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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 (FDI) has increased at an exponential rate during the last two decades. It is now a feature of emerging market economies as well. Foreign direct investment and financial development are important factors in an economy's growth. Various studies have examined the impact of foreign direct investment and financial development on economic growth in different countries and areas. However, the findings are currently inconclusive. Using updated data from 1970 to 2020, this study will examine the relationships between FDI, financial development, and economic growth in 30 rising economies.GDP is the dependent variable, while FDI, financial development, trade openness, infrastructure, exchange rate, and GDP growth are the independent factors. To estimate the panel data, we used the most recent econometric models. The study's major findings suggest that FDI and financial development are critical determinants in emerging economies' economic progress. Furthermore, multiple robustness checks supported the study's empirical findings. The results of this study include various practical recommendations for investors, governments, and policymakers, given the increased interest in global economic integration and member states' reliance on FDI as a critical aspect of sustaining prosperity.

Keywords: FDI, Financial Development, Economic Growth, Emerging Economies

JEL Classification Code: F10, O47, F36, C30

1. Introduction

Foreign direct investment has been proved to be a critical indicator for economic growth and development in recent decades (Almfraji & Almsafir, 2014; Asongu & Odhiambo, 2020; Sokang, 2018). FDI inflows boost factor productivity by providing countries with better managerial skills, better technology, and greater investment, all of which contribute to economic growth (Baskoro et al., 2019). Economic integration helps both developed and underdeveloped countries expand faster. International capital flow (FDI) and free trade of commodities and services are two aspects of the economy's openness.

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). The majority of research shows that the impact of FDI on growth is strongly dependent on domestic economic factors such as per capita GDP, advanced technology use, and human capital competence. Buhari et al. (2020) stated trade openness (both the individual indicator and the consolidated index of trade openness) is positively connected to both long-term and short-term economic growth.

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Several economic models are reported in the literature which suggests that the FDI-Growth association may be reliant on dominant economic factors of the host country, for example, financial development (Hermes & Lensink, 2003). Azman-Saini et al. (2010a) mentioned that financial system growth may help the economy flourish by increasing the size, efficiency, and stability of financial markets, as well as expanding access to financial markets. Increasing savings rates, mobilizing and pooling funds, producing investment information, facilitating and promoting foreign capital inflows, and optimizing capital allocation are all ways that financial development promotes economic growth through capital accumulation and technical progress. The impact of FDI and financial development on economic growth is investigated in this study.

2. Literature Review

2.1. Impact of FDI on Economic Growth

Foreign direct investment (FDI) is a type of cross-border investment in which a company in one nation is owned by an investor in another country for a long time and has a substantial impact on that country. FDI facilitates international technology transfer and facilitates cross-border trade by providing access to new markets and opportunities while also supporting national economic progress.

Agrawal (2015) foreign direct investment is positively associated with economic growth in many ways. Roman and Padureanu (2012) found that the FDI association with economic growth depended on attaining a certain level of trade openness, capital market development, income level, and human capital.

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

Azman-Saini et al. (2010b), Yabi (2010), 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. FDI has a significant positive impact on economic growth in developing nations, according to Liang et al. (2021) and Fayaz and Agha (2021). The present research on the relationship between FDI and economic growth yields mixed or inconsistent results. The purpose of this study is to assess the influence of FDI on economic growth in emerging economies.

2.2. Role of Financial Development

Financial development is vital for establishing economic progress in undeveloped countries (Hassan et al., 2011).Financial development and trade openness are important factors for a nation's long-term growth. According to research, robust financial sectors boost growth in developing economies like China and India (Kandil et al., 2017). Asteriou and Spanos (2019) and Fayaz and Agha (2021) found that there is a strong association between growth rate and financial development before the crisis, but that this association is disrupted after the crisis. Furthermore, Ibrahim and Alagidede (2018) found that financial development in these economies stimulates growth, but that this growth is contingent on the financial and real sectors developing in synch.

Following a review of recent empirical and theoretical research, we conclude that FDI, foreign trade, and well-structured financial markets all have a significant impact on an economy's growth rate. In this study, we take into account all of these factors to see how FDI affects growth rates in emerging economies. In addition, we control certain other variables in our research, such as the exchange rate and infrastructure, in accordance with the empirical literature. This is the first study of its kind to bring together different aspects of emerging economies under one roof to determine economic growth factors.

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 (Figure 1):

$$\begin{aligned}\text{Growth}_{it} = \alpha + \beta\text{FDI}_{it} + \gamma\,\text{FD Index}_{it} + \delta\,\text{Infra}_{it} \\ + \partial\,\text{trade}_{it} + \tau\,\text{ER}_{it} + \varepsilon_{it}\end{aligned} \quad (1)$$

Where Growth_{it} is economic growth which is 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.

