



The Relationship Amongst Financial Development, Economic Growth, And Foreign Direct Investment In Vietnam

Thi Hanh Vu¹, Xuan-Hoa Nghiem², Xuan Hoan Pham^{3*}, Vu Duy Do⁴

¹ Faculty of Economics and Management, International School, Vietnam National University, Hanoi, Vietnam. Email: vuthihanh8901@gmail.com

² Faculty of Economics and Management, International School, Vietnam National University, Hanoi, Vietnam. Email: hoanx@vnu.edu.vn

³ Faculty of Economics and Management, International School, Vietnam National University, Hanoi, Vietnam. Email: pxhoan@vnu.edu.vn

⁴ Private Enterprise, KPMG Vietnam, 46th Floor, Keangnam Landmark 72, E6 Pham Hung Road, Me Tri Ward, South Tu Liem District, Hanoi, Vietnam. Email: vduydo1710@gmail.com

*Corresponding author: pxhoan@vnu.edu.vn

Abstract

In international development, the relationship between economic development and foreign direct investment (FDI) has long been a topic of great interest. Although this interest has provided a wealth of information regarding the effects FDI on growth in developing countries, there has been little empirical analysis of the linkages in Vietnam compared with other developing countries. Therefore, this study investigates the impact of FDI inflows on economic development including economic growth and financial development in Vietnam. By using robust estimation method, this study aims to assess the current state of the qualitative link between environmental quality and FDI. In addition, the study uses comparative and absolute methods to evaluate. The method of synthesis and analysis aims to clarify the role of FDI in economic growth in Vietnam as a basis for giving effective measures to attract and manage FDI and promote growth. Empirical results show that FDI, domestic investment, and trade openness positively impact economic growth. Moreover, the impact of government consumption on economic growth is negative and not statistically significant. Ultimately, this paper suggests that the Vietnamese government should improve regulations governing business operations by easing the process of starting a business, controlling prices, and augmenting cooperation between training centres and Foreign-invested enterprises.

Research purpose

Utilizing data from 1990 to 2019, the purpose of this study is to investigate the impacts of FDI inflows on financial development, economic growth, and further explore the factors influencing the economic development and regulatory quality by using robust least squares (RLS) method.

Research motivation

In international development, the relationship between economic development and foreign direct investment (FDI) has long been a topic of great interest. Although this interest has provided a wealth of information regarding the effects FDI on growth in developing countries, there has been little empirical analysis of the linkages in Vietnam compared with other developing countries. Therefore, this study investigates the impact of FDI inflows on economic development including economic growth and financial development in Vietnam.

Research design, approach, and method:

- The object of the study is to investigate the impacts of FDI inflows on financial development and economic growth
- Research scope:
 - + About space: Effects of FDI inflows on financial development and economic growth are presented for Vietnam.
 - + About time: The period from 1990 to 2019.
- Research data: Data is collected from the World Bank, General Statistics Office of Vietnam, Statistical Yearbook.
- Estimation method: Robust Least Squares (RSL)

Main findings:

Empirical results from RLS confirm the positive, significant impact of FDI and financial development on economic growth in Vietnam. Furthermore, domestic investment, trade openness also have similar effects while the effect of government consumption is negative and negligible.

Practical/managerial implications:

Empirical findings suggest that policymakers should adopt different measures to attract FDI as well as enhance labor quality to make the most use of these FDI inflows.

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1. INTRODUCTION

Vietnam is often regarded as one of Asia's most successful and dynamic economies. The Vietnamese economy has transformed from a completely closed, centrally-planning economy to a highly open market-based economy, thus achieving rapid economic growth since its economic “Doi Moi” (Renovation) in 1986. Vietnam's FDI inflows have surged more than 250 times only one year after Doi Moi, from USD 40 thousand in 1986 to USD 10.3 million in 1987 (Vo & Ho, 2021). Vietnam's impressive and timely responses to the COVID-19 pandemic, which included proactive management of health policy, fiscal stimulus package, and monetary policy, along with supply chain modifications, resulted in net FDI inflows of 15.8 billion USD in 2020 - nearly as much as the USD 16.19 billion registered in 2019. From 2002 to 2018, Vietnam's GDP per capita expanded 2.7 times, reaching over \$2,700 in 2019. Higher income per capita, in turn, helps pull more than 45 million people out of poverty and causes the poverty rate to drop dramatically from over 70% to less than 6%.

On the one hand, FDI may bring about substantial benefits. First, FDI is usually regarded as one of the key drivers of economic growth in Vietnam. FDI's contribution to job growth in the initial phases could be minor but it is likely to lead to a significant boost in industrial production. In recent years, FDI inflows have played a key role in supporting export development as well as investment capital (Anwar & Nguyen, 2010). Second, given appropriate policies implemented by the Vietnamese government, FDI not only attracts more capital, but it also facilitates technology transfer. Technology transfer, in turn, may contribute to improving human capital formation which can further boost economic growth.

Moreover, FDI can also lead to undesirable consequences. For example, FDI can sometimes hinder domestic investment. Since FDI may disrupt local industries and economies by attracting the best workers and creating income disparity, local companies therefore begin to lose interest in investing in their domestic products. In addition, as a result of the political or economic instability, FDI may create long-term capital outflows of the host country. Once a foreign investment becomes profitable, capital could really start to flow out of the host country and into the investor's homeland.

For developed or developing countries with low internal capital accumulation in the economy, it is very urgent to attract investment from abroad. As in Vietnam, with a low accumulation rate and high investment demand, capital is needed for economic development. According to statistics in 2019, FDI contributed capital equivalent to 20% of GDP and accounted for over 70% of export turnover. In addition, participating in FDI capital in different fields has changed the lives of millions of workers across the country. It can be said that FDI has boosted the Vietnamese economy. The attraction of FDI, although receiving many conflicting opinions, is due to the duality of capital sources. However, in recent years, FDI capital from abroad has poured into Vietnam more and more and contributed an important part to economic investment. Specifically, according to the Department of Statistics, by the end of December 2015, new FDI inflows into Vietnam had reached \$23 billion, an increase of nearly 17.4% compared to 2014. According to statistical data in 2013, in the industrial and construction, foreign investment accounted for 73%, while in the service sector, FDI accounted for 27.5%. Because of the important position of FDI in economic growth in Vietnam, the topic “The impact of FDI on economic development” was carried out to build a comprehensive view of the current state of FDI attraction and determine the impact of FDI on Vietnam's economic growth.

The remainder of this paper is structured as follows: Section 2 provides a thorough review of the literature; Section 3 focuses on data description, model specification and estimation method; Section 4 discusses the results and Section 5 concludes the paper with implications and recommendations.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. What is foreign direct investment (FDI) and why is it important?

According to the OECD, FDI is a type of cross-border investment in which an investor residing in one economy acquires a significant degree of influence over a business residing in another economy and a long-term interest in it (OECD, 2017).

