# SERVICES LIBERALISATION IN VIETNAM

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# Abstract

Interest in the liberalisation of services trade has significantly increased since the mid-1980s. However, compared to goods trade, many aspects related to services liberalisation are underexplored. One of the reasons is the complexities and difficulties in quantifying non-tariff barriers in services trade. The first study in this dissertation addresses this issue in the case of Vietnam, a transitional developing economy. It develops a comprehensive time-series dataset based on a newly-constructed index that transforms non-numerical barriers in services trade to numerical measurements. The dataset reflects the changes over time of actual policy in selected service sub-sectors. Other results indicate a strong, positive impact of the accession to the WTO on the reform of the services sector in Vietnam; however, compared to developed countries such as OECD members, Vietnam's services sector remains highly restricted. The motivation of the second and the third studies is to provide empirical evidence on the impacts of services reform on the productivity and employment of manufacturing firms, a subject which has been not well studied in the literature. Firm-level data is used in these two studies. Moreover, different from the conventional approach, where the interaction between the services sector and manufacturing sector is only examined in the case that services sector are providers of intermediate inputs to firms in the manufacturing sector (forward linkage), this dissertation also analysed the interaction where the services firms consume inputs from the manufacturing sector (backward linkage). The second study empirically examines whether manufacturing firms benefit from services reform. The findings complement the results from previous literature in that through the forward linkage, services liberalisation results in an increase in the productivity of manufacturing firms. On the other hand, for the first time, this study finds that controlling for the backward linkages increases the size of productivity gains resulting from increased services liberalization. The third study particularly analyses the employment impacts of services liberalisation on the manufacturing sector, using firm-level data, which has not been done before. Through the forward linkage, the result provides evidence on the decreasing trend in the employment of manufacturing firms when the services sector is liberalised. Meanwhile, Meanwhile, the impact through the backward linkage is found to be opposite with a smaller magnitude.

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This dissertation is dedicated to my beloved parents, my lovely husband, and my little son ‘Hai Minh - Mo’, the sunshine of my life.

# List of Abbreviations and Acronyms

| | |
|---|---|
| AFAS | ASEAN Framework Agreement on Services |
| AFTA | ASEAN Free Trade Area |
| APEC | Asia-Pacific Economic Cooperation |
| ASEAN | Association of South-East Asian Nations |
| BTA | Bilateral Trade Agreement |
| CTPPP | Comprehensive and Progressive Agreement for Trans-Pacific |
| ENT | Economic Needs Test |
| EVFTA | European Union – Vietnam Free Trade Agreement |
| FTAs | Free Trade Agreements |
| GATS | General Agreement on Trade in Services |
| GATT | General Agreement on Tariffs and Trade |
| GDP | Gross Domestic Product |
| GSO | General Statistics Office |
| I-O | Input-Output |
| MFN | Most Favoured Nation |
| NAFTA | North America Free Trade Agreement |
| OECD | Organisation for Economic Co-operation and Development |
| RCEP | Regional Comprehensive Economic Partnership |
| RTAs | Regional Trade Agreements |
| STRI | Services Trade Restrictiveness Index |
| TFP | Total Factor Productivity |
| TPP | Trans-Pacific Partnership |
| UNCTAD | United Nations Conference on Trade and Development |
| VND | Vietnam Dong |
| WB | World Bank |
| WTO | World Trade Organisation |

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# Chapter 1. Introduction

It is widely acknowledged in the literature that the services sector has become increasingly important to the world economy, given the fact that the sector's share in the global GDP (Gross Domestic Product) and the share of services export in the global trade have continuously increased. Services have become more important for employment with the employment share of services in high-income countries at 74 per cent and about 44 per cent in the low and middle-income economies in 2019 (World Bank database).[1]

With the increasing importance of the global services sector, countries began to open their services markets by unilateral regulatory reform. Nevertheless, it was only from 1995 that the inclusion of services agreements in many regional and bilateral trade agreements worldwide began through the conclusion of the GATS (General Agreement on Trade in Services) as the first multilateral agreement to cover trade in services. The literature has however indicated the limited effectiveness of the GATS in reducing barriers to services trade (Adlung & Roy, 2005; Barth, Marchetti, Nolle, & Sawangngoenyuang, 2006; Hoekman & Messerlin, 2000; Hoekman, Mattoo, & Sapir, 2007; Mattoo, 2005), and the multilateral services negotiations in the WTO's Doha Round have not made any substantial progress.

In the case of Vietnam, in 2019, according to GSO (General Statistics Office) Vietnam, the services sector accounted for the largest share in Vietnam's GDP, at 41.64 per cent, and 40.78 per cent of employment, followed by manufacturing and agricultural sectors. The share of the services sectors in GDP and employment of Vietnam have increased gradually, which is opposite to the decreasing trend in the manufacturing sector and agriculture sector. Two distinctive features make Vietnam's liberalisation an interesting case. Firstly, Vietnam is a developing country with a transitional economy that has recently transformed from a centrally planned economy to a market-oriented economy. Unlike the case of large transitional economies, such as China and Russia, which have and have been well studied, there is a gap in the literature on the transition of smaller developing economies like

[1] See more at https://data.worldbank.org/indicator/SL.SRV.EMPL.ZS?end=2017&locations=VN-XD&start=1991&view=chart, accessed on 17 January 2021.

Vietnam. Secondly, joining the WTO (World Trade Organisation) after the formation of this organisation, Vietnam as an acceding member was requested to make more in-depth commitments than the existing regulations at the time of accession, and as such provides a useful case study of the impact of accession on services trade liberalization.

The impacts of the liberalisation of trade in goods on economic growth, trade and investment, employment, consumer welfare, productivity, and other socio-economic issues have been widely studied and recognised (Ben-David, 1993; Edwards, 1993; Kawai, 1994; Liu, Burridge, & Sinclair, 2002; Sachs & Warner, 1995; Wacziarg & Welch, 2008; Winters, 2004). However, less is known about the corresponding impacts of liberalisation in services trade. A number of factors could be in place, including the difficulty in quantifying the non-tariff barriers in services trade and the lack of sufficient data. Given the importance of the manufacturing sector and services sector, together with increasing recognition of the importance of services liberalisation, quantifying non-tariff barriers in services trade and empirically analysing the economic impacts of services liberalisation are important to both academics and policymakers.

The dissertation consists of four main Chapters. Chapter 2 provides a background on the services sector and liberalisation of trade in services. In this Chapter, I discuss the roles of services in the economy and the importance of services as inputs in other sectors. Core concepts in understanding the distinguishing features of services; types of barriers in services; an introduction to the GATS as the world's largest multilateral services trade agreement; and the services liberalisation path of Vietnam are also analysed in this Chapter. Chapters 3, 4, and 5 are three main empirical studies which examine the actual reform of the services sector in Vietnam and estimate the impacts of the reform on the productivity and employment of firms in the manufacturing sectors. The first study, presented in Chapter 3 serves as the center of this dissertation as it provides the key data inputs for the other two studies. Related literature is reviewed within the text of each study.

In Chapter 3, I quantify the non-tariff barriers that hinder services trade in selected services sectors of Vietnam in a numerical index – the so-called services trade restrictiveness index (STRI). A key feature of my index is that it is constructed in time series form, quantifying changes in restrictiveness over the 17-year period in which Vietnam's services trade liberalisation was influenced by its accession to the WTO. While most previous studies

quantify the non-tariff barriers in services based on commitments of countries in their free trade agreements, which do not necessarily reflect the actual level of restrictiveness, my quantification resolves this bias by basing STRI values on the actual regulations that are stated in the official legal documents. Each type of regulation is assigned a weight according to its assessed potential importance in restricting trade, and each individual regulation must be classified and scored according to whether it does restrict trade. The weighted scores are then aggregated to create a restrictiveness index for each services sector. In building the index on a time series basis each regulatory change is assessed as to whether it requires a change in the score of the relevant regulation, which in turn will affect the overall value of the restrictiveness index. The construction of the time series index thus involves the collection of detailed information on the evolution of regulations applying to each services sector over the study period of 17 years, from 2003 to 2019, an enormously complex and time-consuming task involving production of a comprehensive database recording the changes over the period of the regulatory barriers to the services trade of Vietnam in the selected sectors. The findings also suggest that the GATS played a substantial role in the reform of the services sector in Vietnam as an acceding WTO member, which contrasts with the results of earlier studies focused on the founding members. However, compared to developed economies in the OECD members, the study finds that Vietnam's services trade remains relatively highly restricted.

In the second study, presented in Chapter 4, I utilise three datasets including the services restrictiveness index constructed in Chapter 3, the dataset on manufacturing firms of Vietnam (the Vietnam Enterprises Survey-VES), and the input-output table of Vietnam. The purpose of this study is to estimate the impacts of services liberalisation on the productivity of manufacturing firms. The motivation of this study is that the manufacturing sector has played an important role in the economic development of Vietnam, but the earlier literature on determinants of productivity in the manufacturing sector has not touched on factors related to interaction with the services sector.

For the first time, my study investigates how the productivity of manufacturing firms responds to the expansion of reform in the services sector of Vietnam. I use the TFP (Total Factor Productivity) estimated using methodology from Olley and Pakes (1996) as my measure for productivity of manufacturing firms. The regressors of interest include a services linkage index and manufacturing linkage index constructed through the interactions

between the services restrictiveness index and the services input ratios in the manufacturing sectors and the manufacturing input ratios in the services sector. While the services linkage index represents the so-called forward linkage relationship in which services firms play the role as suppliers of intermediate inputs supplier to manufacturing firms, the manufacturing linkage index proxies for the backward linkage in which services firms play the role of consumers of manufacturing products. The previous literature only examines the impacts of services reform on manufacturing firms' productivity through the forward linkage, thus possibly facing an omitted variable bias. For the first time, my study examines these kinds of impacts through both ways that the two sectors interact with each other. Controlling for reform in goods trade and heterogeneity factors among firms, the finding of analysis through the forward linkage, confirms the result of previous studies – that removing barriers to services trade positively affects the productivity of manufacturing firms. The impacts on state-owned firms are found to be stronger than on private domestic firms. In terms of firm size, small firms tend to benefit more from liberalisation of the services sector compared to medium and large firms. The results of analysis through the backward linkage show that more liberalisation in the services sector leads to a loss in productivity of manufacturing firms. The findings are robust through different robustness tests including controlling for endogeneity and using alternative productivity estimation methodologies.

In the third empirical study, in Chapter 5, I turn the focus to the impacts of liberalisation of trade in services on employment of manufacturing firms. The motivation of this Chapter is that in the past, the manufacturing sector tended to play the leading role in creating new jobs for the economy as it absorbed a large amount of labour moving from the agriculture sector. However, with the expansion of the services sector, it has become the most important sector in terms of employment. Labour has moved from the manufacturing and agriculture sectors to the services sector. The purpose of this study is to examine whether services liberalisation plays any role in this employment movement. I use similar datasets and the construction of a services linkage index and manufacturing linkage index as in Chapter 4. The main dependent variable in this study is the employment of manufacturing firms, which is extracted from the Vietnam Enterprises Survey. To the best of my knowledge, this is the first study looking at impacts of services liberalisation on employment in the manufacturing sector at a firm-level. Results from this Chapter show that through the forward linkage, reform in the services sector is associated with a decrease in employment of manufacturing

firms, while the opposite effect is found in terms of the backward linkage. The impacts' magnitudes are not equal among firms but depend on different features of firms, such as size and ownership. The findings hold true after resolving different endogeneity issues including omitted variable bias, subjectivity of the services restrictiveness index, potential lobbying behaviours of manufacturing sector, and the reverse causation from employment levels and input intensity – a component of the linkage indexes.

The rest of the dissertation is structured as follows: Chapter 2 provides background for facilitating a better understanding of services liberalisation and related core concepts in the dissertation. Chapter 3 is the central study in this dissertation. It analyses the general liberalisation path as well as services liberalisation in Vietnam, reviews the literature on methodology for building a service restrictiveness index, proposes the methodology to be used in the study, which is then used to create and present the time series indexes for the selected sectors. Based on the results in Chapter 3, Chapters 4 and 5 empirically investigate the impacts of liberalisation on productivity and employment of the manufacturing sector at a firm-level. Chapter 6 summarises the conclusions from the dissertation and provides policy implications.

# Chapter 2. Services sector and services liberalisation

This Chapter aims to facilitate a better understanding of the core concepts of services liberalisation in this dissertation. It provides a background on the services sector and its roles in the economy, liberalisation of trade in services, distinguished features of services, an introduction of the GATS, and types of barriers in services. The Chapter also discusses the services sector and the liberalisation path of Vietnam.

## 2.1. The role of services

### *2.1.1. Share in Output and Employment*

The rapid transformation of technology and greater movement across borders of people have increased the tradability of services. As a result, the contribution of services in GDP and employment has also increased along with the increase of per capita income (Eschenbach & Hoekman, 2006b). The World Bank latest data shows that the share of the services sector in the global GDP continuously rose since 1960 and reached almost 65 per cent in 2018, compared to the opposite trend of agricultural and manufacturing sectors. Services are also important for employment, with the employment share in high-income countries at 74 per cent and about 44 per cent in the low and middle-income economies in 2019. Employment in traditional sectors, including agricultural and manufacturing sectors, has been shifted to the services sector.

In Vietnam, the services sector was considered to be a driving factor in the national economic plan to become a modern economy by 2020. According to GSO Vietnam, from 2005 to 2019, the services sector grew on average 7.3 per cent per annum which is higher than the average GDP growth rate of 6.4 per cent per year.[2] Regarding export and import, the ratio of export services in GDP increased slowly from 7.4 percent to 7.9 percent from 2005 to 2019; in the same period, the share of import services in GDP of Vietnam also rosemoderately from 7.7 percent to 8.2 percent.[3] In terms of employment, in 2019, the share

[2] Compiled from data on http://gso.gov.vn.
[3] Compiled from data on http://gso.gov.vn.

in the labour force of the services sector was 40.78 per cent, which is much higher than the 34.45 per cent of the agricultural sector and 20.65 per cent of the manufacturing sector.

Despite the importance of the services sector to Vietnam's economy, according to ASEAN (Association of South-East Asian Nations) statistics, compared to other ASEAN counterparts, the share of the services sector in the GDP of Vietnam is the lowest. According to ASEAN statistics, in 2018, services sector represented between 38 per cent and 69 per cent of ASEAN Member States' GDPs. Figure 2.1 shows the contribution of services to the GDP in ten ASEAN Member States. Among these States, Singapore has the highest share of services in GDP (69 per cent) while the lowest figure is the share of services sector in GDP of Vietnam (38 per cent). This figure for Vietnam is even lower than less developed countries such as Lao People's Democratic Republic, Cambodia, and Myanmar.

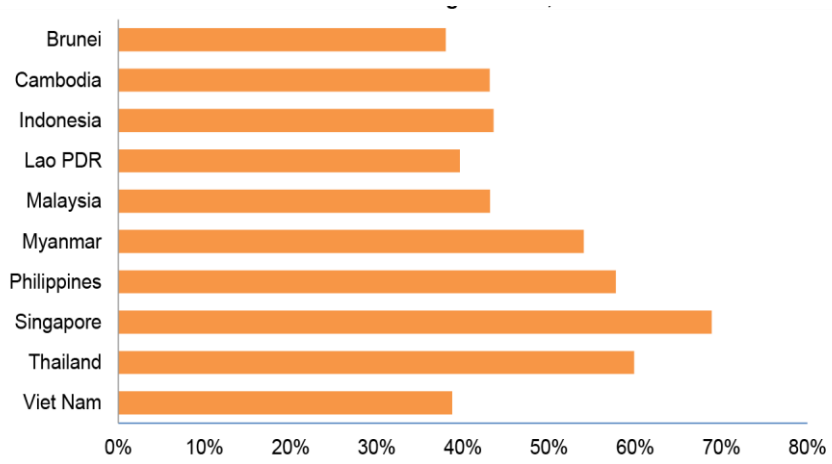


**Figure 2.1. Contribution of services in GDP, ASEAN member states, in 2018**

*Source: ASEAN statistics.*[4]

[4] Achieved from *https://asean.org/asean-economic-community/sectoral-bodies-under-the-purview-of-aem/services/*. Accessed on 17 January 2021.

### *2.1.2. Services trade and services as input of other sectors*

In terms of international trade, according to the World Trade Report 2019, since 2005, on average, trade in services has grown at a higher rate than trade in goods, at the rates of 5.4 per cent and 4.6 per cent per year, respectively. In 2015, commercial services export reached 4.8 trillion USD with 31 per cent coming from developing countries, 2.2 per cent from transition economies and 66.7 per cent from developed countries. Services export has also shown its importance in trade as its share in the total world trade has grown from around 9 per cent in 1970 to over 20 per cent in 2014. The share of services export in the world's GDP has also gone up from 1 per cent in 1970 to about 6 per cent in 2014 (Loungani, Mishra, Papageorgiou, & Wang, 2017). Additionally, in terms of trade on a value-added basis, the services sector plays a much greater role in the world export as the sector provides inputs to the final outputs of manufacturing and agricultural sectors. The point is discussed further in this section.

In the case of Vietnam, according to data from GSO Vietnam, between 2005 and 2019, services export grew at a higher rate than the growth rate of GDP, at about 10.8 per cent. In 2005, services export of Vietnam was worth 4.3 billion USD, reaching 20 billion USD in 2019. Among services sub-sectors, tourism has been leading the sub-sectors in export, followed by transport, finance, and telecommunications. In terms of import, services import grew at a slightly faster rate than services export at an average rate of 11.5 per cent per annum during 2005-2019. Among sub-sectors, transport has been the leading sub-sector in import, followed by tourism, insurance, and finance. Moreover, different from the trend of global trade, in Vietnam, during the current period from 2005 to 2019, export of goods increased faster than export of services, with an average growth rate of 16 per cent annually. Similarly, import of goods also grew faster than import of services in the same period, at a rate of 14.8 per cent annually.

Not only significant to the economy, services also play an essential role in almost all stages of the manufacturing process. Research and development (R&D) services, for example, are involved in not only the first stages of the production process but also in other stages such as marketing and distribution (Nordas, 2010). The backbone services including finance, transportation, and telecommunications are crucial to all sectors, from agriculture and manufacture to services. According to the United States International Trade Commission, in 2011, on average in the US, 25.3 per cent of the intermediate inputs consumed by the

manufacturing sector was provided by the services sector, and in some industries, such as computer and electronic products, this per centage reached approximately 50 per cent. Service costs are embedded in the production cost and price of a final product. Therefore a reduction in services cost would result in a lower price of the final product, stronger competition, and greater consumer welfare. Figure 2.2 demonstrates the importance of services as inputs to many industries, which is reflected by the share of services value added in the global export of agriculture and manufacturing industries. It shows a similar pattern across 20 industries, in which the services value added in export is split into almost three equal shares. While distribution services accounted for the first share, business services (including telecommunications services, computer services, professional services, R&D services, consulting, advertising and marketing services, technical testing services, and environmental services) took the second share, and transport, finance, and other services accounted for the last share.

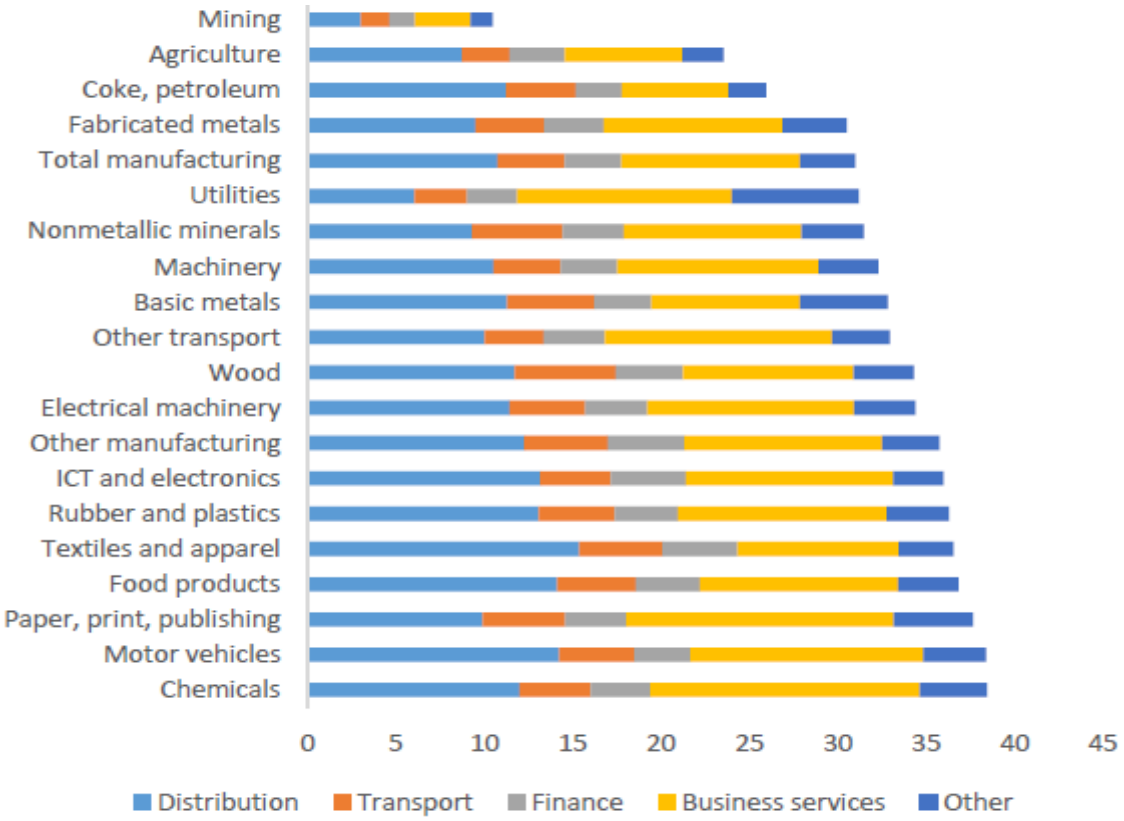


**Figure 2.2. Decomposition of services value added in the world gross exports by industry, per cent, 2011**

*Source: Heuser and Mattoo (2017) adopted from Miroudot and Cadestin (2017)*

It would be ideal to develop a similar figure to Figure 2.2 for the case of Vietnam, unfortunately, the necessary information is not available. At the moment, there is only data on aggregate value of services value added in the gross exports of Vietnam. As provided by APEC, in 2011, the domestic services value-added share of gross exports in manufacturing of Vietnam is 9.5 percent, compared to 18.4 percent average of APEC members. The similar share in the case of foreign services value added for Vietnam is 19.9 precent, which is higher than the average rate of 13.9 percent for APEC members.

## 2.2. Services trade liberalisation and barriers to services trade

### *2.2.1. Why services trade liberalisation matters*

Liberalisation can take place in either a unilateral basis or based on agreement (Stephenson, Findlay, & Bosworth, 2002), and due to the limitation of resources, this study only focuses on liberalisation of services trade through an agreement mechanism and particularly, the GATS as the largest multilateral trade agreement on services.

Liberalisation of trade in services principally involves the removal of restrictive regulation elements in terms of market access and the application of national treatment. It is the process to ensure greater opportunities for foreign firms to penetrate the market of a different economy as well as to create a non-discriminatory and a fair business environment between domestic and international actors.

As discussed above, services are not only important to the trade in services alone but also play a critical role in the development of other economic activities. With access to efficient services, especially the backbone services like telecommunication services, transportation services, and financial services, any product can become more competitive. Furthermore, as in the theory of comparative advantage, countries would gain more by importing products (both merchandise goods and commercial services) for which they do not have a comparative advantage and exporting products for which they do. Increasing access to low-cost and high-quality services as intermediate inputs would increase the comparative advantages of manufacturing products, resulting in an improvement of the export of these products. Hence, with an increase in the role of services as an input of other sectors and the nature of international trade in services, liberalisation of the services sector is indeed important.

Furthermore, governments can track and control international trade in goods through customs at countries' borders, which allows them to impose tariffs on products easily. On the contrary, there is no actual border to control cross-border services. Therefore, restrictions on services trade are usually in the form of non-tariff barriers, which are government regulations. Due to the nature of services trade, the following section provides an understanding of the way that services are traded, the definition, as well as the classification of restrictions to trade in services.

### *2.2.2. Barriers to services trade*

#### *2.2.2.1.How service is traded*

Goods are tangible and can be seen, touched, or smelled. In most cases, producers and consumers of goods do not require direct interaction to make a transaction. Instead, goods are normally delivered indirectly from producers to consumers through a particular distribution channel such as stores, supermarkets, or the internet. In the case of using the internet, only order and payment transactions can be made online; it still requires the delivery of goods to the final consumer. Unlike goods, service is intangible; it cannot be seen, touched, or smelled. Further, a service can be transacted either when service providers and customers have face-to-face contact or indirect interaction via mail, internet, or telephone. For example, a student participating in a distance learning/online English program is indirect versus a patient visiting a hospital to see a doctor when they get sick. Even still, face-to-face interaction is more common in the services trade (Kox & Nords, 2007). Accordingly, the GATS divides services into four modes of supply.

Mode 1 Cross-border supply is when a service is supplied by a provider from a territory of a country to customers of another country. The most common method of this supply is using electronic delivery, such as through telephone, fax, internet, or post. Examples are an individual receiving legal consultation from a law agent abroad through email and telephone or a market research company providing research on a new potential product in country A to a retailer from country B. This mode of supply is vital to the services sector, including telecommunication services, professional services, business services, and courier services. According to the estimates of WTO in the World Trade Report 2019, in 2017, mode 1 contributed to about 27.7 per cent of services trade internationally.