3.2. Static Model of Economic Growth

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

$$\text{Growth}_{it} = \mu_i + \delta_t + \beta\left(X_{it}\right) + \varepsilon_{it} \quad (2)$$

Where Growth_{it} is the growth rate which is proxied 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.

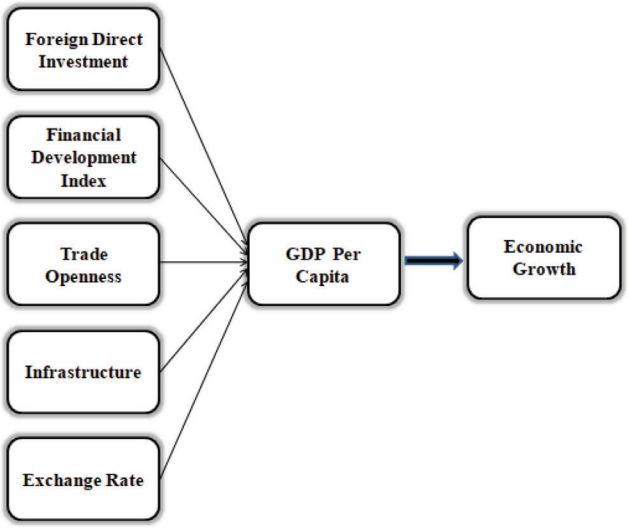

Figure 1: Block Chart of Research Model

3.3. Data and Variable Construction

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

The economies were chosen using two primary sources: 1) MSCI's classification and 2) the IMF's list of economies. The dearth of research on the relationship between FDI and growth rate after accounting for financial development index, infrastructure, trade, and the exchange rate is the basis for choosing these economies for empirical investigation (Figure 2).

3.4. Preliminary Data Analysis

Table 2 Panel A reports 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.

In Table 2, the correlation matrix in Panel B defines the relationship or connection between understudied variables. The relationship between the two variables is described in each cell of this table. Researchers frequently utilize correlation matrix analysis, a descriptive statistical analysis, to describe data and examine possible links between dependent and independent variables before moving on to regression analysis. If the value of a cell is close to zero, it means that the cell's two most essential variables do not have a linear relationship. Simply said, they are indicators that show which way a relationship between two variables

Table 1: Variable Description

Variable Name	Description
Economic Growth	Growth in GDP Per Capita
FDI	Foreign Direct Investment as a percentage of GDP
Financial Development Index	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.
Infrastructure	The proxy that will be used for this variable is "Electricity Production from oil, gas and coal sources in percent of the total"
Trade Openness	Trade openness is proxied by the "Trade as a percentage of GDP"
Exchange Rate	Exchange rates in local currency per unit of US dollars
GDP Growth	For robustness checking of baseline results, GDP growth is used to define economic growth
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

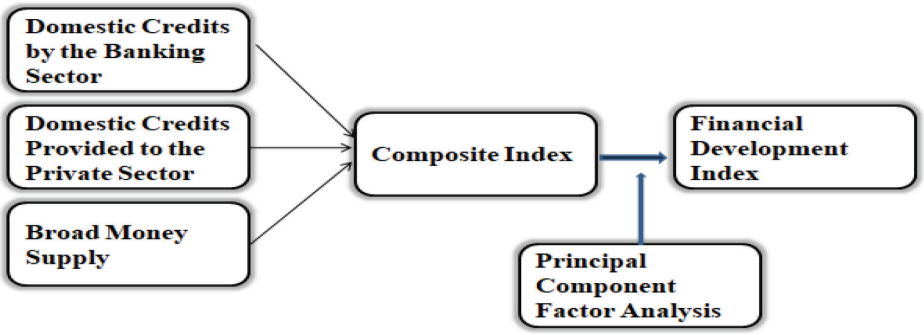

Figure 2: Construction of Financial Development Index

Table 2: Descriptive Statistics and Correlation Matrix

Panel A: Descriptive Statistics							
Variables	**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
Panel B: 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	

is going. It is vital to note that the correlation is not the same as the regression analysis. For example, there is no need to describe the dependent and independent variables in correlation analysis because the correlation coefficient simply indicates the direction or intensity of the link. In regression analysis, on the other hand, it is critical to explicitly describe the dependent and independent variables. The growth rate has a positive linear link or correlation with FDI, financial development index, infrastructure, and exchange rate, but a negative linear link or correlation with trade openness, according to Table 2 panel B.

4. Results and Discussion

To begin, we examine a large body of existing literature on FDI, financial development, and economic growth to identify a research vacuum that needs to be filled. Second, we chose 30 emerging economies based on the IMF's classification system and collected data on them to create a panel analysis. Finally, we choose an appropriate econometrical modeling strategy for defining and estimating relationships between under-studied variables. This chapter discusses the findings,

which helps in the formulation of appropriate policy recommendations.

