THE IMPACT OF THE US-CHINA TRADE WAR ON FOREIGN DIRECT INVESTMENT INFLOWS OF VIETNAM

by

Quynh Nguyen

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Supervisor: István Kónya

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Abstract

This thesis seeks to examine the impacts of the US-China trade war on FDI inflows of Vietnam. To test the impact of the trade war and other determinants of FDI, an econometrics analysis is carried out based on a panel data containing information on bilateral FDI and a set of macroeconomics variables from 2007 to 2019 of Vietnam and ten main FDI investing partners. An augmented gravity model is used with the Fixed effects model estimation method. The findings show that the trade war between the US and China increases FDI inflows of Vietnam by 0.57 percent. Besides that, other determinants such as GDP, distance, real exchange rate have a significantly negative influence on FDI inflows of Vietnam. On the other hand, GDP per capita and export have significantly positive impacts. These findings suggest that a policy set should be designed and combined to increase the FDI inflows into Vietnam. In order to attract more foreign investments, the government should desire policies to restructure the economy, improve infrastructure, boost labor productivity, and support domestic firms. The government also needs to follow every move made by the US and China to have proper policies for all possibilities during the trade tension, especially to cope with undesirable investments from China.

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1 Introduction

After a long time of economic difficulty, Vietnam launched "Doi Moi"[1] reform in 1986 to introduce economic and political changes. The reform created a new development path and slowly transformed the economy from a closed economy to an open economy. Since then, Vietnam's development has been impressive. The living standard has gradually improving with an average annual growth rate of more than 6.5 percent. The poverty rate decreased from 94.4 percent in 1992 to 29 percent in 2016. Per capita GDP increased from $945.87 in 1990 to 7,447.81 in 2018. The inflation rate sharply fell from 398.07 percent in 1986 to 3.39 percent in 2018.

Vietnam has experienced agile development thanks to two crucial factors, namely considerable international trade and massive Foreign Direct Investment (FDI) inflows (Dollar & Kraay, 2004). Basing on updated data of the Ministry of Planning and Investment of Vietnam, up until 20th December 2019, more than 30,000 FDI projects were in force with total registered capital of nearly 370 billion USD and total implemented capital of more than 210 billion USD. Vietnam is supposed to be one of the most attractive destinations for FDI in Asia. Some specific comparative advantages help Vietnam attract FDI inflows including (i) Vietnam's strategic geographical location; (ii) fast stable growing economic and favorable investment policies as well as a stable political environment; (iii) relatively cheap and well-educated labor force; (iv) abundant natural resources such as oil, gas; (v) Vietnam's potential strategic export partner of the EU and US market (Nguyen & Nguyen, 2007).

Inward FDI has played an essential role in the economic growth path of Vietnam because FDI is seen as a package of capital, managerial skills, technology as well as a crucial source of

[1] Doi Moi is the name given to the political and economic reforms initiated in Vietnam in 1986 with the aim to make a transition from a command economy to a socialist-oriented market economy.

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both direct capital inputs and technology spillovers (Balasubramanyam, Salisu, & Sapsford, 1996; Li & Liu, 2005). Thus, attracting FDI has always been recognized as an essential mission of the Vietnamese government to achieve growth and poverty reduction targets. Although there is now an extensive body literature about the trade flows of Vietnam and its impacts on growth and poverty reduction, the research about FDI inflows is lacking, especially research about FDI determinants. Furthermore, these studies were based upon data from many years ago, while recent research examines determinants of spatial FDI distribution but not the FDI inflows overall. Hence, this thesis will contribute to the existing body of literature by conducting an empirical analysis of determinants of FDI inflows of Vietnam. To do so, I conduct an analysis by creating an extended gravity model that has been applied in a large number of studies of FDI inflows around the world with a panel data from 2007 to 2019 covering bilateral FDI inflows of Vietnam and ten main FDI partners[2].

On the other hand, trade integrations and economic shocks/uncertainties usually generate direct impacts on the FDI inflows of Vietnam. Several empirical studies have been conducted to examine the impacts. Binh & Haughton (2002) concluded that bilateral trade agreement (BTA) between the US and Vietnam led to 30 percent more in FDI inflows of Vietnam. Parker, Phan, & Nguyen (2005) also reported the same results about the positive impacts of BTA on inwards FDI. Both Pham (2011) and Chang & Quyet (2013) shared the same findings that WTO accession has significantly positive effects on FDI inflows of Vietnam. In the same study, Pham (2011) also pointed out that free trade agreements (FTAs) led to higher FDI inflows while the 1997 Asian crisis and the 2007 financial crisis reduced FDI inflows significantly.

Regarding trade tension, the recent trade war between the US and China has received much attention globally from governments as well as economists. This trade war has also raised many

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[2] China, Hong Kong, Japan, Taiwan, Netherlands, the United States, Singapore, Thailand, Malaysia and the Republic of Korea.

questions about its impacts on different countries. Another question is whether FDI flows of the world will be shifted. Some experts have argued that Southeast Asian countries will receive massive FDI inflows. Yet, to the best of my knowledge, no existing empirical research has been conducted to address whether the US-China trade war really has an impact on the FDI inflows of Vietnam. Thus, together with the objective mentioned above, my thesis aims to fill this research gap. To examine the impacts, I add a dummy variable that represents for the trade war in the extended gravity model.

RQ1: Does the US-China trade war have impacts on the FDI inflows of Vietnam?

RQ2: What are the determinants of FDI inflows of Vietnam?

By using Fixed effects models to the Augmented Gravity equation, I conclude that the trade tension between the US and China has a significantly positive effect on the inward FDI of Vietnam. Secondly, other determinants of FDI inflows of Vietnam are Gross Domestic Products (GDP), GDP per capita of both Vietnam and partner countries, the real exchange rate, export, and distance.

My thesis is structured as follows: the following chapter, Chapter 2 provides a synthesis of previous studies which have explored FDI determinants in Vietnam, impacts of trade integration or economic shocks on FDI inflows of Vietnam, economic impacts of the US-China trade war and further builds on the purpose of this research. Chapter 3 provides a brief overview of foreign direct investment trends from the "Doi Moi" reform until now, the breakdown of FDI by home countries, economic sectors and regions, and the US-China trade war. In Chapter 4, I continue with a general introduction about the Gravity model, and then I create one basic gravity model and one Augmented Gravity model to test my research questions and list difficulties with estimation methods in the last part. My data source and sample description are discussed in Chapter 5. In Chapter 6, I present the results of my models and tools to choose the

best method to estimate the impacts of the trade war on FDI inflows of Vietnam. In Chapter 7, I discuss my findings and recommend policies to attract more FDI into Vietnam and reduce risks and threats from shifting FDI inflows from China. Finally, in Chapter 8, I summarize my finding and draw conclusions.

2 Literature review

There is abundant theoretical literature on FDI, such as Hymer (1976), Schneider & Frey (1985), or OLI theory introduced by Dunning (1979). It is suggested that there are two main reasons for FDI, particularly: accessing new markets and exploiting low wages for part of the manufacturing process (Helpman, 1984; Markusen, 1984). It is also believed by a group of researchers that different investor's objectives lead to different determinants of FDI. Moosa (2002), as cited in Chang & Quyet (2013) claimed that FDI is divided into three categories based on the investor's objective, namely: market access, export-oriented, and government-initiated FDI. However, according to Pham (2012), the three main types of investor's aims are market seeking, resource seeking, and efficiency-seeking.

Blonigen (2005) reviewed a large body of literature on FDI determinants in his study. Considering the objectives of this thesis, I only provide an overview of relevant research which reveal determinants of FDI inflows of Vietnam, including impacts of trade integration or economic shocks on FDI inflows of Vietnam as well as effects of the current US-China trade war on the global economy in general and in Vietnamese economy in particular.

2.1 Determinants of FDI inflows of Vietnam

The massive growth of inward FDI into Vietnam has attracted the attention of both Vietnamese and foreign scholars. Almost all research studies have examined the relationship between FDI flows, international trade and economic growth of Vietnam; however, there is only a small amount of studies that focus on the main determinants of FDI inflows into Vietnam such as Binh & Haughton (2002); Mirza & Giroud (2004); Hsieh (2005); Xaypanya, Rangkakulnuwat, & Paweenawat (2015); Vo (2018) and Sasana & Fathoni (2019).

By survey method, Mirza & Giroud (2004) showed that four main determinants, namely political system, government policies, market size, and highly qualified labor force, made Vietnam become an attractive destination for FDI. Critics have also argued that the small data sample of this research, which includes only 22 firms made the results quite controversial.