Mode 2 Consumption abroad is defined as covers services flow where there is a movement of customers from the territory of a country to the territory of the service supplier to receive the service. For instance, a client from overseas comes to a lawyer's office for legal consultation, or a tourist from Vietnam goes to New Zealand for travelling and shopping. This mode of supply is important to services sectors such as tourism, health, education, and professional services. Mode 2 accounted for 10.4 per cent of the total world services trade in 2017 (WTO, 2019).

Mode 3 Commercial presence describes conditions under which foreign service suppliers may establish, operate, or expand a commercial presence, such as a branch, agency, or wholly-owned subsidiary in the member's territory. A bank opening branches overseas to provide credit and loan services or a retail venture partnering with a local distributor to open a joint-venture supermarket abroad are examples of mode 3. It is an essential method of supply of financial services, oil, gas and mining services, telecommunication services, distribution services, and transportation services. In 2017, this mode of supply covered about 58.9 per cent of services trade internationally (WTO, 2019).

Mode 4 Presence of natural person refers to the movement of persons from the territory of a country to the territory of another country to provide a certain service. These persons can be self-employed and go abroad temporarily to supply their services, or they can be employed by a services supplier and present to the company to fulfil a service contract in foreign markets (refers to juridical contractual service supplier). In another case, mode 4 is the movement of employees of a services provider, which has a commercial presence in another country's territory, to supply service for this company's branch such as intra-corporate transferees (Chang, Karsenty, Mattoo, & Richtering, 1999). In 2017, this mode of supply accounted for 2.9 per cent of services trades internationally (WTO, 2019). It is important to information technology services, professional services, construction services, hospitality services, and after-sales-related services.

*2.2.2.2.Types of restrictions in services*

Dee and Hanslow (2000), and McGuire and Findlay (2005) classify barriers to services trade into two types: barriers applied to the establishment/entry and the on-going operation of firms; and discriminatory and non-discriminatory restrictions.

*Establishment/Operation restrictions:* Establishment restriction is regulation that affects the ability of service suppliers to establish physical stores and provide services through those stores. On-going operation restriction is regulation that affects the operation of a service provider after it has successfully entered the market.

These two types of restrictions can affect both foreign and domestic service suppliers. To the foreign suppliers, regulations on entry restrict them from establishing a commercial presence (mode 3 in the GATS) such as subsidiaries in a foreign country's territory and providing services through these subsidiaries. For example: regulations on maximum foreign equity, ownership, the use of commercial land, legal entity form, and the number of foreign employees for foreign suppliers. For both domestic and foreign suppliers, regulations affecting entry of them to the market can be required in a minimum legal capital, professional certificates, or a number of qualified employees.

On the other hand, restrictions on on-going operation are regulations imposed on service suppliers after they have entered a market and begun supplying services in the market. Similar to restrictions on entry, restrictions on on-going operation can also affect both the domestic and foreign service suppliers. To foreign suppliers, on-going operation restrictions can be requirements on the nationality of the board of directors, test on the labour market, or a taxation policy that is in favour of domestic firms. For both domestic and foreign suppliers, on-going restrictions are, for instance, requirements on performance, accounting rules, advertisement, or procurement.

Depending on the features, importance, and sensitivity of each sector, the number and types of restrictions are varied across sectors. For instance, during operation, distribution service suppliers are usually restricted by regulations such as town planning and zoning, land ownership, opening hours, import licensing, promotion of retail products, quality standards, price controls, and requirements on management (Arkell, 2010; Cattaneo, Engman, Saez, & Stern, 2010). Meanwhile, logistics services providers likely face restrictions on customs documentation, customs brokers, local employment requirements, cargo reservation laws, freight forwarder, and hours of operation (De Souza, Goh, Gupta, & Lei, 2007; Hollweg & Wong, 2009).

*Discriminatory and Nondiscriminatory restrictions:* Discriminatory restrictions apply only to foreign suppliers and bring them less favourable business conditions than domestic

suppliers. These can be either restrictions on entry or ongoing operation of firms. By contrast, non-discriminatory barriers restrict both domestic and foreign suppliers on an equal basis. Because of this feature, discriminatory restrictions can be interpreted as GATS limitations on national treatment, while nondiscriminatory restrictions are those barriers to market access (McGuire & Findlay, 2005). In practice, restrictions are combinations of each item in the two groups as described in Table 2.1.

The government imposes regulations on foreign service suppliers and on both foreign and domestic suppliers to protect consumers, maintain competition in the market, and to protect domestic suppliers. However, besides serving these purposes, regulations also create costs for both foreign suppliers and domestic suppliers. According to Arkell (2010), while restrictions on entry cause the largest burden to foreign firms, on-going operation restrictions create a smaller effect because the incurred costs can be partially transferred to customers. Also, foreign service suppliers have less unfavourable conditions created by the business restrictions since many of these restrictions are also applied to local suppliers. The adverse effects of government regulations can be either cost-creating/cost-increasing or rent-creating/price-increasing (Adlung & Roy, 2005; Bottini, Marouani, & Munro, 2011; Dee, 2001; Kalirajan, 2000; Nguyen-Hong, 2000). While the former prevents new potential firms or existing firms from increasing business efficiency and pushing up costs, the latter protects domestic and incumbent foreign firms from competition and allows them to charge a price markup over the marginal costs.

**Table 2.1. An example of barriers affecting services trade (in the distribution services)**

| | **Apply for entry/establishment** | **Apply to ongoing operation** |
|---|---|---|
| **Discrimination** | A joint-venture with a domestic partner(s) is required, and foreign capital contribution shall not exceed 49 per cent. From second retail outlets, the Economic Need Test requirement is applied. | Foreign insurance firms not permitted to offer certain types coverage. |
| **Non-discrimination** | Retail banks require maintaining a minimum level of capital. | Retail shops are not allowed to open after 12.am. |

*Source. Author, adapted from Francois and Hoekman (2010)*

## 2.3. The liberalisation of trade in services

The focus of this study is thus on Vietnam's liberalisation of services trade through the GATS, an agreement mechanism which is itself the largest multilateral trade agreement on services. The GATS also provides the framework used in many FTAs (Free Trade Agreements), including the majority of the FTAs of which Vietnam is now a member.

The following section introduces the GATS and the accession process of the GATS, which is essential to understand the difference between Vietnam as an acceding member and the original members of the WTO. It then reviews the literature on the effectiveness of the GATS to provide context to support the research question of this dissertation that despite the typical ineffectiveness of the GATS in generating liberalisation, the GATS has a significant stimulus to facilitating services trade liberalisation of Vietnam. The extent of Vietnam's 'GATS-driven' liberalisation is explored and analysed in detail in Chapter 3.

### *2.3.1. Introduction to the GATS*

The GATS was created and came into force in January 1995. It was a major achievement of the Uruguay Negotiation Round. The GATS was the first multilateral trade agreement to cover the services sector. As stated in the preamble of the GATS, it serves the purpose of expanding trade 'under conditions of transparency and progressive liberalisation and as a means of promoting the economic growth of all trading partners and the development of developing countries' (WTO, 2005, p.3).

There is no specific definition of services trade in the GATS but depending on the movement of services itself, the service consumer, and the service supplier, the GATS categorises services trade into the four modes of supply. These are mode 1, cross-border (movement of service); mode 2, consumption abroad (movement of service consumer); mode 3, commercial presence; and mode 4, movement of natural person (the movement of service supplier). A detailed explanation of these modes is provided in section 2.2.2.1.

The GATS is structured into 29 articles and eight annexes. In terms of sector coverage and for the purposes of structuring commitments, the GATS uses a classification system which comprises 12 core service sectors including business services (including professional services and computer services); communication services; construction-related and engineering services; distribution services; educational services; environmental services;

financial services (including insurance and banking); health-related and social services; tourism and travel-related services; recreational, cultural, and sporting services; transport services; and other services. These 12 sectors are then divided into 160 sub-sectors (using the CPC of the United Nations) which are subjected to each member's schedule of commitments across market access and national treatment limitations.

In the GATS, restrictions are divided into two types, market access and national treatment. There is no clear definition of market access. Article XVI of the GATS lists six possible kinds of limitations which a member can impose on a foreign service supplier. On the other hand, Article XVII of the GATS defines national treatment as per conditions and limitations set out in a member's schedule of commitments; the member cannot treat the foreign providers less favourably than the way domestic providers are treated. It can be interpreted that there is no discrimination between the domestic and the foreign service suppliers. Limitations on market access and conditions for national treatment can affect services trade in all modes of supply.

### *2.3.2. Accession to the WTO (the GATS)*

After the agreement founding the WTO in 1994, 128 existing members of the GATT (General Agreement on Tariffs and Trade) who had signed the GATT as contracting parties and the new 'WTO agreement' officially became members of the WTO and the GATS (Grynberg, Ognivtsev, & Razzaque, 2002). 'Any state or customs territory having full autonomy in the conduct of its trade policies is eligible to accede to the WTO on terms to be agreed between it and WTO Members'(Article XII of the WTO Agreement). However, the condition so-called 'on terms to be agreed' generates a long and tough negotiation process. The applicant is required to go through two stages of negotiation – multilateral stage and bilateral stage.

In the multilateral stage, the applicant's government submits a memorandum covering its existing trade policy to the Working party for examination and replies to all the possible questions from WTO members. The purpose of this examination is to satisfy the existing members that the applicant's policies are consistent with meeting its anticipated WTO obligations, and/or to identify policy changes which are needed to satisfy this condition which can then be written into the applicant's terms of accession.

In the bilateral stage, individual WTO members can request to negotiate bilaterally with the applicant's government to secure liberalisation commitments that they are required to make as the 'price' of accession; the applicant country is not able to make any demand in return from other members of the WTO (Grynberg & Joy, 2000; Lanoszka, 2001). As a result of this process, commitments undertaken by the acceding members are always greater than those of founding members with a similar level of development (Grynberg et al., 2002). Grynberg et al. (2002) confirm this finding by employing a statistical tool to compare the level of commitment in the GATS of 119 WTO founding members and 13 acceding members. Likewise, as acknowledged by the former Director-General of the WTO, Pascal Lamy, 'the price of joining the WTO was increasing every year' and 'for the simple reason that the cost of not belonging to the club increases with each accession' (cited in Kirkbride, 2007).

In the case of Vietnam, during eleven years of negotiation, Vietnam went through six multilateral negotiation rounds and negotiations with 28 individual WTO members who requested bilateral negotiations. Among those, negotiations with the USA and the EU were the most difficult and the most important. However, it is worth noting that the negotiation process and the implementation of the Vietnam-US BTA (Bilateral Trade Agreement) in 2000 was crucial to the accession process of Vietnam to the WTO. The reason is that in signing the BTA with the US, Vietnam was already required to comprehensively reform its legal, regulatory, and economic system to meet the standards of the WTO (Davis, 2006; Davis, 2012). The negotiation and implementation of the BTA was useful practice for Vietnam during the negotiation process to join the WTO.

### *2.3.3. Scheduling approach of trade agreements*

The factor which decides the scope of a trade agreement is the scheduling approach. In the case of services, it covers sectors (or subsectors) to which the obligations apply or which sectors are not included in commitments on market access and national treatment. In practice, there are three scheduling techniques: positive list, negative list, and hybrid list. Hybrid list approach is the combination of the positive list and negative list approaches and was applied in the Trade in Services Agreement (TISA) negotiations. Since all of the trade agreements of which Vietnam is a member follow either positive list or negative list

approaches, and Vietnam has not yet been involved in any hybrid style FTA negotiations, this following section focuses only on the positive and negative list scheduling approaches.

There are two main ways of creating liberalisation in a services trade agreement: loosening market access conditions for foreign investors and promoting national treatment. The former refers to conditions under which a government allows foreign firms access to the domestic market. The latter applies to a situation when foreign firms are treated no less favourably than the local firms. Commitments concerning market access and national treatment are two key categories in any trade agreement negotiations.

*2.3.3.1.The GATS: 'Positive list'*

The GATS is generally regarded as the archetypal positive list. In the GATS, the country chooses (positively lists) sectors/subsectors in which it will undertake market access and national treatment commitments, and negatively lists all exceptions or conditions to these commitments which the country wants to apply.

Sectors which are not listed might be severely restricted, and there is no commitment or reservation to commit in the future. For the positively listed sectors, there are three alternative schedule entries: None, Unbound, and a list of all the limitations retained on market access and national treatment. 'None' is interpreted as meaning that member countries do not wish to retain and any restrictions and commit to not issuing any new restrictions in the future. Unbound means that there are no commitments to liberalise in a particular sector and discipline(s) (Krajewski, 2003). Otherwise, member countries must list all the limitations they are retaining on market access and national treatment and these conditions are often recorded as 'None, except…' or 'Unbound, except…'. An example is given in Table 2.2.

Even if a sector/sub-sector in each mode of supply is listed, country members can still decide to not further open a certain mode of supply of a sector compared to the current openness by designating it as a completely unbound commitment. In this regard, the positive list approach agreement is not transparent for those sectors and measures which are not fully liberalised. The extent of liberalisation in a positive list agreement depends on the number of sectors/modes of supply scheduled as None, the extent and relationship to actual policy of limitations scheduled as applying to all sectors (or scheduled horizontally), and the extent of sectors/modes of supply scheduled as Unbound.

Therefore, as nature of the positive list approach, there is no necessary connection between the restrictiveness of scheduled limitation and actual policy. Scheduling a limitation that is less restrictive than actual policy does not require the member to take any policy action to meet its commitment, and leaves it free to introduce new restrictions later, provided that they are no more restrictive than the schedule limitation. However, in the case of the WTO acceding members who went through a number of multilateral and bilateral accession negotiations, as discussed in section 2.3.2, they were usually required to make greater commitments than those of founding members. In addition, implementation of these commitments usually requires acceding members to reform their current policy.

**Table 2.2. Example of Vietnam's sector-specific commitments in the GATS**

| Mode of delivery: (1) Cross-border supply (2) Consumption abroad (3) Commercial presence (4) Presence of natural person | | | |
|---|---|---|---|
| **Sectors and sub-sectors** | **Limitation on Market Access** | **Limitation on National Treatment** | **Additional Commitments** |
| **3. CONSTRUCTION AND RELATED ENGINEERING SERVICES** | | | |
| A. General construction work for building (CPC 512)<br><br>B. General construction work for civil engineering (CPC 513)<br><br>C. Installation and assembly work (CPC 514, 516)<br><br>D. Building completion and finishing work (CPC 517)<br><br>E. Other (CPC 511, 515, 518) | (1) Unbound.<br>(2) None.<br>(3) None, except:<br><br>For the period of 2 years from the date of accession, 100% foreign-invested enterprises could only provide services to foreign-invested enterprises and foreign-funded project in Vietnam.<br><br>Foreign enterprises have to be juridical persons of a WTO member.<br><br>After 3 years from the date of accession, branching is allowed.<br><br>(4) Unbound, except as indicated in the horizontal section. | (1) Unbound.<br>(2) None.<br>(3) None, except that the chief of the branch has to be a resident in Vietnam.<br><br>(4) Unbound, except as indicated in the horizontal section. | |

*Source: Adopted from Schedule of special commitments of Vietnam – Working party on the accession of Vietnam, WTO, WT/ACC/VNM/48/Add.2.*

Despite the drawbacks mentioned above, a positive list approach can result in gradual liberalisation and have tended to be preferred by developing countries that are not ready to open important and sensitive sectors, or by concerned countries to reserve significant 'policy space' to allow for possible subsequent policy changes. Because many, though by no means, all countries that fall into this approach have used it in the GATS, a positive list approach has been applied to most RTAs (Regional Trade Agreements) involving developing countries (Stephenson, 2015).

*2.3.3.2.Negative list*

In a negative list approach or a top-down approach, which originated in and was inspired by NAFTA (North America Free Trade Agreement), countries commit to full national treatment and market access in their domestic service markets, except sectors which are included in a specific list of reservations and restrictive measures that are listed as existing non-conforming measures (Annex I), and existing non-conforming measures, as well as reserved rights for new measures in the future (Annex II). In a negative list agreement, typically, mode 3 is covered in the investment Chapter, while mode 4 is covered in a separate Chapter or annex, and commitments covered in the services Chapter relate to mode 1 and 2.

In Annex I, by sector, countries list the restrictions on market access and national treatment that they reserve the right to maintain. However, in listing a measure in Annex I, countries are in effect committing to a standstill condition, which guarantees that such measures cannot be made more restrictive in the future. Annex II lists reservations for sectors and activities that member countries reserve the right to maintain existing restrictions and to introduce new restrictions in the future.

Sectors and measures which are not mentioned in Annex I and Annex II are subject to full market access and national treatment. Therefore, quality of a particular trade agreement following the negative list approach depends on the length and the substance of Annex I and Annex II. The shorter and less significant the Annex I and Annex II, the greater liberalisation would be generated. Table 2.3 below provides an example on a schedule of commiments in a negatvie list FTA of Vietnam – the TPP.

Moreover, in a negative list scheduling agreement, a member country can decide to engage in a so-called 'ratchet' clause which refers to a situation where a member country unilaterally makes the market more open than it is at the time of the agreement and this

condition cannot be reversed. This mechanism can facilitate a progressively higher level of liberalisation.

Another factor which makes a negative list approach agreement more transparent than a positive list approach agreement is that member countries have to list all the remaining existing measures which affect national treatment and market access of foreign suppliers. This makes a negative list agreement easier for service suppliers to understand and utilise its benefit. Meanwhile, member countries are required to be more careful in preparation for tough negotiations.

**Table 2.3. Example of Vietnam's schedule of commitments in TPP**

| **Annex I** | | **Annex II** | |
|---|---|---|---|
| **Sector:** | Maritime Transport Services | **Sector:** | Audio-visual Services |
| **Sub-sector:** | Passenger transportation (CPC 7211)<br>Freight transportation (CPC 7212 | **Sub-sector:** | Sound recording |
| **Obligations Concerned:** | National Treatment (Article 9.4)<br>Senior Management and Boards of | **Obligations Concerned:** | National Treatment (Article 9.4) |
| **Level of Government:** | Central | **Description:** | Investment :<br>Vietnam reserves the right to adopt or maintain any measure with respect to sound recording services except that it shall permit foreign ownership of up to 51 per cent in enterprises engaged in sound recording. |
| **Measures:** | Administrative measures | | |
| **Description:** | Investment:<br>Foreign investment to supply maritime passenger and freight transportation services under the national flag of Vietnam may not be supplied except through a joint-venture or the purchase of shares in a Vietnamese enterprise, with foreign equity not exceeding 49 per cent. In addition, foreign seafarers may not exceed one-third of total employees of the ships. The Master or first chief executive must be a Vietnamese citizen. | | |

*Source: Vietnam's commitments in TPP.*

### *2.3.4. GATS scheduling approach and importance of the GATS*

In a GATS schedule, there are two types of commitments: horizontal commitments, where the measures listed relate to all sector; and sector-specific, which relates to specific sectors. First, the horizontal commitments that apply to all sectors could be very important as it could involve very substantial restrictions such as conditions relating to ownership or entry of business personnel. Second, as mentioned above, the sector-specific commitments are also usually in forms of 'Unbound, 'None'; 'Unbound, except…', and 'None, except…'. These conditions are restrictions or barriers to market access and national treatment, including domestic legal regulations and policies that are imposed on foreign service suppliers in a specific mode of supply.

Based on the structure of GATS, the literature commonly argues that the GATS follows the positive list approach where countries compile a list of sectors/sub-sectors that they want to commit to, together with all exceptions or conditions to the commitments. However, Adlung and Mamdouh (2013), Hoekman and Sauve (1994), Fink and Molinuevo (2007), and Suave (2002) and UNCTAD (1999) argue that GATS-style commitment is not only compatible with positive list approach but also the negative list approach, which makes it a hybrid list agreement. They argue that commitments in the form of 'None, except' imply a negative list technique, as they specify what is not covered, while those in the form of 'Unbound, except' imply a positive list technique. However, compared to other RTAs which adopt a pure-negative list approach, such as NAFTA and TPP (Trans-Pacific Partnership) (now CPTPP- Comprehensive and Progressive Agreement for Trans-Pacific Partnership), the GATS does not include existing legal measures of member countries, nor the standstill and ratchet clauses. Likewise, while the Annex I of a negative list agreement guarantees that member countries cannot impose a more restrictive environment for foreign service suppliers than at the time of the agreement, the GATS provides a mechanism by which member countries can introduce new restrictions as long as there is no conflict with the current commitments (Fink, C. & Molinuevo, 2007). Further, based on Article XXI of the GATS, any commitment can be withdrawn or modified after three years from the time it came into force. Even this concession comes with a tight procedure; there are still chances for member countries to reverse commitments as well as tighten restrictions against foreign suppliers.

The discussion above shows that a negative list approach agreement seems to have more advantages than a positive list approach. Nonetheless, it is not necessarily the case that using a negative list approach as the scheduling technique will ensure greater liberalisation. In fact, the TPP, a negative list agreement which is expected to be a comprehensive and high standard agreement – a '21st century agreement' (Fergusson, McMinimy, & Williams, 2015), is subject to criticism that its commitments in services 'seldom go beyond countries' applied policies and the explicit liberalisation resulting from the agreement is limited only to 'a few countries and a few areas' (Gootiiz & Mattoo, 2017). This conclusion was made after a comprehensive comparison between applied policies of 12 TPP-member countries in 2008 (after the beginning of the TPP negotiations) and in 2015 (after the conclusion of the TPP) and the TPP countries' commitments at those times.

Therefore, it is not all about the scheduling technique that defines the quality of a trade agreement, but also the sector's coverage as well as substance of the commitments. The key things that make actual progress on liberalisation are changes in policy.

In this sense, the GATS has been criticised by a number of scholars (Adlung & Roy, 2005; Barth et al., 2006; Hoekman et al., 2007; Hoekman & Mattoo, 2008; Mattoo, 2005). After analysing structure, strengths, and weaknesses of the GATS, Hoekman (1996) concludes that the GATS did not make any progress in facilitating actual liberalisation since its specific commitments did not go beyond the existing level of liberalisation in existing policies of member countries. Consequently, there were no changes required in order to fulfil these countries' commitments in the GATS. Furthermore, unilateral liberalisation of the GATS members since the foundation of the GATS in 1994 have also gone much deeper than the existing commitments in the GATS (Fink, C. & Molinuevo, 2007). These conclusions are supported by the work of Barth et al. (2006). By comparing the specific commitments in GATS and actual regulations in Financial services of 123 countries, the authors discovered that these countries did not have to make any further reduction on restrictions because their markets at the time they became members of GATS were already more open than what their commitments in the GATS could make.

With regards to FTAs and PTAs (Preferential Trade Agreements), there are few studies comparing countries' service commitments in FTAs and PTAs with their commitments in the GATS. The proliferation of trade agreements started after the formation of the GATS, and even though most of the FTAs and PTAs in the 1990s and 2000s used the GATS

frameworks, the literature still found that some FTAs/PTAs have wider sectoral coverage of services than in the GATS because these agreements applied a negative list scheduling technique (Fink & Jansen, 2009; Roy, Machetti, & Lim, 2007). However, the study of Roy et al. (2007) also reveals that the substance of countries' commitments in the PTAs is no deeper than those in the GATS. Fink and Molinuevo (2007) concluded a similar result after investigating 25 FTAs in East Asia, of which 15 FTAs followed the GATS schedule of commitments approach. More surprisingly, even though many PTAs claim to cover more sectors than GATS, a lot of these are found to have GATS-minus elements which evoke less liberalisation than the GATS (Adlung & Morrison, 2010; Fukunaga & Ishido, 2013). This is also true in the case of Vietnam where almost all FTAs of Vietnam (except the CPTPP) is a GATS-style agreement and the commitments in the FTAs hardly go beyond what Vietnam committed to in the GATS (Vu, 2013).

The key to assessing liberalisation is the extent to which regulations are changed to eliminate restrictive elements. However, most of the literature often compares the level of commitments in a trade agreement on both country-specific cases and a cross-countries basis; there has been very little research exploring the actual regulatory changes generated by trade agreements.

### *2.3.5. Liberalisation of trade in services of Vietnam*

#### *2.3.5.1.Liberalisation path of Vietnam and accession into the WTO*

Vietnam has experienced more than a century of war colonisation. The country was heavily damaged by the Vietnam War from 1955 to 1975. After unification in the 1980s, it was among one of the poorest countries in the world and experienced an economic crisis with spectacularly high rates of inflation, unemployment, and poverty.

This critical situation drove Vietnam to transform from a state-planned economy to a socialist-oriented market economy. This renovation was called 'Doi Moi' in Vietnamese and began in 1986. Vietnam officially issued a law on foreign investment in 1987 – the highest legal document on investment by foreigners. With this trigger, together with the end of the embargo opposed by the US in 1994, Vietnam started opening up further to the regional and international market. The milestones of this integration process were the memberships of ASEAN in 1995 and APEC (Asia-Pacific Economic Cooperation) in 1998.

