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## Article

# Index of financial development with foreign direct investment: Case of Vietnam

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# Index of Financial Development with Foreign Direct Investment: Case of Vietnam

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## ABSTRACT

This study investigates the effect of the financial development index (FD) on foreign direct investment inflows (FDI) in Vietnam from 1996 to 2021. Time series data are used in the model to assess the influence of six indicators standing for FD. Financial institution assessment (FA), financial depth of institution (FDE), financial efficiency of the institution (FE), financial assessment of market (FM), financial efficiency of the market (FEM), domestic loans for the private sector (DLP) was collected from 1996 to 2021. As a result of the analysis, when FA, FE, and FEM increase, Vietnam's FDI inflow also increases while FDE and FM decrease FDI. The effect of DLP is unclear, and this study has no significant association. It is found that the selected financial development index has a significant impact on attracting inward FDI. It is also necessary for the government and officials to make appropriate policies in the future.

## KEY WORDS:

financial development, financial development index, foreign direct investment, Vietnam.

## JEL Classification:

F15, F21, G10, G23.

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## 1. Introduction

The importance of studying FDI and the impact of this activity is one of the most controversial topics in financial economics. FDI enables host countries to achieve higher growth rates by supporting advanced technologies, creating new products, shifting product lines, and acquiring advanced technologies (Hermes & Lensink, 2003; Munemo, 2017; Nguyen, 2022). Empirical studies show the benefits of FDI with nations' economies. There is a strong relationship between FDI and capacities to make more products and contribute to the gross domestic product of the nation (Asongu et al., 2018; Chamarbagwala et al., 2000).

In recent years, FDI has acquired special consideration from specialists, academicians, market analysts, and policymakers (Aghion et al., 2009; Durusu-Ciftci et al., 2017; Makoto, 2020; Sharma & Sharma, 2020;). Numerous specialists have seen

FDI as an aid to an economy because of the mechanical dissemination it makes (Iamsiraroj, 2016). FDI represents a central force in financial systems due to its absorptive capacity (Alfaro et al., 2004; Yeboua, 2019). FDI attracts cash flow to a host nation and brings trend-setting innovation and activity experience, from which it supports transferring technology and economic growth. In addition, investments from transnational companies generally produce jobs for the host country's residents. Empirical studies have shown that foreign direct investment often benefits the host country. They believe multinational companies improve the economy by creating new jobs and increasing capital accumulation and productivity. As a result, nations actively work to entice FDI. However, there are also main reasons for the decline in FDI due to the limited external financing situation due to the global financial crisis (United Nations Conference on Trade and Development [UNCTAD], 2010).

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This result shows how vital access to foreign financing is through the influence of FDI. While FDI inflows stimulate technological change through the diffusion of knowledge and new capital goods, the extent of FDI is determined by the overall business conditions in the host country (Azman-Saini et al., 2010; Chamarbagwala et al., 2000).

Some local companies can finance new projects with internal funding. However, when it comes to companies that need technical know-how, the more significant the gap between current practice and the latest technology, the more external funding is needed. The need will be greater (Alfaro et al., 2004). Therefore, FDI inflows can support the improvement of host countries' financial conditions and home countries (Alfaro et al., 2010). Other earlier studies have found the benefits of FDI to the recipient country when the country has reached a certain level of economic development (Lee & Chang, 2009). It has also stimulated extensive research on the determinants of the growth-enhancing effects of FDI inflows. The labor market or corporate tax rate is a strong push and pull factor for market efficiency in accessing financial markets (Blonigen & Piger, 2014). Furthermore, the main problems of absorbing FDI refer to the degree of financial development and related issues of financial development.

For many years, analyzing FDI inflows has been crucial in figuring out impact factors (Nguyen, 2022). While some elements are crucial in one area, others are significant in other areas and time zones. However, one of the critical elements in luring foreign investment to any nation is financial development (Dimitrova et al., 2019). Along with the general financial system's development, institutional conditions must be developed to achieve financial development. In Vietnam, in past years, the foreign direct investment sector has played a crucial role in the development of Vietnam's socio-economy. Statistics from previous years show that FDI businesses today account for over 70% of export revenue and roughly 23.5% of all social investment (20% of GDP). Over the past three decades, the existence of FDI businesses has aided in developing the Vietnamese economy (General Statistics Office of Vietnam [GSO], 2020). There is a need to examine the

impact of financial development indicators on FDI attraction. Our study is not the first to examine the impact of financial development on FDI. However, the three main areas for improvement of other studies are the need for causal identification and the limited scope of inadequate FDI measurement. This study will examine the impact of the financial development index with six indicators in attracting FDI flows. The most important is the evaluation of the factors that influence the attractiveness of foreign direct investments. It is known that foreign direct investment is an essential financial source of capital investment for producers and firms in the economy. Our study examines the impact of Vietnam's Financial Development Index on FDI from 1996 to 2021. This period is when the Vietnamese market is open to the world, and FDI plays an essential role in developing Vietnam's economy.

