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THE IMPACT OF A "NEW - GENERATION" TRADE AGREEMENT ON VIETNAM'S BILATERAL EXPORTS

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Preface

Carrying out this thesis has brought both interest and challenge for my student life. I could not complete it without the massive support and encouragement from my supervisor, professors, family, and friends.

I would like to sincerely thank my supervisor, Professor Mauro Giacomazzi, for his guide and orientation. Because of him, I have a chance to apply the knowledge and devote time to do serious research about the economy of my country, Vietnam. I also want to give my big thanks to all the professors in the course the Master of Business Administration, especially to Professor Anna Giraldo for all knowledge in statistics applied in this study.

Above all, I am grateful to my parents, classmates, and friends for always standing by me whenever I was tired and stumbled.

The academic trip has come to an end, but my journey to know Italy and Italian never ends.

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Dang Thi Thuy Kieu

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Abstract

The recently-ratified Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), also known as TPP11 (Trans-Pacific Partnership), is considered as one of the "new generation" trade agreements for some countries in the region, including Vietnam. CPTPP is anticipated to boost Vietnam's trade in the third-largest free-trade area in the world by Gross Domestic Product (GDP) as a new growth engine.

The primary purposes of this dissertation are to identify the incentives behind the intra-bloc exporting activities and the trade potential of Vietnam. To accomplish these, a modified gravity model (followed Egger 2002) which involves a panel dataset covering trade between Vietnam and ten trading partners in the CPTPP region over the period 1995–2018. This paper also pictures a clear view of the Vietnamese economy, including the economic transition in the context of a more competitive business environment, the comparative advantages, and the analysis of how CPTPP could transform the domestic system of production.

The regression results suggest that Vietnam's export turnover is positively supported by the combined economic size, the similarity in country size, the difference in relative factor endowment, the bilateral real exchange rate, and the co-memberships in ASEAN or bilateral Free Trade Agreements (FTA), as well as is negatively impacted by the distance. However, the World Trade Organization (WTO) co-membership is found to hurt the intra-bloc export revenue, which is consistent with findings from other researches. Moreover, the evidence also proposes that Vietnam does still have more room to boost the flows of its local products and services to other markets in the Trans-Pacific region.

Contents

Annex

1.   Introduction

Vietnam is becoming one of the most dynamic economies in the Asian region and has been calling recent appreciation as being the next promising "tiger". After having experienced in industrialization and sustained transitions in economic systems since its economic reform in 1986, Vietnam successfully signed the US-Vietnam Bilateral Trade Agreement (BTA) in 2001, making the new era for this country after centuries of trade embargoes. After that, Vietnam became an official member of World Trade Organization (WTO) in 2007, entered into the ASEAN–China Free Trade Area (ACFTA) in 2010, ratified the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) in November 2018, and has officially signed the EU-Vietnam FTA (EVFTA) in June 2019. Those significant achievements in international integration are the results of discontinuous improvements of the economic regimes. In 2007, Goldman Sachs included Vietnam as one of the Next Eleven (or the N-11)[1]. Being considered in a range of measures (including energy, citification, infrastructure, health and technology, these eleven countries have been presenting impressive economic growth rates and are under the high expectation to become the vital driver in the globally economic transformation in future. In late 2009, the Global Forecasting Team of the Economist Intelligence Unit (EIU) listed Vietnam as a part of CIVETS, which are six promising emerging markets in future years - Colombia, Indonesia, Vietnam, Egypt, Turkey and South Africa – with the advantages of young population, relative political stability, and increase in foreign direct investments (FDIs).

The US - China trade tension has begun on March 1st, 2018 and was pointed on the customs duty for the imported steel and aluminum. Superpower countries have been increasing the protectionist actions against each other day by day. Unfortunately, there are no stop signals of this commercial trade tension. As a reaction to these economic uncertainties, many FDI companies in both countries are surging the substitutes for the

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[1] The N-11 includes Bangladesh, Egypt, Indonesia, Iran, Korea, Mexico, Nigeria, Pakistan, Philippines, Turkey and Vietnam (https://www.goldmansachs.com/insights/archive/archive-pdfs/brics-book/brics-chap-13.pdf)

current local manufacturing sites, which are directly influenced by trade barriers and restrictions at the moment.

In this context, Vietnam is considered an ideal destination for some reasons, especially after participating in the "new generation" FTAs (CPTPP and EVFTA), which are the new growth engines after WTO's accession. Its impressive economic growth rates, the geographical and cultural proximity to China, the relatively cheaper input costs as well as the FID-led and outward-orientated strategy of economic policies are also ones of the leading forces for some big companies to choose this country.

This dissertation is divided into five main parts. The first is about the introduction and the general incentives for choosing Vietnam under the global business uncertainties. The second part is related to the industrialization and economic transition of the country. The third part mainly refers to the comparative advantages of Vietnam in the international business market. The fourth offers an in-depth analysis that figures out the impacts of CPTPP agreement on Vietnam's economy and trades. Finally, it focuses on the study of the determinants of Vietnam's bilateral exports and trade potentials in the Trans-Pacific region by involving the modified gravity model.

2. The economic transition in Vietnam

2.1 The economic revolution followed China's reform

After the Vietnam War in 1975, Vietnam was one of the lowermost countries in the world in terms of income. The country faced an economic crisis with below-$300 Gross Domestic Product (GDP) Per Capita, slow growth rate, and up-to-775% inflation in the 1980s. Moreover, the combination of the after-war international isolation, the US's trade embargo and the decline in Soviet aid made the slowdown of economic growth worse. Before becoming the third biggest rice exporter in the world at the present, Vietnam once struggled in feeding its people.

Vietnam borders China in the north. The proximity in geography has been tying Vietnam in a wide range of common things with China, including the language, history, culture, and economic development. Besides, Vietnam and China are two among the last communist states in the world. In 1986, "Đổi Mới" (in English: "Renovation"), a series of economic and political reforms, was initiated by the government to create "a socialist-oriented market economy". *Doi Moi* was considered to follow China's economic reform in 1978 carefully that had already worked wonders. In which, Vietnam, similar to China, faced severely financial problems causing by the centralized planning systems and monopoly of power of the communist party for years, then decided to adopt some principles of the market economy to overcome poverty.

Modeling China's reforms, Doi Moi started in agricultural sectors, which play the most critical role in Vietnam's economy. The government put an end to agricultural collectives, terminated the price management on agricultural stocks and products. In the following steps, the majority of the centralized economy was terminated. The government was decentralized, price controls were ended, and a market-driven mechanism took the place of inefficient government monopolies. Private entrepreneurs and foreign investments were encouraged to engage in the majority of economic activities and opened vital sectors, including agricultural ones.

The economic transformation of Vietnam attained impressive accomplishments in the first 20 years of Doi Moi (1986-2006) with about 7.5% average GDP growth rate, which significantly soared from 2.79% in 1986 to 9.54% - the highest in 1995, as given in Figure 1. The economy has maintained the annual growth rate in the range 5% - 7% until the present, making the average GDP growth rate achieved at 6.6% over 30 years of Doi Moi (Source: World Bank data). In 2018, Vietnam's economic growth was at 7.08%, marking its highest rate in 11 years after overpassing the previous year 2017 of 6.8%. Vietnam is becoming one of the fastest-expanding economic systems all around the world and is achieving the second-strongest growth in the region, behind Cambodia (Figure 8, page 15). Continuous improvements in economic sectors have lifted it from one of the poorest

countries up to the lower middle-income class. The government has created numerous jobs for million people, and the living standards has been increasing year by year. In 1992, 52.9% of the population lived on less than $1.9 a day. In 2016, this figure was just 2% (Source: World Bank data). Other comprehensive data are showing the improvement in GDP Per Capita, which significantly increased from $95 in 1989 to $2,564 in 2018, 27 times after 30-years (Figure 2).
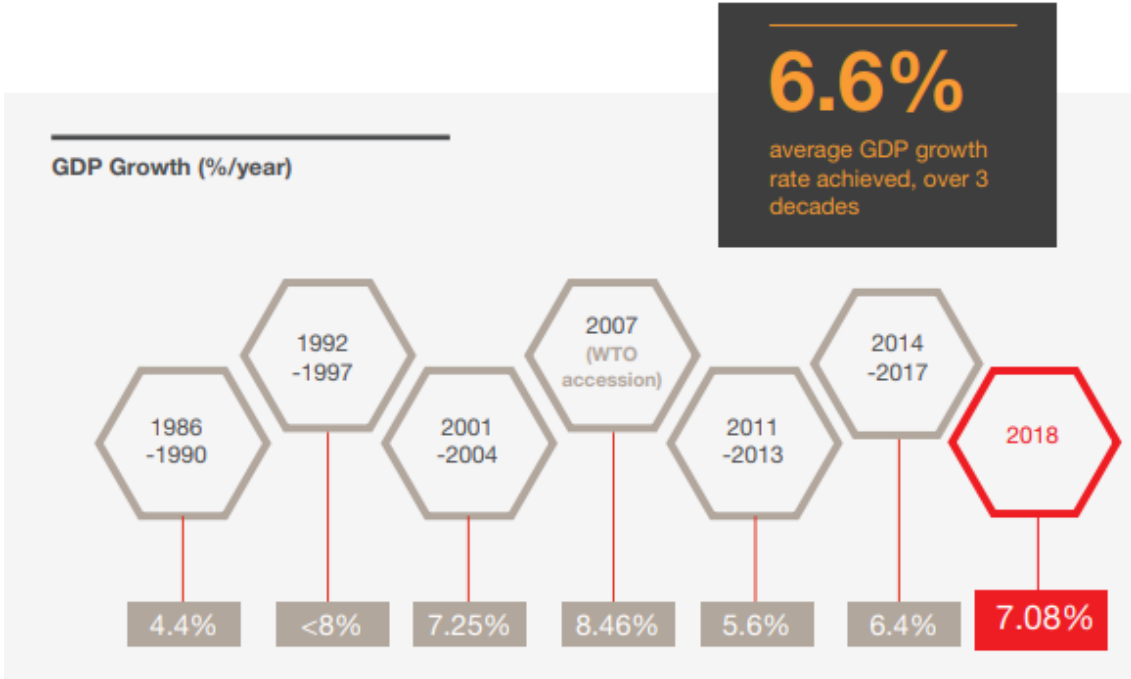

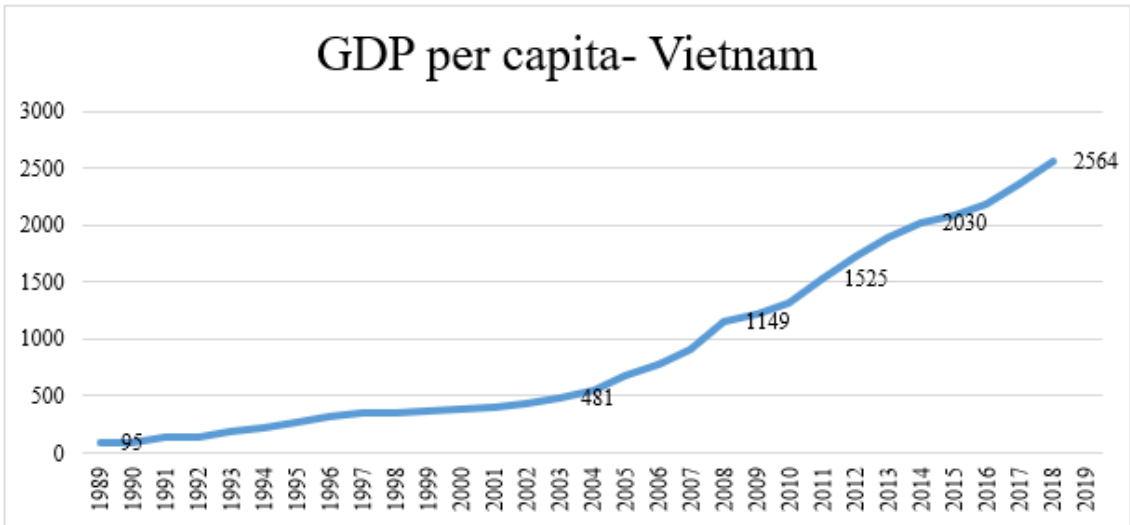*Figure 1- GDP growth rate of Vietnam 1986-2018*

(Source: Pwc)

Figure 2 - GDP per Capita - Vietnam (1989-2018)

(Source: World Bank)

Looking ahead, the Asian Developing Bank (ADB) has projected Vietnam's GDP to grow by 6.8% in 2019, and 6.7% in 2020 while controlling the expected inflation rates by 3.0% and 3.5% in the same years.[2] In a long time until 2050, the global economic power will expectedly continue following the international megatrends, shifting away from the established advanced economies in North America, Western Europe to China, India, and other major emerging economies. In this context, Vietnam is forecasted to be one of the fast-enlarging and enormous economies over the period to 2050.

2.2   Transition in the export structure

By promoting the industrialization and modernization process in the whole nation as a significant motivator, export activities have been strategically planned to play as a key driver for Vietnamese economic development. Vietnam has regarded the orientation in encouraging trade and export, as well as the global economic integration as the priority when building the trade policy approach. The global and regional trade integration (which will be discussed further in Session 3.2.3 – Strong-built integration networks) has been fully utilized as a national strategic instrument to boost economic growth, as well as to ensure the national interest and security through increased economic power.

