Trade and Investment Effects of Free Trade Agreements: The Case of Vietnam

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Abstract

Regional trade agreements (RTAs) are reciprocal trade agreements between two or more partners. The relatively recent emergence of deep and comprehensive RTAs is expected to have substantial impacts on members, especially developing countries. For a particular country, the impacts of RTAs on trade and foreign direct investment (FDI) depend on various factors, with certain types of trade agreements working better in stimulating these flows. This thesis contributes four studies analysing the effects of RTAs that Vietnam has entered into, focusing on Vietnamese trade and investment. Based on econometric modelling, the first study investigates the effects of trade agreements and FDI on Vietnamese trade flows, while the second study explores whether Vietnam's overall involvement in FTAs enhances its FDI inflows. The remaining two studies employ computable general equilibrium (CGE) modelling to analyse the EU-Vietnam FTA (EVFTA) and Regional Comprehensive Economic Partnership (RCEP), with a focus on Vietnamese trade and investment.

Using the random effects technique to estimate the gravity models, the first study reveals that the bilateral trade agreements with the US and Japan have resulted in the greatest expansion in Vietnamese exports and imports, while the impacts from other RTAs are more mixed. Furthermore, the impacts on Vietnamese trade flows of FDI inflows are not as strong as those of some of the trade agreements. Results also suggest that Vietnam's exports have become more sensitive to FDI following the bilateral trade agreements with the US and Japan, whereas Vietnam's imports have become less sensitive to FDI as a result of the trade agreement with Japan.

The regression results from gravity models in the second study indicate that, overall, FTAs are associated with enhanced FDI flows in Vietnam. The results also indicate a dominance of vertical FDI in Vietnam. Further investigation of a recent sub-period reveals that FTAs also affect inward FDI flows to Vietnam through interaction terms with the real exchange rate, human capital, and factor endowments.

The CGE modelling of the EVFTA provides strong evidence of trade diversion following the EVFTA because the bilateral trade between Vietnam and the EU experiences tremendous growth, compared with the growth of their total exports

and imports. At the sectoral level, only the processed food, transport equipment, and labour-intensive manufacturing sectors in Vietnam witness significant export expansion, whereas the remaining sectors exhibit declines in exports. In terms of the investment effect of the EVFTA, the results indicate that Vietnam's short-run current rates of return increase considerably, largely due to the rise in the rental price of capital. These findings explain Vietnam's significant long-run capital gains. The results further suggest that Vietnam's capital gains resulting from tariff elimination are much larger than those arising from other policy actions.

Finally, the CGE modelling of the impacts of RCEP indicates that Vietnam's total real exports and imports both expand, with the growth rate of total exports slightly exceeding that of total imports. The results indicate strong evidence of trade diversion following RCEP, with the rise in Vietnam's imports from other RCEP members being greater than the increase in its total imports in both relative and absolute terms. In addition, Vietnam benefits from export expansion in most of the sectors modelled, except for some agricultural sectors. With regard to the investment effects of RCEP, the simulation results indicate that among RCEP members, Vietnam's short-run current rates of return experience the largest percentage increase, which explains the significant rise in the long-run capital stock in Vietnam. The findings also suggest that all the policy components modelled contribute to Vietnam's capital growth, with goods NTMs contributing most in the scenario with the greatest liberalisation.

Notes of Publications

The following papers from this thesis have been published, submitted to a journal, presented at a conference, or prepared for journal submission.

Chapter 2 is published as:

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Chapter 4 has been prepared for journal submission:

Duong, M., Strutt, A. (2019). Trade and investment effects of the EU-Vietnam free trade agreement.

Chapter 5 was presented at the EAEA conference and has been prepared for journal submission:

Duong, M., Strutt, A. (2018). Impacts of the Regional Comprehensive Economic Partnership on Vietnamese trade and investment. Presented at the 16th International Convention of the East Asian Economic Association (EAEA), 27-28 October 2018, Taipei, Taiwan.

Acknowledgements

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Abbreviations

AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
ACCECA	ASEAN-China Comprehensive Economic Cooperation Agreement
AJCEP	ASEAN-Japan Comprehensive Economic Partnership
AKCECA	ASEAN-Korea Comprehensive Economic Cooperation Agreement
AVEs	Ad Valorem Equivalents
CEPII	Centre d'Études Prospectives et d'Informations Internationales
CGE	Computable General Equilibrium
CPI	Consumer Price Index
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific
EU	European union
EVFTA	EU-Vietnam FTA
FDI	Foreign Direct Investment
FE	Fixed Effects
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GMM	Generalised Method of Moments
GSO	General Statistics Office of Vietnam
GTAP	Global Trade Analysis Project
H-O	Heckscher-Ohlin
IMF	International Monetary Fund
JVEPA	Japan-Vietnam Economic Partnership Agreement
MNEs	Multinational Enterprises
NTMs	Non-tariff Measures
OECD	The Organisation for Economic Co-operation and Development
OLI	Ownership, Location, and Internalisation
OLS	Ordinary Least Squares
PTAs	Preferential Trade Agreements (PTAs)
RCEP	Regional Comprehensive Economic Partnership
RE	Random Effects
RTA	Regional Trade Agreement
SPS	Sanitary and Phytosanitary

TBT	Technical Barriers to Trade
TPP	Trans-Pacific Partnership
TRQs	Tariff Rate Quotas
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
US	The United States
WDIs	World Development Indicators
WTO	World Trade Organisation

Chapter 1: Introduction

1.1   Overview

Regional trade agreements (RTAs) are defined as reciprocal trade agreements between two or more partners including customs unions and free trade agreements (FTAs), with a significant dominance of the latter (WTO, 2019). Between the 1960s and 1980s, RTAs were trivial in number, but there has been an increasing quantity of RTAs since 1990. In particular, 63 RTAs in goods entered into force over the 2000-2005 period, compared with 53 RTAs for the 1990-1999 period (Crawford & Fiorentino, 2005). The suspension in 2006 of the Doha Round, a multilateral trade agreement between WTO members, seems to have accelerated further RTA negotiations among countries, including Vietnam. In 2015, 265 RTAs were notified and in force, with 137 liberalising trade in goods, 1 liberalising trade in services, and the remaining 127 liberalising both goods and services (Acharya, 2016). As of January 2019, 291 RTAs were in force, with at least one for each WTO member as of June 2016 (WTO, 2019). By December 2015, more than half of RTAs covered investment provisions with different scope and coverage (Chornyi, Nerushay, & Crawford, 2016) and by January 2019, RTAs covered over half of international trade (OECD, 2019).

A country enters into a RTA largely due to the expectation of increases in intra-regional trade, members' welfare (Pant & Paul, 2018), and inward foreign direct investment (FDI) flows (Blomstrom & Kokko, 1997; Medvedev, 2012). In the long run, the integration is expected to increase growth rates of members thanks to greater market access, improved competition capacity, better resource allocation and positive externalities (Blomstrom & Kokko, 1997). Therefore, the academic literature has keenly explored the impact of RTAs on trade and FDI flows.

Regarding the relationship between RTAs and trade flows, there is still no firm conclusion on whether RTAs create more trade than they divert (Lee & Park, 2005). The concepts of trade creation and trade diversion were developed in the Custom Union Issue by Viner (2014) which was first published in 1950. Trade creation occurs when higher-cost domestic production of an FTA member is replaced with

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lower-cost imports from other members. Trade diversion takes place when an FTA member diverts its trade activities from non-members to other FTA members due to tariff reductions. Viner (2014) suggests that the dominance of trade creation or trade diversion effects will determine whether a RTA improves or reduces welfare. Bhagwati and Panagariya (1996) indicate that the creation of a preferential trading agreements (PTA) results in larger trade among members, but also fear that that PTAs may result in trade diversion.

There has been a variety of empirical studies examining the trade impact of RTAs in which both trade creation and trade diversion are reported. Based on the findings, existing studies can be categorised into three groups. Firstly, empirical studies analysing the impact of overall FTAs for a large sample of countries such as Baier and Bergstrand (2007), Lee and Park (2007), and Foster (2012) and those focusing on a particular FTA, including García, Pabsdorf, and Herrera (2013), Clausing (2001), Hassan (2001), and Sheng, Tang, and Xu (2014), report empirical evidence of trade creation. Secondly, there is evidence of both trade creation and trade diversion in empirical studies on multiple FTAs (Carrere, 2006; Kahouli & Maktouf, 2014). In particular, RTAs result in an increase in intra-regional trade, benefiting RTA members at the cost of the rest of the world. Thirdly, examining the impacts of various FTAs a particular country has made on its trade flows, some trade agreements are found to have positive effects, while others have negative or no impacts (Busse & Gröning, 2012; Ullah & Inaba, 2012). Thus, for a specific country, it is likely that some types of trade agreements work better than others in terms of expanding trade for a specific country.

With regard to investment effects of FTAs, there has not been a theoretical consensus on this issue. The main reason is that there are a variety of mechanisms through which FTAs can have impacts on FDI flows such as patterns of FDI, the investment provision of FTAs, sources of FDI, and the locational advantages of host countries, which may move in diverse directions. Several empirical studies have focused on investigating the linkage between FTAs and FDI flows and a definite conclusion has not been reached in the literature. Particularly, for multiple FTA studies, a group of studies by Yeyati, Stein, and Daude (2003), Medvedev (2012), Feils and Rahman (2011), and Thangavelu and Narjoko (2014) report that

FTAs lead to increased FDI flows. In contrast, other studies by Lederman, Maloney, and Serven (2003), Ullah and Inaba (2014), Dee and Gali (2003), and Jang (2011) show empirical evidence that FTAs can have no impact or lead to a decline in FDI flows. In terms of case studies, those focusing on a particular FTA show empirical evidence that the FTA is associated with increases in members' FDI flows (Feils & Rahman, 2008; Li, Scollay, & Maani, 2016; Lim, 2001; MacDermott, 2007; Waldkirch, 2003). In addition, overall FTAs a particular country has engaged in can have a positive (Crotti, Cavoli, & Wilson, 2010) or negative (Bae & Jang, 2013) impact on its FDI inflows.

The existing literature is characterised by a relative scarcity of studies exploring trade and investment effects of RTAs for a particular country. This pinpoints the importance of conducting more country-specific studies, especially for developing countries, to better understand the benefits of RTAs in terms of enhanced trade and FDI flows. Moreover, FTAs over time have progressed toward deep and comprehensive FTAs. Modern FTAs include traditional commitments of increased market access for goods and services, provisions on rules of origin and trade remedies such as anti-dumping, countervailing and safeguards (Acharya, 2016). However, they may also cover more sophisticated and new content in terms of investment provisions, electronic commerce, government procurement, competition, state-owned enterprises, intellectual property, labour movement, and environment. This new generation of FTAs has recently become an area of focus for both researchers and policymakers. For instance, the Trans-Pacific Partnership (TPP) and its successor, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), are found to have substantial impacts on trade and investment of its members (Minor, Walmsley, & Strutt, 2016; Petri & Plummer, 2016; Petri, Plummer, & Zhai, 2012; USITC, 2016; Walmsley, Strutt, Minor, & Rae, 2018).

Looking into the context of RTAs for Vietnam leads to a general question that needs to be addressed: How do the RTAs that Vietnam has entered into impact on its trade and investment? This thesis aims to answer this broad question, taking into account both Vietnam's RTAs that have entered into force and those Vietnam has more recently become involved in. Based on econometric and CGE modelling, this thesis

attempts to provide a broad picture of the trade and investment effects of RTAs for Vietnam.

1.2   Background and Research Questions

The Vietnam War ended in 1975 and after the reunification of the country in 1976, Vietnam focused on building the economy based on a state-centred development strategy. However, the economy stagnated under the centrally planned system, leading to a widespread food shortage, with poverty levels above 70% (UNCTAD, 2008). Therefore, at the sixth Party Congress in 1986, the Vietnamese Government launched the "Doi Moi" (Renovation) Policy, shifting from a centrally planned to a market-oriented economy. Over the last three decades, Vietnam has received significant achievements. For instance, the poverty rate in the early 1990s of 58% had substantially reduced to only 14.5% by 2008, 14.2% by 2010 (World Bank, 2012), and 9.8% by 2016 (Pimhidzai, 2018). The average rate of Vietnam's GDP growth was 6.5% in the 1986-2017 period.[1] Over the same period, foreign trade growth averaged 18%.[2]

Since the beginning of the "Doi Moi" policy, Vietnam has pursued an export-led growth strategy in which trade, FDI, and trade liberalisation have been promoted. One of the most significant reforms in Vietnam's trade policy was the abolition of state-owned enterprises' monopoly in foreign trade in the late 1990s, allowing all enterprises to trade (Vo, 2005). To further support enterprises' trading activities, foreign exchange management was relaxed, with the foreign exchange surrender rate decreasing from 50% in 1999 to 0% in 2003 for all economic entities (Vo & Nguyen, 2011).[3] Other major trade policy reforms relate to tariffs and quotas. More specifically, the tariff system for exports and imports has been revised to be simpler and more consistent since 1992 and used to protect domestic production and promote trade. For instance, imports of intermediate inputs that can be domestically produced face relatively high tariffs in Vietnam (Nguyen & Ezaki, 2005; To & Lee, 2015), while imported goods used in export production have been subject to tariff

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[1] Calculated from World Development Indicators, accessed at https://data.worldbank.org/
[2] Calculated from the database of Vietnam's General Statistics Office, accessed at www.gso.gov.vn
[3] A foreign exchange surrender requirement relates to the selling of foreign exchange within a certain period of time.

exemption (Chaponnière & Cling, 2009; Vo, 2005). With respect to quotas, Vietnam's quantitative controls on most imported goods have largely been removed since 2001, with the exception of eggs, sugar, tobacco, and salt.

In addition, FDI attraction has been a critical focus of the Vietnamese reform process since the mid-1980s. The Law on Foreign Investment was first promulgated in 1987 with three forms of investment including business corporate contract, joint ventures, and 100% foreign-invested enterprises. Since then it has been revised several times in 1990, 1992, 1996, 2000, and 2005. Amendments such as improvements in FDI management procedures, reductions in profit transmittal tax rates (Leproux & Brooks, 2004), and increases in foreign participation in some industries have aimed at generating an attractive investment climate for inward FDI.

Together with unilateral reforms, Vietnam has accelerated its trade liberalisation process. The "Doi Moi" has integrated Vietnam into the world economy. Vietnam became a member of ASEAN in 1995 and APEC in 1998. Vietnam's entry into the Vietnam-US bilateral trade agreement in 2002 was considered as a milestone for trade liberalisation. The commitments of reform following the agreement were critical to Vietnam's negotiation process to become a WTO member. Vietnam's accession to the WTO in 2007 after 11 years of negotiation was a breakthrough in Vietnam's trade policy, marking Vietnam's commitment to a multilateral trading system (Nguyen, 2016). More importantly, Vietnam has engaged in deeper trade liberalisation through its participation into a variety of bilateral and RTAs. Vietnam became a member of the ASEAN free trade area (AFTA) in 1996. Between 2005 and 2010, ASEAN had five FTAs entering into force with China, Korea, Japan, India, New Zealand and Australia. ASEAN's sixth FTA with an external partner, the ASEAN-Hong Kong FTA, was signed in November 2017.[4] Vietnam has signed bilateral FTAs with Japan (2008), Chile (2011), Korea (2015), and the EU (2019). Recent FTAs entering into force include the Vietnam-Eurasian Economic Union (2016) and the CPTPP. Three FTAs including the Regional Comprehensive Economic Partnership (RCEP), Vietnam-Israel, and European Free Trade Association (EFTA)-Vietnam have not been signed yet.

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[4] https://asean.org/

It has also been observed that increased trade and FDI inflows to Vietnam are accompanied by Vietnam's involvement in bilateral and RTAs. However, economic integration through trade agreements and reforms in other areas were simultaneously implemented during the last three decades (To, 2018). This motivates me to ask the first and second specific research questions:

Research Question 1: How have trade liberalisation agreements and FDI promoted Vietnamese exports and imports?

This thesis addresses this question in Chapter 2 by evaluating the impact of trade liberalisation agreements and FDI on Vietnam's exports and imports, based on panel data for Vietnam and its main trading partners over a 1996-2014 study period. With an application of gravity models, the degree to which various trade agreements have enhanced the impact on Vietnamese trade flows from inward FDI flows is examined. Specifically, this study reveals which of the trade agreements has been more efficient in terms of expanding Vietnamese exports and imports. In addition, the question of whether Vietnamese trade becomes more sensitive to FDI following the trade agreements is also addressed. In other words, how particular FTAs impact trade flows through interaction terms with FDI is also explored.

Research Question 2: How do free trade agreements impact on Vietnam's inward FDI flows?

This research question is addressed in Chapter 3 of this thesis where the linkage between FTAs and FDI is investigated with gravity models. Panel data for Vietnam's 17 main foreign investors over the period 1997-2016 and 23 partners for the sub-period 2005-2016 are used. The inclusion of the later sub-period is to account for changes in Vietnam's significant FDI partners, dramatic increases in Vietnam's inward FDI flows, and Vietnam's involvement in a variety of bilateral and RTAs in this period. The estimation of regressions for the two periods allow us to compare and contrast the findings, evaluating whether overall FTAs have a greater impact on FDI inflows in the later sub-period. In addition, further examination of the later sub-period is implemented to assess whether FTAs have any effects on Vietnam's inward FDI flows through interaction terms with key drivers of FDI. Based on the outcomes for FTAs and other independent variables

such as trade, factor endowments, and the interaction term between FTAs and factor endowments, this research question provides insights into Vietnam's patterns of FDI.

In recent years, Vietnam has participated in mega-FTAs, the new generation of trade agreements, with three notable FTAs including the CPTPP, RCEP, and EU-Vietnam FTA (EVFTA). CPTPP is an FTA involving Vietnam and other 10 countries in the Asia-Pacific including Japan, Singapore, Malaysia, Brunei, Australia, New Zealand, Canada, Chile, Mexico, and Peru. This FTA has been in force since December 2018. It is the successor to the TPP where the US was included. The TPP members accounted for 36.8% of world GDP in 2018.[5] However, the CPTPP without the US contributed only 13.3% to the world GDP in 2018, with a total population around 480 million people.[6]

RCEP is a proposed FTA which was launched in November 2012. RCEP covers ASEAN member states and six countries having FTAs with the ASEAN-Japan, China, South Korea, India, New Zealand, and Australia. With the US withdrawal from the TPP, RCEP has become larger than the CPTPP. In 2018, the 16 countries included in RCEP accounted for around 32% of world GDP, 28% of global trade, and a combined population of over 3.5 billion people-almost half of the world's population. RCEP without India accounted for 30% of global population and 29% of world GDP in the same year.[7]

While the CPTPP and RCEP are RTAs, the EVFTA is a bilateral FTA between Vietnam and the EU. The EVFTA was signed on 30 June 2019 in Vietnam after 10 years of negotiations. Notably, all of Vietnam's leading trading and FDI partners are covered in the EVFTA and RCEP. For instance, in 2018, the top five export markets for Vietnam include the US, EU, China, ASEAN, and Japan, while Vietnam's largest import partner is China, followed by South Korea, ASEAN, Japan, and the EU.[8] For investment, Japan was the largest foreign investor in

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[5] Authors' calculations based on the data from the World Development Indicator, accessed at https://data.worldbank.org/indicator
[6] https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/cptpp/cptpp-overview/
[7] Calculated from the World Development Indicators, accessed at https://data.worldbank.org/indicator
[8] Calculated from IMF data, Direction of Trade Statistics, accessed at https://data.imf.org/

Vietnam in 2018, followed by South Korea, intra-ASEAN, Hong Kong, China, and the EU.[9] While the TPP/CPTPP has been widely analysed with the impact on Vietnam reported by several studies such as Petri et al. (2012), Petri and Plummer (2016), Areerat, Kameyama, Ito, and Yamauchi (2012), and Minor et al. (2016), studies on RCEP focusing on Vietnam are rare. Furthermore, the EVFTA was signed in mid-2019, which is expected to bring substantial gains to the Vietnamese economy. Motivated by potential benefits to Vietnamese trade and investment following the deep and comprehensive FTAs, this thesis poses the third and fourth research questions:

Research Question 3: How might Vietnamese trade and investment change following the EU-Vietnam FTA?

To answer this research question, Chapter 4 of this thesis explores the impact of the EVFTA, focusing on Vietnamese trade and investment with a computable general equilibrium (CGE) model. Based on the text of this agreement, I model as close to the agreement's contents as possible. Like other modern FTAs, the EVFTA is a deep and comprehensive FTA covering not only tariff removal but also reductions in goods and services non-tariff measures (NTMs), improvement in trade facilitation and liberalisation barriers to FDI. Therefore, all of these liberalisation components are included in the policy scenarios. However, as EVFTA is a bilateral FTA between a developed region and developing country, Vietnam is likely to have a greater extent of liberalisation in some areas. Trade facilitation and investment liberalisation are therefore modelled for only Vietnam because time to import and barriers to FDI based on the OECD FDI index in the EU are already relatively small. Specifically, changes in Vietnam's trade and investment due to both trade and investment liberalisation through the EVFTA are examined in the third research question of this thesis.

In addition to the global trade analysis project (GTAP) database version 10, we calculate ad valorem equivalents (AVEs) of goods and services NTMs based on World Bank (2019) and Fontagné et al. (2016) respectively for both Vietnam and the EU. Time to import data are sourced from the World Bank Doing Business

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[9] https://data.aseanstats.org/

(2019), while the data relating to investment liberalisation share the same sources as the RCEP modelling.

Research Question 4: How might Vietnamese trade and investment change following RCEP?

To answer this research question in Chapter 5 of this thesis, a study using a CGE modelling framework is conducted to investigate the impact of RCEP with a focus on Vietnamese trade and investment. As this FTA has not been concluded yet, policy components included in the model rely on guidance in the principles and objectives for the RCEP negotiation (ASEAN Secretariat, 2012), as well as completed rounds to date. Four policy components are modelled including tariffs, goods and services NTMs, and investment liberalisation. Particularly, changes in trade and investment in Vietnam due to both trade liberalisation and investment liberalisation through RCEP are addressed in the research question above.

Together with the GTAP database version 10, I use data on AVEs of services NTMs by Fontagné, Mitaritonna, and Signoret (2016) and goods NTMs by Kravchenko, Utoktham, Narayanan, and Duval (2019). These data are then applied to sectors and regions modelled for RCEP. Regarding the data on liberalisation of FDI barriers, I also make use of the OECD FDI index (OECD, 2018), FDI stock database (Gouel, Guimbard, & Laborde, 2012), total FDI stock (UNCTAD, 2018), and capital stock (Feenstra, Inklaar, & Timmer, 2015). Based on these data, I exogenously estimate increases in sectoral capital stocks which are implemented as appropriate reductions in tax on capital.

1.3   Summary of Objectives of the Thesis

The overall objective of this thesis is to examine trade and investment effects of the key FTAs with which Vietnam is involved. More specifically, this thesis has the following primary objectives:

1. To assess the impact of trade agreements and FDI on Vietnamese trade, the degree of sensitivity of Vietnamese trade to FDI following the trade agreements and pinpoint the effective trade agreements in terms of stimulating Vietnamese exports and imports;

2. To evaluate the impact of the overall FTAs on Vietnam's inward FDI flows;

3. To evaluate how the EVFTA affects Vietnam with a focus on trade and investment; and

4. To analyse the effects of RCEP on Vietnam through both trade and investment liberalisation, focusing on changes in trade and investment.

1.4 Methodological Techniques

Gravity Model

Two chapters of this thesis use econometric models. In particular, gravity models are employed in Chapters 2 and 3 for trade and FDI analysis respectively. Such models were originally used by Tinbergen (1962) in trade analysis. However, over time they have also been widely used in studies on FDI flows. The gravity model predicts that trade or FDI flows between two countries positively depend on their GDP and negatively rely on transaction cost such as the distance between them. To reduce potential omitted variable bias, gravity models have been extended with more explanatory variables for trade and FDI analysis. The advantage of gravity models mentioned in the study of Brodzicki and Stanisław (2013) is that characteristics of both countries and regions can be accounted for. To estimate the gravity model, I make use of ordinary least squares (OLS), fixed effects (FE), and random effects (RE) estimators. Both FE and RE have their own advantages. In particular, FE can provide consistent estimates and control for unobserved time-invariant specific factors, whereas time-invariant variables of gravity models such as distance and border can be estimated using RE. Thus, based on some specification tests, the best estimator should be determined.

In terms of other estimators, Webb, Strutt, and Rae (2016) note that Poisson pseudo maximum likelihood (Santos Silva & Tenreyro, 2006) and Heckman selection approaches (Helpman, Melitz, & Rubinstein, 2008) are the two major techniques that have been applied to contemporary gravity models. However, these estimators have often been used to address the issue of zero observations which is not an issue in this thesis with the focus only on Vietnam. Moreover, generalised method of moments (GMM) including both the difference GMM (Arellano & Bond, 1991)

and the system GMM (Blundell & Bond, 1998) have also been found in applications of gravity models. This method is efficient in addressing endogeneity. However, the technique is appropriate for dynamic panel data with a short time dimension which does not fit the data in this thesis. Thus, OLS, FE, and RE are better-suited and are used in this thesis.

Computable General Equilibrium Model

This thesis makes use of the GTAP model (Hertel, 1997) and database (Aguiar, Chepeliev, Corong, McDougall, & van der Mensbrugghe, 2019) to analyse the EVFTA and RCEP in Chapters 4 and 5 respectively. The GTAP is a multi-sector, multi-region CGE model, which has become widely used in global trade analysis. The benefit of the GTAP model for trade analysis is that it not only takes into account economic activities and sectoral interactions for a country, but also the economic relationship between that economy and other economies, as well as the rest of the world. As the EVFTA has recently been signed and RCEP is still under negotiation, econometric models which usually require historical data are not appropriate for these cases. A global CGE model is a much better suited to the task of assessing potential future impacts of trade agreements.

1.5   Contributions of the Thesis

This thesis comprises four studies which together explore trade and investment effects of the key trade agreements Vietnam has made. Each study has its own contributions, making the whole thesis significant in several ways.

First, this thesis extends the evaluation of the effects of FTAs on trade flows. Empirical studies that decompose the impact of FTAs that a particular country has entered into on its trade flows are scarce. In addition, existing studies often focus on analysing the impact on trade flows of either FTAs or FDI flows. This thesis takes into account the two factors as key drivers of trade flows, with Vietnam as a case study. By doing so, it is possible to point out the efficient trade agreements Vietnam has entered into in terms of expanding exports and imports as well as the extent of sensitivity of Vietnamese trade to FDI following the trade agreements.

Second, whether or not the overall involvement in FTAs of a developing country such as Vietnam impacts on its FDI inflows is investigated. There have been limited empirical studies on this issue in current literature and all of them have focused on case studies for developed countries. However, addressing this linkage is crucial for assessing the magnitude of effectiveness of FTAs as drivers of FDI flows.

Third, this thesis models the EVFTA as closely to the text of the agreement as possible, using a global CGE framework. This is the first study on the EVFTA that models all the five policy components, including tariffs, goods NTMs, services NTMs, trade facilitation, and liberalisation of FDI barriers. Previous studies, such as Baker, Vanzetti, and Pham (2014) and Philip et al. (2011) analyse the economic effects of tariff elimination through the EVFTA before this agreement was concluded. In other studies, the same liberalised assumptions are applied to the EVFTA and other mega-FTAs of Vietnam for a comparison purpose (Kikuchi, Yanagida, & Vo, 2018), and liberalisation of FDI barriers is not captured (Baker & Vanzetti, 2019; European Commission, 2018; Kikuchi et al., 2018). Moreover, accounting for priority sectors is important for bilateral FTAs, especially those between a developed and developing side. The developing party is more likely to have greater liberalisation in some areas. In this thesis, the modelling of services NTMs and investment liberalisation pays attention to the sectors receiving greater liberalisation following this agreement.

Fourth, this thesis endeavours to measure the effect of investment liberalisation under RCEP on trade and investment, again using a CGE model. Most studies on FTAs using CGE frameworks do not model changes in FDI, partly due to the dearth of available global FDI data (Strutt, Minor, & Rae, 2015). Those that do largely rely on CGE-FDI models in which FDI is endogenously incorporated (Ciuriak & Xiao, 2014; Li, Scollay, & Gilbert, 2017). The construction of these models may be very convoluted. However, estimation of changes in FDI stocks can be exogenously implemented, with estimates later used in the CGE model (Petri et al., 2012). In this thesis, based on the OECD FDI index, increases in sectoral FDI stock and capital stock are exogenously estimated and then serve as inputs for the CGE model. With this method, it is possible to capture liberalisation of FDI barriers under RCEP within a modified standard CGE modelling.

In addition to trade effects, this thesis evaluates changes in investment following the EVFTA and RCEP within modified standard CGE frameworks. A few recent studies analysing modern FTAs have embarked on some modifications to static CGE models to capture capital accumulation in the models (Kawasaki, 2015; Kikuchi et al., 2018), but all of them have focused on trade and welfare effects and ignored changes in capital stocks. However, trade liberalisation through elimination of tariffs and non-tariff barriers (Francois, McDonald, & Nordstrom, 1996; Walmsley, 1998) are found to have significant impacts on capital stocks. Likewise, investment liberalisation following FTAs also leads to increased FDI flows (Li et al., 2017; Petri et al., 2012). Indeed, it is critical to assess changes in investment following an FTA, especially in a developing country where there has been an investment deficiency. Furthermore, this thesis uses new databases of AVEs of goods NTMs in the modelling of both the EVFTA and RCEP, from the World Bank (2019) and Kravchenko et al. (2019) respectively. These data are bilateral and detailed, facilitating modelling at the GTAP sectoral levels. Thus, they are superior to the country-specific AVEs of NTMs that each country imposes on rest of the world, often used in previous studies.

1.6   Thesis Outline

The remaining chapters of this thesis are organised as below. Chapter 2 illustrates the importance of key trade agreements as well as FDI inflows to Vietnamese trade. The chapter begins with a description of trade liberalisation, FDI and trade in Vietnam. This is followed by a review of relevant theoretical and empirical literature, which indicates that FTAs and FDI are critical drivers of trade flows. This chapter then moves on to investigate how the two determinants impact Vietnamese trade flows.

Chapter 3 evaluates another role of FTAs as a key determinant of FDI flows for Vietnam. In addition to addressing the linkage over an extended period, this chapter also emphasises a sub-period during which a variety of FTAs have entered into force. The chapter begins by describing trends and patterns of FDI in Vietnam. It continues with a theoretical framework and a summary of relevant existing studies. Then panel analysis is conducted to assess the FTA-FDI relationship.

Chapters 4 and 5 continue to explore trade and investment effects of FTAs on Vietnam through the two modern FTAs, the EVFTA and RCEP. Chapter 4 sheds fresh light on modelling liberalising components of the EVFTA, carefully based on the text of this agreement. This chapter evaluates how tariff removals, NTMs cuts and improvement in trade facilitation lead to changes not only in Vietnamese trade but also in Vietnamese investment. In addition, the effects of investment liberalisation are also emphasised. This chapter begins with a succinct description of key empirical literature analysing FTAs between the EU and its partners, including those focusing on trade liberalisation and more modern FTAs. It then discusses Vietnam's trade with the EU and EU's investment in Vietnam. This chapter then proceeds to describe the model used and policy scenarios considered, based on the content of this agreement, before discussing the simulation results.

Chapter 5 examines how Vietnamese trade and investment may change as a result of RCEP. This chapter highlights the potential impacts of not only trade liberalisation but also investment liberalisation under RCEP. First, this chapter synthesises relevant empirical studies on RCEP. Next, the CGE modelling framework and policy scenarios are presented. Then, changes in Vietnamese trade and investment are analysed.

Chapter 6 provides a summary of the key findings of the whole thesis, with a discussion of the implications for researchers and policymakers. Some limitations of this thesis are also noted. Finally, some important prospective avenues for future research are summarised.

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Chapter 2: Effects of Trade Agreements and Foreign Direct Investment on Trade: Evidence from Vietnam

2.1 Introduction

In recent decades there has been a striking proliferation of regional trade agreements (RTAs). The World Trade Organization (WTO) notes that 303 RTAs were in force as of January 2020: A dramatic increase from less than 10 agreements that were in force in the early 1990s (WTO, 2018). RTAs, along with encouraging foreign direct investment (FDI) inflows, have been important areas of policy focus for Vietnam; however, they can have complex and sometimes ambiguous effects on trade. In this paper, we assess the impact of trade liberalisation agreements and FDI on Vietnam's imports and exports.

Despite the current prevalence of RTAs, the impact this type of trade liberalisation has on trade remains inconclusive. While free trade agreements (FTAs) are generally expected to increase trade flows (Baier & Bergstrand, 2007; Lee & Park, 2007; Vanhnalat, Phonvisay, & Sengsourivong, 2015), there is also evidence of trade diversion when evaluating specific RTAs (Carrere, 2006; Kahouli & Maktouf, 2014). Moreover, there are examples of RTAs that do not lead to increased export flows, such as for Bangladesh when there was restricted regionalism and high non-tariff barriers (Ullah & Inaba, 2012), or in the case of Jordan when the focus was on the short term impacts of limited liberalisation (Busse & Gröning, 2012).

In addition to negotiating RTAs, Vietnam has been implementing policies to encourage inflows of FDI. FDI is often regarded as a particularly important component of total investment due to its relative stability compared to portfolio capital flows and commercial lending (UNCTAD, 1999). As well as addressing the issue of capital shortages in host countries, FDI contributes to the development of technology, management and an increased understanding of international markets (Brooks, Roland-Holst, & Zhai, 2008). Due to its crucial importance to host countries, FDI has been widely studied, with special attention paid to the linkage between FDI and trade. While some researchers find a complementary relationship between FDI and trade (Clausing, 2001; De Mello Jr & Fukasaku, 2000; Jawaid,

Raza, Mustafa, & Karim, 2016), others find that FDI and exports are substitutes (Belderbos & Sleuwaegen, 1998; Beugelsdijk, Smeets, & Zwinkels, 2008). Furthermore, mixed effects are found in the studies of Svensson (1996), Blonigen (2001) and Swenson (2004).

Despite their potentially ambiguous impacts, FTAs and inward FDI are considered to be key drivers of Vietnam's trade. Since Vietnam's "Doi Moi" or Renovation Policy[10] was launched in the mid-1980s to facilitate change from a centrally planned to a market-oriented economy, Vietnamese trade policy has been based on pursuing an export-led growth strategy (Nguyen & Xing, 2008), in which trade liberalisation, exports and FDI have been promoted (Chaponnière & Cling, 2009). Therefore, examining the effects of both trade liberalisation and FDI on Vietnam's trade is important, especially when foreign trade has become a primary factor driving economic growth (Kastelle & Liesch, 2013). Most developing countries are heavily dependent on imports of machinery, equipment and energy to support economic development, with imports being crucial for technology transfer (Acharya & Keller, 2009). Moreover, increased exports may result in higher labour productivity and the creation of well-paying jobs, thanks to greater competition with foreign firms (Mijiyawa, 2017).

From the start of the Renovation Policy, Vietnam experienced an expansion of foreign trade, with an annual growth rate of almost 18% over the period 1995-2017.[11] Likewise, there has been a surge of FDI inflows to Vietnam, increasing from US$ 1.8 billion in 1995 to US$ 14.1 billion in 2017 (UNCTAD, 2018). The acceleration of Vietnam's foreign trade has accompanied its deeper involvement in trade liberalisation, achieved through a series of trade agreements. With this general observation in mind, it is of interest to examine the extent to which various bilateral and FTAs have enhanced the impact from FDI inflows.

The current study investigates the extent to which trade agreements and FDI inflows stimulate Vietnamese exports and imports. We make a number of significant

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[10] The "Doi Moi" (Renovation) Policy was launched by the Vietnamese Government at its Sixth Party Congress in December 1986 with the goal of creating a market-oriented economy.

[11] Calculated from the database of the Vietnam's General Statistics Office, accessed at www.gso.gov.vn

contributions to the literature. First, while most previous studies focus on analysing the impacts of either trade liberalisation or FDI on trade, we take into account the impacts of both factors, due to their mutual importance to trade in a transitional economy such as Vietnam. The second contribution of this paper is that we decompose the different effects of various FTAs and FDI on both exports and imports for Vietnam. Initial evidence confirms that both trade and FDI have increased in recent years, but there are two important questions that warrant further investigation in this paper. Of the trade agreements that Vietnam has entered into, which of these has been the more effective in terms of stimulating exports and imports? In addition, to what extent has Vietnamese trade become more sensitive to FDI as a result of the trade agreements?

