Does Financial Depth Promote Foreign Direct Investment? New Evidence from the Panel Threshold Regression

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Abstract

In this study, we consider the impact of financial depth (FD) on foreign direct investment (FDI) in emerging markets and developing economies (EMDEs). The data were obtained in 8 Asian EMDEs including Vietnam, Thailand, Philippines, Malaysia, Sri Lanka, India, Indonesia, and China. In the analysis, we adopted the panel threshold regression which is superior to other traditional models, especially in analyzing the nonlinear relationship between variables. Therefore, we expected to reveal more unprecedented findings. The results report that FD has a nonlinear effect on FDI with the threshold value γ = 82.9%. Specifically, if FD reaches the threshold γ, FD is positively associated with FDI. This correlation turns to be negative but at a lower level beyond the threshold value. In addition, we reveal the positive impact of economic growth (EG) and inflation (INF) on FDI. This confirms the importance of FD and macroeconomic factors in attracting FDI into EMDEs.

Disciplinary: Economics, Econometrics and Finance.

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1 INTRODUCTION

Foreign Direct Investment (FDI) can be defined as capital flows invested into a firm located in another country by an investor for his long-term benefit (10 percent threshold of power voting) (IMF, 1993). FDI plays a crucial role to investors and host countries. Indeed, free capital movements allow investors to diversify their portfolios, increase their profits, and more importantly, have easy access to faster-growing markets (Yavas & Malladi, 2020). To host countries, FDI is helpful to them in creating new job opportunities, accessing the latest technology, improving international trade

integration, and establishing a more competitive business environment (Agbloyor et al., 2013; Desbordes & Wei, 2017).

This leads to a big number of empirical studies which investigate driving factors affecting the FDI attraction. Most of them have used macro approaches and are based on international trade theories to identify factors of FDI (Yavas & Malladi, 2020). Accordingly, FDI is frequently affected by macroeconomic factors such as economic growth (Lim, 1983; Akisik, 2020), inflation rate, and trade openness (Akisik, 2020; Yavas & Malladi, 2020). Generally, most of the current literature considers the impact of macroeconomic factors on FDI. Admittedly, the causal relationship between the financial depth (FD) and FDI has not received adequate attention from empirical researchers (Agbloyor et al., 2013; Yavas & Malladi, 2020). FD is essential in the attraction of FDI in many countries. Well-developed financial systems of hosting countries help foreign investors reduce trading costs, facilitate their use of financial services there (Agbloyor et al., 2013; Pradhan et al., 2019), as well as raise the efficiency of FDI use (Bertocco, 2008), so they tend to put more investment there. The effect of FD on FDI can be a big concern of EMDEs who want to attract more FDI to improve firm performance, increase job opportunities, and stimulate economies. Reliable empirical evidence on this impact will provide the government an excellent base for establishing suitable policies for the improvement of FD as well as FDI. Recognizing the limitations in the current literature and its necessity in EMDEs, especially in Asia, we conducted the study to investigate the impact of FD on FDI in Asian EMDEs. By this study, we highlighted the impact in these countries. Moreover, we considered the nonlinear effect of FD on FDI by employing the panel threshold regression, which is a new approach as compared to previous studies. This approach is expected to reveal good results that are reliable empirical evidence as well as a valuable reference to managers and researchers.

2 Literature Review

FD shows the scale of the financial sector to the economy (Klein & Olivei, 2008; Zaman et al., 2012). It can be said that a higher level of FD demonstrates that the financial sector has a better ability in supplying capital to the economy. In developed countries, FD is often measured by the size of the banking sector and stock market to the economy whereas the size of the banking sector to the economy is mainly a proxy of FD in developing or emerging countries whose stock markets are quite nascent and small. Thus, FD is frequently measured by domestic credit to the private sector (% of GDP), mainly focused on the banking sector (Fisman & Love, 2003; Choi & Park, 2017). The impact of FD on FDI has not been a big concern in the current studies. Most of them only consider the effect of macroeconomic factors on FDI. Lim (1983) highlighted that fast-growing economies are more profitable than slow-growing ones (Lim, 1983; Akisik, 2020). Meanwhile, Yavas and Malladi (2020) stated that inflation in hosting countries exerts a significant influence on the attraction of FDI. This is because inflation may lead to uncertainty in their economies, difficulties in business and manufacture, obstacles in long-term plans, thereby being barriers to FDI. More than that, trading limits and higher shipping costs in hosting countries may hinder the FDI

attraction. Generally, the current literature reports that the impact of FD on FDI is a big gap that should be concerned more. This gap was also noticed by Kholdy and Sohrabian (2005), Agbloyor et al. (2013), Yavas and Malladi (2020). It however has not been solved thoroughly in empirical studies.