Hsieh (2005) examined the determinants of FDI inflows in Southeast Asian transition economies, including Laos, Cambodia, Vietnam, and Myanmar with a fixed effects model for panel data from 1900 to 2003. He concluded that GDP per capita, openness (trade volume divided by GDP), the one period lagged FDI inflows are the main determinants of FDI in Vietnam.

Xaypanya et al. (2015) and Sasana & Fathoni (2019) researched the determinants of FDI inflows in some ASEAN countries. Xaypanya et al. (2015) used multiple linear regression for data of Cambodia, Indonesia, Malaysia, Philippines, Thailand and Vietnam for 2007-2016 while Sasana & Fathoni (2019) conducted an analysis with first differencing technique on a panel data from 2000 to 2011 of ASEAN3 (Vietnam, Laos, Cambodia) and ASEAN5 (Philippines, Thailand, Singapore, Indonesia, and Malaysia). Both two studies share two critical determinants in FDI inflows of Vietnam: quality of infrastructure and level of openness. In their thorough analysis, Sasana & Fathoni (2019) also highlighted that market size, wage rate, interest rate, tax rate, and exchange rate are important determinants of inward FDI of Vietnam as well.

Vo (2018) used panel data from 2005 to 2014 with the dynamic generalized method of moments (GMM) estimator to find out determinants of FDI inflows of Vietnam. In his unique study, he focused on the characteristics of the home countries and bilateral relationship. He reported that market size, inflationary risk, and stock market volatility of the home country,

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bilateral trade, and distance between home and host country are the main factors of attracting FDI.

On the other hand, in recent years, there has been an increasing amount of literature on the spatial distribution of FDI in Vietnam, such as Pham (2002), Meyer & Nguyen (2005), Nguyen & Nguyen (2007) and Nguyen (2016).

Pham (2002) investigated the determinants of FDI distribution across regions in Vietnam from 1988 to 1998. He carried out two separate regressions analyses, one for committed FDI and one for implemented FDI. He highlighted that wage rate, quality of the workforce, infrastructure, and local market size are the main factors in locating FDI in Vietnam.

Meyer & Nguyen (2005) also examined distribution for both newly registered FDI in 2000 and cumulative FDI up to 2000. Although their main aim was to investigate the impacts of institutions on FDI, they highlighted several factors for regional distribution of FDI, such as transport, GDP growth rate, wage rate, education, population, and level of FDI in the previous year.

Nguyen & Nguyen (2007) conducted an empirical analysis of determinants of FDI provincial distribution for the period 1988-2006. They found that market size, labor, and infrastructure are three main factors in attracting FDI.

Nguyen (2016) investigated FDI location in Vietnam by using a panel dataset from 2008 to 2012 of 63 cities and provinces across Vietnam with linear regression models (both fixed efects and ramdom effects models), and negative binomial models. She argued that market potential, wage rate, quality of labor force, infrastructure, local government policies, and FDI accumulation have significant impacts on FDI allocation in Vietnam.

2.2 Impacts of trade integration and economic shocks on FDI inflows

A small amount of research on impacts of trade integration and economic shocks (such as crisis) on FDI inflows has been carried out including Binh & Haughton (2002); Parker et al. (2005); Pham (2011); Cuong, Trang, & Nga (2015) and Nguyen & Cao (2016).

The first research exploring this matter was conducted by Binh & Haughton (2002), which used an econometric model to test the influence of the bilateral trade agreement (BTA) between Vietnam and the US on the Vietnamese FDI inflow. The result showed that BTA increases FDI inflows of Vietnam by 30 percent, and in the long term, the FDI inflows even double.

The results of Parker et al. (2005) are consistent with Binh & Haughton (2002) that BTA leads to higher FDI inflows into Vietnam. In contrast with the empirical analysis used by Binh & Haughton (2002), Parker et al. (2005) used only descriptive statistical analysis. They found that FDI flows in clothing, fisheries, and furniture sectors started to increase one year after the BTA was signed.

Pham (2011) assessed impacts of WTO accession on FDI inflows of Vietnam by employing an augmented gravity model and using panel data, including bilateral FDI between Vietnam and 17 investing partners from 1990 to 2008. She concluded that WTO accession generated a significantly positive effect on FDI inflows. Besides that, she pointed out that the Asian crisis in 1997 and the financial crisis in 2007 have negative impacts on FDI inflows, but FTAs have positive impacts.

Both Cuong et al. (2015) and Nguyen & Cao (2016) used gravity models to examine the impacts of FTAs on FDI inflows of Vietnam, and they all agreed that FTAs increase the FDI inflows. However, according to Nguyen & Cao (2016), because of taking all FTA dummy variables in one equation, the results of Cuong et al. (2015) may not be accurate. Nguyen & Cao (2016) also provide an empirical analysis of the impacts of FTA. They conducted two

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separate equations: one equation with only FTA dummy variable and one equation with all individual FTAs including 8 FTAs: AFTA, ACFTA, AKFTA, AJCEP, VJEPA, AIFTA, AANZFTA, and VNCHLFTA[3]. Two authors argued that FTAs have significantly positive impacts on FDI derived from FTAs' partners only. Only AKFTA and VJEPA increase the amount of FDI inflows in Vietnam.

2.3 Effects of the US-China trade war

A small amount of empirical research has been conducted with Numerical General Equilibrium to create many scenarios of the trade war, for example, Bollen & Rojas-Romagosa (2018); Guo, Lu, Sheng, & Yu (2018); Calì (2018) and Abiad et al. (2018).

Bollen & Rojan-Romagosa (2018) analyzed five possible scenarios of the trade war namely: (1) US unilateral steel and aluminum (S&A) tariffs, (2) Retaliation over US steel and aluminum tariffs, (3) US-China trade sanctions, (4) US tariffs on motor vehicles, and (5) trade war escalation. The authors found that scenarios (1) and (2) may have little influence on the global economy. On the contrary, the EU and China may be better off because of the trade diversion effect. US and its North American Free Trade Agreement (NAFTA) partners may be worse off. Under scenario (3) EU and OECD countries will have benefits; however, China may suffer a loss of a 1.2 percent decrease in its Gross Domestic Product (GDP) compared to a 0.3 percent decrease in US GDP. For scenario (4), the EU may be affected, although other transport equipment sectors may benefit. Finally, in scenario (5), a uniform non-services tariff increase is imposed between the US and other countries. As a result, all countries lose due to tariffs.

[3] AFTA: ASEAN Free Trade Agreement (1995); ACFTA: ASEAN – China Free Trade Agreement (2002); AKFTA: ASEAN – South Korea Free Trade Agreement (2005); AJCEP: ASEAN – Japan Comprehensive Economic Partnership (2008); VJEPA: Vietnam – Japan Economic Partnership Agreement (2008); AIFTA: ASEAN – India Free Trade Agreement (2009); AANZFTA: ASEAN – Australia and New Zealand Free Trade Agreement (2009); VNCHLFTA: Vietnam – Chile Free Trade Agreement (2011).

By using a multi-country and multi-country general equilibrium model of Eaton and Kortum (2002), Guo et al. (2018) investigated the shifts in exports, imports, output, and real wages in 62 major economies in two scenarios: 45 percent tariff against only imported goods from China and 45 percent tariff against the whole world. The research showed that a negative impact on international trade is predestined with high tariffs. Using changes in real wages as a proxy for welfare gains/loss, if China levied the same level of tariffs on imported goods from the US, the welfare loss of China would be less than that of the US. As a result of trade diversion, the US has to manufacture more while China has possibilities to export to other small countries. The author pointed out that China may not be hurt by the retribution thanks to the possible terms-of-trade gains. Small open economies may receive some gains or losses in both cases: (a)Trump levies a 45 percent tariff only on Chinese products and (b) on all other countries. Malaysia and Singapore may obtain welfare gain, but Vietnam would suffer welfare loss (0.75 percent decline in real wage). Diminishing demand from the USA makes import prices lower, which will create a source of gain.

Calì (2018) found that US imports from China will decrease nearly 70 billion USD, which is calculated from the elasticity of demand of USA's imports and the released lists of Chinese products in the three phases of tariff products. He also predicted that East Asian countries could be potential destinations for Chinese exports instead of the US market. Based on these economies' size, Cali (2018) argued that Vietnam, the Philippines, and Cambodia have the highest possibilities for replacement. In terms of investment deviation, the most prominent potential winners will be Taiwan, Thailand, Malaysia, Vietnam, and the Philippines because they produce the same type of export product with China.