Moreover, FDI inflows support on development, efficiency, and financial approach of institutions, markets, foreign investors, and domestic enterprises (Azam & Haseeb, 2021). Therefore, this study is essential for Vietnam and emerging countries and foreign investors who intend to invest in emerging countries. Our research includes five parts. The first part is the introduction to the impact of FD on FDI. In part 2, we review the effects of FD on FDI through earlier studies. Part 3 describes the data, variables, and research model. Then in part 4, we present our empirical results and discussion. Finally, we conclude with part 5.

## 2. Literature Review

In recent decades, FDI has attracted considerable attention from academics and policy experts, especially in developing and underdeveloped countries (Babu, 2021). Researchers believe that foreign direct investment in developing countries is a new miracle. FDI was a source of financing for many developing countries providing an effective building block for stability and economic growth (Asamoah et al., 2019; Amjed & Shah, 2021; Asongu et al., 2018).

Financial development plays a vital and statistically significant role in attracting foreign direct investment into the country. High-level financial markets may promote FDI by promoting

contacts between international and domestic businesses. In other words, the growth of the financial sector might increase the size of the local market and encourage market-seeking or horizontal FDI (Haseeb et al., 2019). Özmen (2007) suggested a positive component of financial growth in explaining FDI inflows. Alternatively, Aghion et al. (2009) found evidence of a positive relationship between financial development indicators such as the depth of financial institutions and access to financial markets and foreign direct investment. Yuxiang and Chen (2011) still concluded that financial development is strongly related to FDI inflows in Brics nations. Research predicts that FDI can be attracted by the positive flow of economic growth in an economy and the ability to enter financial institutions. The relationship between FD and FDI is also studied by researchers (Asongu, 2014; Caglayan et al., 2013; Choong, 2011; Eren et al., 2019). Foreign capital also implements technology transfer through direct investment (Mijiyawa, 2015).

Earlier research studies the role of financial development as a decisive factor in increasing the flow of FDI (Ahmed & Jahanzeb, 2020; Islam et al., 2020; Nyasha & Odhiambo, 2016; Sirag et al., 2018). This kind of source is a background of financial development as well as economic growth, especially in developing nations (An & Yeh, 2020; Asamoah et al., 2022; Nguyen & Lee, 2021; Shahbaz et al., 2020; Smith, 2021). As a result, FDI and FD have a relationship together. They support and make conditions for the development of the economy (Caglayan et al., 2013). Similar outcomes regarding the effect of FD on FDI were still found by Eren et al. (2019), Smith (2021), and Asamoah et al. (2022).

Ang (2008), Ersoy (2011), and other studies also concluded a negative relationship between FD and FDI. According to this perspective, FDI is more significant in financially underdeveloped and institutionally weak countries. From this perspective, foreign investors must face obstacles and difficulties in financial development to enter the market (Smith, 2021). Alternatively, Asongu et al. (2018) empirically investigate political issues and financial development in attracting FDI in ninety-seven countries over 20 years. Empirical

results show a non-linear relationship between financial development and FDI inflows.

Moreover, the finding about the relationship between FD and FDI also becomes negative. The financial development index has a negative relationship with FDI inflows. (Sahin & Ege, 2015). From empirical studies, researchers proved that FDI has a significant relationship with financial development, both positively and negatively, and indicators of financial development (Fauzel, 2016). Difficulties in attracting this kind of source may limit the domestic enterprises from approaching new sources for business activities and the growth of the economy (Nguyen & Lee, 2021; Nguyen, 2022; Shahbaz et al., 2020).