Ownership of 10 percent or more of the voting power in an enterprise in one economy by an investor in another economy is evidence of such a relationship. Because it establishes connections between economies that are both stable and enduring, FDI is an essential component of international economic integration. FDI is a significant channel for moving innovation between nations, advancing global exchange through admittance to unfamiliar business sectors, and can be a significant vehicle for financial turn of events. This group covers indicators such as FDI restrictiveness and inward and outward values for stocks, flows, and income by partner country and industry (OECD, 2017). “Foreign Direct Investment reflects the objective of obtaining a lasting interest by a resident entity in one economy (“direct investor”) in an entity resident in an economy other than that of the investor (“direct investment enterprise”)(OECD, 2008). In other words, it is a direct investment made by a corporation in a commercial venture in another country.

According to the Cardillo, Montanjes, Motala, and Patterson (2004) FDI is the category of international investment that reflects the objective of a resident entity in one economy obtaining a lasting interest in an enterprise resident in another

economy. The direct investor's lasting interest indicates that they have significant influence over the company's management and that they have a long-term relationship with the business.

What separates FDI from portfolio investment is the control over the investment (Ietto-Gillies, 2012). In case of FDI at least 10 percent of the voting rights must be held by the foreign investing company (Daniels, Radebaugh, & Sullivan, 2004). The fact that the new venture operates entirely outside of the economy of the company's home country is the primary distinction between FDI and other foreign ventures. The acquisition of resources, expansion of sales, and reduction of risk are the primary drivers of FDI. In addition, governments may promote FDIs for a variety of political reasons (Daniels et al., 2004).

2.2. The impact of FDI on the host country

FDI could bring many benefits to both the investor and the investee at both the corporate and national levels. Some typical positive and negative effects of FDI inflows on the host and host countries at the macro level are discussed below.

There are two approaches in economic theory which contribute to studying the effects of FDI on host countries.

One is the standard theory of international trade by MacDougall (1960). This theory is a "partial equilibrium comparative-static approach intended to examine how marginal increments in investment from abroad are distributed" (Blomström & Kokko, 1997). The main assumption of this model is that there is an increase in the marginal productivity of labour and a decrease in the marginal productivity of capital.

The other theory was proposed by Hymer (1960) and is called the theory of industrial organization. The main question of the theory is why firms make investments in other countries to manufacture similar goods they manufacture at home. The answer to this question has been rightly divided by Kindleberger (1969), who states that "for direct investment to thrive, there must be some imperfection in markets for goods or factors, including among the latter technology, or some interference in competition by government or by firms, which separates markets". Thus, firms in their home countries must have some assets that will be lucrative for their associate in the home country (Blomström & Kokko, 1997).

Therefore, it can be concluded that FDI has both positive and negative effects on the host economy.

2.2.1. Positive effects of FDI on host economy

FDI is accepted to influence the host country decidedly. By increasing the productivity and exports of the host nations, it encourages economic development. According to Görg and Greenaway (2004), imitation, skill acquisition, competition, and exports all contribute to an increase in the host nation's productivity.

The MNC and domestic companies indirectly transfer technology to local businesses in the host nations. By imitating multinationals' superior management or technology practices, local businesses can successfully compete in export markets (Blomstrom, 1991).

Domestic businesses learn more about international markets and become more familiar with them. The administrators and other qualified workers of the homegrown firms obtain prevalent administrative and specialized abilities, which expands their productivity. Multinationals make it harder for local businesses to compete in the market by making investments in human or physical capital. By entering markets with numerous barriers to entry, they aid in improving resource allocation and industrial efficiency in their host nations. As a result, entering these monopolistic markets increases competition and necessitates increased proficiency on the part of local businesses. This is the manner by which multinationals and other abroad firms incite homegrown firms to work on their exhibition and efficiency.

In order to meet the high standards of the overseas company, multinationals also exert influence over the local suppliers of intermediate products to become more effective in terms of delivery speed, quality, and dependability. There is widespread agreement that FDI benefits the labour market. Assume the efficiency of homegrown firms increments by duplicating the multinationals' creation style, which depends on expanded work efficiency, for this situation, the homegrown firms won't hold back from paying higher wages to the work (Lipsey & Sjöholm, 2005). In addition, multinationals raise the standard of the labour market in the host nation by training workers, preparing them to handle complex machinery, and increasing their productivity. Last but not least, FDI has a positive impact on the economy of the host nation by encouraging the government to adopt policies that would encourage a greater number of multinational corporations to do business there and by strengthening the exchange rate.

2.2.2. Negative impacts of FDI on host economy

As seen above, FDI has several positive effects on the host economy, but these effects do not come free of cost. FDI may also bring several negative effects on the host country in various ways. The extent of the negative effects of FDI depends on the characteristics of the multinational companies, the host country, and the host country's policies. Shifting outdated machinery and equipment that pollutes the environment: FDI capital is an opportunity for technology transfer but sometimes turns FDI-receiving countries into technology dumps where new technologies are consumed. Outdated technology no longer meets the standards in the country. Pollution cases such as Formosa and Vedan are lessons for attracting FDI but not checking leads to actions that cause serious environmental pollution. The scale effect is one such channel with harmful implications for the environment. When multinationals set up manufacturing facilities or outsource these to other local businesses, it increases output, leading to an increase in pollution (Liang, 2008).

The economy depends entirely on FDI: although FDI plays an important role, the country cannot heavily rely on FDI

because FDI is still a source of foreign capital that is difficult to control and can leave the country of investment if there is a political event. Then the national economy will be in jeopardy, threatening the country's security. Competing with domestic production: FDI's harm competition and hamper the prevailing market equilibrium. In developing countries, domestic firms may not be able to cope with the competition put up by the MNCs. Thus, they would lose out on business. Domestic firms may not be quick enough to grasp knowledge from foreign firms, losing out on competition in the short run (Görg & Greenaway, 2004).

2.2.3. The relationship between FDI and economic growth

The hypothetical and empirical literature offer inconsistent forecasts on the impacts of FDI on the host nation's economy. Scholars have investigated the connection between FDI and growth in four main ways, employing both the new endogenous growth models and the neoclassical growth models, also known as exogenous growth models: (i) The determinants of development, where FDI is put as one of the logical factors; (ii) the determinants of FDI, where Gross domestic product is one of the logical factors; (iii) pathways by which FDI influences growth; also (iv) the causal connection between the two factors. Seminal studies, attempting to investigate all the four fields of study include the research Balasubramanyam, Salisu, and David (1996), Balasubramanyam, Salisu, and David (1999), Borensztein, De Gregorio, and Lee (1998); De Mello (1997), De Mello (1999); Hansen and Rand (2006), and Al Nasser (2010) among others.

The role or channel through which FDI influences economic growth or the other way around is the subject of the first three aforementioned research areas. The hypothesis that FDI has a significant positive effect on growth is supported by a substantial body of this literature. According to these studies, foreign direct investment (FDI) has a positive impact on the economic growth and welfare of the host nation because of the benefits it provides, including increased global exposure and restructuring for domestic businesses, new managerial skills, innovation and technology, job creation, improved working conditions for employees, and the development of the industrial sector in the host nation. FDI is also associated with positive spillovers or externalities, which can boost the economies of host nations (De Mello (1997); De Mello (1999); and Chowdhury and Mavrotas (2006)). However, there are some other theoretical studies, such as Aitken and Harrison (1999), Carkovic and Levine (2002), Alfaro (2003), and Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004) shown conflicting results. For instance, the study conducted by Carkovic and Levine (2002) covering 72 countries over the period 1960-1995 found down that the exogenous element of FDI did not have any positive effect on growth. Furthermore, they found no evidence to support the assertion that FDI, can influence the host country's economic growth. In addition, Alfaro (2003) used the panel data for the period 1981-1999; and the research results of his article shown that FDI had an ambiguous effect on economic growth. A review of a few theoretical studies sheds some light on the contradictory relationship among FDI, economic growth and financial development. Liu (2008) explained that the level and rate of effects of spillovers or externalities can go in opposite directions. Based on explained below, there are several channels through which FDI affects economic growth. According to the OECD (2002), UNCTAD (1999) and Forte and Moura (2013), the impact of FDI on a host country's economic growth can either be positive or negative.