Some empirical studies reported the positive influence of FD on FDI. Accordingly, higher FD of hosting countries enables them to raise their ability in supplying high-quality financial services at low costs that are helpful for foreign investors to rapidly access and use these services (Agbloyor et al., 2013; Pradhan et al., 2019). Further, countries with high FD can provide FDI firms with adequate capital for their operation expansion (Desbordes & Wei, 2017; Pradhan et al., 2019) and sufficient capacity for implementing projects which they may quit (DiGiovanni, 2005). In addition, FD is essential to FDI firms in boosting investment efficiency, managing investment, and more importantly, improving risk management efficiency (Bertocco, 2008). Hence, FD stimulates the attraction of FDI. The positive effect of FD on FDI has been highlighted in some empirical studies. Klein et al. (2002) reported that Japanese firms considerably reduced FDI flows facing financial difficulties at banks. They also noticed the link between firms and banks is useful in boosting FDI. Sharing the same view, Zakaria (2007) stated that the FDI attraction depends on the relationship between firms and banks. Even FDI can ease restrictions on the access to credit that firms are facing. Kholdy and Sohrabian (2008) declared that developments of financial institutions bring their countries more FDI. Meanwhile, Bevan et al. (2004), Antras et al. (2009), and Bilir et al. (2017) agreed that economies with highly developed financial markets may receive more FDI. Agbloyor et al. (2013) and Pradhan et al. (2019) stated that those with developed banking systems are more advantageous in attracting FDI. From another perspective, Dutta and Roy (2011) reported the nonlinear effect of FD on FDI. Specifically, in a certain FD range, FD is positively correlated to FDI. Then this effect turns to be negative.

In general, the existing literature reveals the crucial role of FD in attracting FDI. However, this topic has not received much attention in empirical studies. On the other hand, there still exist different views on this impact. Indeed, most of the current studies reported the positive impact of FD on FDI. Dutta and Roy (2011) confirmed that there may exist a nonlinear effect of FD on FDI. Therefore, this impact is an interesting topic and a big gap to be filled.

3 Data and Methodology

3.1 Data

We collected data in Asian EMDEs. To ensure a strongly balanced data set, we fully obtained data from eight countries including Vietnam, Thailand, Philippines, Malaysia, Sri Lanka, India, Indonesia, and China in the 2008-2019 period. The data are adopted from the World Bank source.

3.2 Methodology

This study analyzed the impact of FD on FDI employing the panel threshold regression. This method suggested by Hansen (1999) and developed by Wang (2015) shows its superiorities to other analyses. It allows us to test the nonlinear effect of FD on FDI. We can also determine the threshold

value. Thus, by employing the panel threshold regression, we expected to reveal interesting and suitable findings as compared to previous studies.

Based on Dutta and Roy (2011), we proposed a model to test the impact of FD on FDI as

$$FDI_{it} = \begin{cases} \beta_0 + \beta_1 FD_{it} + \beta_2 Z_{it} + \varepsilon_{it}, & when\ FD_{it} \leq \gamma \\ \beta_0 + \beta_1 FD_{it} + \beta_2 c_{it} + \varepsilon_{it}, & when\ FD_{it} > \gamma \end{cases} \quad (1).$$

FDI is foreign direct investment, net inflows (% of GDP). We measure domestic credit to the private sector (% of GDP) as an indicator of FD. β_1 and β_2 are regression coefficents and β_0 and ε refer to the regression constant and the error term. γ is a threshold value of FD. These measures have been adopted in most of the previous studies. Besides, we adopt control variables (*Z*) consisting of economic growth (EG), inflation (INF), and trade (TRA) (Lim, 1983; Akisik, 2020; Yavas and Malladi, 2020).

Table 1: Summary of the variables.

Variable name	Code	Measurement
Dependent variable		
Foreign direct investment	FDI	Foreign direct investment, net inflows (% of GDP)
Independent variables		
Financial depth	FD	Domestic credit to the private sector (% of GDP)
Control variables		
Economic growth	EG	GDP per capita growth (annual %)
Inflation	INF	Consumer prices (annual %)
Trade	TRA	Trade (% of GDP)