Abdul Abiad et al. (2018) calculated the impact of the trade tension between the US and China on Developing Asia by using the Asian Development Bank (ADB)'s Multiregional Input-Output Table (MRIOT) with three scenarios: current, escalation of the trade war, and the

"worse-case" scenario. The study evaluated the direct influence on all affected goods by tariffs and estimated the indirect influence on the country's GDP, employment, and exports individually for all three scenarios with the input-output approach of Feenstra & Sasahara (2017). The author concluded that in all three scenarios, Vietnam gains in terms of both GDP and exports. The Vietnamese economy is the biggest beneficiary from trade redirection, with a 2.14 percent increase in GDP. Gains from exports under bilateral escalation scenario, worse-case scenario, and current scenario are 7.3 percent 7.0 percent and 0.8 percent, respectively. It is revealed from the report that Vietnam is also the country that most gains in exports among Developing Asian countries. The reason is that Vietnam produces and exports the same type of products as countries under tariff policies of the US.

There are very few studies conducted on Vietnam only, and almost all are analytical. Ho, Nguyen, & Chan (2018) showed that in the short term, Vietnam might be better off from the US-China trade war because it is possible to replace exported goods of China to the US and relocate many China-based factories to Vietnam. In the long run, however, Vietnam has to face many challenges due to its export-led and foreign investment-led growth model. Lam & Nguyen (2019) explored the impact of the US-China trade war on Vietnam and concluded that Vietnam is the biggest beneficiary with a higher export rate and a spike in Chinese FDI in Vietnam.

Overall, previous studies of FDI determinants are limited to updated data. In addition, to date, only a limited number of studies focus on the impacts of the US-China trade war on the Vietnamese economy in general and on the FDI inflows of Vietnam in particular. This thesis explores, for the first time, the effects of the current trade tension between the US and China on FDI inflows of Vietnam by conducting an empirical analysis. In the next section, I present trends of FDI inflows into Vietnam by source countries, economic sectors, and regions as well as highlight some key dates of the US-China trade war.

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3 Background

In this section, I give a historical overview of FDI inflows of Vietnam and the main timeline of the trade war between the US and China. In the first subsection, I start with some definitions of FDI then give an overview of FDI inflows of Vietnam from 1988 to 2019 and the breakdown of FDI structure by investment fields, home country, and sector. Finally, I present the main timeline of the trade war, which I will use as a basis to choose the year for the trade war dummy variable in my empirical analysis.

3.1 Foreign direct investment (FDI) in Vietnam

3.1.1 Definitions

Combing the definition of FDI by OECD (1996) and IMF (1993), UNCTAD defines FDI as follows:

Foreign direct investment (FDI) is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate (WIR, 2007).

Foreign direct investors can circulate capital in overseas countries. The definition explains furthermore:

Flows of FDI comprise capital provided (either directly or through other related enterprises) by a foreign direct investor to an enterprise, or capital received from an investing enterprise by a foreign direct investor. FDI has three components: equity capital, reinvested earnings, and intra-company loans (WIR, 2007).

According to WRI (2007), equity capital is acquired shares of foreign direct investors in an enterprise in another country. Retained profits, including non-remitted earnings and dividends, are considered as reinvested earnings. Intra-company loans refer to both short and long-term lending between parent and affiliate ventures.

According to Article 23 of Law on Investment 2005 of National Assembly of Vietnam, foreign direct investors must hold at least 51 percent of registered capital in many forms, including starting a business organization, contributing capital, or buying shares of a domestic business organization.

3.1.2 History of Foreign Direct Investment inflows

In comparison with other countries in the Asian region, the history of FDI in Vietnam is very short. The first law on Foreign Direct Investment was passed in 1987. Although Vietnam has a short history of FDI, Vietnam is an attractive destination for a sizeable amount of FDI. Mirza and Giroud (2004) stated that Vietnam ranked the third among the biggest receivers in ASEAN in 2004.

Figure 3.1 provides an overview of FDI inflows into Vietnam from 1988 to 2019

Figure 3.1: FDI inflows into Vietnam from 1988 to 2019
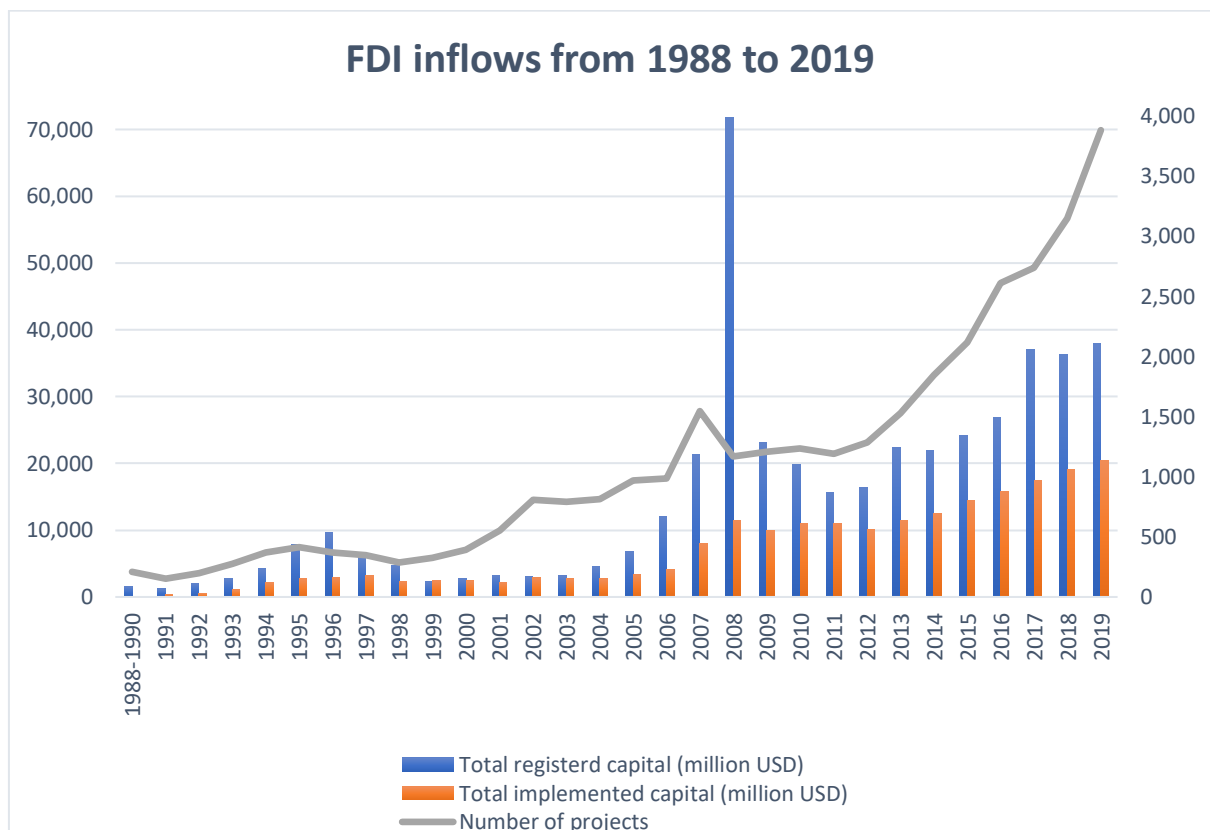
Source: Author's visualization basing on statistics from GSO of Vietnam

It is noticeable that the total number of projects, total registered capital, and total implemented capital have increasing trends. During the "investment boom" stage in the early 1900s, there was a significant change. Specifically, during 1988 and 1900, there were only 211 projects with 1.6 billion USD registered capital, while in 1991, the total licensed projects were 152 with 1.2 billion USD. Registered capital in 1995 and 1996 reached a peak of 7.9 billion USD and 9.6 billion USD, respectively. Although the total number of projects and registered capital increased sharply, the implemented capital was still low. A possible explanation is over-complicated disbursement procedures and inspection of the government. When the economic crisis erupted in Asia in 1997, the FDI to Vietnam started to decrease clearly. FDI inflow climbed back again when Asian countries overcame the crisis and especially after Vietnam joined WTO in 2007. In 2008, Vietnam witnessed a record in registered capital with around 72 billion USD. Since this time, FDI inflows have increased continuously. In 2018, when the USA took the first step to start the trade war with China, the number of FDI projects went up spectacularly from 2,741 projects in 2017 to 3,147 projects in 2018. Implemented capital in 2018 was 1.6 billion USD higher than in 2017, although registered capital in 2017 was around 700 million USD higher than in 2016. The statistics were even more impressive in 2019. According to the Ministry of Planning and Investment, there were nearly 4,000 projects (increased 27.5% as compared to 2018), over 38 billion USD registered capital (increased 7.2% as compared to 2018) and over 20 billion USD implemented capital (increased 6.7% as compared to 2018).

3.1.3 Breakdown of FDI inflows by investment fields

Up until December 2019, 18 fields received investment from foreign investors. The investment mostly focused on the manufacturing sector with more than 15,000 projects and 210 billion USD registered capital, which accounted for nearly 60 percent of total capital. Real estate ranked second with total registered capital of 58 billion USD, accounting for more than

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16 percent, following by electricity, gas, steam and air conditioning supply, hotel and tourism, construction then wholesale, and retail trade.