Surprisingly, despite the history of the Vietnam War, Vietnam signed its first bilateral trade agreement with the US in 2000, and it became one of the most critical steps in contributing to the success of Vietnam's lengthy negotiation to become a member of the WTO. Being a member of ASEAN, Vietnam signed AFTA (ASEAN Free Trade Area) in 2001 and other multilateral FTAs between ASEAN with partners including ASEAN-China in 2002, ASEAN-Korea in 2007, ASEAN-Japan in 2008, ASEAN- India in 2009, ASEAN- Australia – New Zealand in 2010, and RCEP (ASEAN+5) in 2020. As for bilateral FTA, Vietnam signed an economic partnership agreement with Japan in 2008; FTA with Chile in 2011; FTA with Korea in 2015; FTA with the Eurasian Economic Union in 2015 and more recently, CPTPP in 2018; FTA with the European Union in 2019 (EVFTA); and FTA with the United Kingdom in 2020. The integration of Vietnam into the world economy has been continuing with negotiations of FTA between Vietnam and EFTA (European Free Trade Association) States (including Norway, Switzerland, Iceland, and Liechtenstein), and between Vietnam and Israel.

Above all, the most crucial integration of Vietnam so far is indeed the accession to the WTO in 2007 after 11 years of negotiation. The reason is not only because the WTO is the global international trade organisation of more than 200 member countries but in joining the WTO, Vietnam was forced to transform and improve its legal system and policy regime. These changes would then play a foundational role in stimulating the socio-economic development of Vietnam. One of the main reasons is that as an acceding member who joined the WTO after the formation of this organisation in 1994, Vietnam had to go through a long process of negotiations and was required to make greater commitments than the comparable founding members (WTO, 2006). Therefore, a new and accurate quantification of the restrictiveness of Vietnam's services sectors is needed to investigate how far the nature of the accession process and characteristics of Vietnam as a transitional economy influenced the effectiveness of the GATS in the domestic regulatory reform and reduced barriers in the services sector of Vietnam, notwithstanding more negative assessments that have been made about the real impact of multilateral GATS negotiations in reducing services trade barriers. Chapter 3 provides an empirical analysis on the extent to which implementation of the GATS generated actual reform in the selected services sector of Vietnam.

*2.3.5.2. Liberalisation of trade in services of Vietnam*

At a regional level, joining ASEAN in 1995, Vietnam signed AFAS, which aims to remove restrictions on trade in services and enhance the free flow of trade in services within the region and liberalise services trade based on the GATS-plus principles. At a bilateral level, as mentioned in section 2.3.5.1, Vietnam-US BTA was the first comprehensive bilateral trade agreement of Vietnam, which included an agreement in the services sector. In 2007, Vietnam became a member of the WTO and signed the GATT and GATS. Later on, as a member of ASEAN, Vietnam also became involved in various ASEAN-related initiatives covering services trade, for example, AFAS and some ASEAN, plus FTAs such as ASEAN-China, ASEAN-Japan, ASEAN-Australia and New Zealand.[5] The commitments in the services sector of Vietnam in later bilateral and multilateral FTAs are consistent with, and hardly go beyond Vietnam's commitments in the GATS (Vu, 2013). Therefore, it is reasonable to treat Vietnam's internal service-liberalising measures in the period covered by this dissertation as responding primarily to its commitments under the GATS, and to some extent also the bilateral trade agreement with the US, which was considered a 'stepping stone toward the accession of Vietnam to the WTO' (Davis, 2006; Davis, 2012; Toohey, 2008).

However, by comparing commitments on services of Vietnam in the GATS, European-Vietnam Free Trade Agreement (EVFTA), and TPP, Nguyen (2017) concludes that Vietnam's commitments on market access in the TPP and EVFTA are higher than those in the WTO. The sectors are business services (five subsectors), communications services (two subsectors), distribution services (three subsectors), environmental services (four subsectors), and transport services (four subsectors). Further, in the TPP (now superseded by CPTPP) – a negative list approach agreement, Vietnam remains with the highest level of commitment, followed by EVFTA and the GATS – the positive list approach agreements. Nevertheless, compared to commitments in the TPP, Vietnam's schedule of commitments in EVFTA are higher in several subsectors such as social services and health-related services, maritime transport services, and in-flight meal serving services. These

[5] Table 2.4 describes the current FTAs covering services sector, in which Vietnam is a member.

developments are beyond the period covered by this dissertation. Assessing the extent to which these two agreements have required further services trade liberalisation would be an interesting next step for further research.

Despite the importance of the services sector in the economy, little is known about the economic impacts of liberalisation – especially in developing countries. Particularly, in the case of Vietnam, many studies have been conducted to evaluate the impact of the WTO accession on trade in goods and investment in the manufacturing sector. Likewise, as a developing country, the import demand for the economy and the need for retaining a stable macroeconomic situation require Vietnam to pay more attention to its international trade. Hence, comprehensive research to quantify the effect of the WTO accession as well as liberalisation to Vietnam's services sector is extraordinarily appealing and desirable.

**Table 2.4. Current FTAs covering services of Vietnam**

| | **FTAs** | **Date of entry into force (Services agreement)** |
|---|---|---|
| **1** | Vietnam- UK | 31/12/2020 |
| **2** | Vietnam-EU (EVFTA) | 08/06/2020 |
| **3** | AFAS (10th Package) | 09/02/2019 |
| **4** | CPTPP (TPP11) | 14/01/2019 |
| **5** | Vietnam- Eurasian Economic Union | 5/10/2016 |
| **6** | Vietnam-Korea | 20/12/2015 |
| **7** | ASEAN- India | 01/7/2015 |
| **8** | ASEAN – Australia, New Zealand | 01/001/2010 |
| **9** | Vietnam- Japan | 01/10/2009 |
| **10** | ASEAN-Korea | 5/2009 |
| **11** | ASEAN- Japan | 01/12/2008 |
| **12** | ASEAN- China | 7/2007 |
| **13** | GATS | 11/1/2007 |
| **14** | Vietnam- US BTA | 10/12/2001 |

*Source: WTO center, Vietnam.*

# Chapter 3. Assess regulatory barriers to trade in services

## 3.1. Introduction

The next three Chapters focus on an assessment of Vietnam's services trade liberalisation in selected sectors over the period before and after Vietnam's WTO accession and the impact of this liberalisation on Vietnam's economic performance in the areas of manufacturing productivity and employment.

The selected sectors are commercial banking, insurance, telecommunications (fixed-line and mobile), maritime transport, road freight transport, and distribution services (commission Agents, wholesale, and retail). The rationale for this selection is the growing importance of these sectors in international trade as well as economic development [6](Fiorini & Hoekman, 2018; Hapsari & MacLaren, 2012; Mattoo, Subramanian, & Rathindran, 1999). More importantly, these services sectors provide crucial inputs to enhance the productivity of manufacturing firms (Arnold, Jens M., Javorcik, & Mattoo, 2011; Shepotylo & Vakhitov, 2015). While financial services provide crucial financial support for firms, telecommunications speed up the transaction process and reduce transaction costs. Also, distribution services play a bridging role to connect the producers to customers. Without transport services, goods cannot reach buyers in a cost-efficient manner. For that reason, these sectors are considered as the backbone sectors of the economy.

The assessment undertaken here must take account of the well-known reality that services trade restrictions are generally embodied in government regulations that do not express restrictiveness in a numerical form as in the case with tariffs, and that liberalisation necessarily involves reform of these regulations to reduce or eliminate the trade restrictiveness embodied in them, and this change in restrictiveness is again not officially expressed in numerical form. The assessment thus requires identification of the steps involved in the liberalisation process, which generally involve various types of regulatory reform together with a quantification of services trade restrictiveness and changes in

[6] In 2019, the shares in Vietnam's GDP of sectors including Distribution services, Transport (railway and road freight), Financial (Commercial banking and Insurance), and Telecommunication) are 10 percent, 3 percent, 5.8 percent, and 1.1 percent respectively. The similar figure in terms of employment are 13.3 percent, 3.5 percent, 1 percent, and 0.6 percent.

restrictiveness resulting from regulatory reforms in the selected sectors. Both requirements are addressed in this Chapter.

In doing so, this Chapter addresses two research questions. These are 'To what extent has WTO membership generated liberalisation in services trade of Vietnam?' and the crucial question for this dissertation, 'How much did the restrictiveness of services sectors in Vietnam change over time?'

To provide a basis for answering these questions, a key research output reported in this Chapter is the creation of a comprehensive dataset recording changes in the actual regulatory barriers imposed on foreign service suppliers on a time-series basis across the six selected services sectors (ten sub-sectors) of Vietnam. This dataset shows that WTO-related regulatory reforms in Vietnam's services sectors were spread over a lengthy period, beginning with the years prior to accession when Vietnam began to align its relevant regulations with the requirements of WTO rules and anticipated accession commitments, and continuing in the years after accession as Vietnam progressively engaged in further implementation of accession commitments. To incorporate these changes, the period covered by the dataset runs from 2003 to 2019.

This dataset shows that most liberalisation of the selected service sectors was the result of implementing commitments in the GATS, especially in the case of commercial banking, telecommunication, and maritime transport services. This emphasis on compliance reveals the positive and strong impacts of accession to the WTO on the reform of the services sector in Vietnam as an acceding member of the WTO. This contrasts with the findings of earlier literature which focused primarily on the impact on founding members; this indicated that the GATS made little or no progress in facilitating actual liberalisation by those members since their specific commitments often did not go beyond their existing policy practice in relation to services (Barth et al., 2006; Fink, C. & Molinuevo, 2007; Hoekman, 1996).

Answering the crucial second question, on changes in restrictiveness, requires a methodology for measuring the restrictiveness of the regulatory barriers to services trade and the changes in restrictiveness resulting from reforms that reduce these barriers. The methodology used here is based on the methodology developed over recent years for the creation of services trade restrictiveness index (STRI), described and discussed in the literature review in the following section of this Chapter. Application of this methodology to successive reform steps identified in the comprehensive dataset on regulatory reforms

creates in turn a time-series dataset of changes in trade restrictiveness in the selected sectors over the period 2003-2019 covered in the former dataset.

The time series dataset is a necessary input for further assessment of the economic impact of changes in regulatory barriers to services trade, for example, the analysis of the impacts on firm productivity and employment in Chapters 4 and 5. Production of a time-series dataset on changes in services trade restrictiveness that is consistent with datasets on other relevant economic variables, over the same period of time (in this case 2003-2019), overcomes problems in earlier studies associated with inconsistent collection of regulatory data over time, which did not provide data with useable time variation, and was consequently unsuitable for investigating the impacts of regulatory reforms (Molinuevo and Saez, 2014).

Additionally, this Chapter contributes to the current literature on trade restrictiveness in services sectors of transitional and developing economies. So far, the literature has focused more on developed countries and more likely concentrated on one point in time. This is the first unique and comprehensive time-series database on regulatory barriers to the services trade of Vietnam – a transitional and developing economy. Furthermore, the database, which is currently displayed in excel spreadsheet form, can be used to provide useful information for the private sectors in making investment decisions. As noted above, the restrictiveness indexes database constructed in this Chapter will be utilised in empirical studies in the next two Chapters to measure the economic impacts of services regulatory reform.

Finally, despite the demonstrated influence of WTO accession on Vietnam's service trade liberalisation, it is also shown here that Vietnam's services trade remains relatively highly restricted in comparison to developed countries such as OECD members. This suggests substantial scope for further reform of Vietnam's services trade.

The rest of the Chapter is organised as follows. Section 3.2 reviews the most seminal literature on measuring restrictions on services trade. Section 3.3 describes the data and methodology used in this study to quantify levels of regulatory restrictiveness and how they have changed over time. Section 3.4 presents and discusses our results of the quantification. Finally, section 3.5 presents conclusions and policy recommendations.

## 3.2. Literature review

### *3.2.1. Measuring restrictions on trade in services*

The number of studies attempting to quantify restrictions to services trade has increased substantially since the early 1990s, despite the complexity of the quantification. The negotiation of GATS, where countries were required to prepare a commitment schedule (Warren & Findlay, 2000), led to an increase in the availability of data on countries' restrictions on trade in services. This section reviews the most seminal studies on services trade barrier measurement.

Hoekman (1995) first proposed an indexation method to measure the degree of openness of the service sector under the GATS. One hundred and fifty-five sub-sectors from 55 sectors were covered. Hoekman calculated a combined value for each sub-sector in the four modes of supply and two types of commitment (market access and national treatment) using a simple scoring system with three values (zero is unbound, 0.5 is a bound restriction, and one is no restriction). These values were chosen to allow aggregation across sectors and countries. The aggregated index is a simple average of the scores. The higher the value of an index, the greater the level of the openness. The Hoekman index was produced as a simple method to quantify the restrictiveness or openness to trade across countries and sectors based on commitment in the GATS. It highlights the sectors or modes of supply that a country might need to improve in their commitments to achieve full liberalisation. However, this method cannot provide information on the actual barriers to trade in practice because it only captures the commitment listed in countries' schedules of commitments in the GATS with no indication of existing degree of actual restrictiveness or allowance for changes in actual restrictivness that might result from GATS commitments. The equal weight assigned to all the restrictions, regardless of their economic impacts, also reduces the usefulness of Hoekman's methodology.

Subsequent efforts to measure the level of restrictiveness in services trade have focused on the construction of a composite index which came to be called the 'Services Trade Restrictiveness Index' (STRI) or 'Trade Restrictiveness Index' (TRI). Hardin and Holmes (1997) attempted to improve Hoekman's methodology by constructing an index of barriers to FDI (Mode 3 when applied to the services sector) in APEC countries. The study took into account five categories of restrictions including foreign equity limits on all firms; foreign

equity limits on existing firms but none on greenfield investments; screening and approval, control and management restrictions; and input and operational restrictions. The weight assigned for each category of restriction was based on the author's judgment as to its relative degree of restrictiveness. Among these five types of restrictions, the first two types, involving foreign equity limits were given greater weights than the rest. Moreover, different from Hoekman (1995), this study analysed actual restrictions on foreign direct investment (FDI) rather than commitments in the GATS.

In the early 2000s, a new strand of literature, inspired by a joint project between the Australian Productivity Commission and the Australian National University, was specifically interested in measuring restrictions to services trade at a sectoral level. The project consisted of studies on telecommunication (Warren, 2001), banking (McGuire & Schuele, 2000), distribution (Kalirajan, 2000), maritime transport (Schuele & Smith, 2000), and professional services (Nguyen-Hong, 2000). Similar to Hardin and Holmes (1997) and Holmes and Hardin (2000), these studies assessed restrictiveness based on information on de jure regulations from various sources, for example, WTO, APEC, OECD, and the GATS. For every restriction, instead of using a simple scoring system as in Hoekman (1995), the Australian team applied an elaborate scoring system in which score values ranged from 0 to 1. Furthermore, the equal weighting scheme was replaced by a more complex scheme, based on a priori judgment about the economic impact of the respective regulations. In constructing their index, these studies covered a wider and more complex range of restrictions.

Over time, enhancements were introduced to the measurement of regulatory barriers to trade in services, in terms of information on regulations, scoring technique, and weighting methodology (Dihel & Shepherd, 2007; Warren, 2000). Even so, there is one feature in common across the literature – the selection of index components and the allocation of weights to restrictions relied on the authors' judgment. An obvious drawback of the method was that the inevitable subjectivity and the possible arbitrariness associated with it could give rise to biased results (Dihel & Shepherd, 2007).

A summary of early studies focused on measuring trade restrictiveness in the services sectors is provided in Table 3.1.

**Table 3.1. Seminal literature on STRI at the sectoral level**

| No | Author | Sector coverage | Countries coverage | Main findings |
|---|---|---|---|---|
| 1 | Mattoo (1998) | Financial services (direct insurance and banking) | Transition economies | Most restrictions are found in the direct insurance sector of Latin America, while Asia is the most restricted in the banking sector. |
| 2 | McGuire (1998) | Financial services | Australia, Asian countries | Asia countries imposed many strict barriers on sectors, including banking, securities, and insurance than Australia. |
| 3 | McGuire and Schuele (2000) | Banking sector | 23 countries and the European Union | Constructed STRI of banking services for 23 countries and the European Union, then investigated the correlation between GNP per capita and STRI. A negative relation was found. |
| 4 | The OECD (1997) | Accounting services | Australia, France, the United Kingdom, the USA | The United Kingdom was the most liberal, while the US was the most restricted. |
| 5 | Warren (2001) | Telecommunicatio n services | 136 countries | STRI was found very much varied across 136 countries, showing that telecommunication services are highly sensitive to open. |
| 6 | Schuele and Smith (2000) | Maritime services | 35 countries | Quantified STRI on market access, results showed that Chile, the Philippines, Thailand, |

| | | | | |
|---|---|---|---|---|
| | | | | Turkey, and the US discriminated against foreign services suppliers. |
| 7 | Kalirajan (2000) | Distribution services | 38 countries | Restrictions vary among countries. The lower level of restrictions: Singapore, Chile, and Hong Kong; Relatively restrictive: Belgium, India, Indonesia, France, Korea, Malaysia. |
| 8 | Nguyen-Hong (2000) | Professional services (legal, accountancy, architectural and engineering services) | 34 economies | Indonesia, Malaysia, Austria, Mexico, and Turkey apply the most restrictive barriers to professional services, while Finland and the Netherlands are the most open. |
| 9 | Dihel and Shepherd (2007) | Banking, insurance, telecom, engineering, and distribution services | 29 transitional and developing countries | Asia countries are the most restrictive in 4 out of 5 studied sectors as opposed to Eastern European countries. |

*Source: Adapted from Brown and Stern (2001)*

In 2012, the World Bank (WB) finalised a project to develop a large STRI database, covering 103 countries (79 non-OECD countries and 24 OECD countries) and five sectors, estimating restrictiveness at a point between 2008 and 2010 in each case. The methodology and results are explained in Gootizz, Borchert, and Mattoo (2012a; 2012b). Information on actual policy implementation of non-OECD countries was collected through questionnaires and reviews by respective governments, while information from publicly available sources was used for OECD countries. The indexes were calculated for five sectors (including finance, telecommunications, retail distribution, transport, and professional services), chosen on the basis of the WB experts' assessment on the importance of these sectors to member's economies as well as the feasibility of collecting relevant policy data.

Overall, the WB project provides detailed, in-depth information on countries' restrictions at both the sectoral level and aggregate level. Another advantage of the database built by this project is that it captures information on the implementation of policy in practice. Thanks to the large scale and substantial resourcing of the project, the study was able to draw on private sector assessment of how policies were implemented in reality as a way of taking account of gaps between the actual implementation of legislation and the legislation as documented, which are challenging to capture in small-scale studies and studies which are conducted by individual. On the other hand, the study misses out two important aspects of restrictions on services trade. First, the study focused on policy measures that discriminate against foreign service providers but did not take into account non-discriminatory restrictions. These consist of regulations affect both domestic and foreign firms, but they create additional costs for all of them as well as hindering the entry of new firms. Second, the study also excludes regulations that affect mode 2 of services supply. As discussed in the previous Chapter, mode 2 refers to the consumption of a country's country residents in a foreign country. This mode of service supply is important to various sectors, especially sectors such as tourism, health care, and education. These omissions, therefore, limit the extent to which the STRI fully reflects the actual restrictiveness of barriers applying to the services sectors.

In 2014, the OECD officially launched an STRI database for 40 countries across 22 sub-sectors in six main sectors. It is the output of an OECD pilot project, started in 2008, to measure restrictiveness in certain services sectors including computer services, construction, professional services, and telecommunications. The regulatory database and indexes have been updated annually since 2014. Geloso Grosso et al. (2015) provide the most recent description of the methodology of this project, which involves scoring the restrictiveness of policy measures, assigning weights to them and aggregating to the overall STRI. The policy measures are grouped under the same five policy areas in all sectors: restrictions on foreign entry, movement of people, other discriminatory measures, barriers to competition, and regulatory transparency. A simple scoring method is applied to indicate the restrictiveness of each regulation, ranging from a score of zero to indicate a complete absence of restriction, to a score of one for prohibitively restrictive regulations. As in the WB study expert judgment is utilsed in this study to decide the weight of each policy area across sectors, and to score the restrictiveness of the measures applied.

The methodology used in the OECD study, like any methodology that relies on expert judgment method contains an inevitable element of subjectivity. Even though, it is worth noting that the level of subjectivity could be reduced when assessment comes from a large group of experts. The participants with various expertise from regulators, private firms, and law firms could probably provide the most accurate assessment on which measures should be included in the index, and how much its economic impact is (Deardorff & Stern, 2009).

### *3.2.2. Measuring services trade restrictiveness index of Vietnam*

The significantly increased interest over recent decades in assessing services trade barriers, as described above did not always extend to Vietnam. Possibly this is because that Vietnam is a small-scale transitional economy that adopted open-door trade policies comparative recently. At a sectoral level, Vietnam is covered in Dee (2007) and Dee and Dinh (2009). At an aggregated level, Vietnam is included in the cross-country studies of the World Bank in 2012, Ishido (2011); Ishido and Fukunaga (2012), Fukunaga and Ishido (2013), and Thangavelu (2015).

Dee (2007) adopted the methodology used in Warren (2000) to quantify barriers to services trade in seven sectors across multiple countries. The methodology follows that of the Australian team's project. The policy information was drawn from different sources at a specific point in time. In the case of Vietnam, restrictions were collected mainly from the APEC Individual Action Plans in 1999 (for sectors including electricity generation, air transport, and telecommunications), and in 2004 (for sectors including banking, distribution, electricity generation, professional services, and telecommunications).

As part of an ERIA project, Dee and Dinh (2009) took a similar approach to the WB project by sending out questionnaires to ASEAN countries' experts to collect information on the current policy in medical, health, banking, and insurance services. The study collected information on restrictions in 2008 across four modes of supply. The classification of restrictions and scoring technique are similar to the previous studies of the Australian team. With regard to the weighting scheme, however, this study applied a more complex statistical technique – principal component analysis (PCA). According to this methodology, a restriction is given a higher weight when it contributes more to the policy variation. Section 3.2.3.2 will explain further about this technique.

At an aggregated level, with the two exceptions of the WB study and Thangavelu (2015), the rest of the above studies on Vietnam's services trade barriers follow the methodology proposed by Hoekman (1995) to calculate the countries' commitments in services trade under different FTAs, for example, the ASEAN plus FTAs (Ishido, 2011) and the ASEAN China FTA (Fukunaga & Ishido, 2013; Ishido & Fukunaga, 2012). These studies take into consideration all 11 services sectors as in the GATS and all four modes of supply, which provides a broad and complete picture of commitments of members under the FTAs. Although useful, the results fail to capture tany actual changes in restrictiveness resulting from the implementation by Vietnam of its GATS commitments.

Subsequently, the mode 3 commitments of ASEAN member states in AFAS package eight (AFAS 8) and the ASEAN Comprehensive Investment Agreement (ACIA) plus the actual FDI regulations of the member states were quantified in Thangavelu (2015). This study covers FDI restrictions in all eleven services sectors in the GATS (as well as all manufacturing sectors) in the years 2010 and 2014. Regulations on FDI were divided into six areas, and each area was given a random weight based on the framework of Shujiro and Sasuya (2007).

There are two limitations observable in previous studies of Vietnam's services trade barriers. First, some studies focus on the commitments of countries, including Vietnam, in the GATS or in different FTAs with a GATS-based approach to services trade liberalisation. In the GATs, and in FTAs that follow the GATS approach to services trade, a positive list approach is adopted, whereby countries list limitations on market access and national treatment for only sectors and modes of supply that they prefer to commit. Sectors that are not listed might be severely restricted, and there is no commitment or reservation to make a commitment in those sectors in the future. Thus, these positive list approach agreements and quantifications of services restrictiveness based on commitments in these agreements have failed to capture the actual restrictiveness of the services sector in concerned countries. Furthermore, the commitments are often at a level of restrictiveness that exceeds that of the countries' existing policies, especially in the case of founding members of the WTO, as explained earlier. In these cases, the commitments do not signify any necessary reduction in services trade restrictiveness (and may even permit increases in services trade restrictiveness). Therefore, a study that considers actual regulations drawn from countries' specific laws and regulations, and changes in those laws and regulations is indeed necessary.

Second, none of the previous literature has provided quantification of changes to barriers to the services trade of Vietnam on a time series basis. An STRI created on a time-series basis, as discussed earlier, would facilitate investigation of the impacts of changes in barriers to services trade over time. More importantly, an STRI time-series database derived from actual regulation will allow an analysis of the actual impact of trade agreements. I aim to fill this gap in the literature in the case of Vietnam.

### *3.2.3. Key step in the STRI methodology - Summary*

The above review of the relevant literature shows that the methodology of creating an STRI involves three main steps. The first step is to collect detailed information on restrictions applying to each service sector. The second step is to classify and assign a score for each restriction according to its degree of restrictiveness. The third step involves the development of an index for these restrictions, in which each type of restriction is given a weight according to its significance, to be then used in calculating a total restrictiveness score for each sector. For a time-series study, one needs to emphasize that all the measures and weights have to be consistent at different points in time. This section is going to explain further the literature on each of these steps.

