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Impact of foreign direct investment on economic growth: The role of financial development in the context of developing economies

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Abstract

According to economic theory, foreign direct investment inflows (hereafter "FDI") are a crucial catalyst for stimulating economic growth, as FDI has the capacity to attract technology, leading to a subsequent rise in economic growth (hereafter "EGT"). Scholars continue to debate the convincing clarification of the direct impact of FDI on economic growth (thereafter "EGT"), despite the frequent emphasis on the absorptive capacity of host nations. This uncertainty may arise from neglecting the influence of specific conditioning factors. This study aims to examine the empirical relationship between FDI and EGT in the case of seventy developing nations during 1990-2023. Additionally, the study seeks to evaluate whether the impact of FDI on EGT varies according to the level of financial development. This paper specifically addresses the endogeneity problem by employing the General Methods of Moments (GMM) to estimate the instrumental variable approach. The empirical investigation reveals that there exists a specific level of financial development (hereafter "FND"), known as a threshold, at which FDI begins to positively affect EGT. Conversely, below this threshold, FDI has a detrimental effect on EGT. Policymakers in emerging nations should consider the level of domestic financial development to benefit from increasing foreign investment.

Keywords: Economic growth, Financial development, Foreign direct investment inflows.

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Contents

Contribution of this paper to the literature
This study investigates the role of complementarity factor such as FND in effecting EGT through FDI in selected sample countries. Previous studies are limited to examine the role of FDI in effecting EGT; however, these studies have not considered the joint effect of FDI and FND in affecting EG.

1. Introduction

A noteworthy component of the current internationalization trend is the occurrence of foreign direct investment inflows (Wang, Xu, Qin, & Skare, 2022). This issue has held a unique position due to the existing variations in the form and direction of FDI in emerging economies. After experiencing an average decline of around 4% per year from 1980 to 1985, FDI in emerging economies has significantly risen. FDI in developing nations saw an annual growth rate of around 17% throughout the late 1980s. In 1993, developing nations received a total of seventy billion dollars in FDI, and the value of FDI inflows increased by one hundred and twenty-five percent in the first three years of the decade. Policymakers commonly embrace the notion that FDI fosters economic growth and enhances the returns of the recipient economy. Developed countries receive more advantages than developing economies due to their openness (Ali, Raza, Puah, & Samdani, 2021). However, this concept offers an explanation for the observation that FDI supplies capital for direct investments and generates beneficial effects by adopting imported technology and skills. During the past thirty years, emerging economies have attracted substantial levels of FDI. The UN Conference on Trade and Development (UNCTAD) produced a study in 2017 stating that overseas inflows increased significantly from $55 billion to $1,800 billion between 1980 and 2017. Due to this remarkable surge in FDI inflows, policymakers and researchers have been compelled to examine the empirical connections between FDI expansions in the host country. The purported exogenous beneficial impact of FDI on economic growth theory (EGT) has been found to have limited backing in macro-empirical research. FDI has the capacity to attract technology, leading to a subsequent rise in EGT (Baharumshah & Almasaied, 2009). However, this effect is dependent on the host nation meeting a minimum threshold for financial development (Rehman & Noman, 2022).

Although there are some thoughts and data suggesting that FDI can directly impact the EG of emerging countries, this assumption cannot be substantiated without further empirical evidence, particularly in the case of developing nations. Furthermore, it seems that the overall impact of FDI on a nation's EGT depends on several conditional variables that determine the marginal effect of FDI. Moreover, the causal relationship between FDI and conditionality has only been shown in a limited range of scholarly works. For instance, only countries with a sufficiently high level of human capital have a positive relationship between FDI and EGT.

The current study conducts an investigative attempt to find the impact of FDI on economic development using a panel data set comprising seventy less-developed countries from 1990 to 2023. The present study focuses on the mechanisms through which FDI promotes economic growth EG, with particular emphasis on the role of foreign direct investment FND as a conditional variable. The study's findings suggest that the chosen countries experience the advantages of FDI only when their level of domestic FND foreign direct investment exceeds a specific threshold. Furthermore, we assess the impact of FDI as a mediator in developing countries to enhance the credibility of the results.