Table 3.1 gives details of FDI inflows into all sectors with the number of projects, total registered capital, and share in total investment.

Capital from FDI formed some critical industries of the Vietnamese economy such as oil and gas exploitation, mining and quarrying, processing, information technology, and electronics which made notable contributions to the transition of economy, product diversification, enhancement of export goods as well as the acquisition of high technology. In the 1990s, the capital from FDI concentrated on the oil and mining sector but then shifted to the light and heavy industries (Fujita, 2000; Nguyen et al., 2006).

The services sector has also attracted a large amount of investment, with more than 30 percent of total registered capital. Two outstanding fields in this sector are real estate activities and hotel & tourism. It is noticeable that in the early 1990s, there was no FDI inflow to the real estate field, but now this sector accounts for a significant percentage of total registered capital, precisely 16 percent.

Table 3.1: FDI by economic sectors from 1988 to 2019

Number	Industry	Number of projects	Total registered capital	Percentage
1	Manufacturing	14,422	214,174.89	59.07%
2	Real estate activities	868	58,433.26	16.12%
3	Electricity, gas, steam and air conditioning supply	132	23,653.83	6.52%
4	Hotel and tourism	839	11,990.16	3.31%
5	Construction	1,693	10,407.78	2.87%
6	Wholesale and retail trade; repair of motor vehicles and motorcycles	4,544	8,144.23	2.25%

7	Transportation and storage	823	5,067.32	1.40%
8	Mining and quarrying	108	4,897.54	1.35%
9	Education and training	525	4,376.15	1.21%
10	Information and communication	2,145	3,871.02	1.07%
11	Agriculture, forestry, and fishing	497	3,508.45	0.97%
12	Arts, entertainment and recreation	135	3,388.38	0.93%
13	Professional, scientific and technical activities	3,217	3,200.07	0.88%
14	Water supply, sewerage, waste management, and remediation activities	75	2,857.44	0.79%
15	Human health and social work activities	148	1,989.36	0.55%
16	Administrative and support service activities	438	968.99	0.27%
17	Financial, banking and insurance activities	71	822.91	0.23%
18	Other service activities	141	820.29	0.23%
Total		30,827	362,580.44	100%

Source: Author's own creation basing on statistics from MPI of Vietnam

Besides that, agriculture, forestry, and fishing attracted 497 projects with 3.5 billion USD. Although this sector just accounts for nearly 1 percent of total investment, it created many jobs and revised the economy of Vietnam.

3.1.4 Breakdown of FDI inflows by home country

In the period from 1988 to 2019, there were 135 countries in total that have FDI inflows to Vietnam.

Table 3.2 records the top 11 countries with the highest FDI inflows to Vietnam.

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Table 3.2: Accumulated FDI by home countries from 1988 to 2019

No	Countries and Territories	Number of projects	Percentage	Total registered capital	Percentage
1	Korea	8,467	27.47%	67,707.12	18.67%
2	Japan	4,385	14.22%	59,333.86	16.36%
3	Singapore	2,421	7.85%	49,776.85	13.73%
4	Taiwan	2,692	8.73%	32,367.27	8.93%
5	Hong Kong	1,735	5.63%	23,447.07	6.47%
6	The British Virgin Islands	841	2.73%	21,725.12	5.99%
7	China	2,807	9.11%	16,264.80	4.49%
8	Malaysia	616	2.00%	12,634.53	3.48%
9	Thailand	560	1.82%	10,901.32	3.01%
10	Netherlands	344	1.12%	10,051.16	2.77%
11	US	988	3.20%	9,382.98	2.59%

Source: Author's own creation basing on statistics from MPI of Vietnam

Korea is the host country with the highest inward FDI. There were 8,467 projects with around 68 billion USD capital. The average capital per project of Korean investors was 8 million USD. Although it was lower than the average capital of one FDI project in Vietnam (11.76 million USD), enterprises with FDI of Korea such as Samsung, Lotte, or LG are still vital parts of the Vietnamese economy.

The second largest investing country is Japan, with leading firms such as Honda, Toyota, with 4,385 projects and about 60 billion USD capital. Singapore ranked third, with 13.73 percent of the total registered investment. FDI from Singapore has an increasing trend, which is mostly concentrated in the processing industry and real estate business.

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Taiwan is the fourth largest partner with 2,692 projects and more than 32 billion USD capital. Processing and manufacturing industries attracted most investments (accounting for more than 90 percent of total registered capital) then waste management sector (accounting for 7 percent).

After the above biggest partners, Hongkong, the British Virgin Islands, China, Malaysia, Thailand, Netherlands, and the US are also large and major FDI partners of Vietnam. It is noticeable that China has started to invest more in Vietnam recently. Probable explanations are that China wants to shift their factories to Vietnam to reduce pollution or China forecasts the trade conflicts with the USA.

3.1.5 Breakdown of FDI inflows by region

According to updated released data from the Ministry of Planning and Investment, FDI has flown to all 64 cities and provinces across Vietnam.

Figure 3.2 presents the distribution of FDI inflows into provinces in Vietnam.

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Figure 3.2: FDI by regions
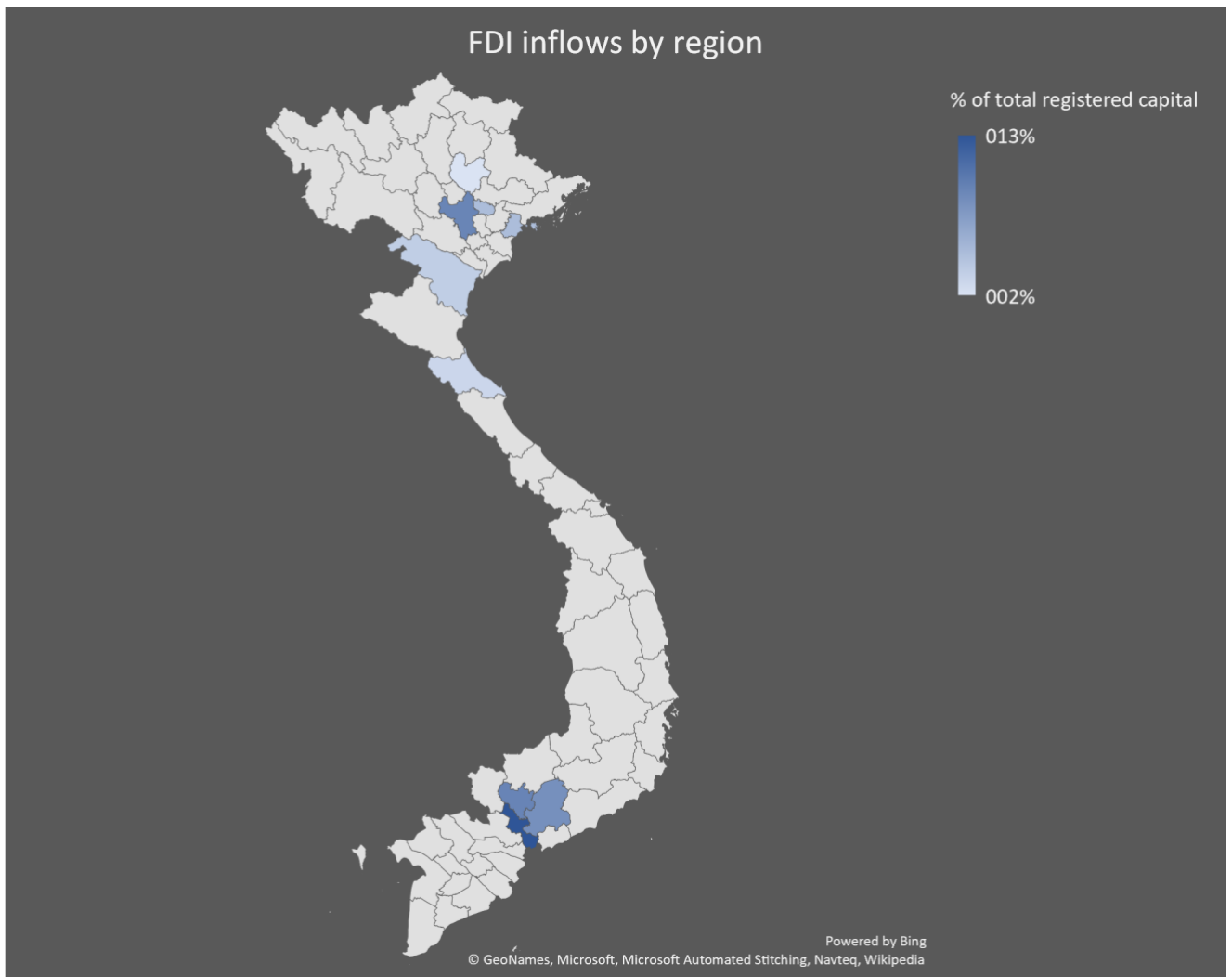
Source: Author's own visualization basing on statistics from GSO of Vietnam

In the Southern part, Ho Chi Minh City and neighboring provinces in Mekong delta, such as Dong Nai, Binh Duong, Vung Tau, attracted the highest share of FDI. In the Northern area, Hanoi and some surrounding areas, such as Bac Ninh, Hai Phong, Thanh Hoa, Thai Nguyen, accounted for a large part of FDI. In the Central area, Ha Tinh was the province that received significant inward FDI. Ha Noi and Ho Chi Minh have attracted vast amounts of investment because of the fact that they are the two main economic centers of Vietnam. When foreign investors want to start a business in Vietnam, they try to choose these cities for their investment

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environments. Furthermore, local governments in these cities also have favorable policies to attract investors, such as reductions in corporate income tax and VAT.