#### *3.2.3.1. Gathering information on restrictions*

Information on restrictions can be based on either a country's commitments in a trade agreement or on its actual regulation. While the former is normally extracted on the provision of multilateral services trade agreement in the WTO (the GATS) and preferential agreements, the latter is collected through various sources such as intergovernmental associations (APEC and ASEAN), and governmental agencies. Other than these sources, to collect actual regulation, using country surveys and sector-specific questionnaires are also very informative on actual regulation (Molinuevo and Saez, 2014). Hoekman (1995), Marko (1998), Ishido (2011), and Fukunaga and Ishido (2013), as well as Ishido and Fukunaga (2012) used commitments in trade agreements in their measurements of restrictiveness in services trade. The use of this information has two advantages. First, it is easy to collect information on commitments because trade agreements are publicly available. This availability also enables study on a large number of countries. Second, commitments in trade agreements are clearly structured as related to market access and national treatment. As a result, the classification of restrictions becomes easier. Besides the advantages, it also

contains a major disadvantage. As discussed previously, the nature of a positive list approach of the trade agreement, especially the GATS, means that commitments in a trade agreement will often not accurately reflect the actual regulatory regimes. First, because the commitments scheduled in GATS may not involve a commitment to liberalise actual policy and second, because countries may not or may not fully implement their commitments. The measurement of actual liberalisation requires the identification of changes in the policy and legal systems of the country concerned.

The use of actual regulation as in Hardin and Home (1997), the Australian team's series, the WB (2012), and the OECD (2014) overcomes the above downside. However, it requires more complex work in collecting and classifying the regulations. To collect the actual regulations, surveys could provide more information but at a much high cost, which is not ideal in the case of an individual research. Using regulations drawn from the policy and legal documents of the country concerned would not only be covered comprehensive information on the actual regulations, but is also a cost-efficient methodology.

*3.2.3.1.Classifying and scoring restrictions*

The next step of STRI construction is to convert qualitative information into quantitative measures. It includes classifying restrictions into different categories and assigning a score for each of the restrictions.

First, restrictions to trade in services can be grouped into different categories such as restrictions on establishment and operation, modes of supply, restrictions affecting Market access and National treatment, discrimination and non-discrimination, and combinations of these categories. Studies using commitments in trade agreements, as mentioned in section 2.2.2.2, classify regulations by mode of supply and by aspects of market access and national treatment. The WB study also applied this approach. Within each category of regulation, for each mode of supply, there are different types of restrictions. For example, categories for mode 3 measures are Form of entry, Licensing, Operations, and Regulatory environment. The other way of grouping regulation by mode is to list all the relevant regulations without putting them in the second layer of category.[7] The OECD took a different approach by

[7] See, for example: Marouani and Munro (Marouani & Munro, 2009), Dihel and Shepherd (2007), Dee and Dinh (2009).

dividing regulations into five policy areas to cover all the possible restrictions that hinder services trade. The template of regulations was decided by experts and member governments. These regulations, later, are divided in various ways, for example, Establishment and Operation, and aspects of discrimination or non-discrimination. It can be seen that the approach of the OECD is more comprehensive and covers a wider range of restrictions to services trade than any previous studies.

Second, each restriction is assigned a score. The literature shows four major scoring techniques. First is the equal scoring technique, as in Hoekman (1995) with three possible values of 0, 0.5, and 1. The next gives each regulation a score value in a range from zero to one based on is level of stringency.[8] The third is to assign scores on a 5-point scale as in the WB's study. Regulations which are considered as open without restriction will take a score of 0, meaning completely open. The values of 25, 50, 75, and 100 are assigned accordingly to restrictions which are judged as virtually open, the existence of major/non-trivial restrictions, virtually closed, and completely closed. The last method uses a binary scoring system with scores of 0 and 1. While a score of 1 is restrictive, a score of 0 is non-restrictive. This technique is simple and transparent, which reduces the inherent subjectivity of the expert judgment methodology. However, because of the simplicity, the equal scoring technique does not allow for differing degrees of restrictions.

With the exception of the equal scoring technique, when assigning a score to each regulation, all the other scoring techniques take into account the interaction between regulations (Molinuevo & Saez, 2014). For instance, when the market is completely closed to foreign suppliers, other restrictions on operation imposed on the suppliers become irrelevant. In the study of the OECD, this principle has been strictly applied across all sectors by introducing a hierarchy relationship among a group of regulations. Geloso Grosso et al. (2015) note that 'In order to capture such linkage, a hierarchy of measure is established, and the measure on the top of the hierarchy determines the scoring of measures further down in the hierarchy'.

[8] See, for example: Warren (2001), McGuire and Schuele (2000), Kalirajan (2000), Schuele and Smith (2000), and Nguyen-Hong (200). Similar to Hardin and Holmes (1997) and Holmes and Hardin (2000), Marouani and Munro (2009), Dihel and Shepherd (2007), Dee and Dinh (2009), Jafari and Tarr (2017).

*3.2.3.2.Computing restrictiveness indexes*

The computation of STRI consists of assigning weight to each restriction/barrier and aggregating scores of all restrictions according to these weights. The literature shows different weighting schemes. The simplest technique is the equal-weights method used in Hoekman (1996), Eschenbach and Hoekman (2006a), and Roy (2011). Scholars have criticised this technique as it does not reflect accurately the economic impacts of restrictions accurately. The more sophisticated methodologies use econometrics, statistical techniques, and a priori judgment. No matter which methodology is chosen, the aim should be that the weighting system describes as closely as possible the costs created by regulations as barriers to trade in services.

Through economic regressions, the econometric methodology enables the estimation of trade costs that resulted from trade barriers. The advantage of this approach is that it is a data-driven method that provides the least subjective results. However, identifying regulations utilising econometric models requires data on trade in services at the sectoral level and aggregated level, which is hard to find even in developed countries. Besides, the presence of multicollinearity among regulations could affect the econometric analysis (Molinuevo & Saez, 2014).

Another alternative is to use statistical techniques, notably Principal Components Analysis (PCA). PCA was introduced by Steiner (2000) for the electricity sector, and the methodology became more common for creating restrictiveness indexes in the services sector, for example, Nicolletti, Scarpetta, and Boylaud (1999), Boylaud and Nicoletti (2000), Bottini, Marouani, and Munro (2011), Dihel and Shepherd (2007), Gonenc, Maher and Nicoletti (2000), and Marouani and Munro (2009a). In PCA, weights are assigned to the regulations according to their statistically derived contribution to the variation in the data sample (Asako Ueno et al., 2014; Molinuevo & Sáez, 2014). One advantage of PCA is that it is a highly data-driven technique that reduces the subjectivity of the results. However, PCA also has limitations. First, it does not reflect any economic impacts of barriers; thus, it is not informative on the magnitude of restrictiveness. The second more serious limitation is that weights derived from PCA change according to the variation of the data sample, for example, a change of data sample in a number of countries and/or the number of years in the sample. For that reason, weights generated from one data sample cannot be applied to different data samples (Molinuevo and Saez, 2014).

The third methodology for the assignment of weight is based on an expert opinion approach. This approach was first used by the Australian Productivity Commission, and despite its potential subjectivity, it has been the most common methodology for the identification of factors impeding services trade (Kalirajan, 2000; Marouani and Munro, 2009b; McGuire and Schuele, 2000; World Bank, 2007). The value of the weights ranges from 0 to 1; it is decided by expert-opinion on the economic impacts of restriction. The experts could be indirect or direct participants in services trade such as researchers, industrial experts, policymakers, and private sectors representatives. This method utilises the knowledge and opinion of experts and is criticised as subjective and contentious (Molinuevo and Saez, 2014). However, this disadvantage can be lessened by utilising the knowledge of a large group of experts, as already noted earlier (Ueno et al., 2014; Rouzet, 2014).

### 3.3. Methodology for this study

The previous section demonstrated the advantages of the OECD methodology in relation to each of the steps involved in constructing an STRI. Given these advantages, our study adopts this methodology for the purpose of creating an internationally comparable time series database to measure restrictiveness of barriers to services trade in Vietnam, and changes in the restrictiveness of these barriers. This methodology is comprehensive enough to address our research questions and it also allows for comparison between Vietnam and the most advanced and liberal economies in services trade.

As outlined in section 3.2.1, our measurement of STRI in Vietnam consists of three steps: gathering information on regulations and changes in them over time, scoring restrictions, and computing restrictiveness indexes by assigning weights and aggregating scores.

Before proceeding further, it must be emphasized that our study involves creating time series estimates of services trade restrictiveness over the period 2003 to 2019. This requires information on the regulatory frameworks not at a single point in time but as they develop and change over the entire period. In each sector, each new regulation introduced, or each change in an existing regulation, requires an assessment of any resulting change in restrictiveness that could affect the score of the restriction involved, which in turn could affect the calculation of restrictiveness using the assigned weights. Tracing the changes of regulatory in a complexity system of Vietnam and resulting changes in restrictiveness over a 17 -year period for six sectors is necessarily an intricate task. The details of the assessments

over the period are recorded on (insert number of spreadsheets) spreadsheets, which are available on request.

The following sections discuss in detail these three steps in the methodology of our research.

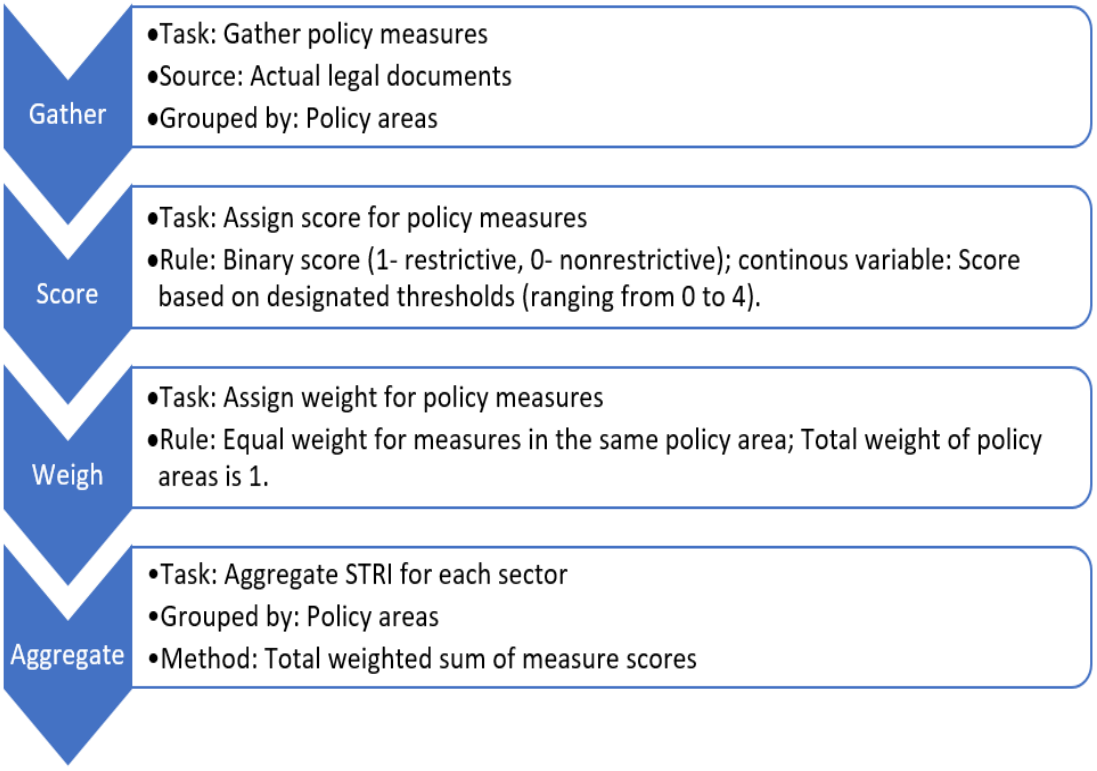


**Figure 3.1. STRI measurement methodology**

### *3.3.1. Gathering information on regulations*

This study relies primarily on de jure information on restrictions and changes in them over time, collected through a comprehensive survey of official legal documents. The main purpose is to capture the actual process of regulatory reform and liberalisation. The regulations used in the STRI calculation, therefore, are recorded on an MFN basis (apply to all countries) and do not take into account concessions in preferential trade agreements. When a regulation is missed or unclearly stated in the domestic legal document, I refer where possible to the relevant databases of the APEC Services Trade Access Requirement

(STAR) and the WB. The APEC STAR database[9] is an online tool which includes information on services market access in APEC members. This database was updated until 2016 – the information contained within the database is current as of 2016. In regard to data from the WB, this study mainly utilises information on ease of doing business gathered on a time-series basis.

The legislative system of Vietnam is considered as complex, not only in terms of the number of documents, but also in its structure. This complexity makes the system less transparent. As stipulated in the Law on the promulgation of the legal documents, the legal system consists of 12 types of documents depending on the issuing agencies. The full hierarchical list of all normative legal documents is explained in the Law on Promulgation of Legal Normative Documents (versions in 1996, 2008, and 2015). Regarding changes reflecting conditions for business, for instance, the normative legal documents directly relevant include Law, Ordinances, Decrees, Decisions of the Prime Minister, and Circulars. This study will focus primarily on reviewing measures in the above documents that affect business condition. The hierarchy of Vietnam's legal framework is explicitly described in Figure 3.2.

Regulations on the services sectors, in general, cannot be found in a single legal document but are scattered across multiple legal materials relating both to specific sectors/sub-sectors and specific issues such as labour, land, competition, and investment. A comprehensive review of official legislative documents, linked to assessments of changes in the restrictiveness scores over time, is needed to allow for an analysis of regulatory reform across the services sectors on a time series basis.

Additionally, in legal documents, the changes in regulations normally state whether they are related to a particular agreement in which Vietnam is a member. Therefore, the review is useful in finding out whether the domestic regulatory reform is a result of unilateral trade liberalization or of trade agreements. This, indeed, creates a valuable contribution to knowledge on the impacts of trade agreements on the regulatory reform of Vietnam.

[9] The database can be accessed via this link: http://www.servicestradeforum.org/SearchforRequirements.aspx?country=22&serviceIndustry=7&barriercat=275.

This study follows the list of types of regulation (policy measures) from the OECD's study, as described in Geleso Grosso et al. (2015). The information on restrictions collected must capture the different regulations applying specifically to the respective services sectors; yet, generally, there is also a set of measures that applies to all sectors in the economy. For example, in Vietnam, regulations on competition are applied to every sector using the same principle. Likewise, so are the regulations on labour (such as the quotas of foreign labour, limitation on duration stay for services suppliers); regulations related to transparency such as the visa process procedure, cost to obtain a visa, and cost to do business.

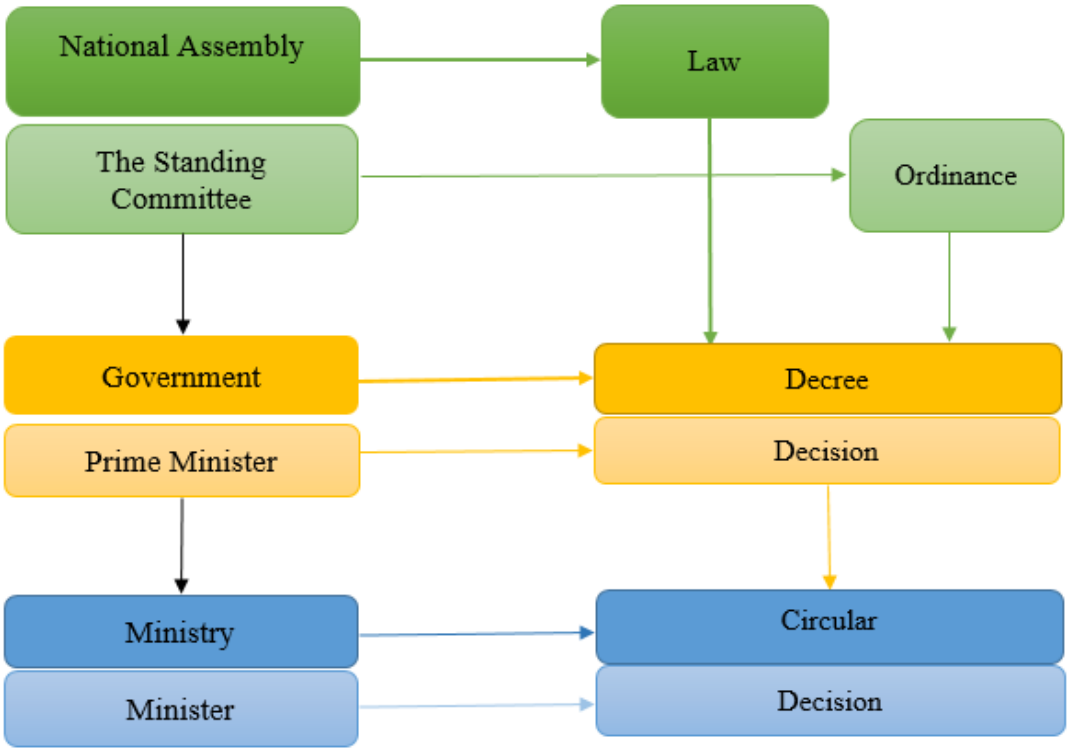


**Figure 3.2. The regulatory system in Vietnam**

*Source: Author*

### *3.3.2. Scoring restrictions*

Following Geloso Grosso et al. (2015) the scoring of the list of types of policy measures applied to the studied sectors is designed to take the form of an answer to a Yes or No question as to the restrictiveness of the measure. If the measure is assessed as restrictive (equivalent to a Yes answer), it is given a score of 1. Otherwise, if a measure is assessed as

nonrestrictive, this is considered as a No answer and it is assigned a score of 0. In addition to this, there are two points that we need to emphasize in the scoring technique.

First, there are measures that cannot be decided immediately as restrictive or not restrictive, for example, “what is the foreign equity limit?”, “how long is the duration of stay for foreign personnel?”. The answers to these questions could be varied across partner countries as well as over time in relation to a given country. For example, foreign equity limits in distribution services of Vietnam in 2003, 2008, and 2009 were 49 per cent, 99.99 per cent, and 100 per cent respectively. To reconcile with the binary scoring technique, brackets and thresholds systems are introduced. For instance, foreign equity limits, which are ranging from 0 to 100 per cent, are assigned to a bracket of four: less than 100 per cent (not restrictive, and scored 1), less than 50 per cent (scored 2), less than 33 per cent (scored 3), and 0 per cent foreign equity (the most restrictive, scored 4). When foreign personnel are allowed to stay in Vietnam for 36 months, the score is zero, and one otherwise.

Second, not all nonrestrictive measures will automatically be scored 0. In this methodology, the hierarchy and interaction between regulations are taken into account. It means that there are measures that are more important than the others. The scores of these more important measures will affect the scoring of some other measures. For example, when the foreign equity limit is zero, meaning that foreign investment is not allowed, all of the measures related to foreign entry will become obsolete and will be scored 1. In this case, even if there is no regulation on screening or requirements on the board of directors, it does not follow that there is an open policy in place, because in fact the sector is entirely closed.

### *3.3.3. Computing restrictiveness indexes*

The aggregation of STRI includes two tasks, assigning weight to each policy measure and computing the index. The below Table 3.2 summarises all steps involving in scoring and computing the restrictiveness indexes of services sectors.

The discussion in section 3.2.3.2 on the advantages and disadvantages of various existing methodologies to assign weights to restrictions shows that the choice of weighting method has been controversial. The choice then depends on the availability of data and purposes of a particular research. In this study, we adopt the weighting scheme as in the OECD study. The weighting system using in OECD’s study is derived from an online survey where

experts in different areas are involved. The value of weight varies from 0 to 1, and the total weight of all policy measures is 1.

The weight of each category is the aggregate of weights assessed for a large number of - sub-categories, each of which is given one of a standard set of weights, according to the assessment. Appendix I . Policy measures for Commercial banking services provides an example of this process for commercial banking services and the same process has been followed for each of the other five sectors. Changes in these sub-categories have been tracked across the entire period, with each change being reflected in a corresponding change in the STRI for the year when the change was made, based on the weight of the relevant sub-category.

**Table 3.2. Scoring and computing the restrictiveness indexes**

| | | |
|---|---|---|
| $s_{ik}$ | Score of restriction/measure k in sector i | - Binary score: 1 if restrictive, 0 if not restrictive<br>- Continuous variable: ranging from 0-4 |
| $w_j$ | Weight of policy area j | Experts' judgment – OECD studies<br>$\sum w_j = 1$ |
| $w_{jk}$ | Weight of measure k in policy area j | $w_{jk} = \frac{1}{k}$; $\sum_k w_{jk} = 1$ |
| $w_k$ | Weight of measure k in sector i | $w_k = w_j w_{jk}$ |
| $STRI_i$ | STRI of sector i | $STRI_i = \sum_k w_k s_{ik}$ |

*Source: Author*

The index of each policy area is aggregated by a simple sum of weighted scores of each policy measure under the area. Then, the restrictiveness index of a sector is computed by taking the sum of all policy areas indexes. Depending on the classification of restrictions, different STRI can be generated. These are STRI by policy areas, modes of supply, market access and national treatment and domestic regulation, establishment and ongoing operation, and discrimination and non-discrimination. The choices depend on the purposes of each study.

The qualitative information on the regulations (or policy measures) as they existed over the period of the study, taking account of changes in existing measures and the introduction of new measures the scores assigned to each policy measure, and sectoral aggregation as it

appeared over the time period, taking account of all relevant changes are recorded in a set of (insert number of spreadsheets) spreadsheets as noted earlier. These files also contain detailed explanations of the measures and electronic addresses to retrieve information. We have tried to provide as many as possible of the sources where English versions are available; however, there are still some sources that only contain Vietnamese language versions. We also expect that later, these files can be transformed into an online time-series database of regulation on services trade of Vietnam. Government officials, researchers, and the private sector would benefit from this resource. The spreadsheets are available upon request.

### 3.4. Results

The regulatory database on selected services sectors of Vietnam developed in this study can generate different restrictiveness indexes, based on various dimensions of regulations as per the discussion above. For the purpose of this study, in this section the results of the analysis of changes in restrictions affecting services suppliers in the selected sectors are reported. The overall trajectory of aggregate changes in restrictiveness emerging from the analysis are reported first for each sector, showing that STRI of each service sector/sub-sector fell over the period 2003-2019. A detailed description of the regulatory changes in each policy category that contributed to this result is then provided for each sector, noting that while the general trend was toward reducing restrictiveness, there were also instances of changes that increased restrictiveness. The detailed calculations of the contribution of each regulatory change to the overall changes in restrictiveness are contained in the supporting spreadsheets.

Relating the regulatory changes to the timing of Vietnam's WTO accession process and comparing the changes with Vietnam's GATS commitments also allows conclusions and inferences to be drawn on the influence of WTO accession on Vietnam's services trade liberalisation.

Also, taking advantage of the availability of STRI calculated for 44 countries from 2013 to 2019 in the OECD study, I conduct a cross-country comparison between the changes in services trade restrictiveness between Vietnam and these countries, indicating how changes in service trade restrictiveness in Vietnam compare with the changes in both a group of countries with a relatively similar level of economic development and in a group of advanced economies.

### *3.4.1. Restrictiveness index by categories and the extent of liberalisation created by the GATS*

This section will analyse the changes in the overall STRI of each service sector through the contribution of restrictions by categories.

Generally, the overall STRI of nine sub-sectors reduced from 2003 to 2019. Among the five policy areas, restrictions on foreign entry receive the highest weight The reason is that, according to experts, foreign entry barriers tend to create the largest share in the total trade costs made by trade barriers to firms. Accordingly, most of the change in the overall STRI came from the changes in regulations governing the entry of foreign firms.

Additionally, as mentioned in Chapter 1, regulatory reform can be made through either unilateral action or trade agreement, or a combination of the two. To establish the importance of the GATS in generating actual liberalisation, this section compares the regulatory database on six selected services sectors and the schedule commitments in services of Vietnam in the GATS.

The following sections describe the main changes that affected the value of restrictiveness index in each sector.

#### *3.4.1.1.Commercial banking*

Overall, during the 17 years of the period studied, regulations in the banking sector of Vietnam have gradually become less restrictive, as illustrated in Figure 3.3. The following analysis describes the main developments that contributed to this result.

First, the regulatory regime for this sector was at its most restrictive from 2003 to 2005 when the index records its highest value for the period studied, at 0.582. The index then significantly dropped to 0.469 in 2006 thanks to a steady relaxation of restrictions on foreign entry and some increase in regulatory transparency as the government moved to improve business conditions. Prior to 2006, foreign equity was limited to less than 50 per cent, giving legal control to the domestic party in a joint-venture. Under these condition measures such as screening, and nationality and residency requirements directors were automatically given

a score of one.[10] In February 2006, the Vietnamese government adopted Decree 22/2006/ND-CP, modifying rules on the organization and operation of foreign joint ventures, and permitting the operation 100% foreign-owned banks, branches, and representative offices of foreign credit institutions in Vietnam. It can be however that although establishment of wholly-owned foreign banks was permitted from 24/3/2006, in reality, the first five 100% foreign-owned banks were not licensed until 2008.[11] Decree 22 also abolished regulations requiring applicants for registration of new banks to demonstrate their contribution to the economy and job creation.

When Decree 22 was enacted in 2006 Vietnam was about to move into the final stages of its WTO accession negotiation. The purpose of this reform was to bring the national legislation of Vietnam into compliance with anticipated WTO commitments. Although formally a unilateral reform it was in practice influenced by the WTO accession negotiations.

Another measure, Decree 161/2005/ND-CP dated 27/12/2005, replacing Decree 101-CP dated 23/9/1997 and implementing a Law on Promulgation of Legal documents contributed to transparency by allowing the involvement of the public (including foreign firms) in the law-making procedure.