Currently, in Vietnam, there are quite a few FDI research results. They all agree on the outstandingly strong growth of FDI over the years and show the important significance of attracting FDI to economic growth in Vietnam at both national and local levels. Research by Anwar and Nguyen (2010) examines the impact of FDI has a positive impact on economic growth at the national level and thinks that to attract FDI, Vietnam needs to expand the market and find new partners. Freeman (2002) reviews the weaknesses in the policy framework on FDI in Vietnam and drew out the factors affecting FDI in Vietnam. The author concludes that the implemented economic reform and business liberalization policies positively impact the business environment for investors. However, to promote FDI, Vietnam needs to strengthen coordination and perfect those policies. Research by Nguyễn (2004) concludes that FDI has a positive impact on the economic growth of localities through the formation and accumulation of inherent assets, and there is a positive interaction between FDI and economic growth. human capital. However, the conclusion is not very convincing because labour mobility is a necessary but not sufficient condition for the spillover effect of FDI. Recently, more quantitative studies have appeared, such as THANH and THANH (2016) province that used the AR model and concluded that FDI depends on its own lagged margin. and the impact of FDI on provincial economic growth is relatively weak. Anwar and Nguyen (2011) uses a concurrent model to test the GMM method, and the results show that FDI and growth have a two-way relationship. Some other economic studies on FDI & labour productivity (Vu & Le, 2017); FDI & economic structure (LONG, 2020); factors affecting FDI attraction and use Anwar and Nguyen (2011); HoA and Phương (2014). However, the studies have not explained how the impact of FDI attraction affects factors in the short and long term and do not consider the endogeneity of economic growth factors.

2.2.4. FDI and financial development

The complicated relationships between financial development and FDI have been explored in numerous studies. A positive direct financial effect on the volume of inward FDI can be seen when the host country can raise external finance for even financially vulnerable firms to engage in FDI. According to Kletzer and Bardhan (1987), countries with highly developed financial systems gain from easier access to external financing and have a competitive advantage that encourages them to specialize in sectors and businesses that depend on external financing. Beck (2002) enhanced Kletzer and Bardhan (1987)'s approach by enabling both sectors to utilize external funding, with one sector being more credit

intensive due to growing returns to scale. By examining a manufacturing sector that relies more on external financing and a food sector, Beck discovered that industries that depend more on foreign financing grow more quickly in countries with better developed financial systems; more specifically, exporting manufactured goods is correlated with a relatively high (low) level of financial development (food).

The majority of empirical studies examining the impact of financial development on international trade, found evidence of a connection between trade and finance: a strong financial system seems to influence both the volume of trade and its structure Beck (2002); Beck (2003); (Svaleryd, 2005); Hur, Raj, and Riyanto (2006); Kim et al., 2010; Becker, Chen, and Greenberg (2013); Manova (2013); and Bilas, Bošnjak, and Novak (2017). In particular, Becker et al. (2013) analyzed data on bilateral trade flows for a sample of 170 countries between 1970 and 1998 to examine the link between financial development, fixed costs, and international trade. They emphasize the importance of financial development when comparing financial dependency to the magnitude of fixed expenses. There is evidence to suggest that companies experience high fixed costs when entering new export markets, necessitating high upfront expenses for product development, marketing, and distribution. More exports are shown to be connected with financial progress in industries with significant upfront fixed costs.

On the impact of the global financial crisis of 2007-8 on international trade, there are also some studies focus on the links between financial development, economic crises, and international trade include those by Iacovone and Zavacka (2009), Chor and Manova (2012), and Berman and Martin (2012). These studies discuss the effects of the global financial crisis of 2007–2008 on international trade. They discover that the negative impact of external financial dependency on the sector-specific growth rates of exports is amplified by banking crises. Trade transactions often require some type of credit, insurance, or guarantee, therefore the lack of commerce financing due to supply-side factors has the potential to further harm on international trade (Auboin, 2009). Empirically, in the context of the effects of credit constraints on international trade, Manova (2013) finds that financial development indirectly increases exports through its positive impact on overall production. Other studies are based on the feedback hypothesis according to which international trade and financial development interact with each other (Bayar, Akyuz, and Erem (2017), Menyah, Nazlioglu, and Wolde-Rufael (2014), Wajda-Lichy, Kawa, Fijorek, and Denkowska (2020)) their main conclusion is that the causal linkage between trade and finance is country specific.

2.3. FDI in Vietnam

In 1990-2019, FDI inflows into Vietnam have achieved many remarkable results. According to UNCTAD (2020), Vietnam's ranking in FDI attraction has improved markedly. From almost zero in 1987, in 2000, Vietnam ranked 45th out of 216 countries in FDI attraction. Vietnam's ranking declined from 2001 to WTO accession in 2006, then quickly regained its form and increased its ranking from 2007. Since then, Vietnam's ranking in FDI attraction has continuously improved over the years.

According to the Ministry of Planning and Investment (MPI, 2020), in 2019, foreign direct investment projects were estimated to disburse 20.38 billion USD, up 6.7% as compared to the same period in 2018. In the context of the general downturn of global FDI inflows, maintaining capital growth is an encouraging achievement. Although the realized capital of the FDI sector in 2019 increased as compared to the same period, but we can see that the increase has declined as compared to 2017 and 2018 (in 2017, the realized capital increased 10.7% as compared to 2016, that in 2018 increased 9.1% as compared to 2017). The proportion of FDI in total social investment and the contribution to Vietnam's economic growth has increased by an average of 25%. The explosion of investment capital through the important contributions of a series of billion-dollar projects, foreign cash flow from capital contributions and share purchases has created an important foundation for promoting economic growth.