### 3. Research Methodology

#### 3.1. Research Data

We use data quarterly in Vietnam from 1996 to 2021 with 120 observations. This period stands for Vietnam's opening market period when Vietnam became joining the association of Southeast Asia, the World Trade Organization, and bilateral Agreements and opened the market to the world. The data is collected from the World Bank, IMF, State Bank of Vietnam, Ministry of Finance of Vietnam, and State Security Commission of Vietnam. Stata 16 program is employed to analyze the model. Moreover, all financial development indexes are mainly collected from the World Bank and IMF databases and calculated by authors.

#### 3.2. Research Variables

Foreign Direct Investment (FDI) is the process by which individuals in one country acquire ownership of assets to exert control over a company's production, distribution, and other operations in a foreign country, according to Nguyen (2022). According to Table 1, FDI inflows will be impacted by six financial development indicators, including financial institution assessment, financial depth of institution, financial efficiency of the institution, financial assessment of the market, financial efficiency of the market, and domestic loans for the private sector, all of these indicators presenting for financial development indexes. The expected hypothesis is that all financial development indicators will positively affect attracting FDI inflows in Vietnam.

**Table 1**  
*Variables and Hypothesis*

Variable	Description	Content	Hypothesis
FDI	Foreign Direct Investment	Logarithm of Foreign Direct Investment	
FA	Financial Institution Assessment	Logarithm of Financial Institution Assessment Index	+
FDE	Financial Depth of Institution	The logarithm of the Financial Depth of Institution Index	+
FE	Financial Efficiency of Institution	Logarithm of Financial Efficiency of Institution Index	+
FM	Financial Assessment of Market the	Logarithm of Financial Assessment of Market Index	+
FEM	Financial Efficiency of Market	Logarithm of Financial Efficiency of Market Index	+
DLP	Domestic Loans for the Private Sector	Logarithm of Domestic Loans for the Private Sector Index	+

Financial development, according to Desbordes and Wei (2017), is a function of depth (the size and liquidity of financial markets), access (the ease with which people can obtain financial services), and efficiency (the capacity of institutions to offer financial services at reasonable prices and with stable revenues, as well as the level of activity on capital markets). Instead, financial development encourages financial stability and allows deep, liquid financial systems with various tools to absorb shocks. The factors, regulations, and institutions that promote efficient financial markets, wide and deep access to money, and the provision of financial services are also referred to as financial development (Choong, 2011). Financial market development can also be referred to as financial sector development, which encompasses the growth in the banking and capital markets regarding size, assets, and structures, among other development indicators (Okello, 2010). As a result, the study selected six variables, FA, FDE, FE, FM, FEM, and DLP, representing financial development indexes, and a study for the Vietnamese financial market in attracting foreign direct investment.

3.3. Research Model and Methodology

We employ time series data for Vietnam from 1996 to 2021 and check whether financial development affects Vietnam's FDI inflows from 1996 until now. We estimate the following model:

$$FDIt = \beta + \beta1 * FA_{it} + \beta2 * FDE_{it} + \beta3 * FE_{it} + \beta4 * FM_{it} + \beta5 * FEM_{it} + \beta6 * DLP_{it} + \varepsilon_t \quad (1)$$

In which:  
 $\beta$ : Regression constant.  
 $\beta1, \beta2, \beta3, \beta4, \beta5$ : Coefficients reflect the effects of FA, FDE, FE, FM, FEM, and DLP on FDI.  
 $\varepsilon$ : stochastic error term.

4. Results and Discussions

4.1. Results of Descriptive Summary

Table 2 summarizes the factors using descriptive analysis. Descriptive and inferential statistics are employed when analyzing data since the mean represents the central trend. The results of the reported minimum, maximum, and standard deviation show the flexibility and unpredictability of the data. The mean, standard deviation, lowest and maximum value, and observation count are the foundation for the descriptive analysis.  
Regarding foreign direct investment as a dependent variable, its mean value is 1.6683%, whereas its minimum and maximum values are 1.2238% and 2.4765%, respectively. Meanwhile, the standard deviation is computed as 0.3442%, showing the divergence of Vietnam's FDI inflows from 1996

**Table 2***Variable Descriptions*

Var.	Mean	Std. Dev.	Min	Max
FDI	1.6683	0.3442	1.2238	2.4765
FA	-3.5696	1.5770	-5.7058	-1.5985
FDE	-1.9117	0.7595	-3.3217	-0.8779
FE	-0.3444	0.0636	-0.4770	-0.0843
FM	-1.0661	0.2195	-1.7167	-0.6968
FEM	-0.4674	0.3059	-1.2901	-0.6968
DLP	4.8404	0.0874	4.7475	-0.0736