Although the overall value of the STRI fell somewhat between 2007 and 2008, at a more detailed level both decreases and increases in restrictiveness can be identified. On movement of people, Vietnam made a horizontal commitment in the GATS on restrictions on nationality and residency of managers, executives, and specialists temporarily entering Vietnam as intra-corporate transferees to a foreign firm's operation. However, it was not until 2008, that Vietnam introduced regulations to which this commitment applied, in the form of Decree 34/2008/ND-CP, governing the recruitment and management of foreign workers in Vietnam. According to this Decree, at least 20 per cent of the total number of managers, executive directors, and experts in foreign-invested firms must be Vietnamese

[10] Due to the hierarchy relationship between regulation on foreign entry and the related regulations such as in screening, board of directors, cross border M&A will be automatically scored one. However, in this case, because all the measure under this hierarchy relationship were already scored one, the consequence of foreign equity limit does not matter.

[11] 100% foreign owned bank established in Vietnam in 2008 are HSBC, Standard Chartered, ANZ, Shinhan, and Hong Leong.

citizens. As long as firms meet this requirement, the Decree permitted them to have at least three non-Vietnamese holding management positions.

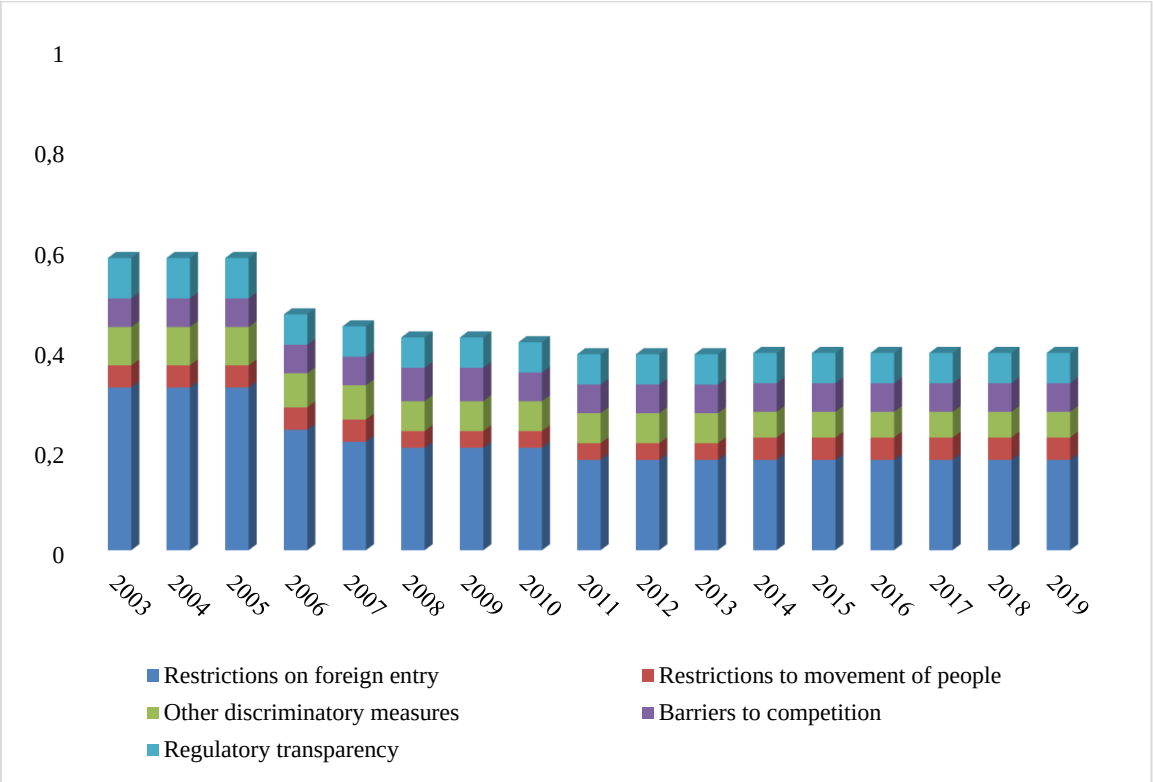


**Figure 3.3. STRI for Commercial banking services by categories of restrictions, 2003-2019**

On the other hand, as well as introducing additional restriction in this way, Vietnam also unilaterally relaxed several restrictions. For example, in 2008, Vietnam eased regulation on quotas of foreign workers allowed to work in Vietnam. Prior to 2008, Decree 105/2003/ND-CP limited the maximum number of foreign workers that a firm could hire to 3 per cent of its total labor force with an absolute limit of 50 people. Since 2008, Decree 34/2008/ND-CP was issued, and it removed these quotas.

Also in relation to the movement of people, the review of national legislation shows that in 2014 Vietnam tightened regulation related to mode 4 of services supply, by reducing the duration of the permitted stay of foreign enterprises' intra-corporate transferees from 36

months to 24 months.[12] This reduction increases the overall restrictiveness of the sector.[13] This contrasts with Vietnam's horizontal GATS commitments relating to the temporary movement of foreign intra-corporate transferees, under the, in which Vietnam committed to allowing them to stay for at least three years with the possibility of extension. Thus, in this regard, Vietnam has contradicted its commitments in the GATS.

In relation to banking regulation, in response to the escalation of inflation and deposit competition between banks in late 2007 and early 2008, the State Bank of Vietnam's (SBV) issued Decision 16/2008/QD-NHNN on the mechanism of Basic interest rates denominated in Vietnamese Dong, capping deposit and loan interest rates at 150 per cent of the basic interest rate in Vietnamese dong (the benchmark rate promulgated every month by the SBV). This regulation was imposed on both local and foreign banks operating in Vietnam, reducing competition in the banking sector.

On the other hand, the limitation on internet banking and foreign exchange rate activity of banks was abolished, benefiting both Vietnamese banks and foreign-owned banks. In 2010, a collateral registry with equal access to all lending institutions was introduced. In 2011, Vietnam removed restrictions on the branch networks of foreign banks and allowed foreign banks the same right as domestic banks to operate in all aspects of banking services. These relaxations contributed to reducing the restrictiveness index in almost all categories, including foreign entry, movement of people, and other discriminatory restrictions and competition.

Regard to regulatory transparency, besides the improvements described above, other improvements are indicated in the World Bank Ease of Doing Business indicators, for instance, in indicators related to registering a company such as costs, number of procedures, and number of working days to register. These improvements, however, fell well short of the thresholds that trigger a change in the STRI. For instance, regarding the number of

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[12] Decree 105/2003/ND-CP and Decree 34/2008/ND-CP replaced Decree 105/2003 allowed foreign labor to work in Vietnam with a maximum stay of 36 months with a possibility of extension. However, in the two most current normative legal documents on regulating foreign employment in Vietnam, Decree 102/2013/ND-CP and Decree 11/2016/ND-CP, the duration of stay does not exceed 24 months.

[13] The regulation is scored 1 if limitation on duration of stay for intra-corpoarate transferees is less than 36 months or three years, and 0 if it is more than 36 months or three years. In the GATS, temporary movement of foreign workers is not clearly defined, however, the duration of their stay from three to five years are commonly indicated (Geloso Grosso et al., 2015). Therefore, the threshold of 36 months or three years is used in our methodology.

working days to complete all mandatory procedures to register a company, there had been a substantial improvement in Vietnam from 61 days in 2003 to 16 days in 2019, but the threshold for a score of zero is five days, so that this regulatory area still counts as restrictive in Vietnam. Likewise, restrictiveness indicated by the total cost to complete all official procedures required to register a company is scored 0 when the total cost is less than 2.4 per cent of income per capita. This cost in Vietnam has decreased gradually from 30.6 per cent in 2003 to 5.9 per cent in 2019, but this is still much higher than the threshold of 2.4 per cent. As a consequence, there is no change in scoring this regulatory area within the time frame chosen.

A constant level of restrictiveness such as that indicated in the STRI for commercial banking services from 2011 in Figure 3.3 can thus reflect offsetting changes in restrictiveness in different policy categories rather than absence of regulatory changes.

*3.4.1.2.Insurance services*

Overall, during the 17 years of the time frame chosen, regulatory changes for insurance services resulted in changes in restrictiveness within a somewhat narrower band than for other services. Regulation of the sector became less restrictive after 2007. This section discusses the main features of the gradual regulatory reform in insurance services.

As in other sectors the category for "foreign entry," carries about 50 per cent of the total weighting for policy categories. Within this category, also as in other sectors regulations on foreign equity limits are assigned the heaviest weight because this type of regulation is recognized as the most critical barrier to trade in insurance services.

Before the beginning of the period covered by this study, and well before Vietnam acceded to the WTO in 2007, Vietnam unilaterally opened the insurance market to foreign investors. According to the Law on Insurance businesses 2000, foreign-invested firms were permitted to establish in two forms, joint-venture and 100 per cent foreign-owned. The restrictions related to foreign equity was then assigned a score of zero, which remained unchanged for the entire period covered by this study. The early removal of limits on foreign equity is reflected in a relatively low contribution of restrictions on foreign entry to Vietnam's STRI at the beginning of the studied period.

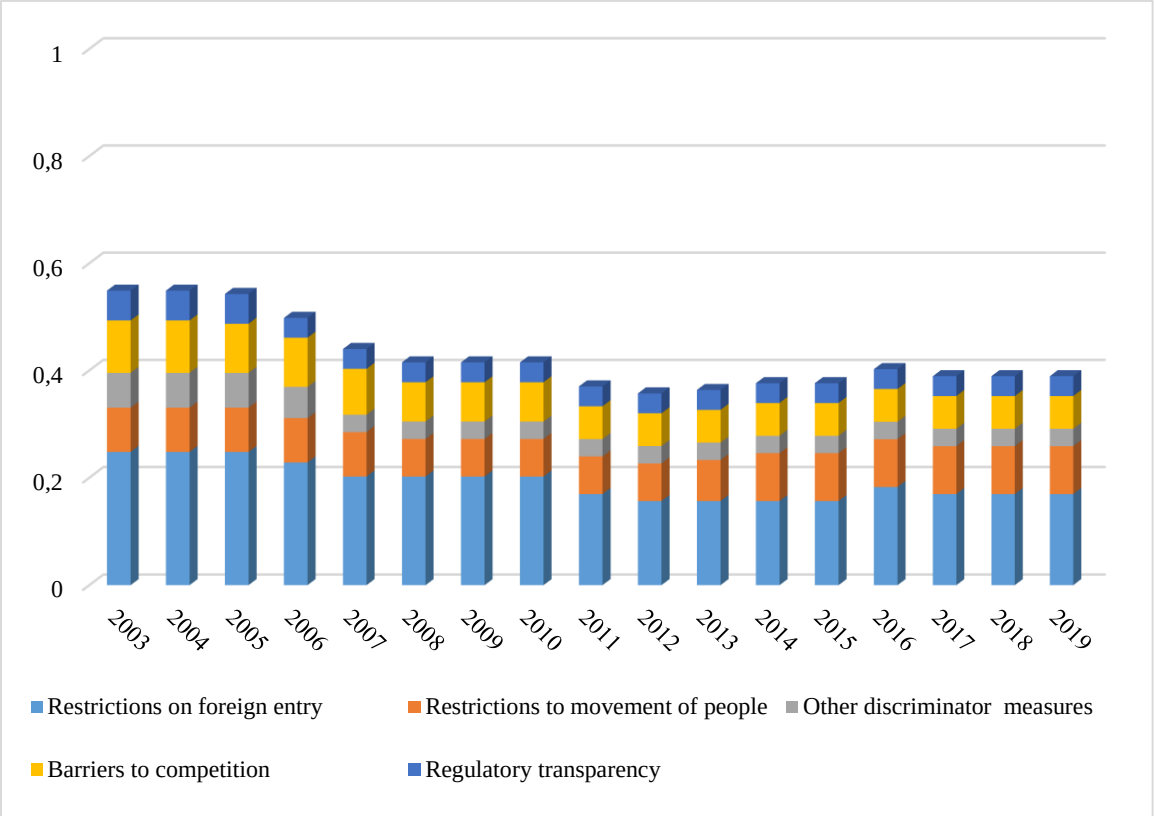


**Figure 3.4. STRI for Insurance services by categories of restrictions, 2003-2019**

Another vital regulation on foreign entry is regulation of establishment of branches by foreign insurers. This regulation was scored 1 between 2003 to 2010, reflecting the prohibition on the establishment of branches of foreign enterprises in all insurance services, which had been imposed by the Law on Insurance Business 2000. The services covered included life, non-life, and reinsurance services. However, in 2011, the Vietnamese government passed the revised Law on Insurance Businesses, which removed restrictions on the legal form of foreign insurance companies. According to the new Law, establishment of branches by foreign non-life insurance and reinsurance companies was permitted, although establishment of branches by foreign life insurance companies remained prohibited. This relaxation was a result of implementing Vietnam's GATS commitments on market access limitations.

In relation to restrictions on foreign entry, prior to 2012 foreign insurance service providers were not allowed to provide services to Vietnam-based customers without having a commercial presence, even though Vietnam committed in the GATS to open up cross-border trade in some cases, such as reinsurance services, insurance services in international transportation, insurance services for foreign-invested companies, and foreign workers in

Vietnam.[14] It was not until 2012, five years after accession to the WTO, that Vietnam gave legal effect to this commitment, by enacting Article 3 Decree 123/2011/ND-CP implementing the revised Law on Insurance Business 2010. It allowed cross-border services provide to foreigners working in Vietnam and foreign invested company with above 49 per cent of foreign capital. This relaxation on cross-border trade contributed to the overall reduction of the overall STRI from 2012 onwards.

In terms of regulations on personnel, similarly to other sectors, Vietnam applied a horizontal commitment in the GATS and began imposing requirements on the nationality of managers of foreign-invested firms. From 2008, at least 20 per cent of these personnel were required to be Vietnamese nationals. They were required to reside in Vietnam during tenure only between 2012 and 2016. Besides, there is also sector-specific policy imposing on insurance services. A regulation required that, the general director or the first Deputy Director of a foreign-invested insurance company had to be a Vietnamese citizen was lifted only in 2017.

Regarding licensing requirements, the requirements for foreign insurance suppliers to obtain licenses became more restrictive from 2007, through a. new requirement that foreign insurers must have been operating insurance business for at least ten years in their home countries. Additionally, from 2016, life insurance and reinsurance companies were required to have total assets amounting to a minimum of 2 billion USD. This asset requirement was applied to non-life insurance companies establishing branches only from 2012 to 2015.

With regards to the category for 'other non-discriminatory measures,' in the case of reinsurance services, prior to 2007, overseas insurance firms were required to reinsure a minimum of 20 per cent of the liability under their policies at the Vietnam National Reinsurance Company. These regulations were applied to both life and non-life services. The regulations were lifted in 2007.

As for barriers to competition, changes from five different regulations contribute to the changes of restrictiveness level of this category. First, before 2008, Vietnam National Reinsurance Cooperation was the only reinsurance company operating in Vietnam, and the government held 56.5 per cent of the capital of that company. After 2008, the amount of

[14] See: Schedule of Specific Commitments in Services of Vietnam, WT/ACC/VNM/48/Add.2 for the full list of services in which cross-border trade is permitted.

capital owned by the state reduced to 40.46 per cent, so that the company was no longer controlled by the State. Second, relating to policy towards the state-owned insurance company, the Vietnamese government guaranteed to provide adequate capital for state-owned insurance enterprises to operate and compete in the market. The policy clearly provided a financial advantage to publicly-controlled firms and negatively affected competition in the market. It was removed in 2008. Third, until 2010, some pressure to reinsure locally was applied through Article 9 of the Law on Insurance Business 2000. Although this law made provision for insurance companies to reinsure with other insurance enterprises, including foreign-invested companies, it also required that an insurance company reinsure with foreign enterprises, also reinsure a part of the liability with a domestic reinsurance company. In practice this amounted to a requirement to reinsure with the Vietnam National reinsurance company, which was the sole domestic reinsurance company. The regulation clearly limited freedom of insurance companies in choosing reinsurance partners. An amendment to the Law on Insurance Business 2011 abolished this barrier and permitted free choice of reinsurance partners. Next, a specific measure allows non-life insurance companies to freely formulate and implement their policy, including conditions and premium scales. In this regard, it is a good practice on competition.

With regard to the movement of people, in addition to regulations that also applied to other sectors, there were also regulations specific to insurance services, one of which changed over time. A residency requirement was applied to authorize actuaries from 2013, whereby personnel in this position were required to stay in Vietnam during their tenure.

Generally, insurance services in Vietnam were relatively open before Vietnam became a member of the WTO. Wholly foreign-owned insurance enterprises were allowed from 2000, though there were limitations in the permitted legal form of these firms. The regulatory database for insurance services indicates that Vietnamese legislation has been fully conforming to WTO rules and commitments.

*3.4.1.3.Maritime transport services*

The importance of maritime transport has increased in line with the growth of trade and international trade. The liberalization of this service is hence a critical factor to improve the competitive export advantage of a country (Mattos & Acosta, 2003). For Vietnam's international trade, maritime transport is the most important mode of transport, accounting for about 90 per cent of the nation's import and export cargo volumes. For domestic trade,

the share is about 60 per cent.[15] It can be seen that maritime transport has a critical role in international trade in Vietnam. Despite this, international maritime services have been quite heavily restricted.[16] Restrictions on foreign entry are given the highest weight in the overall STRI of this sector, at 65 per cent. The changes in restrictiveness across policy categories for maritime transport services shown in Figure 3.5 and are then discussed below.

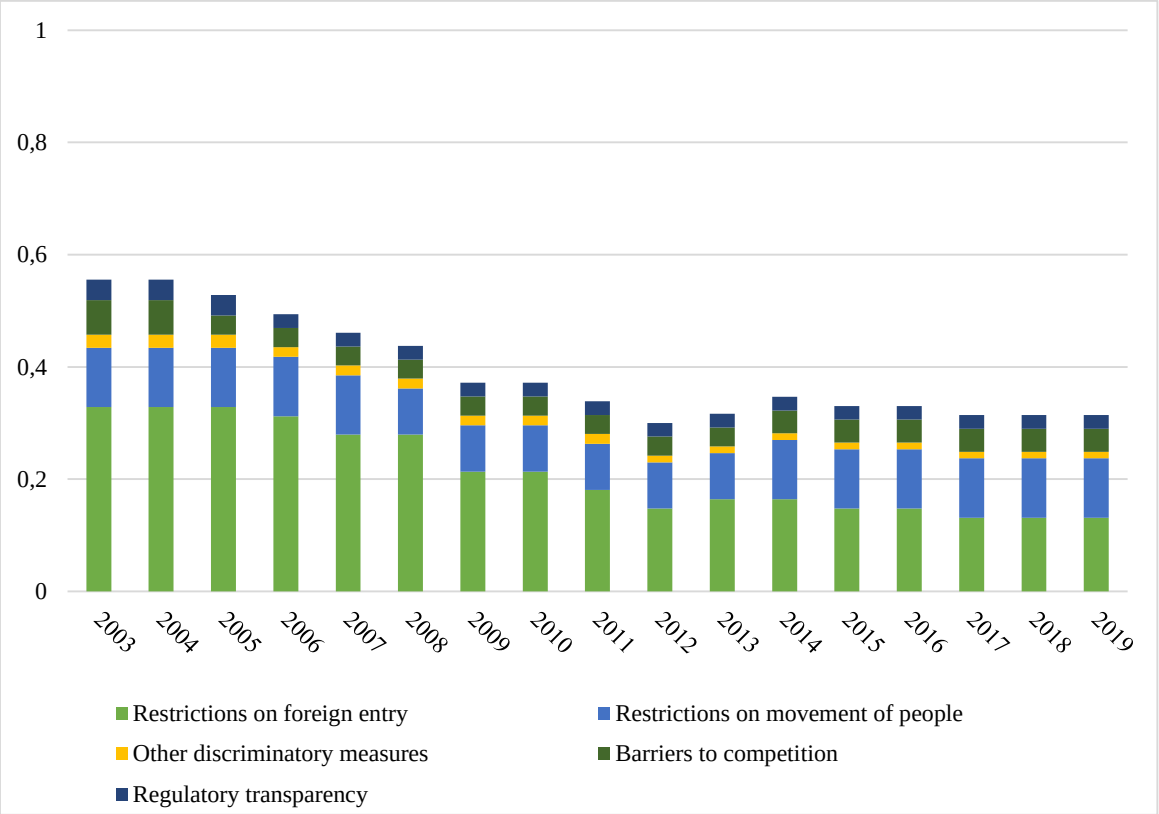


**Figure 3.5. STRI for Maritime transport services by categories of restrictions, 2003-2019**

First, it is easy to notice that the maritime transport of Vietnam has been gradually liberalised since 2004. The most substantial wave of liberalisation happened between 2003 and 2012 when the overall STRI dropped dramatically from 0.556 to 0.300. The overall

[15] Average values from 2000 to 2018, according the GSO Vietnam's website.

[16] For regulations such as foreign equity limit, from 2012, the values of international and internal maritime transport are 100 per cent and 49 per cent respectively. The study can only take value of international maritime transport because maritime transport plays more critical role to international trade than domestic trade of Vietnam. In Vietnam, this regulation is much more restrictive than almost of all 44 countries included in the OECD's study, with the exception of Greece, Indonesia and Korea. These countries also allow less than 50 per cent foreign equity in a maritime joint-venture firm.

index went up slightly between 2013 and 2014 before falling again and remained stable in the most recent period.

Before 2009, most of the maritime services were highly restricted to foreign investment. Joint-venture between Vietnamese parties and foreign investors were permitted with a maximum of 49 per cent foreign equity. Decree 115/2007/ND-CP and Decree 140/2007/ND-CP legalised commitments of Vietnam in the GATS. According to these legal documents, Vietnam raised the foreign equity limit in a joint-venture to 51 per cent from 2009. It became 100 per cent from 2012 for international maritime transport services. For domestic maritime transport, the sector was close to foreign investment until the beginning of 2009. Decree 115/2007/ND-CP allowed joint-venture maritime transport providers, with a limit of 49 per cent foreign ownership, to operate a fleet under the national flag of Vietnam. Foreign seafarers are also allowed to work on ships under the national flags of Vietnam owned by the joint-venture when two more requirements are met. First, the total number of foreign seafarers does not exceed one-third of the total employed on the ships. Second, the Master or first chief executive must be a Vietnamese citizen. These regulations have remained unchanged since 2009.

Concerning cabotage traffic and regulation of cargo and passenger transport inside the national territory, like many countries, Vietnam restricts this type of transport to the vessels with national flags. Before 2006, Vietnamese flagged vessels had a legal monopoly of this type of transport until the introduction of a new Maritime Code. The new regulation allowed foreign-flagged vessels to perform internal maritime transport in some instances.[17] Licenses were granted and regulated by the Ministry of Transport. However, after a few years, in 01/4/2013, the Ministry announced a temporary halt in the provision of licenses for foreign-flagged vessels operating on the internal cargo transportation. The decision was made after continuous complaints from domestic vessel owners about competition in this type of service. Foreign-flagged vessels could provide services at a lower cost than the domestic flagged ships, which disadvantaged the local providers in the highly competitive market.

[17] Article 7, Maritime Code 2005 states that 'Priority is granted to Vietnamese flagged vessels in the carriage of cargo and of passengers and luggage between Vietnamese seaports. Foreign flagged vessel may be permitted to perform this carriage only when Vietnamese flagged vessels are incapable of domestic carriage, particularly when: carrying extra-long and extra-heavy cargoes or other kinds of cargoes by vessels exclusively used for this purpose; transporting passengers and luggage from tourist passenger vessels to the land and vice versa.'

From 2017, the Ministry of Transport resumed granting licenses, resulting in a decrease in the overall STRI from 2016 to 2017 and onwards.

In another intervention, from 2014, a new regulation imposed a minimum capital requirement as an establishment condition for new maritime transport service firms. According to Decree 30/2014, to obtain a maritime transport license, a firm must have a minimum capital of 5 billion VND for an international freight license and 500 million VND for a domestic freight license. Even though this Decree was replaced by Decree 160/2016, the requirement on minimum capital requirement has remained unchanged. From a liberalism perspective, this is not good practice because it raises the behind-border restrictiveness even though this is a non-discriminatory regulation, affecting both domestic and foreign-invested equally.

The reversal in cabotage traffic policy and new requirements for granting transport licenses contributed to increases in the STRI from 2012 to 2014. Other remaining changes across different policy categories, such as regulations on movement of a natural persons, personel requirements, and regulatory on transparency, were identical with those describe for the commercial banking sector.

Overall, Vietnam's legislation was consistent with its GATS commitments, and membership in the WTO led to liberalization in maritime transport services of Vietnam. On the other hand, while reducing the barriers to foreign entry, Vietnam did raise several behind-the-border barriers as indicated above.