This study investigates the role of complementarity factors such as FND in affecting EGT through FDI in selected sample countries. Previous studies are limited in examining the role of FDI in affecting EGT; however, these studies have not considered the joint effect of FDI and FND on EG. Hence, this study contributes to the existing literature by investigating the joint role of FDI and FND in affecting EGT in sample countries.

The upcoming parts of this study are assembled in the following manner: The second portion provides a concise summary of the most recent research, while the third section presents the specifics of the model formulation and empirical techniques. Section V contains the conclusion, whereas Section IV presents a report on the specifics and evaluates the credibility of the results.

2. Literature Review

During the last thirty years, the global economy has experienced a significant increase in globalization. FDI has had a more rapid growth rate compared to many other forms of economic endeavor. Developing nations may now participate in global manufacturing in innovative ways due to the significant surge in FDI. Unlike openness policies, which can play an essential part in attracting FDI, endogenous growth models prioritize the spread of innovations as a key factor in predicting EGT. FDI is commonly regarded as a means for advanced nations to share their technological advancements with less-developed countries, as explained in the theoretical models by De Mello (1999) as well as Romer (1990) framework. However, De Mello (1999) model effectively incorporates FDI as a key determinant of economic development. Their study has not attempted to account for the endogeneity of the investment. A substantial number of researchers have primarily focused their empirical research on examining the impact of FDI on EGT in emerging nations. De Mello (1999) examines the investment trends and their impact on the growth of the African economy. According to his results, the only type of investments that consistently contributed to the increasing rates of economic expansion between 1970 and 1995 were domestic investments in the country.

However, the relationship between FDI and EGT in high capital-abundant countries such as the United States may be intricate and unpredictable. According to Sala-i-Martin, Bilbao-Osorio, Blanke, Hanouz, and Geiger (2011), the impact of FDI on EG is not contingent on a certain minimal level of human capital. Gachino (2012) analyzes the relationship between FDI and EGT in Kenya. The study finds that there is a positive correlation between FDI and economic development. The link between FDI and EGT is considered fascinating. Mehic, Silajdzic, and Babic-Hodovic (2013) examine the impact of FDI on economic development in twelve Central and Eastern European economies using panel data from 1996 to 2010. Based on their research, the study concluded that FDI in the selected European economies has a negative effect on EGT. Presently, some research has employed conditional effects by using various elements to investigate the correlation between FDI and EGT. FDI, as explained by Arsalan and Zaman (2014), contributes to EGT through two primary mechanisms: firstly, by directly fostering the advancement

of new technologies, and secondly, by indirectly bolstering the capabilities of banks and other financial institutions. Borensztein, De Gregorio, and Lee (1998) discovered that the increasing impact of FDI on EGT is contingent upon the achievement of a minimum level of income per capita. Iamsiraroj and Ulubaşoğlu (2015) examine the impact of FDI on investment, factor productivity, and EGT for Organisation for Economic Co-operation and Development (OECD) and non-OECD countries. The study uses a mixed dataset of time series and panel data during 1970-1990. According to their research, the level of substitution and complementarity between FDI and local investment is critical in determining the impact of FDI on EGT.

Although there is a significant number of studies on the correlation between FDI and economic development, the findings remain unclear. Using cross-country growth regressions, several research papers have discovered that FDI has a direct impact on GDP growth (Carkovic & Levine, 2002). Conversely, other research indicates that FDI does not have a substantial direct effect on EGT. These results are also found in the studies conducted by Choe (2003); Ram and Zhang (2002) and Iamsiraroj and Ulubaşoğlu (2015) which have shown that FDI generally has a detrimental impact on EGT, but the extent of this effect varies significantly among countries. Abdel-Gadir (2010) examines the impact of FDI on EGT in Arab nations. Their findings suggest that FDI does not have a significant direct effect on economic performance or, at most, has a minimal influence on it. Almfraji and Almsafir (2014) found that FDI had negative effects on the economy from 1980 to 1994 but had a favorable influence from 1995 to 2009. This information is derived from a panel consisting of fifty African states. Unlike the immediate impacts of FDI, the importance of the host countries' ability to absorb FDI, which refers to their capacity to adopt and utilize new technologies, has been a key finding in many empirical studies on the impact of FDI on EGT. These studies include works by De Mello (1999). De Mello (1999) performed cross-country research and discovered that FDI leads to an increase in production in developing nations only if there is a threshold level of human capital in the host country. This was determined by utilizing human capital as a metric for assessing desirable capacity. Multiple studies, such as those conducted by Forte and Moura (2013); Ozturk (2007) and Choe (2003), have concluded that there is no evidence to support the idea that the impact of FDI is influenced by the level of human capital, as suggested by certain studies. Furthermore, Abdouli and Hammami (2017) and Al-Iriani (2007) challenge this idea specifically in relation to Arab nations and African countries. The term "El-Wassal (2012)" is employed to denote nations in the Arab region. The nature of the interaction between domestic and global enterprises is identified as a secondary factor that contributes to absorptive capacity, as stated by Carkovic and Levine (2002).