The remainder of this paper is organised as follows. Section 2.2 briefly describes Vietnamese trade liberalisation, FDI and trade, followed by a discussion of the previous studies of relevance in Section 2.3. Section 2.4 outlines the model specification, data and methodology used to examine Vietnam over the 1996-2014 study period using random effects estimation. Section 2.5 discusses the empirical results, finding that there is significant variation in the impacts of the various trade agreements, and the sensitivity of imports and exports to FDI has also changed. Section 2.6 presents our concluding remarks.

2.2   Trade Liberalisation, FDI and Trade in Vietnam

2.2.1   Trade Liberalisation and Trade

Since the Renovation Policy was introduced in the mid-1980s, trade reforms focusing on liberalisation have been considered a primary focus of Vietnam's economic reform. Together with unilateral reforms, Vietnam has accelerated its trade liberalisation process through bilateral and RTAs. In particular, Vietnam became a member of the ASEAN free trade area (AFTA) in 1996. Foreign trade between Vietnam and its ASEAN partners increased considerably between 2002 and 2007, with an average growth rate of almost 27% for this period before the Global Financial Crisis.[12]

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[12] Calculated from the database of Vietnam's General Statistics Office, accessed at www.gso.gov.vn.

Trade between Vietnam and the United States (US) has increased since the elimination of the US embargo in 1994. The bilateral trade agreement between Vietnam and the US (USBTA) came into force in 2002 and is considered a milestone in Vietnam's trade liberalisation process. This was the most comprehensive trade agreement between the US and a developing country (Athukorala, 2006). According to the GSO (2018), Vietnam's exports to the US amounted to US$ 2.5 billion in 2002, which was more than double the previous year. This bilateral trade agreement also accommodated a dramatic increase in Vietnam's imports from the US, from US$ 411 million in 2001 to US$ 1.1 billion in 2003 (GSO, 2018).

Due to the commitments of reforms, the USBTA was good preparation for Vietnam's negotiation to become a WTO member. With accession to the WTO in 2007, following 11 years of negotiation, Vietnam's exports have benefitted from most-favoured nation (MFN) status. In particular, Vietnam's exports in 2008 were more than 57% above those in 2006 (GSO, 2018). Similarly, compared to the level reached before Vietnam's accession to the WTO, Vietnam's imports saw a 80% increase, surging from US$ 44.9 billion in 2006 to US$ 80.7 billion in 2008 (GSO, 2018).

As shown in Figure 2.1 Vietnam's foreign trade has increased substantially since the mid-1990s. While the Global Financial Crisis caused a dip in this growth, the strong growth has resumed in more recent years.

Figure 2.1: Vietnam's Total Exports and Imports, 1995-2017 (US$ billion)
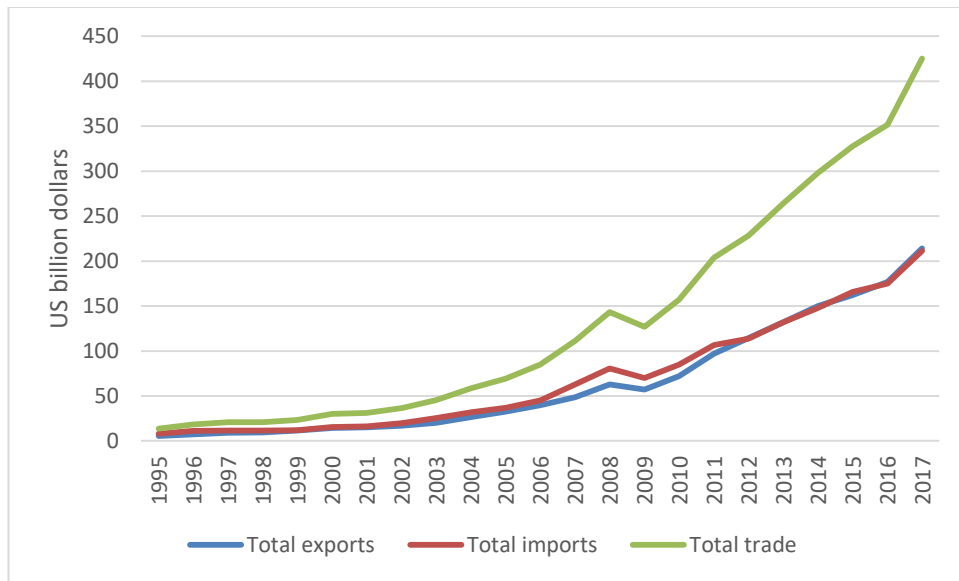
In recent years, Vietnam has been involved in deeper trade liberalisation through its participation in a variety of bilateral and RTAs which include the following: ASEAN-China Comprehensive Economic Cooperation Agreement (ACCECA) starting in 2005, ASEAN-India Comprehensive Economic Cooperation Agreement in 2010, ASEAN-Japan Comprehensive Economic Partnership (AJCEP) in 2008, ASEAN-Korea Comprehensive Economic Cooperation Agreement (AKCECA) in 2010, ASEAN-Australia and New Zealand Free Trade Agreement in 2010, Chile-Vietnam Free Trade Agreement in 2014 and the Japan-Vietnam Economic Partnership (JVEPA) in 2009.[13] It appears these FTAs have largely contributed to the increase in Vietnam's exports and imports since the Global Financial Crisis. However, compared with Singapore, Malaysia, Thailand and Indonesia, Vietnam is characterised by a much weaker global competitiveness ranking (Appendix, Table 2.3), as well as through generally lower exports to China (Appendix, Table 2.4). This points towards the need for increasing competitiveness being a key priority in Vietnam's trade liberalisation process.

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[13] The entry into force years noted are WTO data, accessed at www.wto.org.

2.2.2 FDI and Trade

Investment is a significant factor spurring economic development in Vietnam. To address the problem of capital deficiency, the Vietnamese government has been trying to improve access to investment, especially through FDI, which is regarded as more stable than portfolio capital and debt flows (Maher, Christiansen, & Fortainer, 2001).

Figure 2.2 indicates that Vietnam has performed well in attracting FDI inflows, amounting to US$ 14.1 billion in 2017 as opposed to the minimal level of US$ 0.18 billion in 1990. As can be seen from Figure 2, Vietnam experienced significant decreases in FDI as a result of the Asian Financial Crisis, though even before this, the impact of policy backsliding was impacting the FDI boom (Athukorala & Tran, 2012). However, reforms implemented in response to this decline helped to reverse the downturn, particularly reforms implemented since 2003 (Athukorala & Tran, 2012). It is interesting to note that while most other ASEAN members saw a sharp decrease in FDI inflows in 2008 due to the Global Financial Crisis, Vietnam continued to attract increased FDI inflows amounting to US$ 9.6 billion, a 37% expansion relative to 2007, demonstrating Vietnam's capacity in sustaining FDI interest despite the crisis (ASEAN Secretariat, 2009).

Figure 2.2: Total FDI Inflows to Vietnam, 1990-2017 (US$ billion)
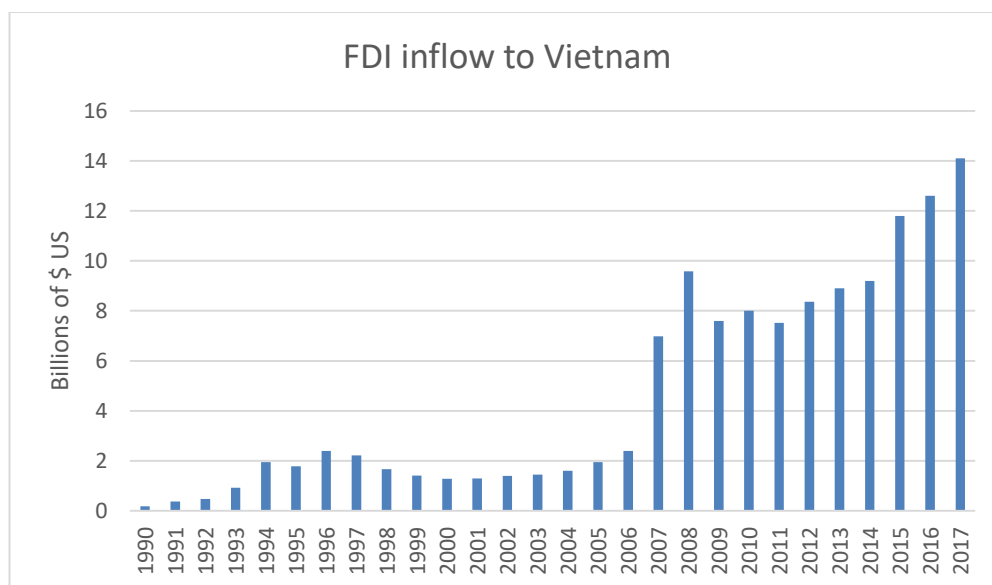
Source: UNCTAD (2018)

Figure 2.3 indicates that from 1988 up to late 2017, more than 70% of the total registered FDI in Vietnam originated from Asia. Specifically, East Asian countries including Hong Kong, Taiwan, Republic of Korea and China accounted for 37% of the total registered FDI in Vietnam, with Korea ranking first. Japan and Singapore were the second and third largest investors in Vietnam.

Figure 2.3: FDI Inflows to Vietnam, Share by Source Country, 1988-2017 (%)

FDI by source countries: Total registered FDI

- Rep. of Korea, 18.1
- Japan, 15.4
- Singapore, 13.3
- Taiwan, 9.7
- British Virgin Island, 7.1
- Hong Kong, 5.6
- United States, 3.1
- Malaysia, 3.8
- China, 3.8
- Thailand, 2.9
- Others, 17.2
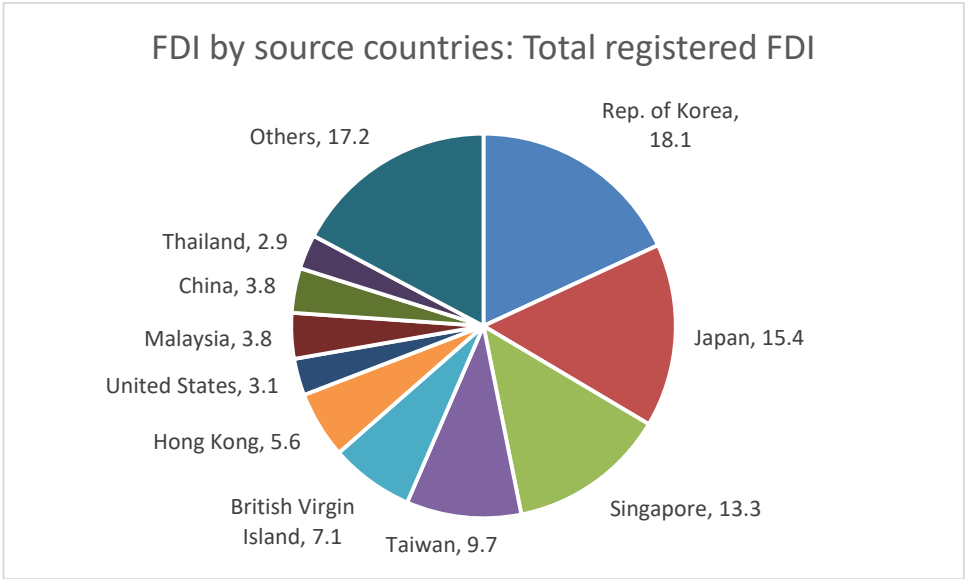
Source: Vietnam's Statistical Yearbook 2017

As shown in Figure 2.4, FDI inflows to Vietnam have been highly concentrated, mostly surging to regions with better economic development. In particular, the South East region has been the largest FDI destination with 42.7% of the total registered FDI during the period 1988-2017, followed by the Red River Delta region (27.9%) and the North Central and Central coastal region (17.9%). In contrast, the three remaining areas have attracted limited FDI flows (11.4%) with Central Highlands receiving a minimal share (0.3%).

Figure 2.4: FDI Inflow Shares to Different Regions in Vietnam, 1988-2017 (%)

FDI by regions: Total registered FDI

- Red River Delta
- Northern midlands and mountain areas
- North Central and Central coastal areas
- Central Highlands
- South East
- Mekong River Delta
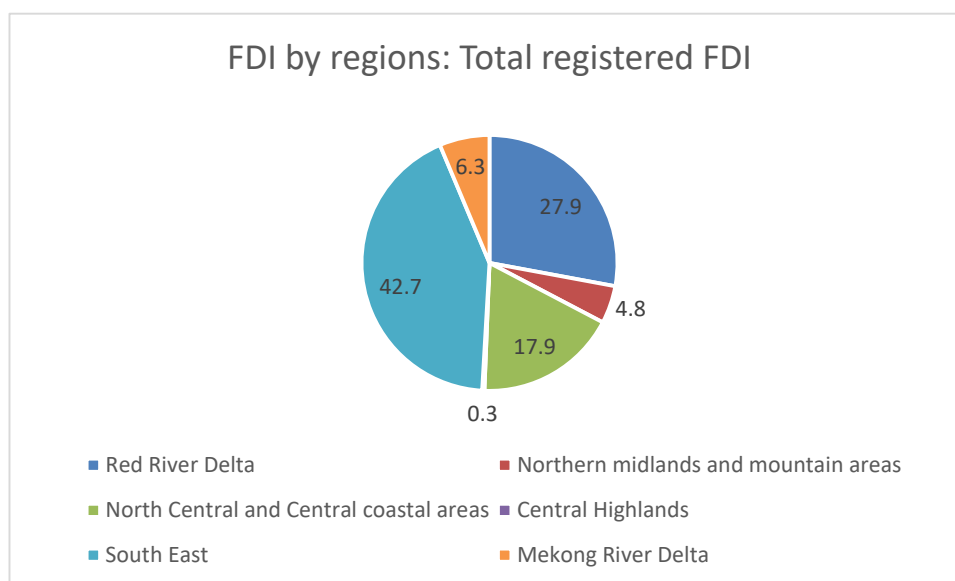
Source: Vietnam's Statistical Yearbook 2017

In addition to providing investment capital for Vietnam, FDI flows into Vietnam have an important role in stimulating Vietnam's trade. As can be seen in Figure 2.5, the foreign invested sector[14] has contributed greatly to Vietnam's total trade, with increasing shares in total exports and total imports. Exports by the foreign invested sector accounted for half of total exports for the first time in 2003, as opposed to 27% in 1995. In 2017, the foreign-invested sector accounted for more than 70% of Vietnam's total exports. Like exports, imports by the foreign invested sector have increased dramatically, from a relatively small share of total imports in 1995 (18%) to more than a half of total imports in 2017 (60%), more than tripling its share over this period.

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[14] Total exports and imports of Vietnam are the combined values from the domestic economic sector and foreign invested sector. The foreign invested sector refers to enterprises in which foreign ownership accounts for at least a 51 percent threshold, as stated in the 2014 Law on Investment in Vietnam, accessed at the website of Ministry of Justice of Vietnam: www.moj.gov.vn/vbpq/lists/vn%20bn%20php%20lut/view_detail.aspx?itemid=30315

Figure 2.5: Foreign Invested Sector's Shares of Total Exports and Imports in Vietnam, 1995-2017 (%)
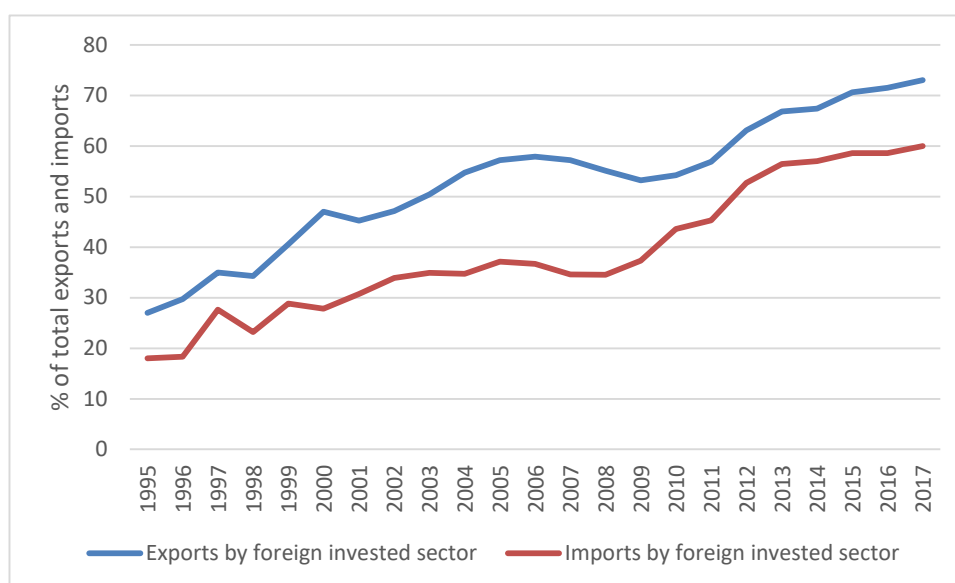
Source: GSO (2018)

2.3 Previous Studies

2.3.1 Trade Liberalisation and Trade Flows

Trade liberalisation is expected to increase welfare because both consumers and producers have access to a variety of cheaper products and intermediate goods respectively as a result of an RTA (Sheng, Tang, & Xu, 2014) and exporters have improved access to international markets. However, Viner (2014) argues that in addition to welfare improvements, a RTA might reduce welfare, depending on trade creation or trade diversion effects. Trade creation involves replacing higher-cost domestic production of an FTA's member with lower-cost imports from other member countries. By contrast, trade diversion occurs when the removal of tariffs leads an FTA member to divert its import activities from non-members to other FTA members, even though imports from non-members would be cheaper if such countries were not discriminated against (Clausing, 2001; Deme & Ndrianasy, 2017; Viner, 2014).

There is little research on the impact of trade liberalisation on exports and imports in Vietnam. The very limited research includes that of Pham (2011) who conducts a panel data analysis of Vietnam and its 17 partner countries between 1990 and

2008, focussing on the evaluation of Vietnam's accession to the WTO affected Vietnam's exports and imports. Her findings show that WTO accession has increased Vietnam's imports because there was a considerable decrease in tariffs as a consequence of joining. By way of contrast, there was no conclusive evidence on whether Vietnam's accession to the WTO affected exports (Pham, 2011). There is also some related literature on how trade liberalisation affects export quality and productivity in Vietnam, with Nguyen (2016) finding that trade liberalisation has been important for improving Vietnam's export quality and suggesting that FDI inflows may help to raise the degree of export sophistication. However, Doan, Nguyen, Vu, Tran, and Lim (2016) find that exposure to competition from imports may lead to lower productivity for smaller firms in Vietnam, though the impact is small and there is some evidence of positive effects for larger firms.

Despite the limited extent of studies on the impact of FTAs in Vietnam, empirical studies of other countries have provided evidence of both trade creation and trade diversion effects of FTAs. For instance, in gravity models that include either one dummy FTA variable (Baier & Bergstrand, 2007) or two RTA dummy variables called RTA-Insider and RTA-Outsider to capture intra-bloc and extra-bloc trade respectively (Lee & Park, 2007), it was found that RTAs stimulate trade among members. These results are supported by Foster (2012), who finds that RTAs result in increasing imports between RTA partners. Moreover, when focusing on a specific RTA, findings by García, Pabsdorf, and Herrera (2013), Clausing (2001), Hassan (2001) and Sheng et al. (2014) identify trade creation effects on members' trade of the Mercado Comun del Sur (MERCOSUR), the FTA between Canada and the US (CUSFTA), the South Asian Association for Regional Cooperation (SAARC) and the ASEAN-China FTA respectively. On the other hand, some studies on multiple RTAs have found mixed effects, including trade creation and trade diversion. For instance, Kahouli and Maktouf (2014) and Carrere (2006) adopt gravity models and apply panel data to a large sample of countries to examine the impact of multiple RTAs on trade flows. Their findings indicate that RTAs have generated an increase in intra-regional trade, benefiting members within RTAs at the cost of the rest of the world.

Empirical studies by Ullah and Inaba (2012) and Busse and Gröning (2012) apply gravity models to examine the impacts of various FTAs for particular countries and find that the effects on trade flows can be negative in some cases. In particular, Ullah and Inaba (2012) show that while the South Asian Free Trade Agreement (SAFTA) and the Bay of Bengal Initiative for Multisectoral Technical and Economic Cooperation Free Trade Area (BIMSTEC FTA) have no statistically significant impacts on Bangladesh's exports, other RTAs such as the Asia Pacific Trade Agreement (APTA) and SAARC have negative impacts. Moreover, Busse and Gröning (2012) find that with the exception of the FTA with the US, which has stimulated Jordan's exports, other multilateral or preferential trade liberalisation have not resulted in statistically significant effects on exports and imports.

2.3.2 FDI and Trade

The Heckscher-Ohlin (HO) model was the first theoretical attempt at explaining FDI (Faeth, 2009) whereby movements of production factors including FDI across countries can be substituted by foreign trade. Based on the 'public goods' or 'jointness' of characterisation of firm-specific activities, Markusen (1984) supports the substitutionary relationship. Furthermore, the proximity-concentration trade-off has suggested that horizontal FDI, which duplicates an existing production facility in foreign markets, and trade are substitutes (Brainard, 1993; Helpman, Melitz, & Yeaple, 2003). In contrast to this, Lipsey and Weiss (1981) hypothesise a complementary relationship between trade and FDI whereby vertical FDI, which involves locating different stages of production in a variety of host countries, complements trade (Helpman, 1984).

There have been few studies examining the relationship between Vietnam's trade and FDI. For instance, using panel data covering 19 major trading partners of Vietnam between 1990 and 2007, Anwar and Nguyen (2011) explore the link between FDI and trade in Vietnam before, during and after the Asian Financial Crisis. They show that a 1% increase in FDI would increase exports and imports of Vietnam by 0.45% and 0.23% respectively. Similarly, with an application of the gravity model, Nguyen and Xing (2008) also evaluate the impact of FDI inflows on Vietnam's exports during the period of 1990-2004 and find that a 1% increase in FDI results in a 0.13% increase in exports of Vietnam. Pham (2012) examines the

empirical relationship between FDI flows and trade for Vietnam from 1990-2007, finding a positive impact of FDI on exports and imports. Other studies such as Minor, Walmsley, and Strutt (2018) have emphasised the impact of other potentially complementary reforms, such as reform of state-owned enterprises, which may also positively impact Vietnam's trade flows.

Empirical studies of other countries that explore the impact of FDI on trade include De Mello Jr and Fukasaku (2000), Bajo-Rubio and Montero-Muñoz (2001), Dritsaki, Dritsaki, and Adamopoulos (2004), Waheed and Jawaid (2010), Hailu (2010), Jawaid et al. (2016) and Mijiyawa (2017). It is clear that FDI can have mixed effects on trade. In particular, Svensson (1996) reports that while production in Sweden's foreign subsidiaries has a complementary effect on Sweden's exports of intermediates, it has negative impacts on Sweden's exports of finished goods. The findings of mixed effects have been supported by Blomstrom, Lipsey, and Kulchycky (1988) and Blonigen (2001). Moreover, Swenson (2004) finds that FDI inflows into the US, which are disaggregated into product, industry and overall manufacturing components, have mixed effects on the US's imports. Furthermore, the findings of Beugelsdijk et al. (2008) conclude that horizontal FDI and exports are substitutes. A more recent study by Tabassum, Nazeer, and Ahmed (2012) concludes that FDI has no significant relationship on Pakistan's exports in both the short-run and the long-run.

In this paper, we analyse how particular trade agreements and FDI impact on Vietnamese trade, which facilitates insights well beyond existing studies that focus on the effects of either trade liberalisation or FDI on trade in a particular country. By doing so, it is possible for us to examine the efficiency of key trade agreements Vietnam has entered into in terms of expanding exports and imports, as well as the sensitivity of Vietnamese trade to FDI following the trade agreements.

2.4 Model Specification, Data and Methodology

To examine the impact of trade agreements and FDI inflows on Vietnam's trade, we use gravity models which have been widely employed for international trade analysis. We begin by summarising a basic gravity model before presenting extended gravity models.

2.4.1 Gravity Model and Model Specification

Gravity models were so named due to the use of gravitational force to explain bilateral trade flows. Tinbergen and Poyhonen are considered as the first authors using these models in international trade analysis (Kahouli & Maktouf, 2014) in the 1960s. The theoretical foundations of the gravity model have been improved over time, particularly due to the contributions of Anderson (1979), Bergstrand (1985), Helpman and Krugman (1985) and Anderson and Van Wincoop (2003).

The basic gravity model is as follows:

$$\ln X_{ij} = \alpha_0 + \alpha_1 \ln Y_i + \alpha_2 \ln Y_j + \alpha_3 \ln t_{ij} + e_{ij} \tag{1}$$

where X_{ij} indicates trade flows between the two countries; Y_i and Y_j is GDP of country i and country j respectively; and t_{ij} is trade costs between two countries such as distance, adjacency and institutions. With the increasing number of studies applying gravity models to international trade analysis, more explanatory variables have been added to the gravity model to reduce potential omitted variable bias. Following Baier and Bergstrand (2007), Carrere (2006) and Kahouli and Maktouf (2014), the current study includes various dummy variables for trade agreements.

Extended gravity models may be respectively defined for exports and imports as follows:

$$\ln EX_{vit} = \alpha_0 + \alpha_1 \ln GDP_{vt} + \alpha_2 \ln GDP_{it} + \alpha_3 \ln DIS_{vi} + \alpha_4 BOR_{vi} + \alpha_5 \ln RER_{vit} + \alpha_6 \ln FDI_{ivt-1}$$
$$+ \alpha_7 \ln DGDPPC_{vit} + \alpha_8 CRIS^A_{vit} + \alpha_9 CRIS^G_{vit} + \alpha_{10} AFTA_{vit} + \alpha_{11} ACCECA_{vit} + \alpha_{12} AJCEP_{vit} +$$
$$\alpha_{13} AKCECA_{vit} + \alpha_{14} JVEPA_{vit} + \alpha_{15} USBTA_{vit} + \varepsilon_{ijt} \tag{2}$$

$$\ln IM_{ivt} = \alpha_0 + \alpha_1 \ln GDP_{vt} + \alpha_2 \ln GDP_{it} + \alpha_3 \ln DIS_{vi} + \alpha_4 BOR_{vi} + \alpha_5 \ln RER_{vit} + \alpha_6 \ln FDI_{ivt-1}$$
$$+ \alpha_7 \ln DGDPPC_{vit} + \alpha_8 CRIS^A_{vit} + \alpha_9 CRIS^G_{vit} + \alpha_{10} AFTA_{vit} + \alpha_{11} ACCECA_{vit} + \alpha_{12} AJCEP_{vit} +$$
$$\alpha_{13} AKCECA_{vit} + \alpha_{14} JVEPA_{vit} + \alpha_{15} USBTA_{vit} + \varepsilon_{ijt} \tag{3}$$

where v denotes Vietnam and i is the country partner of Vietnam. EX_{vit} is real exports from Vietnam to country i. IMP_{ivt} is real imports into Vietnam from country i. GDP_{vt} and GDP_{it} represent real GDP of Vietnam and country i, respectively. DIS_{vi} is the distance between the capital of Vietnam and that of country i. BOR_{vi} is a dummy variable that takes the value of 1 if Vietnam and country i share a common border. RER_{vit} is the real exchange rate between the currency of Vietnam (VND)

and that of country i. $CRIS^G$ and $CRIS^A$ represent the Global Financial Crisis and the Asian Financial Crisis respectively. $CRIS^G$ gets the value of 1 for the period 2008-2009 (Shelburne, 2010) while $CRIS^A$ takes the value of 1 during the period 1997-1998 if Vietnam's partners were really struck by the crisis (Cuyvers, Soeng, Plasmans, & Van Den Bulcke, 2011). FDI_{ivt-1} represents real FDI flows from country partner i to Vietnam.[15] There is a dual causality between FDI and GDP. While MNEs prefer large market potential (GDP), additional FDI inflow also enlarges market potential which attracts further still more MNEs. To address the possibility of endogeneity due to the dual causality, FDI_{ivt-1} is in lagged form (Nguyen & Xing, 2008). $DGDPPC_{vit}$ represents the absolute value difference in GDP per capita between Vietnam and its partners. While the positive sign on $DGDPPC_{vit}$ might lend support to the H-O framework, a negative sign might reflect support for the Linder hypothesis (Antonucci & Manzocchi, 2006; Kahouli & Maktouf, 2014). One might argue that since trade agreements are usually implemented gradually over a period of time, there is a case for considering the use of some form of non-binary dummy variable. This might take a form such as (… 0, 0, 0.25, 0.5, 0.75, 1, 1, 1,…) or (…0, 0, 0.33, 0.67, 1, 1, 1,…) etc. The choice of which form of non-binary dummy to employ and with this, the imposition of the trade agreement effect may become somewhat arbitrary. Therefore, the use of binary trade dummy variables is preferred. In this study, AFTA, ACCECA, AJCEP, AKCECA, JVEPA, and USBTA represent dummy variables. The dummy variables used here take the value of 1 if Vietnam and the country partner have participated in an FTA and 0 otherwise, based on the FTA's entry into force (Bae & Jang, 2013; Baier & Bergstrand, 2007; Lee & Park, 2007). Of course, the dummy variables could be picking up influences from factors other than the trade agreements. Therefore, the date of the FTA's coming into force is chosen as the key date rather than when the FTA was signed. This way, the dummy variable captures the FTA impacts on trade flows occurring from its date of commencement. Finally, $\varepsilon_{ijt} = \alpha_{ij} + v_{ijt}$. While α_{ij} denotes the specific country-pair effect that accounts for the

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[15] Investment produces impacts on outputs over a period of time and so its influence on trade volumes would be also distributed over several future periods. However, the inclusion of additional lags in FDI led to results that were inferior. The estimation of additional parameters might have adversely affected test power and hence the number of significant coefficients in the regressions.

unobservable and time-invariant characteristics that are specific to each pair of countries, v_{ijt} represents the error term that is assumed to be log normally distributed.

2.4.2 Data

This study employs panel data covering Vietnam and its 17 country partners over the period 1996-2014. Based on Vietnam's main FDI and trading partners as well as the availability of the data, 17 partners are selected, namely: Indonesia, Malaysia, Singapore, Thailand, China, Japan, Korea, Canada, United States, Hong Kong, Taiwan, France, Germany, Italy, Netherland, United Kingdom, and Sweden. During the last 2 decades, from 1995 to 2014, these 17 partners have accounted for more than 84% of Vietnam's total FDI inflows, 74% of Vietnam's exports and 84% of Vietnam's imports.[16] In 2014, FDI flows to Vietnam from these partners comprised 91%[17] of Vietnam's total FDI inflows while these countries accounted for almost 80% of Vietnam's total trade.

Data for bilateral exports and imports between Vietnam and its partners are collected from the General Statistics Office of Vietnam (GSO), while inward FDI into Vietnam by source countries are obtained from the ASEAN Secretariat. The data are then scaled by the consumer price index (CPI) of the US to generate real values.

The bilateral real exchange rate data between Vietnam and its partners are not directly available. Therefore, they are measured as follows, using US$ exchange rates:

$$RER_{vit} = (CPI_{it}/CPI_{vt}) * (nER_{vt/\$} / nER_{it/\$})$$

where CPI_{it} and CPI_{vt} are the annual consumer price index of country i and Vietnam at year t respectively. $nER_{vt/\$}$ and $nER_{it/\$}$ are the nominal exchange rates, indicating the amount of each country's currency per 1 US$ at year t. The data are sourced from the World Development Indicators (WDIs) with the exception of Taiwan, for which CPI and nominal exchange rate data are obtained from the National Statistics

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[16] Calculated from the database of Vietnam's General Statistics Office, accessed at www.gso.gov.vn.

[17] The remaining 9% of FDI is primarily sourced from Virgin Islands, Cayman Islands, Cyprus, Samoa, Bermuda and other regions.

Republic of China and the Federal Reserve Bank of St. Louis respectively. Taiwan's nominal GDP, GDP deflator and population data are obtained from the IMF, while real GDP and population data for other countries are sourced from the World Bank's WDIs. $DGDPPC_{vit}$ is calculated as the absolute value of the difference between Vietnam's GDP per capita and its partners' GDP per capita:

$$DGDPPC_{vit} = \ln \left| \frac{GDP_{vt}}{POP_{vt}} - \frac{GDP_{it}}{POP_{it}} \right|$$

Information on Vietnam's different FTAs is available from the website of WTO whereas data on distance and border are from Centre d'Études Prospectives et d'Informations Internationales (CEPII).

2.4.3 Methodology

The available panel estimators include ordinary least squares (OLS), fixed effects (FE) and random effects (RE) techniques. According to Goh and Tham (2013) and others, the disadvantage of pooled OLS is the assumption of homogeneity for all countries, which can result in biased estimates because of the relationship between the explanatory variables and unobservable effects. A key benefit attached to FE is the provision of consistent estimates (Goh & Tham, 2013; Martínez, Bengoa-Calvo, & Sánchez-Robles, 2012). Unobserved time-invariant specific factors such as distance, border, language and colonial history, which might affect trade flows, are controlled for by FE. However, important time-invariant variables of gravity models, such as border and distance, cannot be easily estimated separately in a FE model. RE, on the other hand, can provide estimates for specific time-invariant variables. Recent empirical studies such as (Mijiyawa, 2017) and (Kahouli & Omri, 2017) have applied the system-generalised method of moments (GMM) technique to panel data due to its superior efficiency in dealing with the issue of endogeneity. However, the authors state that the technique is more appropriate for dynamic panel data with a short time dimension, which is not the case for our study period. Therefore, RE is used in this paper.

2.5 Empirical Results

Table 2.1 reports the results for the gravity models based on estimation using RE regressions. Breusch-Pagan LM tests (RE vs. OLS) were carried out and the LM statistics are statistically significant at 1%, indicating that RE models are statistically preferable to OLS for both the export and import gravity equations. The Wald tests for groupwise heteroscedasticity reject the null hypothesis that the variance of the disturbance term in each gravity model is constant over time. Therefore, the White robust standard error is used to address the problem.

We begin our discussion with analysis of the impacts of trade agreements and FDI on Vietnam's exports and imports, which is the main focus of this paper. We then analyse the effects of other factors on trade.

2.5.1 Impacts of Trade Agreements and FDI on Trade

Our econometric results are reported in Table 2.1. As expected, the trade agreements have different effects on Vietnam's trade. The bilateral trade agreements considered, including both the Japan-Vietnam Economic Partnership (JVEPA) and Vietnam-US bilateral trade agreement (USBTA) generate trade creation. Specifically, JVEPA increases Vietnam's exports to Japan by 48% (computed as exp(0.394)-1) and Vietnam's imports from Japan by 71% (exp(0.538)-1). Using the same method of calculation, the USBTA has a stronger expansion impact on trade between Vietnam and the US, with Vietnam's exports and imports increasing by 368% and 70% respectively. There is also evidence of trade creation effects in the ASEAN-Korea Comprehensive Economic Cooperation Agreement (AKCECA), which stimulates Vietnam's exports by 41%.

It is noteworthy that the ASEAN-China Comprehensive Economic Cooperation Agreement (ACCECA) has supported Vietnam's imports by 55%. According to GSO (2018), China has traditionally been the largest import partner for Vietnam, thus it is understandable that Vietnam's imports from China went up sharply as a result of the FTA. However, our results indicate that this FTA has not stimulated Vietnam's exports to China. This may be due to the very strong competition

Vietnam faces from other ASEAN exporting countries, with China regarded as a key export market for all ASEAN members.

The ASEAN free trade area (AFTA) has no significant impact on Vietnam's trade, due in part to the delay and only small decrease in tariffs in the first years of AFTA implementation (Vanhnalat et al., 2015). Our results suggest that the ASEAN-Japan Comprehensive Economic Partnership (AJCEP) has negative effects on Vietnam's trade. This is in line with Busse and Gröning (2012) and Ullah and Inaba (2012) who find evidence of negative impacts of particular FTAs on trade for Jordan and Bangladesh respectively. This result is also consistent with increased competition occurring among members as a result of the AJCEP. However, we note our dataset is only able to examine the first six years during which this RTA has been in force; future studies might throw more light on its trade effects during the next stages of implementation.