Vietnam took the 22nd position for the number of exporting products and services all around the globe in 2018[3] and was the 83rd most sophisticated economy, as stated by the Economic Complexity Index 2013-2017[4]. In 2018, Vietnam shipped an estimated $244 billion worth of goods around the globe, gaining 60% compared to the year 2014 and roundly 15% higher value than that of 2017. Among exporting products, the following export products took account for the highest dollar value in Vietnam's global shipment during 2018 (Table 1):

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[2] The Asian Developing Bank – *Vietnam Economy*: https://www.adb.org/countries/viet-nam/economy
[3] Central Intelligence Agency
[4] The Economic Complexity Index measures the knowledge intensity of an economy by considering the knowledge intensity of the products it exports

Rank	Products	Export value ($ Bil.)	% total export
1	Phones and accessories	49.2	20.2 %
2	Textile, sewing products	30.5	12.5 %
3	Electronic parts, computers and their parts	29.6	12.1 %
4	Footwear	16.2	6.7 %
5	Wood and wooden products	8.9	3.7 %
6	Rucksacks, bag, pockets, wallets, hats	3.4	1.4 %
7	Fishery products	8.8	3.6 %
8	Fresh and processed vegetables & fruit	3.8	1.6 %
9	Coffee	3.5	1.5 %
10	Shelled cashew nut	3.4	1.4 %

Table 1 - Top 10 exporting product categories of Vietnam in 2008
(Source: General Statistics Office of Vietnam)

There is a significant shift among the top product contributors in Vietnamese' export categories, which shows a gradual decrease in labor-intensive products (Figure 3). In more than ten years from 2000-2011, the main drivers for export growth of the country belonged to textile, sewing products, footwear, and agriculture goods, holding around 25% of the total export revenues. Vietnam has even contributed a critical node in the global value chain of labor-intensive industries, including apparel and footwear. The year 2012 recorded a significant change in exporting structure of Vietnam, marking a booming increase in the phones, computers, electronic parts, and related accessories' export turnover. Since this year, these sectors increased 47% yearly on average for the period 2012-2018, contributing to the 2-digit growth rate of the total export revenue in the same period. High-tech products, particularly mobile phones, have emerged as newly leading export categories. In 2017, Vietnam was in the third position in exporting phones and accessories, segmenting 11% of the global market and running up from sixth place in 2016. This exporting shifting goes well with the direction of the socio-economic

development strategy, putting more weight on the manufacturing industries and innovation for sustainable economic development.
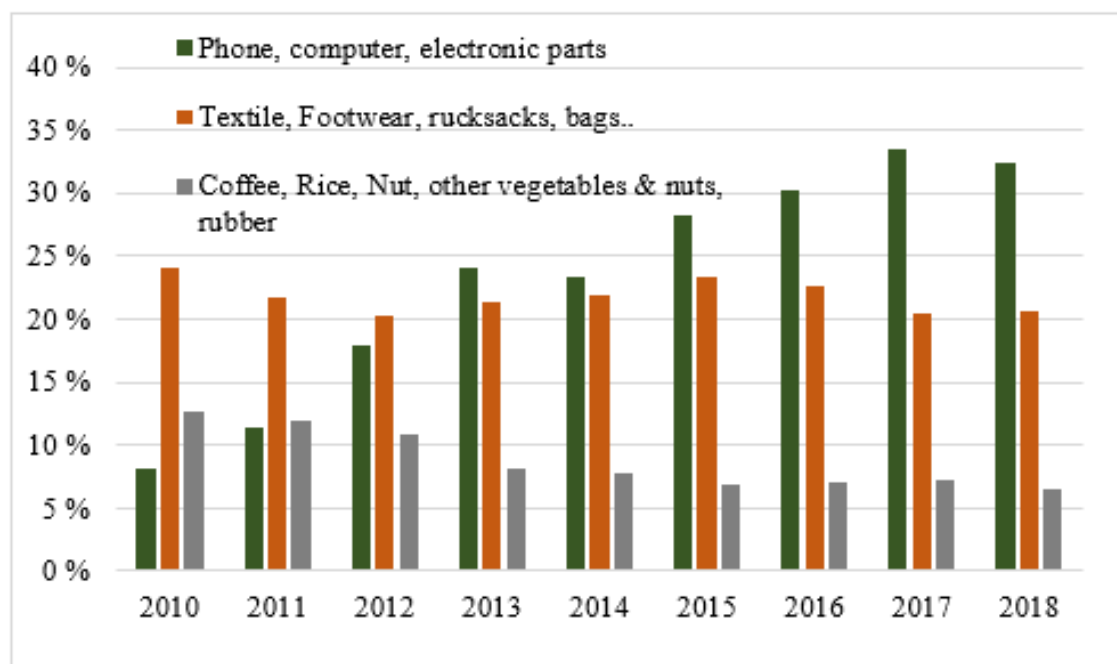
Figure 3- Change in the top 3 of Vietnamese export, 2010-2018
(Source: General Statistics Office of Vietnam)

The transformation in export pyramids has built a strong bedrock and incentive for the government to implement its intensive construction in labor force and infrastructure. Moreover, this change has incorporated related and supported organizations, including companies, administrative agencies, financial institution, vocational schools and universities. Those organizations do not only establish industrial clusters to appeal more investments from private and foreign investors but also intensify mutual network relations and interaction through competition and cooperation, which eventually create innovation.

3. Vietnam's comparative advantages for international trades

Over more than 30 years since the Doi Moi reforms, Vietnam has become an attractive destination to foreign investors. 2011's Per Capita Income of $1,260 marked the country's economic transformation from the bottommost layer of income in the world to a lower-middle-income class after 25 years. Up to the minute, the Vietnamese economy

is sized at $224 billion approximately, equal to 70 per cent of the economic scale of Singapore ($324 billion). It is also placed at the sixth-largest position in the ASEAN, after Indonesia, Thailand, Singapore, Malaysia, and the Philippines. If Vietnam possibly prolongs the annual growth speed in the range of 6-6.5 percent in the subsequent decade, and Singapore continues to maintain a matured rate of about 2.5 percent annually in the same time, the scale of these two economies in real GDP will be expected to converge by 2029.[5]

Vietnam has been becoming a blueprint of economic development and internationalization of other emerging markets (Eckardt, Mishra, and Dinh, 2018). The global economy has been facing the standstill in growth rates, and the world is afraid of upcoming recessions as the results of the trade tensions, geopolitical conflicts, and other risks. In this context, Vietnam's manufacturing sectors have progressively enlarged, adding an approximated 1.5 million new jobs in the period of 2014 - 2016 solely.[6] As a result, Vietnam's economy took the top ranking in GDP per Capita growth rate and second place in the GDP growth rate among the Southeast Asian countries in 2018 (Figure 8, page 15).

So, what is the reason behind the miracle of Vietnam's achievements? The underlying causes are categorized into two groups: the basic foundations and the country's building-up comparative advantages. The former includes demographics and wages, and geographical location while the latter refers to the decisions made by the government, such as investments in human and infrastructures, a combination of domestic reforms and globalization, and trade policies with critical players in the global economy. Vietnam's geographical position in the regional supply chain and its extensive network of FTA are crucially favorable assets among its pool of comparative advantages.

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[5] DBS Group – Group Report, 2019, *Economic & Strategy – Understanding Vietnam: The rising starrising star*
[6] Sebastian Eckardt, Deepak Mishra, and Viet Tuan Dinh , 2018, *Vietnam's manufacturing miracle: Lessons for developing countries*, https://www.brookings.edu/blog/future-development/2018/04/17/vietnams-manufacturing-miracle-lessons-for-developing-countries/#cancel

3.1 Basic foundations of Vietnam's economy

3.1.1 Strategic location

The most favorable factor in creating foundations for Vietnam is geography. Vietnam is positioned in the center of Southeast Asia. This nation shares the common border with China to the north, Laos and Cambodia to the west, and the Gulf of Thailand, Gulf of Tonkin, and the Pacific Ocean to the east and south. It is a part of the South East of Indochinese peninsula, which is the boundary of the adjacent area between Eurasia and Oceania vertically, and the nautical gate for the Pacific Ocean and the Indian Ocean horizontally.

Figure 4 - Geographical location of Vietnam

The prime location that left Vietnam under the scrutiny and colonization of other major countries in the past has been creating an opportunity for the country's economic reformations after getting its independence. Vietnam is on the crowdedly nautical West-

East line and Hong Kong – Singapore, enabling the country to be a center of internationally marine transportation and to develop the topnotch world ports.

The bonus to Vietnam's location is that it shares the common border with China and closes to the manufacturing heartland of southern China. It is far less than 1,000 km from Hanoi to Guangzhou, Hong Kong and it takes less than four hours from Hanoi to Beijing, Shanghai, or Taiwan. The proximity of the most developed regions of China turns Vietnam to be an alternative destination for foreign investors who are looking for a place to diversify their portfolio or to reduce the inherent risks and complexity in investing into big countries like China or India. Moreover, it is easily to reach other major global supply chains, such as Singapore, Kuala Lumpur, Bangkok, Tokyo, Seoul, Jakarta, New Delhi, Mumbai from Vietnam.

3.1.2 Dynamic population structures, large workforce and potential market

The second factor contributing significantly to the development of Vietnam's economy is the demographic structure. The entire population of this country was recorded at about 95 million people as the end of the year 2018, of which: the metropolitan population was 33.83 million persons for 35.7%; the rural community was 60.84 million persons, holding 64.3%; and the employed population was around 54 million persons, taking 57%.[7]

Vietnam has been encountering a remarkable transformation in its demographics that shows an expansion in the labor force and a reduction in dependency ratio over 30 years of 1990-2019. Fertility rate has decreased significantly from a high value of 3.56 to 2.049 (forecasted) births per woman for the period 1990-2019, showing the same pattern as mortality rate. Life expectancy increases over time from 70.55 to 75.37 years. Median

age increases gradually about 5% per year for this period, reaching 30.9 in 2019 (Figure 5).

The effect of young population structure into the economic growth of Vietnam for more than 30 years of Doi Moi has not been revealed officially yet. However, many studies show that the population structure in Vietnam has reached a level significantly impacting on all sectors of the economy. Nguyen Thi Minh (2009) concluded her research of "Dynamic demographics and economic growth in Vietnam" published in Journal of the Asia Pacific Economy that the demographic change contributes around 15% of economic growth during the period 2002-2006, which was ahead the time Vietnam being an official member of WTO in 2007.
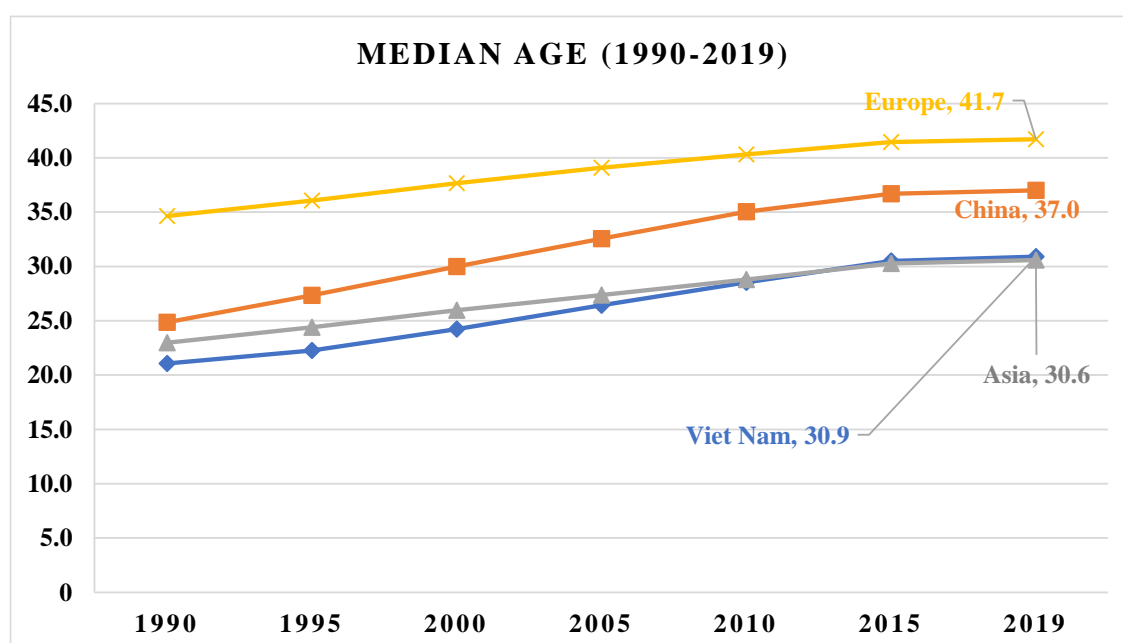
Figure 5 - Median Age of Vietnam and other countries/ regions

(Source: United Nations, World Population Prospects 2019, and worldometers.info)

As a result of predicting age structures of the population in China, India, and Vietnam by 2030 (Wei et al., 2019), Vietnam's demographic composition will be expected to follow that of China but still maintain its good health as a whole. Meanwhile, China will no longer benefit from the population dividend and suffer from an ageing problem more than that of Vietnam. As in this research, for Vietnam, the middle-aged people (aged 15-64) is taking account for 67.27% of the population while the proportions of the young people

and the elderly are 22.56% and 10.18%, respectively. That means that in the next ten years, Vietnam's population pyramid still enjoys its healthy status in both providing efficient laboring resources for the current economy and in ensuring the future workforce for the long run. Therefore, the Vietnamese government must manage well this natural comparative advantage to promote human capital and technology, transforming the economy into the next level before suffering from arising ageing problems.

The relatively young population and being one of the most massive labor forces in Southeast Asia add to Vietnam's appeal. Moreover, 64% of the total population lives in the countryside, giving Vietnam's average labor cost relatively cheaper than other countries, such as China and other ASIAN countries (Figure 6). Workers in the manufacturing sectors in Vietnam are paid less than half what is paid for Chinese peers. Besides, the availability of rural workers will help ease wage pressures, giving Vietnam the time to develop labor-intensive industries, a must for a country of nearly 100 million people.

Figure 6 - Manufacturing worker's monthly wage - October 2017

(Source: Japan External Trade Organization)

<u>Note:</u> Data in Figure 6 is the base salary as of October 2017 and exchanged to the US Dollar using the average exchange rate of the month.

3.2   Building-up comparative advantages

This session concentrates on what differentiates Vietnam's comparative advantages based on what the government sets on its road to open the economy and appeal the private and foreign investments. Many countries have the power of young workforces, but not all of them implements effective policies. Since Vietnam appreciated the openness to international trade and investment after Doi Moi, the government has carried out many supportive policies to encourage the FDI inflows. Trade amount has significantly increased since Vietnam joined WTO in 2007. In 2018, trade value accounted for nearly 200% of national GDP, higher than any peering country at the same level of GDP Per Capita.

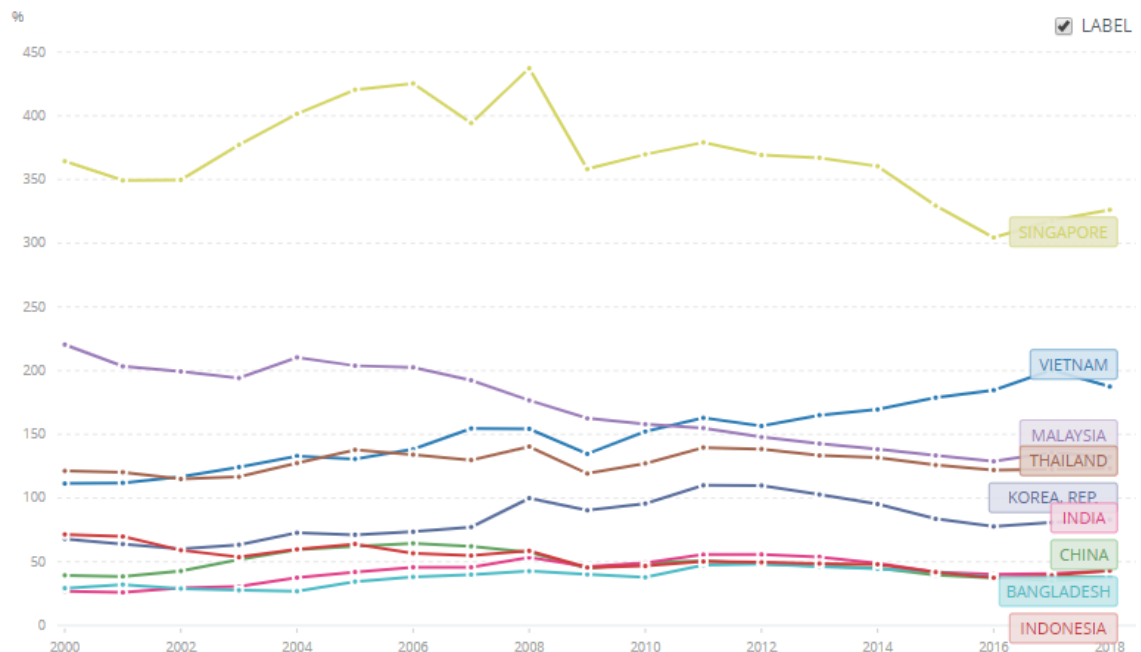*Figure 7 - % Trade of GDP of Vietnam and other countries in the same region*

(Source: World Bank)

3.2.1 Focusing on long-term economic stability and sustainability

In Vietnam, the documents for socio-economic development policies differ in the reach of the temporal and geographical scope. At the state level, there are three types of materials that need to be considered. Among them, the socio-economic development

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strategy (SEDS), which is a ten-year plan, is regarded as a blueprint for Vietnam's socio-economic direction.

