

THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Determinants of FDI Inflow from European Union Countries to Vietnam: A Panel Data Analysis

Cao Hong Minh

Lecturer, Department of Commerce and Tourism,
Industrial University of Ho Chi Minh City, Vietnam

Abstract:

This paper explores the determinants of FDI inflows from EU nations to Vietnam, employing a set of panel data from 26 member countries of EU that have been investing in Vietnam over the period 2012-2020. With the panel dataset, the study estimates three models, including pooled Ordinary Least Square (OLS), Fixed Effect Model (FEM), and Random Effect Model (REM), and then uses several formal tests to determine which model is best suited for data analysis. Based on the results of the F-test, Breusch - Pagan's Lagrange Multiplier test, and Hausman test, the Random Effect Model is preferred. According to the empirical findings, FDI from EU economies to Vietnam might be positively affected by GDP, corruption perception level, or the cleanliness of Vietnam's public sector, which is consistent with the theoretical basis. The effect of trade openness and economic freedom is negative, contrary to expectations. The coefficients of the real exchange rate, infrastructure, and COVID pandemic on FDI inflows are not statistically significant. Further studies should be carried out for a better understanding of these determinants.

Keywords: FDI, EU, Vietnam, panel data

1. Introduction

Foreign direct investment (FDI) plays an important role in the economic growth of countries, especially developing countries and emerging economies. In addition to contributing to increasing capital account surplus, improving the balance of payments, and supplementing domestic investment capital, FDI is also an important channel to help host countries access and transfer advanced technologies, spread knowledge, management skills and labor qualifications. For this reason, countries are constantly improving the investment environment, actively supporting foreign investors to increase FDI attraction for economic growth and development.

After more than three decades of opening, Vietnam has made some remarkable achievements in attracting FDI in terms of both the number of investment projects, the amount of registered capital and the number of investment partners. By the end of 2022, there will be investment partners from more than 130 countries and territories with valid investment projects in Vietnam. However, the majority of FDI capital is concentrated on key investors from about 15 countries and territories, led by Korea, Japan, China, Taiwan, and Singapore. Meanwhile, although Europe is one of the two main export markets besides the US, bringing a large export surplus to Vietnam, FDI inflows from this market into Vietnam are still quite limited. By the end of 2022, there were 2,375 projects from European Union (EU) countries still valid in Vietnam with a total registered capital of nearly 28 billion USD, accounting for about 7.7% of projects and 7.03% of the total registered capital of the countries. In the period from 2010 to 2022, FDI from EU nations into Vietnam has achieved many remarkable achievements:

- Firstly, most EU countries have invested in Vietnam,
- Secondly, the gradual increase in value and quantity of capital during the period 2010-2022 and especially in the first half of 2022, represents the rapid recovery of Vietnam's FDI sector in the post-COVID-19 period,
- Thirdly, Vietnam continues to become a promising investment destination for the processing and manufacturing industries, which actively contributes to the creation of new technology-intensive industries and products and increases the number of jobs.

However, the FDI flow from the EU still shows some limitations, requiring the Government to pay attention to come up with appropriate solutions such as:

- Although the number and value of FDI projects from EU to Vietnam tend to increase, they only account for a small proportion of the total EU outward investment capital, which shows that FDI flows into Vietnam from the EU are not commensurate with the potential of EU investors,
- The scale of EU-invested projects is still disparate,
- The quality of FDI projects from EU is still low in comparison with other ASEAN countries,
- The number of large-scale FDI projects in fields that are advantages of EU countries and areas that Vietnam is interested in attracting, such as high-tech projects, source technology, green technology, renewable energy, hi-tech agriculture, banking and finance, etc., is still modest.

When the EU-Vietnam Free Trade Agreement (EVFTA) and the Investment Protection Agreement (EVIPA) come into effect with commitments to give fair, equal, safe, and adequate treatment to investors, Vietnam is expected to become an attractive destination for investors from the EU. In this special context, it is necessary to properly assess the factors affecting foreign direct investment from the EU into Vietnam as a basis for making reasonable policies to enhance the attraction of new generation FDI from this potential market.