Table 2.1: Estimation Results from Gravity Models (Random Effects)

Independent variables	Dependent variables	
	$\ln EX_{vit}$	$\ln IM_{ivt}$
$\ln GDP_{vt}$	1.993***	1.510***
	(0.187)	(0.179)
$\ln GDP_{it}$	0.515**	0.452*
	(0.229)	(0.233)
$\ln DIS_{vi}$	-0.693***	-1.444***
	(0.249)	(0.459)
BOR_{vi}	0.088	0.678
	(0.504)	(0.669)
$\ln RER_{vit}$	0.043**	0.003
	(0.020)	(0.041)
$\ln FDI_{ivt-1}$	0.038*	0.048***
	(0.021)	(0.010)
$\ln DGDPPC_{vit}$	-0.051	0.173
	(0.097)	(0.272)
$CRIS^A$	0.214	-0.036
	(0.142)	(0.047)
$CRIS^G$	-0.108*	0.067
	(0.063)	(0.062)
AFTA	0.201	0.034
	(0.272)	(0.125)
ACCECA	0.062	0.441***
	(0.096)	(0.152)
AJCEP	-0.490**	-0.424*
	(0.192)	(0.228)
AKCECA	0.341**	0.067
	(0.171)	(0.209)
JVEPA	0.394*	0.538**
	(0.218)	(0.264)
USBTA	1.544***	0.528***
	(0.105)	(0.113)
Constant	-37.604***	-19.679***
	(5.169)	(5.134)
Wooldridge test, F	86.78***	24.62***
Breusch-Pagan LM test	344.17***	866.81***
Wald test statistics	589.60***	5180.83***
Number of observations	323	323

Robust standard errors are in parentheses. ***, ** and * denote significance at the 1, 5 and 10% levels

Regarding the impacts of FDI on trade, the estimated coefficient suggests that a 1% increase in FDI will lead to a 0.04% increase in exports over the period of 1996-2014, which supports the findings of Nguyen and Xing (2008), Anwar and Nguyen

(2011) and Pham (2012). Although the size of the coefficient is quite small, one can gain a good idea by looking at the study of Anwar and Nguyen (2011) in which the impact of FDI on exports in different periods is examined. Using RE approach, they find that Vietnamese exports increase by 0.38% in the 1990-1997 period, only 0.17% in the 1998-2000 period, and 0.16% in the 2001-2007 period. One possible reason for the lower sensitivity of exports to FDI in more recent periods is that the domestic demand for products of FDI firms in Vietnam has significantly increased. The positive impact of FDI inflows on Vietnam's exports can be explained as follows. Firstly, the export capacity of domestic firms in Vietnam has increased on account of FDI spill-over effects in terms of superior technology and management from multinational enterprises (MNEs) (Brooks et al., 2008). Moreover, Vietnam's domestic firms have improved their technology due to increased competition with MNEs (Mijiyawa, 2017). Secondly, the complementary relationship between FDI inflows and exports in Vietnam might be partly explained by the exports of foreign affiliates constructed by vertical FDI to their home countries, due to fragmentation of various production stages across countries (Helpman, 1984). Thirdly, the rapidly increased shares of the foreign invested sector in Vietnam's total exports suggest there is a high possibility that Vietnam is becoming an increasingly important 'export platform' by many MNEs. Through MNEs, a source country would launch FDI in a host country and consider the foreign country as a production platform for exports to its other partners (Ekholm, Forslid, & Markusen, 2007; Faeth, 2009; Kneller & Pisu, 2004). For instance, Samsung Electronics from South Korea has surpassed Petro Vietnam, a state-owned enterprise, to be the largest firm in Vietnam and significant contributor to Vietnam's total exports.

The results reported in Table 2.1 also suggest that FDI inflows have stimulated Vietnam's imports from partners, which is consistent with Anwar and Nguyen (2011) and Pham (2012). The positive impact of FDI inflows on imports is also found in some other ASEAN countries, such as Indonesia, Malaysia and Thailand between 1970 and 1994 (De Mello Jr & Fukasaku, 2000) and Pakistan (Waheed & Jawaid, 2010). The expansion effects of inward FDI on Vietnam's imports might be attributable to different types of FDI. Firstly, when a firm engages in vertical FDI in a variety of host countries to take advantage of relatively cheap and abundant factor endowments, firm-specific assets would be applied in all of its production

plants in addition to the one located in the home country (Helpman, 1984). This suggests that inward FDI increases imports into the host country due to the demand for the principal components of these affiliates from their home countries. Secondly, horizontal FDI also results in an increase in a host country's imports, due to foreign affiliates' demand for intermediate inputs from their home countries. This is consistent with the finding that a higher level of production for a US firm in a host country is associated with the host country's increased imports from the US firm (Lipsey & Weiss, 1984).

In terms of the control variables, Vietnam's exports and imports depend on the GDP of both Vietnam and Vietnam's partners, with much stronger dependence on the economic growth of Vietnam. Distance has a significantly negative effect on both Vietnam's exports and imports. The significantly positive coefficient of the real exchange rate between Vietnam and country partners suggests that a depreciation of the Vietnamese dong would increase the competitiveness of Vietnamese products which, in turn, has an expansion impact on Vietnam's exports. However, the real exchange rate has no impact on Vietnam's imports. Maybe this is because, compared with exports, imports are more sensitive to FDI than the real exchange rate. The dummy variable for the Global Financial Crisis is negative and statistically significant, indicating an adverse impact on Vietnam's exports. This supports the conclusion of Kahouli and Maktouf (2014) that the crisis reduced exports among countries. Unlike exports, Vietnam's imports were not affected by the crisis. One possible reason is that Vietnam's exports markets during the Global Financial Crisis were adversely affected (due to economic slowdown in the economies of trading partners), but domestic demand for imports remained strong.

2.5.2 Trade-FDI Relationship Following Particular Trade Agreements

As discussed above and shown in Table 2.1, we find that FDI and trade are complementary. Among the key six trade agreements, only USBTA and JVEPA are found to stimulate both Vietnam's exports and imports. Vietnam's exports are also stimulated by AKCECA and imports by ACCECA. Therefore, it is of interest to consider whether the trade agreements have had any impacts on the trade-FDI relationship. Following Hejazi and Safarian (2005), multiplicative dummies between FDI and the particular trade agreements are included in the estimation. In

particular, ln FDI_{ivt-1}*USBTA, ln FDI_{ivt-1}*JVEPA and ln FDI_{ivt-1}*AKCECA are included in the exports model and ln FDI_{ivt-1}*USBTA, ln FDI_{ivt-1}*JVEPA and ln FDI_{ivt-1}*ACCECA are included in the imports model. The regression results with these interactive terms are reported in Table 2.2.

Table 2.2: Regression Results with Multiplicative Dummies (Random Effects)

Independent variables	Dependent variable	
	ln EX_{vit}	ln IM_{ivt}
ln GDP_{vt}	1.998***	1.488***
	(0.189)	(0.173)
ln GDP_{it}	0.507**	0.477**
	(0.233)	(0.218)
ln DIS_{vi}	-0.701***	-1.480***
	(0.253)	(0.457)
BOR_{vi}	0.164	0.799
	(0.531)	(0.761)
ln RER_{vit}	0.041**	-0.001
	(0.021)	(0.044)
ln FDI_{ivt-1}	0.040*	0.061***
	(0.024)	(0.014)
ln $DGDPPC_{vit}$	-0.027	0.212
	(0.108)	(0.297)
$CRIS^A$	0.213	-0.024
	(0.143)	(0.047)
$CRIS^G$	-0.118*	0.063
	(0.064)	(0.062)
AFTA	0.207	0.062
	(0.267)	(0.107)
ACCECA	0.050	1.991
	(0.100)	(1.619)
AJCEP	-0.635**	-0.407**
	(0.265)	(0.194)
AKCECA	3.086	0.086
	(2.105)	(0.185)
JVEPA	-0.619	0.802*
	(0.566)	(0.421)
USBTA	0.901**	1.110***
	(0.367)	(0.288)
ln FDI_{ivt-1}*USBTA	0.034*	-0.031*
	(0.020)	(0.016)
ln FDI_{ivt-1}*JVEPA	0.055**	-0.014
	(0.024)	(0.022)
ln FDI_{ivt-1}*AKCECA	-0.139	
	(0.111)	
ln FDI_{ivt-1}*ACCECA		-0.087
		(0.091)
Constant	-37.733***	-20.052***
	(5.107)	5.013
Wooldridge test, F	83.99***	24.17***
Breusch-Pagan LM test	351.59***	855.09***
Wald test statistics	503.49***	4649.70***
Number of observation	323	323

Robust standard errors are in parentheses. ***, ** and * denote significance at the 1, 5 and 10 percent levels.

All the independent variables maintain the same sign as those reported in Table 2.1. Therefore, we focus on the impact of the interactive terms.

For exports, there is no significant change in FDI slope with the inception of AKCECA. In contrast, the slope on FDI increases from 0.040 to 0.074 (0.040+0.034) as a result of USBTA. Following JVEPA, the FDI slope more than doubles, increasing from 0.040 to 0.095 (0.040 + 0.055). The dramatic increase in FDI slopes implies that Vietnam's exports have become more sensitive to FDI as a result of USBTA and JVEPA. This suggests that the complementary relationship between FDI and exports has become more salient as a result of the two trade agreements. For imports, JVEPA and ACCECA appear not to result in a significant change of slope on FDI. However, the slope on FDI decreases from 0.061 to 0.030 (0.061-0.031) following USBTA. This suggests that USBTA has reduced the complementary relationship between FDI and imports.

The changes in sensitivity of Vietnam's trade to FDI following the particular trade agreements are consistent with a change in the foreign investment behaviour of multinational firms. For instance, Buckley, Clegg, Forsans, and Reilly (2007) point out that US multinational firms' foreign investment decisions in Canada, which were mainly dependent on market size and exchange rate factors prior to the North American FTA, were driven by the Canadian market and financial market factors following the FTA. Vietnam has become an attractive destination for FDI due to the advantages brought about by the particular FTAs, which could affect Vietnam's trade. The reduction in trade cost due to particular trade agreements could also affect the type of FDI flows in Vietnam, which in turn impacts on Vietnam's trade as well.

2.6 Conclusion

While Vietnam has participated in numerous bilateral and FTAs, we find that the bilateral trade agreements with the US and Japan have led to the most noticeable expansion in Vietnamese exports and imports. The impacts from other RTAs are more mixed, due in part to increasing competition among members and the long tariff reduction process. In terms of FDI inflows, there is strong evidence of FDI inflows stimulating Vietnam's exports and imports. However, the impact on

Vietnamese trade from FDI inflows is not as strong as that from some of the trade agreements. Furthermore, our findings suggest that Vietnam's exports (imports) have become more (less) sensitive to FDI as a result of the bilateral trade agreement with the US and exports have become more sensitive to FDI following the free trade agreement with Japan.

These findings have important implications for Vietnam's policy makers. Firstly, to continue building growth in trade it is important that Vietnam continues its trade liberalisation process, including through FTAs. Furthermore, to take advantage of a number of RTAs Vietnam is participating in, Vietnam needs to increase its competitive ability, including with ASEAN member countries. Secondly, in addition to addressing the problem of capital deficiency, FDI inflows to Vietnam can help to increase trade. Therefore, intensifying policies that help to attract FDI are expected to be useful in promoting trade.

It seems that certain types of agreements work better than others in terms of stimulating Vietnamese trade. In particular, policymakers may benefit from looking closely at the trade agreements with Japan and the US when it comes to future trade deals. Given that government policy is interested in stimulating FDI, closer trading ties with Japan and the US may confer most benefit in terms of Vietnamese exports. Therefore, a useful avenue for future research might be to more closely explore the nature of these agreements and whether or not lessons are available for trade agreements involving other countries. In terms of the changed sensitivities of trade to FDI, further research might also explore more closely the particular forms of FDI that have the most impact on this.

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Chapter Appendix

Table 2.3: Global Competitiveness Index Rankings

Country	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Singapore	8	7	5	3	3	2	2	2	2	2	2	2
Malaysia	19	21	21	24	26	21	25	24	20	20	18	25
Thailand	28	28	34	36	38	39	38	37	31	31	32	34
Indonesia	54	54	55	54	44	46	50	38	34	34	37	41
Philippines	75	71	70	75	85	76	65	59	52	52	47	57
Vietnam	64	68	71	87	59	65	75	70	68	68	56	60

Source: Created from World Economic Forum's Global Competitiveness Reports 2006-2007 to 2017-2018.[18]

Table 2.4: Exports from ASEAN-5 to China

Source: IMF (2017)

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[18] http://www.weforum.org/
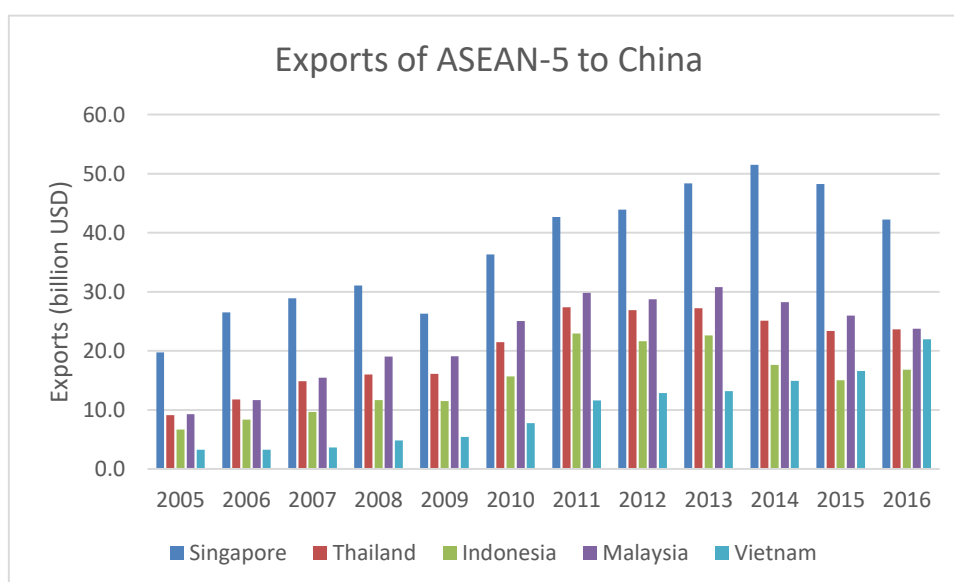
Chapter 3: The Impact of Free Trade Agreements on FDI Inflows: The Case of Vietnam

3.1 Introduction

Foreign direct investment (FDI) occurs as a result of corporate strategies and investment decisions of multinational corporations (De Mello Jr & Fukasaku, 2000). It is favoured around the world, especially in developing countries, for the great benefits it brings, including a critical source of finance, technology diffusion (UNCTAD, 2015), knowledge spill-over effects on domestic firms in terms of production process, innovative products, patents, establishment of production and distribution networks (Mijiyawa, 2017). While large FDI flows have surged to a limited number of developing countries such as China, India and Mexico (Waldkirch, 2010), increasing capital has been challenging for governments in many developing countries, particularly as it often requires significant economic reforms.

Free trade agreements (FTAs) have been viewed as an increasingly important driver of FDI in emerging countries (Yeyati, Stein, & Daude, 2003). One of the most important reasons a country enters into an FTA is the expectation of increased FDI flows (Blomstrom & Kokko, 1997; Medvedev, 2012). In the long run, the integration is expected to increase growth rates of members thanks to greater markets, improved competition capacity, better resource allocation and positive externalities (Blomstrom & Kokko, 1997). However, the effects of FTAs on FDI depend on different channels such as patterns of FDI, the investment provision of FTAs, intra- and extra-FTA source countries, the locational advantages of host countries and interactions among them. In addition, individual members of a regional trade agreement (RTA) may experience gains or even losses in FDI flows (Feils & Rahman, 2011). Therefore, it has been difficult to draw a definite conclusion on the role of FTAs on FDI because some of the channels might be in opposite directions (Yeyati et al., 2003), thus the expected effect of FTAs on FDI remains an open question (Medvedev, 2012).

Existing analysis of the linkage between FDI and FTAs has mainly focused on either multiple FTAs for a group of countries or case studies of a specific FTA. The question of how a particular country's general participation in FTAs impacts on its FDI flows has not received much attention. The limited studies include Crotti, Cavoli, and Wilson (2010) and Bae and Jang (2013) for Australia and Korea respectively. However, there remains a paucity of studies assessing the overall impact of FTAs on FDI in a developing country where there has been a shortage of investment. This paper contributes to the existing literature by examining the impact on FDI inflows of the overall FTAs that Vietnam has participated in. This allows us to evaluate whether FTAs, in general, have been associated with increased FDI flows, which is a major motive for Vietnam and other developing countries pursuing FTAs. A secondary question is whether FTAs have changed investors' sensitivity to key determinants of FDI flows in Vietnam.

Furthermore, vertical FDI is more likely between industrialised and developing countries while there is a prevalence of horizontal FDI among industrialised countries (Aizenman & Noy, 2006). Therefore, vertical FDI might be more popular in developing countries (Egger & Winner, 2005). However, multinational enterprises (MNEs) can have a mixed option including both vertical FDI and horizontal FDI in practice (Aizenman & Noy, 2006). Based on the outcomes for the FTAs and other determinants of FDI, we can further explain patterns of FDI flows in Vietnam, which have been ignored in studies analysing FDI flows in Vietnam.

Vietnam is a particularly interesting case study for several reasons. Firstly, FDI flows in Vietnam have recently become the main source of external financing for the domestic savings-investment gap. Over the period 2007-2009, FDI inflows to Vietnam, on average, accounted for 61% in capital flows (Tran, 2013) and this has remained a high share, with a slight decrease to 59% during the 2010-2017 period.[19]

Secondly, although Vietnam has not received a large amount of FDI flows compared to other developing countries such as China, India and Mexico, its increasing success in attracting FDI flows has been impressive. In particular, FDI flows into Vietnam in 2017 (14.1 billion US$) were 70 times larger than the flows

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[19] Calculated from Balance of Payments and International Investment Position Statistics, IMF, accessed at http://data.imf.org

in 1990 (180 million US$), while the figures are 21.1, 3.7, 17.3, 11.1, and 3.0 times for Indonesia, Malaysia, Philippines, Singapore and, Thailand respectively (UNCTAD, 2018). Vietnam became the second largest FDI recipient (after Singapore) in ASEAN for the first time in 2008, continuing in 2009. In 2017, Vietnam was the third largest FDI destination in the ASEAN region, following Singapore and Indonesia (UNCTAD, 2018).

Thirdly, FDI has played a key role in Vietnam's exports. Exports from the foreign invested sector have accounted for more than 60% of Vietnam's exports since 2012, reaching 73% in 2017 (GSO, 2018).[20]

Fourthly, there has been rapid trade liberalisation in the world economy, achieved through a number of RTAs, with 291 RTAs in force as of January 2019 (WTO, 2019). Consistent with the global trend, Vietnam has been actively and deeply involved in trade liberalisation process, with 11 FTAs entered into force as of April 2019, as shown in Table 3.1.[21] Significant changes in Vietnam's inward FDI have been observed following these FTAs.

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[20] The foreign invested sector refers to enterprises in which foreign ownership accounts for at least a 51 percent threshold, as stated in the 2014 Law on Investment in Vietnam, accessed at the website of Ministry of Justice of Vietnam http://www.moj.gov.vn

[21] Although the US-Vietnam trade agreement is an important trade agreement, it is not categorised as a RTA, therefore is not included in this table. See
http://rtais.wto.org/UI/PublicSearchByMemberResult.aspx?MemberCode=704&lang=1&redirect=1 and
http://wtocenter.vn/fta.

Table 3.1: Vietnam's RTAs Entering into Force as of April 2019

RTAs	Date of signature	Date of entry into force
ASEAN Free Trade Area (AFTA)	Jan-1992	Jan-1993
ASEAN-China	Nov-2004	Jan-2005
ASEAN-Korea	Aug-2006	Jan-2010
ASEAN-Japan	Mar-2008	Dec-2008
ASEAN-Australia-New Zealand	Feb-2009	Jan-2010
ASEAN-India	Aug-2009	Jan-2010
Vietnam-Eurasian Economic Union	May-2015	Oct-2016
Vietnam-Japan	Dec-2008	Oct-2009
Vietnam-Chile	Nov-2011	Jan-2014
Vietnam-Korea	May-2015	Dec-2015
Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)	March-2018	Dec-2018

Source: WTO (2019)

The remainder of this paper is organised as follows. Section 3.2 briefly presents trends and patterns of FDI flows in Vietnam. Section 3.3 summarises the theoretical framework of FDI, followed by a discussion of previous relevant studies in Section 3.4. Model specification, data, and methodology are presented in Section 3.5, with Section 3.6 discussing the empirical results. Section 3.7 presents our concluding remarks.

3.2   Trends and Patterns of FDI in Vietnam

In this section, we present trends of FDI in Vietnam, followed by a discussion of changes in Vietnam's sources of FDI and the sectoral composition of Vietnam's inward FDI flows. Figure 3.1 indicates FDI flows into Vietnam between 1990 and 2017. In the immediate aftermath of the Renovation Policy in the mid-1980s,

Vietnam became an attractive destination of foreign firms due to a variety of investment opportunities in infrastructure and resource extraction boom (Athukorala & Tran, 2012), which explains much of the rapid increase in Vietnam's inward FDI flows over the 1990-1996 period.

After reaching its peak in 1996, FDI inflows to Vietnam experienced significant decreases over the 1997-2001 period. This decrease was largely due to adverse impacts on Vietnam's investment environment due to the revised FDI law in 1996 which included some restrictions on foreign firms (Athukorala & Tran, 2012; Schaumburg-Müller, 2003). The Asian Financial Crisis, however, contributed to the deterioration of this downturn (Schaumburg-Müller, 2003).

Since 2003, Vietnam has experienced a substantial increase in inward FDI. It is notable that FDI inflows to Vietnam in 2008, 2009, and 2010 were higher than the annual levels before the Global Financial Crisis. A survey carried out by the Economist Intelligence Unit characterised Vietnam, along with Brazil, Russia, India, and China, as the most attractive FDI destination between 2008 and 2010 (Breu, Dobbs, Remes, Skilling, & Kim, 2012). This is in line with UNCTAD (2010), which ranked Vietnam one of the most attractive destination for FDI over the 2007-2009 period.

Figure 3.1: Annual FDI Inflows to Vietnam, 1990-2017 (US$ million)

Source: UNCTAD (2018)

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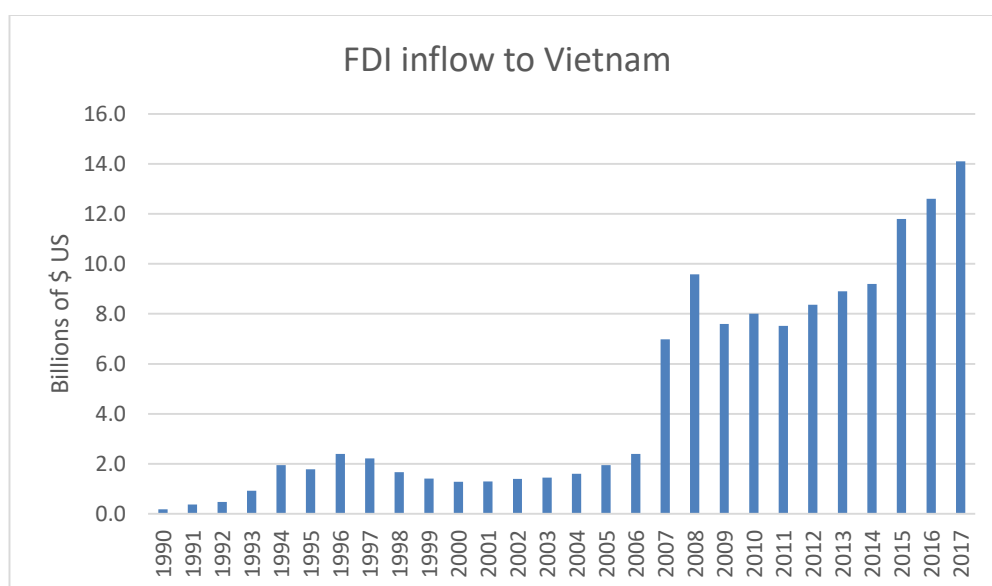
Table 3.2 presents sources of Vietnam's inward FDI flows from FTA partners as well as other key partners. Over the 1996-2000 period, FDI flows from intra-ASEAN accounted for almost one-fifth of Vietnam's total inward FDI, followed by Japan (16.9%), Taiwan (14.4%), South Korea (10.9%), and Hong Kong (9.8%). However, these main investors contributed smaller shares between 2001 and 2005. The remaining periods experienced increasing FDI shares of partners having FTAs with Vietnam, such as ASEAN, China, Japan, and South Korea. In the most recent period from 2016 to 2017, ASEAN+6 together accounted for 71.1% of Vietnam's total FDI inflows, with the top 3 investors including South Korea (26.1%), Japan (18.4%), and intra-ASEAN (18.1%). In contrast, although Australia, India, and New Zealand invested more in Vietnam following FTAs, their FDI shares in Vietnam's total inward FDI remain minimal.

Table 3.2: Sources of Vietnam's Inward FDI (%)

Source country	1996-2000	2001-2005	2006-2010	2011-2015	2016-2017
Intra-ASEAN	19.7	12.2	14.9	18.7	18.1
China	0.7	2.1	1.8	4.6	6.8
India	0.1	0.0	0.4	0.2	0.5
Japan	16.9	12.4	10.4	18.3	18.4
South Korea	10.9	6.9	12.8	21.6	26.1
Australia	0.5	0.9	0.5	0.7	1.1
NZ	0.0	0.0	0.1	0.0	0.0
ASEAN+6[*]	48.8	34.6	40.9	64.2	71.1
Hong Kong	9.8	4.4	4.3	9.1	5.4
Taiwan	14.4	7.3	9.5	6.9	5.8
US	3.8	6.0	16.3	1.1	2.1
Others	23.2	47.6	29.0	18.7	15.7
Total (%)	100.0	100.0	100.0	100.0	100.0
Total (Mil. $US)	8,987.0	7,714.0	34,560.0	45,787.0	26,700.0

Source: Calculated based on ASEAN Secretariat database (ASEAN Secretariat, 2019)
Note: [*] Includes nine ASEAN members plus China, India, Japan, South Korea, Australia, and New Zealand.

The sectoral composition of Vietnam's FDI inflows are shown in Table 3.3. The manufacturing sector has been the largest FDI recipient. This sector has recently become more important, accounting for more than 70% of Vietnam's annual inward FDI in three successive years of 2012, 2013 and 2014, due to a surge of Korean investment. In 2016, 64% of Vietnam's inward FDI flows surged to this sector, with Korea making the greatest contributions (ASEAN Secretariat, 2017). In contrast,

mining and quarrying, which used to be the traditional beneficiaries of FDI, have seen their shares decrease over time. Their annual shares have been less than 10% since 2006, compared with the average annual shares of 28.2% for the 2000-2004 period. Similarly, FDI shares of agriculture, fishery and forestry have gradually declined, from 7.1% in 2000 to 0.6% in 2014. It is notable that real estate, which attracted minimal FDI prior to 2005, has recently become a favoured sector for foreign investors, absorbing one-third of Vietnam's FDI flows in 2009. While reducing in importance somewhat, this sector maintained relatively high shares of 11% and 7% in 2015 and 2016 respectively (ASEAN Secretariat, 2017).

Table 3.3: Shares of FDI Flows into Vietnam by Sectors (%)

	Agriculture, fishery & forestry	Mining & quarrying	Manufacturing	Construction	Trade	Financial services	Real estate	Others	Total
2000	7.1	24.1	39.5	8.2	0.0	0.9	0.0	20.3	100.0
2001	9.2	23.0	38.2	5.7	0.0	1.2	0.0	22.6	100.0
2002	7.3	33.9	47.8	2.8	0.9	3.3	0.5	3.6	100.0
2003	2.9	29.8	40.2	0.3	1.8	1.2	0.4	23.4	100.0
2004	3.5	30.0	35.0	0.6	1.9	1.1	0.6	27.4	100.0
2005	2.8	12.9	59.9	1.2	3.0	1.0	2.2	17.1	100.0
2006	2.2	1.8	63.0	5.3	1.3	0.9	22.4	3.2	100.0
2007	2.3	1.8	62.4	5.4	1.4	0.8	21.9	3.9	100.0
2008	3.6	1.2	56.8	15.9	2.5	1.1	13.2	5.8	100.0
2009	0.6	1.8	15.4	2.4	1.4	0.0	34.0	44.4	100.0
2010	0.1	0.0	30.6	10.1	1.5	0.4	29.3	28.1	100.0
2011	1.0	0.5	48.5	17.2	2.9	0.0	5.0	24.8	100.0
2012	0.6	1.0	71.6	2.1	4.7	0.0	12.1	7.8	100.0
2013	0.4	0.4	76.9	1.0	2.5	0.0	4.4	14.4	100.0
2014	0.6	0.5	71.1	5.0	1.9	0.0	13.0	8.0	100.0

Source: Data compiled from the ASEAN Investment Reports 2011, 2013-2014, and 2015[22]

3.3   Theoretical Framework

In this section, we analyse firms' motivations to invest abroad before moving to discuss channels through which FTAs affect FDI flows. With regard to theories explaining why firms invest abroad, the well-known eclectic paradigm (Dunning, 1981), also known as the OLI (Ownership, Location, and Internalisation) framework, discusses three conditions for FDI to occur. Firstly, the firm needs

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[22] https://asean.org/

ownership advantages including both tangible and intangible firm-specific assets such as proprietary technology, trademarks, production management, organisational and marketing systems, or R&D capacity. Secondly, based on location-specific advantages such as input prices, transport and communication costs, government intervention, education, and infrastructure, the firm chooses the best foreign destination. Thirdly, internalisation advantages of a MNE mean that the firm will get more benefits if it internally exploits ownership advantages itself rather than licensing them to foreign producers. Blomstrom and Kokko (1997) and Globerman (2002) support the view that FDI is driven by the motivation to exploit firm-specific intangible assets. Horstmann and Markusen (1987) argue that serving foreign markets though horizontal FDI would be preferable to licensing strategy because it helps preserve secrecy in terms of firm-specific assets. The proximity-concentration hypothesis suggests that given greater transport costs, trade barriers, lower plant scale economies, and investment barriers, a firm is more likely to choose overseas production over exports (Brainard, 1993).

FDI patterns reflect firms' motivations for investing abroad. A firm will engage in vertical FDI (resource seeking) to take advantage of relatively cheap and abundant factors of production across countries, while it may launch horizontal FDI (tariff-jumping or market seeking) to jump trade barriers such as tariffs, distance, transportation, and insurance (Bae & Jang, 2013).

A number of key factors contribute to how FTAs impact on FDI. Firstly, FTAs have different effects on the two patterns of FDI. Firms of an FTA member are likely to serve FTA members' demand through exports and benefit from economies of scale rather than through foreign production, due to reduced trade costs following FTAs. Thus, FTAs tend to have adverse impacts on horizontal FDI. In contrast, FTAs increase vertical FDI as it becomes cheaper for MNEs within the integrated region to export intermediate goods to FTA members and import final goods from these countries to their home countries.

Secondly, FTAs' investment provisions create an FDI-friendly environment (Bae & Jang, 2013), which stimulates inward FDI to FTA members. For example, following the AFTA, two investment packages including the ASEAN Industrial Cooperation and the ASEAN Investment Area were established to encourage both

intra- and extra-ASEAN FDI flows (Ismail, Smith, & Kugler, 2009; Te Velde & Bezemer, 2006).

Thirdly, as a result of RTAs, non-members become important sources of increased FDI inflows due to two possible reasons. Firstly, possible increases in relative protection against firms from non-members result in enhanced FDI from outsiders into the whole region (Blomstrom & Kokko, 1997). Secondly, RTAs also generate greater market size, making the integrated areas more attractive (Buckley, Clagg, Forsans, & Reilly, 2001). Outside investors can launch horizontal FDI in one or more FTA members to serve the demand of these countries and use them as platforms to export to other locations of the region (Feils & Rahman, 2008; Lederman, Maloney, & Serven, 2003; Te Velde & Bezemer, 2006).

Fourthly, locational advantages of host countries are also channels through which FTAs affect FDI. A RTA may not benefit all its members in terms of increased FDI flows, depending largely on FDI competition and location-specific advantages (Feils & Rahman, 2008, 2011). FTA members with stronger locational advantages are more likely to receive FDI inflows from remaining members and outsiders (Blomstrom & Kokko, 1997).

3.4 Previous Studies

In this section, we review empirical studies examining the relationship between FTAs and FDI. We start with studies focusing on multiple FTAs for a group of countries before proceeding to summarise case studies, with a focus either on one specific FTA or country, followed by a summary of FDI studies on Vietnam.

In terms of multi-FTA studies for a large number of countries, mixed results of FTAs on FDI have been found, with a dominance of positive effects. Yeyati et al. (2003) use panel data covering 20 source countries from the OECD and 60 host countries during the 1982-1999 period to examine how FTAs impact on the location of FDI. Based on a gravity model, they find that FTAs increase FDI stocks between members by 27%. Medvedev (2012) accounts for all existing preferential trade agreements (PTAs) and uses a large panel covering 153 countries over the 1980-2004 period. His findings show that PTA membership results in a substantial increase in net FDI inflows. Using gravity models and panel data from 1980 to 2003,

Feils and Rahman (2011) analyse FDI flows from 59 countries into 24 OECD host countries. They report that there is an increase in FDI flows among regional integrated area members, with greater impacts for larger economies. Thangavelu and Narjoko (2014) find that FTAs increase FDI inflows to the ASEAN region between 2000 and 2009, based on an extended gravity model.

In contrast, Lederman et al. (2003) find that the coefficient on free trade area dummy has no impact on FDI flows. Ullah and Inaba (2014) analyse FDI flows to nine Asian host countries from 23 source countries over the 1995-2010 period. Similarly, estimation results of the gravity model suggests that both bilateral investment treaties and bilateral trade agreements are not associated with increased FDI flows due to existing liberal FDI policies. Dee and Gali (2003) examine effects of PTAs on foreign investment over the period from 1988 to 1997 using a gravity model. They find evidence of net investment creation in six of the nine PTAs examined. One PTA creates negative net investment effects, while the two remaining PTAs show no effects. Employing a knowledge capital model, Jang (2011) shows that bilateral FTAs have a negative effect on bilateral FDI in intra-OECD country pairs and a positive effect in extra-OECD country pairs. These outcomes are consistent with their hypothesis that there is a dominance of horizontal FDI in intra-OECD country pairs and vertical FDI in extra-OECD country pairs.

Case studies, which focus on a specifically well-known FTA, usually report positive results, with significant difference in FDI gains among FTA members. For instance, the North American FTA (NAFTA) has received a lot of attention, with Waldkirch (2003) finding that this agreement is associated with enhanced FDI flows into Mexico from the US and Canada. Feils and Rahman (2008) indicate the US and Canada are great beneficiaries in terms of inward FDI due to the implementation of NAFTA. Based on a fixed-effects gravity model, MacDermott (2007) finds that NAFTA increases FDI flows into the US, Canada, and Mexico by 0.96%, 1.54%, and 1.73% respectively. Regarding the European Union, Dunning (1997) finds that there has been an increase in both intra- and extra-European Community FDI following the Internal Market Program (IMP) launched in 1986. Lim (2001) reports the Mercado Comun del Sur (MERCOSUR) has had a stronger impact on FDI flows

in Brazil than in Argentina, with FDI as a percent of GDP rising by 578% and 71% respectively. Ismail et al. (2009) use a gravity model and point out that during the implementation period of the AFTA from 1995 to 2003, FDI flows among original AFTA members were not as much as the bilateral FDI flows from these countries to Brunei, Laos, Myanmar and Vietnam. Li, Scollay, and Gilbert (2017) suggest that the ASEAN-China FTA has increased FDI flows to China and ASEAN-6 countries (Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam) based on an extended knowledge capital model.

There are very few case studies assessing the impact on FDI flows of overall FTAs in a specific country. The limited studies include Crotti et al. (2010) and Bae and Jang (2013) for cases of two developed countries, Australia and Korea respectively, with inconsistent results. In particular, Crotti et al. (2010) examine FDI flows into Australia from 27 source countries using panel data between 1993 and 2003. They find that Australia's bilateral trade agreements are associated with increased FDI flows into Australia based on a gravity model. However, with a knowledge-capital model, Bae and Jang (2013) find that between 2000 and 2010, while FTAs increase Korea's outward FDI by more than 50%, their effects on Korea's inward FDI are negative due in part to the possible dominance of horizontal FDI over vertical FDI.