Overall, the current corpus of literature plays a crucial role in advancing the field of study, but it does have certain limitations. Initially, a substantial amount of research focuses on empirically examining the correlation between FDI and economic progress, but it fails to consider the conditional impact. In previous research conducted by De Mello (1999) and Hermes and Lensink (2003), the conditional variables used to examine the functional relationship between FDI and EGT include the estimated threshold level of per capita income, domestic investment, and the level of human capital development. However, these levels alone do not offer an explanation for the extent of FND as a conditional factor for studying the impact of FDI on EGT in emerging economies. Moreover, the existing literature indicates that it is important to make improvements in techniques for identification to mitigate the effect of endogeneity concerns. Hence, existing studies have made insufficient contributions to support policymakers in emerging economies in increasing the growth strategy for FDI. Our empirical research indicates that the impact of FDI on the EGT depends on the financial position of the countries. This study aims to determine the impact of FDI on EGT in the selected nations by incorporating the interaction term of FDI and the degree of financial development. The study seeks to establish whether FDI can have a statistically significant and positive influence on the EGT.

3. Methodology

3.1. Model Specification

This study examines the role of FDI in effecting economic growth in the presence of financial development. This study pioneers the analysis of the causal link between FDI and EGT in developing nations while employing the mediating role of the degree of financial development. As far as we know, this research is the inaugural one of its kind. The current study relies on the system GMM estimator, which was specifically designed for dynamic models, as the basis for the empirical investigation. This study focuses on an unbalanced panel dataset of seventy emerging nations, covering the period from 1990 to 2023.

The Equation 1 that follows is our core model, derived from the straightforward Cobb-Douglas representation of the aggregate function. We utilize FDI, which specifically pertains to the net inflows of investment from foreign sources into the host country, based on the concept introduced by Borensztein et al. (1998) and Alege and Ogundipe (2014) as follows:

$$Iny_{it} = \propto + \beta Iny_{it-1} + \beta X_{it} + + Ł_{it} + \Psi_{it} + \mu_{it} \quad (1)$$

The letter "i" symbolizes the nation, where "i" may take on values from 1 to N. The letter "t" indicates the time period, where "t" can take on values from 1 to T. For the dependent variable, the notation Δln(yit) represents the logarithmic difference between the average growth rate of per capita GDP for nation i and time period t, spanning from 1990 to 2023. The difference operator is represented by the symbol Δ, whereas the lag of the dependent variable is represented by the coefficient Δln(yit-1). The symbol Xit represents a vector of control factors that are believed to influence the average growth rate of GDP per capita. The main variable used to describe the phenomenon is called "fdi," which indicates the net inflow (inflows minus outflows). Conversely, gc denotes the process of creating gross fixed capital. The variable l denotes the rate of labor growth, whereas the variable fdpvt reflects the level of FND, proxied by the ratio of private sector credit to GDP. The variable "inf" indicates inflation as measured by the GDP deflator. The term (hc) is used as a proxy for human capital development in the Penn World Table (version 9.0), which provides data on average years of schooling and returns to education. The notion "(*f*diit*lnfdit)" denotes an interaction term that captures the relationship between FDI in trade and the degree of financial development. The parameters α, β, and δ are the variables and vectors of variables that must be determined in relation to financial development. The symbol t represents the impacts that are specific to a certain era, whereas the symbol Łi represents

the effects that are distinct to a particular nation. The error term is represented by the symbol ϕ it. The study utilizes the natural logarithms of all the given variables. Equation 2 presents the natural logarithms of all the given variables.