4.1. Estimations of Baseline Models

To provide more dependable and robust results, the baseline model is estimated using several econometrical techniques. In addition, we use various proxies for economic development in accordance with the literature to see how the predicted coefficient reacts when the dependent variable's description changes. Table 3 summarisesthe findings of equation 1. After stacking each country's variable data on top of each other, Model 1 is estimated using simple OLS. Model 2 is estimated using the "FE Model," a panel data approach that has been around for a long time. Model 3 is calculated using the "RE Model," a typical panel data technique.

Different econometric assumptions are used in the FE and RE models. The FE model, according to Nzioka et al. (2017), is a good choice for estimating panel data since it produces asymptotically consistent results. In other words, as the sample size grows, the estimated coefficients converge inexorably towards their true values. However, the FE model's estimations have several flaws, for example, they are inefficient due to minimum variance. "Because RE is a more efficient estimator, it will provide better *P*-values (a higher possibility of discovering that alternative policy alternatives truly affect economic development), hence one should run RE if it is statistically reasonable to do so.

Because both FE and RE models have benefits and drawbacks, the Hausman test can help us decide which model is best for our dataset. "The efficient RE estimator estimates the same coefficients as the consistent FE estimator," says the Hausman null. If the test *p*-value is greater than the 5% significance level, we do not reject this null hypothesis. Acceptance of the null hypothesis, in plain terms, means that a RE model is more appropriate, consistent, and efficient for the dataset. The results of the Hausman test are shown in Table 3, where the *p*-value is less than a 5% threshold of significance, indicating that we reject the null hypothesis

Table 3: Static Panel Regression Analysis

Dependent: GDP Per Capita Growth	**Static Panel Regression Analysis**			**Dynamic Panel Regression Analysis**	
Independent Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Pooled OLS	**Fixed Effects**	**Random Effects**	**System GMM Model**	**GMM EGLS Random**
Foreign Direct Investment	0.0311***	0.0217***	0.0255***	0.0356***	0.0242***
Financial Development Index	0.3323***	0.3120***	0.3208***	0.3004***	0.3147***
Infrastructure	0.0021***	0.00273**	0.00289***	0.0028***	0.0029**
Trade Openness	0.0054***	0.00539***	0.0054***	0.0062***	0.0048***
Exchange Rate	0.0001*	0.00004***	0.0001***	0.0001*	0.00001***
Constant	11.247***	10.5364***	10.6178***	10.4714***	10.5611***
No of Observation	773	773	773	773	773
No of Countries	30	30	30	30	30
Adjusted *R*-Squared	0.42	0.76	0.76	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 10%, ** at 5%, and * at 1% level of significance.

and prefer the RE model. However, we give the estimated coefficients of all three econometrical techniques, namely the OLS, FE, and RE models, for comparative study.

FDI, financial development index, infrastructure, trade openness, and exchange rate all have a significant positive impact on GDP per capita growth in emerging nations, according to Model 1 in Table 3. The coefficient of the financial development index has the greatest magnitude of all, implying that the development of financial markets has the greatest impact on the country's economic growth. Models 2 and 3 support these findings, stating that there is a positive relationship between FDI and the pace of growth of emerging economies. These findings are consistent with Agrawal (2015). In all three models, the financial development index has a significant positive impact on the growth rate. Other researchers, such as Ibrahim and Alagidede (2018), MusilaandYiheyis (2015), and Fetahi-Vehapi et al. (2015).

Different researchers employed different econometrical methodologies to handle panel data related to FDI and growth rate, as stated in the literature review section. The majority of academics discuss the issue of endogeneity in panel data-based economic growth models. Alege and Ogundipe (2018). Endogeneity, serial correlation, and heteroscedasticity are all challenges that GMM econometrical modeling can help with. On our panel data, we use the System GMM Model and GMM EGLS Random Model to generate a more trustworthy estimation of equation 1 and to deal with the problem of endogeneity.

Model 4 in Table 3 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, For this kind of dataset, the system GMM is a more efficient method. At various degrees of significance, all explanatory variables have a significantly positive impact on the growth rate. More importantly, FDI has a positive impact on selected emerging economies' economic growth (Ahmad et al., 2015) Furthermore, the financial development index has the greatest impact on growth rate among all explanatory factors, as shown in the pooled, FE, and RE models. To summarise, FDI has a considerable positive impact on GDP per capita growth rates, regardless of whether an econometrical estimating technique is used.

4.2. 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 4 reports that FDI, financial development index, and trade openness have a constructive and statistically significant effect 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.