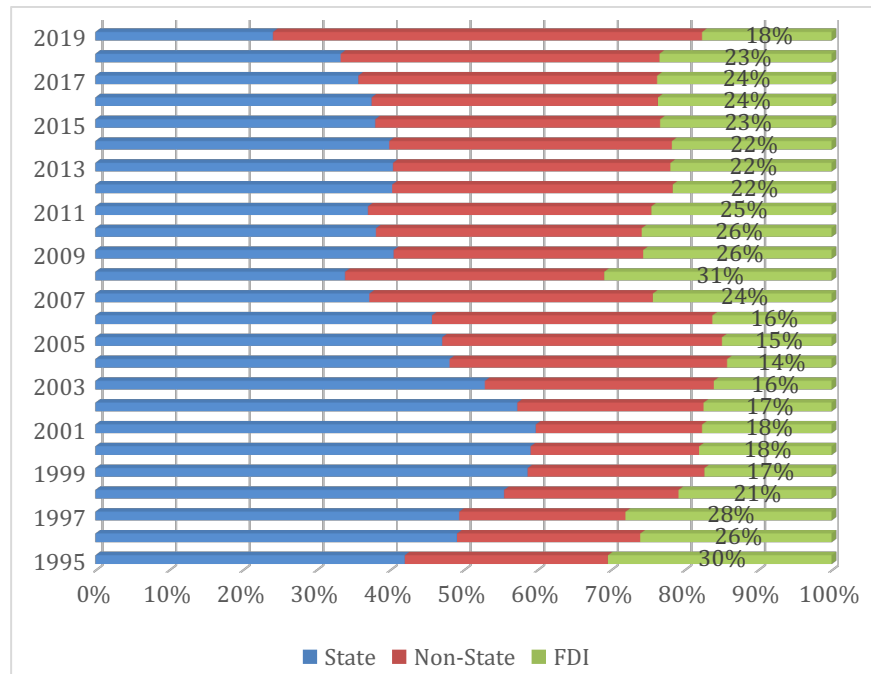


Figure 1. The proportion of FDI in total investment capital of the whole society
Source: GOS (2021)

As analyzed above, the economic growth structure of developing countries like Vietnam is based on capital, which is the ratio of investment capital to GDP, which is always high. The increase in FDI inflows has contributed significantly to Vietnam's economic growth. The contribution of the FDI sector shows this to the total GDP, which is always around 16-17%.

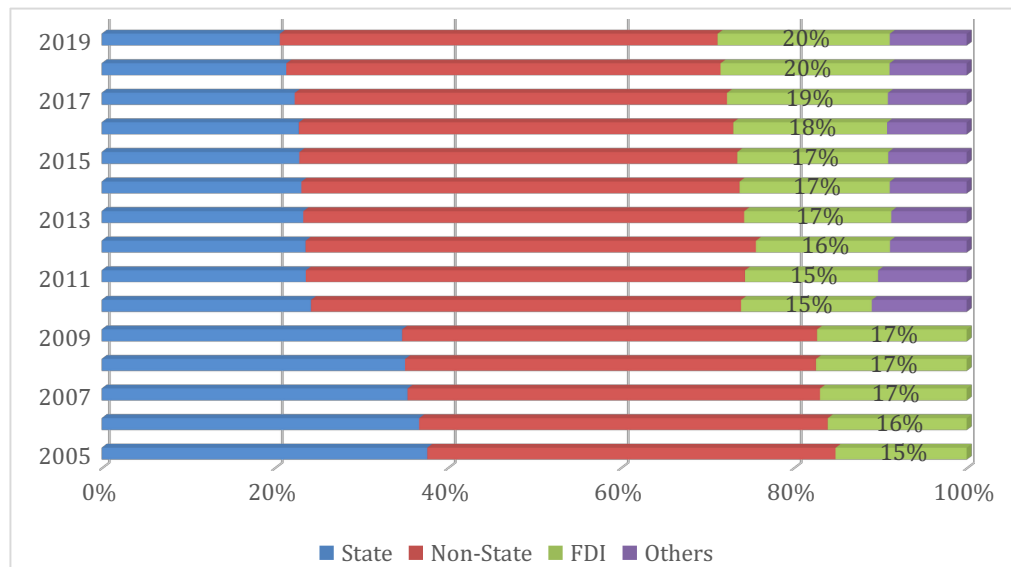


Figure 2. The contribution of FDI in the total GDP of the country
Source: GOS (2021)

3. METHODOLOGY

3.1. Data sources and variable description

3.1.1. Sources of variables and data relationships

This paper employs the situation of the Vietnam dataset based on data ranging from 1990 to 2019. The availability of data is one of the justifications behind choosing these periods. Although a number of research on the impact of FDI on economic development has been conducted on many countries, little can be investigated in terms of Vietnam's situation. Therefore, this study will examine whether FDI positively or negatively influences economic development and what the government can do to mitigate these issues. The dependent variable is GDP (annual). The variables that have been taken as the independent variables are FDI inflows, GDP per capita, trade openness, CO2 emission, and renewable energy

consumption (all extracted from World Bank's World Development Indicators) and financial development from International Monetary Fund (IMF). As all three independent variables are significantly impact on the level of GDP as mentioned in literature review, we decide to focus on them to analyze relationships between study objects and determine how they can influence the FDI in Vietnam. The sample of data that has been taken for empirical analysis will take credit on 30 years of data on an annual basis from 1990 - 2019. All variables are expressed in natural logarithmic form.

3.1.2. Descriptive statistics

Table 1 provides descriptive statistics of the variables, which includes maximum value, minimum value, mean, standard deviation, skewness and kurtosis. GDP (constant LCU), FDI is FDI Inflows net inflows (BoP, current US\$), FD is financial development (annual %), CO2 is carbon emissions (metric tons per capita), RENEW is renewable energy consumption as percentage of total energy consumption, TO is trade openness, GDPpc_growth (annual %).

	GDP	FDI	FD	GDPpc	TO	CO2	RENEW
Mean	51,530,555,155.76	5,356,245,192.83	0.337992	5154.004	118.218	1.24	48.112
Max	334,365,257,436.76	16,120,000,000.00	0.454462	10134.26	164.704	3.488	76.082
Min	6,471,740,805.57	180,000,000.00	0.203087	2066.372	66.212	0.284	18.65
Standard deviation	103,962,841,431.04	5,006,836,069.59	0.06478892	2378.133	29.999	0.868	16.902

Table 1 Descriptive statistics of the variables
Source: Authors' calculations

3.3. Model specification

This study followed Naz et al. (2019), Zaman and Abd-el Moemen (2017), Khan, Zaman, and Zhang (2016), Qureshi, Rasli, and Zaman (2016), (Azam, Khan, Zaman, & Ahmad, 2015), which investigated the relationship between FDI Inflows, financial development, GDP per capita, trade openness, CO2, and renewable energy consumption with level of GDP. The following are the estimated non-linear regression equation.

$$\text{GDP} = \beta_0 + \beta_1 \text{FDI} + \beta_2 \text{FD} + \beta_3 \text{GDP}_{pc} + \beta_4 \text{TO} + \beta_5 \text{CO}_2 + \beta_6 \text{RENEW} + \varepsilon \quad (1)$$

The above equation analyzes the impacts of FDI (FDI Inflows), FD (financial development), GDPpc (GDP per capita), TO (Trade Openness), CO2 (CO2 emissions), and RENEW (Renewable Energy Consumption) and the GDP. $\beta_0, \beta_1, \dots, \beta_k$ are parameters. By applying the natural logarithms (Ln) to both sides we obtain.

$$\text{Ln}(\text{GDP}) = \beta_0 + \beta_1 \text{Ln}(\text{FDI}) + \beta_2 \text{Ln}(\text{FD}) + \beta_3 \text{Ln}(\text{GDP}_{pc}) + \beta_4 \text{Ln}(\text{TO}) + \beta_5 \text{Ln}(\text{CO}_2) + \beta_6 \text{Ln}(\text{RENEW}) \quad (2)$$

Specifically, GDP shows total annual GDP, FDI represents FDI Inflows, RENEW denotes renewable energy consumption as percentage of total energy consumption, GDPpc is the GDP per capita, TO represents Trade Openness, FD shows financial development index, CO2 relates to the carbon dioxide emissions per capita (measured in metric tons) FDI illustrates foreign direct investment inflows, and Ln shows the natural logarithm. GDP is an important indicator of an economy; it shows the growth and development of that country.