3.2 An overview of the US-China trade war

The action considered as the first sign of a trade war was that the United States started to impose tariffs on solar panels and washing machines of China in the first month of 2018. According to China Briefing[4], however, the relation between the US and China was considered to be under strain after the state visit of Trump in 2017. The US decided to levy tariffs at 30 percent on imports of solar panels (except Canada) and 20 percent on imports of the washing machine. In March 2018, Trump signed a memorandum with three actions that directly attacked China and imposed tariffs at 25 percent on all imported steel and 10 percent on imported aluminum. The total tariffs on Chinese products were around 50-60 billion USD (Caporal, 2018). In retaliation, in April 2018, China also imposed tariffs ranging from 15-25 percent on 128 American products, particularly automobiles, chemicals, and soybeans (Fortnam, 2018). After China agreed to buy more US goods, two sides agreed to put the trade war on hold later on. In June 2018, however, both countries continued the trade war with initial tariff lists of the first round, which were implemented in July 2018. The US put a 25 percent tariff on 818 imported Chinese products, and in response, China levies a 25 percent tariff on 545 imported US products, respectively.

Until now, Washington imposed four rounds of tariffs, three rounds in 2018 and one round in September 2019, which were worth more than 550 billion USD in total. Beijing also hit back its rival with four rounds of tariffs on more than 185 billion USD of US products. Both countries have threatened to impose new tariffs on escalating levels.

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[4] China Briefing is published by Asia Briefing which publishes articles, magazines, and guides on doing business in Asia.

Trump has accused China of unfair trade practices and intellectual property theft. China, in turn, thought that the US is trying to curb its rise as a global economic power. As a result, over the first 18 months of the trade war, neither the US nor China wanted to back down. Nevertheless, finally, in January 2020, the two parties agreed to sign the Phase One Deal, which was considered as the first sign of a truce. Under Phase One, China pledged to expand the trade purchases by importing 200 billion USD above the 2017 levels as well as committed to tightening intellectual property rules. The US also agreed to roll back some of the new tariffs. Besides, the US and China renewed some commitments about technology transfer and currency practices. Washington said it would resolve additional issues in the Phase Two Deal, but uncertainties still remain.

In summary, the trade war between the US and China is considered to begin in 2018 when the US officially levied tariffs on imported goods from China. Signs which led to the official trade war, however, were detected in 2017. In that time, based on predictions, investors may change their minds on the selection of countries to invest. This section has reviewed the most significant timeline of the US-China trade war so that in section 2 of Chapter 4, 2017 will be chosen as the base year to test impacts of the trade war on FDI inflows of Vietnam.

4 Methodology

In this chapter, I give a general idea about the gravity model used in trade flows and FDI flows estimation. Then models used in my empirical analysis will be introduced. Some issues of estimation methods are discussed in the last part of this section.

4.1 The Gravity Model

The gravity model' s basic concept is from Newton's Law of Universal Gravitation, which states that the gravity force between two objects depends on their masses and distance between them. The gravity model was first introduced to international trade in 1962 by Tinbergen. Subsequently, Pöyhönen (1963), Fisk & Linnemann (1967), Anderson (1979) also applied the gravity equation to research trade flows. In the basic formula, the gravity model predicts export (trade) between two countries by an equation of their economic masses and distance between them. Specifically, the trade flows between the two countries are assumed to increase in their sizes, as measured by their economic mass (GDP), and decrease in the cost of transport, as measured by the distance between the two countries' capitals.

Many researchers have utilized the gravity model to measure the FDI inflows. Kleinert & Toubal (2010) made support to the theory of the FDI model by using three models of global corporations to estimate the gravity equations.

Empirically, several studies have developed the gravity equation. Mátyás (1998) suggested a specification for the gravity model where each county has two fixed effects, one as a source country and the other as a host country. One major drawback of this approach is that all country-specific and time-invariant effects are excluded from the estimation. In their useful study, Cheng & Wall (2005) concluded that the gravity equation for a pair of countries might have a unique intercept, which could be different in different directions. The specific country

effect includes the effects of all variables that are time-invariant but are cross-sectionally specific. By approaching this method, these authors exclude distance variable from the equation because it represents for all variables that remain constant over time. Egger (2000) claimed that panel data is the most applicable method to solve the problem of country-specific and time-invariant effects. Egger & Pfaffermayr (2003) argued that the exclusion of country-specific effects could lead to biased coefficients. Difficulties arise; however, some variables might be time-invariant, which would create biased estimators. Besides, other researchers such as Bergstrand (1985), Helpman (1987), and Wei (1996) contributed to the development of the definition of variables as well as added new variables in the analysis. It is almost sure that with newly added variables, it is good to conduct in-depth analysis.

In conclusion, there are a large number of empirical applications of the gravity model and many variations of gravity equations. However, there are some common features. Firstly, the gravity model in the FDI field aims to explain bilateral FDI; the equation always takes the FDI variable as the dependent variable. Secondly, the economic mass of home country and host country is measured by GDP, GNP, GDP per capita, or GNP per capita. The idea behind this is that countries with higher incomes tend to invest more in countries with lower incomes. Next, distance is also a popular variable in the gravity model. It is a measurement of the transportation cost by geographical distance between countries' economic centers (usually the capital). In some cases, however, it is not the right measure because some countries have many economic centers, so when choosing the capital to measure, it can over or underestimate the distance between this country and its partners. Finally, dummy variables are always added to the gravity equations so as to investigate the qualitative variables.

4.2 Model specification

The intuitive gravity model is:

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$$\mathbf{X_{ij} = C\ Y_i\ Y_j\ /\ D_{ij}}$$

Where:

- X_{ij} = flows (ex: trade, migration, foreign direct investment) from the source country i to the host country j

- C = constant

- Y = economic masses (GDP)

- D_{ij} = trade cost between capitals of two countries (distance)

Equation (1) demonstrates that flows between the two countries are positively related to their economic masses (GDP) and negatively related to their distance (D_{ij}).

Augmented Gravity Equation:

$$\boldsymbol{X_{ij} = \alpha_1 + \alpha_2 Y_i + \alpha_3 Y_j + \alpha_4 YH_i + \alpha_5 YH_j + \alpha_6 D_{ij} + \alpha_7 A_{ij} + u_{ij}}$$

Where:

- lnX_{ij} = log of bilateral trade flows/bilateral foreign direct investment flows

- Y_i, Y_j = GDP of country i and country j

- YH_i, YH_j = GDP per capita of country i and country j

- D_{ij} = log of the distance between country i and country j

- A_{ij} = other factors that affect the trade/FDI flows

- u_{ij} = error terms

The discussion in section 4.1 shows that the gravity model 's best specification still remains a debate in the field. As a result, in previous research, each author chose different specifications that fit the goals of their study.

In constructing my empirical analysis, I employed a basic gravity model then added additional controls to create an augmented gravity model with a panel data framework. Panel data displays several superiorities over cross-section data and time-series data. One of the main advantages of panel estimation is that it can control individual heterogeneity, whereas cross-section and time-series studies in a completely opposite way, which may disclose biased estimated results. Further, panel data offer more dispersion, more degree of freedom as well as lessen the chance of collinearity among explanatory variables; therefore, it helps improve the efficiency of the econometric estimates. More notably, according to Baltagi (2005), panel data can examine effects that are not measurable in time series and cross-section data. Baltagi (2005) also stated that the panel data could construct and test more complicated behavior models than purely cross-section or times series data.

For estimation purposes, the gravity equation is transformed into a linear log form.