$$\triangle \text{lny}_{it} = \beta_0 + \beta_1 \text{lny}_{it-1} + \beta_2 Infdii_{it} + \beta_3 Inpvct_{it} + \beta_4 Inl_{it} + \beta_5 Inhc_{it} + \beta_6 Ininf_{it} + \beta_7 Infcf_{it} + \beta_8 Intopen_{it} + \beta_9 (fdii_{it} * Inpvct_{it-1}) + Ł_{it} + \Psi_{it} + \mu_{it} \quad (2)$$

Equation 3 allows us to calculate the specific impact of FND on the overall growth of FDI. This is achieved by utilizing two coefficients, β2 and β9. This is accomplished by performing a partial differentiation of the function Δln(yit).

$$\frac{\partial Iny_{it}}{\partial Infdi} = \beta_2 + \beta_9 Inpvct \quad (3)$$

3.2. Data Source

The estimation of our model is based on an unbalanced panel dataset comprising seventy emerging economies throughout the period from 1990 to 2023. Refer to Appendix A1 for a comprehensive list of the countries covered in this study. The collection of these nations is determined based on the availability of data. Table 1 provides a statistical description of the model variables. The required dataset encompassing gross domestic product, labor growth rate, physical capital formation, financial development, and inflation is sourced from the World Development Indicators (WDI). The United Nations Conference on Trade and Development (UNCTAD) is the primary authority on trade openness and FDI. The Penn World Table edition 9.0 is the source of statistics on human capital, encompassing information on schooling years and returns to education. The description and basic statistical measures for each variable are presented in Table 1.

Table 1. Descriptive statistics.

Variables	Minimum	Mean	Maximum
Lny	−2.99	1.79	8.35
Lnhc	1.017	2.451	4.219
lnfdi	−6.28	3.878	44.346
lngfcf	−0.319	19.325	198.645
Lnl	−0.151	1.941	4.521
lnpvct	0.579	41.623	202.256
lninf	0.381	11.514	235.583
lnopen	18.441	43.293	179.119

The definition and sources of variables are mentioned in Table 2.

Table 2. Definition and sources of variables.

Symbol	Variables	Source
lny	The growth rate of per capita GDP	WDI
lnhc	Years of schooling and returns to education (PWT version 9)	PWT
lnfdi	FDI net inflows as a % of GDP	UNCTAD
lngfcf	Physical capital formation as a % of GDP	WDI
lnl	Labor growth rate as a % of total population age (15-64)	WDI
lnpvct	Private credits as a % of GDP	WDI
lninf	Inflation rate	WDI
lnopen	Trade openness as a share of GDP	UNCTAD

3.3. Analytical Strategy

Existing studies, including Gui-Diby (2014); Bouchoucha and Yahyaoui (2019) and Albulescu (2015), offer additional insights into the persistent disagreement regarding the connection between FDI and EG. They specifically focus on empirical debates that question the accuracy of growth models. Conclusions state that the GMM estimator is a suitable instrument for addressing endogeneity challenges. However, it tends to overestimate the rate of convergence in the growth model for the case of a panel dataset. The system GMM estimator employs internal instruments to mitigate the potential for endogeneity in the variables that describe the system. Numerous investigations have widely utilized the lagged values of important explanatory variables as internal instrumental variables (IVs) because of their high accuracy. Therefore, we employ the GMM estimator to estimate our dynamic growth model. This is based on the study undertaken by Carkovic and Levine (2002) as well as other similar publications. Using this empirical approach, our research examines the impact of FDI on economic development by using time-lagged investment vehicles (IVs).