The adoption of log linear specification to estimate the coefficient of variables has various reasons. First, the relation between these different variables is not linear. Second, in the case of log model, the value of coefficients could be interpreted in terms of percentage or elasticity rather than unit. In addition, we expect that FDI inflows, financial development index, GDP per capita trade openness and CO2 emission have positive effects on economic growth whereas renewable energy are expected to have negative relationship with economic growth in Vietnam. Moreover, FDI is one of the variables influencing CO2 emissions according to Vo and Ho (2021), and Tang and Tan (2015). FDI and trade openness would facilitate to specify the industry intensive pollution growth. In fact, increasing emissions may be led by growing trade openness. Model (2) will be estimated using the method of Robust Least Squares (RLS). For detailed description of this method, its advantages, see Nghiem (2020).

4. RESULTS AND DISCUSSION

This study uses the time series analysis: Economic data is often collected over time, resulting in a time series dataset. Time series analysis assumes that the underlying data generating process has certain characteristics, such as stationarity. Testing for unit root helps to determine whether the series is stationary or exhibits a trend, which has implications for the validity of time series models and their results.

There is a significant necessity to examine the stationarity qualities of the provided variables after studying the descriptive statistics. The multiple unit root tests for time series to assess the stationarity of the provided variables are shown in Table 2. The table shows the results in both ADF and PP tests reveal that all first difference series are stationary expected GDPpc (GDP per capita) is non-stationary. Because the overall findings suggest that the variables vary substantially over time, we used the first. At the level, the variables, FDI inflows (FDI), FD (Financial development) CO₂ emissions (CO₂), Renewable Energy Consumption (RENEW), and Trade Openness (TO), are stationary, difference of the individual variables to separate the non-stationary series from the stationary series. As a result, all research variables are series integrated of order 1 - I (1), meeting the model's requirements.

Table 2 PP and ADF-unit root test estimates

Variables	Level			First Difference		
	With Constant	With Constant & Trend	Without Constant & Trend	With Constant	With Constant & Trend	Without Constant & Trend
ADF Test Statistics						
FDI	0.937154 (0.9946)	-1.18361 (0.8953)	2.496499 (0.9958)	-4.27009 (0.0024)	-4.5396 (0.0061)	-3.67056 (0.0007)
FD	-2.298798 (0.1790)	-2.603460 (0.2815)	0.363933 (0.7831)	-6.319106 (0.0000)	-6.462 (0.0001)	-6.243378 (0.0000)
GDPpc	2.397151 (0.9999)	2.444159 (1.0000)	2.901688 (0.9984)	0.389263 (0.9788)	-1.214034 (0.8879)	2.494287 (0.9957)
TO	-0.565417 (0.8635)	-2.076071 (0.5361)	1.44106 (0.9594)	-5.481209 (0.0001)	-5.339117 (0.0009)	-4.895213 (0.0000)
RENEW	-0.129654 (0.9369)	-2.440587 (0.3527)	-4.448037 (0.0001)	-4.845996 (0.0006)	-4.751609 (0.0037)	-2.980364 (0.0043)
CO2	0.45017 (0.9815)	-4.495695 (0.0067)	3.657332 (0.9998)	-5.466361 (0.0001)	-5.450434 (0.0008)	-3.682326 (0.0007)
PP Test Statistics						
FDI	0.967485 (0.9950)	-1.290239 (0.8703)	2.550263 (0.9963)	-4.277646 (0.0024)	-4.506779 (0.0066)	-3.651605 (0.0007)
FD	-2.256701 (0.1920)	-2.472177 (0.3382)	0.803704 (0.8806)	-6.862904 (0.0000)	-12.18935 (0.0000)	-6.377304 (0.0000)
GDPpc	11.40109 (1.0000)	3.434548 (1.0000)	29.11937 (0.9999)	0.585418 (0.9867)	-1.436559 (0.8271)	3.918319 (0.9999)
TO	-0.491496 (0.8791)	-2.115626 (0.5161)	1.570045 (0.9683)	-5.616901 (0.0001)	-5.480128 (0.0007)	3.918319 (0.9999)
RENEW	0.055186 (0.9563)	3.434548 (1.0000)	-4.223299 (0.0001)	-2.988885 (0.0042)	-4.839239 (0.0030)	-2.988885 (0.0042)
CO2	3.440077 (1.0000)	-1.575167 (0.7780)	8.30387 (1.0000)	-5.194435 (0.0002)	-6.794095 (0.0000)	-3.609364 (0.0008)

FDI is FDI Inflows, net inflows (BoP, current US\$), TO is trade openness, GDPpc is GDP per capita (annual), RENEW is renewable energy consumption as percentage of total energy consumption, FD is financial development index, CO2 is carbon emissions (metric tons per capita). Small bracket shows probability values.

After analyzing the unit root estimates, the study proceeds to estimate the relationship among the variables using RLS method, which is presented in Table 3.

It can be seen from the table that FDI has a p-value less than 0.05, showing that FDI has a profound influence on GDP. The relationship can be established for GDPpc and FD (Financial development), as evidenced by the fact that the GDPpc coefficient is positive. This indicates that increased economic growth will result in increased GDP emissions. The findings also revealed that, as a result of the increased trade of energy-related carbon emissions, the environment is jeopardized, sabotaging the process of global environmental sustainability. This finding is consistent with Nguyen's (2020) previous studies. With the deepening of Vietnam's opening up, FDI has become a key factor in promoting the rapid development of Vietnam's economy. The p-value for the FDI Inflows is 0.003, which is smaller than the critical value (0.05), emphasizing that FDI Inflows have a profound impact on economic development. FDI has adverse effects on the environment due to the increase in pollution caused by multinational corporations as they set up manufacturing facilities or outsource these to other local businesses.

Similarly, with a magnitude of 2.639111%, the interaction impact of trade openness on GDP is positive. The estimation results likewise uncover that receptiveness to exchange including imports and commodities fundamentally affects Vietnam's financial development. This suggests that in the case of Vietnam, a decrease in the level of restrictions placed on trade exchanges tends to encourage economic growth. Both Hadeel Yaseen (2014) and Adhikary (2015) discovered a strong positive correlation between economic expansion and trade openness. Vietnam has been enacting trade policies that simultaneously safeguard domestic industries while accelerating export growth. Moreover, the results shows that the influence of CO2 emission on GDP is positive that means more FDI is invested in Vietnam causing negative impact on environmental quality. It can be seen that environmental deterioration has been observed as a result of trade openness, which is in line with the finding of Managi, Hibiki, and Tsurumi (2009). Trade openness is found to have a significant positive effect on CO2 emissions. This could be explained by several factors. Despite increasing trade openness, its technique effect is observed to be quite low as Vietnam does not implement state-of-the-art production techniques from advanced countries. Up to now, the level of technology transfer from the FDI sector to the domestic economic sector in recent years has not reached both quantity and quality. It is much underestimated compared to other countries in the region.