The basic Gravity equation:

$$logFDI_{vit} = \alpha_0 + \alpha_1 \log(GDP_{vt} * GDP_{it}) + \alpha_2 \log(GDPPC_{vt} * GDPPC_{it}) + \alpha_3 D_{vi} + e_{vit}$$

(3)

The Augmented Gravity equation:

$$logFDI_{vit} = \alpha_0 + \alpha_1 \log(GDP_{vt} * GDP_{it}) + \alpha_2 \log(GDPPC_{vt} * GDPPC_{it}) + \alpha_3 D_{vi} + \alpha_4 EX_{vit} + \alpha_5 logT_{vit} + \alpha_6 TW + e_{vit}$$

(4)

Where:

v = 1 (Vietnam)

i = 2,3,4,5,6,7,8,9,10 (partner countries)

t = 2000, 2001, 2002, …, 2019

FDI_{vit}: FDI flows from country i to Vietnam in year t

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GDP$_{vt}$: GDP of Vietnam in year t

GDP$_{it}$: GDP of country i in year t

GDPPC$_{vt}$: GDP per capita of Vietnam in year t

GDPPC$_{it}$: GDP per capita of country i in year t

D$_{vi}$: the geographical distance between Vietnam and country i

EX$_{vit}$: real exchange rate between Vietnam and country i in year t

T$_{vit}$: bilateral trade between Vietnam and country i in year t

TW: trade war dummy variable which equals to 1 if year t is 2017 and 0 otherwise

e$_{vit}$: error term

4.3 Issues of estimation methods

There are three ways to estimate panel data models, including pooled ordinary least square (OLS), fixed effects, and random effects with panel data (Gujarati, 2003).

Pooled OLS is the simplest approach, but it may lead to biased and inefficient estimated results because individual effects and time effects are not considered. The fixed effect takes into consideration the time effects and individual effects. One major weakness of the fixed effects model though is that it will omit time-invariant variables such as distance from the estimation as the impact of these variables may not be identified. To overcome this issue, random effect or Hausman and Taylor's estimator are used instead. Cheng & Wall (2005) has suggested using individual effects to measure the impact of the time-invariant variables. In the fixed effects model, the country pair fixed effects involve all determinants that remain constant over time. For this purpose, we can indirectly measure the effect of time-invariant variables such as distance from the country pair fixed effects. I first examine the equation (4) running

the fixed effects method, then follow Cheng & Wall (2005) to run an additional regression of the estimated country pair fixed effects on distance variable so as to identify the importance of distance variable in the fixed effects model. The regression is as follows:

$$\alpha_{vi} = a_1 + a_2 d_{vi} + e_{vi}$$

(5)

Where:

α_{vi}: country individual effects

a_1, a_2: coefficients

d_{vi}: the geographical distance between the capital of Vietnam and home countries

e_{vi}: error term

The random effects model is also one of the most common approaches for estimating panel data. It is assumed that in the random effects model, the individual error components are not autocorrelated across both time series and cross-sectional units and are not correlated with others.

Previous studies on applying the gravity model do not clearly answer the question among pooled OLS, fixed effects, and random effects model, which is the best estimation method. Thus, the equation (4) will be tested firstly by all the three estimation methods, then the BP Lagrange multiplier test and the Hausman test will be carried out to decide the most appropriate method for interpreting the estimation results.

5 Data

In this part, I describe my dataset used for analyzing the impacts of the US-China trade war. The section begins with methods of data collection, and then a description of my sample is presented.

5.1 Data collection

The data used in this thesis is collected from several reliable sources. The primary sources are the Vietnam General Statistics Office (GSO), the Foreign Investment Agency – Vietnam Ministry of Planning and Investment (MPI), the General Department of Vietnam Customs, the World Development Indicator of the World Bank (WDI), the International Monetary Fund (IMF), the Asian Development Bank (ADB). The data set includes ten countries: China, Hong Kong, Japan, South Korea, Singapore, Taiwan, USA, Malaysia, Netherlands, and Thailand for the period from 2000 to 2019. These ten countries cover nearly 90% of FDI inflows to Vietnam from 1990 until now.

The bilateral FDI inflows data are obtained from annual reports of MPI. Data on GDP, GDP per capita are obtained from the WDI. Bilateral trade (total of imports and exports) of Vietnam with ten partner countries are collected from the General Department of Vietnam Customs. Distance between countries is measured by distance from the capital of Vietnam to the capital of partners which are accessed from the website (www.indo.com/distance). Real exchange rates between Vietnam Dong (VND) and its partner's currencies are measured as follows:

$$\mathbf{RER_{it} = e_{it} \left(CPI_{it} / CPI_{VNt} \right)}$$

(6)

CPI_{it} is the consumer price index of country i, CPI_{VNt} is the consumer price index of Vietnam which is collected from the IMF. And e_{it} is the nominal exchange rate between VND and

foreign currencies. This nominal exchange rate data is gathered from historical data of the exchange rate from the website (www.fxtop.com).

Exceptionally, WDI excludes Taiwan in its database. Indicators of Taiwan are obtained from ADB statistics. However, the base for GDP, GDP per capita have the same base with data for these indicators of other countries from WDI source, which is converted to international dollars using purchasing power parity rates. The summary of the data source is presented in Table A.1, Appendix A.

Table 5.1 shows the expected coefficient signs of all variables on FDI equation (3) and (4).

Table 5.1: Variables Descriptions and Expected signs

Variable	Description	Expected sign
$Log(GDP_{vt}*GDP_{it})$	Log of multiplication of gross domestic product in Vietnam and Home country i	+
$Log(GDPPC_{vt}*GDPPC_{it})$	Log of multiplication of gross domestic product per capita in Vietnam and Home country i	+/-
$logD_{vi}$	Log of the distance between capital of Vietnam and capital of the Home country i	-
EX_{vit}	The real exchange rate between VND and Home country i's currency	+/-
$LogT_{vit}$	Log of bilateral trade between Vietnam and Home country i	+
TW	Dummy variable represents for the US-China trade war	+

5.2 Sample description

My sample is a panel dataset of ten investing partners of Vietnam over the period 2007-2019. Therefore, my sample dataset consists of a perfectly balanced panel data of ten trading pairs, with a total number of 130 observations.

Table 5.2 shows some descriptive statistics, including mean, standard deviation, min, and max, for the main variables used in the regression models.

*Table 5.2: Descriptive Statistics of the sample*

Variable	Mean	Std. Dev.	Min	Max
$logFDI_{vit}$	6.967401	1.325751	2.827314	9.61375
$log(GDP_{vt}*GDP_{it})$	27.37693	1.37237	25.37238	30.44653
$log(GDPPC_{vt}*GDPPC_{it})$	18.97351	.6392654	17.14713	20.26805
$logD_{vi}$	7.894673	.8132584	6.858565	9.50017
EX_{vit}	6469.761	7949.369	14.03472	30105.32
$logT_{vit}$	9.44978	.9377003	7.433903	12.30416
TW	.2307692	.4229549	0	1

Source: Author's own calculation using STATA

Figure 5.1 presents trends in FDI inflows of ten home countries in the sample over a 13-year period from 2007 to 2019. It can be seen from the graph that FDI from these countries fluctuated over the years. However, in 2008, one year after Vietnam joined WTO, FDI inflows from all of the ten countries increased dramatically. From 2010, the FDI inflows a little bit

slowed down, but then since 2017, there has been a clear trend of increasing FDI inflows from almost all of the source countries.