The purpose of this study is to investigate the key factors that influence FDI inflows to Vietnam from EU nations by providing empirical evidence of the economic effect of market size, infrastructure, exchange rate, openness to trade, corruption, economic freedom, and Covid pandemic. The rest of the paper is organized as follows:

- Part 2 provides a review of existing literature on the research topic;
- Part 3 describes the model specification, data, and research methodology;
- Part 4 analyzes and discusses the empirical results and
- The final section is devoted to the conclusion.

2. Literature Review

The topic of determinants of FDI has attracted the attention of many researchers. The most common model used in FDI research is the gravity model. Ismail (2009), in a study on factors affecting FDI in ASEAN countries, concluded that besides the market size of the home country and the host country, factors such as language, border, inflation rate, exchange rate, government budget control, telecommunications, infrastructure, and information transparency along with preferential policies related to commercial investment make sense. Dauti (2015), studying the determinants of FDI inflows into the Southeast European countries and the new EU member countries using the gravity model, showed that besides the traditional gravity variables such as the size of the economy, the geographical distance between countries and other factors affecting FDI in these countries include: Control of corruption,

- Political stability,
- Process transformation of the economy,
- The proportion of the population going to school, and
- Agreements related to FDI

Participation in the regional free trade agreements also has a positive impact on attracting FDI inflows into a country, according to a study by Ullah and Inaba (2014) employing a panel data set for ASEAN countries and countries in AFTA in the period 2001-2010 approached from the gravity model.

In addition to the gravity model, there are many other models that are also used to evaluate the determinants of FDI inflows. Using panel data for the period 1996-2008 to determine the role of institutional quality in attracting FDI into the ASEAN region, Ariffin and Abdullah (2010) concluded that besides market size, human capital and the openness of the economy, the improvement of institutional quality would have a positive impact on FDI location choice. Polyxeni and Theodore (2019), based on data from 18 developing countries from 1970 to 2016, examined the influence of terrorism on the decisions of foreign investors and concluded that terrorism would discourage FDI inflows into countries. Jedlička (2023) analyzed the determinant of bilateral FDI between OECD economies and Viségrad countries, concluding that corporate taxation strongly affected FDI flows. Mohd Shahidan et al. (2023) included the variable of environmental degradation in a study on drivers of FDI in ASEAN+3 countries and went to the conclusion that environmental degradation, together with corruption, influenced FDI in the long run, while inflation imposed a strong impact in the short run.

Besides panel data, some authors also use time series data to estimate the factors affecting FDI flow. Boateng et al. (2015), investigating macroeconomic factors affecting FDI inflows into Norway, indicated that real GDP, exchange rate, and trade openness had a positive impact on FDI inflows while money supply, inflation, and unemployment imposed a negative effect. Doğan and Arslan (2016) also used time series data to test the influence of political globalization on FDI inflows into Turkey in the period 1970-2012.

As an attractive destination that calls much attention from foreign investors, Vietnam is a typical case study for issues related to FDI. Thao (2020) examined the trend and determinants of foreign direct investment from Japan and Korea to Vietnam, showing that for Korean investors, trade openness, corporate income tax, wage and inflation rate are crucial factors. There was no evidence of the effect of market size and demand. This is consistent with the fact that instead of focusing on domestic consumption, most Korean investment projects in Vietnam focus on manufacturing and processing garments and footwear, mainly for export. For Japan, corporate income tax represents incentives in investment attraction policy and is the factor that mostly affects FDI inflows from this country into Vietnam.

Hanh (2011) assesses the impact of WTO accession on foreign direct investment and trade flows in Vietnam. Approaching a gravity model based on FDI data from 17 important investment partners of Vietnam in the period 1990-2008, the study has shown that WTO accession had a positive impact on capital flows into Vietnam during the study period.

Hoang and Goujon (2014) use a spatial econometric model to identify factors affecting the allocation of FDI among localities in Vietnam in the post-Asian crisis. The research results showed that the regional trade background and economic clustering effect have a strong impact on the decision to choose an investment destination. Besides, the economic policies of the country and localities also play an important role in attracting FDI. In a similar study, Nguyen (2016) used foreign direct investment data in 63 provinces and cities of Vietnam in the period 2008-2012 to assess the factors affecting investment location choice in Vietnam. Research results show that the investors' decision is significantly

influenced by factors such as market potential, labor costs, labor quality, infrastructure, and provincial institutions. Besides, the wage rate and market size also affect the size of FDI projects.