In the research of Manuel Arellano and Bond (1991), they developed a widely replicable strategy in the growth accounting literature to eliminate the unobserved influence. The model employs the pioneering generalized method of moments (GMM) difference estimators to calculate the dynamic panel data model. The first difference equation (Equation 4) may be derived by modifying Equation 1.

$$(\text{lny}_{it} - \text{lny}_{it-1}) = \propto + \beta(\text{lny}_{it-1} - \text{lny}_{it-2}) + \delta(\text{X}_{it} - \text{X}_{it-1}) + (Ł_i - Ł_i) + (\Psi_{it} - (\Psi_{it}) \quad (4)$$

The GMM-difference technique aims to mitigate the specific effects originating from the source nation by calculating the initial differences of the basic growth equation and then eliminating them. To address the issues of simultaneity bias and endogeneity, the values of the variables that are used to describe the occurrence are lagged by two periods and then further postponed. In our inquiry, we utilize three distinct delayed durations as instruments. However, Blundell and Bond (1998) argue that using the lagged level of right-hand side variables as instruments for factors in differences is not effective. They explain that this is because the variables that explain the differences are consistently present throughout time. Arellano and Bover (1995) have found that the system-GMM estimators are highly successful in capturing country-specific effects while maintaining the cross-country dimension of the data. This is achieved by including Equation 1 at the level of the difference equation.

The system GMM estimator employs instrumented variables to account for potential endogeneity in all variables related to the explanation. To utilize these new instruments, it is necessary to assume that the original difference in explanatory factors is not correlated with these variables. Furthermore, this paper also anticipates a consistent relationship over time. During the Monte Carlo simulations, it has been demonstrated that the system GMM estimators outperform the GMM-difference estimators in terms of the validity of moment requirements, as proven by Blundell and Bond (1998). The Sargan (1958) is also employed to assess the validity of the present conditions and identify potential restrictions. The study also intends to test the null hypothesis, assuming that there is no second-order serial correlation between the variables being studied and the error term (Fingleton, 2023).

4. Results and Discussion

Our study examines the impact of FDI on the EGT through the use of ordinary least squares and fixed effect approaches. Subsequently, a GMM estimator is employed to assess the validity of the outcomes derived from these conventional methodologies. It is feasible to examine the data shown in Table 3.

Table 3 describes the outcome of the Ordinary Least Squares (OLS) model. Hence, the empirical evidence indicates that FDI has a detrimental effect on EGT, as shown by the statistically significant negative coefficient of FDI. This finding aligns with the extensive body of earlier research undertaken by Bouchoucha and Yahyaoui (2019); Saidi, Mani, Mefteh, Shahbaz, and Akhtar (2020) and Rehman and Noman (2022). The results of the fixed effects approach are reported in columns (2) and (3), based on the research conducted by Wacziarg and Welch (2008). By employing the Hausman test, we may systematically choose between the fixed and random effects models. According to the test results, we propose using the fixed effects model for our investigation. The second column displays the results of the fixed effects method, excluding the interactive term. Conversely, the coefficient of FDI has a statistically significant negative sign. The third column shows that the value of the interacting term between FDI and the degree of FND is positively signed and statistically significant at the 1% level. It is implied that in certain developing nations, the enhancement of EGT through FDI necessitates synchronization with the degree of FND in the host country. To fully capitalize on FDI, emerging nations must enhance their domestic financial infrastructure. This study shows that the extent of FND acts as a conditioning factor that is accountable for the overall positive influence of FDI growth.

The current study literature provides data suggesting that the challenges of endogeneity persist by relying solely on the results obtained from fixed effect approaches. FDI is a quantitative measure that has the ability to show a correlation with the remaining unexplained factors in the equation. FDI-growth correlations may also be impacted by unseen elements or traits of nations. Moreover, countries undergoing rapid economic growth are more inclined to utilize FDI due to the availability of advanced technology, as FDI promotes the dissemination of knowledge and stimulates economic development. In addition to the existing problems, some variables have already been ignored and are theoretically believed to be linked to FDI and real economic growth. Therefore, system-GMM estimators have been used to evaluate the dynamic model and address endogeneity issues. In columns 4 and 5, respectively, the findings are displayed both with and without the addition of interaction conditions. The development of a system GMM estimator is attributed to the work of Arellano and Bover (1995) and Blundell and Bond (1998). If it is determined that the lagged values of the regressors are valid instruments, then the reliability of the two-step GMM estimator may be assumed. This study utilizes two time-period delays for estimating the results. By employing the Sys-GMM technique, which is a more sophisticated estimation approach compared to the fixed effect method, we establish a specific threshold for the degree of financial development. Beyond this threshold, we see a positive influence of FDI on GDP growth. This is performed based on Equation 3, as explained in Section III, A. The results obtained through the use of Sys-GMM are presented in Column 4 of Table 3, without the inclusion of any interaction terms. The coefficient for FDI has a negative sign with a magnitude of -0.139, indicating that it is statistically significant at the 10% level. This indicates that the correlation between FDI and gross domestic product (GDP) growth is weak. Multiple studies, such as those by Agbloyor, Abor, Adjasi, and Yawson (2014) and Gui-Diby (2014) have examined the relationship between FDI and economic growth in emerging economies; however, they have yielded ambiguous findings.