For Vietnam, there have been a variety of studies on Vietnam's FDI, with many of them analysing the role of FDI. For instance, Athukorala and Tran (2012) explore the importance of FDI in reaping developmental gains in Vietnam. Le and Pomfret (2011) assess the impact on the productivity of Vietnam's domestic firms of technology spillovers through FDI. Anwar and Nguyen (2010) and Vu, Gangnes, and Noy (2008) evaluate the impact of FDI on growth in Vietnam. Some studies examine the linkage between FDI and trade (Anwar & Nguyen, 2011; Nguyen & Xing, 2008; Pham & Nguyen, 2013). Other studies, such as Pham (2002) and Hoang and Goujon (2014), assess the drivers of FDI inflows among Vietnamese provinces. Xaypanya, Rangkakulnuwat, and Paweenawat (2015) investigate key determinants of FDI in Vietnam and other ASEAN countries. However, very few studies account for changes in Vietnam's inward FDI following FTAs. In particular, Nguyen and Haughton (2002) examine whether there is an expansion of FDI flows into Vietnam as a result of the bilateral trade agreement between Vietnam and the US between

1990 and 1999. They find that FDI flows into Vietnam go up by 30% in the first year following this agreement. Using the Hausman-Taylor estimator approach for the panel data covering Vietnam's 18 major FDI partners, Hoang, Do, Bui, and Dang (2013) find evidence of investment diversion for Vietnam following the AFTA and the ASEAN-Australia-New Zealand FTA during the 1995-2011 period. In contrast, Le (2017) applies the Prais-Winsten panel-corrected standard error (PCSE) estimation to the 1996-2012 panel data for Vietnam's 25 main partners, showing that the ASEAN-Korea FTA and the Japan-Vietnam FTAs are associated with increased FDI flows into Vietnam during the period 1996 to 2012. These results are mixed and inconsistent, depending on study periods, methodologies used and specific FTAs. Therefore, it is imperative to have a study assessing whether FTAs have, in general, been efficient in attracting FDI flows to Vietnam.

In conclusion, there have been a wide range of studies on the link between RTAs and FDI, with mixed results. However, there has been a lack of empirical studies evaluating the impact of overall FTAs on inward FDI for a particular country, especially in the case of developing countries. The current study therefore contributes to the existing literature on FDI-FTA linkages in developing countries, with a case study of Vietnam. We also examine whether there are any changes in foreign investors' sensitivity to key drivers of FDI following FTAs in Vietnam. Furthermore, based on the outcomes for FTAs and other drivers of FDI, we provide insights into Vietnam's patterns of FDI, which are generally ignored in existing studies.

3.5 Model Specification, Data and Methodology

3.5.1 Model Specification

In this section, we measure the impact of FTAs on Vietnam's inward FDI flows using a gravity model approach.[23] Brenton, Di Mauro, and Lücke (1999) show that theoretical models explaining FDI such as OLI framework and others developed by Brainard (1997) and Markusen and Venables (2000) consider economic size and other country characteristics as important drivers of FDI, which stimulate

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[23] The gravity model was first adopted by Tinbergen (1962) and Pöyhönen (1963) in trade analysis.

applications of gravity models to studies on FDI. The gravity model, which seems to fit FDI flows well (Feils & Rahman, 2011; Hejazi & Safarian, 2005), predicts that FDI flows between two countries positively depend on the countries' economic sizes and negatively relates to the distance between them.

Faeth (2009) states that a variety of theoretical models should be combined to explain FDI. Consistent with Bevan and Estrin (2004), we extend the basic model to account for comparative and locational advantages in Vietnam. A dummy variable is also added to the model to account for the impact of FTAs on FDI flows (Crotti et al., 2010; Yeyati et al., 2003).

The extended gravity model for FDI flows is specified as follows:

$$\ln \text{rFDI}_{ivt} = \alpha_0 + \alpha_1 \ln \text{GDP}_{vt-1} + \alpha_2 \ln \text{GDP}_{it-1} + \alpha_3 \ln \text{DIS}_{vi} + \alpha_4 \ln \text{rER}_{vit-1} +$$
$$\alpha_5 \ln \text{rIMP}_{ivt-1} + \alpha_6 \ln \text{DIFF}_{vit-1} + \alpha_7 \ln \text{INFRA}_{vt-1} + \alpha_8 \text{HC}_{vt-1} + \alpha_9 \text{FTA}_{vit} +$$
$$\alpha_{10} \text{CRISA} + \alpha_{11} \text{POLITI}_{vt-1} + \alpha_{12} \text{BOR}_{vi} + \varepsilon_{ivt} \tag{1}$$

where v denotes Vietnam and i is the country partner of Vietnam. The independent variables, with the exception of the time invariant and dummy variables, are lagged one-year on the grounds that MNEs may rely on previous information to make investment decisions (Bellak, Leibrecht, & Damijan, 2009; Bevan & Estrin, 2004). This is also helpful in dealing with the possibility of endogeneity (Ullah & Inaba, 2014).[24] rFDI_{ivt} represents real FDI flows from country partner i to Vietnam. GDP_{vt} and GDP_{it} represent real GDP of Vietnam and country i, respectively. DIS_{vi} is the distance between the capital of Vietnam and that of country i. BORvi is a dummy variable that takes the value of 1 if Vietnam and country i share a common border. rER_{vit} is the real exchange rate between the currency of Vietnam (VND) and that of country i. Following Feils and Rahman (2008), rIMP_{ivt}, which is Vietnam's real bilateral imports from home country i, is a determinant of FDI flows. Factor endowments are important determinants of FDI flows (Bae & Jang, 2013; Park & Park, 2008; Yeyati et al., 2003). Therefore, DIFF_{vit}, which is the ratio of GDP per capita of Vietnam and GDP per capita of country partner i, is defined as a proxy for the differences in factor endowments between the two countries (Bae & Jang, 2013).

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[24] Also see Crotti et al. (2010) and Nguyen and Xing (2008) who use lagged independent variables to avoid the problem of endogeneity.

INFRA$_{vt-1}$ denotes a proxy for infrastructure development in Vietnam. HC$_{vt-1}$ is defined as human capital, representing the importance of labor quality in Vietnam. It is the percentage of Vietnamese students in Vietnam's total population. CRIS^A represents the Asian Financial Crisis, taking the value of 1 during the period 1998-1999 for countries affected. POLITI$_{vt-1}$ denotes a proxy for governance indicator.

The World Development Indicators (WDIs) of the World Bank provide six governance indicators including control of corruption, government effectiveness, regulatory quality, rule of law, voice and accountability, political stability and absence of violence. A principal component of these six indicators was calculated and included in the model, but no impact was observed. Among these six individual indicators, only political stability and absence of violence positively impacts on FDI flows into Vietnam. Therefore, it is used as a governance indicator in this study, which is in line with Edwards (1990) and Chakrabarti (2001). FTA$_{vit}$ is the key variable, getting the value of 1 if Vietnam and country partner i have participated into an FTA (date of entry into force), and 0 otherwise. Finally, $\varepsilon_{ivt} = \alpha_{vi} + v_{vit}$. While α_{vi} denotes the specific country-pair effect that accounts for the unobservable and time-invariant characteristics that are specific to each pair of countries, v_{vit} represents the error term that is assumed to be log normally distributed.

3.5.2 Data

This study employs panel data comprising Vietnam and its 17 country partners over the 1997-2016 period. Based on Vietnam's main FDI partners and the availability of the data, the 17 partners selected include Indonesia, Malaysia, Singapore, Thailand, China, Japan, Korea, Canada, US, Hong Kong, Taiwan, France, Germany, Italy, Netherland, United Kingdom, and Sweden. During the last two decades, from 1995 to 2016, these 17 partners have accounted for almost 84% of Vietnam's total inward FDI.[25] Indeed, in 2016 at the end of the study period, FDI flows into Vietnam from these partners contributed 83% of Vietnam's FDI inflows.

We also include a sub-period spanning from 2005 to 2016 with Vietnam's 23 trading partners due to three reasons. Firstly, AFTA was Vietnam's first FTA, and

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[25] Calculated from the database of Vietnam's General Statistics Office, accessed at www.gso.gov.vn.

it took almost ten years before Vietnam had its second FTA (ASEAN-China FTA), at the end of 2004. Since then, Vietnam has participated in a variety of FTAs. Secondly, Brunei, India, Australia, Denmark, Belgium and Luxembourg have become Vietnam's significant FDI partners in this sub-period and this change in partners should be accounted for. Furthermore, the 2005-2016 period has experienced dramatic increases in Vietnam's FDI inflows.

FDI flows into Vietnam by source countries are obtained from the ASEAN Secretariat, while Vietnam's imports from its partners are collected from the General Statistics Office of Vietnam (GSO). The data are then scaled by the consumer price index of the US to generate real values.

The bilateral real exchange rate data between Vietnam and its partners are not directly available. Following Duong, Holmes, Strutt, and Lim (2019), they are calculated as follows:

$$rER_{vit} = (CPI_{it}/CPI_{vt}) * (nER_{vt/\$} / nER_{it/\$})$$

where CPI_{it}, CPI_{vt} are the annual consumer price index of country i and Vietnam at year t respectively. $nER_{vt/\$}$ and $nER_{it/\$}$ are the nominal exchange rates, indicating the amount of each country's currency per 1 $US at year t. CPI and nominal exchange rate data for Taiwan are from the National Statistics Republic of China and the Federal Reserve Bank of St. Louis respectively, whereas the data for others are from the World Bank's WDIs.

Real GDP and population data are sourced from the WDIs of the World Bank except for Taiwan whose data are collected from the IMF. Political stability and absence of violence index is from the WDIs, ranging from -2.5 (weak) to 2.5 (strong) for governance performance. Human capital (percentage of Vietnamese students in its total population) is from the General Statistical Office of Vietnam. The length of railways (a proxy for infrastructure) is from the WDIs. Information on Vietnam's FTAs are from the World Trade Organization, whereas data on distance and border are from Centre d'Études Prospectives et d'Informations Internationales (CEPII).

3.5.3 Methodology

As a panel dataset is used, panel estimators, such as ordinary least squares (OLS), fixed effects (FE), and random effects (RE) methods can be employed. First, based on Wald statistics for groupwise heteroscedasticity, we test whether there is the presence of heteroscedasticity across panel data for the whole period and sub-period. The Wald tests, as reported in Table 3.4 and Table 3.5, reject the null hypothesis that the variance of the disturbance term in each model is constant over time. To address the issue, the White-adjusted robust standard errors are used. Next, we check the serial correlation for the models in the two periods. The Wooldridge test suggests that there is no serial correlation in the idiosyncratic error term in the sub-period model, while it indicates that autocorrelation exists in the whole period model. To deal with the problem of autocorrelation, generalised least squares (GLS) should be used (Barreto & Howland, 2005; Wooldridge, 2012). We then utilise the Hausman's specification test (FE vs. RE) and the Breusch and Pagan LM test (OLS vs. RE) to determine the preferred estimator for each model.

In terms of dynamic panel data, the difference generalised method of moments (GMM) estimator (Arellano & Bond, 1991) and the system GMM estimator (Blundell & Bond, 1998) have been increasingly applied to studies on FDI analysis (Kahouli & Omri, 2017; Mijiyawa, 2017; Saini & Singhania, 2018; Ullah & Khan, 2017). However, it is well-known that GMM estimator is efficient for panels with small or moderate time points (T) and large cross-section units (N), which is not the case for the whole period (T=20>N=17). In this respect, large T may lead to inconsistent GMM estimators (Han & Phillips, 2010). In the sub-period, we have N>T. However, the GMM technique is still inapplicable because the data do not meet the requirements of GMM estimation.[26] Therefore, the GMM estimator is not an alternative to estimate the panel data in this study.

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[26] Two conditions need to be met for the application of the GMM (Kahouli & Omri, 2017). First, the differenced error term should be serially correlated at the first order, but no autocorrelation at the second order. Second, based on Sargan/Hansen test of over-identifying restrictions, the instruments and the error term need to be uncorrelated.

3.6 Empirical Results

We estimate two separate regressions, allowing us to compare and contrast the findings. The first regression includes data for the whole period, whereas the second regression is restricted to the more recent data with Vietnam's additional FDI partners included.

The estimated results for the whole period, from 1997 to 2016, are shown in Table 3.4 using OLS, FE and RE methods. The LM statistic (643.68) of the Breusch and Pagan LM test (RE vs. FE), is significant at 1%, suggesting that RE model is superior to the OLS model. In addition, the test statistic (1.22) of the Hausman's specification test (FE vs. RE) indicates that RE model is preferable to FE model. We therefore focus on the estimated results based on RE estimation reported in the fourth column. We begin with a discussion of the impacts from the control variables before focusing on our main variable (FTAs).

Home country market size positively affects FDI inflows to Vietnam, with an elasticity of 0.71. Vietnam's market size, however, has no significant effects on inward FDI. Although this seems to contrast with the literature showing that host country market size is a driver of FDI, this finding reflects the fact that source country market size is much larger than the size of the Vietnamese market. Therefore, overseas investors may not base on Vietnam's market size to determine whether they invest in Vietnam or not.

The significantly positive estimated elasticity of FDI inflows with respect to the real exchange rate between Vietnam and its partners suggests that a depreciation of Vietnamese currency contributes to enhanced FDI flows. Foreign investors benefit from a weak host country currency as they receive a larger investment (Blonigen, 2005; Feils & Rahman, 2011). However, inward FDI responds negatively to the distance between Vietnam's capital and its partners' capitals. Greater geographic distance between two countries results in less FDI due to increased costs such as transportation, transaction and management costs. Regarding the quality of human capital (HC), infrastructure (INFRA) and political stability (POLITI) of Vietnam, these are found to be associated with increased FDI flows.

With regards to the relationship between trade and FDI, the elasticity of FDI inflows with respect to imports by Vietnam from partners is 0.39 and significant at 5%, underlining a complementarity between them (Lipsey & Weiss, 1981; Markusen, 1984). This is partly because MNEs need intermediate inputs and services from headquarters in their home countries (De Mello Jr & Fukasaku, 2000). We can further infer that vertical FDI seems to dominate FDI flows into Vietnam because the increase in imports by Vietnam from partners (or exports from partners to Vietnam) does not reduce FDI flows from partners to Vietnam.

In terms of factor endowments, the DIFFvit-1 coefficient carries a negative sign as expected and is significant at the 1% level, with a 1 % increase in DIFFvit-1 resulting in a 1.06% decrease in Vietnam's FDI inflows. An increase in the ratio of GDP per capita of Vietnam to GDP per capita of country partner i (ln DIFFvit-1) indicates a decreased difference in factor endowments between Vietnam and its partners. In other words, Vietnam's factor endowments have become relatively more expensive. Therefore, vertical FDI, which has been motivated by cheaper factor endowments, tends to decrease. This decrease, in turn, reduces FDI flows to Vietnam. This finding also supports the dominance of vertical FDI over horizontal FDI flows in Vietnam. This is in agreement with Bae and Jang (2013), who find that a smaller gap of GDP per capita between Korea and its developed partners decreases FDI flows from these partners into Korea. In contrast, for the dominance of horizontal FDI in total FDI, Hattari and Rajan (2008) find that the smaller the income divergence between the host and source countries, the larger will be bilateral FDI flows between them.

FTAs, the main focus area of our study, are found to be associated with increased FDI flows to Vietnam, on average, of 129% (exp(0.827)-1). This finding is consistent with positive impacts of the ASEAN-Korea FTA and the Japan-Vietnam FTA on FDI flows in Vietnam (Le, 2017), investment creation in China and ASEAN-6 following the ASEAN-China FTA (Li et al., 2017), and significant increase in FDI flows to Brunei, Laos, Myanmar and Vietnam from original ASEAN members as a result of the AFTA (Ismail et al., 2009). Although there is evidence of investment diversion of the AFTA and the ASEAN-Australia-New Zealand FTA in Vietnam (Hoang et al., 2013), our results show that FTAs, in

general, are significantly beneficial to Vietnam in terms of enhanced FDI flows. This increase is largely due to the prevalence of vertical FDI. A more friendly-FDI environment following FTAs also contributes to the positive change in Vietnam's inward FDI.

Table 3.4: Estimation Results for FDI Inflows to Vietnam, 1997-2016

Variables	OLS	FE	RE
ln GDP_{vt-1}	-0.548	-0.402	-0.063
	(1.107)	(2.447)	(0.623)
ln GDP_{it-1}	0.324***	1.216	0.705*
	(0.119)	(2.624)	(0.421)
ln DIS_{vi}	-1.108***	-	-1.927***
	(0.211)	-	(0.503)
ln rER_{vit-1}	0.120***	0.156*	0.138**
	(0.043)	(0.089)	(0.070)
ln $rIMP_{ivt-1}$	0.807***	0.340	0.392**
	(0.111)	(0.198)	(0.188)
ln $DIFF_{vit-1}$	-0.840***	-0.688	-1.062***
	(0.148)	(2.768)	(0.279)
ln $INFRA_{vt-1}$	2.471**	2.298***	2.306***
	(1.149)	(0.548)	(0.566)
HC_{vt-1}	0.859	0.985*	0.976**
	(0.840)	(0.462)	(0.439)
FTA	0.443**	0.840***	0.827***
	(0.192)	(0.258)	(0.172)
CRISA	0.207	0.257	0.238
	(0.263)	(0.245)	(0.236)
$POLITI_{vt-1}$	1.821*	1.757***	1.760***
	(0.948)	(0.515)	(0.516)
BOR	-0.712	-	-0.716
	(0.474)	-	(1.007)
Constant	-9.653	-36.376**	-16.781
	(23.455)	(15.000)	(13.350)
Breusch-Pagan LM test			643.68***
Hausman test			1.22
Wald test statistics			240.13***
Wooldridge test, F			4.90*
Number of observations			340

***, **, *: Significance levels at 1%, 5%, and 10% respectively. White robust standard errors are in parentheses.

Table 3.5 reports the results for the sub-period between 2005 and 2016. We estimate the gravity model using OLS, FE, and RE methods. Similarly, both the Breusch-

Pagan LM test (RE vs. OLS) and the Hausman test (RE vs. FE) suggest that RE should be used. As most of Vietnam's FTAs entered into force in this sub-period, we also examine whether foreign investors' sensitivity to key determinants of FDI has changed following FTAs. Therefore, we base on RE (3) and RE (4) for the result explanation.

As shown in Table 3.5, the signs and significance of most of the estimated coefficients for the sub-period remain unchanged. However, Vietnam's market size has become an important determinant of FDI. One possible reason is that Vietnam has experienced significantly decreased gaps between the GDP of Vietnam and its partners since 2005, which may make the market size of Vietnam more important.

Consistent with the outcome for the whole period, FTAs are also found to stimulate FDI flows. As expected, the impact of FTAs is much stronger in this sub-period, increasing FDI inflows to Vietnam by 246% (exp(1.240)-1). Therefore, there has been a significant role for FTAs in attracting FDI. In addition, in this FTA period, the effect of FTAs on FDI flows instead works interactively through DIFF, HC, and rER, as shown in (4).

Regarding the interaction terms FTA*ln rER_{vit-1}, the sub-period has seen FDI and the real exchange rate becoming negatively related following FTAs, with a more important role of the real exchange rate. The negative sign on the FTA*ln rER_{vit-1} suggests that a real exchange rate depreciation leads to a fall in FDI. This outcome is opposite to the finding in Table 4 and the general literature as well. However, this result may be partly explained by the Vietnamese nominal exchange rate (VND/1US$), a component used in calculations of the real exchange rate in this study. The nominal exchange rate in Vietnam has experienced substantial fluctuations since 2008, with a depreciating trend of the VND against the US dollar between 2009 and 2011 (Le et al., 2016), and a variety of adjustments from the State Bank of Vietnam, especially in the exchange rate band. In addition, the habit of keeping US dollars, either as a hedge against inflation or with expectations of a depreciation in VND against US$, leads to an artificial demand for US dollars and generates pressures on the nominal exchange rate (State Bank of Vietnam, 2015). Although a nominal exchange rate depreciation benefits foreign investors, high volatility in the exchange rate may reduce the confidence of overseas investors. As

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most of the FTAs Vietnam has made coming into force in the period with significant fluctuations in the nominal exchange rate, it is understandable that foreign investors, especially from FTA partners, may be more cautious and respond negatively to changes in the Vietnamese nominal exchange rate and the real exchange rate between Vietnam and its partners as well.

The FTA*HC coefficient is positive and statistically significant at 5 %. The results are in line with Yeyati et al. (2003), who interact FTA dummy with human capital (proportion of the labour force with complete secondary education) and find the positive impact of the interaction on FDI flows. Our finding shows that human capital has become more important as a driver of FDI following the FTAs. For Samsung, Vietnam has become an attractive alternative to China due to not only younger labour force and cheaper labour costs, but improvement of quality of labour as well.

Consistent with Yeyati et al. (2003) and Bae and Jang (2013), we include the interaction term between FTA dummy and relative factor endowments, FTA* ln DIFFvit-1. If FDI is more likely to be vertical FDI, then we expect the impact of the FTAs on FDI flows to be large. The FTA* ln DIFFvit-1 coefficient is significantly positive as expected. This finding is in line with Bae and Jang (2013), who also find a positive impact from this kind of interaction term on FDI inflows to Korea where Korea's partners have higher GDP per capita than Korea. This result, together with the consistent findings for FTAs, trade, and factor endowments in both the whole period and sub-period, strongly suggest the prevalence of vertical FDI in Vietnam.

Table 3.5: Estimation Results for FDI Inflows to Vietnam, 2005-2016

Variables	OLS (1)	FE (2)	RE (3)	RE (4)
ln GDP$_{vt-1}$	1.421	1.973	1.482*	1.711**
	(1.077)	(3.670)	(0.766)	(0.755)
ln GDP$_{it-1}$	0.746***	3.063	0.873***	0.833***
	(0.163)	(3.071)	(0.273)	(0.236)
ln DIS$_{vi}$	-2.228***	-	-2.462***	-2.693***
	(0.271)	-	(0.462)	(0.483)
ln rER$_{vit-1}$	0.028	3.858**	0.066	0.215
	(0.052)	(1.544)	(0.123)	(0.183)
ln rIMP$_{ivt-1}$	0.140	0.110	0.120*	0.094
	(0.089)	(0.084)	(0.069)	(0.060)
ln DIFF$_{vit-1}$	-1.548***	0.851	-1.661***	-1.816***
	(0.292)	(2.907)	(0.225)	(0.205)
ln INFRA$_{vt-1}$	2.839**	2.981***	2.837***	2.760***
	(1.274)	(1.032)	(1.036)	(1.069)
HC$_{vt-1}$	0.772	0.286	0.755	0.221
	(1.072)	(0.798)	(0.747)	(0.877)
FTA	1.149***	1.022**	1.240***	1.138
	(0.386)	(0.491)	(0.467)	(0.979)
POLITI$_{vt-1}$	2.501	2.422*	2.495*	2.487*
	(1.522)	(1.353)	(1.351)	(1.402)
BOR	0.125		-0.078	-0.068
	(0.477)		(0.801)	(0.663)
FTA* ln DIFF$_{vit-1}$				0.419***
				(0.063)
FTA*HC				1.323**
				(0.664)
FTA*ln rER$_{vit-1}$				-0.182*
				(0.110)
Constant	-52.566*	-172.408***	-55.865***	-58.324***
	(26.658)	(49.483)	(20.297)	(19.400)
Breusch-Pagan LM			101.97***	102.44***
Hausman test			9.13	6.78
Wald test statistics			2,195.84***	2,420.94***
Wooldridge test, F			2.652	2.633
No. of obser.			276	276

***, **, *: Significance levels at 1%, 5%, and 10% respectively. White robust standard errors are in parentheses.

3.7 Conclusion and Recommendations

The impact of FTAs on FDI has been ambiguous in the literature to date. Our study focuses on Vietnam to provide evidence on the effect of the overall FTAs on FDI

flows in a developing country. Panel regression results indicate that the overall FTAs have substantially stimulated FDI inflows to Vietnam in the whole period, with a much stronger impact in the later sub-period. This indicates that FTAs have become efficient drivers of Vietnam's inward FDI. Therefore, the more Vietnam's involvement in economic integration through FTAs, the more likely it is to induce FDI inflows, suggesting the importance of further FTA negotiations. This result, along with the outcomes for trade, factor endowments, and the interaction term between FTAs and factor endowments, suggests the dominance of vertical FDI in Vietnam, which is consistent with the theoretical reasoning indicating that vertical FDI is more prevalent in developing countries.

We also examine whether the FTAs result in any changes in foreign investors' sensitivity to the key determinants of FDI in the sub-period. We find that the real exchange rate, human capital, and factor endowments become more important as drivers of FDI following the FTAs. These findings have important implications for Vietnam's policy makers. In addition to relatively cheaper labour costs as Vietnam's locational advantages, Vietnam should continue to develop human capital. Furthermore, maintaining stability of the exchange rate appears important to enhance overseas investors' confidence.

As factor endowments are found to be associated with increased FDI inflows into Vietnam, future research might explore threshold effects of factor endowments on inward FDI in an extended study on the ASEAN, such as ASEAN-6. Given that the real exchange rate has a more important role on FDI flows in Vietnam following FTAs, another avenue for future research might be to more closely explore the linkage between them. Furthermore, this study could not account for Vietnam's involvement in recent mega-FTAs, such as the CPTPP (Comprehensive and Progressive Agreement for Trans-Pacific Partnership), RCEP (Regional Comprehensive Economic Partnership), and EU-Vietnam FTA, which cover most of Vietnam's main FDI partners. Future research might look at how these FTAs impact on Vietnam's total and sectoral FDI.

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Chapter 4. Trade and Investment Effects of the EU-Vietnam Free Trade Agreement

4.1 Introduction

The suspension of the Doha Development Round negotiations has encouraged countries to reap economic gains through regional trade agreements (RTAs) (Kutlina-Dimitrova & Lakatos, 2014). Likewise, Vietnam has been actively involved in a variety of RTAs, among which the EU-Vietnam free trade agreement (EVFTA) is the most ambitious and comprehensive FTA ever concluded between the EU and a developing country. This FTA was first negotiated in October 2012 and signed on 30 June, 2019. This is the EU's second FTA with an ASEAN member after Singapore, making further contributions towards the goal of a potential EU-ASEAN FTA.

The EU plays a critical role in Vietnam's trade. For instance, in 2018, the EU was Vietnam's second largest export destination after the US and the fifth largest import partner, with trade between Vietnam and the EU accounting for 12.0% of Vietnam's total trade. The magnitude of trade complementary between the two regions is relatively high (Baker, Vanzetti, & Pham, 2014). Vietnam tends to export relatively labour-intensive products to the EU, whereas the EU's main exports to Vietnam are more likely to be high-tech products. Thus, the agreement is expected to benefit trade between the two sides.

The EU is a significant investor in ASEAN, but the EU investment varies significantly among ASEAN member states. Over the period from 2000 to 2017, Singapore received 71.4% of total EU investment to ASEAN, followed by Malaysia (9.5%), and Indonesia (5.9%), while the rest of ASEAN shared the remaining 13.2%, with Vietnam receiving only 4.1%.[27] Given that the EU investment in Vietnam is still small in comparison with some ASEAN members, liberalisation under the EVFTA is expected to attract more foreign direct investment (FDI) from the EU to Vietnam. Therefore, there is still great potential for enhanced FDI inflows to Vietnam from the EU and trade development between the two regions. Thus, it

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[27]Authors' calculations based on the ASEAN FDI database, accessed at https://data.aseanstats.org/

is of interest to examine changes in both Vietnamese trade and investment following the EVFTA.

The EVFTA is ambitious and comprehensive, but existing studies on this agreement have not modelled liberalisation of FDI barriers following this agreement (Baker & Vanzetti, 2019; European Commission, 2018b; Kikuchi, Yanagida, & Vo, 2018). Furthermore, these studies do not analyse how investment in Vietnam changes as a result of this agreement. Thus, the goal of this paper is to explore the impact of the EVFTA using a CGE modelling framework, with a focus on Vietnamese trade and investment. Both trade and investment liberalisation under this agreement are modelled through reductions in tariffs, non-tariff measures (NTMs) to both goods and services trade, improved trade facilitation, and reduced barriers to FDI.

The remaining paper is organised as follows. Section 4.2 briefly summarises the existing literature. Section 4.3 describes trade and investment between Vietnam and the EU. Section 4.4 presents the modelling framework and policy scenarios. Our simulated results are presented in Section 4.5, with Section 4.6 noting our conclusions.

4.2   Previous Studies

The EU has concluded a variety of bilateral FTAs with both developed and developing countries. Many of them are based on tariff elimination and have been found to stimulate trade between the EU and EU' developing FTA partners such as the EU-Chile FTA (Jean, Mulder, & Ramos, 2014; Nowak-Lehmann, Herzer, & Vollmer, 2007), the EU-Ukraine FTA (Frey & Olekseyuk-Viber, 2011), and the EU-Mexico FTA (Slootmaekers, 2004).

With regard to deep and comprehensive FTAs, the EU-Korea FTA, which came into effect in 2011, is the first agreement ever concluded between the EU and a partner (Lakatos & Nilsson, 2017). To assess the economic impact of this FTA, Decreux, Milner, and Péridy (2010) use a computable general equilibrium (CGE) model called MIRAGE (Modelling International Relationships in Applied General Equilibrium) in which tariffs, goods, and services NTMs are modelled. They find that relative to the baseline assuming no conclusion to the Doha Round, Korea's

GDP goes up by 0.84%, compared with 0.07% for the EU. In addition, EU's exports to Korea grow by 82.6%, whereas exports from Korea to the EU rise by 38.39%. Based on a dynamic general equilibrium model, Kutlina-Dimitrova and Lakatos (2014) examine the economic impacts of the EU-Singapore FTA which was concluded in December 2012. Their simulation results indicate that as a result of reductions in tariffs and NTMs, Singapore's GDP increases by 0.94% (2.7 € billion), while EU's GDP grows marginally (0.00%), with a gain of 550 € million. Furthermore, EU's exports to Singapore and Singapore's exports to the EU are expected to increase by 1.4 € billion and 3.5 € billion respectively.

Like the EU-South Korea and EU-Singapore FTAs, the EVFTA is one of a new generation of FTAs. However, studies on this agreement are still limited. In particular, before the EVFTA was concluded, Philip et al. (2011) and Baker et al. (2014) focus on analysing the potential impacts of tariff reductions under this agreement using CGE models. Philip et al. (2011) find that in the case of rapid tariff dismantling, the FTA would increase Vietnam's annual GDP and aggregate imports by around 2.7% and 1.8% respectively. In addition, they indicate that the impacts of the EVFTA on Vietnam's investment vary significantly depending on the scenarios, with the largest increase up to 3.4% by 2020. The simulation results by Baker et al. (2014) indicate that Vietnam's GDP would increase by 7-8% relative to the 2025 baseline following this FTA. In addition, Vietnam's exports to the EU increase by around 50%, while its imports from the EU go up by 43% relative to the 2020 baseline.

Recent studies on the EVFTA include Duong (2016), Vu (2016), Kikuchi et al. (2018), European Commission (2018b), and Baker and Vanzetti (2019). In particular, based on a gravity model and panel data covering Vietnam and 27 EU member states over the 1997-2013 period, Duong (2016) reports that tariff cuts under the EVFTA lead to an expansion in the bilateral trade between Vietnam and the EU. With a partial equilibrium model, namely SMART (Software for Market Analysis and Restrictions on Trade) model, Vu (2016) examines the ex-ante impact of the EVFTA on Vietnamese imports of pharmaceutical products from the EU. She finds that as a result of tariff elimination, Vietnam's pharmaceutical imports from the EU would not experience a significant increase (around 3%). Employing a static

global CGE model, Kikuchi et al. (2018) compare economic impacts of different mega-RTAs on Vietnam. Policy scenarios include tariff removals, reductions in goods and services NTMs, and spill-over to non-member countries for goods. They find that the EVFTA would expand Vietnam's GDP by 8.1%, which is larger than the CPTPP (6.5%), but smaller than RCEP (9.2%) and TPP (13.2%). In addition, at the sectoral level, they find that exports of a variety of Vietnamese agricultural sectors decline following these FTAs. The European Commission (2018b) uses a dynamic GTAP model to explore the economic impacts of the EVFTA. In addition to tariffs, trade facilitation, goods and services NTMs are modelled. The economic impacts on trade, public procurement, and global value chain integration are analysed. For instance, by 2035, exports from the EU to Vietnam and Vietnam to the EU grow by 29% and 18% respectively. Baker and Vanzetti (2019) use a recursive dynamic CGE model to explore the impact of the EVFTA on the United Kingdom (UK) economy. They model reductions in tariffs and NTMs following this agreement and find that real GDP and real wages in the UK grow slightly by 0.01% and 0.03% respectively, while those of Vietnam rise by 1.20% and 3-4% by 2030. In addition, UK's exports to Vietnam rise by 60% and its imports from Vietnam (Vietnam's exports to the UK) rise by 33% by 2030. In contrast, UK's total exports and imports increase slightly by 0.09% and 0.01% respectively, compared with 2.14% and 1.59% in Vietnam. Among the sectors modelled, they show that both UK and EU27 exports to Vietnam rise significantly in services sectors. With respect to sectoral output, output of the leather and wearing apparel sectors in the UK and EU decline, but expands in Vietnam.

With the exception of Philip et al. (2011), none of the existing studies on the EVFTA analyses changes in investment following this agreement. Although Philip et al. (2011) provide some estimates on Vietnam's investment as a result of the EVFTA, they only analyse the impacts of tariff elimination. Moreover, reductions in FDI barriers have not yet been modelled in existing studies on the EVFTA. This study aims at analysing the impact of the EVFTA on Vietnam, focusing on Vietnamese trade and investment. This is the first study on the EVFTA which models both trade and investment liberalisation and examines changes in Vietnamese capital stocks in addition to changes in Vietnamese trade.

4.3   Trade and Investment between the EU and Vietnam

4.3.1   Vietnam's Trade with the EU

The EU, along with China, Japan, and the US have traditionally been key trading partners of ASEAN. In 2017, the EU was ASEAN's second largest export destination after China, while it was ASEAN's third largest import partner after China and Japan (ASEAN Secretariat, 2018).

Like other ASEAN members, the EU has been Vietnam's main trading partner in terms of exports and imports of goods. Figure 4.1 indicates Vietnam's exports to the EU in the 2000-2018 period. The shares of Vietnam's exports to the EU in its total exports, which are shown in the line chart of this figure, are quite stable, ranging between 16.2% and 21.1%**.** In 2018, the EU was Vietnam's second largest export market, accounting for 17.8% of Vietnam's total exports after the US (19.7%), followed by China (17.3%), ASEAN (10.3%), and Japan (7.9%)**.**[28] The bar chart of Figure 4.1 points out that exports from Vietnam to the EU have substantially increased over the last two decades except for in 2009, due to the Global Financial Crisis. In 2018, Vietnam's exports to the EU reached 42.4 billion US$, which was approximately14 times larger than it was in 2000.