*3.4.1.4.Telecommunications*

Telecommunications sector is undoubtedly an essential tool providing for exchange of communication or information between people separated by a distance. It promotes businesses by creating more effective and cheaper communications between companies and customers and among business partners. Over the last several years, strong economic growth and government efforts in deregulation have resulted in the rapid growth of telecommunications services in Vietnam. The following data, which is extracted from

different issues of the White Book Vietnam Information and Communication Technology, demonstrates the growth of telecommunication services in Vietnam.[18]

Between 2006 and 2009, the total number of fixed-line subscriptions and the number of fixed-line subscriptions per 100 people doubled from 8.5 million to 17.4 million, and from 10.16 to 22.41 respectively. For the mobile services, growth was even faster. In just two years, the total number of mobile subscriptions and the number of mobile subscriptions per 100 people increased by more than 500 per cent, from 18.9 million to 98.2 million, and from 22.41 to 113.4, respectively. With the on-going growth in mobile services and later, the internet, the use of fixed-line telephone services fell sharply to 4.3 billion of total subscriptions and 4.51 subscriptions per 100 people by late 2018. Simultaneously, mobile subscriptions reached 130 million in total and 136 subscriptions per 100 people, and internet subscriptions reached 13 million.[19]

As a result of a fast-growing mobile and internet services, the digital economy has become essential in many countries. An economy based on digital technology with transactions made through the internet or mobile devices is designated the digital economy. In Vietnam, about 64 per cent of the population having access to the internet and the widespread connection of mobile devices to 4G; as such, the digital economy is expected boom in the near future. In 2018, according to analysis by Google and Temasek, the size of Vietnam's digital economy was evaluated at 12 billion USD in 2019 and predicted to rise to 43 billion USD by 2025, with a growth rate of 25 per cent. The government of Vietnam is targeting increase in the contribution of the digital economy to GDP to 20 per cent and 30 per cent by 2025 and 2030, respectively.

This fast growth came alongside rapid liberalisation. The telecommunications sector has experienced the highest level of changes among the sectors studied, even though, overall, it has remained the most restricted sector, despite experiencing gradual reform. Overall,

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[18] The White book Vietnam Information and Communication Technology has been published annually since 2009 by Ministry of Information and Communications of Vietnam. This publication aims to provide a broad picture on the development and policy of Vietnam on Information and Communications. It can be accessed at https://english.mic.gov.vn/Pages/ThongTin/115426/White-book-Vietnam-Infomation-Communication-Technology.html.

[19] The number of internet subscribers at the end of 2009 was 3.2 million, which is about a quarter of the subscribers in 2018, according to the White Book Vietnam Information and Communication Technology published in 2009 and 2018. It has shown the fast growing of Internet in Vietnam in the recent years.

Figure 3.6 illustrates that during the last 17 years, the telecommunications service has been highly restrictive, despite a significant decrease in the restrictiveness index from 0.834 in 2003 to 0.497 in 2019. The next section discusses the gradual transformation process of Vietnamese telecommunication services through changes across policy areas, and the resulting changes of the sector's overall STRI. From Figure 3.6, we can see three outstanding features.

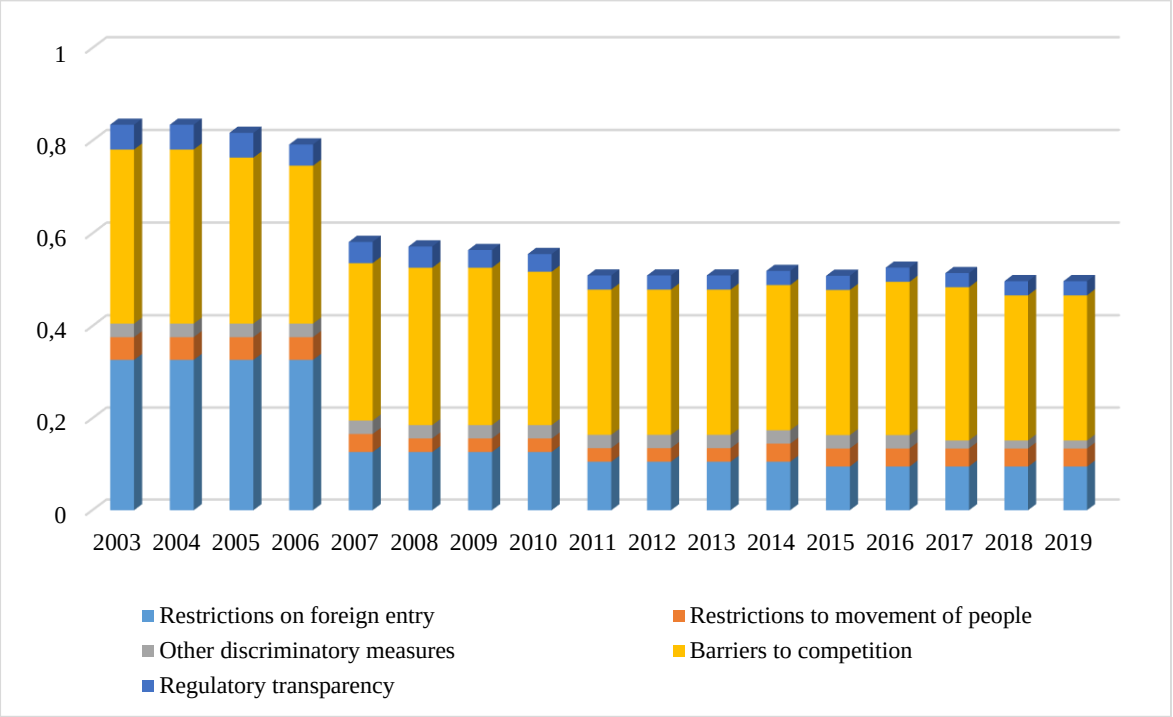


**Figure 3.6. STRI for Telecommunications services by categories of restrictions, 2003-2019**

First, the overall STRI dropped dramatically by more than 30 per cent from 0.834 to 0.581 between 2003 and 2007. Prior to the WTO accession, in 2003, as a part of the bilateral agreement with the USA, Vietnam started opening the telecom market for US investors, who were restricted to equity of no more than 50 per cent in joint-ventures of value-added services. At this time investment from outside of the US was not allowed in the telecommunications sector of Vietnam. Upon accession, in 2007, Vietnam started opening more comprehensive telecommunications services more comprehensively by allowing investors from the WTO's members to establish joint-ventures with a maximum of 49 equity per cent capital (for non-facilities-based services). This limit was raised to 65 per cent from

2010.[20] These regulations have fully complied with the commitments of Vietnam in the GATS, as stated in Decree 108/2006, implementing the Law on Investment in 2005. The Decree refers to the direct application of commitments in the GATS regarding limitations on market access.

It is necessary to note upfront that in this sector, there are various ways of grouping services such as fixed-line, mobile, internet, facilities-based services, and non-facilities-based services, basic, and value-added services. Furthermore, to facilitate the aggregation of the STRI, when foreign equity limits are different among services, we took the highest existing value. The relaxation of foreign equity limits in joint-ventures from less than 50 per cent to 65 per cent contributed to most of the STRI reduction for Vietnamese telecommunications services in the post-WTO period. This reform is the result of implementing the GATS commitments of Vietnam.

Additionally, the Law on Investment 2005, as the highest legal document on investment, unified regulations imposed on domestic and foreign investment, creating a more friendly business environment for foreign investors. Specifically, in relation to project screening, this new investment law abolished the requirements on economic and social benefit in granting investment licenses. Before 2006, a project in telecommunications sector was categorised as an A group project, which was required to show socio and economic benefits including creating new production capability, new products, and more jobs. The easing of this regulation and the relaxation on foreign equity participation were together responsible for the reduction in the sector's overall STRI from 2006 to 2007.

Second, it is not difficult to recognise that the restrictiveness category of barriers to competition category accounts for the largest share in the overall STRI. There are two reasons for this occurrence. One is that in this sector, although regulations on the foreign entry category still given the highest weight of 0.4, relatively speaking the barriers to competition category also has a similar role with a weight of 0.37. Additionally, given that

[20] Regarding foreign equity limits, commitments of Vietnam were deeper than those made by China. In China, foreign ownership in joint-venture for telecommunication services gradually increased from 25 per cent to 50 per cent by 2006 and remain unchanged until present.

the telecommunications sector tends to be dominated by monopoly providers,[21] ensuring and maintaining competition in the market is the most critical reform (Nordas et al., 2014). Relatedly, the Reference Paper on Basic Telecommunications under the GATS, a set of principles for the regulatory framework for the basic telecommunications services, is binding for WTO members. By committing to the GATS, countries must append a part of or the whole of the paper in their schedules of commitments. Being a member of the WTO, Vietnam also agreed to undertake the obligations contained in the Reference Paper. The paper provides definitions and regulatory principles regarding competitive safeguards, interconnections, universal service, public availability of licensing criteria, independent regulators, and allocation and use of scarce resources. These issues are all included in the policy areas under the barriers to competition category. The Law on Telecommunications came into force in July 2010 was quite in line with the pro-competitive regulatory principles as stated in the Reference Paper. Even though, regarding competition, Vietnam still needs to make stronger reform in the future.

Third, the overall STRI for telecommunications rose slightly between 2013 and 2014 because a limitation on duration movement of intra-corporate transferees of foreign-invested enterprises began taking effect in 2014. This regulation was described in the section above on the banking sector (see section 3.4.1.1). The remaining changes across different policy categories, such as regulations on movement of a natural person, other discriminatory measures, and regulations on transparency, are identical with those described for previous sectors.

*3.4.1.5. Distribution services*

Distribution services[22] play a role as the bridge connecting producers and consumers. For that reason, it becomes a critical sector in any economy. According to the World Bank, in

[21] In the case of Vietnam, dominant telecom providers are state-owned enterprises, such as VNPT, Viettel, and EVN telecom.

[22] According to the Services Sectoral Classification W120, distribution services are composed of four categories, including commercial agent, retailing, wholesaling and franchising.

many economies, the sector accounts for a large share of GDP and employment.[23] The more efficient the distribution sector, the higher the benefit for the economy and vice-versa. Together with a dramatic development in technology and expansion of the world's economy, the sector has changed significantly due to tougher competition. Reform of distribution services has happened in a different path than the other sectors studied, and it is worth providing the following overview of the historical background to reform in the sector.

Before 1986, when Vietnam started its Renovation (Doi Moi), consumer products (especially food) were distributed by the state via a ration coupon system. At the time, private retail and wholesale trading were prohibited. After Doi Moi reforms, private trading was allowed and boomed in the forms of small and family-owned shops that quickly became dominant players in the sector. Foreign-owned distributors in Vietnam were allowed to operate in Vietnam after the open-door policy in 1987 due to the introduction of the foreign direct investment law. The new law approved and provided incentives to attract overseas investors to invest in Vietnam through joint-ventures with local partners, business cooperation contracts, and wholly foreign-owned enterprises.

Data from the Vietnam Enterprises Survey shows that in 2003, there were 35 wholly foreign-owned and 12 joint-venture firms operating in the wholesaling service. Simultaneously, the government implemented an experimental policy that permitted foreign investors in the retail sub-sector on a case-by-case basis.[24] As a result, at the beginning of the period studied, the VES shows that there were dozens of joint-venture retailing firms and very few 100 per cent foreign-owned firms. Thus, prior to the WTO era, the foreign equity limits category was given a score of one for retail services and zero for wholesaling services.

Then from 2006, Vietnam also created a more competitive market by relaxing restrictions in this category. Instead of strictly specifying the required main content of a commercial contract, Commercial Law 2005 only suggested the main articles that should be included in

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[23] The share of distribution services in countries' GDP and employment are usually from about 10 per cent to 20 per cent and 15 per cent 30 per cent respectively (Arkell & Johnson, 2005). The indicators of Vietnam are 15 per cent of GDP and 15 per cent of the total employment (GSO, 2015).

[24] As a result, before entering the WTO, some large retailers began operating in Vietnam, such as Big C in 1998 in form of a joint-venture, Metro Cash and Carry in 2002, and Parkson in 2005.

a contract, and the inclusion of these articles was not obligatory. With the rapid development of telecommunication technology, Vietnam approved the use of electronic signatures and allowed foreign certification entities to issue digital certificates for electronic signatures. Electronic signature is much more cost-effective than the traditional method. It helps firms save several costs including printing, postage, mailing supplies, and especially saves time. It also facilitates cross-border commercial deals by firms.

After joining the WTO, Vietnam ended the trial period described above, and did not immediately fully open the market for foreign investment but followed a strategy of gradual opening. The purpose was to protect the domestic distributors, especially those of family businesses,[25] in the early stage of integration. By applying the cautious and gradual opening strategy, the government's aimed to help local enterprises take advantage of capital and technology through joint ventures. It intended to help them gradually improve competitiveness so that they could compete well with foreign enterprises when the market became fully opened. First of all, the foreign equity limit was lowered to 49% for five years from the WTO accession in 2007 until 2013. In 2014, this limit was abolished, and since then enterprises with 100% foreign capital have been allowed. From 2007 to 2013, because the foreign equity was capped at a maximum of 49%, some regulations in the foreign entry category automatically given a score of one, regardless of the degree of restrictiveness of the regulations.

One of the most controversial regulations applied in this sector after becoming a member of the WTO is the use of ENT.[26] Among subsectors that Vietnam has commitments in the GATS, ENT is only applied in retailing services. Vietnam did not set any schedule to relax this barrier at the time of signing the GATS. In terms of national legislation, Decree 23/2007/ND-CP was the first to legalize and guide the use of ENT. In 2013, Circular 08/2013/TT-BCT detailing goods trade and related activities of international firms over the period 7/6/2013 to 21/2/2018 relaxed the restriction concerning ENT. Prior to the enforcement of this Circular, regardless of the size, the opening of any additional retailing

[25] According to the Ministry of Trade and Industry, Vietnam currently has more than 1.8 million household operating in traditional retailing sectors. This type of business is the small-scaled retailers or so-call mom and pop shops, especially popular in high density urban areas such as Hanoi and Ho Chi Minh city.
[26] See Appendix II for more understanding of ENT and how ENT has been implemented in Vietnam.

store beyond the first one,[27] regardless of its size, was subject to ENT. From 2013, the Circular permitted foreign suppliers to open stores that are smaller than 500 squares meters without the need for an ENT conducted by the local government administrative body. It shows that Vietnam has gone beyond its commitments with the relaxation of ENT. However, the ENT is still applied to stores that are larger than 500 squares meters. As a result, the regulation related to the number of sales outlets was scored zero before 2007 and one from 2007 onwards.

Regarding the exemption list of products applied to foreign suppliers, there was no such list before 2007 when the market was still in an experimental period for the penetration of foreign investors. However, regulations started to change to be compatible with the GATS commitments. Vietnam imposed two kinds of goods lists on firms with foreign capital participation. These are goods that foreign firms are not allowed to sell at any time and goods that they are permitted to distribute as scheduled. For that reason, measures on licenses for the distribution of certain products took a score of zero during 2004-2006, one during 2007-2017.

The list of products that foreign-invested firms was prohibited from selling comprised of cigarettes and cigars, books, newspapers and magazines, video records on whatever medium, precious metals and stones, pharmaceutical products and drugs, explosives, processed oil and crude oil, rice, cane, and beet sugar. This list did not apply to foreign-invested firms that already operated in Vietnam before the accession of Vietnam into the WTO in 2007. More recently in 2018, Decree 09/2018/ND-CP allowed foreign firms to apply for a license to distribute the above-listed products, which can be issued provided that firms meet requirements that are much more stringent than those applied to their domestic competitors. Therefore, from 2018, measures related to licenses for the distribution of certain products have been scored at zero.

Overall, Figure 3.7 illustrates that the distribution services in Vietnam were relatively restricted during the first four years of the pre-WTO era. Since then, the sector has undergone substantial deregulation, affecting both local and foreign-invested suppliers. The

[27] The first store is automatically allowed to open when the firm is registered.

index sharply dropped by about 17 per cent from 0.528 in 2005 to 0.436 in 2007 with a further substantial fall from 2007 to 2009.

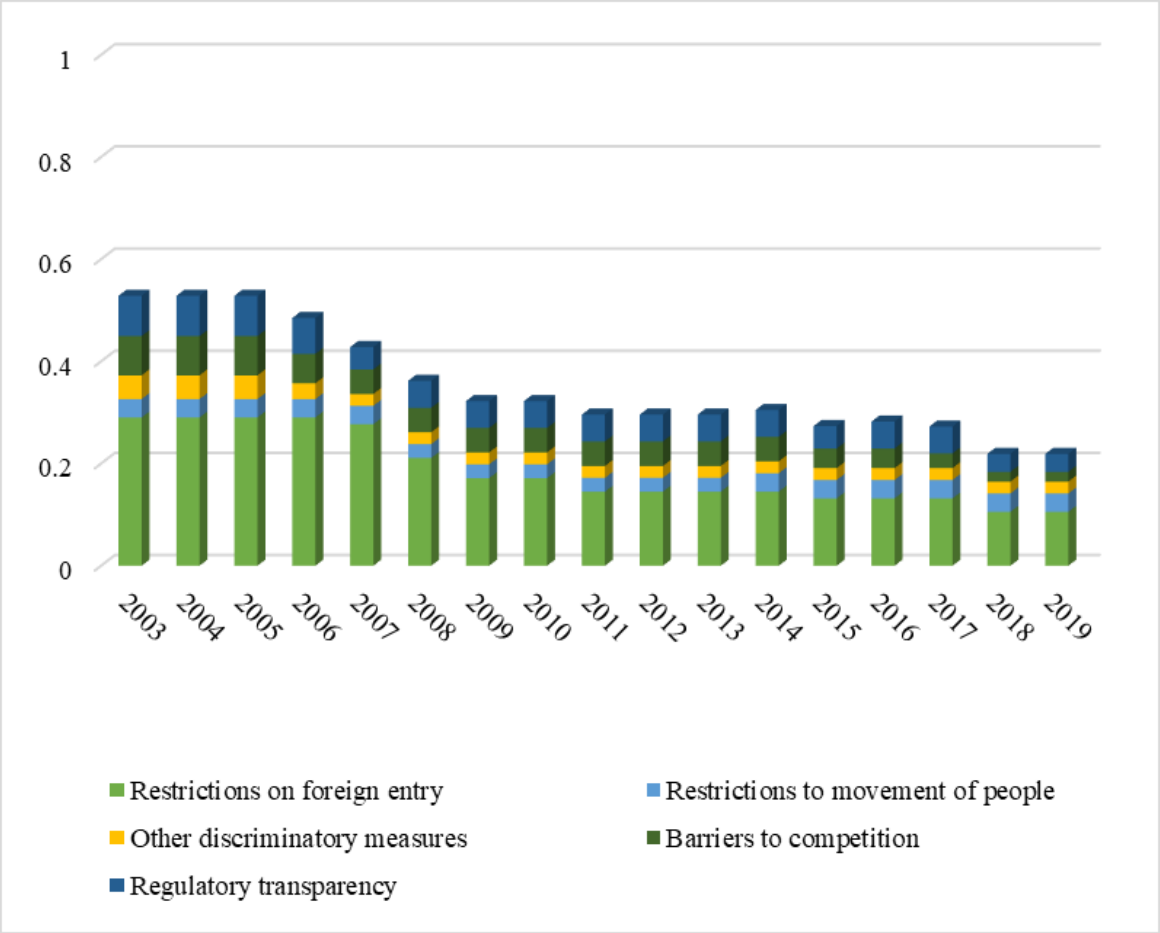



**Figure 3.7. STRI for Distribution services by categories of restrictions, 2003-2019**

The remaining changes across different policy categories, such as regulations on movement of natural persons, other discriminatory measures, and regulations on transparency, are identical with those described for previous sectors. Other regulations that do not change over time are also identified in the spreadsheets demonstrating the computation of the STRI, which are available upon request, as noted earlier.

As a result of the developments described above, the sector had by the end of the period covered become the most open among the six sectors studied, with the STRI at a value of 0.227 in 2019.

*3.4.1.6.Road freight transport*

Road freight is one of the most popular means of goods transportation in Vietnam and in many countries. According to data from GSO Vietnam, on average from 2003 to 2019, road

freight transport carried 74.6 per cent of the total volume of goods transported locally, followed by maritime transport (at 24.4 per cent), rail freight transport (at 6.2 per cent), and air freight transport (at 0.8 per cent). The growth rate of road freight traffic is usually greater than the total growth of the transport sectors as well as other means of goods transportation.[28] These data have shown the vital role of the road freight transport sector to the economic growth of Vietnam. The reasons for the greater popularity of this transport method compared to the others include flexibility and convenience. With its variety in types and sizes of vehicles, only road freight transport among the different means of transportation can carry out door-to-door services. This mean of transport is necessarily, complementary to the others. Airfreight, maritime, and rail transport cannot operate without goods traffic by road. Also, timing and individual requirements can be easily adjusted based on the various demands of customers. Moreover, while other means do not suit short distance shipments, road freight is the best choice for that. On the other hand, the disadvantages of road freight transport include frequent accidents causing damage to goods, and high costs and general unsuitability for long distances freight and bulky goods.

In comparison with the sectors covered previously, Figure 3.8 demonstrates that policy in the road freight transport sector has become the second least restrictive, after distribution services. From 2003 to 2019, restrictiveness in this sector gradually decreased from 0.548 to 0.303, with most of the decrease occurring between 2005 and 2012. This section will focus mainly on two main features of the regulatory changes affecting road freight transport services that contributed to this result.

There are two significant drops in the sector's STRI during the period from 2003 to 2019. The first was between 2006 and 2007 when the STRI fell from 0.515 to 0.451 (about 14 per cent). There was no contribution to this result from relaxing limits on foreign capital equity, but contributions came from other regulatory changes within the same policy category of foreign entry. On acceding to the WTO, Vietnam committed to allowing joint ventures with a maximum of 49 per cent foreign equity from 2007 but this commitment did not signify a fresh reduction in restrictiveness in this sector. According to the VES database that I have accessed, from 2004 to 2006, there were five joint-venture firms with less than 49 per cent

[28] Except for the years 2010, 2014 and 2018, when volume of goods transported by air grew at faster rates than by road.

of foreign equity in the road freight transport sector. For this reason, the decrease of STRI in this sector between 2006 and 2007 comes from different reforms, other than reducing barriers on foreign equity limits. These include the relaxations on the nationality of the board of directors in firms, screening regulations, and type of shares or bonds held by foreign investors. The detail is already discussed in section 3.4.1.1. The second drop of STRI in this sector is between 2009 and 2010, from 0.433 to 0.348 (equivalent to 20 per cent), reflecting an increase to 51% in the foreign equity limit in a road freight joint-venture, allowing for the possibility of foreign majority control of the enterprise.

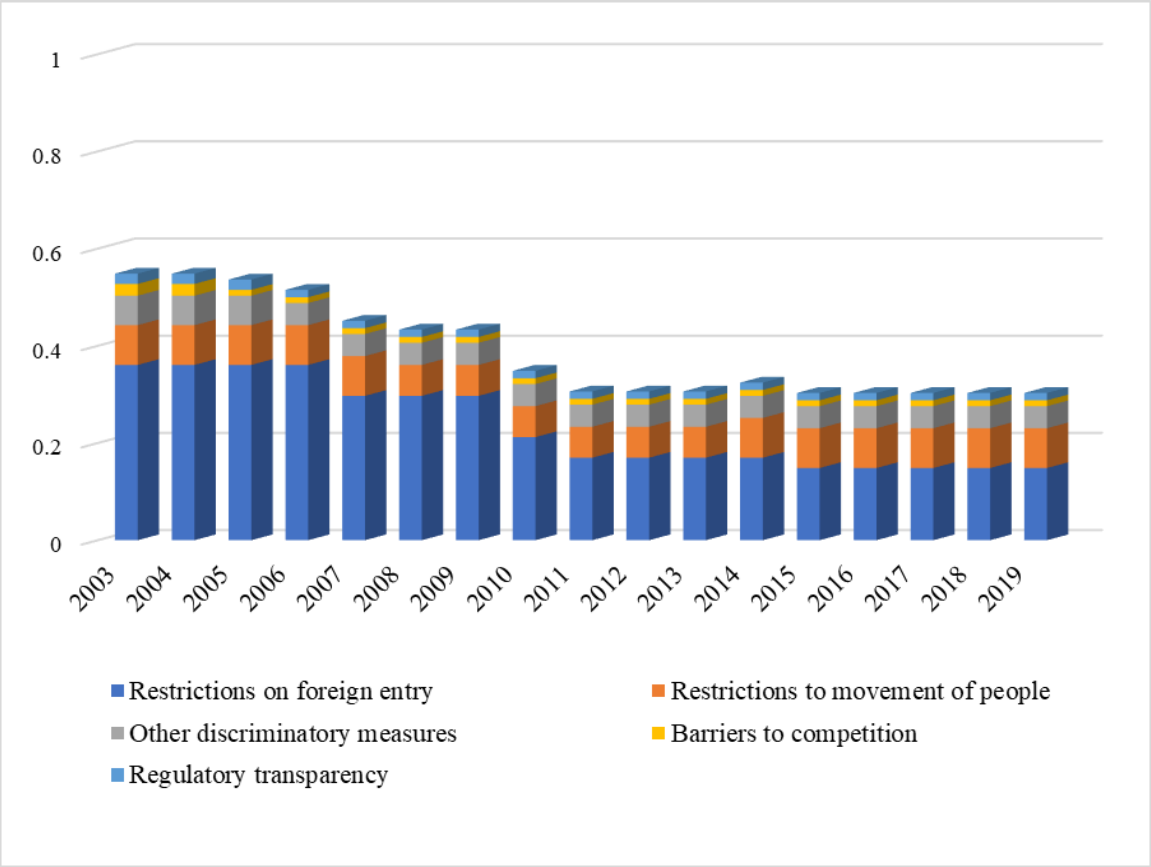



**Figure 3.8. STRI for Road freight transport by categories restrictions, 2003-2019**

Second, in 2014, restrictiveness increased in the road freight transport sector with the STRI for the sector increasing from 0.306 in 2013 to 0.324 in 2014. This increase mainly reflects the change in regulation on the movement of people already mentioned in connection with other sectors, in which the duration of stay of foreign enterprises' intra-corporate transferees reduced from 36 months to 24 months in 2014, resulting in an increase in restrictiveness in the movement of people category, with a corresponding increase in the aggregated index of

the sector's STRI. A detailed analysis of the change of this regulation is provided in section 3.4.1.1.