Column 5, however, shows that the values of the interaction factor (lnfdi*lnpvct) are positively signed and exhibit statistical significance at the 5% critical threshold. The coefficient value of the interaction term between FDI and the human capital development level is positive and statistically significant. This means that the effect of FDI on EGT is only positive when the level of FND exceeds the threshold of 1.563 (−0.486 + 0.311 lnpvct). Based on the data shown in Table 1, the threshold value is lower than the average FND value for the entire group, which is 2.351. Our findings suggest that FDI is a significant driver of GDP growth in the majority of the nations included in our sample. Meanwhile, it has been found that FDI has an adverse impact on the GDP growth of economies that fall below this threshold. Hence, to maximize the advantages of FDI, enterprises must ensure prudent measures to manage their financial expansion. The threshold value analysis has revealed that the FND level in sixty-one out of seventy nations has consistently been above the barrier for several years. However, many emerging economies have shown a significantly lower level of financial progress compared to this standard over the entire period of observation. To fully capitalize on the positive impact of FDI on EGT, they are still striving to close the gap.

The obtained results are reliable for nations with a private credit-to-GDP ratio exceeding the specified threshold. Hence, countries with a larger percentage of private credit as a proportion of their EGT in a particular year, above the threshold level for the full sample, have a favorable impact on EGT through FDI at the same level of FDI. Countries with a private credit-to-GDP ratio below this level do not see a positive impact on GDP growth from FDI. Therefore, the results remain constant regardless of the model parameters and estimating methodologies used in the study. Kusi, Gyeke-Dako, Agbloyor, and Darku (2018) state that in order to enhance the growth of gross domestic product (GDP) in the sample nations, it is necessary to coordinate the findings derived from the interaction impact of FDI and the degree of FND. This supports the idea that economically advanced countries may effectively use resources by engaging in foreign investments. In summary, a strong financial sector leads to a substantial beneficial effect on GDP growth when there is an increase in FDI. There is a strong correlation between a substantial rise in the percentage of GDP made up of private credit and a high EGT. Based on theoretical models, it is predicted that

the impact of FDI on EGT may vary depending on the level of FND in the nations being studied. This finding aligns with these ideas.

The results for the bulk of the control variables include widely anticipated signals. Mankiw, Romer, and Weil (1992) argue that the idea of conditional convergence is supported by the observation that the estimates of the lagged dependent variable have adverse and statistically significant signs in both models (Column 5 and Column 6). Across all models, the coefficients of the labor growth rate exhibit positive and statistically significant expected signals. This is because rising nations are commonly distinguished by their reliance on labor-intensive industries. Busse and Groizard (2008) argue that the strength and growth rate of labor are crucial determinants in estimating economic growth. This is due to their significant impact on economic activities, such as the establishment and operation of large-scale markets for goods and services. Our research aligns with the conclusions of Agbloyor et al. (2014), who assert that the growth of the workforce is the main catalyst for consumer expenditure and, consequently, EGT. The coefficients of human capital have positive signs, although they lack statistical significance despite their positive nature. Both King and Levine (1993) have discovered a favorable correlation between the development of human capital and the growth of GDP. This finding aligns with the widely held notion that this correlation does indeed exist. For most of the models, it was found that the inflation coefficients were both numerically negative and statistically significant. The results of this study align with the investigations carried out by Temple (1999) and Rousseau and Wachtel (2002) as well. Based on this finding, it seems that inflation tends to have an adverse impact on GDP growth. This is because inflation often serves as a sign of macroeconomic instability and mismanagement. Conversely, some theoretical studies (e.g., Kusi et al. (2018)) have indicated that moderate inflation has a positive impact on EGT. The coefficients of fixed capital investment exhibit a positive and statistically significant correlation with nearly all of the equations. Haq and Luqman (2014) conducted a study using the dynamic panel growth model to evaluate the correlation between capital stock and EGT for nine Asian emerging economies from 1972 to 2012. Their findings support this conclusion. They discovered a significant correlation at that time. For every calculated model, the coefficients of the trade openness index are consistently shown to be positive and statistically significant. This conclusion supports the findings of Omri and Kahouli (2014) that trade openness promotes EGT in impoverished nations, indicating that trade openness indeed improves EGT.