4 Empirical Analysis

Figure 1 presents FD and FDI of EMDEs in 2019. Specifically, China and Vietnam have relatively high levels of FD. Nevertheless, FD is still limited in several countries like Indonesia and the Philippines. Vietnam is also the one with the highest level of FDI whereas Sri Lanka has the lowest level.
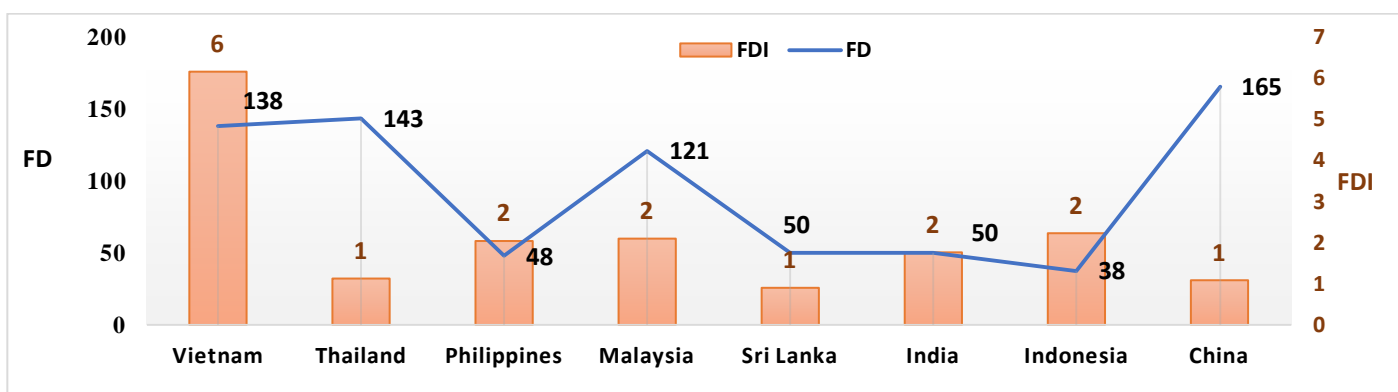
Figure 1: FD and FDI of EMDEs in 2019

Table 2: Correlation matrix

	FDI	FD	EG	INF	TRA
FDI	1.000				
FD	0.369	1.000			
EG	0.235	0.074	1.000		
INF	0.253	-0.373	0.123	1.000	
TRA	0.663	0.551	-0.237	-0.064	1.000

Table 2 shows that FDI is positively correlated to FD and the controlled variables. Especially, the correlation between independent and controlled variables is quite low, which means that there is no serious multicollinearity issue.

Table 3: Threshold effect test

Model	Threshold	Lower	Upper
γ	82.873	52.138	94.832
Prob	0.000***		

Note: *** significant at 1 percent.

The result shows that there exists a threshold of FD, γ = 82.873% (Table 3). Based on this, we estimated the nonlinear effect of FD on FDI. The estimation result is presented in Table 4.

Table 4: Estimation result

FDI	Coef.
FD *(FD ≤ 82.873%)*	0.058*** [0.003]
FD *(FD > 82.873%)*	-0.022*** [0.009]
EG	0.205*** [0.000]
INF	0.066** [0.013]
TRA	0.005 [0.493]
β_0	1.175 [0.230]
R^2	36.63%
F-statistic	9.59*** [0.000]

Note: *, ** and *** significant at 10, 5 and 1 percent, respectively.

From Table 4, FD exerts a considerable impact on FDI at the 1% level of significance. Indeed, at the threshold γ (FD ≤ 82.873%), FD is positively (0.058) correlated to FDI. Beyond the threshold γ (FD > 82.873%), the impact of FD on FDI turns to be negative, but at a lower level (-0.022). This finding confirms the importance of FD in attracting FDI if FD ≤ 82.873%. Accordingly, improvements in FD help firms expand their operation and investors easy access to better financial services at lower costs as well as greatly contribute to the efficiency of FDI use. Thus, it is understandable that FD is useful in the attraction of FDI. This finding is in line with what has been reported by Klein et al. (2002), Zakaria (2007), Kholdy and Sohrabian (2008), Dutta and Roy (2011), Agbloyor et al. (2013), Pradhan et al. (2019). However, this effect may turn to be negative if FD is bigger than 82.873%. This confirms that excessive FD may cause potential risks to the financial system which will be big obstacles to the FDI attraction within EMDEs. This report is also similar to that of Dutta and Roy (2011).

Moreover, we found the positive influence of EG and INF on FDI. This effect was also found by Lim (1983), Akisik (2020), Yavas and Malladi (2020). Hence, FDI is substantially affected by the

macroeconomic factors of each country. In other words, a positive macroeconomy will be an essential foundation to bring EMDEs more FDI.

5 Conclusion

In this study, we investigate the impact of FD on FDI in Asian EMDEs. To reach the objective, we use the panel threshold regression which was suggested by Hansen (1999) and developed by Wang (2015). Admittedly, this method shows its superiorities to other ones, especially in testing the nonlinear effect between variables. The result shows that FD exerts a nonlinear effect on FDI. Specifically, FD is positively (0.058) correlated to FDI under the threshold g (FD ≤ 82.873%). Beyond the threshold γ (FD > 82.873%), FDI is negatively (-0.022) affected by FD, but at a lower level. In addition, we also find the positive impact of EG and INF on FDI. This reveals that positive FD and macroeconomic factors play a crucial role in helping the EMDEs attract FDI. Based on this, it is necessary for the EDMEs to formulate wise policies on boosting FD and managing the macroeconomic factors to promote FDI. Based on our findings, researchers may develop new proposals on measuring FD by the growth of the stock, bond, and forex markets.

6 Availability of Data and Material

Data can be made available by contacting the corresponding authors.

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