Document	Characteristics	Approving body
Ten-year Socio-economic development strategy	Nationwide, 10-year. Define political vision for long-term establishment. Sets priorities for national, sectoral and regional missions and goals.	Communist Party of Vietnam
Five-year socio-economic development plan	Nationwide, 5-year. Concretizes the sectoral master plans and strategic actions.	National Assembly
Annual socio-economic development plan	Nationwide, annual	National Assembly

Being exposed from the economic crisis and poverty in the past lays a robust foundation for Vietnam's economic conversion. The Government's Resolution 11 was released in February 2011 to trigger the strategic planning and actions for financial stability by stabilizing the macro-economy, boosting production and business, encouraging export, curbing the trade deficit, and ensuring social security. Based on that, the 10-year Socio-Economic Development Plan for the period of 2011-2020 (SEDP, 2011-2020) was published in the same year, putting sustainable development at the heart of the economic strategy.

A year later, the 5-year Socio-Economic Development Plan for the period of 2011-2015 (SEDP, 2011-2015) paid attention to the complete restructure. SEDP, 2011-2015 covered restructuring the state business groups and corporations, industries and sectors, financial markets with a focus on the system of commercial banks and financial institutions, public investments, creating the solid foundation for Vietnam to become a modern-oriented industrialized nation.

Following the success of its predecessor, the 5-year Socio-Economic Development Plan for the period of 2016-2020 (SEDP, 2016-2020) continues to promote socio-economic stability and sustainability as well as stimulates the execution of decisive breakthroughs, economic reconstruction coming with growth model innovation and upgrading productivity, effectiveness, and competition. SEDP, 2016-2020 also emphasizes the role of proactive international integration and boosts the involvement of non-state-run sectors with appropriate state financial resources.

Since then, the economic performance has been blooming with a significant increase in the GDP growth rate. The average GDP growth rate is 6.4% for the period 2014-2017, reaching its peak of a decade in 2018 at 7.08% and being expected higher in 2019. Meanwhile, the inflation rate is maintained at 3.17% in the same period. Moreover, Vietnam is going to outpace many regional peers in a number of sectors. Among Southeast Asian countries, Vietnam's GDP growth and GDP per capita have been standing on the top out of the others.
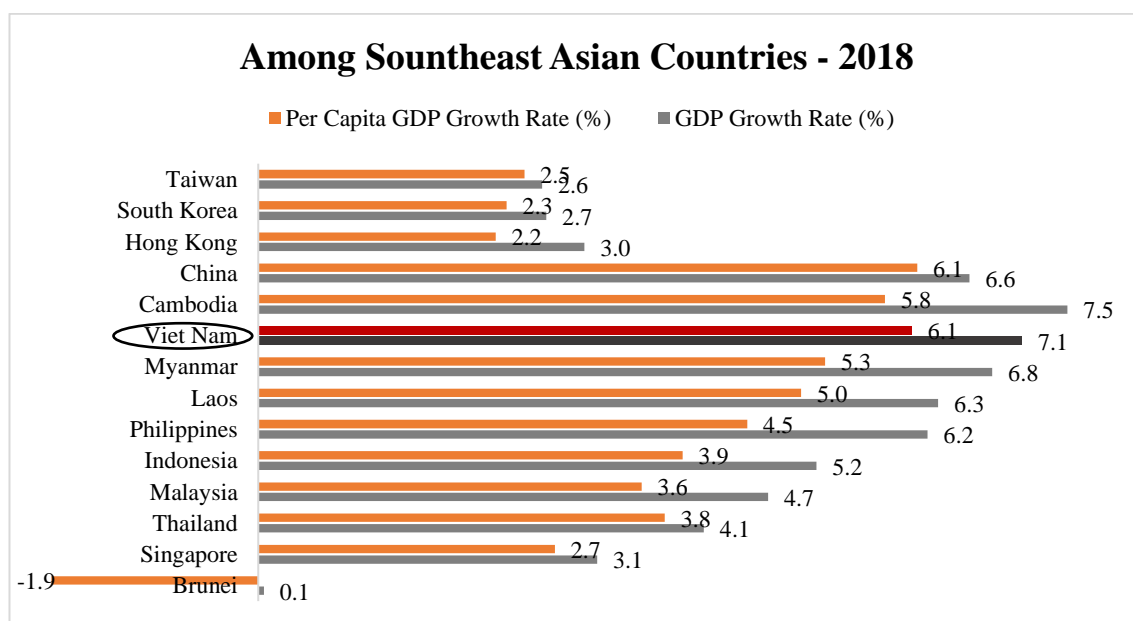
Figure 8 - GDP growth rate and Per capita GDP growth rate for Southeast Asian Countries - 2018

(Source: ADB Bank)

More considerably, the National Assembly and policymakers are directing more attention to the long-lasting, sustainable development of the entire economy than the speed of GDP growth. Domestic reformations, productivity improvement, environmental targets, human resource management, and more are on the way. Based on those supportable policies, the outlook of Vietnam's economy is positive in the long run. It is expected to participate in the list of the relatively developed countries in the region shortly regarding the size of the economy. For instance, as in the report "the World in 2050: Will the shift in global economic power continue" done by PricewaterhouseCoopers UK, Vietnam will be the 22nd largest economy on the planet by 2050 based on GDP in purchasing power parity (PPP) term.

3.2.2 Investment for the future - human capital and infrastructure

It has been more than 30 years since Vietnam opened the door to welcome foreign investors. To date, FDI has become a critical sector of the economy, yielding remarkably to socio-economic development. The amount of FDI flowing into Vietnam has been increasing over the years, especially after its WTO accession in 2007.
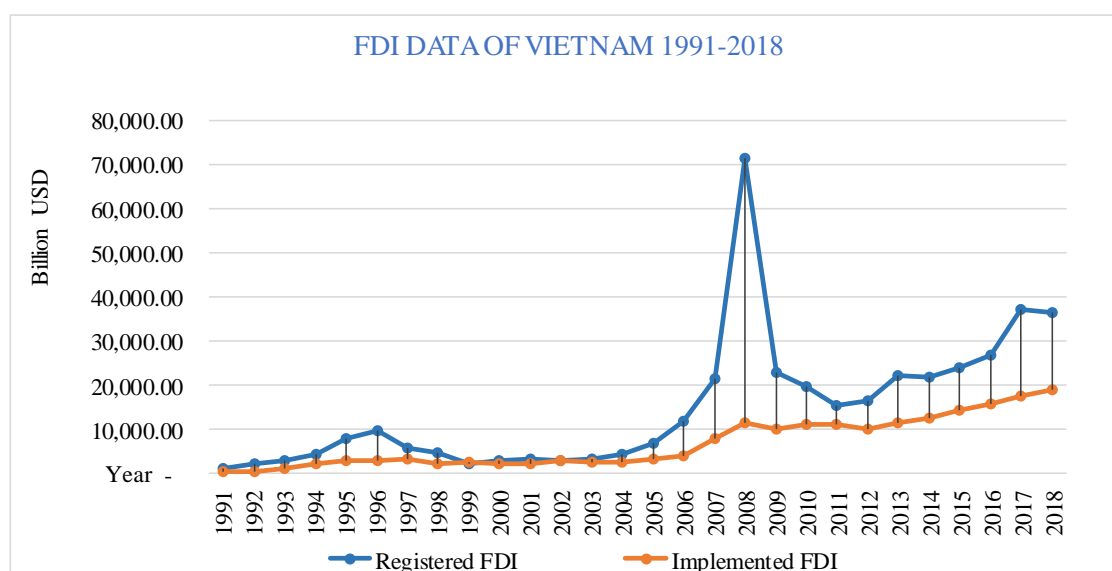

Figure 9 - Data of Vietnam's FDI (1991-2018)

(Source: General Statistics Office of Vietnam)

In the ASEAN region, Vietnam is one of the largest FDI recipients, attracting $36.4 billion in registered inflows with 3,147 projects, in which more than $15.5 billion was

implemented in 2018 (Source: ASEAN FDI Database) or $19.1 billion following the source of the General Statistics Office of Vietnam (the variance of $4.6 million would come from the difference in timing of record) (Table 2):

FDI Flows in ASEAN, 2015-2018 Billions of dollars				
Host	2015	2016	2017	2018
Singapore	59.7	73.9	75.7	77.6
Indonesia	16.6	3.9	20.6	22
Viet Nam	**11.8**	**12.6**	**14.1**	**15.5**
Thailand	8.9	2.8	8	13.2
Philippines	5.6	8.3	10.3	9.8
Malaysia	10.2	11.3	9.3	8.1
Myanmar	2.8	3	4	3.6
Cambodia	1.7	2.3	2.7	3.1
Lao People's Democratic Republic	1.1	1.1	1.7	1.3
Brunei Darussalam	0.2	-0.2	0.5	0.5
ASEAN	**118.6**	**119**	**146.9**	**154.7**

Table 2 - FDI Flows in ASEAN for the period of 2015-2018
(Source: ASEAN FDI Database)

Investment in infrastructure

Shorting of capital is one of the disadvantages of Vietnam's resources. Therefore, FDI is the primary channel to bring financial leverage to Vietnam's economy and to its local manufacturing value chains. Understanding that, the Vietnamese government has set a variety of policies to attract FDI's inflows. Improving infrastructure is one of the key focuses of the government, covering all sectors: power, transport, telecommunications, water and sanitation to encourage more investments from private and FDI players and to build the capacity for longer-term growth.

The urban network attached with synchronous, contemporary and environment-friendly infrastructure, particularly in sizable metropolitan zones has been gradually built, following the sustainable development. While many peers in the region also invest in infrastructure, Vietnam is doing that more heavily compared to the economic size of the country. It is the only country committed to spending more than 5% of GDP on infrastructure.[8] Vietnam's share of infrastructure expenditure to GDP is 5.8%, higher than any other countries in ASEAN. Transportation infrastructure connecting the North and the South of the country and in disadvantaged areas is prioritized. The big metropolitan areas, including Hanoi, Ho Chi Minh City, Binh Duong, Da Nang, are on their ways to improve transportation networks and facilities. Moreover, highly integrated and dedicated economic zones, manufacturing sites and clusters, hi-tech parks and agri-tech zones are focused on affording the growing pace of FDI inflows. It is recorded that 326 industrial parks would be established by the end of 2018, in which 250 ones would be in operation.

Selected countries	Infrastructure spending per capita (2017)	Education spending per capita (2017)	Infra-structure rank	Human Skills score	Global competitiveness index
			Out of 141 selected countries (2019)		
Singapore	2.30 %	2.90 %	1st	19th	1st
Malaysia	1.80 %	5.00 %	35th	30th	27th
Thailand	1.70 %	4.10 %	71st	73rd	40th
Indonesia	2.60 %	3.60 %	72nd	65th	50th
Vietnam	**5.80 %**	**5.80 %**	**77th**	**93rd**	**67th**
Philippines	2.20 %	2.40 %	96th	67th	64th

Table 3 - Infrastructure and Education data of selected ASEAN countries

(Source: ASEANstats Database, The Global Competitive Report 2019)

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[8] The Asian Develop Bank, *Meeting Asia's Infrastructure Needs*

As an emerging market, Vietnam cannot maintain the growth rate without sustainable infrastructure. It is projected that to achieve that growth, Vietnam needs to spend average $25.5 billion per annum on infrastructure for the upcoming period 2020-2040 if the country wants to match the performance of its best performance peers and to continue its current trends[9]. Because of the restriction on the fiscal capacity to self-finance all infrastructure requirements on its account, the Vietnamese government has shown its openness to welcome FDI and private sectors to large infrastructure projects to meet this demand.

Investment in human capital

According to the Global Competitive Index 4.0 2019 released by The World Economic Forum, Vietnam is ranked at 67th out of 141 countries selected in the report, upgrading from 77th position in 2018. However, the human skill indicator is still relatively low, placing the 93rd position.

Understanding that shortcoming of skills of the large labor force, the Vietnamese government has been continuously investing intensively in education and human healthcare. Vietnam is one of the countries showing a great interest in education, maintaining roundly 20% of total budget expenditure of the government in recent years. It is also on the top of education expenditure out of GDP among ASEAN member states (Table 3, page 18).