Regarding the foreign direct investment relationship between the EU and Vietnam, Phuong (2020) assessed the expected impacts of the EU-Vietnam Free Trade Agreement on FDI from the EU into Vietnam when the EVFTA has not yet come into force. This study has shown that the signing of EVFTA not only increases but also helps improve FDI inflows into Vietnam. Hence, Vietnam needs to take full advantage of the opportunity brought by EVFTA when neighboring countries in the region have not yet reached an FTA agreement with the EU and, at the same time, focus on promoting economic growth, improving the quality of human resources, and improving infrastructure to attract FDI from EU countries.

Although there have been quite a few studies related to the determinants of the flow of foreign direct investment into Vietnam, most of the studies focus on Vietnam's major investment partners, such as Japan, Korea, Taiwan, the United States, China, Singapore, etc. There have been several studies referring to FDI flows from the EU into Vietnam. However, these studies are mainly qualitative studies, based on describing statistics on FDI from some traditional investment partners from the EU, assessing the challenges and opportunities in attracting FDI from this market. To the knowledge of the author, there has been no research that comprehensively and systematically examines the factors affecting the flow of foreign direct investment from EU countries to Vietnam yet, especially in the new context when EVFTA and EVIPA come into effect. This paper will partially solve the research gap.

3. Methodology

3.1. Model Specification

Based on the systematization of theory as well as related empirical studies, the framework for analyzing factors affecting foreign direct investment from EU countries into Vietnam is presented as follows:

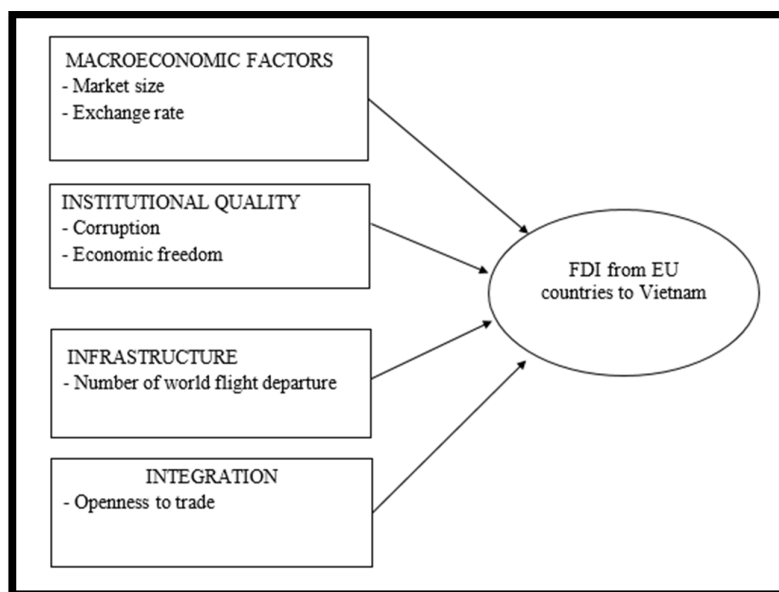


Figure 1: Model Specification

To quantitatively analyze the determinants of FDI inflows from EU countries to Vietnam, this study regresses the model on panel data, which has the following form:

$$FDI_{it} = \beta_0 + \beta_1 GDP_{vt} + \beta_2 GDP_{it} + \beta_3 GDPcapita_{vt} + \beta_4 GDPcapita_{it} + \beta_5 RER_{it} + \beta_6 COR_{vt} + \beta_7 FREEDOM_{vt} + \beta_8 INFRAS_{vt} + \beta_9 OPEN_{vt} + \beta_{10} COVID_{vt} + \varepsilon_{it}$$

in which:

- FDI_{it} is FDI inflow from country i to Vietnam in year t , expressed in millions of US dollars,
- GDP_{vt} , $GDPcapita_{vt}$ and GDP_{it} , $GDPcapita_{it}$ are Gross Domestic Product and Gross Domestic Product per capita of Vietnam and country i in year t , measured in millions of US dollars,
- RER_{it} denotes the real exchange rate between Vietnam Dong and the currency of country i in year t ,
- COR_{vt} is corruption perception index of Vietnam in year t ,
- $FREEDOM_{vt}$ is economic freedom level of Vietnam in year t ,
- $INFRAS_{vt}$ is an indicator of infrastructure improvement of Vietnam in year t ,

- $OPEN_{vt}$ is the level of Vietnam's openness to trade in year t ,
- $COVID_{vt}$ is a dummy variable that takes the value 1 for the year that countries suffer from the Covid pandemic and takes 0 otherwise
- \mathcal{E}_{it} is the error term.