Figure 5.1: FDI inflows by home countries in the sample from 2007 to 2019
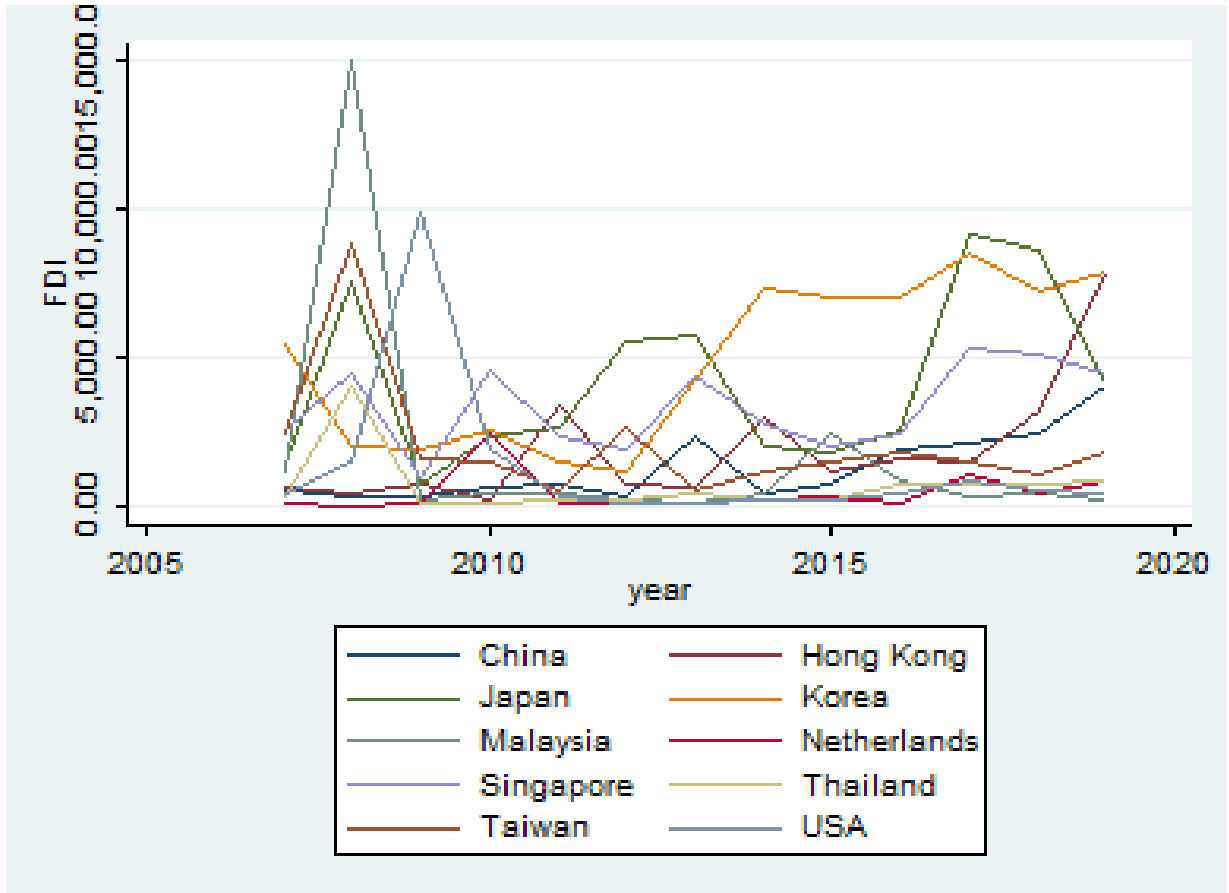
Source: Author's own visualization using STATA

6 Results

In this part, first, I present results of equation (3) with the pooled OLS method and results of equation (4) with all three estimation methods and discuss ways to choose an efficient method for my models and sample. Finally, I analyze results with the selected method.

The estimation results of FDI inflows between Vietnam and its10 partner countries using equations (3) and (4) are given in table 5.

Table 6.1: Estimation results

Variable	Pooled OLS		FE Model	RE Model
	(3)	**(4)**		
$\log(GDP_{vt}*GDP_{it})$	0.376***	-0.389*	-9.487**	-0.299
	(0.097)	(0.198)	(4.054)	(0.237)
$\log(GDPPC_{vt}*GDPPC_{it})$	1.001***	0.780***	11.808**	0.612**
	(0.187)	(0.212)	(5.104)	(0.264)
$\log D_{vi}$	-0.876***	0.346	-0.321***	0.376
	(0.167)	(0.278)	(0.105)	(0.368)
EX_{vit}		-0.000***	-0.000***	-0.000***
		(0.053)	(0.000)	(0.000)
$\log T_{vit}$		0.676***	-0.143	0.394
		(0.245)	(0.328)	(0.270)
TW		-0.065	0.574**	0.203
		(0.259)	(0.281)	(0.266)
Constant	-15.413***	-5.691	53.929**	-2.605
	(4.541)	(5.796)	(22.031)	(7.038)
Home_country China (dummy)			53.276**	
			(23.110)	
Home_country Hong Kong (dummy)			-29.049**	
			(12.116)	
Home_country Japan (dummy)			29.049**	
			(12.116)	

Home_country Korea (dummy)			20.744** (8.499)	
Home_country Malaysia (dummy)			14.602** (6.661)	
Home_country Netherlands (dummy)			7.828* (4.359)	
Home_country Singapore (dummy)			-2.170 (1.502)	
Home_country Thailand (dummy)			23.059** (10.450)	
Home_country Taiwan (dummy)			11.910** (5.059)	
Home_country USA (dummy)			36.292** (16.083)	
R-squared	0.233	0.395	0.575	0.384

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Author's own calculation using STATA

FDI inflows' equation (4) is run with the three above mentioned methods. The results have nearly all the expected coefficient signs, except for distance and trade variables. However, the significances of the coefficients in the fixed effects estimation are noticeably different from those in the pooled OLS and random effect method. This result may be explained by the fact that the pooled OLS estimation generates biased results because it ignores the country individual effects. Meanwhile, the random effects estimation gives inconsistent estimates due to the correlation between the individual effects and other regressors.

Two tests are carried out to select the most appropriate method. The BP Lagrange multiplier test is conducted firstly to identify whether pooled OLS or random effects model should be used (Table A.2, Appendix A). The null hypothesis H_0: Var (u) = 0 can be rejected at the 0.01 level. Consequently, the pooled OLS method may create biased coefficients and will not be

used in this thesis. Then the Hausman test is conducted to decide to choose fixed effects or random effects model (Table A.3, Appendix A). The null hypothesis H_0: difference in coefficients not systematic is rejected at the 0.01 level. Hence, the fixed effect is the best choice for my sample. My analysis then discusses only the results of the fixed effects model for equation (4).

The determinants of FDI inflows of Vietnam are GDP, per capita GDP, distance, the real exchange rate, and especially the US-China trade war. Trade seems to have no effect on FDI inflows because it is statistically insignificant. GDP variable has a positive sign with FDI inflows at 0.01 significant level in the equation (3). 1% increase in the GDP of both Vietnam and source countries will increase the FDI inflows by 0.38%. Nevertheless, when new variables are introduced in equation (4), the coefficient of GDP variable changes sign from positive to negative. This inconsistency may be due to additional control variables. The coefficient of GDP in equation (4) is at the 0.05 significance level. For a 1% increase in the GDP of Vietnam and the GDP of a partner country, the FDI inflows of Vietnam are expected to decrease by 9.48%. GDP per capita of Vietnam and the source countries positively impacts on the FDI inflows. Whenever GDP per capita increases by 1%, the FDI inflows will increase by 11.8% (p<.022). The estimated coefficient of the distance is negatively correlated with FDI inflows at the 0.01 level, a 1% increase in the distance will lead to a 0.3% decrease in the inflows of FDI. The real exchange rate has a negative significance level at 0.01; however, the coefficient is minimal. It may reveal that the exchange rate of Vietnam Dong has not supported attracting FDI in the sample period. One reason for this weak impact may be that the Vietnam exchange rate policy in recent years has not been efficient enough to increase the competitiveness of Vietnam.

Most importantly, the results confirm that the US-China trade war has a positive correlation with FDI inflows of Vietnam at the 0.05 significance level. The findings suggest that FDI inflows of Vietnam are expected to rise by 0.57% if the trade war continues.

On the other hand, bilateral trade has no impact on the FDI inflows of Vietnam. It may be because there are still other unexplained variables or cancelation effects from other variables.

Besides, I conducted one separate regression of FDI inflows on only import and export variables (results in Table A.4, Appendix A), it is revealed that the export variable has a significantly positive correlation with FDI inflows while import does not.

7   Discussion and policy implications

FDI is a crucial element in the economic and social development of Vietnam. Policymakers should find ways to attract more FDI inflows to Vietnam. In the following paragraphs, I make some key recommendations based on the empirical results of this thesis.

It is shown from the above statistic results that both GDP per capita of Vietnam and partner countries have a positive effect on FDI inflows. This result is consistent with previous research such as Mirza & Giroud (2004) and Nguyen & Nguyen (2007). Increasing per capita GDP encourages more FDI flows to Vietnam. To achieve this target, there are several options. First, because Vietnam is an agricultural country with more than 80% of people employed in this sector, the government should restructure the economy by moving traditional agriculture to modern agriculture with high technology; and developing industry and service sectors which will yield higher productivity. Second, the labor force in Vietnam is low-skilled; therefore, it is essential to invest in education and training programs to increase technology and skilled labor. Third, besides favorable policies applied to foreign firms only, it is also necessary to increase subsidies to domestic firms so that domestic firms can improve their competitiveness. The government can incentivize foreign firms to engage with local firms. Last but not least, investing in infrastructures such as roads, railways, ports, and industrial parks increases FDI inflows not only directly (Globerman & Shapiro, 2002; SHAH, 2014; Ross, 2019) but also indirectly through GDP per capita (Esfahani & Ramírez, 2003)

According to the empirical results, countries with short distances with Vietnam have a tendency to invest more. Among the ten countries with the highest FDI in Vietnam, eight countries are in the Asian region. Rather than just being dependent on investment from countries in the region, Vietnam should further promote itself and increase investment from the EU, the US, or other countries. Geographical distance is impossible to change; however,

policymakers may consider FTA tool as evidence from previous studies prove that FTAs has a possible effect on FDI inflows (Cuong et al., 2015; Duong, Holmes, & Strutt, 2020; Parker et al., 2005)

The significantly negative sign of real exchange rate variable demonstrates that depreciation of Vietnam Dong increases the FDI inflows into Vietnam. A possible explanation for this might be that the objective of FDI corporations in Vietnam is to re-export. If Vietnam Dong is depreciated, the cost of capital investment will reduce, and the competitiveness increases. As a result, the FDI inflows increase. In this case, policymakers should carefully consider whether to depreciate or appreciate Vietnam Dong against partner countries' currencies. Nevertheless, when Vietnam Dong is depreciated too low, it may lead to a new round of inflation and financial crisis. The State Bank of Vietnam should adopt a flexible exchange rate mechanism based on a basket of major investing partners' foreign currencies.