On the other hand, the estimates of Renewable energy consumption show that there is a negative relationship with the GDP, which implies that this variable substantially decreases GDP with the magnitude value of -5.50754. Renewable energy is as well seen having two ways causal relationship with both carbon emission and fossil fuels. It minimizes the effect of greenhouse gas emissions (types of air pollution) by reducing the use of fossil fuels (coal, gas, oil). It is also important because it reduces the dependence on imported fuels and creates economic development and jobs in manufacturing and installation. Overall, the result shows that FDI inflows lead to increasing economic development including GDP per capita, financial development index, and trade openness. Furthermore, the data show that data show that GDPpc and FDI inflows, together with trade openness harm the air quality measure. It supported a country's "pollution-haven hypothesis," which is consistent with Eskeland and Harrison (2003), Zhang (2011) and Jiang (2015). The results of the study can be used for the government and economists to come up with policies to promote trade and commercialization and attract FDI into Vietnam to promote economic growth. Moreover, those results would provide a firm foundation for environmentalists and policymakers to adopt long-term steps to optimize the country's environmental agenda.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
FDI	20.58121	0.758024	27.15114	0.003
FD	4.636195	0.5695119	8.140646	0.036
GDPpc	4.283645	0.211523	20.25144	0.000
TO	2.639111	0.459369	5.745072	0.001
RENEW	-5.50754	0.5466249	-10.07554	0.000
CO2	1.588537	0.1470855	10.80009	0.003
Robust Statistics				
R ²	0.7464	Adjusted R ²		0.7373

Table 3 Robust least square regression estimates. Dependent variable: GDP

5. Conclusion, implications, recommendations and future studies

5.1. Conclusions and recommendations

FDI has long been one of the most effective channels of wealth creation and technology transfer between developed and developing countries globally. It is because FDI coordinated through multinational corporations has the potential to

promote the welfare of many societies (Idoko & Taiga, 2018). This study examines the impact of inward FDI on Vietnam's economic growth from 1990-2019 by applying Robust least squares for empirical research. Empirical results show that FDI inflows, domestic investment, and trade openness positively impact economic growth. However, when multinationals set up manufacturing facilities or outsource these to other local businesses, it leads to an increase in output which in turn leads to an increase in pollution. In addition, the impact of government consumption on economic growth is negative and statistically significant. These findings are consistent with previous studies by Bahname (2012), H. (2014) Yaseen (2014) and Adamu, Kabuga, and Suleiman (2015). It can be seen that in the period 2010-2020, Vietnam has achieved remarkable achievements in attracting FDI into socio-economic development. In spite of impressive FDI investment results, Vietnam is still not the most attractive country for foreign investors in the ASEAN region. Many multinational corporations have chosen Thailand, Malaysia, Indonesia, etc. to invest in because of having the most competitive investment environment in ASEAN and supporting industries to develop and create favorable conditions for FDI enterprises. Therefore, Vietnam needs to change its arrangement procedure to keep up with seriousness in ASEAN, guarantee the manageability of gotten FDI inflows, and advance the fascination of higher worth added FDI. This is to achieve socio-economic development goals. To do that, the government should focus on the following policies:

First, it is necessary to improve the legal framework for foreign investment to ensure a more open environment and conditions for investors, but this improvement still must be consistent with Vietnamese law.

Second, reform administrative procedures toward simplicity and compactness for foreign investment projects. It is necessary to regularly review, amend, and supplement administrative regulations related to investment activities to encourage investors and ensure compliance with general regulations of the state. Administrative procedures need to be publicized, transparent, and widely published in the mass media, ensuring information reaches foreign investors most conveniently.

Third, it is necessary to pay attention to and focus on investing in material and technical infrastructure to create favourable conditions for foreign investors. The development of a technical infrastructure system increases the attractiveness of the investment environment and creates favourable conditions for foreign investors.

Fourth, train high-quality human resources to serve the needs of FDI enterprises. Vietnam needs to gradually improve the quality of human resources, especially those for high-tech industries, to provide human resources for FDI projects.

Fifth, promote the attraction of new-generation FDI towards the high-tech industry. Vietnam needs to select projects actively, foreign investors, and appropriate technologies, promote the attraction of high-tech investment projects and give special investment incentives to these projects. Moreover, restricting licensing for investment projects using outdated technology causes environmental pollution.

Finally, focus on developing supporting industries in the direction of focusing on a few key industries and products to maximise the spillover effects of FDI projects, helping Vietnamese enterprises participate in the supply chains of FDI enterprises.

In addition, this study argues that the Vietnamese government needs to improve business management regulations by loosening the business start-up process, reducing government bureaucracy, controlling prices, increasing compliance with international trade commitments, increasing public spending on education and training, strengthening cooperation between training centres and foreign-invested enterprises, etc. These policies can enhance FDI attraction and economic growth in Vietnam.

On the one hand, it is clear that FDI activities in Vietnam in the period 1990-2019 have greatly impacted Vietnam's socio-economic development. The research has focused on clarifying Vietnam's economic growth, period 1990-2019, including Growth Model, Growth Size and Structure and Growth Quality. Based on the statistics we have analysed and shown, FDI impacts the Vietnamese economy. On the other hand, explain how FDI has affected growth factors in the short and long term by synthesising data and statistics and concluding. The study has given an overview of FDI in the period 1990-2019 and the effects of FDI on the economy. Therefore, it helps the investor and recipient countries have an overview to make decisions and invest in future projects to bring the highest efficiency, helping FDI sources to increase sharply and the country's economy. Vietnam is always in growth momentum.

5.2. Limitations and future research of the study

In spite of these important findings, this study is not without limitations. Firstly, although the sample size was sufficient for this study, comparable regional or provincial data for 1990-2019 were not available. That means it is not possible to compare the impact of FDI on economic growth across regions or provinces of Vietnam. Therefore, given the limited data available on FDI in Vietnam, more studies are needed in the future to confirm and extend this work using data sets at the regional level or province, and the FDI data are segmented by industry. Secondly, it may also be useful to examine the causal relationship between FDI and economic growth in Vietnam by applying the Granger causality test.

Third, future work needs to address the impact of FDI on the growth of Vietnam's economy according to industrial structure, policy regime, infrastructure development, interest rate and exchange rate. On the other hand, this study can be further extended by analysing the impact of FDI-led economic growth on income distribution and poverty reduction in Vietnam.

Fourth, variables related to institutional quality are not available in the period 1990-2019, so the study has not tested institutional quality influences. In particular, some possible avenues for further development could include examining how institutional quality influences the analysis or dividing it into different stages for analysis. In the future, research needs to improve on this content to collect data related to institutional quality to produce more comprehensive and objective results.

Finally, through this study, we find that FDI not only has a positive effect on economic growth but also has many contributions to the development of society. Therefore, we will be able to find more data and research more specifically for some of the provinces and cities where there is a lot of FDI attraction.