Investments in people are central to the economic and human development, delivering considerable premium in the long run. It makes time for the benefits of these investments to materialize. At this regard, the World Bank Human Capital Index[10] is an appropriate

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[9] The Global Infrastructure Outlook, *Vietnam case* (https://outlook.gihub.org/countries/Vietnam)

[10] The Human Capital Index (HCI) database provides data at the country level for each of the components of the Human Capital Index as well as for the overall index, disaggregated by gender. The index measures the amount of human capital that a child born today can expect to attain by age 18, given the risks of poor health and poor education that prevail in the country where she lives. It is designed to highlight how improvements in current health and education outcomes shape the productivity of the next generation of workers, assuming that children born today experience over the next 18 years the educational opportunities and health risks that children in this age range currently face. (Source: World Bank)

measurement of long-term human investment, ranking Vietnam as the second place among ASEAN countries and relatively comparable to China (Figure 10).
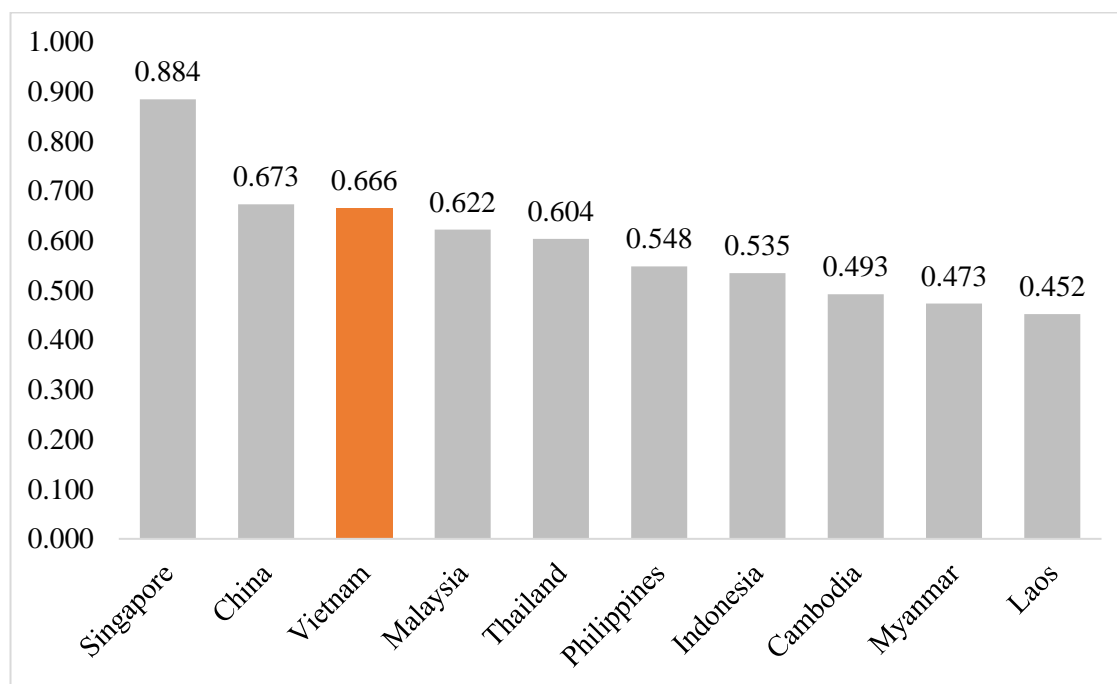
Figure 10 - The Human Capital Index 2018, ASEAN and China

(Source: World Bank)

When other competitive advantages are gradually depreciated over time, labour productivity is expected to become the upcoming focus to upgrade the country's investment and international integration. Even though labour productivity in Vietnam is still relatively low compared to other regional peers but has been improved along with the innovative process and economic development, reducing the relative distance between Vietnam and other ASEAN members gradually.

The labour productivity measuring at the current price was about $4,521, increasing by 6% compared to 2017. On average, labour productivity increased by 5.77% annually between 2016-2018, higher than that figure of the previous period 2011-2015 (4.35%).[11] Adjusted for the Purchasing Power Parity 2011, the labour productivity growth of Vietnam was marked at 4.8% annually between 2011-2018, higher than that number of

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[11] The General Statistics Office, Vietnam
https://www.gso.gov.vn/defarlt.aspx?tabid=382&idmid=2&ItemID=19315

Singapore (1.4%), Malaysia (2%), Thailand (3.2%), Philippines (4.4%). This achievement helps Vietnam reduce the relative gap between itself and other peers. However, the absolute distance of labour productivity is still significant and requires much effort from the Vietnamese government to catch up with other ASEAN member states. Recently, the Resolution 52-NQ/TW, which was activated on 27th September 2019 about guidelines for participating in the Fourth Industrial Revolution, figures out that labour productivity will be managed to increase 7% annually by 2025.

3.2.3 Strong-built integration networks

Hanoi and Washington did start to normalize relations under the Bill Clinton administrations in 1995 after a 20-year hiatus of severed ties. Then the bilateral relationship developed expeditiously under the administrations of Presidents George W. Bush and Barack Obama. Vietnam has broadened the economic and political exchanges with the US to neutralize the growing influence of China over the country. Since then, Vietnam's economic internationalization has been stimulated dynamically in diversified forms, following a comprehensive roadmap towards integrating global rules and standards. Vietnam has progressively opened its markets by building bilateral relations and participating in multilateral mechanisms in trade, investment, and finance. Joining WTO can be seen as a milestone making the country's first step toward integration.
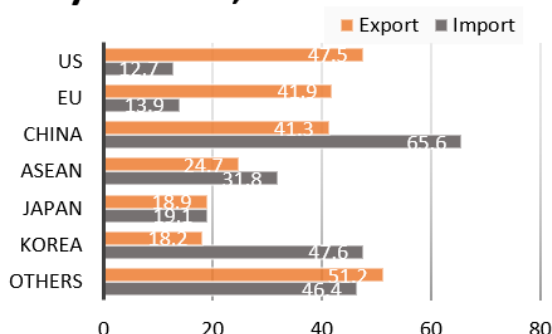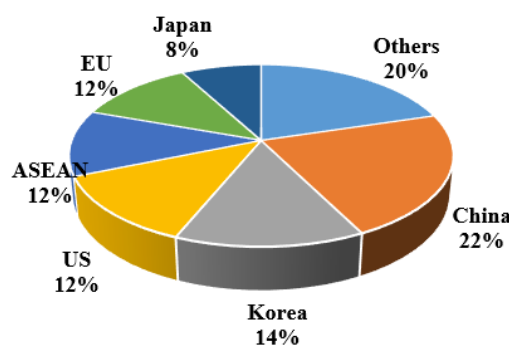
Figure 11 - Key traders of Vietnam
(Source: the general statistics office of Vietnam)

21

In 2018, China, South of Korea, the United States of America, the ASEAN, the EU, and Japan together held nearly 80% volume of the two-way trade of Vietnam (Figure 11). This is the result of its hardworking effort to tighten up the bilateral relationships and trade agreements with these countries and regions in years. In terms of integration degree, Vietnam has involved deeply in the ASEAN Economic Community and with other Asian countries, such as Japan, South of Korea, and China more than other active FTAs. However, the country leaders have not stopped looking for new opportunities to get Vietnamese products into more potential markets but with higher requirements by looking for more opportunities for joining FTAs with other partners in broader geographical reach.

Until the present, Vietnam has become a member of all major international organizations and involved in 16 free trade agreements (FTA) in total, including both collective and bilateral FTAs. *"When all 16 of Vietnam's Free Trade Agreements[12] come in to effect in 2020, the country will belong to a huge economic network of 59 partners, including 5 permanent members of the United Nations (UN) Security Council, 15 members of the G20, and other emerging economies"* (Whitebook 11th Edition, 2019, Eurocham Vietnam). If Vietnam exploits the "new generation" FTAs with crucial partners, including the EVFTA, the CPTPP and the RCEP (Regional Comprehensive Economic Partnership) in the upcoming years, there will be more rooms for the economic boom.

In the face of accelerating international tensions and decreasing economic growth, the EU and Vietnam have proven to be robust trade partners[13]. The EU sustains the strategic economic partner with Vietnam as one of the most critical exporting markets. In 2018, the EU took account for 17% global export of this nation as well as came to be the fourth-largest trading partner of Vietnam with the two-way trade up to $56.3 billion. Vietnam's exports to the EU have been growing 11% year-on-year on average, which presents how important the EU market is in Vietnam's economy. The bilateral relationship has been strengthened since the EU-Vietnam Free Trade Agreement (EVFTA) was officially

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[12] The complete list of Vietnam's FTAs is on the annex A
[13] Whitebook 11th Edition, 2019, Eurocham Vietnam

signed on 30th September 2019, expecting Vietnam to access more advanced trades with the EU.

Regarding the CTPP, it involves 11 economies: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. The CTPP officially entered into force for Vietnam on 14th January 2019, marking the 7 out of 11 countries to ratify the agreement (Brunei, Chile, Malaysia, and Peru have remained). Once fully exercised, the CPTPP will construct a sizeable Pacific-rim trading bloc incorporating a market size of more than half a billion people and accounting for 13.5% of the global GDP.[14] The CPTPP marks a new step in the internationalization of the country, bringing direct and massive privileges to Vietnam from trade integration and upgraded market entrance. Above all, it is expected to encourage and enhance domestic reforms in various areas. "Even under conservative assumptions, the report estimates that CPTPP would increase Vietnam's GDP by 1.1 percent by 2030. Assuming a modest boost to productivity, the estimated increase of GDP would amount to 3.5 percent from CPTPP," according to Ousmane Dione, World Bank Country Director for Vietnam.

4.   How the CPTPP impacts Vietnam's economy and export activities

4.1   An overview of the CPTPP agreement

The CPTPP originally commenced in March 2010, when formal discussions for its predecessor - the Trans-Pacific Partnership (TPP) - was launched. The intended members had extended from seven to nine to eleven to twelve until 2016. Unexpectedly, at the time the deal was at last completed, the U.S President Donald Trump took the United States out of the deal in January 2017. Most officers supposed that that action would put an end into the TPP. However, the Japanese Prime Minister suggested to revive the deal by changing the name to The Comprehensive and Progressive Agreement for Trans-Pacific

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[14]Riyaz Dattu, Gajan Sathananthan, 2019, *CPTPP implemented in Vietnam*
https://www.osler.com/en/resources/cross-border/2019/cptpp-implemented-in-vietnam

Partnership (CPTPP, or TPP11) and adjusting/ resolving/ freezing some of the provisions among remaining members.

On 8th March 2018, the formal signing ceremony was taken place in Chile to sign official agreements between 11 members (Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam). In spite of a dramatic decrease in size since the United States withdrew its signature out of the TPP trade agreement, the new CPTPP is still an impactful deal in its own right. At the time of signing, the total pooled GDP of 11 member states represented 13.5% of global GDP, which was equivalent to $13.5 trillion. CPTPP is the third most significant trade agreement in the world at the moment, standing behind the North American Free Trade Agreement (NAFTA) and the European Union with gross GDP of $20 trillion and $19 trillion, respectively. [15] The CPTPP is not powerful enough to change the rule of international trades as the original TPP's ambition when standing alone, but still significant for its potential. The deal keeps appealing to the United States if this nation still urges to "rewrite the rules of the road for trade in the 21st century" as it stated in the former TPP, making a possibility of a material reversal in international trade in future. Moreover, many other countries, including the United Kingdom, Taiwan, Colombia, Indonesia, South Korea, and Thailand have announced interest in CPTPP, which is prospective to stimulate export turnovers and strengthen globalization.

TPP is an "ambitious, high standard" deal. And CPTPP inherits a majority of the provisions from the original agreement, preserving TPP's high level of ambition on trade rules and market access when it enters into forces in each member. With 30 chapters in total, the CPTPP rule book covers virtually all aspects of trade among 11 members. Out of the whole agreement, just some traditional issues are addressed, including the market access for goods, rules of origin and origin procedures, trade remedies, sanitary and

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[15] The Diplomat, 2018, *TPP 2.0: The deal without the US* https://thediplomat.com/2018/02/tpp-2-0-the-deal-without-the-us/

phytosanitary measures, customs administration, technical barriers to trade, investment, cross-border trade in services, financial services, and legal and institutional aspects. Many rooms are designed for advanced trade issues, for example, competition policy, intellectual property, labor, environment, government procurement, state-owned enterprises, and so on. Under the CPTPP's tariff elimination roadmap, most tariff lines become duty-free when the agreement enters in force for each CPTPP state. Tariffs on other goods will gradually decrease over the "phased-out" period, fluctuating by country and sector. Once fully exercised, 99% of tariff lines among CPTPP parties will be exempted.

	GDP ($Bil.)	Population (mil. people)	GDP per capita (USD)	HDI	Continent	Area (km²)	Coastline (Km)	Major city
Australia	1 432	24.99	57,305	0.939	Oceania	7,682,300	25,760	Sydney
Brunei	14	0.43	31,628	0.853	Asia	5,270	161	Bandar Seri Begawan
Canada	1 713	37.06	46,211	0.926	America	9,093,510	202,080	Toronto
Chile	298	18.73	15,923	0.843	America	743,532	6,435	Santiago
Japan	4 971	126.53	39,287	0.909	Asia	364,560	29,751	Tokyo
Malaysia	354	31.53	11,239	0.802	Asia	328,550	4,675	Kuala Lumpur
Mexico	1 224	126.19	9,698	0.774	America	1,943,950	9,330	Mexico (Distrito Federal)
New Zealand	205	4.89	41,966	0.917	Oceania	263,310	15,134	Wellington
Peru	222	31.99	6,947	0.750	America	1,280,000	2,414	Lima
Singapore	364	5.64	64,582	0.932	Asia	724	193	Singapore
Vietnam	245	95.54	2,564	0.694	Asia	310,070	3,444	Hanoi

Table 4 - Brief information of TPP members (2018)

(Source: World Bank data (GDP, Population, GDP per capita), UNDP (HDI), CIA factbook (Coastline length), CEPII's GeoDist Database (Main city))

As shown on Table 4, 11 states in the CPTPP come from different continents, implying a wide distance in geography, language, culture, practice and norms, and more. Moreover, there are great gaps in economic and human development levels among members, as well as in demographic sizes. These unique characters in a regional trade agreement of the CPTPP are expected to help developed countries access more potential markets, and less-developed countries have a chance to increase economic size, enhance productivity, and upgrade living standards. The common thing among 11 CPTPP members is that they share in a common area - the Pacific Ocean, which is extremely special. In this area, the Asia Pacific, which acts as a dynamic hub of international trade, is the most crowded with trade agreements that could be overlapped with each other. All CPTPP members have already involved in a broad range of FTAs, consisting of AFTA, ASEAN-Australia-New Zealand, ASEAN-Japan, P-4, and NAFTA (Figure 12). Moreover, these 11 CPTPP participants are also member economies of Asia-Pacific Economic Cooperation (APEC). APEC, not an FTA, is an inter-governmental forum for 21 Pacific Rim member economies to develop free trade and investment across the region based on dialogues and non-binding commitments.
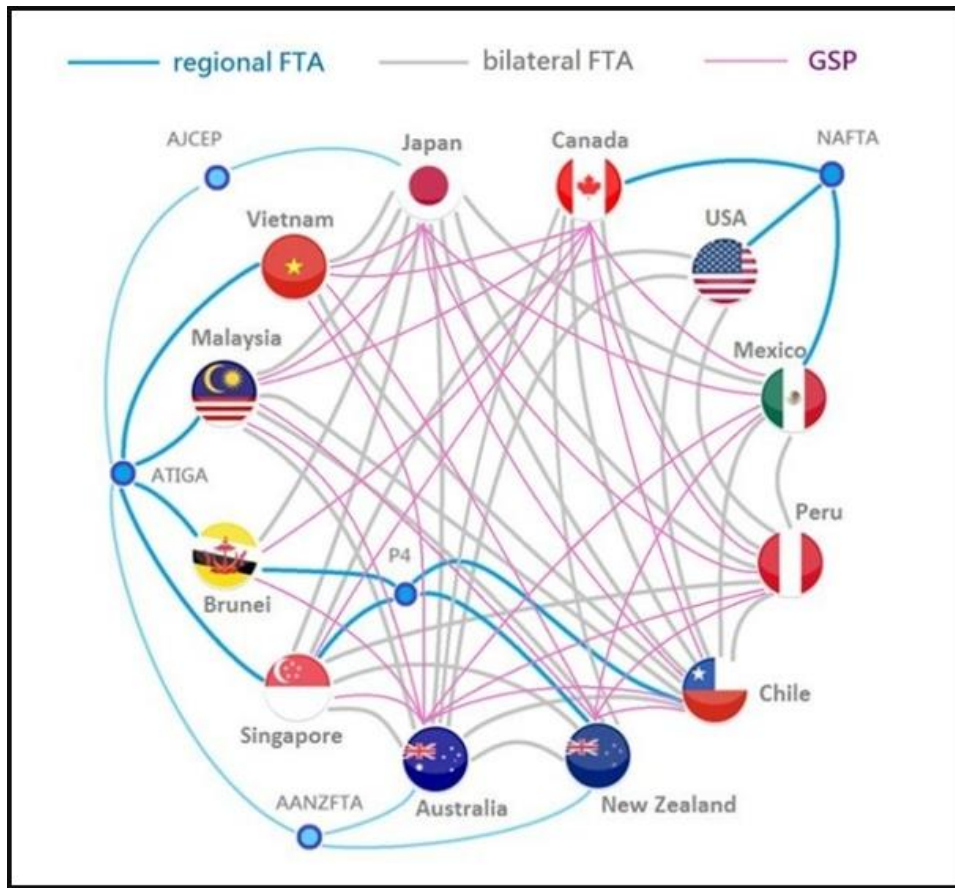
Figure 12 - "Spaghetti bowl" of TPP, former version of CPTPP

