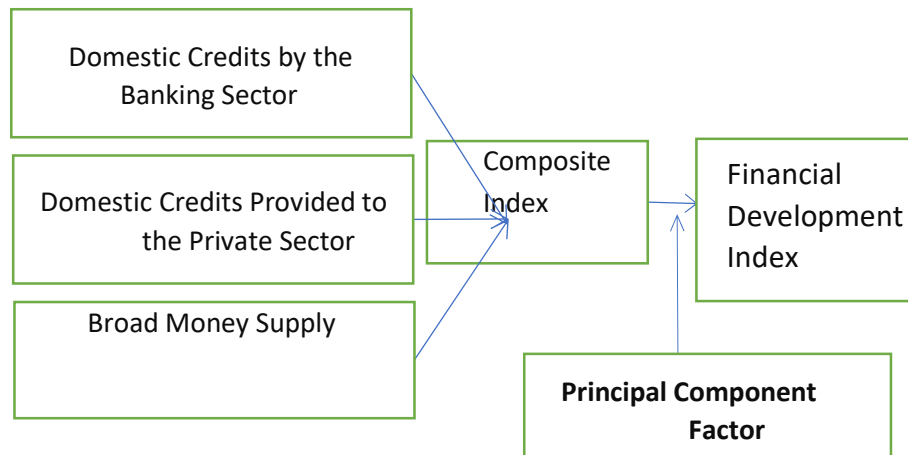
Figure 2 Construction of Financial Development Index

1.2.   Preliminary Data Analysis

Table 2 report the descriptive statistics of all understudied variables (including dependent and independent). These statistics provide different measures of spread, the measure of central tendency, and basic features of the variables to present the data in an understandable and meaningful way.

Table 2: Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	S.D	Skewness	Kurtosis
Economic Growth	11.0620	11.0295	12.980	9.62781	0.59322	0.25611	2.77339
FDI	2.39998	1.32229	50.463	-15.745	3.78538	6.184693	68.9411
FD Index	-0.08135	-0.4435	3.0448	-1.3123	0.952656	1.411948	4.15165
Infrastructure	64.54923	66.7111	100.00	4.4955	25.30953	-0.64453	2.54926
Trade Open	57.1792	48.1851	220.40	7.6696	38.77074	1.632111	5.79247
Exchange Rate	753.810	8.70997	20933.4	0.0000	2869.138	4.796726	26.3642
GDP Growth	4.37293	4.74765	27.2104	-27.526	4.339708	-0.98593	9.01803

Table 3 is the correlation matrix that defines the correlation or association between understudied variables. Each cell of this table describes the relationship between two variables. Same descriptive statistical analysis, the correlation matrix analysis is often used by the researchers to summarize the data and assess the possible linkages between dependent and independent variables before moving to regression analysis. If the value in a cell is close to zero then it means that the relevant two variables of the cell have no linear relationship. In simple words, these are the signs that specify the relationship direction between two variables. It is important to mention here is that the correlation is different from the regression analysis. For instance, in correlation analysis, there is no need to define the dependent and independent variables because the correlation coefficient simply tells us the direction or measure of the relationship strength. On the other hand, in regression analysis, it is important to define the dependent and independent variables explicitly. According to table 4, the growth rate has a positive linear link or correlation with FDI, financial development index, infrastructure, and exchange rate but a negative correlation with trade openness. Among all, the financial development index has the strongest correlation with the economic growth of the selected emerging economies.

Table 3 Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Economic Growth	1.000					
(2) Foreign Direct Investment	0.059	1.000				
(3) Financial Development Index	0.404	0.130	1.000			
(4) Infrastructure	0.120	-0.058	0.277	1.000		
(5) Trade Openness	-0.021	0.412	0.472	0.230	1.000	
(6) Exchange Rate	0.026	0.096	0.072	0.008	0.233	1.000

2.   Results and Discussion

First of all, we review a bulk of existing literature on FDI, financial development and economic growth to identify the research gap that needs to be filled. Secondly, based on the IMF classification of economies, we selected 30 emerging economies and collected data on them to establish panel analysis. Thirdly, we select a suitable econometrical modeling approach to define and estimate the connections between understudied variables. This chapter provides a discussion on the results that help to formulate suitable policy recommendations.