**Table 3***Unit Root Test Result*

ADF Test Results			
FA	-1.574	FM	-3.029
FDE	-1.540	FEM	-2.156
FE	-1.589	DLP	-1.953

ADF Critical Values (Level) 5% = -1.403

until 2021. It also indicated that foreign direct investment significantly improved from minimum value to maximum value when Vietnam opened to the world. While examining the independent variables standing for financial development index, including financial institution assessment, financial depth of institution, financial efficiency of the institution, financial assessment of the market, financial efficiency of the market, and domestic loans for the private sector have mean values of -3.5696%, -1.9117%, -0.3444%, -1.0661%, -0.4674%, 4.8404%, whereas the minimum and maximum value are -5.7058%, -3.3217%, -0.4770%, -1.7167%, -1.2901%, 4.7475%, and -1.5985%, -0.8779%, -0.0843%, -0.6968%, -0.6968%, -0.0736% respectively. In contrast, the standard deviation is computed as 1.5770%, 0.7595%, 0.0636%, 0.2195%, 0.3059%, and 0.0874%, which shows the dispersion of financial development to be rather large among the financial development index.

#### 4.2. Unit Root Test

We employed the ADF test to examine the stationary properties of the variables. The unit root test results are shown in Table 3.

The study checks the stationary of variables at the same level. The data are analyzed using the unit root Augmented Dickey-Fuller test created by Dickey and Fuller (1979) to find the impact of financial institution assessment (FA), financial depth of institution (FDE), financial efficiency of the institution (FE), financial assessment of the market (FM), financial efficiency of the market (FEM), and domestic loans for the private sector (DLP) on the foreign direct investment (FDI) of Vietnam. And then the regression model with time series data was then constructed to analyze financial development variables' impact on FDI in Vietnam from 1996 to 2021.

In Table 3, ADF results show that t estimated statistics for all variables are more significant than the critical values at the 5% level. The results showed that all selected variables are constant. They present an analysis of the impact of selected financial development variables on foreign direct investment in Vietnam from 1996 to 2021.

#### 4.3. Model Results

In Table 4, the model results show that the P value is less than 0.05 and 0.1. Therefore, the financial development variable significantly impacts FDI in

**Table 4**  
*Model Results for Impact of Financial Development on FDI*

Var.	Coef.	Prob.
Const.	6.4017	0.016
FA	0.2341*	0.059
FDE	-0.6518***	0.001
FE	2.2934*	0.070
FM	0.0563*	0.092
FEM	0.2138**	0.049
DLP	-0.8672	0.329
R-squared	0.4195	Adjusted R-squared: 0.2986
F-statistic	3.47	Prob(F-statistic): 0.0017

Notes: \*, \*\*, and \*\*\* – significance at 10%, 5%, and 1%, respectively.

Vietnam. Changes in FD will have a negative relationship with attracting FDI inflows to Vietnam. Moreover, FA, FE, FM, and FEM changes positively impact Vietnam's FDI inflows. According to the regression results, FDI is significantly impacted by FA, FDE, FE, FM, and FEM.

In contrast, there is not enough data to conclude the impact of DLP on FDI. The regression results also show that the model's independent variables account for roughly 41.95% (R-squared = 0.4195) of fluctuations in the dependent variable (FDI). Studies and our hypothesis consider that the deeper institutions and markets take part in the international market, the higher the FDI in the country will be. These results in Vietnam still contrast with the findings of other studies (Azman-Saini et al., 2010; Caglayan et al., 2013; Sirag et al., 2018; Islam et al., 2020). The reasons are that Vietnam does not, in any case, have an open monetary market totally, and State Bank limits Vietnam's monetary establishments. Besides, foreign investors investing in Vietnam must face administration barriers which can cause limitations in attracting new FDI inflows. Alternatively, Vietnamese financial institutions need help in joining the international market. However, four other financial development indicators, including financial institution assessment, financial efficiency of the institution, financial assessment of the market, and financial efficiency of the market influencing, significantly positively on Vietnam's FDI inflows attraction. The results reflect

that when accessing financial institutions and markets is easier and more efficient, foreign investors tend to invest more funds in the countries. This result is the same as the results of Aghion et al. (2009), Ersoy (2011), and Mijiyawa (2015).