(Source: ITC MKI ANALYSIS)

Encompassed Regional Trade Agreement of CPTPP members					
CPTPP	**ASEAN**	**ASEAN-Australia-NZ (AANZFTA)**	**ASEAN-JAPAN (AJCEP)**	**P4**	**NAFTA**
Australia		★			
Brunei	★	★	★		
Canada					★
Chile				★	
Japan			★		
Malaysia	★	★	★		
Mexico					★
New Zealand		★		★	
Peru					
Singapore	★	★	★	★	
Vietnam	★	★	★		

Table 5 – Current Regional Trade Agreement of CPTPP members

4.2 Why CPTPP could be an answer for US-China trade tension?

The United States and China have started to end the era of engagement since President Donald Trump's inauguration in January 2017. On 14th August 2017, President Trump issued a Memorandum to the Trade Representative stating *inter alia* that:

> *"China has implemented laws, policies, and practices and has taken actions related to intellectual property, innovation, and technology that may encourage or require the transfer of American technology and intellectual property to enterprises in China or that may otherwise negatively affect American economic interests. These laws, policies, practices, and actions may inhibit United States exports, deprive United States citizens of fair remuneration for their innovations, divert American jobs to workers in China, contribute to our trade deficit with China, and otherwise undermine American manufacturing, services, and innovation."[16]*

In 2018, Trump initiated a number of tariffs and other trade barriers on China in order to pressure the Chinese government to resolve those "unfair trade practices", triggering a severe trade battle between the world's two largest economies. After a series of attacking and responding in tariffs as well as unsuccessful negotiations between the two countries, talks are occurring, but with no unambiguous solution about to happen yet. In company with direct impacts on the pace of growth and volume of trade in short and medium terms, decisions from any party of the negotiation can reconstruct the global economic structure and rewrite the bilateral relationship between the two Pacific powers in the long run. While 2018 saw the beginning of the US – China trade tension, it also witnessed a rebirth of CPTPP from the dead TPP. Along with reducing conventional trade barriers, for instance, tariffs and quotas, CPTPP provides an extensive rule book for modern economic

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[16] *"Findings of the Investigation into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation Under Section 301 of the Trade Act of 1974",* Office of the U.S. Trade Representative, March 22, 2018

cooperation, including competition policy, intellectual property, labor, environment, government procurement, state-owned enterprises and so on.

CPTPP gives another alternative therapy for trade disagreement if not yet a full-fledged trade war. In the most favorable scenario in which China joins the CPTPP, this "new generation" trade agreement is anticipated to motivate economic reforms toward modern and open manners. These reformations, in turn, will ease tensions with the US and other countries when the Chinese economy engages itself towards improved standards of integration. China has already established an intensive trade volume with CPTPP members, then participating in this new generation FTA can decrease or even eliminate other trade matters which still existing in these trades. Not only promotes trade networks across the Asia-Pacific region, adopting CPTPP's trade rule but also improves the productivity of supply chains and the trading independence with North America.

In reality, this scenario is not easy to achieve because some of CPTPP members always concern about Chinese expansion, competition and dominance in bilateral trades. On the other hand, it is still possible to happen when those members are also eager to open the more massive trade door into Chinese markets, remarkably with an enormous and market-orientated economy. Moreover, current economies in CPTPP, such as Japan, Vietnam, Canada, and New Zealand are taking advantages of the CPTPP's provisions and clauses to implement comprehensive social-economic reforms that are politically difficult. Those achievements could be clear examples for China, which has itself gained significantly since its participation in WTO. Therefore, there are enough supportive pieces of evidence to believe that CPTPP's meaningful enforcement clauses would motivate credible reforms in case China joins the agreement.[17]

In the report of "Answering China's economic challenge preserving power, enhancing prosperity" (Boustany and Friedberg, 2019), the United States is suggested to set up an alliance of economies that share the common concern about China's rapacious policies

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[17] *Why the CPTPP could be the answer to the US-China War*, 11.01.2019 https://www.scmp.com/week-asia/opinion/article/2181369/why-cptpp-could-be-answer-us-china-trade-war

and biased trading practices to create the highest pressure for China's reform. Following that, by implementing new FTAs with allies to raise the international trade standards, the US can indirectly create incremental economic costs to China from non-participation, which in turn stimulates China to reform its economic and trade policies to enter the new trade agreement. The CPTPP will be the first in the consideration list because of its size and potential.

A year after the withdrawal from the TPP agreement, the US President Trump showed his interest to rejoin the CPTPP in 2018. The main underlying reason is that TPP (now is CPTPP) engages critical new rules in the area that makes an enormous difference for the US, including competition policy, intellectual property, state procurement, state-owned enterprises, and transparency. Combined, the economies in the CPTPP, the EU and the United States take into account for 58.6% of global GDP in 2018, as given in Figure 13. This collective global segment of the US – the EU – the CPTPP is expected to provide enough leverage to create extra costs for Chinese products without China in the trading block, hence to force China into a comprehensive reform in policies to integrate into new international deals.
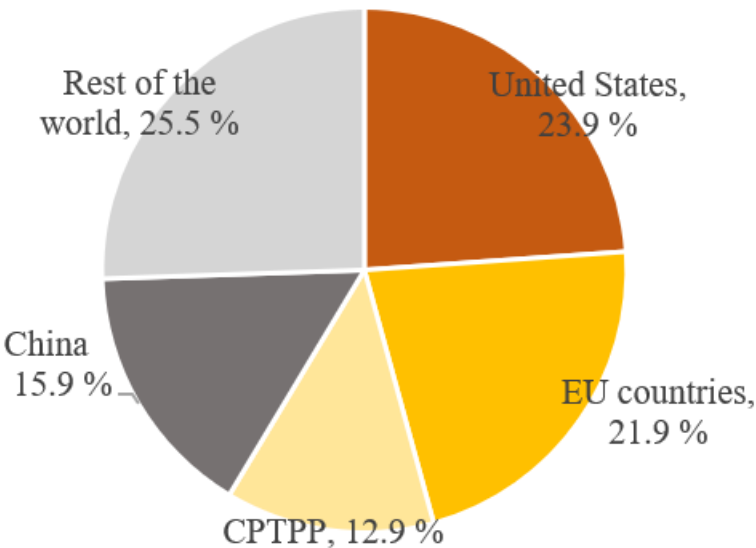

Figure 13 - Share of the global GDP, 2018

(Source: GDP (Current $), World Bank)

4.3   The expectation of entering the CPTPP on Vietnam's economy

Participating in WTO marked the first milestone of Vietnam's integration into the international playground. Being the seventh member to ratify the CPTPP - the most significant "new generation FTA", it is anticipated to lay the second stone for stronger internationalization of Vietnam. Up to now, Vietnam is one of eight countries (Mexico, Japan, Singapore, New Zealand, Canada, Australia, Vietnam, and Chile) ratifying the agreement on 15th November 2018 and entering in force at the beginning of the following year. With the nearly-499-million-people market size, CPTPP is expected to create strong economic yields for Vietnam by boosting the country's investment and export-driven growth model.

Improving market access, expanding market structure

Increasing export turnover is the direct economic benefit that the government can anticipate visibly in its planning. In 2018, earning from exporting to 10 CPTPP's members accounted for 15% total export revenue of Vietnam in 2018. This figure is expected to increase dramatically, about 4% annually or $4 billion thanks to the elimination of tariffs and non-tariffs barriers, according to an analysis of Minister of Planning and Investment, Vietnam. Among the beneficial industries, textiles and footwear would be the most favorable from CPTPP's deals, expected to grow from 8.3% to 10.3% annually thanks to the vast variance in tariffs between Most-Favored Nation Tariffs (MFN) and CPTPP's favored rates[18].

Vietnam has built a long-term trading relationship with ASEAN and Northeast Asia (Japan, China, the Republic of Korea, Taiwan, Hong Kong) since its first day of integration. Being a member of WTO has promoted more the export turnovers into other advanced markets, such as the EU, and the US. The bilateral trade between the US and Vietnam has increased considerably after signing the US – Vietnam Bilateral Trade Agreement in December 2001. Export turnovers to the US overperformed in the

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[18] Review of Finance, 2019, *Boosting the Vietnam's economy by entering CPTPP*
http://tapchitaichinh.vn/nghien-cuu-trao-doi/tham-gia-cptpp-kinh-te-viet-nam-se-tang-toc-302918.html

following year, rising 130% compared to the one in 2001. The turnover to the American market of the year 2002 doubled its percentage of total exporting actives from 7% in 2001 to 15%, which has increased afterwards up to 20% - 22% in the following years. In 2018, export to the US was recorded $47.5 billion, 20% of total goods outflow and 43.6 times higher than that number (which was around $1 billion) in 2001. The United States, the EU, China, ASEAN, Japan, the Republic of Korea did together generate 79% export revenues of Vietnam in 2018. Due to the currently high concentration of exporting markets, seeking for new perspective markets is a critical step to expand the country's export and to diversify the trading risks substantially and sustainably. In CPTPP, whether tariff and non-tariff barriers will be eliminated immediately upon the agreement takes effect, or following an elimination roadmap, Vietnam still has a chance to access more to new promising and large markets in North America (Canada), South America (Mexico, Chile, Peru), and Oceania (Australia, New Zealand).

A solid foundation for additional regional economic integration

ASEAN not only marked the first step towards international economic integration of Vietnam, but it also has taught this country the initial lessons about regional integration and development since its participation in 1995. More than 20 years later, Vietnam has emphasized the demand for broader integration with all partners, not just ASEAN and WTO, by joining "new generation" FTAs, including Eurasian Economic Union – Vietnam FTA (2016), CPTPP (2018), EVFTA (2019), and the Regional Comprehensive Economic Partnership (upcoming). Standing away other regional trade agreements, CPTPP specifically involves countries from various continents, languages, history, cultures, and business practices, scales, and development. That brings both challenges and opportunities for all members, including Vietnam, to improve the socio-economic up-growth.

Restructuring export's compositions

One of the inefficiencies in Vietnam economic system is the imbalance between FDI and domestic manufacturing sectors with no tight connections. In which, the latter does not play as supportive nodes in the former's supply chains and still lacks technology and innovation to catch up with the pace of the former's growth. As being analyzed in section 2.2 – Transition in the export structure, Vietnam's export brackets are going towards more advanced products. However, this transition still deploys the labor-intensive advantages of Vietnam as well as puts more weight on the traditional sectors, for example, textiles and agriculture, as a robust foundation for future development. The economists are looking forward that attending CPTPP would restructure import-export industries toward more balancing between import and export categories, FDI and domestic sectors, and among export brackets to improve the nation's financial capacity and economic independence. CPTPP also creates opportunities for Vietnam's companies to be a part of its collective value chains, promising to contribute more added-value goods and services for economic growth.

Figure 14 - Export's compositions by sectors of Vietnam
(Source: the general statistics office of Vietnam)

Domestic reforms through making commitments:

Beyond the direct gains in export activities, long-term benefits from joining CPTPP attracts more interest from the policymakers. Up to now, CPTPP is now Vietnam's largest FTA, which aims to create motives and incentives for domestic reforms in all economic and political respects. Also, to establish barrier-free entrance for trading in products and services between members, the CPTPP brings a rules-based trade environment and an improved market access for all market players. Following that, the Vietnam government is expected to allow foreign investors to invest with greater confidence by removing biased and discriminatory treatments, offering higher level of transparency in information and bureaucratic system as well. Delivering commitments under the CPTPP would stimulate and accelerate Vietnam's regulations and reforms of institutions, creating an open and transparent business environment, promoting the product quality and attracting more FDI inflows towards the country. Not only focused on the elimination of tariff barriers, but Vietnam is also currently paying more attention to the strategic positioning of the country in global maps.

5. Gravity model

5.1 Literature review

There are three rationales given in Baier and Bergstrand (2007) for what make the gravity model successful in the last 30 years: 1) a robust support of formal economic explanation already in the 1980s, 2) a consistently empirical interpretation with a high fit to the data (high R-squared), 3) a widespread application for analyzing new free trade agreements and trade policies.

This part of the paper works toward estimating how CPTPP can affect Vietnam's export turnover. By examining trade determinants of Vietnam's export to 10 CPTPP economies, the gravity model aims to evaluate the impact of bilateral, regional and global integration on Vietnam's export appropriately. Jan Tinbergen first introduced the gravity model of international trade in 1962. In which, it is suggested that the value of bilateral trade inflow

and outflow between any two individuals or groups of economies is possibly estimated by deploying the "gravity equation", which is formulated from Newton's original theory of gravitation[19].

A simple form of a gravity equation as below:

$$Trade_{ij} = G\frac{M_i M_j}{D_{ij}}$$

In which,

$Trade_{ij}$: The value of bilateral trade between nation i and nation j

G: A simple constant

M_i, M_j: The size of the nation i, j, respectively

D_{ij}: The distance between nation i and nation j

The model, then, has been adjusted by log-linearizing both sides of the equation and adding some sorts of dummy variables. This modified model is simply estimated by using ordinary least square (OLS):

$$\ln Trade_{ij} = \alpha_1 \ln M_i + \alpha_2 \ln M_j + \alpha_3 \ln D_{ij} + \sum_{x=4}^{X} \alpha_x V_x$$

Where V_x is a set of dummy variables and α_i are the respectively estimated coefficients.