3.2. Data and Methodology

To examine the determinants of FDI inflow from EU countries to Vietnam, this study employs panel data that involves 26 investing partners from EU over the period 2012-2020. Data are obtained from various reliable sources.

Data on FDI inflows are collected from the database of the International Trade Center (Investment Map - ITC). Like most empirical studies on FDI, the author takes the natural logarithm form of FDI. In this study, FDI is specifically transformed using the formula $Y = \ln(y + \sqrt{(y^2 + 1)})$, which allows us to include the observations with zero or negative values (Busse & Hefeker, 2007).

Data on the GDP and GDP per capita of Vietnam and home countries of FDI are sourced from World Development Indicators (WDI).

The real exchange rates between the Vietnam Dong and the currency of investing country are calculated based on the nominal exchange rate and Consumer Price Index that is collected from International Financial Statistics - IFS database. The formula to calculate the real exchange rate is as follows:

$$RER = e \times \frac{CPI^i}{CPI^v}$$

in which e is the nominal exchange rate between Vietnam Dong and the currency of country i ,

CPI^i and CPI^v is the Consumer Price Index of country i and Vietnam, respectively.

To measure the effectiveness of institutions in the host country, the author uses the corruption perception index that is annually reported by Transparency International. The corruption perception index is given on a scale from 0 to 100, with 0 indicating a high level of corruption and 100 indicating relatively clean public sectors. It is expected that high-scoring countries absorb more FDI.

The economic freedom index is obtained from the Heritage Foundation. The index is graded on a scale of 0-100, based on 4 main categories, including: rule-of-law, government size, regulatory efficiency, and open markets. The high-scoring countries imply a higher wealth, cleaner environment, better society, and more prosperity.

Infrastructure is proxied by air transport, registered carrier departure worldwide from Vietnam, deriving from World Development Indicators (WDI).

Openness to trade is the trade-to-GDP ratio that is frequently used to measure the importance of international transactions relative to domestic transactions. This indicator is calculated as the simple average of total trade (the sum of exports and imports of goods and services) relative to GDP. Data are sourced from World Development Indicators (WDI).

The summary of independent variables and expected signs is presented in table 1.

Variables	Description	Expected Signs
GDP_{vt}	Gross Domestic Product of Vietnam in Year t	+
GDP_{it}	Gross Domestic Product of country i in Year t	+
$GDPcapita_{vt}$	Gross Domestic Product per Capita of Vietnam in Year t	+
$GDPcapita_{it}$	Gross Domestic Product per capita of country i in Year t	+
RER_{vt}	Real exchange rate between Vietnam Dong and currency of country i in Year t	+
COR_{vt}	Corruption perception index of Vietnam in Year t	+
$FREEDOM_{vt}$	Economic freedom level of Vietnam in Year t	+
$INFRAST_{vt}$	Infrastructure development level of Vietnam in Year t	+
$OPEN_{vt}$	The level of openness to trade in Vietnam in Year t	+
$COVID_{vt}$	Dummy variable of the effect of the COVID pandemic	-

Table 1: Summary of Variables and Expectations of Signs

This study estimates three regression models with panel data:

- Pooled Ordinary Least Squares (OLS),

- Fixed Effect Model (FEM), and
- Random Effect Model (REM)

The F-test is used to decide between the OLS and the FEM. If the F-test null hypothesis (H_0 : all fixed effects are jointly zero) is rejected, the fixed-effect model outperforms the pooled OLS. The Breusch - Pagan's Lagrange Multiplier - LM test is used to choose between OLS and REM. If the null hypothesis of the LM test (H_0 : all individual-specific variances are jointly zero) is rejected, there are unaccounted random effects in the pooled OLS estimator residuals. Hence, the random-effect model is favored over the OLS model. If the null hypotheses of both the F-test and the LM test are rejected, the Hausman test should be used to determine whether the FEM or REM is more appropriate. If the null hypothesis is rejected, it means that the FEM is better; otherwise, the REM would be the best fit for research data.