Figure 4.1: Vietnam's Exports to the EU (billion US$ and %)
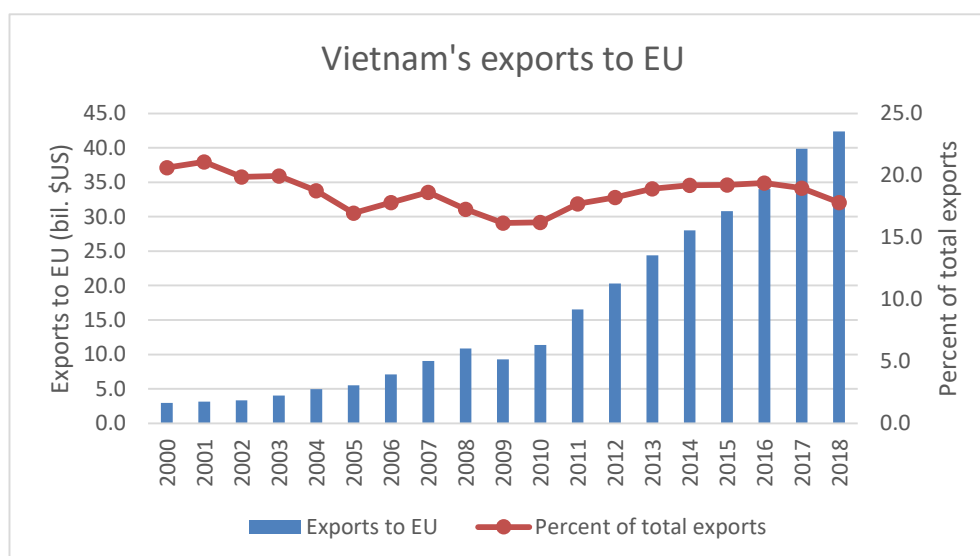
Source: Direction of Trade Statistics, IMF (2019)

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[28] Calculated from IMF data, Direction of Trade Statistics, accessed at https://data.imf.org/

Figure 4.2 shows Vietnam's imports from the EU between 2000 and 2018. As can be seen in the bars of this figure, there was a rapid expansion in Vietnam's imports from the EU, increasing from 1.4 billion US\$ in 2000 to 13.8 billion US\$ in 2018, with an average import growth of 14.6% for this period. The line in this figure indicates that shares of Vietnam's imports from the EU in its total imports had a stronger downward trend than those of its exports. Nevertheless, in 2018, the EU was still among Vietnam's top five import partners, constituting 6.0% of Vietnam's total imports, while China, South Korea, ASEAN, and Japan accounted for 28.3%, 20.6%, 13.8%, and 8.3% respectively.[29]

Figure 4.2: Vietnam's Imports from the EU (billion US\$ and %)
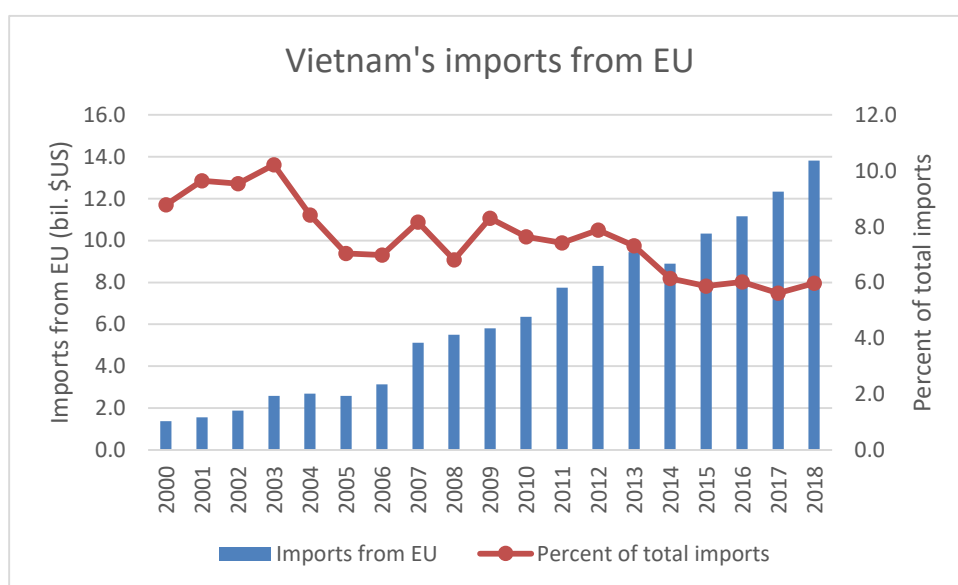
Source: Direction of Trade Statistics, IMF (2019)

The main products traded between Vietnam and the EU are presented in Table 4.1. They accounted for 84% of Vietnam's total exports to the EU and 73.1% of Vietnam's total imports from the EU in 2017.[30] As shown in this table, there have been significant changes in the composition of Vietnam's main export commodities to the EU. In particular, in 2005, Vietnam's exports of footwear represented 32% of Vietnam's total exports to the EU, followed by apparel and clothing accessories (14.7%), furniture (8.6%), coffee (7.1%), and fish (6.5%). Although these products remained among Vietnam's top ten export products to the EU in 2017, they contributed much smaller shares than in 2005. Instead, electrical machinery and

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[29] Calculated from IMF data, Direction of Trade Statistics, accessed at https://data.imf.org/
[30] Authors' calculations based on the ASEAN Statistics Database, accessed at https://data.aseanstats.org/

appliances accounted for 39.8% of Vietnam's total exports to the EU in 2017, compared with 1.6% in 2005. With respect to imports, Vietnam has mainly imported electrical machinery and appliances, nuclear reactors and boilers, pharmaceutical products, optical and photographical instruments, and transport equipment. The five main import products accounted for around 61% of Vietnam's total imports from the EU in both 2005 and 2017. Although electrical machinery and appliances are both Vietnam's key export and import products with the EU, Vietnam's exports of these products are much greater than its imports in dollar terms. The key trade products suggest that trade between Vietnam and the EU is likely to be complementary.

Table 4.1: Vietnam's Top 10 Trade Products with the EU (million US$ and %), 2005 and 2017

	Export products (Vietnam to the EU), 2005	Mil. US$	% Total	Export products, 2017	Mil. US$	% Total
1	Footwear; gaiters and the like; parts of such articles	1,394	32.0	Electrical machinery and appliances	15,260	39.8
2	Apparel and clothing accessories; not knitted or crocheted	474	10.9	Footwear, gaiters and the like, etc	4,785	12.5
3	Furniture, furnishings, lighting, signs, etc	376	8.6	Nuclear reactors, and boilers, etc	2,821	7.4
4	Coffee, tea, mate and spices	308	7.1	Apparel (not knitted or crocheted), etc	2,603	6.8
5	Fish, crustaceans, and molluscs, etc	284	6.5	Coffee, tea, mate and spices	1,573	4.1
6	Apparel and clothing accessories; knitted or crocheted	166	3.8	Apparel (knitted or crocheted), etc	1,142	3.0
7	Leather, saddlery, travel goods, and animal gut	143	3.3	Furniture, furnishings, and signs, etc	1,103	2.9
8	Nuclear reactors, boilers, and machinery, etc	119	2.7	Edible fruit and nuts, etc	1,062	2.8
9	Edible fruit and nuts; peel of citrus fruit or melons	94	2.2	Fish, crustaceans, and molluscs, etc	941	2.5
10	Ceramic products	89	2.0	Leather, saddlery, and travel goods, etc	899	2.3
	Import products (EU to Vietnam), 2005	Mil. US$	% Total	Import products, 2017	Mil. US$	% Total
1	Nuclear reactors, boilers, and machinery, etc	535	21.5	Electrical machinery and appliances	2,316	19.1
2	Electrical machinery and appliances	380	15.3	Nuclear reactors and boilers, etc	2,135	17.6
3	Transport equipment	357	14.4	Pharmaceutical products	1,705	14.1
4	Pharmaceutical products	151	6.1	Optical instruments, etc	688	5.7
5	Live animals; animal product	99	4.0	Transport equipment	507	4.2
6	Optical and photographic instruments, etc	81	3.2	Plastics and articles thereof	378	3.1
7	Plastics and articles thereof	68	2.7	Chemical products n.e.c.	341	2.8
8	Chemical products n.e.c.	68	2.7	Raw hides and skins and leather	303	2.5
9	Iron and steel	55	2.2	Organic chemicals	251	2.1
10	Organic chemicals	47	1.9	Live animals; animal product	246	2.0

Source: ASEAN Secretariat (2019)
Note: % Total is defined as share in Vietnam's exports (imports) to (from) the EU

Services trade between the EU and Vietnam is still limited (UNCTAD, 2019). Indeed, Vietnam's trade in services accounted for only 10% of Vietnam's total trade over the period from 2005 to 2014 and decreased to 7.5% and 6.6% in 2015 and 2017 respectively.[31] Among the services sectors, travel and transport together accounted for 82.6% of Vietnam's total services trade in 2017.[32]

4.3.2 EU's Investment in Vietnam

The EU was ASEAN's largest foreign investor during the last decade, accounting for 18.5% of total FDI inflows to ASEAN, followed by intra-ASEAN (18.1%), the US (12.4%), Japan (11.8%), China (6.1%), and South Korea (3.6%) (ASEAN Secretariat, 2018). The EU is also Vietnam's important investor. Figure 4.3 indicates FDI inflows to Vietnam by source country in the 2000-2017 period. The EU was Vietnam's fourth largest investor, accounting for one-tenth of Vietnam's total inward FDI, after Korea (19.0%), intra-ASEAN (17.0%), and Japan (15.6%). Other significant investors in Vietnam include Taiwan, Hong Kong, the US, and China.

Figure 4.3: FDI Flows to Vietnam by Source Country (%), 2000-2017
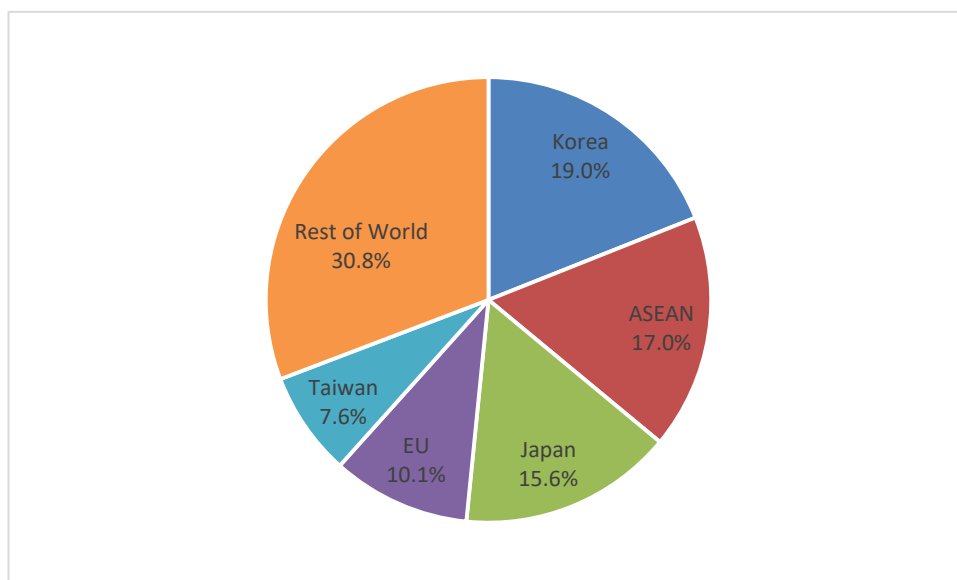
Source: ASEAN Secretariat (2019)

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[31] Authors' calculations based on the database of UNCTAD, accessed at
https://unctadstat.unctad.org/
[32] Authors' calculations based on the database of ASEAN Secretariat, accessed at
https://www.aseanstats.org/

Regarding FDI to Vietnam from the EU member states, Table 4.2 shows accumulation of projects with total registered capital of the ten largest EU investors in Vietnam as of December 2017. These countries accounted for 6.8% of Vietnam's total registered capital, with Netherlands contributing the most (2.6%). Most of the projects and registered FDI from the EU are associated with those from Netherlands, United Kingdom, France, Luxembourg, and Germany. In 2017, Netherlands, Germany, and United Kingdom together accounted for 83% of the EU investment in Vietnam, with more than a half from Netherlands.[33] The European Commission (2018a) states that as of 2017, industrial processing and manufacturing sectors accounted for 35% of EU's total investment stock in Vietnam.

Table 4.2: Accumulation of Projects by Top 10 EU Member States as of 31/12/2017

Country	No. of projects	Registered capital (Mil. US$)	Share[*] (%)
Netherlands	306	8177.1	2.6
United Kingdom	318	3464.7	1.1
France	513	2786.6	0.9
Luxembourg	45	2336.6	0.7
Germany	293	1759.5	0.6
Cyprus	17	975.4	0.3
Belgium	63	914	0.3
Denmark	130	883.4	0.3
Italy	87	388.7	0.1
Slovakia	10	197.3	0.1

Source: General Statistics Office of Vietnam (2018)
Note: [*] is defined as percentage of Vietnam's total registered capital

4.4 Modelling Framework and Scenarios

4.4.1 Model and Database

The current paper uses the global trade analysis project (GTAP) model (Hertel, 1997) to analyse the impact of the EVFTA on Vietnam, with a focus on trade and investment. This type of model is ideal for analysing FTAs as changes in a policy component may result in both domestically and globally economic impacts. In order to examine the change in capital stock, we use a long-run closure (Francois, McDonald, & Nordstrom, 1996; Walmsley, 1998). A rise in income leads to

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[33] Authors' calculations based on the ASEAN Statistics Database, accessed at https://data.aseanstats.org/

increases in both savings and investment, with the rise in savings being proportionate to additional income (Kawasaki, 2015).

In this study, we use the GTAP version 10 database (Aguiar, Chepeliev, Corong, McDougall, & van der Mensbrugghe, 2019), which contains 141 countries/regions and 65 sectors, with a base year of 2014. Existing trade agreements to 2014 are included in the GTAP database used and we note that the EVFTA is the first FTA that both Vietnam and the EU are members of. For the purpose of our analysis, the regions have been aggregated into 26 regions (Appendix, Table 4.10). In addition to modelling Vietnam's key trading partners, we model 17 regions within the EU so that the bilateral trade flows between Vietnam and its important trading partners in the EU are accounted for. In terms of the sectoral aggregation, in order to be able to focus on key trade products between Vietnam and the EU, we aggregate the 65 GTAP sectors into 22 sectors, as shown in Appendix, Table 4.11.

4.4.2 Scenarios

Trade in goods and services, trade facilitation, and investment liberalisation are included in the text of the EVFTA. Therefore, we take into account these factors in our policy scenarios.

Table 4.3 briefly summarises two scenarios simulated in the current study. Each scenario includes five components, with Scenario 2 assuming a greater liberalisation in NTMs, trade facilitation and FDI barriers.[34]

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[34] Although the EVFTA is already signed, there remains uncertainty about exactly how much liberalisation will be achieved under these aspects of the agreement. Therefore, it is appropriate to model a range of outcomes.

Table 4.3: Policy Scenarios

Policy components	Scenario 1	Scenario 2
Tariff cuts	99% cut on all goods by Vietnam and the EU	99% cut on all goods by Vietnam and the EU
Goods NTMs	A symmetric reduction (for Vietnam and the EU) of 10%	A symmetric reduction (for Vietnam and the EU) of 20%
Services NTMs	Vietnam: - Business, finance, communication, and transport: 10% cut - Other services: 3% cut EU: 3% cut in all services	Vietnam: - Business, finance, communication, and transport: 20% cut - Other services: 3% cut EU: 3% cut in all services
Trade facilitation (only Vietnam)	7.5% cut in time to import by Vietnam	15% cut in time to import by Vietnam
FDI barriers (Only Vietnam)	- Food products, beverages, chemicals, plastics products, textiles, and apparel: 50% cut - Other manufacturing sectors: 25% cut - Services sectors: 25% cut	- Food products, beverages, chemicals, plastics products, textiles, and apparel: 75% cut - Other manufacturing sectors: 50% cut - Services sectors: 50% cut

4.4.2.1 Tariffs

A key goal of FTAs is to reduce trade barriers among members. Tariffs and quotas, the most basic forms of trade barriers, will be largely eliminated as a result of the EVFTA. In particular, 99% of tariffs will be eliminated (Delegation of the European Union to Vietnam, 2019), with the exception of a few minor products retaining partial liberalisation through tariff rate quotas (TRQs). The EU will apply zero-duty TRQs on some sensitive agricultural products imported from Vietnam including birds' egg and egg yolks, garlic, sweetcorn, rice, cassava starch, tuna, surimi, and speciality sugar.[35] Specially, among these products, up to 80 thousand metric tonnes of Vietnamese rice (husked rice and milled rice) are allowed to be imported into the EU duty-free. Indeed, in the fourth quarter of 2018, Cambodia and Thailand accounted for 37% and 27% respectively of EU's rice imports, while Vietnam made up only 2% (European Commission, 2019), a modest figure for the third largest rice exporter in the world. The agreement, therefore, is expected to bring large benefits to the Vietnamese rice. In Vietnam, TRQs are imposed on imports of eggs, sugar,

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[35] See Annex 2-A "Reduction or elimination of customs duties", accessed at
https://trade.ec.europa.eu/doclib/docs/2018/september/tradoc_157340.pdf and Appendix 2-A-1
"Tariff schedule of the European Union" of the EVFTA, accessed at
http://trade.ec.europa.eu/doclib/press/index.cfm?id=1437

tobacco, and salt from the EU.[36] These products with partial liberalisation agreed by the EU and Vietnam comprise a small number of tariff lines and are not key export products of the two regions.[37] Therefore, we make an ambitious assumption on tariff cuts that both the EU and Vietnam reduce tariffs by 99% on all commodities in both scenarios.

Table 4.4 reports tariff rates imposed by Vietnam and the EU on imports from the EU and Vietnam respectively. Processed food and labour-intensive products from the EU, on average, face quite high tariff rates of 12.31% and 11.38% respectively in Vietnam, compared with 6.97% and 7.67% faced by the Vietnamese counterparts in the EU. In addition, the EU imposes relatively minimal import tariff rates on agriculture (0.60%), extraction (0.61%), and other manufactures (0.13%) from Vietnam. In contrast, the EU still faces relatively high tariff rates of 2.57%, 4.66%, and 4.11% respectively in Vietnam.

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[36] See Appendix 2-A-2 "Tariff schedule of Vietnam" of the EVFTA, accessed at http://trade.ec.europa.eu/doclib/press/index.cfm?id=1437
[37] See http://trade.ec.europa.eu/doclib/docs/2015/august/tradoc_153674.pdf and https://trade.ec.europa.eu/doclib/docs/2016/june/tradoc_154622.pdf

Table 4.4: Tariff Rates Imposed by Vietnam and the EU (%)

Sector	Tariffs imposed by Vietnam	Tariffs imposed by the EU
Agriculture	**2.57**	**0.60**
Rice	24.87	20.39
Fishing	8.76	3.60
OthAgri	2.06	0.06
Livestock	2.54	2.88
Processed food	**12.31**	**6.97**
MeatProds	13.72	7.09
FoodBever	12.24	6.96
Extraction	**4.66**	**0.61**
Labor-intensive manufactures	**11.38**	**7.67**
Textiles	10.59	5.31
AppaLeath	11.95	7.83
Other manufactures	**4.11**	**0.13**
Wood	0.56	0.14
Chemicals	3.22	1.00
Metals	3.99	0.47
ElecEquip	1.09	0.02
Machinery	3.03	0.01
TransEquip	9.32	1.42
OthManufac	6.48	0.05

Source: Authors' calculations based on the GTAP 10 database

4.4.2.2 Non-tariff Measures

Given that many tariffs have been reduced, trade barriers in the form of NTMs have become increasingly important. NTMs are classified into technical measures and non-technical measures. The former comprises technical barriers to trade (TBT), sanitary and phytosanitary (SPS) measures, while the latter includes contingent trade measures, quantitative restrictions, price controls, exports restrictions, finance measures, and behind-the-border measures (UNCTAD, 2015).

Goods NTMs

In terms of goods NTMs, technical NTMs are modelled in this study as the EVFTA has two separate chapters on TBT and SPS.[38] The UNCTAD (2015) indicates that SPS measures deal with restricting specific substances, ensuring food safety, preventing the spread of disease or pests as well as conformity assessment

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[38] See Chapter 5 on Technical Barriers to Trade and Chapter 6 on Sanitary and Phytosanitary Measures of the EVFTA, assessed at http://trade.ec.europa.eu/doclib/press/index.cfm?id=1437

procedures relating to food safety such as certification and testing. In addition, technical measures refer to those largely dealing with labelling requirements and conformity assessment procedures involving technical requirements such as certification and testing (UNCTAD, 2015).

It is noted that assumptions of reductions in goods NTMs following FTAs range between 20% and 50% in much of the current literature. It is very difficult to assess the precise magnitude to which goods NTMs will be reduced as a result of the EVFTA. Therefore, from a conservative perspective, we assume symmetric reductions in goods NTMs for the two regions of 20% for the ambitious scenario and 10% for the conservative scenario.

Data on ad valorem equivalents (AVEs) of good NTMs at the GTAP sectoral level are sourced from the World Bank (2019), which are based on the estimation method of Kee and Nicita (2016) developed from their previous work (Kee, Nicita, & Olarreaga, 2009). AVEs of goods NTMs for the sectors modelled are presented in Appendix, Table 4.12.

Services NTMs

The text of the EVFTA shows that EU firms would have significantly increased access to a variety of services sectors in Vietnam, including business services, financial services, communication, and transportation services.[39] In contrast, the agreement indicates much smaller liberalisation of the EU services sectors.

In terms of reductions in services NTMs, studies analysing the recent bilateral FTAs between the EU and partners show conservative views. In particular, Kutlina-Dimitrova and Lakatos (2014) assume that both the EU and Singapore reduce services NTMs by 3% due to the EU-Singapore FTA. Decreux et al. (2010) assume a 10% cut by only Korea in services NTMs for telecommunication, financial, and business services as a result of the EU-Korea FTA. Following Kutlina-Dimitrova and Lakatos (2014), in this paper we assume the EU reduces services NTMs by 3% in all services sectors. As Vietnam has committed to large reductions in finance,

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[39] See Annex 8-B "Vietnam's Schedule of Specific Commitments" of Chapter 8 "Liberalisation of Investment, Trade in Services and Electronic Commerce" in the EVFTA, accessed at http://trade.ec.europa.eu/doclib/press/index.cfm?id=1437

business, communication, and transport, we start with a 10% cut by Vietnam in these four services sectors in the conservative scenario (Scenario 1) and 20% in the ambitious scenario (Scenario 2). For other services sectors, we assume that Vietnam reduces services NTMs by 3% in both scenarios.

We use the latest available estimates of AVEs of services NTMs by Fontagné, Mitaritonna, and Signoret (2016) (Appendix, Table 4.13). Their estimated sectors include communication, construction, insurance, business services, financial services, government service, trade and transport, which are consistent with the GTAP 10 database.

4.4.2.3   Trade Facilitation

The World Trade Organisation (2019) defines trade facilitation as the simplification, modernisation, and harmonisation of export and import processes, reducing unnecessarily bureaucratic delays in cross-border trade in goods. Following Walmsley, Strutt, Minor, and Rae (2018), we estimate improvement in trade facilitation through a 7.5% and a 15% cut in time to import for Vietnam in Scenario 1 and Scenario 2 respectively. We do not model the impact of this policy component for the EU member states because their time to trade is already very small (Appendix, Table 4.14).

The World Bank Doing Business (2019) reports data on trading across borders, with the number of days delay in both good exports and imports for 175 countries due to border compliance and documentary compliance. Hummels, Minor, Reisman, and Endean (2007) estimate tariff equivalents of one day waiting for exports and imports. Based on the estimates by Hummels et al. (2007), Minor and Hummels (2013) create a global database which includes ad valorem of per day time cost in trade for use in CGE models, making it possible for the inclusion of trade facilitation in CGE modelling framework. Combining these estimates with the trading across borders data from the World Bank Doing Business (2019), we then convert the days of delay in imports to tariff equivalents for the sectors modelled for Vietnam.

4.4.2.4   Investment Liberalisation

Vietnam's investment liberalisation described in the EVFTA mainly focuses on manufacturing sectors. Following this agreement, the EU investors will benefit from substantially increased access to a wide range of Vietnam's key manufacturing sectors including food products and beverages, chemicals (other than explosives), rubber and plastics products, textiles, and apparel.[40] In this study, reductions in FDI barriers are not modelled for the EU as Vietnam's investment in the EU has been minimal. In particular, as of 31 December 2017, Germany was the main destination of Vietnam's direct investment in the EU, followed by the UK, with Vietnam's total registered capital of 105.3 million US$ and 11.1 million US$ in Germany and the UK respectively (General Statistics Office of Vietnam, 2018). We assume that Vietnam liberalises FDI barriers in the key sectors by 50% and other manufacturing sectors and services sectors by 25% in the conservative scenario (Scenario 1). In the more ambitious scenario (Scenario 2), the reductions are assumed up to 75% and 50% respectively.[41]

4.5   Simulated Results of the EVFTA

This section begins with a representation of macroeconomic gains following the EVFTA in terms of real GDP, investment, and aggregate exports and imports. Then, the sectoral effects of this agreement are depicted.

4.5.1   Macroeconomic Impacts

4.5.1.1   Real GDP

The simulation results indicate that in percentage terms, there are almost no changes in the EU's real GDP, whereas Vietnam's real GDP increases by 1.54% in Scenario

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[40] See Annex 8-B: Vietnam's Schedule of Specific Commitments, Chapter 8 on Liberalisation of Investment, Trade in Services and Electronic Commerce, assessed at http://trade.ec.europa.eu/doclib/press/index.cfm?id=1437

[41] Reductions in FDI barriers are implemented as tax on capital by sector. However, this policy instrument has marginal (negligible) economic impacts on Vietnam in both scenarios. We, therefore, do not present the results of this component. Full details of investment modelling and a literature review on modelling FDI liberalisation are provided in Chapter 5 of this thesis, as this modelling is much more important in the case of RCEP.

1 and 1.98% in Scenario 2. Figure 4.4 decomposes the changes in Vietnam's real GDP by policy components. The GDP gains in Scenario 1 are largely attributable to tariff elimination, which results in an increase of 1.15%, followed by good NTMs and trade facilitation (0.30%)[42], and services NTMs (0.09%). In Scenario 2, cuts to goods and services NTMs, trade facilitation, and FDI barriers are greater, but tariff elimination continues to dominate the results.

Figure 4.4: Changes in Vietnam's Real GDP Due to Liberalising Components of the EVFTA (%)
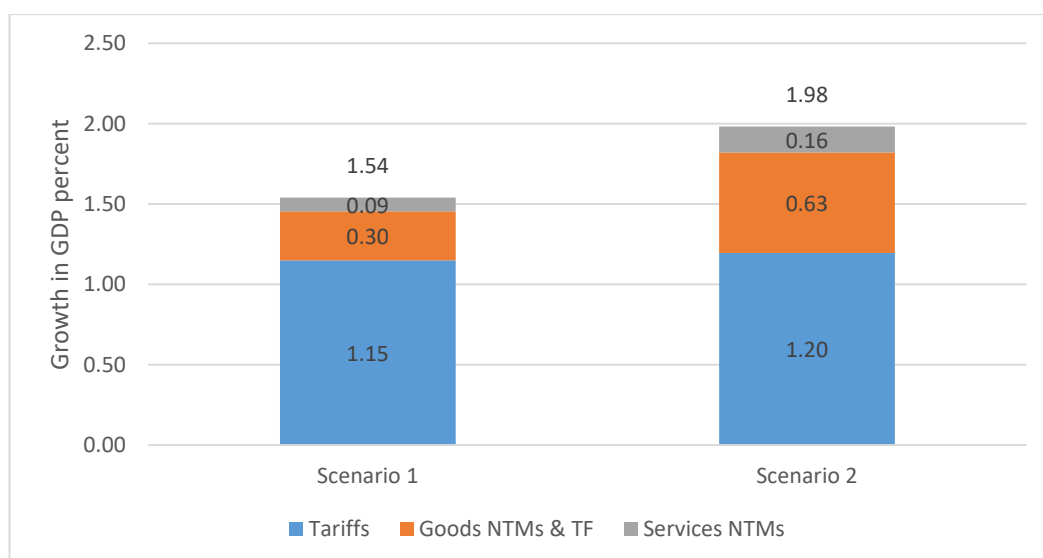
Source: Authors' model results

4.5.1.2 Investment Effects

This section begins with an analysis of the change in Vietnam's long-run capital stock. This is followed by the change in the current rate of return, rental price of capital, and price of capital goods in both the short- and long-run. Following the EVFTA, Vietnam receives considerable gains in the long-run capital stock, whereas the capital changes for the EU member states are close to 0%. In particular, Vietnam's long-run capital stock rises by 2.93% in Scenario 1 and 3.57% in Scenario 2. Figure 4.5 presents changes in Vietnam's long-run capital stock by liberalising components as a result of this agreement. All the policy components have positive impacts on Vietnam's capital growth, but the magnitude of their contributions vary significantly. Most of these gains are from tariff elimination,

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[42] Goods NTMs contribute 0.23%.

which increases Vietnam's long-run capital stock by 2.39% in Scenario 1, followed by goods NTMs and trade facilitation (0.46%)[43], and services NTMs (0.08%). With larger cuts to goods NTMs & trade facilitation and services NTMs in Scenario 2, their contributions to Vietnam's capital growth increase to 0.94%[44] and 0.14% respectively. However, tariff removal continues to dominate the results (2.49%).

Figure 4.5: Changes in Vietnam's Capital Stock due to Liberalising Components of the EVFTA (%)
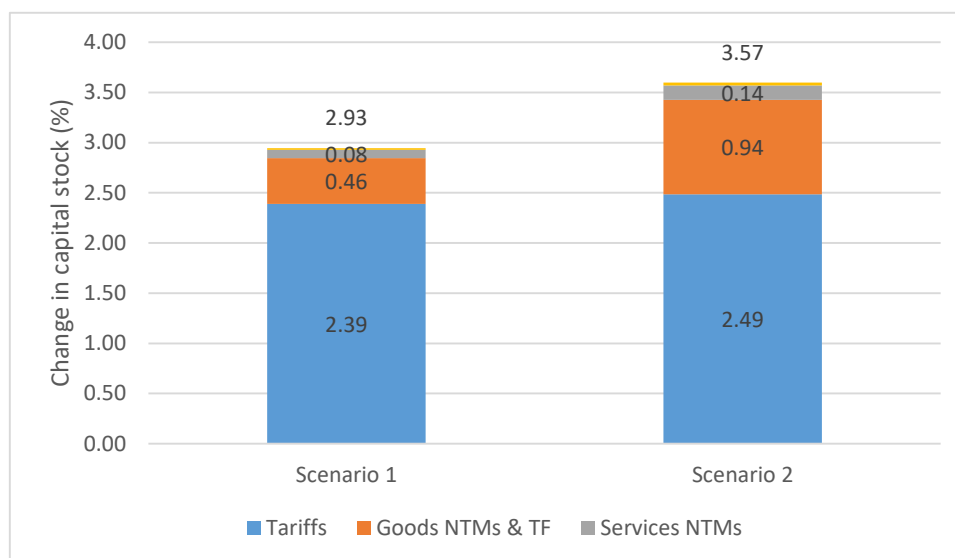
The significant increases in Vietnam's long-run capital stock relate to the short-run current rate of return, which is specified as follows (Hertel, 1997):

$$rorc(r) = GRNETRATIO(r) \times [rental(r) - pcgds(r)] \tag{1}$$

In which r is a particular region; GRNETRATIO is the ratio of GROSS/NET rates of return on capital; rorc is the current rate of return; pcgds is the price of capital goods; rental is the rental price of capital.

Equation (1) indicates that the change in the current rate of return positively depends on the change in the rental price of capital and negatively relates to the change in the price of capital goods. Table 4.5 provides changes in Vietnam's current rates of return, rental prices of capital, and prices of capital goods in the short-run for both Scenarios 1 and 2. It is notable that as a result of the EVFTA,

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[43] Goods NTMs contribute 0.40%
[44] Goods NTMs contribute 0.84%

Vietnam's prices of capital goods rise by 0.39% in Scenario 1 and 0.47% in Scenario 2. Changes in the price of capital goods depend on two factors moving in the opposite direction. In particular, reductions in tariffs and NTMs are likely to reduce the price of imported capital goods, whereas the increase in the demand for these products leads to the enhanced price (Walmsley, 1998). Therefore, the positive change in the price of capital goods suggests that the impact of the latter dominates the results. Indeed, Vietnam imports around 30.7% of products used in the production of the capital goods, but the EU is not Vietnam's largest import partner.[45] Instead, Vietnam largely imports from China, South Korea, ASEAN, and Japan.

As the price of capital goods rises as a result of the EVFTA, the increase in the current rate of return in Vietnam is due to the change in the rental price of capital which grows by 2.55% in Scenario 1 and 3.11% in Scenario 2. The rise in the rental price of capital in Vietnam is due to the increased demand for the services of capital stock following the EVFTA, given the available capital stock. The significant increases in Vietnam's short-run current rates of return (3.50% in Scenario 1 and 4.26% in Scenario 2) can explain the expansion in Vietnam's capital stock in the long-run when the capital stock is no longer fixed, and the supply of capital will rise to meet the increased demand for capital.

Table 4.5: Changes in the Short-run Current Rate of Return, Rental Price of Capital and Price of Capital Goods in Vietnam (%)

Variables	Scenario 1	Scenario 2
Current rate of return on capital	3.50	4.26
Rental price of capital	2.55	3.11
Price of capital goods	0.39	0.47

Source: Authors' model resullts

Table 4.6 indicates the long-run current rate of return, rental price of capital, and price of capital goods of Vietnam, which are relatively small compared with those in the short-run. Changes in the current and expected rates of return are equated for all regions in the long-run, at minamal rates of 0.01% in Scenario 1 and 0.02% in Scenario 2 following the EVFTA. Therefore, changes in the rental price of capital

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[45] Authors' calculation from the GTAP 10 data base

are mainly determined by changes in the price of capital goods.[46] In Vietnam, changes in long-run rental prices of capital and prices of capital goods are almost the same, around 0.1% in both scenarios.

Table 4.6: Changes in the Long-run Current Rate of Return, Rental Price of Capital and Price of Capital Goods in Vietnam (%)

Variables	Scenario 1	Scenario 2
Current rate of return on capital	0.01	0.02
Rental price of capital	0.10	0.12
Price of capital goods	0.09	0.11

Source: Authors' model results

4.5.1.3 Aggregate Exports and Imports

Table 4.7 describes changes in total exports, total imports, and bilateral trade between Vietnam and the EU. This agreement substantially benefits both Vietnam and the EU in terms of bilateral trade. In Scenario 1, Vietnam's exports to the EU increase by 24.8% (almost 8.2 billion US$) and EU's exports to Vietnam exhibit a 37.2% increase (5.1 billion US$). In Scenario 2, they increase to 30.0% (9.9 billion US$) and 44.5% (6.1 billion US$) respectively. The significant expansion in the bilateral trade is not surprising as the EU has been Vietnam's key trading partner. In addition, the EU benefits from increased access to the Vietnamese market as Vietnam imposed much higher import tariffs on EU products than the tariffs imposed by the EU against Vietnamese exports prior to the agreement. Although the export growth of the EU is greater than that of Vietnam, the absolute values imply Vietnam has a trade surplus with the EU. Among the EU member states, Vietnam would trade more with Italy, France, Spain, Germany, and UK.

While the bilateral trade between Vietnam and the EU grow substantially, total trade of both Vietnam and the EU experiences much smaller growth. In particular, both EU's total real exports and total imports grow marginally (0.01%) in both scenarios. Likewise, the percentage increases in Vietnam's total exports and imports range between 3.11% and 4.17% in the two scenarios. The results indicate that although the EVFTA creates more trade for both Vietnam and the EU, there is strong evidence of trade diversion effects as well. The EU and Vietnam

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[46] $\text{rental}(r) = \left[\frac{1}{\text{GRNETRATIO}(r)}\right] \times \text{rorc}(r) + \text{pcgds}(r)$

dramatically increase their bilateral trade and trade less with the rest of the world. In particular, the expansion in Vietnam's exports to the EU is much greater than in Vietnam's total exports, and the increase in Vietnam's total imports are largely attributable to the rise in Vietnam's imports from the EU.[47] In addition, for the EU, the rise in the EU's exports to Vietnam is much larger than in the EU's total exports. Similarly, the increase in the EU's imports from Vietnam exceeds the expansion in the EU's total imports.[48]

Table 4.7: Changes in Total Real Exports, Imports, and Bilateral Trade (% and million US$)

	Scenario 1		Scenario 2	
	%	MIL. US$	%	MIL. US$
Total exports				
Vietnam	3.11	5,206	3.84	6,417
EU	0.02	1,141	0.02	1,290
Total imports				
Vietnam	3.39	6,637	4.17	8,158
EU	0.02	1,096	0.02	1,239
Bilateral trade				
Vietnam exports to the EU	24.82	8,176	29.97	9,870
EU exports to Vietnam	37.20	5,077	44.45	6,066

Source: Authors' model results

When the increase in Vietnam's total exports is decomposed by policy components, we find that tariff elimination contributes the most to the export growth rate of Vietnam, with 83.1% in Scenario 1 and 71.2% in Scenario 2. This is followed by the contributions of goods NTMs and trade facilitation, services NTMs, and tax on capital.

4.5.2 Sectoral Impacts

Table 4.8 presents changes in Vietnam's real sectoral exports and imports. The six aggregated sectors from the 22 sectors modelled reveal that that the agricultural, extraction, and other manufacturing sectors exhibit export contraction. One of the main reasons is that these sectors do not benefit from tariff reductions under the EVFTA as the EU imposed minimal import tariffs against these Vietnamese

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[47] Vietnam's imports from the EU are similar to EU's exports to Vietnam
[48] EU's imports from Vietnam are similar to Vietnam's exports to the EU

products (<1%) prior to the creation of this FTA. Export contraction also occurs in the services sector.