From the findings of the model, the results still show that FDI will decrease by 0.6518% in the long term when the financial growth index, including FDE, increases, while FA, FE, FM, and FEM increase, then the FDI increases by around 0.2341%, 2.2934%, 0.0563%, and 0.2138%. Moreover, expanding the financial and capital markets will attract more FDI in Vietnam. However, the domestic loans to the private sector index have yet to have a clear result about the impact on attracting FDI in Vietnam.

In Table 5, the chi-square is 5.7031, and the P-value is more significant than 0.05, so we can conclude that the data are not serially related. This result guarantees the validity of the chosen model and is suitable for our study. The study results show that this model is suitable and reliable for assessing the impact of financial development on foreign direct investment in Vietnam.

Besides, when evaluating the model with Breusch Pagan and Ramsey, the results in Table 6 and Table 7 with prob values are larger than 5%. The result also shows that the selected model to evaluate the impact of the financial development index on Vietnam's foreign direct investment inflows is significant and suitable in this study. Furthermore, the

**Table 5***Breusch Godfrey Test*

<b>Breusch-Godfrey Serial Correlation LM Test</b>			
F-statistic	5.7031	Prob. F (1,18)	0.2810

**Table 6***Breusch Pagan Test*

<b>Breusch-Pagan test for heteroskedasticity</b>	
chi2(1) = 1.73	Prob. F > chi2 = 0.1888

**Table 7***Ramsey Test*

<b>Ramsey test</b>	
F (3, 20) = 1.24	Prob > F = 0.3226

**Table 8***VIF test*

<b>Var.</b>	<b>Coef.</b>	<b>Prob.</b>
Variables	VIF	1/VIF
EA	8.55	0.1170
FDE	7.35	0.1360
FM	6.62	0.1511
FEM	3.39	0.2946
FE	2.31	0.4335
DLP	2.26	0.4429
Mean VIF	5.08	

model ensures not to lack of necessary variables.

Table 8 shows that variance inflation factors with all independent variables are moderately correlated because all variables are between 2 and 8, and the mean of VIF is only 5.08. The result is less than 10. It also proved that the model is suitable.

## 5. Conclusions and Recommendations

In summary, the results of this study show that financial institution assessment, financial depth of institution, financial efficiency of the institution, and financial efficiency of the market are significantly related to foreign direct investment inflows to Vietnam during the period 1996-2021. the re-

sults showed that when the financial development index increases, Vietnam's foreign direct investment inflows will decrease by 0.6518% in the long term. When the financial development index, including financial institution assessment, financial efficiency of the institution, financial assessment of the market, and financial efficiency of market increase, Vietnam's foreign direct investment inflows increase by 0.2341%, 2.2934%, 0.0563%, and 0.2138%. As a result, expanding the financial and capital markets will create more conditions to attract more FDI in Vietnam in the future. However, findings with the domestic loans to the private sector index still need to clearly show the impact on



attracting FDI in Vietnam. Our research focuses on studying the impact of the financial development index on attracting foreign direct investment in Vietnam, emerging countries, and developing countries in general. It is helpful for policymakers to manage and adjust the domestic financial system and make it more efficient to take advantage of financial growth and FDI inflows (Asongu et al., 2018). With these findings, the government and policymakers should consider a priority to develop financial activities to build a strong economy that will attract more foreign investment not only in the short term but also in the long term. All of these will create a perfect financial system. With such a strong foundation, long-term observations and preservation of the links between FDI and growth are possible (Ang, 2008; Cheng & Kwan, 2000).

## 6. Limitations and Future Research

The analysis of the literature on the topic and the research issues carried out in the paper deepens the scientific knowledge and fills the research gap in foreign source issues of the financial sector with a particular example of Vietnam's financial market and the impact of financial development on Vietnam foreign direct investment inflows from opening period to the world from 1996 until now. However, the research still has specific limitations. The research only focuses on the Vietnam market. Observations are also sampled from when Vietnam became an ASEAN member in 1996. It presents for opening market periods of Vietnam to the world. However, this can lead to discrepancies in the research results, affecting the paper. The limitations mentioned above can open gaps and opportunities for our other studies in the future. In addition, our research only mentions six factors for financial development to assess the impact of FD on FDI inflows. Other control variables are not studies like inflation, economic growth, or tax issues. Therefore, further research can enlarge the period and the selected variables.

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