2.1. Estimations of Baseline Models

The baseline model is estimated with different econometrical techniques to get more reliable and robust findings. Also, following the literature, we use different proxies for economic growth to assess that how the estimated coefficient reacts when the description of the dependent variable changes. The results of equation 1 are reported in Table 4. Model 1 is estimated with simple OLS after stacking each country's variable data upon one another. Model 2 is estimated with a traditionally used panel data approach called the "FE Model". Model 3 is estimated with another traditional panel data approach called "RE Model". The FE and RE models are based on different econometrical assumptions. According to Nzioka et al., (2017), the FE model is a suitable practice to estimate the panel data because it gives asymptotically consistent results. In other words, the estimated coefficients converge towards their true values as the sample size increase indefinitely. But the estimates of the FE model have some problems, for instance, they are not much efficient due to minimum variance. On the other hand, "RE will give better P- values (higher chances of finding that various policy options do influence economic growth) as they are a more efficient estimator, so one should run RE if it is statistically justifiable to do so" (Nzioka et al., 2017).

As both FE and RE models have some advantages and disadvantages, Hausman, (1978) test can help us to select which model is better suitable for our dataset. The null of the Hausman is "the coefficients estimated by the efficient RE estimator are the same as the ones estimated by the consistent FE estimator". We do not reject this null if the test p-value is larger than the 5% significance level. In simple words, acceptance of the null hypothesis means a RE model is more suitable, consistent, and efficient for the dataset. The results of Hausman test are presented in Table 5 where the p-value of the test is less than a 5% level of significance which means we reject the null i.e. RE model is consistent and preferred. But for comparative analysis, we report the estimated coefficients of all three econometric approaches i.e. OLS, FE, and RE models.

Table 4: Static Panel Regression Analysis

Dependent: GDP Per Capita Growth			
	Model 1	**Model 2**	**Model 3**
Independent Variables	**Pooled OLS**	**Fixed Effects**	**Random Effects**
Foreign Direct Investment	0.0311***	0.0217***	0.0255***
Financial Development Index	0.3323***	0.3120***	0.3208***
Infrastructure	0.0021***	0.00273**	0.00289***
Trade Openness	0.0054***	0.00539***	0.0054***

Exchange Rate	0.0001*	0.00004***	0.0001***
Constant	11.247***	10.5364***	10.6178***
No of Observation	773	773	773
No of Countries	30	30	30
Adjusted R-Squared	0.42	0.76	0.76

**Test for Model Selection**			
Hausman Test Chi-Square			35.3368
P-Value			0.0000
**Normality Testing**			
Jacque-Bera Test	20.0101	14.1166	2.5593
P-Value	0.0001	0.0001	0.2781

Note: *** means significant at 1%, ** at 5%, and * at 1% level of significance.

Model 1 in Table 4 reports that FDI, financial development index, infrastructure, trade openness, and exchange rate have a significantly positive influence on GDP per capita growth of the emerging economies. Among all, the coefficient of the financial development index has the greatest magnitude i.e. financial markets development has the biggest impact on the economic growth of the country. Model 2 and Model 3 also confirm these findings and report that there is a positive link exists between the FDI and the growth rate of the emerging economies. These outcomes are persistent with the existing literature (Adeolu, 2007; Agrawal, 2015; Sala & Trivín, 2014). The financial development index has also a significantly positive influence on the growth rate in all three models. A similar kind of association is reported by some other scholars (Ibrahim & Alagidede, 2018). Another important finding of Table 4 is a significantly positive connection between trade openness and economic growth of the understudied economies which is supported by the prevailing literature (Fetahi-Vehapi et al., 2015; Musila & Yiheyis, 2015).

As stated in the literature review section, different researchers used different econometrical methods to handle the panel data related to FDI and growth rate. The majority of scholars report the problem of endogeneity in the panel data-based models of economic growth (Alege & Ogundipe, 2018; Hayat, 2014). GMM econometrical modeling helps to handle this endogeneity problem along with serial correlation and heteroscedasticity problems. To get a more reliable estimation of equation 1 and handle

the problem of endogeneity, we apply the System GMM Model and GMM EGLS Random Model on our panel data.