### *3.4.2. Cross-country STRI comparison*

In this section, I conducted a cross-country comparison on services trade restrictiveness between Vietnam and select countries from the 44 countries included in the study of the OECD. This comparison is reasonable because the methodology for measuring STRI in this research was identical to that in the OECD's study. The comparison between services trade restrictiveness in Vietnam – a developing economy – and OECD countries - a group of industrial economies - is unique and useful. At the time of writing, this is the first study that extends the study of the OECD to quantify the restrictions to the services sector in developing countries on a time-series basis for an extended period. The comparison between a country that represents transitional and developing economies as well as the most advanced economies allows us to uncover differences in the level of services trade liberalisation of these two groups. Intuitively, one could see whether a high level of economic development usually comes with a high level of liberalisation in the services sector.

This study computed STRI for six sectors of Vietnam from 2003 to 2019; however, the comparison is only possible for 2014-2018 because these are the years covered in the OECD study. Since it is not meaningful to put all 45 countries in one graph to demonstrate the comparison, I have found a way to group countries to reveal the most important information. In each sector comparison, there are two groups of countries selected. The first group contains Asian economies that are included in the OECD[29] and Vietnam. The second group includes 12 non-Asian members of OECD made up of six countries with the highest restrictiveness and six countries with the lowest level of restrictions. The countries included in this second group differ across sectors, according to restrictions that different countries apply in each sector. The section then compares restrictions affecting six services across the countries included, based on the average STRI values in each country for the period 2014-

[29] This group includes two Asian members of OECD, Japan and South Korea. The other non-OECD members from Asia contained in the OECD's study are China, India, Malaysia, and Indonesia. Thailand appears in some of the sectors.

2018. In each figure, the vertical axis is the average value of the STRI for the priod 2014-2018.

*3.4.2.1.Commercial banking*

Figure 3.9 shows that among 45 countries studied, Vietnam and other Asian countries are among the countries with the highest overall degree of restrictiveness in the banking sector. However, on average, the banking sector in Vietnam is more open than in China, Indonesia, and India. In the OECD, Latvia is the most open country to trade in banking services with the STRI of 0.127 which is just one third the level of the most restrictive country in the OECD group – Mexico with the STRI of 0.364. The average STRI of Vietnam during 2014-2018 is about four times larger than the lowest level of restrictiveness, and about two times above the average restrictiveness in the OECD countries.

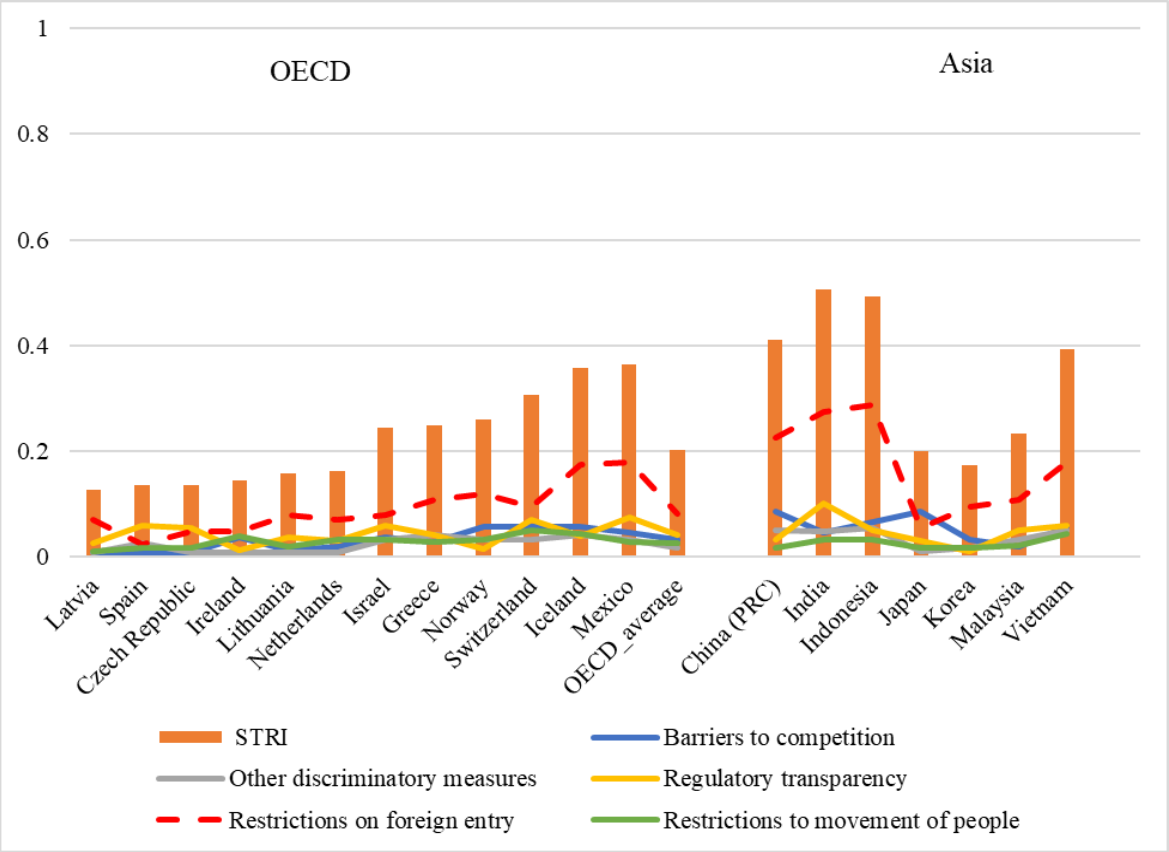



**Figure 3.9. Cross-country comparion of trade restrictiveness: Commercial banking services**

Across the 45 countries included in the comparison, restrictions on foreign entry are dominant among regulatory categories, except for Spain and Japan. In Spain, regulations are less transparent than the average of OECD countries, resulting in a higher score for the

regulatory transparency category. In Japan, competition between firms is more constrained by regulations, which results in a high score of barriers to competition category. Within the category of restrictions on foreign entry, currently, only India and Indonesia retain barriers to foreign entry by limiting the share of foreign participation. In these countries, the penetration rate of foreign banks to the domestic market is 74 per cent and 99 per cent, respectively. Wholly foreign-invested incorporated banks have been permitted since 2006.

*3.4.2.2.Insurance*

Insurance services are the second most open among the six sectors studied in Vietnam. As indicated in Figure 3.10, insurance services in Vietnam are more restricted than in all OECD countries. The average overall STRI of Vietnam is double the value of the average overall STRI of OECD countries at 0.387, as against 0.193. Among the Asian countries studied, regulation of insurance services of Vietnam is less stringent than in China, India, and Indonesia. As with the banking sector, India appears to be the most restrictive country.

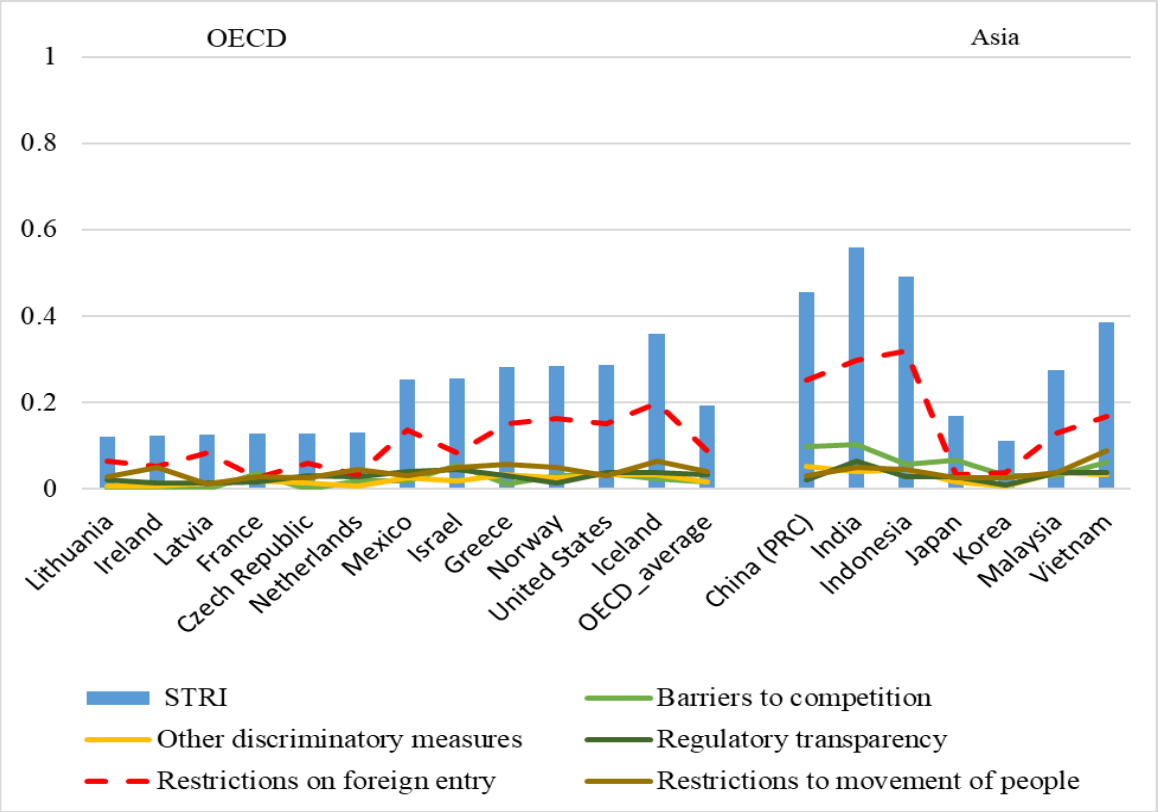



**Figure 3.10. Cross-country comparison of trade restrictiveness: Insurance services**

With regard to regulatory categories, foreign entry is the most restrictive category for most countries except for Japan where barriers to competition are the most restrictive. As regards

other categories, despite India enforcing the most stringent regulations in general, Indonesia is the country where entry to the domestic market is the most restricted.

*3.4.2.3.Maritime transport*

Compared to the more restrictive of the 44 other countries included in the study, the maritime transport sector of Vietnam is somewhat more open. The level of restrictiveness is slightly above the most restricted countries in OECD, as shown in Figure 3.11, even though the overall STRI of Vietnam is only 1.4 times the OECD average. During 2014-2018, the average of STRI in maritime transport of Vietnam was 0.327, which is higher than the average STRI of more advanced economies in Asia, including Japan, Korea, and Malaysia. However, the value is lower than that of the most restrictive countries – Indonesia, China, and India.

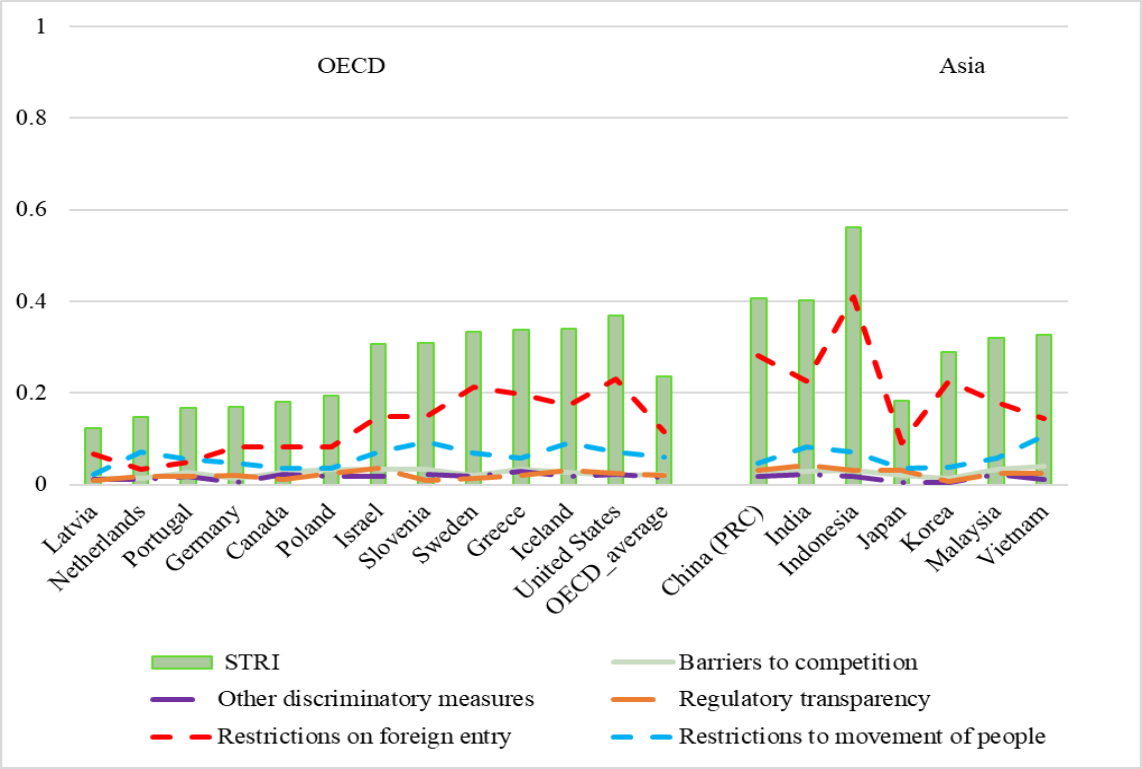



**Figure 3.11. Cross-country comparison of trade restrictiveness: Maritime transport services**

Figure 3.11 shows that within regulatory categories, restrictions on foreign entry play the most important roles with the exception of the Netherlands. Instead, this country imposes more stringent regulation on the movement of people than any other restriction categories. By contrast, Indonesia, China, and India are the three countries that retain the highest degree

of restrictiveness on the establishment of foreign firms in the domestic market. For Indonesia and China, the reason is that these two countries allow only a low rate of foreign participation in the local market, with a maximum permitted foreign equity joint-ventures recently standing at 49 per cent. The other countries already permit 100 per cent foreign-owned maritime transport enterprises, except for Korea. Korea applies the same foreign equity limit as Indonesia and China; however, Korea is quite relaxed in other restriction categories, resulting in a relatively low value of the overall STRI.

*3.4.2.4.Telecommunications*

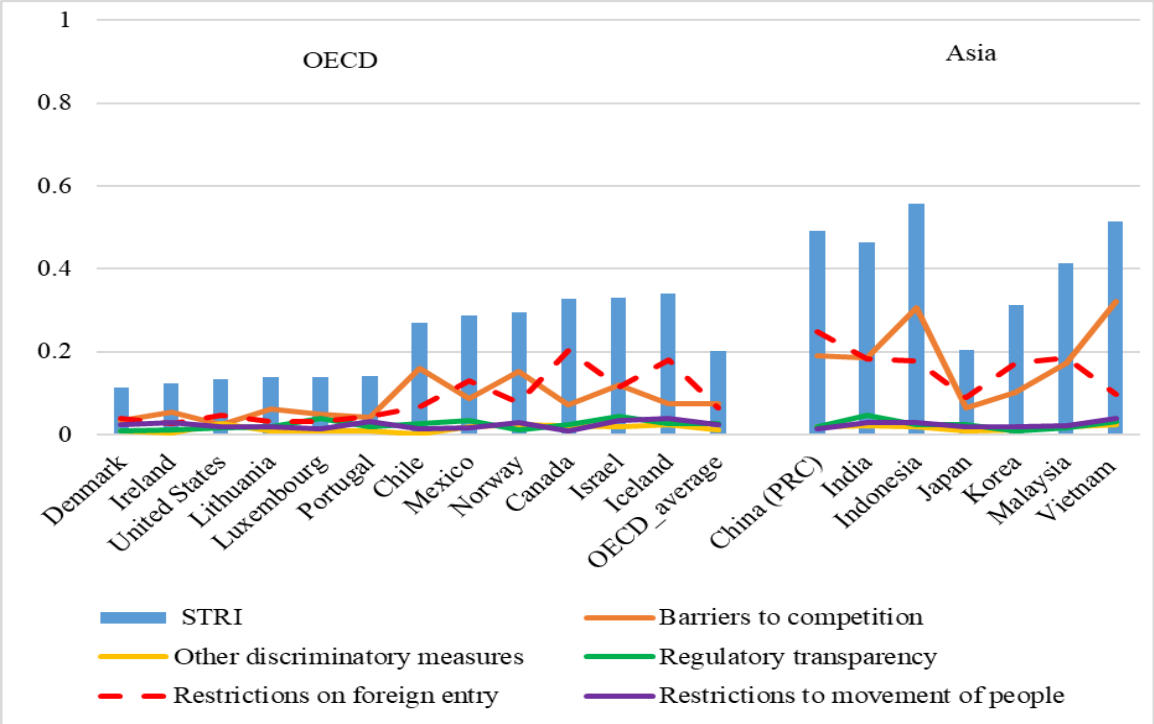



**Figure 3.12. Cross-country comparison of trade restrictiveness: Telecommunications services**

Among the six sectors studied, in Vietnam telecommunication services are subject to the most stringent regulations. On average, between 2014-2018, STRI of Vietnam had a high score of 0.513 – more than 2.6 times higher than the OECD averages (at a value of 0.2), and higher than all the countries included apart from Indonesia. Figure 3.12 also highlights that in the same period, OECD countries' markets were much more open than Asian countries. Similar to Vietnam, Indonesia, China, India, and Malaysia also have a high level of restrictiveness in telecommunication services.

In the case of the previous sectors, for most countries, restrictiveness on foreign entry is usually the highest among regulatory categories. However, in telecommunications services, this is not a clear trend as barriers to competition are dominant in some countries such as Vietnam, Indonesia, Norway, Chile, and Lithuania. Regulations on foreign entry prevail in the remaining countries.

*3.4.2.5.Distribution services*

In Vietnam the distribution sector is the most open of services sectors studied here. This is also the trend in OECD countries. As indicated in the figure above, on average, STRI of Vietnam during 2014-2018 is about 1.6 times the OECD average STRI. Nevertheless, it is still less restrictive than the most restricted country in the OECD. The level of restrictiveness of distribution services in Vietnam is the lowest in the Asian countries included – equal to Malaysia and lower than in India and Indonesia.

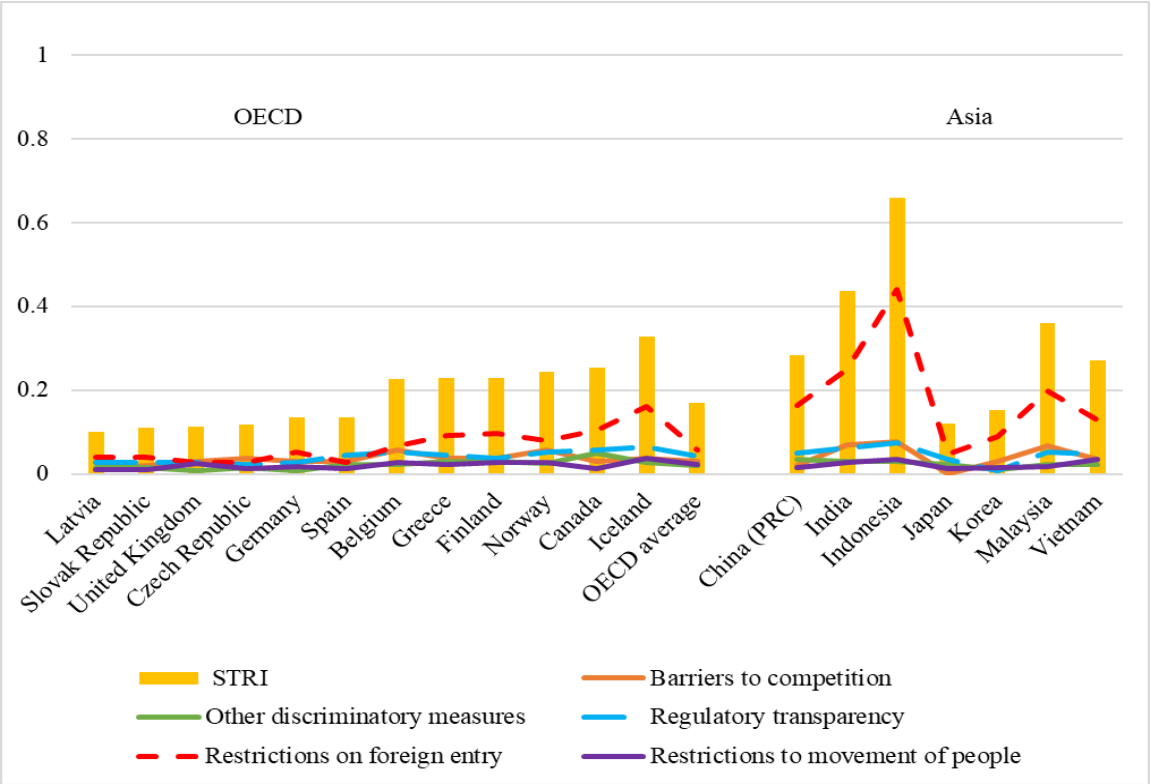



**Figure 3.13. Cross-country comparison of trade restrictiveness: Distribution services**

Barriers to foreign entry are the most important category of restriction in distribution services across the 45 countries studied – especially in the more restricted countries in Asia. These barriers are the most stringent in Indonesia and India. Currently, the retail market of Indonesia is fully closed to foreign investors, while 67% of foreign ownership is permitted

for wholesaling. In India, foreign equity up to 51% is allowed for multi-brand retail trading, and 100% is allowed for single-brand product retail trading, and there is no foreign equity limit in wholesaling. By contrast, Vietnam and other countries studied have already fully opened the distribution market to foreign investors without any limitation on foreign equity. Regarding other regulations on foreign entry, different from OECD countries, Vietnam has applied several requirements on personnel, the number of outlets, zoning, and licenses for the distribution of certain products. For other regulatory categories, including regulatory transparency, movement of people, and other discriminatory measures, Vietnam retained a moderate degree of restrictiveness compared to OECD countries.

*3.4.2.6.Road freight transport*

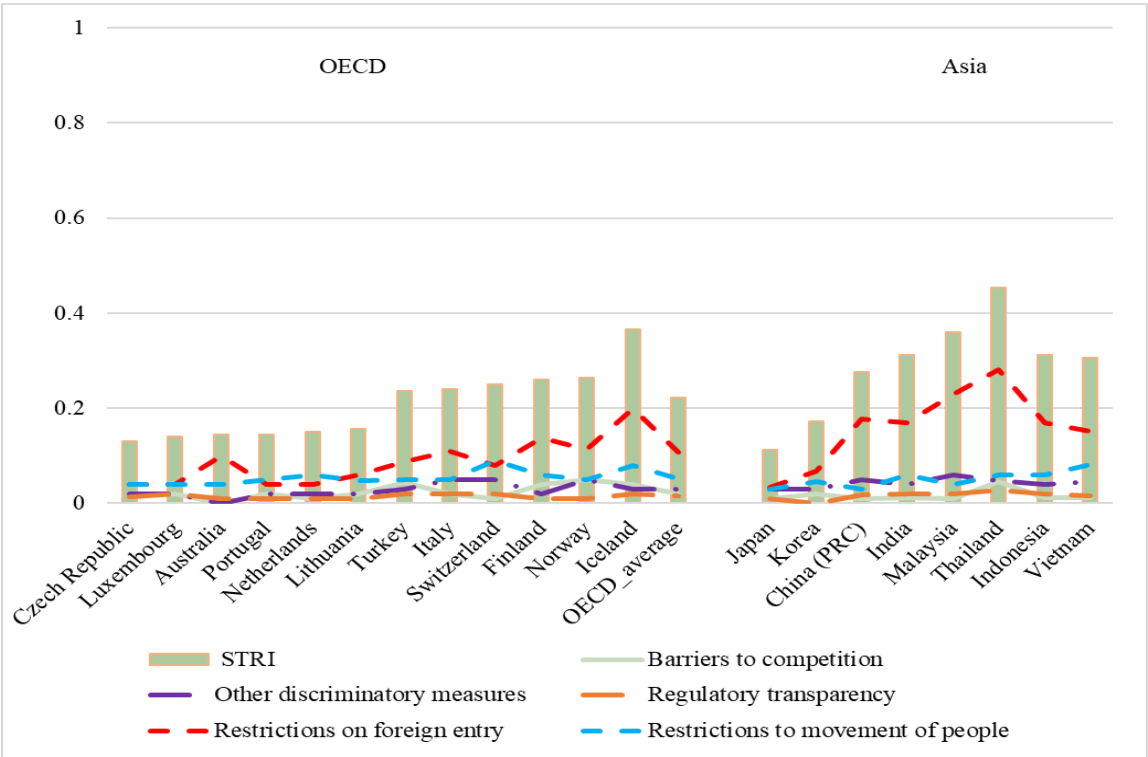



**Figure 3.14. Cross-country comparision of the trade restrictiveness: Road freight transport**

Across the 45 countries, among the six sectors included in this study, road freight transport is the least restrictive sector, with the lowest value of STRI. In comparison to 45 countries in the OECD's study, Figure 3.14 indicates Vietnam and other Asian countries are among the countries with the highest overall degree of restrictiveness in the road freight transport sector. However, Japan – an Asian member of the OECD – is the most open economy in this sector with an average STRI of 0.113 which is half of the average STRI of the whole

dataset. However, on average, the road freight transport sector in Vietnam is much more open than in Thailand and Malaysia – two countries with the highest average STRI in the sector. The level of restrictiveness in Vietnam is less than in Iceland – an OECD member from Europe – and is equal to the restrictiveness in Indonesia and India.