In contrast, the processed food and labour-intensive manufacturing sectors are beneficiaries in terms of exports following this agreement. These sectors gain more access to the EU market thanks to tariff reductions as they used to have relatively high tariffs imposed by the EU before the creation of the FTA. Exports of the processed food sector on average rise by around 3.0% in both scenarios. Exports of the labour-intensive manufacturing sector expand mainly due to apparel & leather products, whose exports grow by 19.6% (6.8 billion US$) in Scenario 1 and to 23.5% (8.1 billion US$) in Scenario 2 due to larger cuts to NTMs, time to trade, and FDI barriers. In dollar terms, among the 22 sectors modelled, apparel & leather products experience the greatest expansion in exports, followed by food & beverages, textiles, transport equipment, livestock, and meat products. The export expansion in these six sectors compensates for the declines in exports of the remaining sectors (See Appendix, Table 4.15). Regarding the changes in sectoral imports, all the aggregated sectors experience import growth, as shown in Table 4.8. Within these sectors, textiles, apparel and leather products exhibit rapid expansion in imports, partly due to the need for large exports in these sectors, followed by chemicals, food and beverages (See Appendix, Table 4.15).

Table 4.8: Changes in Vietnam's Real Exports and Imports by Sector (% and million US$)

	Export				Import			
	Scenario 1		Scenario 2		Scenario 1		Scenario 2	
	%	MIL. US$	%	MIL. US$	%	MIL. US$	%	MIL. US$
Agriculture	-2.4	-250	-2.7	-290	2.6	297	3.2	367
Processed food	3.2	320	3.1	306	3.7	601	4.3	704
Extraction	-2.9	-320	-3.2	-352	2.1	244	2.5	291
Labor-intensive	17.4	6,991	21.1	8,445	12.8	3,832	15.4	4,589
Other manufac	-1.6	-1,361	-1.7	-1,473	1.3	1,591	1.7	2,026
Services	-1.8	-159	-2.2	-193	5.1	605	7.8	932

Source: Authors' model results
Note: Aggregate sector compositions are defined in Appendix, Table 4.11

The changes in real exports and imports by sector suggest that following the EVFTA, the domestic agricultural, extraction, other manufacturing, and services sectors may face difficulty due to both export contraction and import expansion.

Table 4.9 depicts changes in Vietnam's sectoral output. Output declines in extraction and other manufactures, but slightly expands in agriculture and processed food. Notably, output of labour-intensive manufactures rise substantially by 15.7% (8.5 billion US$) in Scenario 1 and 18.8% (10.1 billion US$) in Scenario 2, mainly due to the large expansion in exports of these sectors.

Table 4.9: Changes in Vietnam's Sectoral Output (% and million US$)

	Scenario 1		Scenario 2	
	%	MIL. US$	%	MIL. US$
Agriculture	0.1	85	0.2	109
Processed food	0.7	221	0.7	218
Extraction	-0.4	-135	-0.4	-122
Labour-intensive manufactures	15.7	8,462	18.8	10,135
Other manufactures	-1.2	-1,541	-1.2	-1,631
Services	1.6	2,152	1.9	2,555

Source: Authors' model results
Note: Aggregate sector compositions are defined in Appendix, Table 4.11

4.6 Conclusion

This study implements simulations for two policy scenarios to explore the impacts of the EVFTA on Vietnamese trade and investment, using a global CGE model. The five components in each scenario are tariff elimination, reductions in goods and services NTMs, improvement in trade facilitation associated with reductions in time to import, and investment liberalisation. The second scenario models a greater magnitude of liberalisation for all components except tariffs.

Simulation results reveal that the bilateral trade between Vietnam and the EU grow substantially, and by a much greater amount than the growth of total exports and total imports for the two regions. These findings suggest that trade diversion occurs as a result of the EVFTA. In addition, when aggregating the sectors modelled into six aggregate sectors including agricultural, processed food, extraction, labour-intensive manufacturing, other manufacturing, and services sectors, we find that the processed food and labour-intensive manufacturing sectors in Vietnam experiences significant export growth, whereas the remaining four sectors witness declines in exports. Therefore, the Vietnamese government may need to consider policies aiming to mitigate the adverse impacts of the EVFTA in these sectors.

With regard to the investment effect of the EVFTA, we find that the EVFTA leads to positive changes in Vietnam's short-run current rates of return, which is due to the change in the short-run rental price of capital. These findings suggest that Vietnam would receive significant capital gains in the long-run. We further find that all the policy components contribute to the capital growth in Vietnam in the long-run. However, capital gains resulting from tariff elimination are much larger than those from other policy components.

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Chapter Appendix

Table 4.10: Regional Aggregation

No.	Regions modelled	Description	GTAP regions	Aggregated regions for reporting
1	Vietnam	Vietnam	VNM	Vietnam
2	RestASEAN	Other ASEAN countries	IDN, MYS, PHL, THA, SGP, LAO, KHM, BRN, XSE	Rest of the world
3	China	China	CHN	Rest of the world
4	Japan	Japan	JPN	Rest of the world
5	South Korea	South Korea	KOR	Rest of the world
6	Hong Kong	Hong Kong	HKG	Rest of the world
7	Taiwan	Taiwan	TWN	Rest of the world
8	United States	United States	USA	Rest of the world
9	Austria	Austria	AUT	EU28
10	Belgium	Belgium	BEL	EU28
11	Czech	Czech Republic	CZE	EU28
12	Denmark	Denmark	DNK	EU28
13	Finland	Finland	FIN	EU28
14	France	France	FRA	EU28
15	Germany	Germany	DEU	EU28
16	Ireland	Ireland	IRL	EU28
17	Italy	Italy	ITA	EU28
18	Netherlands	Netherlands	NLD	EU28
19	Poland	Poland	POL	EU28
20	Portugal	Portugal	PRT	EU28
21	Slovakia	Slovakia	SVK	EU28
22	Spain	Spain	ESP	EU28
23	Sweden	Sweden	SWE	EU28
24	UK	United Kingdom	GBR	EU28
25	RestEU28	Other EU-28 countries	CYP, EST, GRC, HUN, LVA, LTU, LUX, MLT, SVN, BGR, HRV, ROU	EU28
26	ROW	Rest of World	XOC, MNG, XEA, BGD, NPL, PAK, LKA, XSA, CAN, MEX, XNA, ARG, BOL, BRA, CHL, COL, ECU, PRY, PER, URY, VEN, XSM, CRI, GTM, HND, NIC, PAN, SLV, XCA, DOM, JAM, PRI, TTO, XCB, BHR, IRN, ISR, JOR, KWT, OMN, QAT, SAU, TUR, ARE, XWS, EGY, MAR, TUN, XNF, BEN, BFA, CMR, CIV, GHA, GIN, NGA, SEN, TGO, XWF, XCF, XAC, ETH, KEN, MDG, MWI, MUS, MOZ, RWA, TZA, UGA, ZMB, ZWE, XEC, BWA, NAM, ZAF, XSC, CHE, NOR, XEF, ALB, BLR, RUS, UKR, XEE, XER, KAZ, KGZ, XSU, ARM, AZE, GEO, XTW, AUS, NZL, IND	Rest of the world

Source: Authors' aggregation based on 141 regions of GTAP 10 Data Base

Table 4.11: Sectoral Aggregation

No.	Sectors modelled	Description	GTAP sectors	Aggregated sectors for reporting
1	Rice	Paddy rice; Processed rice	PDR; PCR	Agriculture
2	Fishing	Fishing	FSH	Agriculture
3	OthAgri	Wheat; Other grains nec; Oil seeds;	WHT; GRO; OSD	Agriculture
		Vegetables, fruit and nuts; Sugar cane and sugar beet;	V_F; C_B	
		Plant-based fibers; Crops nec; Forestry	PFB; OCR; FRS	
4	Livestock	Bovine cattle and sheep; Other animal products nec;	CTL; OAP;	Agriculture
		Raw milk; Wool, silk-worm cocoons	RMK; WOL;	
5	MeatProds	Bovine cattle and sheep products; Other meat products	CMT; OMT;	Processed food
6	Wood	Wood products	LUM	Other manufactures
7	Extraction	Coal; Oil; Gas; Minerals nec;	COA; OIL; GAS; OXT	Extraction
		Petroleum and coal products; Mineral products nec	P_C; NMM	
8	FoodBever	Vegetable oils and fats; Dairy products; Sugar;	VOL; MIL; SGR;	Processed food
		Food products nec; Beverages and tobacco products	OFD; B_T	
9	Textiles	Textiles	TEX	Labor-intensive manufac
10	AppaLeath	Wearing apparel; Leather products	WAP; LEA	Labor-intensive manufac
11	Chemicals	Chemicals; Pharmaceutical products; Rubber & plastic	CHM; BPH; RPP	Other manufacture
12	Metals	Ferrous metals; Metals nec; Metal products;	I_S; NFM; FMP	Other manufacture
13	ElecEquip	Electronic equipment	ELE	Other manufacture
14	Machinery	Electrical equipment; Machinery and equipment nec	EEQ; OME	Other manufacture
15	TransEquip	Motor vehicles and parts; Transport equipment nec	MVH; OTN	Other manufacture
16	OthManufac	Paper products and publishing; Manufactures nec	PPP; OMF	Other manufacture
17	Construction	Construction	CNS	Services
18	FinBusTra	Insurance; Finance; Other business services; Trade	INS; OFI; OBS; TRD	Services
19	Transport	Transport nec; Water transport; Air transport	OTP; WTP; ATP	Services
20	Communication	Communication	CMN	Services
21	GovSvs	Government services	OSG	Services
22	OthSvs	Electricity; Gas manufacture and distribution;	ELY; GDT;	Services
		Water; Recreational and other services;	WTR; ROS;	
		Accommodation, food and service activities	AFS	
		Warehousing and support activities	WHS	
		Real estate activities; Education	RSA; EDU	
		Human health and social work activities; Dwellings	HHT; DWE	

Source: Authors' aggregation based on 65 sectors of GTAP 10 Data Base

Table 4.12: Ad-valorem Equivalents of Goods Non-tariff Barriers Imposed by Vietnam (EU) on EU (Vietnamese) Products (%)

Aggregated sector	Imposed by EU on VN products	Imposed by VN on EU products
Rice	14.13	106.52
Fishing	0.71	2.26
Other agriculture	5.22	25.23
Livestock	32.56	1.32
Meat products	10.05	4.12
Wood	5.90	33.36
Extraction	32.77	4.53
Food and beverages	5.54	8.91
Textiles	5.31	2.66
Wearing apparel and leather products	18.34	5.43
Chemicals	1.01	7.21
Metals	5.45	10.41
Electronic equipment	0.28	2.62
Machinery	4.61	2.33
Transport equipment	5.92	3.39
Other manufactures	3.15	7.49

Source: World Bank (2019). Trade weighted by the authors for the aggregated sectors and regions

Table 4.13: Ad-valorem Equivalents of Services Barriers in Vietnam and EU Member States (%)

Country	Construction	Finance, business and trade	Transport	Communication	Government services
Austria	33.56	37.45	21.45	30.43	64.94
Belgium	41.05	24.51	10.49	17.30	56.63
Czech Republic	67.58	48.05	39.79	45.50	80.40
Denmark	18.02	25.97	11.12	15.08	63.71
Finland	53.66	31.52	34.72	51.80	90.14
France	47.44	45.94	19.59	52.33	61.50
Germany	16.36	26.42	7.32	31.00	44.99
Ireland	71.34	3.87	24.91	26.30	59.79
Italy	37.26	35.50	22.38	38.01	51.47
Netherlands	39.64	25.68	24.72	21.24	50.88
Poland	45.56	44.19	37.23	52.20	64.26
Portugal	70.04	58.15	23.82	41.20	68.06
Slovakia	41.85	57.88	40.53	65.27	76.17
Spain	42.84	37.37	26.66	38.86	70.11
Sweden	35.90	24.50	20.06	29.89	69.16
United Kingdom	44.77	27.48	9.11	19.49	63.71
RestEU28	40.76	17.84	16.06	28.11	60.03
Vietnam	34.49	59.78	41.26	47.35	59.90

Source: Fontagné et al. (2016). Trade weighted by the authors for the aggregated sectors and regions

Table 4.14: Time to Import, Vietnam and the EU Member States

	Time to import		
	Border compliance(h)	Documentary compliance (h)	Total (days)
Austria	0	1	0.0
Belgium	0	1	0.0
Czech	0	1	0.0
Denmark	0	1	0.0
Finland	2	1	0.1
France	0	1	0.0
Germany	0	1	0.0
Ireland	24	1	1.0
Italy	0	1	0.0
Netherlands	0	1	0.0
Poland	0	1	0.0
Portugal	0	1	0.0
Slovakia	0	1	0.0
Spain	0	1	0.0
Sweden	0	1	0.0
UK	3	2	0.2
Cyprus	15	2	0.7
Estonia	0	1	0.0
Greece	1	1	0.1
Hungary	0	1	0.0
Latvia	0	1	0.0
Lithuania	0	1	0.0
Luxembourg	0	1	0.0
Malta	2	1	0.1
Slovenia	0	1	0.0
Bulgaria	1	1	0.1
Croatia	0	1	0.0
Romania	0	1	0.0
EU28	1	1	0.1
Vietnam	56	76	5.5

Source: World Bank Doing Business (2019). Trade weighted by the authors for the EU28

Table 4.15: Changes in Real Exports and Imports by All Sectors Modelled (million US$ and %)

	Export				Import			
	Scenario 1		Scenario 2		Scenario 1		Scenario 2	
	%	MIL. US$	%	MIL. US$	%	MIL. US$	%	MIL. US$
Rice	-1.9	-45	-2.8	-64	5.3	2	6.4	3
Fishing	-2.0	-3	-2.9	-5	3.0	36	3.5	42
OthAgri	-2.7	-212	-3.1	-242	2.4	215	3.0	268
Livestock	1.1	4	2.0	7	3.5	44	4.5	56
Meat products	5.9	3	6.1	4	2.8	88	3.4	106
FoodBever	3.2	312	3.0	292	3.9	514	4.6	601
Extraction	-2.9	-323	-3.2	-359	2.1	245	2.5	294
Textiles	2.6	142	2.6	142	13.3	2,344	16.0	2,812
AppaLeath	19.6	6,769	23.5	8,135	12.2	1,496	14.6	1,796
Wood	-2.8	-65	-3.1	-74	2.3	38	3.0	49
Chemicals	-1.5	-112	-1.8	-135	3.0	733	3.7	902
Metals	-1.2	-72	-1.1	-67	0.1	17	0.3	55
ElecEquip	-1.8	-902	-2.0	-998	-0.5	-172	-0.4	-158
Machinery	-1.2	-129	-1.2	-127	1.7	448	2.1	570
TransEquip	1.6	42	1.7	45	4.9	354	5.7	406
OthManufac	-1.8	-144	-1.9	-151.86	2.9	169	3.5	205
Construction	-1.3	0	-1.6	0	4.4	1	5.3	2
FinBusTra	-2.4	-85	-2.8	-99	6.1	339	9.8	541
Transport	-0.4	-8	-0.5	-11	4.0	85	6.2	133
Communication	-2.0	-19	-2.4	-24	6.0	78	9.7	127
GovSvs	-3.5	-6	-4.1	-8	3.8	8	4.6	9
OthSvs	-3.0	-52	-3.5	-62	3.5	92	4.3	115

Source: Authors' model results

Chapter 5: Impacts of the Regional Comprehensive Economic Partnership on Vietnamese Trade and Investment[49]

5.1 Introduction

Regional Comprehensive Economic Partnership (RCEP) is a proposed free trade agreement (FTA) involving ASEAN and six FTA partners (Australia, New Zealand, China, Japan, Korea and India), with China and India being the largest and fastest growing economies (Kikuchi, Yanagida, & Vo, 2018). The first RCEP negotiation was in 2012, with 28 rounds completed as of September 2019.[50] However, in December 2019, India opted out of RCEP because of concerns about imports from China. In the recent negotiating round 29, April 2020, the proposal to India, with a package of flexibilities, was agreed by the 15 RCEP parties, expecting that India can resolve its outstanding issues and RCEP will be signed by all 16 parties in November 2020.[51] The goal of RCEP is to create a modern, comprehensive, high-quality and mutually beneficial economic partnership agreement, in which trade in goods, trade in services, investment, economic and technical cooperation, intellectual property, competition and dispute settlement are included (ASEAN Secretariat, 2012). RCEP is expected to harmonise overlapping rules and regulations of existing preferential trade agreements in the region, such as the ASEAN + 1 FTAs, which have hindered firms, especially small and medium ones from private sectors, from using the preferential systems (Basu Das, 2015; Fukunaga & Isono, 2013).

With the US withdrawal from the Trans-Pacific Partnership (TPP), RCEP has become Vietnam's largest FTA negotiation. The RCEP region already contributes significantly to Vietnam's integration in the world economy. Among the four largest export partners of Vietnam including the US, EU, ASEAN, and Japan, two

[50] https://www.mfat.govt.nz/en/trade/free-trade-agreements/agreements-under-negotiation/
[51] https://www.mfat.govt.nz/assets/Uploads/Regional-Comprehensive-Economic-Partnership-Negotiating-Round-29-Apr....pdf

of them (ASEAN and Japan) are included in the RCEP region. Vietnam also has large imports from other RCEP members including China, ASEAN, Korea and Japan. In 2018, RCEP members accounted for almost 60%[52] of Vietnam's total trade and 72%[53] of Vietnam's total foreign direct investment (FDI) inflows. Given the importance of this regional grouping to Vietnam, it is of interest to explore the potential impact of RCEP on Vietnam.

Although a variety of FTAs include provisions intended to reduce barriers to FDI, very few studies on FTAs using computable general equilibrium (CGE) models have accounted for liberalisation of investment barriers, due in part to the dearth of detailed global FDI data (Strutt, Minor, & Rae, 2015). Indeed, most existing studies on RCEP analyse trade liberalisation of this agreement through only tariff cuts and non-tariff measures (NTMs) reductions (Cheong & Tongzon, 2013; Gilbert, Furusawa, & Scollay, 2018; Itakura, 2014; Kawasaki, 2015; Rahman & Ara, 2015). The limited research on RCEP covering Vietnam that model reductions in barriers to FDI and other trade liberalisation components under RCEP is the study of Petri, Plummer, Urata, and Zhai (2017). However, all of these studies focus on macroeconomic effects of RCEP for all members. Therefore, they do not provide insights into the impacts of RCEP on a particular member, including Vietnam, in terms of investment effects, sectoral trade effects, and the contribution of each liberalising component. For RTA studies on Vietnam, the impacts of RCEP on the Vietnamese economy are analysed by Nguyen et al. (2014) and Kikuchi et al. (2018) who focus on only trade liberalisation of this agreement, like most current studies on RCEP.

The goal of this paper is to analyse the potential impacts of RCEP on Vietnam, focusing on trade and investment when liberalisation of investment barriers, along with reductions in tariffs and NTMs, are modelled. We use the global trade analysis project (GTAP) model with a long-run closure so that changes in both trade and investment can be examined. We first project the GTAP database to 2020, with the tariff baseline capturing the implementation of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and other regional trade

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[52] Authors' calculations based on the data from Vietnam's General Statistics Office accessed at https://www.gso.gov.vn/default_en.aspx?tabid=780

[53] Authors' calculations based on data from ASEAN Secretariat at https://www.aseanstats.org/

agreements (RTAs) within RCEP members. This study models reductions in barriers to FDI following RCEP based on the OECD FDI restrictiveness index, which has not been used in previous studies of trade agreements for Vietnam. This is the first study that investigates the effects of RCEP on Vietnam in which increased FDI stock is accounted for. This is also the first study that provides insights into the investment effect of RCEP on Vietnam in both the short- and long-run. Furthermore, this study uses the new bilateral ad valorem equivalents (AVEs) of goods NTMs at the GTAP sectoral level (Kravchenko, Utoktham, Narayanan, & Duval, 2019) and we carefully include existing FTAs in the baseline to avoid double-counting benefits.

This paper is organised as follows. Section 5.2 briefly summarises the existing literature. Section 5.3 describes the modelling framework and policy scenarios. Our simulated results are presented in Section 5.4, and Section 5.5 notes our conclusions.

5.2 Review of Existing Studies

Among the three notable modern FTAs Vietnam has signed or are under negotiation, including the CPTPP, RCEP, and EU-Vietnam FTA (EVFTA), most modelling attention has focused on the CPTPP and its precursor, the TPP. Based on models building on GTAP, the impact of this agreement focusing on either a member or a non-member has been widely evaluated, including for the US (USITC, 2016), New Zealand (Walmsley, Strutt, Minor, & Rae, 2018), China (Li & Whalley, 2014; Lu, 2015), Turkey (Oduncu, Mavuş, & Güneş, 2014), the Philippines (Cororaton & Orden, 2015), and India (Narayanan & Sharma, 2016). For Vietnam, the TPP has been estimated to result in the largest percentage gains in comparison to other TPP members in terms of real GDP (Areerat, Kameyama, Ito, & Yamauchi, 2012; Burfisher et al., 2014), welfare (Itakura & Lee, 2012), real income and exports (Petri & Plummer, 2016; Petri, Plummer, & Zhai, 2012b). Of particular note is the study of Minor, Walmsley, and Strutt (2016) who use a dynamic GTAP model to analyse the impact of the TPP on Vietnam. They find that following this agreement, Vietnam's real GDP would increase by a cumulative 8.1% by 2035, while investment would reach its peak at a 23% increase relative to the 2025 baseline.

Furthermore, Petri et al. (2017) analyse the TPP without the US and indicate that Vietnam still reaps large benefits, though these are now reduced.

While there is a large number of studies on the TPP, RCEP as a proposed RTA in the Asia-Pacific has received more limited attention in the literature. There are some studies on RCEP which do not report any results for Vietnam. For instance, Li, Scollay, and Gilbert (2017) analyse the impact on China's FDI inflows of RCEP. They use an innovative CGE model which is based on the theory of firm heterogeneity and extended to include FDI. Balistreri and Tarr (2017) assess the impact of RCEP on the Philippines using a CGE model with three different market structures including the Armington, Melitz, and Krugman. The two studies focus on China and the Philippines, thus the regions modelled are highly aggregated, with three regions (Li et al., 2017) and eight regions (Balistreri & Tarr, 2017) respectively, reducing the size of the effects to be observed (Gilbert et al., 2018). As Vietnam is not separately modelled in these studies, how RCEP affects Vietnam is not assessed. Unlike Li et al. (2017) and Balistreri and Tarr (2017), the regions modelled in the study of Rahman and Ara (2015) include Vietnam. However, the economic impacts of tariff elimination under RCEP are reported for the whole ASEAN region instead of individual member states because South Asian countries are their area of focus.

With respect to RCEP studies covering Vietnam, some of them analyse RCEP along with other RTAs for comparative purposes (Cheong & Tongzon, 2013; Gilbert et al., 2018; Kawasaki, 2015). Regarding the economic impacts of RCEP on Vietnam, Cheong and Tongzon (2013) analyse tariff elimination under RCEP using a dynamic GTAP model and find that among RCEP members, Vietnam witnesses the largest GDP gains of 5.9% by 2027. Kawasaki (2015) modifies a standard GTAP model to account for some dynamic aspects of capital formation. His findings suggest that Vietnam is the greatest beneficiary of income gains in percentage terms following either tariff removals or tariff removals plus NTMs reductions through RCEP, compared with other RCEP members. In contrast, Gilbert et al. (2018) employ a modified GTAP model in which medium and long-run closures are used to allow factors to move across sectors and capital stock to vary. Their simulation results indicate that Korea experiences the largest increase in welfare (4.1%),

whereas Vietnam's welfare rises by 1.4% due to RCEP trade liberalisation in the long-run.

RCEP is also analysed by Itakura (2014) and Itakura (2015). Based on a dynamic CGE model, Itakura (2014) finds that tariff removal alone or full implementation of RCEP with tariff elimination, reductions in services trade barriers, and improvements in logistics result in the largest GDP and welfare gains for Vietnam and Thailand in percentage terms, compared with other ASEAN member states. In particular, Vietnam's GDP and welfare rise by 13.4% and 11.2% respectively following the full implementation of RCEP. Itakura (2015) uses a dynamic CGE model to analyse different policy simulations of RCEP. He finds that the RCEP implementation through the four policy components, including tariff cuts, services NTMs reductions, logistics improvements, and country-specific risk reductions, increases both Vietnam's GDP and exports by 2.9% relative to the 2030 baseline, which are smaller than the percentage increases in Cambodia, Thailand, and Korea. Moreover, Vietnam's investment experiences an increases by 7.7%, while investment in Korea, Cambodia, and New Zealand increase by 24.7%, 23.4%, and 14.9% respectively.

Although the above studies provide some simulation results for Vietnam, all of them focus only on the macroeconomic effects of RCEP on all members, including real GDP, welfare, aggregate exports, imports, and investment. None of these studies provide insights into the contributions of different liberalising components to the changes, which may vary among members. Analysis of the sectoral effects of RCEP is also not covered. Furthermore, these studies do not model reductions in barriers to FDI as a result of RCEP.

Most of the existing studies on RCEP have focused only on RCEP trade liberalisation through tariffs and NTMs, with the exception of some limited research by Li et al. (2017), Balistreri and Tarr (2017), and Petri et al. (2017), in which changes in FDI are also modelled. In particular, Li et al. (2017) endogenously incorporate FDI in the CGE model and FDI liberalisation is conducted through reductions in fixed trading costs of foreign firms. Balistreri and Tarr (2017) model reductions in FDI barriers based on the ad valorem equivalent (AVEs) of the barriers against foreign providers of services, which are taken from Jafari and Tarr

(2014). As previously mentioned, the two studies focus on China and the Philippines, with no results reported for Vietnam. Petri et al. (2017) use a dynamic CGE model in which tariffs, NTBs, FDI barriers, and non-preferential NTBs are captured. They model reductions in FDI barriers following TPP12, TPP11, TPP16, US-Japan, and RCEP using the approach discussed in Petri et al. (2012b) and Petri and Plummer (2016). In particular, potential increases in the bilateral FDI stock, which are later used in the model, are exogenously estimated based on a proxy for the investment climate (the World Bank's Doing Business rank), the score of the FDI-related provisions, and the baseline bilateral FDI stock (Petri et al., 2012b). Consistent with Gilbert et al. (2018), they find that RCEP members such as China, Japan, Korea, and India are winners in terms of welfare gains. Their results also indicate that Vietnam's exports rise by 4.9% in 2030, after Japan (11.4%), India (9.7%), Korea (5.7%), and China (5.2%). Like most of the current studies on RCEP, Petri et al. (2017) only focus on the macroeconomic effects of this agreement regarding the welfare gains and aggregate exports. Petri et al. (2017) do not provide analysis on changes in Vietnamese trade at sectoral levels and investment as a result of RCEP, as well as the policy instrument having the largest impact on the changes in Vietnam.

For Vietnam, Nguyen et al. (2014) analyse the impacts of phasing out tariff barriers under RCEP on Vietnam, using the GTAP model. In addition to their main focus of tariffs, reductions in services trade costs are included in their three scenarios, with different levels of ambition. They find that the rise in Vietnam's national exports ranges from 2.4% to 3.9%, and the change in its imports is between 3.7% and 5.6% relative to 2020 baseline. Furthermore, Vietnam's real wage increases by 3% to 5% by 2020 as a result of RCEP. Regarding sectoral output, textiles, apparel, and leather witness the major expansion in percentage terms. Kikuchi et al. (2018) employ a static CGE model to analyse the effects of mega-RTAs on Vietnam including the EVFTA, TPP, CPTPP, and RCEP. Policy instruments include tariffs, time costs as proxies for trade costs on goods trade, services NTMs, and spill-over to non-member countries for goods. They find that as a result of RCEP liberalisation, Vietnam's real GDP expands by 9.2% and agricultural sectors are not as adversely affected as they are under the EVFTA or TPP. However, the current study is able to expand on this previous work in a number of ways. In particular, we also model

potential reductions in barriers to FDI as a result of RCEP. Capturing investment liberalisation of RCEP is important as intra-RCEP FDI flows are significant sources of investment for each of the RCEP members. With respect to merchandise trade barriers, while Kikuchi et al. (2018) model improvements in time costs, other NTMs such as sanitary and phytosanitary measures, as well as other technical measures regarding labelling requirements and conformity assessment (UNCTAD, 2015) are not modelled in both studies. These goods NTMs may have significant impacts on the Vietnamese economy, given the increasingly important role of NTMs relative to tariffs. Finally, although these studies provide analyses on sectoral trade effects, there is no analysis of the investment effect of RCEP in both the short- and long-run and the current study is also able to contribute in this space.

The current study fills these gaps by applying a global CGE model to analyse the potential impact of RCEP through both trade and investment liberalisation on Vietnam. Policy instruments modelled include reductions in tariffs, goods NTMs, services NTMs, and reductions in FDI barriers based on the OECD FDI index. Indeed, this is the first study to date that analyses RCEP, focusing on Vietnam, in which changes in FDI stocks are modelled. In addition to the trade effects of RCEP, this study evaluates changes in Vietnamese investment in the short-and long-run.

5.3 Modelling Framework and Scenarios

5.3.1 Model and Baseline Scenario

We use the GTAP model (Hertel, 1997) to analyse the impact of RCEP. The model is multi-sectoral and multi-country, allowing us to explicitly capture interactions between regions and sectors. Therefore, this type of model is ideal for analysing impacts of future trade agreements. Principle characteristics of the model include perfect competition, constant returns to scale, and maximisation of consumers' welfare and firms' profits based on budget and resource limitations respectively. Imports are differentiated by countries of origin due to the Armington elasticities. As capital stocks are fixed in the standard GTAP model, modifications need to be made to capture capital accumulation (Francois & Reinert, 1997; Walmsley, 1998). Therefore, we modify the standard GTAP model so that changes in both trade and investment following RCEP can be examined. In particular, we employ a steady-

state closure (long-run closure) with the assumption of fixed saving rates (Francois, McDonald, & Nordstrom, 1996). An increase in income results in increases in both savings and investment, and increases in saving are proportional to increases in income (Kawasaki, 2015). Furthermore, the trade balance is endogenous in our model, allowing capital to move across countries.

Given the importance of economic effects of liberalising investment barriers, FDI has been incorporated into CGE models so that reductions in barriers to FDI are accounted for. The key characteristic of CGE-FDI models is the existence of both domestic and foreign investors in each sector and each region, which is different from one composite investor in the standard GTAP model (Ciuriak & Xiao, 2014). For instance, Petri (1997) was one of the pioneers who constructed FDI in a CGE framework to assess the impact of APEC liberalisation. Jensen, Rutherford, and Tarr (2007) develop a small open economy CGE model to examine the impact of accession to the World Trade Organization (WTO) on the Russian economy. Based on CGE-FDI models, Lejour, Rojas-Romagosa, and Verweij (2008) analyse the Services Directive aiming at opening up commercial services markets within the EU, while Mérette, Papadaki, Hernandez, and Yu (2008) explore the impact of eliminating FDI barriers on Canada and the United States. As investment provisions are covered in new-generation FTAs, recent studies applying CGE-FDI models to the analysis of FTAs include Ciuriak and Xiao (2014) and Li et al. (2017). Particularly, Ciuriak and Xiao (2014) modify the dynamic GTAP model to add foreign-owned firms in each services sector so that services trade can be captured through foreign affiliates. The FDI-CGE model of Li et al. (2017) is a comparative static model, which is based on firm heterogeneity framework and can account for changes in both intensive and extensive margins as a result of trade liberalisation as well as new entry of foreign firms. Construction of CGE-FDI models, however, may be complicated and time-consuming, with data difficult to source. On the other hand, investment liberalisation can also be addressed based on an exogenous approach (Petri et al., 2012b). Petri, Plummer, and Zhai (2012a) and Petri et al. (2012b) estimate changes in FDI stocks due to improvements in the investment climate and reductions in FDI barriers respectively. These potential increases in FDI stocks are then used in their CGE model. In this study, to model investment liberalisation, we exogenously estimate changes in FDI stocks based on the OECD

FDI restrictiveness index. Following Lotze (1999), these estimates are introduced in our modified CGE model through changes in sectoral capital stocks. FDI liberalisation is then implemented as reductions in tax equivalents.

The latest GTAP 10 database (Aguiar, Chepeliev, Corong, McDougall, & van der Mensbrugghe, 2019) is used as our starting point. Before simulating RCEP, we first project the 2014 baseline to 2020 with the assumption that national real GDP, population, skilled and unskilled labour grow at exogenous rates for each region modelled. GDP and population growth rates are from the World Bank. We also include labour force growth rate projections (Appendix, Table 5.10). The baseline we model also accounts for existing trade agreements to avoid double-counting benefits. In particular, the tariff rates in the baseline refer to the tariffs after the implementation of the CPTPP and other existing agreements within RCEP members, drawing on estimates from Walmsley et al. (2018). For the purpose of our analysis, we aggregate the 141 regions and 65 sectors of this data base into 18 regions and 21 sectors, as described in Appendix, Table 5.11 and Table 5.12.

5.3.2 Scenarios Modelled

As guided in the principles and objectives for the RCEP negotiation (ASEAN Secretariat, 2012) and the 27 rounds negotiated, trade in goods, trade in services and investment liberalisation are included under RCEP. Therefore, they are included in our policy scenarios. Table 5.1 briefly summarises two scenarios simulated in the current study. Each scenario has four components, with Scenario 2 having greater degree of liberalisation.

Table 5.1: Policy Scenarios

Scenario 1	RCEP members reduce tariffs by 85% on all goods, NTMs on both goods and services by 7%, and investment barriers by 50%.
Scenario 2	RCEP members reduce tariffs by 95% on all goods, NTMs on both goods and services by 25%, and investment barriers by 50%.

5.3.2.1 Tariffs

In the five existing ASEAN+1 FTAs including ASEAN-Australia-New Zealand, ASEAN-China, ASEAN-India, ASEAN-Japan and ASEAN-Korea, the average tariff reduction committed to by ASEAN members was 90.9%, compared with the average committed rate of 92.6% by the ASEAN's FTA partners (Fukunaga & Kuno, 2012). Fukunaga and Kuno (2012) point out that RCEP should aim for a higher rate of 95% so that its members receive additional benefits. Therefore, we assume a 95% tariff cut by each of the RCEP members in the more ambitious scenario (Scenario 2). However, sensitive and exempt lists that apply to dozens or hundreds of tariff lines may significantly weaken the liberalising effect. Although the tariff cuts under RCEP have not been specified, past agreements may provide a basis for making judgment of these cuts. Previous FTAs between ASEAN and India, China, Korea, and Japan specify long lists of sensitive and exempt products, which tend to be the same in each agreement. For instance, in the ASEAN-Korea FTA, Korea excluded a variety of tariff lines of products covering fish and aquatic invertebrates, prepared foodstuffs, meat and edible offal, edible vegetables & certain roots, cereal, edible fruits & nuts, coffee & tea, and products of milling industry. Vietnam excluded products such as tobacco, cars, car accessories and spare parts of cars, motorbikes, bikes, home electric appliances, etc.[54] Baker, Vanzetti, and Pham (2014) calculated tariffs changes at the six digit level using TASTE (Tariff Analytical and Simulation Tool for Economists), however, since an updated version of this tool is not yet available, we model a 85% cut as an approximation of the potential outcome in the more conservative scenario (Scenario 1).[55]

Table 5.2 indicates the average tariff rates imposed by Vietnam (other RCEP) on imports from other RCEP (Vietnam) after the implementation of the CPTPP and other existing agreements between the RCEP members. Manufactured products from other RCEP, on average, face relatively high tariffs in Vietnam, especially labour-intensive products (8.3%). Examining this in more detail, we find that

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[54] See Appendix 2. Highly Sensitive List of the ASEAN-Korea agreement, accessed at http://wtocenter.vn/chuyen-de/12745-asean-republic-of-korea-free-trade-area

[55] The 85% cut enables less sensitive sectors to approach very low tariff rates, while more sensitive sectors maintain higher relative tariffs.

Vietnam's import tariffs applied to apparel and leather products are the highest (12.0%), followed by transport equipment (7.8%), and textiles (5.8%). In contrast, other RCEP partners, on average, impose negligible import tariffs on manufactured products from Vietnam except for chemicals (1.64%). Similarly, Vietnam imposes import tariffs of 2.8% against extraction products from the RCEP, compared with only 0.2% imposed by other RCEP. Unlike manufacture and extraction, Vietnam on average imposes an import tariff of 1.4%, which is much lower than the average rate imposed by other RCEP (5.6%) in agriculture. Among Vietnam's agricultural products, Vietnam's rice faces the highest tariff (20.6%) in the RCEP region.