REFERENCES

- Adamu, A. M., Kabuga, N. A., & Suleiman, H. H. (2015). *Remittance, aid, foreign direct investment, financial development and economic growth in Nigeria: a time series analysis*. Paper presented at the Proceedings of 1st international conference and doctoral colloquium on the theme: "development in africa: perspectives, issues and trends", faculty of social and management sciences, Bayero University Kano, Nigeria held between 17th–18th November.
- Adhikary, B. K. (2015). Dynamic effects of FDI, trade openness, capital formation and human capital on the economic growth rate in the least developed economies: evidence from Nepal. *International Journal of Trade, Economics Finance*, 6(1), 1.
- Aitken, B. J., & Harrison, A. E. (1999). Do domestic firms benefit from direct foreign investment? Evidence from Venezuela. *American economic review*, 89(3), 605-618.
- Al Nasser, O. M. (2010). How does foreign direct investment affect economic growth? The role of local conditions. *Latin American Business Review*, 11(2), 111-139.
- Alfaro, L. (2003). Foreign direct investment and growth: Does the sector matter? *Harvard Business School, Working Paper*.
- Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: The role of local financial Markets. *Journal of international Economics*, 89-112.
- Amal, M., Tomio, B. T., & Raboch, H. (2010). Determinants of foreign direct investment in Latin America. *GCG: revista de globalización, competitividad y gobernabilidad*, 4(3), 116-133.
- Anwar, S., & Nguyen, L. P. (2010). Foreign direct investment and economic growth in Vietnam. *Asia Pacific business review*, 16(1-2), 183-202.
- Anwar, S., & Nguyen, L. P. (2011). Foreign direct investment and export spillovers: Evidence from Vietnam. *International Business Review*, 20(2), 177-193.
- Auboin, M. (2009). Restoring trade finance during a period of financial crisis: stock-taking of recent initiatives. *World Trade Organization (WTO) Economic Research and Statistics Division WP*.
- Azam, M., Khan, A. Q., Zaman, K., & Ahmad, M. (2015). Factors determining energy consumption: Evidence from Indonesia, Malaysia and Thailand. *Renewable Sustainable Energy Reviews* 42, 1123-1131.
- Bahname, M. (2012). Foreign Direct Investment and Economic Growth: Evidence from Southern Asia. *Atlantic Review of Economics*, 2(2), 34-48.
- Balasubramanyam, V. N., Salisu, M., & David, S. (1996). Foreign direct investment and growth in EP and IS countries. *The economic journal*, 106(434), 92-105.
- Balasubramanyam, V. N., Salisu, M., & David, S. (1999). Foreign direct investment as an engine of growth. *Journal of International Trade Economic Development*, 8(1), 27-40.
- Bayar, Y., Akyuz, F., & Erem, I. (2017). Openness and financial development in Central and Eastern European countries. *Studies in Business Economics* 12(3), 5-16.
- Beck, T. (2002). Financial development and international trade: Is there a link? *Journal of international Economics*, 57(1), 107-131.
- Beck, T. (2003). Financial dependence and international trade. *Review of international Economics*, 11(2), 296-316.
- Becker, B., Chen, J., & Greenberg, D. (2013). Financial development, fixed costs, and international trade. *The Review of Corporate Finance Studies* 2(1), 1-28.
- Berman, N., & Martin, P. (2012). The vulnerability of sub-Saharan Africa to financial crises: the case of trade. *IMF Economic Review*, 60(3), 329-364.
- Bilas, V., Bošnjak, M., & Novak, I. (2017). Examining the relationship between financial development and international trade in Croatia. *The South East European Journal of Economics Business*, 12(1).
- Blomstrom, M. (1991). Host country benefits of foreign investment. *National Bureau of Economic Research Working Paper Series* (w3615).
- Blomström, M., & Kokko, A. (1997). The impact of foreign investment on host countries: a review of the empirical evidence. *Policy Research Working Paper*, 1745.
- Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of international Economics*, 45(1), 115-135.
- Brooks, C. (2019). *Introductory econometrics for finance*: Cambridge university press.
- Cardillo, C., Montanjes, M. M., Motala, M. J., & Patterson, M. N. K. (2004). *Foreign direct investment: trends, data availability, concepts, and recording practices*: International Monetary Fund.
- Carkovic, M. V., & Levine, R. (2002). Does foreign direct investment accelerate economic growth? *University of Minnesota Department of Finance Working Paper*.

- Chor, D., & Manova, K. (2012). Off the cliff and back? Credit conditions and international trade during the global financial crisis. *Journal of international economics* 87(1), 117-133.
- Chowdhury, A., & Mavrotas, G. (2006). FDI and growth: what causes what? *World economy*, 29(1), 9-19.
- Daniels, J., D, Radebaugh, L., H, & Sullivan, D., P. (2004). *International business: Environments and operations*: Pearson Prentice Hall.
- Davidson, R., & MacKinnon, J. G. (2004). *Econometric theory and methods* (Vol. 5): Oxford University Press New York.
- De Mello, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The journal of development studies*, 34(1), 1-34.
- De Mello, L. R. (1999). Foreign direct investment-led growth: evidence from time series and panel data. *Oxford economic papers*, 51(1), 133-151.
- Demirhan, E., & Masca, M. (2008). Determinants of foreign direct investment flows to developing countries: a cross-sectional analysis. *Prague economic papers*, 4(4), 356-369.
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association* 74(366a), 427-431.
- Do, T. A. T., & Cao, H. T. (2015). Recognizing the Role of FDI and Institutional Reforms Required in Vietnam. Fulbright Economics Teaching Program
- Du, J., Zhang, Z., & Xie, T. (2018). Model averaging for M-estimation. *Statistics* 52(6), 1417-1432.
- Đường, T. L. T. (2021). Nâng cao hiệu quả quản lý nhà nước về FDI ở Việt Nam. *Tạp chí Kinh tế và Dự báo số 11*.
- Eskeland, G. S., & Harrison, A. E. (2003). Moving to greener pastures? Multinationals and the pollution haven hypothesis. *Journal of Development Economics*, 70(1), 1-23.
- Forte, R., & Moura, R. (2013). The effects of foreign direct investment on the host country's economic growth: theory and empirical evidence. *The Singapore Economic Review*, 58(03), 1350017.
- Fox, J., & Weisberg, S. (2018). *An R companion to applied regression*: Sage publications.
- Freeman, N. J. (2002). *Foreign direct investment in Vietnam: an overview*. Paper presented at the DFIP Workshop on Globalisation and Poverty in Vietnam, Hanoi.
- Fuller, W. A. (1976). Introduction to Statistical Time Series, New York, John Wiley and Sons. In: Inc.
- Görg, H., & Greenaway, D. (2004). Much ado about nothing? Do domestic firms really benefit from foreign direct investment? *The World Bank Research Observer*, 19(2), 171-197.
- GOS, G. S. O. o. V. (2002). Tình hình kinh tế – xã hội 10 năm 1991-2000.
- GOS, G. S. O. o. V. (2021). Data.
- Granger, C. W., & Newbold, P. (2001). Spurious regression in econometrics. *ECONOMETRIC SOCIETY MONOGRAPHS* 33, 109-118.
- Hansen, H., & Rand, J. (2006). On the causal links between FDI and growth in developing countries. *World economy*, 29(1), 21-41.
- HoA, P., & Phương, B. T. B. (2014). Nghiên cứu các nhân tố tác động đến đầu tư trực tiếp nước ngoài tại những quốc gia đang phát triển. *Tạp chí Phát triển & Hội nhập, Số, 14*, 01-02.
- Hur, J., Raj, M., & Riyanto, Y. (2006). Finance and trade: A cross-country empirical analysis on the impact of financial development and asset tangibility on international trade. *World Development* 34(10), 1728-1741.
- Hymer, S. H. (1960). *The international operations of national firms, a study of direct foreign investment*. Massachusetts Institute of Technology,
- Iacovone, L., & Zavacka, Z. (2009). Banking crises and exports: lessons from the past. *World Bank Policy Research Working Paper*, 5016.
- Idoko, C. U., & Taiga, U. U. (2018). Effect of Foreign Direct Investment (FDI) On Manufacturing Output In Nigeria (1981–2016). *Advances in Social Sciences Research Journal*, 5(5).
- Ietto-Gillies, G. (2012). *Transnational corporations and international production: concepts, theories and effects*: Edward Elgar Publishing.
- Jiang, Y. (2015). Foreign direct investment, pollution, and the environmental quality: a model with empirical evidence from the Chinese regions. *The International Trade Journal*, 29(3), 212-227.
- Johnston, K. A., & Ramirez, M. D. (2015). Foreign direct investment and economic growth in Cote D'Ivoire: a time series analysis.
- Kandiero, T., & Chitiga, M. (2003). Trade Openness and Foreign Direct Investment. *Journal of Economic*.
- Khan, S. A. R., Zaman, K., & Zhang, Y. (2016). The relationship between energy-resource depletion, climate change, health resources and the environmental Kuznets curve: Evidence from the panel of selected developed countries. *Renewable Sustainable Energy Reviews* 62, 468-477.