4. Results and Discussion

Following the procedure to select the most appropriate model for the panel data, results of the F-test, the Breusch - Pagan's Lagrange Multiplier test, and the Hausman test indicated that the Random Effect Model is the best model to estimate the determinants of FDI inflows from EU to Vietnam during the study period. As a result, the interpretation and discussion of the findings will center on the REM. The outcome is shown in table 2.

Variable	Pool OLS		Fixed-Effect Model		Random-Effect Model	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
c	-1211.377*	0.0898	-1463.359***	0.0002	-1206.195**	0.0346
GDP_{vt}	68.89665*	0.0954	85.19542**	0.0138	68.62374**	0.0377
GDP_{it}	0.390175***	0.0000	-0.329518	0.8364	0.385952***	0.0000
$GDPcapita_{vt}$	-71.29899	0.1024	-83.89636**	0.0199	-70.96029**	0.0420
$GDPcapita_{it}$	1.196462***	0.0000	0.939042	0.5655	1.122309***	0.0000
$INFRAST_{vt}$	0.159855	0.7283	-0.430543	0.3867	0.165449	0.6532
RER_{ht}	0.026400	0.4273	-2.081886**	0.0484	0.022833	0.7380
$OPEN_{vt}$	-12.27902**	0.0246	-17.13078***	0.0008	-12.26005***	0.0051
$FREEDOM_{vt}$	-0.203056*	0.0847	-0.342586***	0.0041	-0.202775**	0.0314
COR_{vt}	4.801654**	0.0431	5.056899***	0.0081	4.796724**	0.0115
$COVID_{vt}$	-0.264549	0.3556	-0.332835	0.1537	-0.262289	0.2493
R^2	0.551105		0.746520		0.266035	
Adjusted R^2	0.530975		0.701713		0.233122	
F-test	0.0000					
BP's LM test	0.0000					
Hausman test	1.0000					
***: statistical significant at 1%						
**: statistical significant at 5%						
*: statistical significant at 10%						

Table 2: Regression Results

Briefly, empirical results indicate that the market size of economies proxied by variables GDP_{vt} and GDP_{it} are found to have positive effects on inward FDI. Specifically, for every 1% increase in GDP of Vietnam, FDI inflow remarkably increases by 68.6%, while a 1% increase in GDP of the home country induces an increase of about 0.4% in FDI investment to Vietnam. These coefficients are highly statistically significant at 5 percent and 1 percent level, respectively. The positive effect of GDP is quite consistent with the theoretical background. It is expected that if foreign investors prefer the larger market with a high level of purchasing power, then they can make a high profit from sales revenues. They can also have ample opportunity to reduce their average cost thanks to increasing returns to scale. From the perspective of home countries, a greater number of firms are likely to seek chances to invest overseas, and it appears that enterprises from larger countries often operate more efficiently than those from smaller ones. Hence, FDI inflow is usually proportional to the market size of both home and host countries. Concerning the variables of GDP per capita, while GDP per capita of home countries is positively related to FDI flow into Vietnam, the coefficient of GDP per capita of host country Vietnam is unexpectedly negative. The corruption perception index as an indicator of institutional quality has its expected sign and is strongly significant at 5%. For every 1-point increase in the corruption perception index, there is a 4.8% increase in FDI invested in Vietnam. The variables of trade openness and economic freedom produced unexpected results and went against the theoretical background. It is reported that these two factors discourage FDI inflows to Vietnam. The negative

relationship between the level of openness to trade and FDI could also be found in a study by Rathnayaka Mudiyansele et al. (2021) in a case study of the casual link between trade openness and FDI in Romania. It could be explained by the fact that the improvement in trade openness and economic freedom of Vietnam might be inefficient in attracting FDI compared to competing countries in the region. The variables of the real exchange rate, infrastructure and covid pandemic effects are statistically insignificant.