In international trades, gravity approaches are consistent with many different trade theories, such as the theory of increasing returns and Heckscher-Ohlin. Therefore, findings about the importance of the gravity model do not rule out the relevance of any of these theorems in international trade. The gravity model supports to break down the elements behind the value of bilateral trade between two individuals or groups of economies, defines the main connection between trade determinants and trade flows, and clarifies the drawbacks that restrain international trade in current global integration. In the gravity model, finding an appropriate aggregation of trade costs is a crucial concern. While the other variables are quite clear in definition, it is not straightforward to measure

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[19] Tinbergen, J., 1962, *Shaping the World Economy; Suggestions for an International Economic Policy*. Books (Jan Tinbergen). Twentieth Century Fund, New York. Retrieved from http://hdl.handle.net/1765/16826

and infer the height of trade costs and their compositions, which vary considerably across countries and regions, and across goods.

Clarete et al. (2002) used the gravity model in order to assess the main factors behind trade flows involving 11 major preferential trade agreements in the Asia-Pacific region, including data of 83 countries in 1980-2000. The estimated coefficients of fundamental variables of the model explain well the international trade flows. As shown in the result of their study, the cross-country trade has a positive correlation with income and size of the economy. A higher income allows people to have more demanding in more expensive and importing goods, then leverages import activities. Hence, GDP per capita is employed to assess how the size and income of a country can influence the trade flow. Population, geographical areas of both importers and exporters, as well as the distance between trading partners hurt bilateral trading activities.

According to Anderson and Wincoop (2004), as concluded in their "Trade Costs" paper[20], the cost of trade across borders are on average, about 170% tax-equivalent rate for industrialized countries. This 170% figure are broken into 21% transportation costs, 44% border-related costs having to deal with paperwork, bureaucracy, tariffs, or different cultures and regulatory standards, and 55% retails and wholesale margins for local distributors (1.7=1.21*1.44*1.55 – 1).

In the book: "International economics: theory & policy" (Krugman, Obstfeld, and Melitz, 2008), a robust empirical correlation between the economic size of a country and the import-export volume is found. Besides, cultural affinity, geography, transport costs, distance, barriers, and borders are also the main drivers in deciding the size of a trade. Change in value of the domestic currency against foreign currency also leads to volatility in import and export activities. Study of Micco et al. (2003) about the effect of the

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[20] James E. Anderson; Eric van Wincoop, 2004, *Trade Costs*, Journal of Economic Literature, Vol. 42, No. 3. (Sep., 2004), pp. 691-751

European Monetary Unit on bilateral trade for 22 developed countries in 1992-2002 figures out that the exchange rate is having a consequential impact on the bilateral trade.

5.2 The bilateral trade determinants

Reviewing the gravity model in international trade by Jan Tinbergen, Luca De Benedictis and Daria Taglioni (2011) sorted the determinants in international bilateral trade into three sub-categories: economic attractors, trade distance, and trade policies. **Economic attractors** include the size of export and import countries in terms of USD-converted GNP, denoted as M_i, M_j, respectively. **Distance** consists of $\emptyset_{ij}$ and N_{ij}. In which, $\emptyset_{ij}$, the geographical gap between two countries in 1,000 nautical miles, plays as "*a rough measure*"[21] of transportation costs. Sharing the common border that is supposed to boost trade activities between two countries is indicated by the dummy variable, N_{ij}, taking 1 if they are adjacent to each other or 0, if otherwise. The **political or semi-economic determinant,** the dummy variable V_{ij} is added to augment the model, which is 1 if both countries are members of the British Commonwealth Preference system, a sort of preferential trade area. A gravitational constant G and a random error ε_{ij} are also enclosed, and all coefficients are determined in an OLS cross-country regression:

$$\ln X_{ij} = \underbrace{\ln G}_{a_0 \equiv constant} + \underbrace{a_1 \ln M_i + a_2 \ln M_j}_{economic\ attractors} + \underbrace{a_3 \phi_{ij} + a_4 N_{ij}}_{distance} + \underbrace{a_5 V_{ij}}_{policy} + \underbrace{\varepsilon_{ij}}_{iid}$$

5.2.1 Trade flow attractors

Trade flow attractors are supposed to reflect expenditure capability in the country of destination as well as supply power in the country of origin. In line with this description, GDP, GNP, population have been used as proxy indicators of attractors. Higher GDP or GNP shows a better explanation for the supply capacity in the country of origin and the demand capacity of the country of destination. GDP per capita (Frankel et al., 1997, Bergstrand 1989) or infrastructure development index (Limao et al., 2001) has been

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[21] Benedictis and Taglioni, 2011, *The gravity model in International Trade*, chapter 4 in Luca De Benedictis and Luca Salvatici (Ed.), The Trade Impact of European Union Preferencial Policies. Springer.

applied as an alternative for the population. To track the income effect, we are going to incorporate the GDP per capita of 11 CPTPP economies in our regression.

Many research papers point out that mutual cross-country settings also deliver a favorable impact on bilateral trades. Consequently, along with economic attractors, extended versions of the gravity model also take other attractors, including history, cultural, institutional, social ones, and so on into consideration. Luca De Benedictis and Daria Taglioni (2011) introduced an exhaustive menu of common trade attractors. For example, they took language, special history events (of colonial connection, military alliances or political entities), religion, nationality (by immigration), institutional and legal system, tastes and technology, and a high input-output linkage in the global value chain into consideration.

5.2.2 Trade flow barriers

All significant issues in international trades are influenced by trade costs, which are hard to break out in the full detail and to collect the relevant data. Tariffs and transportation costs are definitely a part of trade costs, how about culture distances, negotiation costs, country specifics, or product specifics?

It is quite straightforward to define the transportation cost in theory, but most researchers use a proxy parameter in their empirical studies because of the lack of data source. Moreover, an appropriate proxy for transportation costs is still under debate. It has been not persuasive enough for researchers to use geographical distance as a proxy for transportation cost since Tinbergen used it. They would concern that this physical variable does not acquire much information. Following that consideration, researchers have introduced a large number of proxies: "economic distance" (Anderson 1979), "relative distance" (Deardorff 1995), "remoteness index" (McCallum 1995), but still under argument. A lot of subsequent studies attempted to give a better option for measuring distance, such as Euclidean distance between the two major cities of related

countries (capital, the biggest city, major port or airport), or the variance between Free on Board (FOB) and Cost, Insurance & Freight (CIF) price in international shipment.

Being derived from Tinbergen's suggestion that distance in his gravity model would implicate beyond transportation costs, many studies put more attention into the economic distance rather than just the physical distance. It means that they are looking for variables that hurt bilateral trades and fit the gravity model, for example, a mutually historical event of conflict (Martin et al., 2008). John T. McCallum introduced the widely known "border puzzle" in 1995.[22] He found that inter-province trade in Canada is twenty times higher more than cross-country trade with the United States, holding determinants of trade (size and distance) constant. This effect is also called as "home bias in trade puzzle", or "border effect". Following papers of North American, European, and the Organization for Economic Co-operation and Development (OECD) showed relatively less but still significant border effect. The gap between relative prices created by formal and informal trade barriers, such as tariffs, non-tariffs, insurance fee, freight cost, incompatible law and regulatory structures and so on are supposed to explain the home bias (Rossi–Hansberg, 2005).

5.2.3 Policies

Involving a dummy variable of the co-membership of the Commonwealth of British Nations in Tinbergen's work (1962) raised an idea of incorporating trade agreements in subsequently extended gravity models to analyze the long-term relationships between countries in bilateral trades.

By deploying trade agreements, dummy variables along with a gravity model, Frankel et al. (1997) estimated the supplementation in trade thanks to varied preferential and regional trade agreements, for instance, APEC. Wei and Subramanian (2003) adopted a modified gravity model suggested by Anderson and van Wincoop (2003) incorporating

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[22] McCallum, (1995), National Borders Matter: Canada-U.S. Regional Trade Patterns, American Economic Review, 85, (3), 615-23

country-specific fixed effects in the OLS model in order to analyze the consequence of being a WTO member on international trades. The study showed that WTO strongly has a positive influence on promoting global trade, but not evenly. First, industrial countries that have actively involved in tariffs liberalization enjoy more benefit from participating in WTO than developing countries. Second, the joint trade would be more sizable when the two partners perform liberalization than that number of when only one side do. Third, a negative correlation between protection and trade is unambiguous for both non-WTO and WTO members. Interestingly, Hellvin and Nilsson (2000) employed the gravity model to figure out the trade relationship in the triangle of the EU, Asia, and NAFTA. The average value of international trading activities among OECD economies was considered as a benchmark. Accordingly, EU-Asia and NAFTA-Asia trade levels are higher; meanwhile, EU-NAFTA trade level is lower than that benchmark. Moreover, the link between NAFTA and Asia is more active than the EU-Asia one that could be one of the main incentives for the Asia-Europe Meeting (ASEM) establishment.

Altogether, almost of studies has followed Tinbergen's original idea to evaluate the effect of preferential trade policies on the trade flows between partners. The approach mainly engages a dummy variable taking "1" if the preferential trade on bilateral trade flows exits or "0" if otherwise in gravity model estimation.

5.3 Methodology

5.3.1 Ordinary least squares (OLS)

This thesis paper modifies an extended gravity model introduced by Peter Egger (2002)[23] and Nguyen and Henry (2016)[24] to examine the determinants in bilateral trades between Vietnam and other CPTPP countries. The underlying reasons for choosing Egger (2002) are more than its theory back and the excellent explanation of trade flows. This modified version accounts for "asymmetric circumstances" across CPTPP economies (such as significant variance in size, factor endowments, and established preferential trade

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[23] Egger, 2002, *An economic view on the estimation of Gravity Models and the calculation of trade potential*
[24] Tien – Viet Nguyen, Michael Henry, 2016, *Vietnam's export to TPP countries – Gravity model, trade determinants and trade potentials*

agreements among members) as well as allows material flexibility for considering other variables. Accordingly, the following baseline model is in use:

$$\ln EXPORT_{ijt} = \beta_0 + \beta_1 G_{ijt} + \beta_2 S_{ijt} + \beta_3 D_{ijt} + \beta_4 \ln Dist_{ijt} + \beta_5 E_{ijt} \quad \textbf{(1)}$$
$$+ \beta_6 ASEANFTA_{ijt} + \beta_7 WTO_{ijt} + \varepsilon_{ijt}$$

In which,

EXPORT_{ijt} is Vietnam's export (host country, denoted as **i**) to other 10 CPTPP economies (Australia , Brunei, Canada, Chile, Japan, Mexico, Myanmar, New Zealand, Peru, and Singapore, denoted as **j**) in year t for 24 years in the period 1995-2018.

The collective sum-up of GDP (**G_{ijt}**), the relative country size (**S_{ijt}**), and difference in relative factor endowment (**D_{ijt}**) are playing as **trade flow attractors,** and defined as the followings with GDP (Gross Domestic Product) and POP (population). Especially, GDP Per Capita, which is used in the relative factor endowment's equation, is a common proxy for the ratio of capital and labor (Egger, 2002).

$$G_{ijt} = ln\ (GDP_{it} + GDP_{jt})$$

$$S_{ijt} = ln\ \left(1 - \left(\frac{GDP_{it}}{GDP_{it} + GDP_{jt}}\right)^2 - \left(\frac{GDP_{jt}}{GDP_{it} + GDP_{jt}}\right)^2\right)$$

$$D_{ijt} = \left| ln\ \left(\frac{GDP_{it}}{POP_{it}}\right) - ln\ \left(\frac{GDP_{jt}}{POP_{jt}}\right) \right|$$

Dist_{ijt} stands for the effective distance between the host country (Vietnam) and other CPTPP members. **Dist_{ijt,}** which follows Head and Mayer (2002)[25], is the effective distance between countries. It is computed by the physical distance between the most major cities of each country, which is weighted by the population distribution[26]:

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[25] Head and Mayer (2002), *Illusory Border Effects: Distance mismeasurement inflates estimates of home bias in trade,* CEPII Working Paper No 2002-01.

[26] In Head and Mayer (2002), the bilateral distance is weighted by the total income distribution

$$Dist_{ijt} = \left(\sum_{k \in i} \left(\frac{POP_k}{POP_i} \right) \sum_{l \in j} \left(\frac{POP_l}{POP_j} \right) d_{lk}^{\theta} \right)^{\frac{1}{\theta}}$$

Where k and l are the most important cities of country i and j; POP_k, POP_i, POP_l, POP_j denote the population of city k, the population of country i, the population of city l, and the population of country j, respectively. d_{lk} is the great circle distance (or geodesic distance, air flying distance) in kilometers, which involves the geographical longitude and latitude in radians of two points on the surface of the Earth. In this paper, the major city mentioned in CEPII's GeoDist Database is considered as the most important location of each CPTPP member (as shown on Table 4 - Brief information of TPP members (2018), page 25). θ is the sensitive of trade to the effective distance, and usually takes the value of either 1 or -1. Head and Mayer also suggested that $\theta \sim$ -1 based on reviews of other papers. $Dist_{ijt}$ plays as a proxy for trade costs. The longer the effective distance, the higher is the trade cost in terms of transportation, fuel or time.

E_{ijt}, $ASEANFTA_{ijt,}$ and WTO_{ijt} would be added into the model to study the impact of **policy factors** on trade flows. E_{ijt} is the bilateral real exchange rate between the two partners in international trade. The bilateral real exchange rate, which is from Elliott and Ikemoto (2004)[27], is determined by the exchange rate of the currency of the importing country (denoted as j) in the exporting country (denoted as i)'s currency, multiplied by j's GDP deflator and divided by i's GDP deflator. Instead of using the exchange rate of the country j's currency in the country i's currency, the exchange rate of US Dollar in Vietnam Dong is applied in E_{ijt} calculation in this paper. The underlying reason is, in reality, most international trading commodities and services are quoted in the US Dollar, which would be exchanged from the exporting country's currency and into the importing country's currency. It is known that depreciation in domestic currency will enhance export values of the host country, then a positive sign would be expected from the model.

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[27] Elliott and Ikemoto 2004, *AFTA and the Asian Crisis: Help or Hindrance to ASEAN Intra-Regional Trade?*

The dummy variable $ASEANFTA_{ijt}$ is taken into consideration due the role of this regional trade bloc in its members. The ASEAN countries have attained considerable economic growth and improvement following the outward-looking strategies and policies. As mentioned above in session 4.1 – An overview of the CPTPP agreement, the FTA "spaghetti bowl" in ASEAN region is rather complex, including both collective and mutual trade agreements between ASEAN as a whole or an individual ASEAN member with a trading partner. Hence, $ASEANFTA_{ijt}$ will cover all the bilateral trade agreement between ASEAN member (in which including Vietnam) or between Vietnam and a trading partner(s). $ASEANFTA_{ijt}$ is equal to value 1 if both countries in a pair are official members of ASEAN, or regional FTAs of ASEAN (ASEAN-Japan Comprehensive Economic Partnership, ASEAN-Australia and New Zealand Free Trade Agreement), or bilateral FTAs of Vietnam (Viet Nam - Chile Free Trade Agreement), otherwise it will be 0.