Model 4 in Table 5 reports the findings of the system GMM model and Model 5 presents the GMM EGLS Random model with a similar set of variables and dataset. As our panel data is unbalanced, (Nguyen et al. 2018) argue that the system GMM is a more efficient method for these kinds of datasets. All explanatory variables are showing significantly positive impacts on the growth rate at different levels of significance. More importantly, again, FDI has a positive impact on the economic growth of selected emerging economies. These findings are following the earlier literature (Ahmad et al., 2015; Nguyen et al. 2018). Moreover, as reported in the pooled, FE, and RE models, the financial development index has the biggest impression on the growth rate among all explanatory variables. To sum up, most prominently, the FDI has a significantly positive influence on the GDP per capita growth rate no matter which econometrical estimation technique is applied.

Table 5: Dynamic Panel Regression Analysis

Dependent: GDP Per Capita Growth		
Independent Variables	**Model 4**	**Model 5**
	System GMM Model	**GMM EGLS Random**
Foreign Direct Investment	0.0356***	0.0242***
Financial Development Index	0.3004***	0.3147***
Infrastructure	0.0028***	0.0029**
Trade Openness	0.0062***	0.0048***
Exchange Rate	0.0001*	0.00001***
Constant	10.4714***	10.5611***
No of Observation	773	773
No of Countries	30	30
Adjusted R-Squared	0.76	0.76

Note: *** means significant at 1%, ** at 5%, and * at 1% level of significance

2.2.   Robustness Analysis

For the robustness check of our findings, we replaced the "GDP per capita growth" proxy of economic growth with "annual GDP growth" and repeat the econometrical estimation. Model 6 in Table 6 reports that FDI, financial development index, and trade openness have a positive and statistically significant impact on the GDP growth of the emerging economies. Among all, the coefficient of the financial development index has the greatest magnitude i.e. financial markets development has the biggest impact on the economic growth of the country. Model 7 and Model 8 also confirm some of these findings and report that there is a positive association exists between the FDI and growth rate of the emerging economies. The financial development index has also a significant positive impression on GDP growth in all three models. Another important finding of Table 6 is a significantly positive connection between GDP growth and trade openness of the understudied economies which is supported by the prevailing literature. However, the rate of exchange has no statistically significant impact on the GDP growth model 6, model 7, and model 8. As far as infrastructure is concerned, the coefficient is statistically insignificant in pooled OLS technique but statistically significant in FE and RE models. Again, the Hausman test is used to select the appropriate model between FE and RE models. The results are presented in Table 6 where the p-value of the test is less than a 5% level of significance which means we reject the null i.e. FE model is consistent and preferred. But for comparative analysis, we report the estimated coefficients of all three econometrical approaches i.e. OLS, FE, and RE models.

Table 6: Static Panel Regression Analysis (Robustness Check)

Dependent: GDP Growth			
Independent Variables	**Model 6**	**Model 7**	**Model 8**
	Pooled OLS	**Fixed Effects**	**Random Effects**
Foreign Direct Investment	0.0098***	0.0045**	0.0051***
Financial Development Index	0.2912***	0.1742***	0.1775***
Infrastructure	-0.0001	0.0041***	0.0039***
Trade Openness	0.0057***	0.00478***	0.0035***
Exchange Rate	0.0001	0.0001	0.0001
Constant	11.6445***	10.8322***	10.8667***

No of Observation	773	773	773
No of Countries	30	30	30
Adjusted R-Squared	0.30	0.90	0.90
Test for Model Selection			
Hausman Test Chi-Square			24.1911
P-Value			0.0002
Normality Testing			
Jacque-Bera Test	25.9227	28.3691	12.7654
P-Value	0.0000	0.0001	0.0020

Note: *** means significant at 1%, ** at 5%, and * at 1% level of significance.