To verify the authenticity of all independent variables (IVs), we conduct three tests and provide the corresponding statistical data. The tests used include the K.P. Wald F test to assess weak identification, the Hansen J-test to evaluate excessive identification, and the test to determine under-identification. Table 3 displays the findings of the econometric specification tests, providing statistically substantial proof of the IVs' legitimacy. The appropriate instruments for conducting the Hansen J-test of over-identification may be found in Columns 5 and 6, respectively. The outcomes of the Sargan-Hansen J-test for over-identification are displayed at the bottom of Table 3. This test provides evidence that the additional instruments used in system GMM estimators are valid and do not disprove the accuracy of the null hypothesis. Furthermore, the AR (1) test is rejected, but the AR (2) test cannot be rejected. Consequently, this suggests that the hypothesis of no second-order serial correlation in the residuals is satisfied. Furthermore, to mitigate the problem of overfitting caused by an excessive number of instruments, the number of cross-sections is deliberately kept smaller than the number of instrumental variables. Since FDI and certain control variables are both endogenous in relation to growth, our empirical method is vulnerable to endogeneity issues (Nistor & Hernández-García, 2018). The prevalence of the endogeneity problem may increase as EGT rises (Glaeser, La Porta, Lopez-de-Silanes, & Shleifer, 2004). Furthermore, a part of this problem may be reduced simply by engaging in a range of different activities, where the number of time delays for variables that occur at the same time (excluding the variable being studied) is extended as much as possible. According to Nistor and Hernández-García (2018), this implies that there are still fewer instruments compared to the number of cross-sections. The results suggest that the impact of FDI on EGT depends on the extent of FND in certain emerging economies. Based on our findings, FDI has a beneficial effect on EGT for countries with a level of FND that exceeds a certain threshold value. The level of FND is a contingent factor that influences the impact of FDI. Furthermore, the conditional effect of FDI on growth provides a resolution to the ongoing debate in academic literature. It fills a gap in theoretical research and provides empirical evidence for the existing controversy about the impact of FDI on EGT. Moreover, the results suggest that FDI is beneficial for some emerging economies that possess well-established financial institutions. The governments of developing nations must prioritize the growth of their financial sectors to maximize the benefits of FDI inflows.

Table 3. The OLS, Fixed effect and system-GMM for the model of FDI and EGT.

$\Delta lnyi_t$	(1)	(2)	(3)	(4)	(5)
	OLS	**FE**	**FE**	**GMM**	**GMM**
lny_{t-1}	---	---	---	−0.068**	−0.093***
				(0.030)	(0.027)
lnfdi	−0.08**	−0.118*	−0.546***	−0.142*	−0.479**
	(0.085)	(0.082)	(0.140)	(0.121)	(0.201)
lnpvct	0.721**	0.611**	1.901**	0.341**	0.472***
	(1.193)	(1.182)	(1.208)	(1.991)	(1.591)
lnl	0.167*	0.139**	0.100**	0.835***	0.871***
	(0.205)	(0.199)	(0.195)	(0.309)	(0.222)
lnhc	0.021**	0.013**	0.011**	0.311*	0.011
	(0.031)	(0.031)	(0.031)	(0.021)	(0.017)
lninf	−0.131	−0.129	−0.163**	−0.122	−0.070
	(0.082)	(0.083)	(0.081)	(0.105)	(0.054)
lngfcf	0.390***	0.387**	0.329**	1.233***	1.120***
	(0.253)	(0.255)	(0.250)	(0.333)	(0.182)
lnopen	0.070**	0.258**	0.303***	0.227**	0.127**
	(0.168)	(1.589)	(1.563)	(0.157)	(0.116)
lnfdi * pvct			0.418***		0.314***
			(0.163)		(0.226)
Constant	3.341	1.118	1.473	2.314***	3.524***