Similarly, WTO co-memberships are denoted by dummy variable WTO_{ijt}, which will take the value 1 if both nations in a pair officially participate in WTO, otherwise it will be 0. Both dummy variables expectedly have a favorable effect on trade flows due to the stimulations of adopting the preferential trading terms after joining WTO and ASEAN. In order to explain other unobserved variables, an error term ε_{ijt} is included.

Following Nguyen and Henry (2016), the data will be split into two sub-periods of time: 1995-2008 *(1c)* and 2009-2018 *(1b)* (before and after the financial crisis 2018) to test the robustness of the model *(1)* through the time.

5.3.2 Fixed Effect adjusted model

The OLS model *(1)* is rather good at explaining the bilateral trade flows between Vietnam and other CPTPP economies. However, it is still controversial that the log-linearized OLS model can result in significant bias (Silva and Tenreyro, 2006) or a certain level of misspecification (Mátyás, 1997 and Egger, 2002). The OLS model fails to capture the combined effect of 3 dimensions of the bilateral trade: exporter, importer, and time (Mátyás, 1997) when working with cross-section data. Moreover, OLS's convenient

estimators can lead to inconsistent ones (Egger, 2002) because the demand for some goods can be influenced by a specific year and a particular destination. To address those OLS-related problems, data panel techniques that capture the country-specific and time-specific of the data, as well as lower the multicollinearity relating to cross-section data, are usually used.

The massive dominance of the Fixed Effect (FE) in the literature over the Random Effect (RE) in data panel techniques is because the RE model requires a high level of restrictive assumption of the unobserved heterogeneity in the data. Following that, the country-specific FE and the time-specific FE are applied to enhance the application of the OLS model in this paper. The FE model offers a proper method to determine and explain trade determinants in the intuitive gravity model consistently: dummy variables take the unobservable multilateral relationship. However, the significant shortcoming of the FE method is that any variable collinear with dummy variables should be removed out of the model.

In the country-specific FE model *(2)*, a dummy variable $DumC_p$ for each trading partner will be deployed. Ten country-specific dummy variables will be included in the country-specific FE model to avoid the dummy variable traps, which will result in the multicollinearity among dummy variables. In this context, there is only one exporter (Vietnam), then the dummy variable also presents the CPTPP trading pairs. By including a dummy variable for each country, the dummy would measure the unobserved characteristics and remove heterogeneity bias; and then the estimates would achieve a substantial degree of accuracy. Significantly, the variable $ASEANFTA_{ijt}$ which shows a perfect correlation with the country-specific FE's dummy variables, would be excluded:

$$\ln EXPORT_{ijt} = \beta_0 + \beta_1 G_{ijt} + \beta_2 S_{ijt} + \beta_3 D_{ijt} + \beta_4 \ln Dist_{ijt} + \beta_5 E_{ijt} + \beta_6 WTO_{ijt}$$

$$+ \sum_{p=1}^{10} DumC_p + \varepsilon_{ijt} \qquad (2)$$

Similarly, the time-specific dummy variable $DumT_p$ for every year in $(24 - 1)$ years will be examined in the time-specific FE model to remove multicollinearity. The cost for adding new time-specific FE dummy variables is to drop WTO_{ijt} out of the model because WTO_{ijt} and time-specific FE dummy variables are perfectly correlated:

$$\ln EXPORT_{ijt} = \beta_0 + \beta_1 G_{ijt} + \beta_2 S_{ijt} + \beta_3 D_{ijt} + \beta_4 \ln Dist_{ijt} + \beta_6 E_{ijt}$$

$$+ \beta_7 ASEANFTA_{ijt} + \sum_{p=1}^{23} DumT_p + \varepsilon_{ijt} \qquad (3)$$

5.4 Data

Our dependent variable is the log of the export from Vietnam to each country of the other ten CPTPP economies in a given year for a period **1995-2018,** which is obtained from the website of the General Statistics Office of Vietnam[28]. The explanatory variables are taken from different sources of data. The nominal GDP, GDP Per Capital, the official exchange rate (Vietnam Dong per \$), and GDP deflators are acquired from the World Bank's database. The great circle distance comes from CEPII's GeoDist Database[29]. The ASEAN and WTO co-memberships are acquired from the Nuclear Threat Initiative website about ASEAN and the WTO official website, respectively.

5.5 Result and discussion

5.5.1 Correlation matrices and multicollinearity

Table 6 presents the correlation matrix between selected variables, being considered as the initial step to examine the intuition of the gravity model. In general, the shown correlations are consistent with the general understanding of the relationship between variables. As expected, the trade increases along with an increase in the combined economic size of trading partners (G_{ij}) and the difference in factor endowment (D_{ij}), and a co-membership in WTO (***WTO***) and a multilateral/ bilateral FTA (***ASEANFTA).*** The

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[28] The General Statistics Office of Vietnam's website https://www.gso.gov.vn/Default_en.aspx?tabid=491
[29] CEPII's GeoDist Database includes a set of different distance and common dummy variables used in gravity equations to identify particular links between countries such as colonial past, common languages, contiguity. (http://www.cepii.fr/CEPII/en/bdd_modele/download.asp?id=6)

coefficients of G_{ij}, D_{ij}, $ASEANFTA$, *and WTO*, are positive. **ln_Dist_** gets a negative coefficient that is appropriate with its role as trade frictions.

The correlations between export amount and the relative country size (S_{ij}) and bilateral exchange rate (E) is unexpectedly negative. The correlation matrix, which figures out a degree of relationship between two variables, just gives the first overview of the data that is quite persistent with the theory. However, these correlations are not sufficient enough to imply a causal relationship. The further investigation about the relationship between $lnEXPORT_{ij}$ and S_{ij}, E will be implemented in case any abnormal results are arising from the regression model.

	lnEXPORTij	Gij	Sij	Dij	lnDist	E	ASEANFTA	WTO
lnEXPORTij	1.00							
Gij	0.65	1.00						
Sij	-0.25	-0.74	1.00					
Dij	0.14	0.20	-0.54	1.00				
lnDist	-0.36	0.17	-0.02	-0.20	1.00			
E	-0.11	-0.06	-0.05	0.00	-0.08	1.00		
ASEANFTA	0.34	-0.18	0.31	-0.08	-0.71	0.03	1.00	
WTO	0.32	0.26	0.26	-0.45	0.02	0.01	0.32	1.00

Table 6 - Correlation matrix of OLS's regression model

The most consideration when working with panel data and gravity model is the multi-collinearity, in which two or more predictor variables are highly correlated together. Then the collinearity problem would reduce the accuracy of the estimates of the regression coefficients. The most effective method to detect multi-collinearity is to calculate *the variance inflation factor (VIF)* by the following formula: $VIF(\hat{\beta}_J) = \frac{1}{1-R^2_{(X_j|X_{-j})}}$, where $R^2_{(X_j|X_{-j})}$ is the R^2 gotten from the regression model of X_i onto the other predictors. If the correlation is present, R^2 will be close to 100%, and VIF will be substantial. As a rule

of thumb, VIF <10 (Hair et al., 1995), or VIF<5 (Ringle et al., 2015) is acceptable. The VIF value for OLS model is presented as in Table 7:

Variance Inflation Fator	
	VIF
Gij	5.06
Sij	5.83
Dij	1.78
log(Dist)	2.86
E	1.06
ASEANFTA	3.11
WTO	2.47

Table 7 - VIF table of predictor variables

As observed above, the VIF value ranges from 1.058 to 5.83, and the mean VIF is 3.17, which are statistically acceptable. Because the mean VIF is above 1, there is a suspicion that a correlation between predictor variables might exist, but not perfectly.

5.5.2 Testing the fit and time robustness of OLS model

The result of the OLS regression, as in Table 8 below, shows a high value of adjusted R-squared: 89.45%, 90.02%, and 96.34% for the entire 1995-2018 period, and two sub-periods 1995-2008 and 2009-2018, respectively. These high R-squared values demonstrate small variances between the observed data and the fitted values, showing a significant degree of goodness-of-fit. Generally, it is concluded that OLS models can explain well and consistently bilateral trades in reality over time.

Getting into detail, it seems that the OLS model plays better for the ex-post period of the financial crisis in 2008. All models *(1), (1a) and (1b)* disclose the coefficients of the collective sum of both trading partners' GDP (G_{ij}), relative country size (S_{ij}), and distance (D_{ij}) as the expectation with a high degree of robustness. Although model *(1)* gives a coefficient of difference in relative factor endowment variable (D_{ij}) as analyzed, it fails to explain the impact of the bilateral real exchange rate (*E*), ASEAN and Vietnam's FTA (*ASEANFTA*) and WTO membership (*WTO*), which are better described by the model

(1b). All the effect of explanatory variables will be discussed in details in the fixed-effect regression.

		Model 1 (OLS)		Model 1a (OLS)		Model 1b (OLS)	
		Coefficient	Signif.	Coefficient	Signif.	Coefficient	Signif.
(Intercept)		-4.5210000	***	-0.0247900		-8.1210000	***
Gij	Collective GDP	2.7270000	***	2.7260000	***	2.6560000	***
Sij	Relative country size	2.2290000	***	2.3630000	***	1.9980000	***
Dij	Difference in relative factor endowment	0.3136000	***	0.5150000	***	-0.0517300	
log(Dist)	Log(Effective distance)	-1.1790000	***	-1.7310000	***	-0.8081000	***
E	Bilateral real exchange rate	-0.0000001		0.0000008		0.0000001	
ASEANFTA	FTA (Vietnam/ASEAN)	-0.1939000		-0.9140000	.	0.2907000	**
WTO	WTO membership	-1.1020000	***	-0.5424000	*	NA	
Observation		209		109		100	
Multiple R-squared:		89.80%		90.67%		96.56%	
Adjusted R-squared:		89.45%		90.02%		96.34%	
p-value:		< 2.2e-16		< 2.2e-16		< 2.2e-16	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 8 - Regression result of OLS model: whole period and 2 sub-periods

5.5.3 Trade determinants

After the fitness and robustness of the OLS model are confirmed as in its regression result, the fixed effect techniques are deployed to correct the potential bias and heterogeneity related to OLS regression. The Table 9 figures out that both fixed-effect models present a better of goodness-of-fit than the OLS model with higher explanation power. Interestingly, model *(2)* with the country-specific fixed-effect model comes with the most significant level of adjusted R-squared – 92.5% (compared with 89.45% of the OLS model – model *(1)* and 89.87 % of the time-specific fixed-effect model – model *(3)*). However, it associates with a cost of a fewer number of significant variables – just 3 (compared with 6 in the model *(1)* and 5 in the model *(3)*).

Model *(3)*, which involves the time-specific fixed effect, outperforms the OLS model *(1)* and country-specific fixed-effect model *(2)*. Model *(3)* shows a better explanation of real trade than the model *(1)* and has more significant variables than the model *(2)*. In model *(3)*, there are 5 out 7 determinants that get significant value, including the interception, collective GDP of both partners (G_{ij}), relative country size

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(S_{ij}), the difference in relative factor endowment (D_{ij}), and effective distance (D_{ij}). Model (3) also gives an expected sign of the correlation between bilateral trade and all its explanatory variables both at a significant and non-significant degree.

		Model 1 (OLS)		Model 2 (Country-specific		Model 3 (Time-specific FE)	
		Coefficient	Signif.	Coefficien	Signif.	Coefficien	Signif.
(Intercept)		-4.5210000	***	0.2735000		-5.3540000	***
Gij	Collective GDP	2.7270000	***	1.8130000	***	2.9010000	***
Sij	Relative country size	2.2290000	***	1.2300000	***	2.3910000	***
Dij	Difference in relative factor endowment	0.3136000	***	-0.3007000		0.2661000	***
log(Dist)	Log(Effective distance)	-1.1790000	***	-1.1830000	***	-1.1410000	***
E	Bilateral real exchange rate	-0.0000001		0.00000004		0.00000005	
ASEANFTA	FTA (Vietnam/ASEAN)	-0.1939000		Excluded		0.0194100	
WTO	WTO membership	-1.1020000	***	-0.3298000	.	Excluded	
Observation		209		209		209	
Multiple R-squared:		89.80%		93.01%		91.29%	
Adjusted R-squared:		89.45%		92.50%		89.87%	
p-value:		< 2.2e-16		< 2.2e-16		< 2.2e-16	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 9 - Regression result of modified OLS model, country-specific Fixed Effect model, and time-specific Fixed Effect model

Three trade attractors – the collective GDP of both trading partners (G_{ij}), the relative country size (S_{ij}), and the difference in relative factor endowment (D_{ij}) – are confirmed to have positive impacts on export from Vietnam to other CPTPP economies, as Egger (2002), Nguyen and Henry (2016). Accordingly, 1% increase in the collective GDP of both trading partners (G_{ij}), the relative country size (S_{ij}), and the difference in relative factor endowment (D_{ij}) will boost exporting revenue by 2.901%, 2.391%, and 0.2661%, respectively. It means that the higher combined country output, the bigger relative country size, and the less similarity in factor endowments between two countries of a trading pair will enhance the export activities of Vietnam.

All three models strongly agree with the negative impact of trade friction factors. The longer physical distance between partners creates more cost in time consumption, fuel,

bureaucracy, transportation, etc. Thus, longer geographical distance has a higher possibility to reduce the bilateral trade. In the model *(3)*, 1% increase in geographical distance (***Dist$_{ij}$***) will decrease export turnover by 1.141%.

Surprisingly, while the model *(3)* shows the positive impact of the bilateral exchange rate and ASEAN/Vietnam – related FTA memberships as expected, model OLS *(1)* represents the opposite (ASEAN/Vietnam – related FTA membership is excluded in the model *(2)*). This finding helps to prove that the time-specific FE model provides a better fit of the regression model. However, both are not statistically significant.