Models 7 and 8 confirm some of these findings, stating that there is a positive relationship between FDI and the pace of growth of emerging economies. In all three models, the financial development index has a strong positive impact on GDP growth. Table 4 also reveals a significant absolute relationship between GDP growth and trade openness of the understudied economies, which is corroborated by the existing evidence. The rate of exchange, on the other hand, has no statistically significant impact on GDP growth models 6, 7, or 8. In terms of infrastructure, the coefficient in the pooled OLS technique is statistically insignificant but statistically significant in the FE and RE models. The Hausman test is used once again to choose between the FE and RE models.

The findings are reported in Table 4 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 4 shows the findings of the system GMM, while Model 10 shows the GMM EGLS Random model, which has a similar collection of variables and dataset but uses "GDP Growth" as the dependent variable proxy. At various degrees of significance, some explanatory variables have a positive and statistically convincing influence on the growth rate. More importantly, FDI has a statistically significant and convincing impact on emerging economies' GDP growth. These findings are consistent with previous research by Nguyen et al. (2018). Furthermore, the financial development index has the greatest impact on economic growth among all explanatory factors, as revealed in the pooled, FE, and RE models.

When comparing GMM estimation-based results with GDP growth as a dependent variable to GMM estimation-based results with GDP per capita growth as a dependent variable, the coefficients are different. Exchange rates have no effect on the rising economy's GDP growth, but infrastructure has a positive coefficient only when the GMM EGLS Random model is used instead of the system GMM. To keep things simple, FDI has a considerable positive effect on GDP per capita growth rates, regardless of which econometrical estimating approach or economic growth proxy is chosen. These findings point to some fantastic policy implications for boosting an economy's economic growth, which leads to improved living standards and prosperity.

5. Conclusion and Policy Implications

Global economic ties, access to current technology, cutting-edge marketing strategies, innovative managerial

Table 4: Panel Regression Analysis (Robustness Check)

Dependent: GDP Growth	Static Panel Regression Analysis			Dynamic Panel Regression Analysis	
Independent Variables	Model 6	Model 7	Model 8	Model 9	Model 10
	Pooled OLS	Fixed Effects	Random Effects	System GMM Model	GMM EGLS Random
Foreign Direct Investment	0.0098***	0.0045**	0.0051***	0.0163**	0.0063**
Financial Development Index	0.2912***	0.1742***	0.1775***	0.3002***	0.1762***
Infrastructure	–0.0001	0.0041***	0.0039***	–0.0028	0.0042**
Trade Openness	0.0057***	0.00478***	0.0035***	0.0061***	0.0048***
Exchange Rate	0.0001	0.0001	0.0001	0.0001	0.0001
Constant	11.6445***	10.8322***	10.8667***	11.6628***	10.8198***
No of Observation	773	773	773	773	773
No of Countries	30	30	30	30	30
Adjusted *R*-squared	0.30	0.90	0.90	0.50	0.50
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 10%, ** at 5%, and * at 1% level of significance.

skills, and human capital are all benefits of FDI (Barsky & Kilian, 2004). Researchers looked at the relationship from a variety of angles, using various econometrical methodologies and economic development proxies, and came up with mixed results. The purpose of this research was to see if there was a substantial and positive relationship between FDI, financial development, and growth rate in 30 merging economies. To confirm the existence of a relationship between the dependent and independent variables, we used a variety of statistical approaches. To obtain more trustworthy predictions and tackle the potential issues of endogeneity, serial correlation, and heteroscedasticity, we use the System GMM Model and GMM EGLS Random Model.

The study's baseline findings show that FDI, financial development index, infrastructure, trade openness, and exchange rate all have a significant positive impact on emerging economies' GDP per capita growth, which is consistent with Nguyen (2020), Tariq et al. (2020), and Nguyen et al. (2021). We repeated the econometrical estimation after replacing "GDP per capita growth" with "annual GDP growth" as a robustness check. According to the findings, FDI, the financial development index, and trade openness, all have a significant positive impact on emerging economies' GDP growth. In the pooled OLS technique, infrastructure is statistically unimportant, but it is statistically significant in fixed and random effects models. The positive associations of FDI, financial development index, and trade openness with economic growth are also supported by GMM model analysis of "GDP Growth as the dependent variable.

This study offers policymakers a number of policy recommendations. First, governments must take appropriate initiatives to boost foreign inflows. Increase remittances; develop regulations to relocate superfluous workers to alternative money-making areas, such as Canada and the MENA region. Foreign exchange reserves that can be used to import products can be boosted by inward remittances. To contribute to GDP growth, governments should take advantage of inward remittances. Second, the government should implement appealing investment rules and a financing structure for Greenfield projects to attract expatriate citizens and ease future investment opportunities.

Third, emerging economies place more emphasis on international collaboration on FDI and trade, which is critical for promoting long-term trade.

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