Table 5.2: Tariff Rates Imposed by Vietnam (Other RCEP Partners) on Imports from Other RCEP Partners (Vietnam) (%), 2020

Sector	Tariffs imposed by Vietnam	Tariffs imposed by RCEP
Agriculture	**1.42**	**5.57**
Rice	0.17	20.62
Fishing	0.03	0.34
OthAgri	0.93	7.69
MeatLstk	0.02	0.04
ForesWood	0.76	1.47
FoodBever	2.92	1.23
Extraction	**2.83**	**0.19**
Labor-intensive manufactures	**8.25**	**0.07**
Textiles	5.75	0.11
AppaLeath	12.01	0.05
Other manufactures	**1.34**	**0.23**
Chemicals	1.03	1.64
Metals	0.60	0.05
ElecEquip	0.57	0.00
Machinery	1.43	0.04
TransEquip	7.76	0.29
OthManufac	3.39	0.01

Source: Authors' model results, drawing on Walmsley et al. (2018)

5.3.2.2 Non-tariff Measures

In addition to tariff reductions, we take into account reductions in non-tariff barriers on both goods and services. NTMs face a range of data and modelling challenges (Walmsley et al., 2018) and we note that it is difficult to accurately determine the extent of reductions in NTMs following RCEP. The estimation results of Hayakawa and Kimura (2015) show that NTMs of FTA members are, in general, 6.5% point

lower than those of non-members. Following Itakura (2015), we start with a relatively conservative assumption of a 7% cut in NTMs on goods and services in Scenario 1. In the second scenario, the assumptions are more ambitious when we reduce NTMs on both goods and services by 25%.

In terms of NTMs on goods, we apply the bilateral technical AVEs of NTMs estimates by Kravchenko et al. (2019)[56] which are different from the average AVEs of NTMs that each country imposes on rest of the world, as generally used in previous studies.

With respect to NTMs on services, we use the latest estimates of AVEs of non-tariff barriers on services by Fontagné, Mitaritonna, and Signoret (2016) (Appendix, Table 5.13). Sectors estimated include communication, construction, insurance, business services, financial services, government service, trade, and transport, which are consistent with the GTAP 10 database.

5.3.2.3 Investment Barriers

In this section, we start with assumptions for liberalising barriers to FDI in the RCEP region. We then move to explanations for the calculations of shocks used in this model.

Modelling investment liberalisation through declines in investment barriers is important as it may impact on changes in investment, trade, and other economic indicators. Most existing studies on FTAs that model FDI assume substantial reductions in the level of investment restrictions. For instance, FDI barriers are reduced by 50% following RCEP (Balistreri & Tarr, 2017; Li et al., 2017) and 59% following the TPP (Ciuriak & Xiao, 2014). In a case study of unilateral liberalisation, Lakatos and Fukui (2014) assume a cut of 75% in barriers to FDI in India's distribution sector. Consistent with these existing studies, we assume that RCEP members reduce barriers to FDI by 50% in both scenarios. However, in Scenario 2, the ambitious scenario, we assume that increases in sectoral FDI stocks in each RCEP member are due to a 50% reduction in FDI barriers affecting both

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[56] We are grateful to Alex Kravchenko for supplying us with preliminary estimates from this new database.

RCEP members and non-members. These assumptions are based upon the observation that intra-RCEP investment is important to each member, accounting for a relatively significant share of each member's total FDI stocks (Appendix, Table 5.14). In addition, as RCEP is a RTA, investment liberalisation from this agreement may encourage investment not only between members but from non-members into the region as well. In Scenario 1, the more conservative scenario, the increases in FDI stocks by sector in each member are due to only RCEP members, based on the RCEP FDI stock share in each member's total FDI stocks.

Reductions in barriers to FDI in this paper are based on the OECD's annual FDI regulatory restrictiveness index described in Kalinova, Palerm, and Thomsen (2010). FDI indices are commonly used to measure the restrictiveness in a sector or an economy (Lakatos & Fukui, 2014), ranging from 0 to 1, with higher values indicating higher restrictions on FDI. This index measures the restrictiveness of FDI in a country based on four different restrictions on FDI including foreign equity limitations, discriminatory screening, restrictions on the employment of foreigners, and other operational restrictions (OECD, 2018). The latest FDI indices in 2017 are used. We map the GTAP database's more detailed sectors with OECD's broader sectors. For instance, sub-sectors of agriculture in the GTAP database belong to the agricultural sector of the OECD with the same FDI index. FDI indices for the 21 aggregated sectors modelled are shown in Appendix, Table 5.15.

To estimate the impact of this policy component on RCEP members, we exogenously estimate the increase in FDI stocks in RCEP members, at the sectoral level. We use the ratios of FDI stocks and capital stocks in each sector to determine increases in sectoral capital stocks, which are later used in the model as exogenous variables (Lotze, 1999). Liberalisation of barriers to FDI is then simulated as reductions in tax on sectoral capital.

In order to estimate how much sectoral FDI stocks will increase as a result of removing all FDI barriers, Lakatos and Fukui (2014) apply a gravity-like econometric specification, with further details described in Fukui and Lakatos (2012). They find that the estimated elasticity of FDI stocks with respect to the FDI restrictiveness index (α) is -1.44. Ciuriak and Xiao (2014) use a gravity model similar to that of Lakatos and Fukui (2014) and also report that FDI restrictiveness

indices adversely affect inward FDI stocks. Following Lakatos and Fukui (2014), percentage changes in FDI stocks for the 21 sectors modelled for RCEP members, given full liberalisation of FDI barriers, are presented in Appendix, Table 5.16. These values are calculated by multiplying the above estimate (α) adopted from Lakatos and Fukui (2014) with the OECD FDI index. For instance, the percentage change in FDI stocks of Vietnam's extraction sector is 2.9%. This means that if Vietnam removes all the barriers to FDI in the extraction sector, there will be a 2.9% increase in FDI stocks in this sector.

Regarding the data needed for the calculations of estimated sectoral FDI stock and estimated capital stock ratios in Vietnam, annual FDI stocks are available at UNCTAD (2018), while annual capital stocks can be collected from the Penn World Table 9.1 (Feenstra, Inklaar, & Timmer, 2015). To split total FDI stocks into the sectors modelled, we use the global FDI stock database (Gouel, Guimbard, & Laborde, 2012; Lakatos, Walmsley, & Chappuis, 2011), which is the latest and most appropriate for CGE analysis. In addition, information on capital component of producer expenditure (EVFA from the GTAP database) is used to split total capital stocks within 21 sectors in our model. Based on the data, ratios of FDI stocks and capital stocks in 2017 are calculated (Appendix, Table 5.17). Combining the ratios with increases in sectoral FDI stocks (Appendix, Table 5.16), given full liberalisation of barriers to FDI, increases in sectoral capital stocks are calculated (Appendix, Table 5.18).[57] Investment liberalisation is then simulated as shocks to taxes on sectoral capital. Table 5.3 indicates changes in Vietnam's FDI stocks, capital stocks, and tax on capital given full removal of FDI barriers. Final shock values used in our model assume 50% reductions in barriers to FDI in both scenarios, with shocks in the more conservative scenario (Scenario 1) adjusted to reflect shares of RCEP FDI stocks in each member's total FDI stocks (Appendix, Table 5.14).

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[57] Increases in sectoral capital are shocked together with equivalent increases in total capital.

Table 5.3: Changes in Vietnam's FDI Stocks, Capital Stocks, and Equivalent Tax on Capital (%), with Full Removal of FDI Barriers, 2017

	FDI stock	Capital stock	Tax on capital
Rice	11.95	0.05 (0.004)	-0.29
Fishing	2.88	0.00 (0.000)	-0.02
OthAgri	11.95	0.00 (0.000)	-0.01
MeatLstk	11.95	0.41 (0.034)	-0.88
ForesWood	6.49	0.02 (0.004)	-0.04
Extraction	2.88	0.02 (0.009)	-0.30
FoodBever	6.48	0.06 (0.009)	-0.16
Textiles	6.48	0.04 (0.007)	-0.04
AppaLeath	6.48	0.02 (0.003)	-0.02
Chemicals	2.88	0.11 (0.037)	-0.13
Metals	2.88	0.07 (0.023)	-0.07
ElecEquip	2.88	0.07 (0.026)	-0.08
Machinery	2.88	0.08 (0.029)	-0.08
TransEquip	2.88	0.05 (0.018)	-0.06
OthManufac	6.48	0.04 (0.005)	-0.06
Construction	2.88	0.00 (0.000)	0.00
FinBusTra	7.30	3.64 (0.499)	-3.81
Transport	76.03	0.22 (0.003)	-0.24
Commu	83.95	0.94 (0.011)	-1.12
GovSvs	32.69	0.16 (0.005)	-0.15
OthSvs	16.56	0.01 (0.001)	-0.02

Source: Authors' calculations and model results
Note: Values in the brackets are ratios of sectoral FDI stocks and capital stocks.

5.4 Potential Impacts of RCEP

5.4.1 Real GDP

Table 5.4 summarises simulated changes in real GDP under RCEP liberalisation. In percentage terms, real GDP in Vietnam increases by 4.63% (10.9 billion US$) in Scenario 2, compared with a 2.35% increase corresponding to 5.5 billion US$ in Scenario 1. Other RCEP members also benefit from this agreement, with real GDP on average rising by 0.51% (124.5 billion USD) in Scenario 1 and 1.19% (293.4 billion USD) in Scenario 2.

Table 5.4: Changes in Real GDP of RCEP Members (% and million US$), 2020

	Scenario 1	Scenario 2
	PER CENT	
Vietnam	2.35	4.63
Other RCEP*	0.51	1.19
	US $ MILLION	
Vietnam	5,533	10,911
Other RCEP*	124,494	293,417

Source: Authors' model results
Note: Aggregation of regional compositions is defined in Appendix, Table 5.11

Figure 5.1 decomposes the impact of liberalising components on Vietnam's real GDP following Strutt et al. (2015). Liberalisation of FDI barriers has the smallest effect on Vietnam's real GDP in the two scenarios. Similarly, reductions in services NTMs make relatively small contributions to the increase in real GDP, due in part to a small services share of Vietnam's total exports (7.0%).[58]

In contrast, tariff reductions largely account for the percentage increase in Vietnam's real GDP (1.59%) in Scenario 1, followed by goods NTM reductions (0.65%). However, the contribution of reductions in goods NTMs (2.59%) surpasses that of reductions tariffs (1.78%) in Scenario 2.

Figure 5.1: Changes in Vietnam's Real GDP by Liberalisation Components (%), 2020
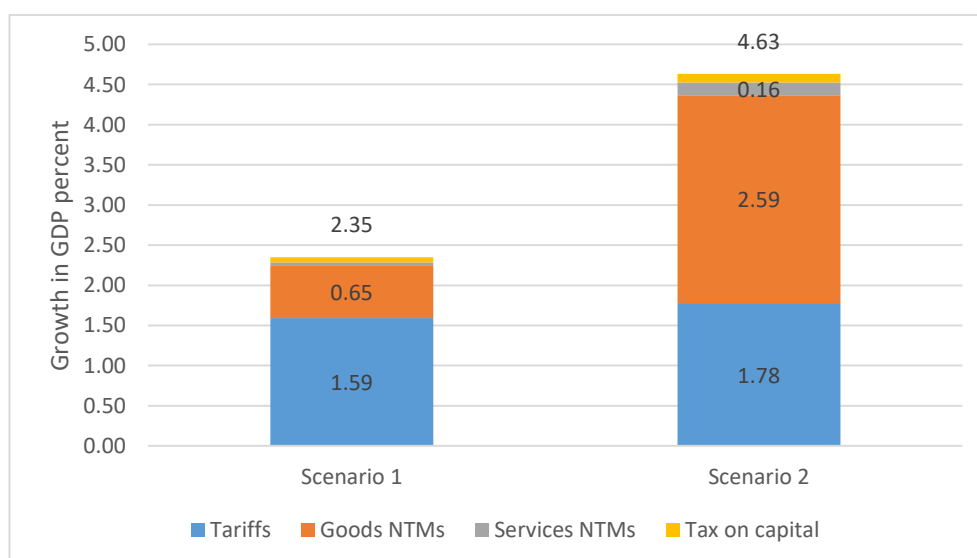
Source: Authors' model results

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[58] Authors' calculations from the GTAP 10 database

5.4.2 Trade Effects

5.4.2.1 Aggregated Levels

Table 5.5 shows changes in total real exports, imports, and bilateral trade of Vietnam and other RCEP. As a result of RCEP liberalisation, Vietnam's total real exports rise by 6.40% in Scenario 1 and 10.05% in Scenario 2, whereas its total real imports experience a slighter increase by 5.39% and 9.10% respectively. In addition, Vietnam's exports to other RCEP members rise by 4.13% in Scenario 1 and 8.33% in Scenario 2, reflecting an increase of 4.2 billion US$ and 8.5 billion US$ respectively. In addition, both scenarios indicate that Vietnam's imports from other RCEP (other RCEP members' exports to Vietnam) are larger than Vietnam's total imports in both relative and absolute terms, reflecting evidence of trade diversion following RCEP. For other RCEP members, their bilateral trade with Vietnam has larger percentage increases, compared with their total trade in both scenarios.

Table 5.5: Changes in Total Real Exports, Imports and Bilateral Trade (% and million US$), 2020

	Scenario 1		Scenario 2	
	%	MIL. US$	%	MIL. US$
Total exports				
Vietnam	6.40	14,153	10.05	22,218
Other RCEP	1.99	136,951	3.73	257,195
Total imports				
Vietnam	5.39	13,897	9.10	23,485
Other RCEP	2.46	153,365	4.64	289,128
Bilateral trade				
Vietnam exports to other RCEP	4.13	4,196	8.33	8,472
Other RCEP export to Vietnam	8.60	16,211	13.09	24,681

Source: Authors' model results
Note: Aggregation of regional compositions is defined in Appendix, Table 5.11.

5.4.2.2 Sectoral Levels

Table 5.6 describes changes in Vietnam's real exports and imports by sectors. Aggregating the sectors modelled into six sectors including agriculture, extraction, labour-intensive, other manufactures, and services, we find that all of them experience growth in both exports and imports following RCEP. With respect to

exports, the increase in Vietnam's real aggregate exports is largely attributable to manufactured exports. Particularly, labour-intensive manufactures and other manufactures, on average, expand by 21.1% and 3.3% respectively, reflecting an increase of 10.3 billion US$ and 3.8 billion US$ in Scenario 1. These export expansions are much greater with more ambitious assumptions in Scenario 2. In general, manufactured exports expand largely due to wearing apparel and leather products, textiles, metals, and electric equipment.

By contrast, agriculture, extraction, and services, on average, experience minimal export growth. In particular, the services sector witnesses small export growth, from 0.7% in Scenario 1 to 1.7% in Scenario 2, exhibiting a gain of 82 million US$ and 190 million US$ respectively. The agricultural sector, on average, exhibits a negligible export growth in Scenario 1, mainly due to rice. However, agricultural exports decline with greater liberalisation in Scenario 2.

Our simulation results suggest that Australia and New Zealand have become increasingly important export markets for Vietnam as a result of RCEP. Export growth rates of apparel and leather products from Vietnam to Australia and New Zealand are high.

Among the six aggregated sectors, increases in imports are much greater than in exports of agriculture, extraction, other manufactures, and services with the exception of labour-intensive manufactures in dollar terms, mainly because Vietnam's key import partners such as China, ASEAN, Japan, and Korea are covered in RCEP. Notably, each sector modelled experiences an increase in imports except for the fishing sector. Among these sectors, wearing apparel and leather products and textiles experience the largest expansion in both percentage and dollar terms. The main reason is the dramatic increase in exports of these products with heavy dependence on imported inputs used to produce them (Lu, 2015; Minor et al., 2016).

Table 5.6: Changes in Vietnam's Real Exports and Imports by Sectors (% and million US$), 2020

	Export				Import			
	Scenario 1		Scenario 2		Scenario 1		Scenario 2	
	%	MIL. US$	%	MIL. US$	%	MIL. US$	%	MIL. US$
Agriculture	**0.1**	**27**	**-1.1**	**-308**	**2.7**	**993**	**5.5**	**2,001**
Rice	29.8	908	34.1	1,038	16.6	8	23.9	11
Fishing	0.5	1	-1.3	-3	-1.3	-21	-0.1	-2
OthAgri	-4.7	-412	-7.4	-659	2.2	232	3.5	377
MeatLstk	-7.1	-32	-6.4	-28	3.6	211	7.3	426
ForesWood	-2.2	-98	-4.2	-186	3.5	100	6.5	183
FoodBever	-3.0	-339	-4.1	-469	3.0	463	6.5	1,006
Extraction	**0.7**	**121**	**1.7**	**303**	**7.0**	**1,133**	**12.7**	**2,057**
Labor-intensive	**21.1**	**10,277**	**27.5**	**13,374**	**18.5**	**6,759**	**24.6**	**8,976**
Textiles	10.9	764	14.3	1,003	16.7	3,635	22.9	4,981
AppaLeath	22.9	9,512	29.8	12,371	21.2	3,124	27.1	3,995
Other manufac	**3.3**	**3,763**	**7.7**	**8,848**	**3.8**	**6,198**	**7.7**	**12,370**
Chemicals	2.3	234	2.0	206	4.3	1,358	7.1	2,245
Metals	2.3	211	13.9	1,281	2.6	747	6.9	1,982
ElecEquip	3.3	2,181	8.8	5,821	3.4	1,664	8.2	3,954
Machinery	4.0	618	5.2	791	3.1	1,131	5.8	2,092
TransEquip	1.7	65	3.8	146	8.2	765	12.3	1,153
OthManufac	4.2	453	5.6	602	7.2	533	12.7	945
Services	**0.7**	**82**	**1.7**	**190**	**2.8**	**423**	**7.5**	**1,115**
Construction	0.9	0	1.7	0	5.1	2	11.8	5
FinBusTra	0.1	2	1.8	84	3.5	248	8.9	630
Transport	4.4	121	7.5	206	1.4	40	4.9	134
Communication	0.3	3	2.2	28	2.9	45	7.3	113
GovSvs	-2.4	-6	-4.3	-10	2.6	7	8.1	21
OthSvs	-1.5	-39	-4.7	-118	2.6	81	6.7	213

Source: Authors' model results

Note: Aggregation of sectoral compositions is defined in Appendix, Table 5.12.

    Agriculture includes processed food

5.4.3   Investment Effect

To explain changes in long-run capital stocks, it is critical to first explore investment effects of RCEP in the short-run. Therefore, this section analyses the investment effects of RCEP in both the short- and long-run, focusing on Vietnam. In the GTAP model, investment is depicted as purchases of capital goods (Malcolm, 1998). The supply of capital goods is based on the demand for investment. From an investor's point of view, it depends on the rate of return which is in turn determined by the rental price of capital and the price of capital goods. According to Hertel (1997), the current rate of return is specified as follows:

$$rorc(r) = GRNETRATIO(r) \times [rental(r) - pcgds(r)] \qquad (1)$$

In which r is a particular region; GRNETRATIO is the ratio of GROSS/NET rates of return on capital; rorc is the current rate of return; pcgds is the price of capital goods; and rental is the rental price of capital. Table 5.7 depicts changes in the short-run current rate of return, rental price of capital, and price of capital goods. Among the RCEP members, Vietnam experiences the largest percentage change in the current rate of return, 5.00% in Scenario 1 and 9.20% in Scenario 2. These increases are largely attributable to the increase in the rental price of capital in Vietnam.

As can be seen in this table, all of the RCEP members witness positive changes in their rental prices of capital. RCEP liberalisation results in increased demand for capital in each of RCEP member. Given the available regional supply of capital stocks in the short-run, there is an increase in the rental price of capital and a reallocation of capital stocks across industries in response to the enhanced demand in each region (Walmsley, 1998). The rental price of capital in Vietnam rises by 2.90% in Scenario 1 and 5.89% in Scenario 2 which is much larger than other RCEP members.

Unlike the rental price of capital, changes in the price of capital goods in RCEP members can be either positive or negative because they depend on two factors moving in opposite directions. Prices of imported capital goods are likely to reduce following trade liberalisation, whereas increased demand for capital goods results in a higher price (Walmsley, 1998). The price of capital goods in Vietnam declines by 0.17% in Scenario 1, but rises by 0.21% in Scenario 2, indicating that with

greater liberalisation, the increased price of capital goods resulting from the enhanced demand for capital goods dominates the net change in Vietnam's prices of capital goods.

Table 5.7: Changes in the Current Rate of Return, Rental Price of Capital, and Price of Capital Good in the Short-run (%), 2020

Regions	Scenario 1			Scenario 2		
	rorc	rental	pcgds	rorc	Rental	pcgds
Vietnam	5.00	2.90	-0.17	9.20	5.89	0.21
Indonesia	0.76	0.41	-0.15	2.08	1.48	-0.06
Malaysia	1.63	0.93	-0.26	3.95	2.48	-0.41
Philippines	1.36	0.76	-0.26	4.48	3.55	0.17
Thailand	2.41	1.16	-0.47	5.69	3.37	-0.47
Singapore	1.19	0.80	-0.17	5.87	4.38	-0.40
OthASEAN	1.33	0.35	-0.73	2.91	1.18	-1.16
Australia	0.97	0.64	0.12	3.07	2.66	0.99
NewZealand	2.75	2.59	0.68	3.99	3.83	1.05
China	0.53	0.17	-0.09	1.52	0.71	-0.07
Japan	1.21	2.57	1.78	1.82	3.63	2.42
SouthKorea	0.94	0.87	0.30	1.92	1.83	0.67
Other RCEP[*]	-	0.86	0.14	-	1.82	0.29

Source: Authors' model results
Notes: Aggregation of regional compositions is defined in Appendix, Table 5.11
Rental for other RCEP countries is based on the capital weighted average of other RCEP
Pcgs for other RCEP countries is based on the capital goods weighted average of other RCEP

The significant increases in the short-run current rate of return in Vietnam in both scenarios suggest that Vietnam's capital stocks would expand significantly in the long-run when the regional supply of capital is no longer fixed. Table 5.8 shows the changes in long-run capital stocks and trade balances of RCEP members. All of the RCEP members experience gains in capital stocks and a deterioration in the trade balance. In particular, Vietnam's capital stocks grow markedly from 4.35% in Scenario 1 to 8.17% in Scenario 2. Other RCEP members including Singapore, Thailand, the Philippines, Malaysia, and New Zealand also benefit from the significant growth of capital stocks. This table also indicates that Vietnam is among the countries exhibiting the largest reductions in its trade balance, indicating an increase in foreign investment. For instance, in Scenario 2 with greater liberalisation, the trade balance of Vietnam reduces by 2.9 billion US$, after China (9.7 billion US$).

Table 5.8: Changes in Long-run Capital Stocks (%) and Trade Balances (million US$), 2020

	Scenario 1		Scenario 2	
	Capital stock (%)	Trade balance (mil. US$)	Capital stock (%)	Trade balance (mil. US$)
Vietnam	4.35	-1,500	8.17	-2,938
Indonesia	0.90	-675	2.45	-955
Malaysia	2.28	-253	5.64	42
Philippines	2.10	-593	7.03	-2,459
Thailand	3.55	-328	8.34	-520
Singapore	1.86	56	9.73	-613
OthASEAN	1.81	-153	3.91	-129
Australia	0.77	-569	2.44	-1,965
NewZealand	3.54	-478	4.95	-614
China	0.35	-1,649	1.00	-9,727
Japan	1.42	-920	1.93	-868
SouthKorea	1.00	-1,716	1.92	-2,078
Other RCEP	-	-	-	-

Source: Authors' model results

Figure 5.2 decomposes changes in Vietnam's capital stocks by liberalising components. In Scenario 1, tariff elimination contributes 3.10% to the changes, followed by goods NTMs (1.04%), tax on capital (0.16%), and services NTMs (0.06%). In Scenario 2, larger cuts to tariffs, NTMs, and tax on capital lead to changes in the contributions among the components. In particular, goods NTMs now contribute the most (4.11%), followed by tariffs (3.59%), tax on capital (0.26%), and services NTMs (0.21%). Our simulation results suggest that the impact of reducing the tax on capital has a more important role to the growth rate of capital in other RCEP compared with Vietnam, partly because of the higher barriers to FDI through the FDI restrictiveness index in a number of RCEP members.

Figure 5.2: Changes in Vietnam's Capital Stocks by Liberalising Components (%), 2020
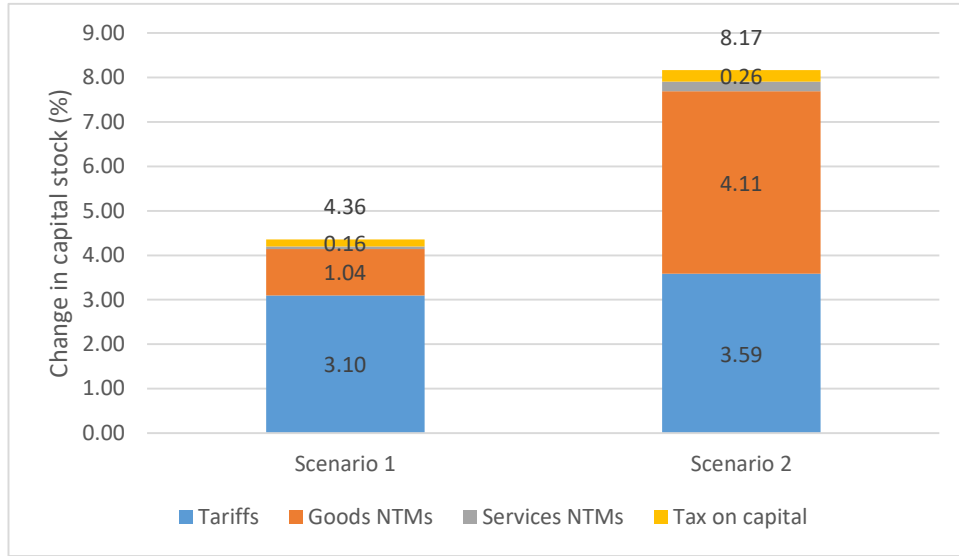
Source: Authors' model results

Changes in the long-run current rate of return, rental price of capital, and price of capital goods of RCEP members are provided in Table 5.9. In terms of the rental price of capital, the above equation (1) can be rewritten as follows:

$$\text{rental}(r) = \left[\frac{1}{\text{GRNETRATIO}(r)}\right] \times \text{rorc}(r) + \text{pcgds}(r) \qquad (2)$$

The long-run rental price of capital of Vietnam reduces by 0.56% in Scenario 1 and 0.44% in Scenario 2, whereas that of other RCEP, on average, increases by 0.24% in Scenario 1 and 0.40% in Scenario 2. This fall in the long run rental price relative to the short run (rise) is due to the increase in the supply of capital, which in turn reduces the return.

As can be seen in Equation (2), the change in the rental price of capital is determined by changes in the current rate of return and price of capital goods. However, in the long-run, changes in the current, expected, and global rates of return are equated. As shown in Table 5.9, the current rates of return in all regions increase by 0.15% in Scenario 1 and 0.42% in Scenario 2. Therefore, prices of capital goods have become more important in determining changes in rental prices of capital among regions. Table 5.9 indicates that the price of capital goods in Vietnam reduces by 0.66% in Scenario 1 and 0.70% in Scenario 2, compared with an average reduction of only 0.01% and 0.07% in other RCEP members respectively. Indeed, some

RCEP members experience positive changes in the price of capital goods, while others witness negative changes. This is due to the high share of imported capital goods in Vietnam. Vietnam imports more than 30.7% of goods for the production of capital goods, whereas the imported shares of inputs in other RCEP members, on average, is around 8.5%.[59] Therefore, Vietnam tends to have much larger reductions in prices of capital goods following implementation of this agreement.

Table 5.9: Changes in the Current Rate of Return, Rental Price of Capital, and Price of Capital Goods in the Long-run (%), 2020

Regions	Scenario 1			Scenario 2		
	rorc	rental	pcgds	rorc	rental	pcgds
Vietnam	0.15	-0.56	-0.66	0.42	-0.44	-0.70
Indonesia	0.15	-0.21	-0.32	0.42	-0.19	-0.50
Malaysia	0.15	-0.31	-0.42	0.42	-0.48	-0.78
Philippines	0.15	-0.41	-0.52	0.42	-0.31	-0.62
Thailand	0.15	-0.82	-0.92	0.42	-1.21	-1.49
Singapore	0.15	-0.15	-0.28	0.42	-0.50	-0.84
OthASEAN	0.15	-0.82	-0.94	0.42	-1.30	-1.64
Australia	0.15	0.00	-0.08	0.42	0.53	0.31
NewZealand	0.15	0.15	0.04	0.42	0.41	0.12
China	0.15	-0.11	-0.19	0.42	-0.13	-0.35
Japan	0.15	1.52	1.42	0.42	2.15	1.87
SouthKorea	0.15	0.23	0.14	0.42	0.59	0.34
Other RCEP*	0.15	0.24	-0.01	0.42	0.40	-0.07

Source: Authors' model results
Notes: Aggregation of regional compositions is defined in Appendix, Table 5.11
Rental for other RCEP countries is based on the capital weighted average of other RCEP
Pcgs for other RCEP countries is based on the capital goods weighted average of other RCEP

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[59] Authors' calculations based on the projected GTAP 10 database to 2020

5.5   Conclusion

This paper sheds light on the potential impacts of RCEP through both trade and investment liberalisation on Vietnam, with a focus on the trade and investment impacts. A long-run closure in the GTAP model is used so that changes in both trade and investment can be examined. RCEP trade liberalisation is modelled through three policy components, including reductions in tariffs, goods and services NTMs, while RCEP investment liberalisation is based on reductions in FDI barriers. Each of the two scenarios modelled comprises the four policy components, with Scenario 2 being more ambitious.

The simulation results indicate that Vietnam's total real exports increase by 6.4% in Scenario 1 and 10.1% in Scenario 2, while Vietnam's total real imports rise by slighter rates of 5.4% in Scenario 1 and 9.1% in Scenario 2. The results further indicate that although RCEP creates an increase in trade flows among members, there is evidence of trade diversion following this agreement. Indeed, Vietnam's increased imports from other RCEP are greater than its total imports in both relative and absolute terms. At the sectoral levels, all of the five aggregated sectors, including agriculture, extraction, labour-intensive manufactures, other manufactures, and services, witness both export and import growth. Among the more detailed sectors modelled, only meat & livestock and food & beverages experience significant declines in exports, while exports of apparel and leather products grow substantially.

Regarding the investment effects of RCEP, our simulation results indicate that among RCEP members, the short-run current rate of return in Vietnam experiences the largest increase, suggesting a significant increase in Vietnam's long-run capital stocks. In the long-run, Vietnam's capital stocks grow remarkably from 4.36% in Scenario 1 to 8.17% in Scenario 2. These increases are due to both trade and investment liberalisation under RCEP. Among the policy instruments, tariffs and goods NTMs have the largest impacts on Vietnam's growth of capital. With greater liberalisation in Scenario 2, the contribution of goods NTMs exceeds that of tariffs.

Exports of some agricultural and processed food sectors contract following RCEP. Therefore, it may be necessary to have particular policies aiming at easing the

adverse impacts and assisting transitions of workers between sectors. In addition, Vietnam should diversify its export markets to include countries such as Australia and New Zealand in addition to Vietnam's key and traditional export markets. Furthermore, reductions in barriers to FDI are found to have positive impacts on capital. Thus, restrictions on foreign equity, approval mechanisms, employment of foreigners, and operation such as branching and capital repatriation (OECD, 2018) should be eased to attract more investment.

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Chapter Appendix

Table 5.10: Annual Growth Rates of GDP, Population, and Labour Force (%), 2014-2020

	Annual GDP growth							Annual population growth							Annual labour force growth rates						
	2014	2015	2016	2017	2018	2019	2020	2014	2015	2016	2017	2018	2019	2020	2014	2015	2016	2017	2018	2019	2020
Vietnam	6.0	6.7	6.2	6.8	7.3	7.1	6.7	1.1	1.1	1.1	1.0	0.9	0.8	0.8	1.1	0.9	0.8	0.7	0.6	0.6	0.5
Indonesia	5.0	4.9	5.0	5.1	6.7	6.7	6.6	1.2	1.2	1.1	1.1	0.8	0.8	0.7	1.3	1.3	1.2	1.2	1.2	1.1	1.0
Malaysia	6.0	5.1	4.2	5.9	4.8	4.7	4.6	1.7	1.6	1.5	1.4	1.4	1.4	1.4	1.9	1.9	1.8	1.7	1.7	1.6	1.5
Philippines	6.1	6.1	6.9	6.7	4.9	4.9	4.8	1.6	1.6	1.6	1.5	1.6	1.6	1.6	2.2	2.2	2.2	2.2	2.1	2.1	2.0
Thailand	1.0	3.0	3.3	3.9	5.1	5.1	5.1	0.4	0.4	0.3	0.3	0.5	0.5	0.4	0.7	0.6	0.5	0.4	0.3	0.2	0.1
Singapore	3.9	2.2	2.4	3.6	3.6	3.4	3.2	1.3	1.2	1.3	0.1	0.6	0.5	0.5	1.9	0.5	0.8	0.4	0.0	-0.2	-0.3
OthASEAN	6.4	6.0	5.1	6.2	6.1	5.9	5.7	1.1	1.1	1.1	1.1	0.6	0.6	0.6	1.2	1.0	0.9	0.8	0.7	0.6	0.6
Australia	2.6	2.4	2.8	2.0	3.4	3.3	3.2	1.5	1.4	1.6	1.7	1.5	1.5	1.4	1.2	1.1	1.1	1.0	1.0	1.0	1.0
NewZealand	3.5	4.4	3.5	2.8	2.3	2.2	2.2	1.5	1.9	2.1	2.1	1.0	1.0	1.0	0.7	0.7	0.6	0.6	0.5	0.5	0.5
China	7.3	6.9	6.7	6.9	8.1	7.7	7.3	0.5	0.5	0.5	0.6	0.2	0.2	0.2	0.5	0.3	0.1	0.0	-0.1	-0.2	-0.2
Japan	0.4	1.4	0.9	1.7	0.9	0.9	0.9	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-1.0	-1.0	-0.9	-0.9	-0.8	-0.7	-0.6
SouthKorea	3.3	2.8	2.9	3.1	3.8	3.7	3.6	0.6	0.5	0.5	0.4	0.2	0.2	0.2	0.3	0.1	0.0	-0.2	-0.3	-0.5	-0.6
India	7.4	8.0	8.2	7.2	6.9	6.8	6.7	1.2	1.2	1.1	1.1	1.2	1.2	1.1	1.7	1.6	1.5	1.5	1.4	1.4	1.4
US	2.8	3.0	3.0	3.0	3.0	2.9	2.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.4	0.4	0.4	0.4	0.4
HongKomg	3.6	3.7	3.8	3.8	3.7	3.6	3.3	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.4	0.2	0.0	-0.2	-0.3	-0.4	-0.5
Taiwan	3.6	3.8	4.1	4.1	4.0	3.8	3.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.0	-0.2	-0.3	-0.5	-0.6
EU28	1.7	1.7	1.8	1.8	1.8	1.8	1.8	0.3	0.3	0.3	0.3	0.2	0.2	0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
ROW	4.0	4.1	4.1	4.0	4.0	3.9	3.9	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.8	1.7	1.7	1.6	1.6	1.6	1.6

Source: Projections draw on middle of the road 'business as usual' trends (O'Neill et al., 2014) and the World Bank

Table 5.11: Regional Aggregation

No.	Regions modelled	Description	GTAP regions	Aggregated regions for reporting
1	Vietnam	Vietnam	VNM	Vietnam
2	Indonesia	Indonesia	IDN	Other RCEP
3	Malaysia	Malaysia	MYS	Other RCEP
4	Philippines	Philippines	PHL	Other RCEP
5	Thailand	Thailand	THA	Other RCEP
6	Singapore	Singapore	SGP	Other RCEP
7	OthASEAN	Other ASEAN countries	LAO, KHM, BRN, XSE	Other RCEP
8	Australia	Australia	AUS	Other RCEP
9	New Zealand	New Zealand	NZL	Other RCEP
10	China	China	CHN	Other RCEP
11	Japan	Japan	JPN	Other RCEP
12	South Korea	South Korea	KOR	Other RCEP
13	India	India	IND	Rest of the world
14	United States	United States	USA	Rest of the world
15	Hong Kong	Hong Kong	HKG	Rest of the world
16	Taiwan	Taiwan	TWN	Rest of the world
17	EU28	European Union	AUT, BEL, CYP, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN IRL, ITA, LVA, LTU, LUX, MLT, NLD, POL, PRT, SVK, SVN ESP, SWE, GBR, BGR, HRV, ROU	Rest of the world
18	ROW	Rest of World	XOC, MNG, XEA, BGD, NPL, PAK, LKA, XSA, CAN, MEX, XNA, ARG, BOL, BRA, CHL, COL, ECU, PRY, PER, URY, VEN, XSM, CRI, GTM, HND, NIC, PAN, SLV, XCA, DOM, JAM, PRI, TTO, XCB, BHR, IRN, ISR, JOR, KWT, OMN, QAT, SAU, TUR, ARE, XWS, EGY, MAR, TUN, XNF, BEN, BFA, CMR, CIV, GHA, GIN, NGA, SEN, TGO, XWF, XCF, XAC, ETH, KEN, MDG, MWI, MUS, MOZ, RWA, TZA, UGA, ZMB, ZWE, XEC, BWA, NAM, ZAF, XSC, CHE, NOR, XEF, ALB, BLR, RUS, UKR, XEE, XER, KAZ, KGZ, XSU, ARM, AZE, GEO, XTW	Rest of the world

Source: Authors' aggregation based on 141 regions of GTAP 10 Data Base

Table 5.12: Sectoral Aggregation

No.	Sectors modelled	Description	GTAP sectors	Aggregated sectors for reporting
1	Rice	Paddy rice; Processed rice	PDR; PCR	Agriculture
2	Fishing	Fishing	FSH	Agriculture
3	OthAgri	Wheat; Other grains nec; Oil seeds;	WHT; GRO; OSD;	Agriculture
		Vegetables, fruit and nuts; Sugar cane and sugar beet;	V_F; C_B;	
		Plant-based fibers; Crops nec	PFB; OCR	
4	MeatLstk	Bovine cattle and sheep; Other animal products nec;	CTL; OAP;	Agriculture
		Raw milk; Wool, silk-worm cocoons;	RMK; WOL;	
		Bovine cattle and sheep products; Other meat products	CMT; OMT	
5	ForesWood	Forestry; Wood products	FRS; LUM	Agriculture
6	Extraction	Coal; Oil; Gas; Minerals nec;	COA; OIL; GAS; OXT;	Extraction
		Petroleum and coal products; Mineral products nec	P_C; NMM	
7	FoodBever	Vegetable oils and fats; Dairy products; Sugar;	VOL; MIL; SGR;	Agriculture
		Food products nec; Beverages and tobacco products	OFD; B_T	
8	Textiles	Textiles	TEX	Labour-intensive manu
9	AppaLeath	Wearing apparel; Leather products	WAP; LEA	Labour-intensive manu
10	Chemicals	Chemicals; Pharmaceutical products; Rubber & plastic	CHM; BPH; RPP	Other manufactures
11	Metals	Ferrous metals; Metals nec; Metal products;	I_S; NFM; FMP	Other manufactures
12	ElecEquip	Electronic equipment	ELE	Other manufactures
13	Machinery	Electrical equipment; Machinery and equipment nec	EEQ; OME	Other manufactures
14	TransEquip	Motor vehicles and parts; Transport equipment nec	MVH; OTN	Other manufactures
15	OthManufac	Paper products and publishing; Manufactures nec	PPP; OMF	Other manufactures
16	Construction	Construction	CNS	Services
17	FinBusTra	Insurance; Finance; Other business services; Trade	INS; OFI; OBS; TRD	Services
18	Transport	Transport nec; Water transport; Air transport	OTP; WTP; ATP	Services
19	Communication	Communication	CMN	Services
20	GovSvs	Government services	OSG	Services
21	OthSvs	Electricity; Gas manufacture and distribution;	ELY; GDT;	Services
		Water; Recreational and other services;	WTR; ROS;	
		Accommodation, food and service activities	AFS	
		Warehousing and support activities	WHS	
		Real estate activities; Education	RSA; EDU	
		Human health and social work activities; Dwellings	HHT; DWE	

Source: Authors' aggregation based on 65 sectors of GTAP 10 Data Base

Table 5.13: Ad-valorem Equivalents of Services Barriers in the RCEP Region (%)

Country	Construction	Finance, business & trade	Transport	Communication	Government Services	Other Services
Vietnam	34.49	59.78	41.26	47.35	59.90	-
Indonesia	50.78	64.02	48.44	65.45	87.15	-
Malaysia	12.82	38.83	22.78	32.17	57.28	-
Philippines	100.72	83.78	52.06	87.88	83.64	-
Singapore	51.40	16.93	0.00	19.02	43.99	-
Thailand	31.40	35.22	19.98	71.12	60.03	-
OthASEAN	28.76	131.29	50.68	77.71	82.25	-
Australia	126.66	68.61	34.43	75.56	76.02	-
New Zealand	52.83	53.36	22.91	53.09	62.45	-
Japan	38.43	65.95	38.82	104.77	93.02	-
China	68.02	66.92	68.83	106.29	104.11	-
Korea	34.63	44.36	13.98	67.18	69.56	-
India	77.75	53.97	46.20	81.90	112.85	-

Source: Fontagne (2016). Trade weighted to aggregated sectors and regions by the authors
*RestASEAN includes Lao, Cambodia, Myanmar, and Brunei. AVEs of services barrier for
Myanmar are imputed using average values of similar countries (Vietnam, Lao, and Cambodia).