The variable of WTO co-membership gets an unexpected significant impact with a negative sign in both the OLS and country-specific FE models (in the time-specific FE model, the variable ***WTO$_{ij}$*** is excluded because of the perfect multi-collinearity). In literature, the effect of being WTO member on the economic development and trade of a country is still argumentative. Many WTO regulations, which cover some sectors of the economy, such as intellectual property, product transparency, technical and quality requirement, and so on, are not bilateral. Therefore, the WTO dummy variable of a pair of countries cannot capture all those measures. Since Rose (2004) found no significant effect of WTO membership on trade using the gravity model, many papers have re-assessed the consequence of participating in WTO on bilateral trades. As mentioned in Session 5.2.3 - Policies, the study of Wei and Subramanian (2003) shows that WTO does promote trade, but unevenly. Industrial countries that have actively involved in tariffs liberalization enjoy more benefits from participating in WTO than developing countries. Roy and Jayjit (2011) notice that there is no statistical impact of WTO co-membership once country-time fixed effects are included in the gravity model. Eicher, Theo, and Henn (2011) argue that WTO membership only has a favorable effect on bilateral trade before the formation of Regional Trade Areas and between nearby developing countries. The unfavorable effect of the WTO's co-membership on Vietnam's trade to other CPTPP countries has possibly resulted from unreadiness of the economy. WTO accession has created both opportunities, advantages, and disadvantages for Vietnam's economy. Even

so, those opportunities could turn into challenges to Vietnam without appropriate macro-economic strategies, policies, and reforms.

5.5.4 Trade potential

Trade potential index

The trade potential index will be taken into consideration by following De Benedictis (2004) and Nguyen and Henry (2016) to implement another in-depth analysis of the prospect in trade between Vietnam and other CPTPP members as a whole or between Vietnam and each economy in CPTPP. **The trade potential index (TP_{ijt}),** which will be from 0 and 1, is the ratio between actual *($EXPORT_{ijt}$)* and estimated trade value ($\widehat{EXPORT}_{ijt}$). In case the TP_{ijt} is lower than 1, it means that actual export value is underperformed in the given year, letting more room for trade improvements in the future. Standardizing the trade potential index, we will have the Standardized Trade Potential (STP_{ijt}), which runs from -1 to 1.

$$TP_{ijt} = \frac{EXPORT_{ijt}}{\widehat{EXPORT}_{ijt}}$$

$$STP_{ijt} = \frac{TP_{ijt} - 1}{TP_{ijt} + 1}$$

If STP or the average STP in the examined period of 1995-2018 is below 0, there is still a trade promise for export from Vietnam to other CPTPP states that would be stimulated much more under CPTPP implementation. The closer value to -1 implies that there is a higher potential in trade between Vietnam and other CPTPP members. Otherwise, closer to 1, the trade potential index indicates that bilateral trade is overtraded, and there is no room for improvement under the current context.

Country	Model 1 95-18	Model 2 95-18	Model 3 95-18	Model 3 Sub 95-08	Model 3 Sub 09-18
Australia	0.231	0.003	0.228	*0.434*	*(0.061)*
Brunei	(0.209)	(0.001)	(0.030)	*No data*	*(0.030)*
Canada	(0.173)	0.003	(0.162)	*(0.228)*	*(0.069)*
Chile	0.120	(0.006)	0.108	*(0.128)*	*0.321*
Japan	0.039	0.000	0.023	*0.085*	*(0.065)*
Mexico	(0.076)	0.004	(0.097)	*(0.284)*	*0.127*
Malaysia	(0.019)	0.001	(0.073)	*(0.078)*	*(0.067)*
New Zealand	(0.179)	(0.000)	(0.163)	*(0.227)*	*(0.081)*
Peru	0.095	0.001	0.127	*(0.123)*	*0.252*
Singapore	0.059	0.003	0.044	*0.314*	*(0.333)*
10 CPTPP	**(0.004)**	**0.001**	**(0.004)**	***(0.007)***	***(0.001)***

Table 10 - Average Standardized Trade Potential (ASTP)

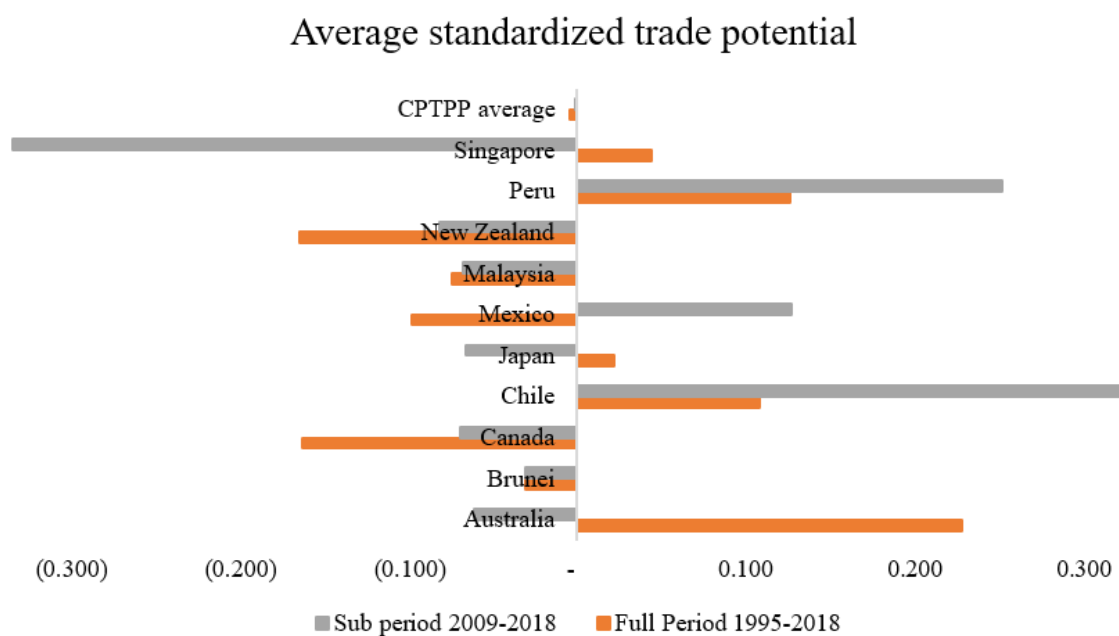## Average standardized trade potential

Figure 15 - Average standardized trade potential

In general, three models are reliable in estimating the fitted value of trade amount with the adjusted R-squared around and more 90%. Notably, the OLS model *(1)* and the time-specific fixed effect model *(3)* show the outcome of the trade potential index more consistently rather than the country-specific fixed model *(2)* once again. Therefore, the vast majority of statistical analysis in trade potential will follow the model *(3)*.

On average, the trade potential index for the export from Vietnam to 10 CPTPP members is negative, suggesting that there is still room for Vietnamese products and services to grow further in the regional markets even without adopting CPTPP commitments and trading rules. Notably, the model shows the negative sign of the index of Brunei, Canada, Mexico, Malaysia, New Zealand, suggesting that Vietnam has not fully exploited the export potential to those specific markets. Canada and Mexico, which are the two largest markets in the American continent in the list of CPTPP economies, promise the abundant exporting markets if Vietnam unlocks the prospect for Vietnamese goods there. Meanwhile, all three models indicate that Vietnam has overtraded to Australia, Japan, Peru, and Singapore, meaning that Vietnam has been setting up an excellent bilateral trade with those countries before reaching the CPTPP agreement.

Breaking the model *(3)* into two sub-periods of time: before and after the 2008 financial market crash, we are focusing more on the latter sub-period of 10-year 2009-2018. Vietnam has obtained some significant achievements in the period, such as the GDP growth rate of 6.15%, GDP per capita growth rate of 5.07%, the inflow-FDI annual growth rate of 9%, and export growth rate of 15% annually. Although the specific export turnover from Vietnam to other 10 CPTPP members increases by 8% yearly over the 2009-2018 period, the trade potential index calculated from the gravity model implies that Vietnam has underperformed the bilateral trade in exporting activities with 7 members except for Chile, Mexico, and Peru in those years.

This implication withdraws two suggestions. Firstly, Vietnam's export had been acting under its capacity for the current mutual and collective trade agreements between Vietnam and its partners until 2018, when the CPTPP agreement has not been activated

yet in this economy. The gravity model has not accounted for the new CPTPP trade provisions and regulation and the members' commitments, including tariff and non-tariff barriers, transparency, competition policy, intellectual property rights, and so on, but has just reflected the up-to-2018 trade policies. Therefore, more strategies should be sufficiently implemented by the Vietnamese government to fully take advantage of the popular attraction of those CPTPP markets, especially large ones such as Japan, Australia, Canada, even in the case of no CPTPP deal. Vietnam should leverage the on-going regional trade preference to go deeper into the regional integration to improve the trade with other ASEAN members (Brunei, Malaysia, and Singapore). Secondly, the unexhausted trade between Vietnam and the other 7 CPTPP members puts Vietnam into more action to take the internal eco-social reforms of the economy to prepare for the future benefits from the CPTPP agreement when it is fully implemented. The CPTPP agreement, which is called as one of the "new generation" FTA of Vietnam, hopefully, brings the massive profit to this 95-million-people country. However, it will turn into a big challenge if the human and capital infrastructure, as well as the trade policies, are not sufficient enough for CPTPP commitments and provisions.

6. Conclusion

The global economy has been unpredictably volatile. The main underlying reasons have come from conservative views and decisions of big players. In which, the actions of President Donald Trump to withdraw the United States from the Trans-Pacific deal and to execute many protectionist policies, the Brexit, the spread of populism in Western countries, especially the US-China trade tension have drawn much attention. China is the manufacturing hub of the world, but the pace of companies moving production out of China is accelerating. Vietnam has been considered as one of the alternative destinations for manufacturing factories of many companies, such as Japan's Nintendo, Chinese multinational electronics company TCL, athletic shoe makers – Asics, and so on.

Vietnam has signed 13 FTA with other partners up to 2019, of which the Viet Nam-EU free trade agreement (EVFTA) and the comprehensive and progressive agreement for

trans-pacific partnership (CPTPP) are the "new-generation" deals with higher and broader commitments. The recent-signed CPTPP aims to become one of new engines of growth for this emergingly export-motivated and trade-open economy. The primary purposes of this thesis are to assess the trade determinants of Vietnam's bilateral trades to 10 CPTPP economies and to discover the potential in those trades, if any. These goals are accomplished by employing the modified gravity model that was introduced by Peter H. Egger in 2002 with three econometric methods (the Ordinary Least Squares, the country-specific Fixed Effect, and the time-specific Fixed Effect) and a panel dataset covering exporting amount from Vietnam to the other 10 CPTPP economies over the period 1995-2018.

The empirical results of the regression model provide two significant findings. The first finding is about how the bilateral trades are influenced, as pictured in Table 8 - Regression result of OLS model: whole period and 2 sub-periods. Combined economic size, the similarity in economic capacity, and the difference in relative factor endowment between two countries in a trading pair do significantly have a positive impact on trades. The ASEAN co-membership and bilateral FTA, and bilateral real exchange rate give the same effect but not considerably. Physical distance also acts as expected when showing the friction effect on trade. However, the impact of WTO co-membership on trades is unexpected negative, which is still controversial in the literature. The undesirable effect of WTO-membership gives a warning to the Vietnamese government when entering the CPTPP agreement. Ineffective trade policies, and inadequate preparations of domestic firms and necessary infrastructure along with the fierce competition against other foreign players, "made-in-Vietnam" products could be defeated when a majority of trade barriers will be removed.

Another finding which is shown in Table 10 suggests that there is still room for Vietnam's export to the CPTPP region as in the calculation result of Average Standardized Trade Potential. In particular, Vietnam still has the potential with 7 out of 10 CPTPP economies: Australia, Canada, Japan, New Zealand, Singapore, Malaysia, and Brunei. This finding

also sheds light on the fact that the current trading policies of Vietnam have not worked efficiently as being set. Therefore, the Vietnamese government is supposed to work harder to take tremendous opportunities from being a member of CPTPP fully. The "new-generation" provisions and commitments in CPTPP's agreement can support Viet Nam to create more effective policies to promote an open multilateral trading system as well as to boost intensive international integration progress.

This paper suggests that a modified gravity model adjusted with a time-specific fixed effect works well in Vietnam. In addition to the above findings, it is free to further improvements for future research. Firstly, the dataset excludes the impact of CPTPP status on the bilateral trades of Vietnam because CPTPP ratifications and implementation has just been in its early stages. This impact will play a critical element in analyzing the trade determinants; however, it requires at least five years for data to be available. Secondly, this study is focusing on intra-bloc trades between Vietnam and other CPTPP members. The data sample can be extended to the effect from other countries outside the bloc, such as the US and China.

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A. Vietnam's bilateral export with its 10 CPTPP partner economies in 1995-2018

No	Type of FTA	Status	Date	Members
1	ASEAN Free Trade Area	Signed and In Effect	1998/ 2010/ 2012	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
2	ASEAN-People's Republic of China Comprehensive Economic Cooperation Agreement	Signed and In Effect	01 Jul 2005	People's Republic of China, ASEAN
3	ASEAN-[Republic of] Korea Comprehensive Economic Cooperation Agreement	Signed and In Effect	01 Jun 2007	Republic of Korea, ASEAN
4	ASEAN-Japan Comprehensive Economic Partnership	Signed and In Effect	01 Dec 2008	Japan, ASEAN
5	Japan-Viet Nam Economic Partnership Agreement	Signed and In Effect	01 Oct 2009	Japan, Vietnam
6	ASEAN-India Comprehensive Economic Cooperation Agreement	Signed and In Effect	01 Jan 2010	India, ASEAN
7	ASEAN-Australia and New Zealand Free Trade Agreement	Signed and In Effect	01 Jan 2010	Australia, New Zealand, ASEAN
8	Viet Nam-Chile Free Trade Agreement	Signed and In Effect	14 Mar 2012	Chile, Vietnam

No	Type of FTA	Status	Date	Members
9	[Republic of] Korea-Viet Nam Free Trade Agreement	Signed and In Effect	20 Dec 2015	Republic of Korea, Vietnam
10	Eurasian Economic Union-Viet Nam Free Trade Agreement	Signed and In Effect	05 Oct 2016	Armenia, Belarus, Russian Federation, Kazakhstan, Kyrgyz Republic
11	Comprehensive and Progressive Agreement for Trans-Pacific Partnership	Signed and In Effect	30 Dec 2018	Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam
12	ASEAN-Hong Kong, China Free Trade Agreement	Signed and In Effect	11 Jun 2019	Hong Kong-China, ASEAN
13	Viet Nam-European Union Free Trade Agreement	Signed but NOT YET In Effect	Signed: 30 Jun 2019	Austria, Belgium, Bulgaria, Cyrus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Malta, Slovakia, Slovenia, Spain, Sweden, United Kingdom, Netherlands, Vietnam
14	Viet Nam-European Free Trade Association Free Trade Agreement	Negotiations launched	Launched 2012	Liechtenstein, Iceland, Norway, Switzerland, Vietnam

No	Type of FTA	Status	Date	Members
15	Regional Comprehensive Economic Partnership	Negotiations launched	Launched 2013	Australia, Brunei, Cambodia, China, India, Indonesia, Japan, South Korea, Lao PDR, Malaysia, Myanmar, New Zealand, Singapore, Philippines, Thailand, Vietnam
16	Viet Nam-Israel Free Trade Agreement	Negotiations launched	Launched2015	Israel, Vietnam

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