5. Conclusion

To investigate factors affecting FDI inflow from EU countries to Vietnam, this paper utilizes a set of panel data from 26 EU partners that have been investing in Vietnam over the period 2012-2020. Among the 3 models, including pooled OLS, FEM, and REM, the test results showed that REM is the most suitable model for the research. Following the outcome of REM, it is reported that the FDI inflows from EU countries to Vietnam are encouraged by the size of the economies and the institution quality proxied by the corruption perception index. The influence of economic freedom and openness to trade on FDI is not in line with the theoretical background and previous studies in the field. There is no significant evidence of real exchange rate, infrastructure, and covid pandemic on FDI inflows from EU to Vietnam in the study period. More research should be done to gain a better grasp of these determinants.

6. References

- i. Ariffin, T., & Abdullah, H. (2010). Institutional Quality as a Determinant for FDI Inflows: Evidence from ASEAN. *World Journal of Management*, 2, 115-128.
- ii. Boateng, A., Hua, X., Nisar, S., & Wu, J. (2015). Examining the determinants of inward FDI: Evidence from Norway. *Economic Modelling*, 47, 118-127. doi:10.1016/j.econmod.2015.02.018
- iii. Busse, M., & Hefeker, C. (2007). Political risk, institutions and foreign direct investment. *European Journal of Political Economy*, 23(2), 397-415. doi:10.1016/j.ejpolco.2006.02.003
- iv. Dauti, B. (2015). Determinants of Foreign Direct Investment in South East European Countries and New Member States of European Union Countries. *Economic and Business Review*, 17, 93-115. doi:10.15458/2335-4216.1166
- v. Doğan, C., & Arslan, Ü. (2016). Political Globalization and Foreign Direct Investment Inflows in Turkey. 6, 43-48.
- vi. Hanh, P. T. H. (2011). Does WTO accession matter for the dynamics of foreign direct investment and trade? *The Economics of Transition*, 19(2), 255-285. doi:10.1111/j.1468-0351.2010.00395.x
- vii. Hoang, H., & Goujon, M. (2014). Determinants of foreign direct investment in Vietnamese provinces: a spatial econometric analysis. *Post-Communist Economies*, 26, 103-121. doi:10.1080/14631377.2014.874658
- viii. Ismail, N. W. (2009). The Determinant of Foreign Direct Investment in ASEAN: A Semi-Gravity Approach. *Transition Studies Review*, 16(3), 710-722. doi:10.1007/s11300-009-0103-0
- ix. Jedlička, V. (2023). Taxation as a factor in investment attractiveness in the Visegrád countries. *Post-Communist Economies*, 35(4), 368-383. doi:10.1080/14631377.2023.2169522
- x. Mohd Shahidan, S., Asbullah, M. H., Noorazeela Zainol, A., Zulkefly Abdul, K., & Nangle, B. (2023). Determinants of Foreign Direct Investment in ASEAN+3 Countries: The Role of Environmental Degradation. *International Journal of Environmental Research and Public Health*, 20(3), 1720. doi:10.3390/ijerph20031720
- xi. Nguyen, A. (2016). Regional Determinants of FDI Location in Vietnam. *Journal of Development Economics*, 19-37. doi:10.33301/2016.18.01.02
- xii. Phuong, N. T. M. (2020). Assessing the Expected Impact of the EU-Vietnam Free Trade Agreement on Foreign Direct Investment in Vietnam. Ha Noi National University.
- xiii. Polyxeni, K., & Theodore, M. (2019). An empirical investigation of FDI inflows in developing economies: Terrorism as a determinant factor. *The Journal of Economic Asymmetries*, 20, e00125. doi:10.1016/j.jeca.2019.e00125
- xiv. Rathnayaka Mudiyansele, M. M., Epuran, G., & Tescaşiu, B. (2021). Causal Links between Trade Openness and Foreign Direct Investment in Romania. *Journal of Risk and Financial Management*, 14(3), 90. doi:10.3390/jrfm14030090
- xv. Thao, P. T. (2020). Foreign direct investment attractive factors from East Asia Countries into Vietnam. National Economic University.
- xvi. Ullah, M. S., & Inaba, K. (2014). Liberalization and FDI Performance: Evidence from ASEAN and SAFTA Member Countries. *Journal of Economic Structures*, 3(1), 6. doi:10.1186/s40008-014-0006-z