Table 5.14: Shares of RCEP FDI Stocks in Total FDI Stocks of Each RCEP Member (%), 2017

Country	Australia	China	Indonesia	Japan	Korea	Malaysia	NZ	Philippines	Singapore	Thailand	VN	ASEAN4
Australia		10,535	5,882	647	669	4,586	48,433	761	15,772	1,232	1,580	35
Brunei	0	2,444	31	0	5	0	0	0	428	30	0	29
Cambodia	0	189	0	0	5	0	0	21	160	-22	0	10
China	36,175		10,539	3,197	5,983	4,915	2,492	820	44,568	5,358	4,965	17,849
Indonesia	0	690		283	61	0	0	183	18,660	301	0	17
Japan	68,682	116,970	30,389		36,592	14,309	3,730	14,986	58,969	61,496	15,608	1,393
Korea	12,457	77,800	7,219	5,135		4,962	206	2,477	11,999	3,561	14,582	4,547
Lao	0	17	0	0	0	0	0	0	43	-35	0	1
Malaysia	5,993	2,122	11,348	135	-58	0	339	315	23,171	2,337	1,596	1,759
Myanmar	0	61	1	0	1	0	0	0	1,043	16	0	0
New Zealand	8,574	33	2	295	56	0		0	966	-10	0	1
Philippines	57	384	95	-1	0	11	1		1,289	0	45	0
Singapore	36,573	100,326	48,184	11,518	6,358	33,656	1,427	5,637		19,118	6,600	4,233
Thailand	3,120	3,728	3,859	3,684	187	3,659	62	702	12,184		5,239	8,952
Vietnam	0	6	71	0	-27	0	0	4	518	-47		372
FDI stocks from RCEP	171,630	315,305	117,619	24,894	49,831	66,097	56,691	25,906	189,772	93,335	50,214	39,199
Total FDI stock	689,396	1,488,676	231,492	200,193	229,399	146,602	76,028	79,016	1,393,380	223,816	129,491	62,550
Share*	24.90	21.18	50.81	12.44	21.72	45.09	74.57	32.79	13.62	41.70	38.78	62.67

Source: UNCTAD and IMF

Note: * RCEP FDI stock shares in total FDI stocks of each RCEP member.

Some bilateral outward FDI stocks from Lao, Cambodia, Myanmar, Brunei are unavailable. They are assumed to be zero. Even in case they are available (but small), they can hardly change the RCEP FDI stocks shares in each RCEP member

Table 5.15: FDI Index, RCEP Members, 2017

Sectors	Vietnam	Indonesia	Malaysia	Philippines	Thailand	Singapore	Rest ASEAN	Australia	New Zealand	China	Japan	South Korea
Rice	0.083	0.347	0.150	0.760	0.419	0.064	0.142	0.200	0.200	0.220	0.025	0.500
Fishing	0.020	0.735	0.200	0.565	0.500	0.244	0.179	0.075	0.690	1.000	0.150	0.500
OthAgri	0.083	0.347	0.150	0.760	0.419	0.064	0.142	0.200	0.200	0.220	0.025	0.500
MeatLstk	0.083	0.347	0.150	0.760	0.419	0.064	0.091	0.200	0.200	0.220	0.025	0.500
ForesWood	0.045	0.060	0.014	0.073	0.046	0.020	0.082	0.102	0.190	0.050	0.002	0.000
Extraction	0.020	0.112	0.000	0.582	0.331	0.029	0.249	0.085	0.190	0.193	0.052	0.000
FoodBever	0.045	0.060	0.004	0.072	0.045	0.018	0.074	0.100	0.190	0.050	0.000	0.000
Textiles	0.045	0.060	0.004	0.072	0.045	0.018	0.082	0.100	0.190	0.050	0.000	0.000
AppaLeath	0.045	0.060	0.004	0.072	0.045	0.018	0.073	0.100	0.190	0.050	0.000	0.000
Chemicals	0.020	0.087	0.000	0.065	0.051	0.018	0.037	0.075	0.190	0.060	0.008	0.000
Metals	0.020	0.060	0.000	0.075	0.045	0.018	0.058	0.075	0.190	0.095	0.000	0.000
ElecEquip	0.020	0.060	0.000	0.065	0.042	0.018	0.021	0.075	0.190	0.060	0.000	0.000
Machinery	0.020	0.060	0.000	0.075	0.045	0.018	0.060	0.075	0.190	0.095	0.000	0.000
TransEquip	0.020	0.060	0.031	0.065	0.052	0.018	0.025	0.075	0.190	0.245	0.000	0.000
OthManufac	0.045	0.060	0.004	0.072	0.045	0.018	0.068	0.100	0.190	0.050	0.000	0.000
Construction	0.020	0.210	0.250	0.465	0.308	0.018	0.095	0.075	0.190	0.170	0.000	0.000
Finbustra	0.051	0.437	0.352	0.603	0.392	0.049	0.108	0.079	0.179	0.274	0.000	0.074
Transport	0.528	0.426	0.296	0.655	0.459	0.210	0.139	0.268	0.273	0.540	0.275	0.508
Commu	0.583	0.260	0.375	0.665	0.433	0.083	0.041	0.400	0.390	0.750	0.265	0.325
GovSer	0.227	0.400	0.326	0.430	0.385	0.081	0.232	0.181	0.226	0.396	0.077	0.141
OthSer	0.115	0.256	0.374	0.447	0.376	0.104	0.125	0.192	0.207	0.423	0.059	0.299

Source: OECD FDI index and authors' calculations
Note: FDI indices for aggregated sectors and regions are calculated by weighting estimated FDI stocks of sectors and regions

Table 5.16: Changes in FDI Stocks by Sectors (%), with Full Removal of FDI Barriers, RCEP Members, 2017

Sectors	Vietnam	Indonesia	Malaysia	Philippines	Thailand	Singapore	Rest ASEAN	Australia	New Zealand	China	Japan	South Korea
Rice	11.95	49.97	21.60	109.44	60.34	9.22	20.47	28.80	28.80	31.68	3.60	72.00
Fishing	2.88	105.84	28.80	81.36	72.00	35.14	25.80	10.80	99.36	144.00	21.60	72.00
OthAgri	11.95	49.97	21.60	109.44	60.34	9.22	20.52	28.80	28.80	31.68	3.60	72.00
MeatLstk	11.95	49.97	21.60	109.44	60.34	9.22	13.12	28.80	28.80	31.68	3.60	72.00
ForesWood	6.49	8.67	2.07	10.46	6.66	2.94	11.88	14.76	27.36	7.20	0.27	0.00
Extraction	2.88	16.12	0.00	83.86	47.70	4.11	35.82	12.25	27.36	27.80	7.44	0.00
FoodBever	6.48	8.64	0.58	10.37	6.53	2.59	10.67	14.40	27.36	7.20	0.00	0.00
Textiles	6.48	8.64	0.58	10.37	6.53	2.59	11.74	14.40	27.36	7.20	0.00	0.00
AppaLeath	6.48	8.64	0.58	10.37	6.53	2.59	10.56	14.40	27.36	7.20	0.00	0.00
Chemicals	2.88	12.53	0.00	9.36	7.30	2.59	5.33	10.80	27.36	8.64	1.15	0.00
Metals	2.88	8.64	0.00	10.80	6.48	2.59	8.35	10.80	27.36	13.68	0.00	0.00
ElecEquip	2.88	8.64	0.00	9.36	6.00	2.59	3.09	10.80	27.36	8.64	0.00	0.00
Machinery	2.88	8.64	0.00	10.80	6.48	2.59	8.58	10.80	27.36	13.68	0.00	0.00
TransEquip	2.88	8.64	4.46	9.36	7.49	2.59	3.55	10.80	27.36	35.28	0.00	0.00
OthManufac	6.48	8.64	0.58	10.37	6.53	2.59	9.76	14.40	27.36	7.20	0.00	0.00
Construction	2.88	30.24	36.00	66.96	44.40	2.59	13.61	10.80	27.36	24.48	0.00	0.00
Finbustra	7.30	62.87	50.62	86.79	56.48	7.11	15.57	11.34	25.84	39.52	0.00	10.67
Transport	76.03	61.34	42.62	94.32	66.10	30.24	19.98	38.59	39.31	77.76	39.60	73.15
Commu	83.95	37.44	54.00	95.76	62.40	11.95	5.97	57.60	56.16	108.00	38.16	46.80
GovSer	32.69	57.60	46.94	61.92	55.49	11.66	33.42	26.06	32.54	57.02	11.09	20.30
OthSer	16.56	36.90	53.84	64.30	54.09	15.01	17.95	27.58	29.75	60.84	8.48	43.11

Source: Authors' calculations based on OECD FDI index and Lakatos and Fukui (2014).

Table 5.17: Ratios of FDI Stocks to Capital Stocks, RCEP Members, 2017

Sectors	Vietnam	Indonesia	Malaysia	Philippines	Thailand	Singapore	Rest ASEAN	Australia	New Zealand	China	Japan	South Korea
Rice	0.0041	0.0024	0.0188	0.0068	0.0046	1.0000	0.0018	0.0719	0.2256	0.0071	0.0030	0.0175
Fishing	0.0000	0.0000	0.0006	0.0000	0.0001	0.2143	0.0000	0.0183	0.0015	0.0000	0.0010	0.0085
OthAgri	0.0000	0.0000	0.0000	0.0000	0.0000	0.1426	0.0000	0.0123	0.0005	0.0000	0.0014	0.0084
MeatLstk	0.0341	0.0019	0.0033	0.0042	0.0067	0.6416	0.0061	0.0331	0.0536	0.0006	0.0028	0.0392
ForesWood	0.0038	0.0007	0.0025	0.0036	0.0045	0.2254	0.0013	0.0487	0.0245	0.0017	0.0062	0.0378
Extraction	0.0085	0.0019	0.0116	0.0675	0.0198	1.0000	0.0133	0.1299	0.4519	0.0043	0.0682	0.1206
FoodBever	0.0093	0.0028	0.0218	0.0028	0.0099	1.0000	0.0124	0.1298	0.1807	0.0046	0.0051	0.1003
Textiles	0.0067	0.0010	0.0042	0.0021	0.0047	0.3254	0.0525	0.0536	0.0985	0.0011	0.0283	0.0272
AppaLeath	0.0029	0.0015	0.0019	0.0021	0.0038	0.6761	0.0021	0.0314	0.0870	0.0006	0.0339	0.0187
Chemicals	0.0368	0.0060	0.0136	0.0259	0.0105	0.1547	0.2175	0.4181	0.3252	0.0051	0.0421	0.0403
Metals	0.0234	0.0006	0.0031	0.0027	0.0028	0.3860	0.0308	0.0397	0.0508	0.0002	0.0153	0.0079
ElecEquip	0.0259	0.0044	0.0011	0.0006	0.0022	0.0591	0.0303	0.3214	0.4652	0.0017	0.0268	0.0055
Machinery	0.0293	0.0050	0.0086	0.0064	0.0076	0.3241	0.1081	0.3131	0.2121	0.0017	0.0105	0.1174
TransEquip	0.0178	0.0022	0.0204	0.0172	0.0061	0.7304	0.0457	0.2481	0.4685	0.0023	0.1964	0.0437
OthManufac	0.0054	0.0015	0.0102	0.0083	0.0056	0.5967	0.0164	0.0724	0.1303	0.0015	0.0145	0.0452
Construction	0.0002	0.0003	0.0159	0.0001	0.0025	0.0649	0.0004	0.0462	0.0037	0.0001	0.0051	0.0032
Finbustra	0.4987	0.0962	0.1898	0.0818	0.1147	1.0000	0.3128	0.4514	0.2903	0.0549	0.0102	0.0520
Transport	0.0029	0.0004	0.0029	0.0004	0.0009	0.0167	0.0008	0.0112	0.0324	0.0002	0.0023	0.0084
Commu	0.0111	0.0028	0.0114	0.0029	0.0142	0.2644	0.0165	0.0221	0.0394	0.0024	0.0010	0.0271
GovSer	0.0048	0.0014	0.0034	0.0016	0.0017	0.0904	0.0049	0.0054	0.0151	0.0007	0.0012	0.0008
OthSer	0.0008	0.0003	0.0040	0.0012	0.0018	0.0726	0.0012	0.0125	0.0084	0.0003	0.0005	0.0025

Source: Authors' calculations

Table 5.18: Changes in Capital Stocks by Sector (%), with Full Removal of FDI Barriers, RCEP Member, 2017

Sectors	Vietnam	Indonesia	Malaysia	Philippines	Thailand	Singapore	Rest ASEAN	Australia	New Zealand	China	Japan	South Korea
Rice	0.05	0.12	0.41	0.74	0.27	9.22	0.04	2.07	6.50	0.22	0.01	1.26
Fishing	0.00	0.00	0.02	0.00	0.00	7.53	0.00	0.20	0.15	0.00	0.02	0.62
OthAgri	0.00	0.00	0.00	0.00	0.00	1.31	0.00	0.35	0.01	0.00	0.01	0.60
MeatLstk	0.41	0.09	0.07	0.46	0.40	5.91	0.08	0.95	1.54	0.02	0.01	2.83
ForesWood	0.02	0.01	0.01	0.04	0.03	0.66	0.01	0.72	0.67	0.01	0.00	0.00
Extraction	0.02	0.03	0.00	5.66	0.95	4.11	0.48	1.59	12.36	0.12	0.51	0.00
FoodBever	0.06	0.02	0.01	0.03	0.06	2.59	0.13	1.87	4.94	0.03	0.00	0.00
Textiles	0.04	0.01	0.00	0.02	0.03	0.84	0.62	0.77	2.70	0.01	0.00	0.00
AppaLeath	0.02	0.01	0.00	0.02	0.02	1.75	0.02	0.45	2.38	0.00	0.00	0.00
Chemicals	0.11	0.08	0.00	0.24	0.08	0.40	1.16	4.52	8.90	0.04	0.05	0.00
Metals	0.07	0.01	0.00	0.03	0.02	1.00	0.26	0.43	1.39	0.00	0.00	0.00
ElecEquip	0.07	0.04	0.00	0.01	0.01	0.15	0.09	3.47	12.73	0.01	0.00	0.00
Machinery	0.08	0.04	0.00	0.07	0.05	0.84	0.93	3.38	5.80	0.02	0.00	0.00
TransEquip	0.05	0.02	0.09	0.16	0.05	1.89	0.16	2.68	12.82	0.08	0.00	0.00
OthManufac	0.04	0.01	0.01	0.09	0.04	1.55	0.16	1.04	3.57	0.01	0.00	0.00
Construction	0.00	0.01	0.57	0.01	0.11	0.17	0.01	0.50	0.10	0.00	0.00	0.00
Finbustra	3.64	6.05	9.61	7.10	6.48	7.11	4.87	5.12	7.50	2.17	0.00	0.56
Transport	0.22	0.02	0.13	0.04	0.06	0.51	0.02	0.43	1.27	0.02	0.09	0.62
Commu	0.94	0.10	0.61	0.28	0.89	3.16	0.10	1.27	2.21	0.26	0.04	1.27
GovSer	0.16	0.08	0.16	0.10	0.10	1.05	0.16	0.14	0.49	0.04	0.01	0.02
OthSer	0.01	0.01	0.21	0.08	0.10	1.09	0.02	0.34	0.25	0.02	0.00	0.11

Source: Authors' calculations

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Chapter 6: Conclusions

Regional trade agreements (RTAs) have increased at a significant pace and there is significant interest in investigating their effects. Regarding the trade effects, the current literature is characterised by a limited studies examining how the different RTAs a country has made affect its trade flows. Some types of trade agreements appear to work better than others in terms of stimulating trade flows (Busse & Gröning, 2012; Ullah & Inaba, 2012). With respect to the investment effect, how an RTA affects members' foreign direct investment (FDI) inflows depends on a variety of factors such as patterns of FDI, the investment provision of FTAs, sources of FDI, and location-specific advantages in terms of input prices, transport and communication costs, government intervention, education, and infrastructure (Dunning, 1981). However, whether the overall involvement in FTAs of a developing country enhances its FDI inflows has not been paid sufficient attention. Furthermore, a variety of RTAs have progressed toward deep and comprehensive RTAs, which are expected to have substantial impacts on trade and investment of members, especially developing countries. In order to provide a deeper understanding of the linkage between RTAs and trade and investment, it is critical to conduct more case studies. Therefore, the theme of this thesis is to investigate the key RTAs that a developing country, such as Vietnam, has entered into. The assessment is through their trade and investment effects for Vietnam.

Vietnam is an interesting case study as it is one of the most active countries in the Asia-Pacific regarding integration into the world economy through RTAs. Vietnam is now involved with 16 RTAs and is one of the seven countries in the Asia-Pacific participating in the two largest agreements in this region, namely the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and Regional Comprehensive Economic Partnership (RCEP). Vietnam is also the second member of ASEAN having an FTA with the EU, after Singapore.

This thesis is a compilation of addressing the following research questions: (i) how do trade liberalisation agreements and FDI promote Vietnamese exports and imports?; (ii) how do free trade agreements impact on Vietnam's inward FDI flows?; (iii) how might Vietnamese trade and investment change following the EU-Vietnam free trade agreement (EVFTA)?; (iv) how might Vietnamese trade and investment

change following RCEP? These research questions are addressed by making use of econometric and computable general equilibrium (CGE) modelling.

6.1 Main Findings and Policy Implications

Chapter 2 employs the random effects technique to estimate the gravity models which are used to investigate the effects of trade agreements and FDI on Vietnamese trade. This study reveals that Vietnamese exports and imports have the greatest expansion following the bilateral trade agreements with the US and Japan. The impacts from other RTAs are more mixed. This study also provides empirical support for FDI inflows stimulating both exports and imports in Vietnam. However, the impacts on Vietnamese trade flows of some of the trade agreements are much stronger than that of FDI inflows. Furthermore, this study suggests that Vietnam's exports have become more sensitive to FDI following the bilateral trade agreements with the US and Japan, whereas Vietnam's imports have become less sensitive to FDI as a result of the trade agreement with Japan.

These findings have important policy implications for Vietnam. First, the results suggest that trade liberalisation through bilateral and RTAs is a good channel to build growth in trade for Vietnam. The study also suggests that certain types of agreements are better at promoting Vietnamese trade. Therefore, Vietnamese policymakers should closely look at the trade agreements with Japan and the US, which are helpful for the negotiations of future trade deals. In addition, it should be noted that policies aiming at attracting FDI flows are also likely to stimulate trade.

Chapter 3 investigates whether the overall involvement in FTAs of Vietnam increases FDI inflows. Therefore, this study contributes to the current literature with an empirical study evaluating the impact of overall FTAs on inward FDI of a developing country, which has been ignored. The regression results from gravity models suggest that FTAs, overall, are associated with increases in FDI flows. Based on these results and the outcomes for other FDI determinants such as trade, factor endowments, and the interaction term between FTAs and factor endowments, this study indicates that there is evidence of the dominance of vertical FDI in Vietnam. Further investigation of the later sub-period reveals that FTAs also affect

inward FDI flows to Vietnam through interaction terms with the real exchange rate, human capital, and factor endowments.

From a policy perspective, the findings of this chapter suggest that FTAs are associated with increased FDI inflows. However, FTAs can be enhanced to encourage growth in investment. For instance, FTAs with investment protection agreements will help protect investors and investments in a host country. In addition, investment provisions should aim to reduce restrictions on foreign firms, allowing them to participate in a variety of sectors. Tax incentives can also be used to encourage FDI projects, particularly where there are substantial positive externalities for the rest of the economy. Moreover, in addition to Vietnam's relatively cheaper labour costs, the Vietnamese government should continue to boost human resources and keep the exchange rate stable, given that the two FDI determinants have more important roles as a result of FTAs.

Chapter 4 assesses the impact of the EVFTA, focusing on Vietnamese trade and investment, with a global trade analysis project (GTAP) model. Five policy components are modelled, including tariffs, non-tariff measures (NTMs) on goods and services, trade facilitation, and barriers to FDI. Among the policy instruments, improvements in trade facilitation and reductions in FDI barriers are only modelled for Vietnam which is characterised by relatively high barriers in comparison with the EU. This chapter finds that the EVFTA leads to a stronger rise in Vietnam's total imports than Vietnam's total exports, suggesting a deterioration in the trade balance. This study also finds that the bilateral trade between Vietnam and the EU grows enormously and much faster than the growth rates of total exports and imports for the two sides. The simulation results indicate the presence of trade diversion which is explained by the findings that Vietnam imports more from the EU and less from the rest of the world. Similarly, the trade diversion effect of the EVFTA is also found for the EU. At the sectoral level, this study indicates that several Vietnamese sectors suffer from this agreement. Processed food, labour-intensive manufacturing sectors, and transport equipment experience export growth in Vietnam, whereas there are declines in exports in the remaining sectors.

With regard to the investment effect of the EVFTA, the simulation results indicate that this agreement would not increase the EU's capital stocks, which is consistent

with the fact that Vietnam's investment in the EU has been minimal. In contrast, this study suggests that Vietnam benefits from this agreement in terms of increased capital stocks in the long-run, due to the significant increase in Vietnam's short-run current rates of return mainly resulting from the rise in the short-run rental price of capital. By decomposing the policy instruments, this study further find that tariffs contribute the most to Vietnam's capital growth in both the conservative and ambitious scenarios.

The findings of this chapter have important policy implications. Vietnam's trade grows substantially following the agreement. However, at the sectoral level, the export expansion occurs in very few sectors, whereas a variety of Vietnamese sectors experience deep declines in exports. Therefore, the government should support workers in the industries that have been adversely affected following the trade agreement. This can be done through career transitions and training, assisting workers to find a new job as soon as possible.

Chapter 5 employs a GTAP model with a long-run closure so that changes in both trade and investment following RCEP are examined. Reductions in tariffs, NTMs on goods and services, and barriers to FDI are modelled so that both RCEP trade and investment liberalisation are captured. Specially, this study uses bilateral ad-valorem-equivalents (AVEs) of NTMs (Kravchenko, Utoktham, Narayanan, & Duval, 2019). The modelling of reductions in FDI barriers is based on the OECD FDI index. This chapter finds that Vietnam's total real exports grow slightly faster than its total real imports. However, for bilateral trade, Vietnam's imports from other RCEP countries exhibit greater expansion than its exports to other RCEP. The results further indicate that Vietnam is likely to divert its trade activities, especially imports, toward other RCEP members. With respect to the sectoral level, all of the aggregated sectors modelled, including agriculture, extraction, labour-intensive manufactures, other manufactures, and services, experience both export and import growth. Within the aggregated sectors, only some agricultural sectors suffer from the contraction in exports, whereas wearing apparel and leather products witness substantial export growth. The findings also suggest that Australia and New Zealand become more important export markets for Vietnam thanks to RCEP.

Regarding the investment effects, Chapter 5 finds that among RCEP members, the short-run current rate of return in Vietnam experiences the largest increase, which can explain the substantial gains in Vietnam's long-run capital stocks. Decomposing the changes in capital stocks, this study concludes in general that all the policy components modelled contribute to the increase in capital stocks. However, with greater liberalisation in the ambitious scenario, goods NTMs have the most significant impact on Vietnam's capital growth. Therefore, this study provides support for the importance of focusing on NTMs, especially goods NTMs. In addition, this study suggests that it is worthwhile to model investment liberalisation of RCEP as reductions in FDI barriers affect changes in Vietnam's capital, though the impacts are not as large as those for reductions in tariffs and goods NTMs. This policy component, however, has a more important role on changes in capital stocks of other RCEP, mainly because some RCEP partners have relatively high restrictions on FDI.

Chapter 5 has significant policy relevance. First, policymakers should be aware that investment liberalisation is a critical area of negotiations in modern FTAs, which has an important role in attracting FDI inflows. Therefore, to attract more FDI flows, the Vietnamese government should ease the restrictions on foreign equity, approval mechanisms, employment of foreigners, and operation such as branching and capital repatriation (OECD, 2018). Second, consideration should be given to specific policies aiming at reducing the adverse impacts on some agricultural and processed food sectors while taking advantage of the immense export growth of textiles, apparel and leather products. Vietnamese industries need to increase competitiveness and there may be a role for the Government to play in supporting this or assisting with the transition to alternative industries. Third, Vietnam should diversify its destination for exports such as Australia and New Zealand in addition to Vietnam's key and traditional export markets such as the US, ASEAN, EU, and Japan.

The simulation results of the EVFTA and RCEP indicate that both agreements have considerable economic impacts on Vietnam in terms of real GDP, trade, and investment. However, RCEP has greater economic impacts as it covers a variety of Vietnam's important trading and FDI partners. Furthermore, in the scenario with

greatest liberalisation, results indicate that economic gains from reductions in goods NTMs following RCEP are the greatest, whereas tariff reductions contribute most to economic gains in Vietnam as a result of the EVFTA. The main reason for this is that tariff rates imposed within the RCEP region are relatively low, particularly as the baseline used accounts for the implementation of the CPTPP and other existing agreements in RCEP, however, there are higher tariffs between the EU and Vietnam. With respect to real exports by sector, the two agreements result in the greatest export growth of labour-intensive manufactures, especially apparel and leather products. Notably, most of the sectors modelled experience export growth following RCEP. In contrast, as a result of the EVFTA, exports of only some sectors, including labour-intensive manufactures, transport equipment, and processed food, expand, whereas those of the remaining sectors decline. The results reflect the fact that trade between Vietnam and the EU is complementary, and Vietnam is more likely to export relative labour-intensive products to the EU.

6.2 Limitations and Future Research

There are some limitations in this thesis, many of which may form the basis for future research. First, the panel datasets used in Chapters 2 and 3 comprise a limited number of cross-sections. The focus of this thesis is on Vietnam, thus the panel datasets cover the data for Vietnam and its key trading and FDI partners. One advantage is that the gravity models used in the two chapters do not suffer from the issue of extensive zero values that needs some appropriate econometric techniques to deal with. More techniques may be applicable to the estimation of the gravity models such as the differenced generalised method of moments (GMM) or the system GMM for panel datasets with more cross-sections and observations. Second, although the lagged variable approach was used to address possible endogeneity issues in this thesis, the approach might not necessarily overcome the problem if autocorrelation is present in data series. Third, investments produce impacts on outputs over a period of time, but did not recognise some type of distributed lag to explore the FDI impacts on exports.

Fourth, it should be noted that the FDI indices used in the modelling of investment liberalisation of RCEP in Chapter 5 cannot fully measure the investment climate of a country (OECD, 2018). The OECD (2018) points out that other factors may affect

restrictions on FDI such as the implementation of FDI rules, state ownership in key sectors, the market size, the degree of integration with neighbours, and more general geographical issues. Modelling these factors is well beyond the scope of this thesis.

Fifth, in the current modelling effort, the GTAP model used includes a number of well-documented potential limitations. For example, there is an assumption of perfect competition, however, significantly different market structures often exists in the real world, such as monopoly power and imperfect competition (Zhang & Folmer, 1998). For the current focus, a particular limitation is imperfect modelling of capital accumulation over time in the comparative static GTAP model. While we use a long-run closure to capture accumulation, we are not able to capture other aspects such as income flows associated with international investment (Ianchovichina & Walmsley, 2012).

There is a variety of potential avenues for future research arising from this thesis. Firstly, based on Chapter 2, further research may explore the nature of the trade agreements that are more efficient in promoting Vietnamese trade. Lessons may be available for other countries. Regarding changes in sensitivities of trade to FDI, future studies may examine which of Vietnam's FDI patterns (horizontal or vertical FDI) has the greatest impact on this.

Secondly, the panel datasets in both Chapters 2 and 3 can be extended by including other ASEAN countries such as Indonesia, Malaysia, Philippines, Singapore and Thailand. Based on the new datasets, future research may investigate the impact of FTAs on ASEAN trade and FDI flows. Developing the empirical study in this direction is worthwhile as ASEAN member states have involved in a wide range of FTAs. In addition, the CPTPP and EVFTA have been signed and so they should be incorporated into future panel data analysis of Vietnamese trade and FDI flows.

Thirdly, from Chapters 4 and 5, future research may focus on examining changes in investment over time following the EVFTA and RCEP. For instance, the investment creation and diversion effects (Baldwin, Forslid, & Haaland, 1995; Kalotay, 2007; Lakatos & Walmsley, 2012) of RCEP may be explored. To do this, potential research may follow the expanded GTAP model developed by Lakatos and Walmsley (2012). In addition, future research may evaluate net effects of the

EVFTA and RCEP on Vietnam, given that some sectors are adversely affected by the EVFTA, but they benefit from RCEP.

In summary, this thesis has provided a broad picture of how the RTAs Vietnam has entered into change Vietnamese trade and investment. I identify which of Vietnam's trade agreements have been more efficient in terms of expanding trade and how Vietnamese trade has become sensitive to FDI following the trade agreements. I contribute to the literature a case study which investigates whether the overall involvement in FTAs of a developing country, such as Vietnam, is associated with an increase in FDI flows. To examine the EVFTA, I model as closely to the text of this agreement as possible. With respect to RCEP, I model reductions in FDI barriers in addition to other trade liberalisation components that may be agreed. In addition to exploring the changes in Vietnamese trade at both aggregated and sectoral levels, I investigate the investment effects of the two agreements in both the short- and long-run.

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Thesis Appendix

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Chapter 2:
Duong, M., Holmes, M. J., Strutt, A., & Lim, S. (2019). Effects of trade agreements and foreign direct investment on trade: Evidence from Vietnam. International Journal of Economics and Financial Issues, 9(3), 116-126.

Nature of contribution by PhD candidate	Lead author: undertaking data collection and empirical analysis as well as drafting the paper. Journal submission and corresponding author.
Extent of contribution by PhD candidate (%)	85

CO-AUTHORS

Name	Nature of Contribution
Mark J. Holmes	Advice on drafting, data, econometrics and the interpretation of results.
Anna Strutt	Guidance on drafting and explaining results
Steven Lim	Advice on motivating the paper

Certification by Co-Authors

The undersigned hereby certify that:
❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and

Name	Signature	Date
My Duong		27 November 2019
Mark J. Holmes		20 November 2019
Anna Strutt		22 November 2019
Steven Lim		26 Nov. 2019

July 2015

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Chapter 3:
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Nature of contribution by PhD candidate	Lead author: undertaking data collection and empirical analysis as well as drafting the paper. Journal submission.
Extent of contribution by PhD candidate (%)	85

CO-AUTHORS

Name	Nature of Contribution
Mark J. Holmes	Advice on drafting, data, econometrics and the interpretation of results.
Anna Strutt	Guidance on drafting and explaining findings

Certification by Co-Authors

The undersigned hereby certify that:
- ❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and

Name	Signature	Date
My Duong	*(signature)*	4 June 2020
Mark J. Holmes	*(signature)*	4 June 2020
Anna Strutt	*(signature)*	4 June 2020

July 2015

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Chapter 4:
Trade and investment effects of the EU-Vietnam free trade agreement.

Nature of contribution by PhD candidate	Lead author: performing the data work and CGE modelling, as well as drafting the paper.
Extent of contribution by PhD candidate (%)	95

CO-AUTHORS

Name	Nature of Contribution
Anna Strutt	Guidance on modelling, interpreting results and drafting

Certification by Co-Authors

The undersigned hereby certify that:
❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and

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Chapter 5:
Impacts of the Regional Comprehensive Economic Partnership on Vietnamese trade and investment.

Nature of contribution by PhD candidate	Lead author: performing the data work and CGE modelling, as well as drafting the paper.
Extent of contribution by PhD candidate (%)	80

CO-AUTHORS

Name	Nature of Contribution
Anna Strutt	Guidance on modelling, interpreting results and drafting

Certification by Co-Authors

The undersigned hereby certify that:
❖ the above statement correctly reflects the nature and extent of the PhD candidate's contribution to this work, and the nature of the contribution of each of the co-authors; and

Name	Signature	Date
My Duong		26 November 2019
Anna Strutt		22 November 2019

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