Although the coefficient of the bilateral trade is not statistically significant in the equation (3), when conducting regression of FDI on separate import and export variable, the export variable shows a strong positive correlation with FDI inflows. This result also suggests that FDI inflows to Vietnam are oriented to export sectors, and the relationship between FDI inflows and exports is complementary. In recent years, most trading partners of Vietnam have also been FDI partners, and most exports are unfinished products. From these facts, policymakers should consider policies to develop industrial export zones, seaport infrastructure, and road systems to facilitate export in order to attract more foreign investments. On the other hand, policies to promote domestic production of potential exports of high growth and high added value should be implemented. The government can support domestic producers by sponsoring high technologies and investing in human capital training so that domestic companies can have industrial competitiveness and produce higher quality goods. Only with

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these actions can Vietnam export finished products and contribute more to the global industrial chain.

This thesis's focus is to test the impacts of the US-China trade war on FDI inflows into Vietnam. The evidence from empirical results suggests that Vietnam can make use of the trade war to attract more FDI inflows. However, Vietnam may become the "backyard" of China, which may have adverse consequences (Lam & Nguyen, 2019). For example, Chinese companies may accelerate the transfer of outdated and pollution-generating technologies to Vietnam through the FDI channel. Either Chinese companies can bring their finished goods to Vietnam through cooperation and joint-venture regime then re-export these goods as "made in Vietnam" products to the US. These practices will make the US levy high tariffs on all products made in Vietnam. Several courses of action can be taken to cope with these challenges as well as to attract FDI inflows during the trade tension between the US and China. First, there would seem to be a definite need for more selective specific policies. The local governments should carefully investigate and reject investment projects that exhibit evidence of rerouting and disguising practices. Second, Vietnam should impose stringent environmental requirements and enforcements against pollution-intensive investments. Last but not least, for a developing economy that counts heavily on FDI and exports like Vietnam, implementing fiscal policies to support economic growth is critically important. One problem with public investment in Vietnam is over-complicated disbursement procedures and inspection, so the government should make wiser decisions in using public investments, especially in strategic infrastructure projects.

In a nutshell, policies are needed and mixed together to achieve higher FDI inflows as well as minimize risks of undesirable foreign investment from China during the US-China trade war.

8   Conclusion

In my thesis, I sought to examine the impacts of the US-China trade war as well as some other determinants on FDI inflows of Vietnam. To study this, I used the panel data from 2007 to 2019 with ten main FDI partners of Vietnam and main variables, namely bilateral FDI inflows, GDP and GDP per capita of Home countries and Vietnam, distance, real exchange rate, and bilateral trade. I explored the research question with the gravity model. An augmented gravity model and trade war dummy variable were created to examine causal relations between FDI inflows of Vietnam and independent variables.

I have found that the GDP of Vietnam and the GDP of the source countries, distance, and real exchange rate have negatively significant impacts on FDI inflows. GDP variable in the basic gravity equation has a significantly positive effect on FDI inflows; however, after adding more control variables, the sign of GDP variable turns to negative. GDP per capita variable yield a strongly positive impact on FDI inflows. The coefficient of bilateral trade is insignificant in the main equation, but in the regression between FDI inflows, export, and import, export shows a positive significance level. Especially my main concerned variable Trade war also has a positive correlation with FDI inflows at 0.05 significance level. The existence of the US-China trade war increased the FDI inflows of Vietnam by 0.57%.

Limitations There are limitations in my thesis related to the panel data, the estimation methods, and the variables used. The sample size is quite small with only ten FDI investing partners and 13 years as a consequence of a lack of available data. Data was collected from various sources with a variety of definitions and calculation methods. Although all data in each variable are converted to the same base, it still may over or underestimate the effect of determinants on FDI inflows. Some factors such as government stability, government expenditures, wage rate, investment risk, free trade agreement are not considered in my models.

The reason is that my main focus is to test the impact of the US-China trade war on FDI inflows (trade war dummy variable).

Final remarks I conclude that the trade war between the US and China has a positive impact on FDI inflows of Vietnam. However, it may be a trap if China turns Vietnam into its "backyard" during the trade tension. The Vietnamese government and policymakers need to follow every move made by the US and China to desire appropriate policies for all possibilities. Although increasing FDI inflows is necessary for economic growth, Vietnam should focus on strengthening macroeconomics resilience and extending more bilateral/regional trade integration to deal with uncertainties of the ongoing trade war.

Previous studies on determinants of Vietnamese FDI inflows focus on how elements such as GDP, GDP per capita, distance, exchange rate, and trade affect the FDI inflows. There is some theoretical research about the impact of the US-China trade war on the Vietnamese economy, but there is no empirical research. This thesis contributes to the existing knowledge by employing the extended gravity model to examine the impacts of the US-China trade war.

In order to improve study models and results, a larger data set with more source countries and years should be used in the further studies. In addition, besides economic factors, social and political factors, for example, political risk, population growth, income distribution should be added to the Gravity model to capture an in-depth analysis of a broader range of determinants of FDI inflows in Vietnam.

Appendix A

Table A. 1: Data sources and description

Variable	Description	Unit	Source
GDP	PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. Data are in constant 2011 international dollars.	Million US $	World Development Indicators database, World Bank https://databank.worldbank.org/source/world-development-indicators Asian Development Bank (ADB). Key indicators for Asia and the Pacific 2019 www.adb.org/statistics
GDP per capital	PPP GDP per capita is gross domestic product converted to international dollars using purchasing power parity rates then divided GDP by the total population. Data are in constant 2011 international dollars.	Million US $	World Development Indicators database, World Bank https://databank.worldbank.org/source/world-development-indicators Asian Development Bank (ADB). Key indicators for Asia and the Pacific 2019 www.adb.org/statistics
FDI inflows	Amount of FDI inflows from 10 home countries to Vietnam	Million US $	Vietnam General Statistic Office
Trade	Sum of exports and imports between Vietnam and home countries	Million US $	General Department of Vietnam Customs

Exchange rate	Measured by CPI and nominal exchange rate	VND	CPI: International Monetary Fund (IMF) Nominal exchange rate: website (https://fxtop.com/en/historical-exchange-rates.php?MA=0&TR=1)
Distance	The geographical distance between Hanoi and the capitals of home countries	Miles	Website (http://www.indo.com/distance/)

Table A. 2: Result of Breusch – Pagan Lagrange multiplier test

```
               |        Var        sd = sqrt(Var)
      ---------+-----------------------------
        logfdi |   1.757616          1.325751
             e |    .8386852          .9157976
             u |    .0869798          .2949234

  Test:   Var(u) = 0
                      chibar2(01) =      5.84
                    Prob > chibar2 =   0.0078
```

Table A. 3:Hausman test

```
                 ---- Coefficients ----
             |      (b)           (B)            (b-B)
                  sqrt(diag(V_b-V_B))
             |       fe            re         Difference
                   S.E.
-------------+-----------------------------------------------
                   -----------------
lo~pconstant |   -9.487446      -.299003        -9.188443
                    4.047073
lo~cconstant |    11.80768      .6124489         11.19524
                    5.097001
Exchangerate |   -.0000698      -.000092          .0000222
                    .0000653
    logtrade |   -.1426958      .3937333        -.5364291
                    .1855066
         TW1 |    .5735408      .2030398          .3705011
                    .090902
-------------------------------------------------------------
                   -----------------

    Test:  Ho:  difference in coefficients not systematic

            chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                        =        16.99
                  Prob>chi2 =       0.0019
```

Table A. 4: Result of regression of FDI inflows on import and export variable

VARIABLES	(1) M2
logExport	0.460**
	(0.176)
logImport	-0.243
	(0.258)
Constant	5.158***
	(1.656)
Observations	130
R-squared	0.064

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