- Kindleberger, C. P. (1969). *American business abroad*: Yale University Press.
- Kletzer, K., & Bardhan, P. (1987). Credit markets and patterns of international trade. *Journal of Development Economics*, 27(1-2), 57-70.
- Lartey, V. C., Antwi, S., & Boadi, E. K. (2013). The relationship between liquidity and profitability of listed banks in Ghana. *International Journal of Business and Social Science*, 4(3).
- Liang, F. H. (2008). Does foreign direct investment harm the host country's environment? Evidence from China. *Evidence from China*.
- Lipsey, R. E., & Sjöholm, F. (2005). The impact of inward FDI on host countries: why such different answers? *Does foreign direct investment promote development*, 23-43.
- Liu, Z. (2008). Foreign direct investment and technology spillovers. *Theory and evidence. Journal of Development Economics*, 176-193.
- LONG, N. T. (2020). Do Foreign Direct Investment, Energy Consumption and Urbanization Enhance Economic Growth in Six ASEAN Countries? *The Journal of Asian Finance, Economics, and Business*, 7(12), 33-42.
- MacDougall, G. (1960). The Benefits and Costs of Private Investment from Abroad: A Theoretical Approach." *Economic Record*, Special Issue, March.
- Managi, S., Hibiki, A., & Tsurumi, T. (2009). Does trade openness improve environmental quality? *Journal of environmental economics*, 58(3), 346-363.
- Manova, K. (2013). Credit constraints, heterogeneous firms, and international trade. *Review of Economic Studies*, 80(2), 711-744.
- Menyah, K., Nazlioglu, S., & Wolde-Rufael, Y. (2014). Financial development, trade openness and economic growth in African countries: New insights from a panel causality approach. *Economic Modelling* 37, 386-394.
- Ministry of Industry and Trade, V. N. (2020). Technology transfer from FDI.
- Moosa, I. (2002). *Foreign direct investment: theory, evidence and practice*: Springer.
- MPI, M. o. P. a. I. (2020). Brief on foreign direct investment of 2019.
- MPI, M. o. P. a. I. (2020). Report on foreign direct investment of 2019.
- Naz, S., Sultan, R., Zaman, K., Aldakhil, A. M., Nassani, A. A., & Abro, M. M. Q. (2019). Moderating and mediating role of renewable energy consumption, FDI inflows, and economic growth on carbon dioxide emissions: evidence from robust least square estimator. *Environmental Science and Pollution Research* 26, 2806-2819.
- Nguyễn, T. T. H. (2004). *Đầu tư trực tiếp nước ngoài ở Bắc Ninh: thực trạng và giải pháp: Luận văn ThS. Kinh tế. Khoa Kinh tế*,
- OECD. (2002). Foreign Direct Investment for Development: Maximising Benefits, Minimising Costs.
- OECD. (2008). *OECD Benchmark Definition of Foreign Direct Investment* (Fourth Edition ed.). Paris: OECD.
- OECD. (2017). Foreign direct investment (FDI). doi:https://doi.org/10.1787/9a523b18-en
- Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika* 75(2), 335-346.
- Qureshi, M. I., Rasli, A. M., & Zaman, K. (2016). Energy crisis, greenhouse gas emissions and sectoral growth reforms: Repairing the fabricated mosaic. *Journal of Cleaner Production*, 112, 3657-3666.
- Sichei, M. M., & Kinyondo, G. (2012). Determinants of foreign direct investment in Africa: A panel data analysis. *Global Journal of Management and Business Research*, 12(18).
- Svaleryd, H., Vlachos, J., (2005). Financial markets, the pattern of industrial specialisation and comparative advantage: evidence from OECD countries. *European Economic Review*, 49(1), 113-144.
- Tang, C. F., & Tan, B. W. (2015). The impact of energy consumption, income and foreign direct investment on carbon dioxide emissions in Vietnam. *Energy* 79, 447-454.
- THANH, M. H. T., & THANH, T. P. T. (2016). Mối quan hệ giữa tăng trưởng kinh tế và đầu tư trực tiếp nước ngoài tại Khánh Hòa. *Tạp chí Khoa học Trường Đại học Cần Thơ*(44), 28-38.
- Truong, D. D. (2015). Environmental Management in Foreign Direct Investment (FDI) Enterprises in Vietnam. *VNU Science Journal*, 31(5), 48-49.
- UNCTAD. (1999). *World investment report: foreign direct investment and the challenge of Development*: New York and Geneva: United Nations.
- UNCTAD. (2020). World Investment Report
- Vo, D. H., & Ho, C. M. (2021). Foreign investment, economic growth, and environmental degradation since the 1986 "Economic Renovation" in Vietnam. *Environmental Science and Pollution Research*, 28, 29795-29805.
- Vu, H. D., & Le, V. H. (2017). FDI spill-overs, absorptive capacity and domestic firms' technical efficiency in Vietnamese wearing apparel industry. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*.

- Wajda-Lichy, M., Kawa, P., Fijorek, K., & Denkowska, S. (2020). Trade openness and financial development in the new EU member States: Evidence from a granger panel bootstrap causality test. *Eastern European Economics*, 58(3), 242-263.
- WorldBank. (2021). World Bank Open Data.
- Yaseen, H. (2014). The impact of foreign direct investment FDI on economic growth of Jordan. *European journal of bussines Management* 6(1), 39.
- Yaseen, H. (2014). The Impact of Foreign Direct Investment FDI on Economic Growth of Jordan. *European Journal of Business and Management*, 6(39), 121-128.
- Zaman, K., & Abd-el Moemen, M. (2017). Energy consumption, carbon dioxide emissions and economic development: evaluating alternative and plausible environmental hypothesis for sustainable growth. *Renewable Sustainable Energy Reviews* 74, 1119-1130.
- Zhang, Y.-J. (2011). The impact of financial development on carbon emissions: An empirical analysis in China. *Energy policy*, 39(4), 2197-2203.

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