In Table 7, Model 9 reports the results of the system GMM and Model 10 presents the GMM EGLS Random model with a similar set of variables and dataset but the dependent variable proxy is changed to "GDP Growth". Some explanatory variables are showing a positive and statistically significant effect on the growth rate at different levels of significance. More importantly, again, FDI has a statistically significant and positive influence on the GDP growth of emerging economies. These findings are following the earlier literature (Nguyen et al. 2018). Moreover, as reported in the pooled, FE, and RE models, the financial development index has the biggest impact on the economic growth among all explanatory variables. The GMM estimation-based results with GDP growth as dependent show different coefficients as compared to GMM estimation-based results with GDP per capita growth as a dependent variable. Here, exchange rates have no significant effect on the GDP growth of the emerging economy, while infrastructure shows a positive coefficient only if we apply the GMM EGLS Random model rather than system GMM. To keep the discussion concise, the FDI has a significantly positive effect on the GDP per capita growth rate no matter which econometrical estimation technique is applied or proxy of the economic growth is used. These results are suggesting some incredible policy implications to boost the economic growth of an economy that leads to higher living standards and prosperity.

Table 7: Dynamic Panel Regression Analysis (Robustness Check)

Dependent: GDP Growth		
Independent Variables	**Model 9**	**Model 10**
	System GMM Model	**GMM EGLS Random**
Foreign Direct Investment	0.0163**	0.0063**
Financial Development Index	0.3002***	0.1762***
Infrastructure	-0.0028	0.0042**
Trade Openness	0.0061***	0.0048***
Exchange Rate	0.0001	0.0001
Constant	11.6628***	10.8198***
No of Observation	773	773
No of Countries	30	30
Adjusted R-Squared	0.50	0.50

Note: *** means significant at 1%, ** at 5%, and * at 1% level of significance.

3. Conclusion and Policy Implications

FDI provide global links to economy, access to modern technology, the latest marketing techniques, innovative managerial skills, and human capital. Researchers used different econometrical techniques and economic growth proxies to examine this association from a variety of perspectives and conclude mix findings. Present study was carried out to analyze any significant and positive impact existence between FDI, financial development, and growth rate in 30 merging economies. We employed different statistical techniques to confirm the existtance of relationship between dependent and independent variables. We employ the System GMM Model and GMM EGLS Random Model to generate more reliable estimations and handle the possible issue of endogeneity, serial correlation, and heteroscedasticity. The baseline results of this study report that FDI, financial development index, infrastructure, trade openness, and exchange rate have a significantly positive influence on GDP per capita growth of the emerging economies.

For robustness check, we replaced the "GDP per capita growth" with "annual GDP

growth" and repeat the econometrical estimation. The results show that FDI, financial development index, and trade openness have a significantly positive influence on the GDP growth of emerging economies. While infrastructure is statistically insignificant in pooled OLS technique but statistically significant in fixed and random effects models. GMM model analysis of "GDP Growth as dependent variable" also supporting the positive associations of FDI, financial development index, and trade openness with economic growth.

3.1.   Policy Recommendations

This research proposes several policy recommendations for the policymakers. First, policymakers take suitable initiatives to boost the foreign inflows. Enhance the remittances inflow, formulate policies to send the redundant workforce to different moneymaking destinations like Canada and MENA region economies. Inward remittances can boost the FX reserves, that can be used to import goods. The governments should leverage inward remittances inflow to contribute to GDP growth. Secondly, the government should formulate attractive investments policies and developed their financial system for Greenfield projects and facilitate the potential investment opportunities to attract expatriate citizens. Thirdly, the emerging economies give more important to the international cooperation on FDI and trade matters a lot to boost sustainable trade.

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Appendices

Appendex A: List of Emerging Economies in Sample

Argentina	Egypt, Arab Rep.	Malaysia	Slovenia
Bangladesh	Greece	Mexico	Thailand
Brazil	Hungary	Pakistan	Turkey
Bulgaria	India	Peru	Ukraine
Chile	Indonesia	Philippines	Vietnam
China	Iran Islamic Republic	Poland	
Colombia	Israel	Romania	
Czech Republic	Korea Republic	Russian Federation	