Δlnyi,	(1)	(2)	(3)	(4)	(5)
	OLS	FE	FE	GMM	GMM
	(2.330)	(0.082)	(2.121)	(1.162)	(1.332)
Observations	2,270	2,270	2,270	2,270	2,270
R-squared	0.513	0.532	0.641	0.619	0.623
Number of countries	70	70	70	70	70

Note: (1): Parentheses shows Robust standard errors. (2): ***, **, and * shows level of significance at the 1%, 5%, and 10% level respectively.

The marginal effect in Equation 3 changes when there is a shift in the level of financial development. Table 4 offers a detailed explanation of the marginal impact and the significance of the interaction. It includes examples at the mean, minimum, and maximum levels.

Table 4. Marginal impact of financial development in FDI and EGT model using GMM.

$$\frac{\partial Iny_{it}}{\partial Infdi} = \beta_2 + \beta_9 Inpvct$$

FDI	Mean value	Maximum value	Minimum value
	1.821	2.015	1.013

5. Conclusion

The process of globalization has led to a significant increase in FDI flows. Developing nations have consistently faced severe challenges in terms of the performance of FDI. The empirical research on the impact of FDI on EGT in developing nations presents conflicting findings. This study aims to fill a gap in the present research by examining the relationship between FDI and EGT in a selection of emerging economies. The study also considers the level of FND as a factor that may influence this relationship. The results of this study suggest that the level of FND has a significant role in determining the relationship between foreign direct investment and EGT. FDI enhances the growth of a financially advanced country. Hence, emerging economies aspiring to match the pace of economic expansion should initiate the establishment of their financial institutions in order to effectively compete in the global market.

For this study, a dataset of seventy developing nations from 1980 to 2015 is employed. System GMM estimators are used as a management tool for addressing endogeneity concerns. Based on the assumption that annual growth rates can vary significantly due to the cyclical volatility of GDP growth, which may appear large in yearly data and lead to inaccurate growth estimates, we assess the model using five-year averaged data to ensure the results are as reliable as possible. The basic insights that we have made are validated by consistently achieving outcomes. Our empirical study findings indicate that the level of FND is a crucial factor that influences EGT through foreign direct investment in several emerging economies.

This study is limited to investigating the complementary role of FND in affecting EGT through FDI in the case of 68 emerging economies across the globe. In the future, studies may be carried out to investigate the complementary role of FND in affecting EGT through FDI in the case of G7, OECD, and next 11 countries. Furthermore, policymakers must evaluate the conditional impact in order to promote growth and maximize the potential of the interconnected global economy. Although there may be other mechanisms at play in this scenario, including nonlinearities and threshold panel regressions, they might prove beneficial and thus offer promising avenues for future study.

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Appendix A1. Sample countries.

Sub Saharan Africa (40)		**Latin American Caribbean (14)**	**South and East Asia (14)**
Angola	Africa Swaziland Togo	Costa Rica	Vietnam
Congo Côte	Leone South	El Salvador Uruguay Venezuela	Thailand
Benin	Liberia	Ecuador	Sri Lanka
Bissau	Senegal	Paraguay Peru	Papua New Guinea Philippines Singapore
Burundi	Madagascar	Colombia	Malaysia Nepal Pakistan
Cameroon	Lesotho Gabon	Chile	Korea, Rep.
Central Africa	Malawi Mali	Belize Brazil	India
Bolivia	Mozambique Namibia	Argentina	Bangladesh Cambodia China
Botswana	Nigeria Rwanda Sierra	Nicaragua Panama	
Chad	Niger		
Burkina	Mauritania		
Congo D. Rep.	Uganda		
Cote d'Ivoire	Zambia Zimbabwe		
Cabo Verde			
Guinea			
Kenya			
Djibouti			
Faso			
Guinea			
Gambia			
Ghana			