Similar to most of the sector concerned, and across 45 countries included in the comparison, restrictions on foreign entry are dominant among regulatory categories, except for the case of the Netherlands. In the Netherlands, regulations on the movement of people are the most restrictive. Within the category of restrictions on foreign entry, most recently, Malaysia, Indonesia, and Thailand have retained barriers to foreign entry by limiting the share of foreign participation. In these countries, the maximum permitted equity of foreign firms to the domestic market is 49 per cent, which is lower than the 51 per cent in Vietnam.

### 3.5. Conclusion

This Chapter quantified the restrictiveness of trade in the selected services sector of Vietnam. The focus was on six major services, including commercial banking, insurance, maritime transport, road freight transport, distribution services (wholesaling, retailing), and telecommunications services (fixed-line and mobile), for the period from 2003 to 2019. The analysis of changes over time of each sector's STRI is specifically linked to the question of whether the accession to the WTO led to actual liberalisation of Vietnam's services sectors. It also compared the level of restrictiveness in the services sectors of Vietnam with 44 countries included in the study of OECD in the most recent time.

It is worth noting that the GATS is a positive list or bottom-up approach agreement. In a positive list approach agreement, the country chooses sectors/sub-sectors in which it will undertake market access and national treatment commitments and lists all exceptions or limitations on these commitments which the country wants to apply. The commitments in the GATS are the minimum commitments that Vietnam must implement. In practice, Vietnam has the right to either reduce or impose more restrictions applied to foreign investors (or both foreign and local investors) as long as the restrictions do not violate its commitments in the GATS. Therefore, reviewing the regulatory framework can not only determine whether Vietnamese legislation has been compliant with its commitments in the GATS but also create a picture of the actual liberalisation of Vietnam's services sectors.

The results suggest that, generally, Vietnamese legislation has complied with commitments in the GATS. During and after WTO accession negotiations and after members like Vietnam had to revise existing regulations and introduce new legal documents to bring their national legislation in compliance with the WTO rules and regulations. Our results suggest that a major part of services liberalisation in Vietnam was a result of implementing commitments in the GATS – especially in commercial banking, telecommunications, and maritime transport services. As a result, foreign investors were permitted to hold a higher ratio of capital in joint-ventures in telecommunications services, and there were no limits in banking and maritime transport services. Additionally, Vietnam also unilaterally opened broader trade channels by relaxing several regulations affecting foreign firms. These regulations are usually related to the movement of people and the operation of foreign firms. For example, Vietnam removed the quotas for foreign labour that firms could employ in 2008, expanded the permitted operating activities of foreign banks' branches, relaxed the application of ENT, and reduced the number of products that foreign firms are prohibited from distributing.

However, the results also find that together with granting broader market access and national treatment to foreign investors, Vietnam also raised some behind-the-border restrictions. For example, minimum capital requirements as an establishment condition have been imposed on new firms in maritime transport services from 2014 and insurance services from 2016. Concerning regulations on the movement of people, the review shows that Vietnam has been inconsistent regarding limits on the duration of stay of foreign enterprises' managers, which has indeed been a backward step in the liberalisation process of Vietnam.

Compared to 44 countries in the study of the OECD, during 2014-2018, in all six sectors studied, Vietnam was among the top five countries with the highest degree of trade restrictiveness. In telecommunications, Vietnam was the most restricted country. Among the Asian countries group, the levels of restrictiveness of Vietnam in insurance and maritime transport services were lower than those of China, Indonesia, and India. Distribution and commercial banking services in Vietnam were not as restricted as in China and Indonesia. Although Vietnam's services sectors have been significantly liberalised in general, it has maintained a high level of restrictiveness. Thus, there is much scope for further reform.

The contribution of this Chapter is two-fold. First, it is the first study that quantifies the level of restrictiveness in multiple services sectors of Vietnam on a time-series basis. It also

expands the literature on regulatory restrictiveness in the services sector of transitional and developing economies. Second, it provides empirical evidence that the WTO accession is a major factor creating actual liberalisation of services trade in the acceding members. The Chapter constructs a time-series dataset for the period 2003-2019 on trade restrictiveness indexes by regulatory categories that affect market entry and operation of firms. This dataset and the regulatory database constructed by this Chapter provide useful information for the private sector in making investment decisions. Moreover, the dataset provides essential inputs for quantitative empirical assessment on the impacts of services trade liberalisation.

However, the study has a limitation that can be explored in future research. It measured the restrictiveness of the regulations as stated in official legal documents of Vietnam without taking into account the implementation of these legal documents and the business perspectives of such implementation. This requires in-depth interviews with industrial experts, and public and private stakeholders, which is outside the scope of this study. With more time and financial resources, I expect that the limitation could be overcome.

In the next two Chapters, I will use the newly constructed STRI dataset to evaluate the impacts of the services sector regulatory reform on the productivity and the employment of firms in manufacturing sectors.

# Chapter 4. Impacts of barriers to services trade on the productivity of manufacturing firms

## 4.1. Introduction

Statistically, services account for an increasing share in the world GDP, employment, international trade, and investment. The services sector, moreover, plays a vital role in creating jobs and providing conditions for the growth of other sectors through intersectoral linkages (Nordas & Rouzet, 2016). Understanding these linkages is essential in formulating trade policies as it provides insight into the structure of an economy (Cai & Leung, 2004; Comin, 2010).

The reduction of trade barriers in services can benefit the economy in two ways. First, it attracts foreign service providers, who then bring various benefits to the host country through increased competition in local markets, improving services availability and quality, and creating knowledge spillover (Fernandes & Paunov, 2012). The beneficiaries are not limited to firms in the services sector themselves but also in other sectors via the sectoral linkages channel. Second, besides advantages from the spillover effect of inward FDI as a result of services liberalisation, domestic services suppliers can also directly gain more from relaxing regulations that apply to all firms in the market.[30]

The manufacturing sector has been long proven as the main driving force of the economic growth and productivity of developing countries. This sector not only consumes most of the output but also absorbs a large amount of labour which originated from the agricultural sector. Previous explanations for improvement of the manufacturing sector performance emphasise the openness of trade in goods (Arnold et al., 2016). As a part of comprehensive liberal trade policy, the potential impacts of services trade reform have not been extensively studied in both theoretical and empirical aspects. A number of reasons could be evoked, including the difficulty in quantifying non-tariff barriers to services trade and the lack of sufficient data at the micro-level – especially in the case of developing countries. With the

[30] These are nondiscriminatory regulations, which apply to not only foreign-owned firms, but also local firms. For example, in distribution services, regulations on advertising, pre-packing of products, and opening hours are normally imposed on all suppliers regardless of ownership.

availability of both data on the measure of barriers to services trade and manufacturing firm's database, this study aims to investigate the intersectoral linkage between liberalisation in the services sector and the performance of firms in the Vietnamese manufacturing sector.

Vietnam represents an interesting case in a number of aspects. First, Vietnam is well known as a successful case of economic transition from a planned economy to a market-oriented economy. In the last two decades, Vietnam has retained rapid rates of economic growth with an increasingly important role of the services sector. Second, with the findings from Chapter 3, despite criticism on the effectiveness of the GATS on actual services liberalisation in many countries, it was found that Vietnam is a different case. As an acceding member of the WTO, the binding commitments in the GATS were more liberalised than the existing regulations in the services sector of Vietnam at the time. Therefore, the implementation of the commitments to the GATS has proven to create the liberalisation of trade in services of Vietnam.

To investigate the impacts of services reform on the performance of firms in the manufacturing sector, this study estimates three kinds of information: a measure of services liberalisation, information on sectoral linkages, and a performance measure for manufacturing firms. Services liberalisation was measured in Chapter 3, where a large amount of qualitative regulation information on the sector was gathered and then transformed into a composite time-varying index.[31] The construction of the database on services restrictiveness is one of the contributions of this dissertation as it is unique in being available on an annual basis, starting from 2003. This time-series database can also be used in other research on the impacts of Vietnam's services reform – especially in the post-WTO era.

This index is combined with a sector-specific ratio which measures the reliance of respective manufacturing sectors on inputs from each service sector. The ratios are constructed from the Vietnam national Input-Output table (I-O table). Finally, as a performance measure, I

[31] The index ranges from 0 and 1. Addressing the research questions in Chapter 3, I calculated the services restrictiveness index for each of five services sectors, for the period from 2003 to 2019. Detailed methodology to measure this index is in Chapter 3 of this dissertation.

obtained the TFP (Total Factor Productivity) of firms through sector-specific production function estimates, using firm-level data from the Vietnam Enterprises Survey.

The main finding of this Chapter is that relaxing barriers to services trade was associated with improvement in the performance of downstream manufacturing firms that use services as intermediate inputs. Regarding the forward linkage, the effect of services liberalization was an increase in productivity of 9.1 percent for manufacturing firms for a one standard deviation decrease in the restrictiveness index. The size of impacts of services reform in Vietnam is slightly larger than that of the previous studies, such as 9 percent in Shepotylo and Vakhitov (2012), 8.4 percent in Arnold et al. (2016), and 7.7 percent in Matoo et al. (2011). The effects are strongest with small-sized firms and domestic firms, while medium and large firms and foreign firms receive the least benefits. In terms of the backward linkage, a one standard deviation decrease in the manufacturing linkage index corresponds to a loss of 7.8 percent in productivity. The results are robust to different TFP estimation method, to alternative measures of the services liberalization. Through running IV regression – using the outward FDI of the US to the rest of the world as instruments for the STRI, it is proven that the main results are not driven by reverse causation sourced from the potential lobbying behaviours of the manufacturing sector. The further robustness test that I conducted also confirms that the effects of services reform in manufacturing firm's performance is not through increasing firms' markup.

The main contribution of this study is to examine the effects of services liberalisation on the productivity of manufacturing firms through both conventional and unconventional channels: the manufacturing sector as consumers of services products and as providers of input for firms in the services sector. This study also complements the literature regarding the economic impacts of services reform on the manufacturing sector – especially in the case of developing countries. In the case of Vietnam, it serves as the first attempt.

The remainder of this Chapter is organised as follows. Section 4.2 reviews literature on the theoretical framework and empirical evidence on how liberalisation of services trade affects the productivity of manufacturing firms. Section 4.3 describes the data sample selection and empirical models. The main results, robustness tests, and extensions to the core analysis are discussed in section 4.4. Section 4.5 provides conclusion and policy implications.

## 4.2. Literature review

### *4.2.1. Theoretical framework*

The importance of the services sector has been increasing given the fact that the share of the services sector in GDP and employment have continuously increased also. While the role of services sector as a final product was an early focus (Baumol, 1967; Clark, 1940), services as intermediate goods began receiving attention much later (Markusen, James R., 1989; Melvin, 1989). Thus, in international trade theory, the literature on intermediate goods is quite limited. Among those, several touch on linkages between services trade and productivity growth.

Similar to intermediate manufactured goods, services are often differentiated and knowledge-intensive, requiring an initial learning cost. After that, the services can be supplied to other users at a very low marginal cost (Markusen, 1989). The services sector is increasing in importance to both final users and intermediate users whose productions require services as inputs. Moreover, producer services do not only provide manufacturing firms missing inputs but also substitute for services produced in-house at a lower cost (Markusen, James, Rutherford, & Tarr, 2005). As the cost of production input decreases, firms would be able to lower prices of final products, resulting in higher profit margins, which possibly leads to an expansion in production scale and productivity (Fiorini, Hoekman, & Malgouyres, 2018).

Manufacturing firms can gain from the increased specialisation of services in two other ways. First, more variety, knowledge-intensive, and lower-cost producer services have paved the way for the fragmentation of manufacturing firms (Deardorff, 2001). Fragmentation or outsourcing increases specialisation of firms as different parts of production can be done in multiple locations where resources are abundant. Second, manufacturing firms can improve their export competitiveness thanks to the availability of low-cost producer services. For example, the export of merchandise goods cannot happen without transportation services. Other services such as telecommunications, finance, and professional business services play the role of facilitating international trade deals and transactions of firms. Likewise, firms can also benefit from the importation of lower-cost inputs for production with the support of the services sector. The expansion of international

trade (both export and more efficient imports), in turn, would allow firms to achieve productivity growth through economies of scale (Shepotylo & Vakhitov, 2015).

In addition, by replacing services produced in-house by more efficient and lower-cost producer services, manufacturing firms can reallocate resources to production processes in which they hold the greatest comparative advantages. As such, in an open economy, access to low-cost and high-quality producer services is determinant of the competitiveness of the manufacturing firms (Francois & Hoekman, 2010).

Theoretical links have clearly supported the important role of higher efficiency, more variety, and high-quality services to the performance of manufacturing firms. The question now is how the services sector, as intermediate inputs for production, achieves such conditions. The answer is through liberalisation. Like goods trade policy reform, liberalisation in the services sector does not only promote foreign investment (through reducing foreign entry barriers) but also creates a more competitive business environment (through removing anti-competitive regulations). Reducing barriers to foreign entry would encourage foreign service suppliers to establish commercial presences in the hosting countries. In the case of developing countries, foreign firms tend to be more efficient and competitive than most of local firms, which then increase competition in the market. This could cause firm exits, but also creates stronger surviving firms. Besides providing better quality services, foreign providers are also a source of new services that have not yet existed in the hosting countries. Moreover, knowledge and technology spillovers are likely gained through foreign investment in the forms of joint-ventures, and mergers and acquisitions. Spillovers can also benefit manufacturing firms through interaction between domestic and foreign service providers (Fernandes & Paunov, 2012). Next, strengthening competition regulations prevents incumbents from maintaining high prices and possibly improves competitiveness by either lowering prices or increasing services quality. As a result, the increase in the number of service suppliers, and the greater competition in the market would result in a reduction of service price, and a more reliable and better quality of service.

In this Chapter, besides the conventional channel as described above, I also examine another channel – that the reform of the services sector may affect the productivity of manufacturing firms. That is, the linkage operating through demand from the services sector for manufacturing inputs. Given the fact that services firms do not only provide services as inputs for manufacturing firms but also consume manufacturing products, the expansion of

the services sector then affects the demand of manufacturing firms. This is the first study that investigates this type of linkage between liberalisation of trade in services and productivity of firms in manufacturing sectors. A detailed explanation of this linkage is described in section 4.3.1.2.

### *4.2.2. Empirical evidence*

The limited theoretical studies and the scarcity of firm-level data have explained the presence of only a small body of empirical literature on the linkage of services trade and economic performance. Duggan, Rahardja and Varela (2013) summarise the link via four channels between openness to services trade and performance in the existing empirical literature: (1) services reform and economy-wide gains, (2) services reform and service sector performance, (3) services reform and manufacturing export competitiveness, and (4) services reform and manufacturing productivity. This section surveys the literature on all these four channels with a specific focus on the last channel, which is the main interest of this study.

First, a strand of literature emphasises the impacts of services trade liberalisation on economy-wide performance.[32] Conducting a cross-country analysis, Mattoo, Rathindran, and Subramanian (2006) concluded that controlling for other determinants of growth, openness in services sector, including finance and telecommunications, has positive impacts on long-running economic growth. Additionally, countries with fully opened telecoms and financial services sectors grow up to 1.5 per centage points above that of the other countries. Eschenbach and Hoekman (2005) utilise the services reform indexes in finance, telecommunications, and infrastructure of 20 transition economies, complied by the European Bank for Reconstruction and Development (EBRD) from 1990 to 2004. They found that services reform is significantly associated with the capita GDP growth and the inward FDI of the sample economies during the period studied. Inconsistent with these studies, recently, Fiorini and Hoekman (2018), after controlling for a number of factors, did not find any linkage between restrictions in finance, telecommunications, and professional sectors and economic growth in developing countries. However, the restrictiveness index of

[32] These studies have been conducted using cross-country macro-level data.

transport services does appear to have an effect on the economic growth of the sample countries. In this study, the service trade restrictiveness index (STRI), developed by the World Bank, which captures the trade policy regime of countries in 2009, is used for a sample of 92 countries.

Recently, three more economic impacts of services sector liberalisation on macro-economic performance have received research attention. First, Fiorini and Hoekman (2017, 2018) made the first attempt to investigate the potential effects of services policy reform and sustainable development in a sample of 92 countries. While services reform is proxied by the World Bank STRI,[33] sustainable development goals are linked to services through a number of indicators referring to access of the public to certain services. For example, indicators include the number of internet users per 100 people, the Logistics Performance Index, and the per centage of the population having a bank account, which refers to the access of the public to Information and Communication Technology (ICT), transport, and finance sectors. The authors argued that removing restrictions to services was associated with greater access of the public to the sector studied. Through these mechanisms, the respective Sustainable Development Goals (SDGs) would be achieved. However, it is highlighted that to identify the extent to which a particular service sector and each type of policy affects different SDGs, a country-specific analysis time-series data is recommended. Second, Nordas and Rouzet (2016) used the latest comprehensive STRI constructed by the OECD since 2014 to investigate the relationship between services restrictions and trade performance in the restricted sectors. The study took advantage of the new availability of the bilateral services trade of OECD countries. For that reason, only OECD countries were included. Using the gravity model, the authors found that the STRIs negatively affect imports of services in many sectors and that the effect of STRI on services exports is stronger than on services imports.

At the sectoral level, reform does matter to the performance of service sector itself. Using macro-level data, Fink, Mattoo, and Rathindran (2002) investigated the impact of policy reform in fixed-line telecommunications on sectoral performance in 86 developing countries

[33] In 2012, the WB finalised a project to develop an STRI database, covering 103 countries (79 non-OECD countries and 24 OECD countries), and five sectors (including finance, telecommunications, retail distribution, transport, and professional services). The study covered policy as in 2008.

from 1985 to 1999. The reform focused on two aspects of policy – privatisation and competition. Changes in both policy aspects were found to enhance the performance of fixed-line telecommunications, and comprehensive reform of both these two policy areas would associate with an increase of 8.0 per cent in mainlines and 21 per cent in labour productivity. The authors also concluded that these gains could only be achieved as the result of a simultaneous introduction of both policies.

Cross-country studies by Fink, Matoo, and Neagu (2002) and Francois, Manchin, and Pelkmans-Balaoing (2009) found a positive relationship between communications reform and export of manufacturing firms. Communications costs negatively affects trade flow – especially in the case of differentiated goods (Fink et al., 2002). Reducing this cost through the reduction of barriers in communications-related infrastructure increases the export performance of firms (Francois et al., 2009). Concerning a broader effect of the aggregate services sector on export activities of firms, both Tarr (2012), Bas (2014), and Hoekman and Shepherd (2018) confirmed evidence that services reform is associated with an increase in manufacturing firms probability of export and their export sales.

The fourth line of literature examines the link between the reform of the services sector and the total factor productivity of the downstream manufacturing firms using services inputs. The reason for choosing TFP as the main variable of interest was due to its importance to economic growth. While the growth that is driven by inputs deepening, without an increase in efficiency, is certainly limited, the rise in total factor productivity has been proven as a key determinant of long-term economic growth of a country (Comin, 2010; Krugman, 1994).

Most of the studies in this channel are driven by country-specific, firm-level data and a standard two-stage methodology has been widely employed. The first stage is to estimate TFP of firm in manufacturing industries through obtaining production function at the industry-level. Since ordinary least square estimator is often criticised as being biased, semi-parametric estimation technique, which was developed in the recent literature, e.g., Olley and Pakes (1996), Aw, Chen and Roberts (2001), Levisohn, and Petrin (2003), Wooldridge (2009), and Ackerberg, Daniel, Caves, and Frazer (2006; 2015), is the most commonly used to estimate production function. In the second stage, the estimated TFP is further regressed on the index of services liberalisation. This index is computed at the sector-level by interaction between a measure of services reform and the ratios that indicate the reliance of

manufacturing sectors on various service inputs. While the measure of reform in the services sector varies across studies, the intensity of services usage is usually taken from a national input-output table.

Arnold, Mattoo, and Narciso (2008) used the data of 1000 firms in sub-Saharan countries. The study used both OLS and semi-parametric estimation methodology suggested by Olley and Pakes to estimate firms' TFP and found a significant positive contribution of greater access to telecommunications, electricity, and financial sectors on productivity gains of manufacturing firms. In another study, Arnold, Javorcik, and Mattoo (2011) showed the greater access to services inputs is associated with the higher productivity of local manufacturing producers from the Czech Republic from 1998-2003. The authors also highlighted that the openness to FDI in the services sector plays a key role in boosting downstream manufacturing performance.

In this study, the TFP was used as a proxy of firms' performance; it was estimated as the residual of sector-specific three-factor Cobb-Douglas production function. The parameters of the production function were identified using methodology as in Olley and Pakes (1996). The liberalisation index of the services sector was measured in three aspects: foreign entry (foreign ownership), the progress of privatisation, and the level of competition.

To estimate the reliance of manufacturing firms on each type of service, due to the unavailability of the usage of services at firm-level (as used in Fernades and Paunov, 2012), information from a national input-output table was utilised. In a study focusing on Indian manufacturing firms, Arnold, Javorcik, Lipscomb, and Mattoo (2016) identified that the reform of sectors including transport, telecommunications, and finance contributed significantly to the enhancement of manufacturing firms' productivity of Indian manufacturing firms during the mid-1990s and the early 2000s (identical with results found in Duggan et al., 2013, and Arnold et al., 2008). The effects were found for both foreign and domestic firms, yet the foreign firms were likely to benefit more.

Two separate studies examined the effect of FDI in services on the productivity growth of manufacturing industries. Fernandes and Paunov (2012) analysed the case of Chilean manufacturing firms. To measure the importance of services FDI to producers that consume services as intermediate inputs, the study obtained the usage of services at the firm-level as opposed to other studies using input coefficients from input-output tables. This approach, however, may raise concerns regarding the correlation between the productivity of an

individual firm and its services usage (Arnold et al., 2011). The evidence of the improvement in the performance of Chilean manufacturing firms as a result of services sector liberalisation implies a suggestion of opening up the services sector for foreign entry.

Exploiting Indonesian firm-level data, Duggan et al. (2013) took a similar approach as Arnold et al. (2011) by analysing the impacts of services trade liberalisation on manufacturing industries in Indonesia. To estimate the productivity of firms, the study used a multilateral index following Aw, Chen, and Robert (2001) with the data from the manufacturing census at a firm-level for about 20,000 Indonesian firms. OECD FDI regulatory restrictiveness index for both services and manufacturing sectors from 1997 to 2003 was used as a proxy of services trade reform. The results showed that the openness to FDI in services during the period studied contributed to 8.0 per cent of overall TFP gains in Indonesia manufacturing industries. The gains were not of the same magnitude for all firms as more productive firms likely gained more benefit from services liberalisation than the less productive competitors. Likewise, the authors concluded the largest productivity gains were from regulatory relaxation in sectors such as transport and utilities (electricity, gas, and water). Within regulations, the reduction of restrictions on foreign entry (foreign capital limits, screening, and prior approval requirements) was found to have a greater impact on enhancing the performance of manufacturers than those on movements of key-personnel.

Van de Marel, Kren, and Iootty (2016) claimed to have undertaken the first cross-country study with an emphasis on European Union member economies. Services reform was proxied by the index generated from a combination of the Non-Manufacturing Regulations (NMR) in services index and FDI restrictiveness index. Both indexes come from the database of the OECD. While the former ranges from 0 to 6, the latter varies from 0 to 1. The overall services reform indicators are rescaled from 0 to 1. The result of this study was robust as the authors computed the productivity of manufacturing firms using the different methodologies. A strong positive effect of the services sector openness to manufacturing productivity was found as in previous studies, yet the degree of effects varies across types of regulations.[34] Because the chosen proxy for services reform was not able to capture the

[34] In this study, relaxing regulations related to competitions tend to contribute more on the growth of manufacturing productivity than barriers to entry. In opposite, Arnold, Javorcik and Mattoo (2011) find removing barriers to foreign entry plays the most important in explaining the productivity gains of downstream manufacturing industries.

enforcement of regulations, it is essential to add into the regression model a variable which indicates the interaction of services reform and institutional capacity of countries. The study concluded that manufacturing firms in a country with strong institutions tend to have greater productivity gains from services reform than in an institutionally weak country.

In the case of Vietnam, to date, there are very few studies that quantify barriers to services trade,[35] and no study has touched exclusively on the impacts of services reform to economic performance. This study is the first attempt to empirically investigate the linkages of liberal services trade policy on the productivity of the manufacturing sector at a firm-level.

## 4.3. Empirical strategy, endogeneity, and data

### *4.3.1. Estimation strategy*

In this Chapter, I apply the standard two-stage approach to investigate how services liberalisation associate with the productivity of firms in the manufacturing sector. In the first stage, I estimated TFP of individual firms based on the estimation of production functions at the 2-digit sector level. In the second stage, I regressed TFP on the sector-specific services liberalisation index, controlling for liberalisation of trade in goods, firm-fixed effect, and time-fixed effect. This section discusses the details of the methodology.

#### *4.3.1.1. Total Factor Productivity Estimation*

The firm-level TFP in this study is measured from parameters estimated from production function estimation at 2-digit sectoral-level, as below:

$$\widehat{\omega_{it}} = y_{it} - \widehat{\beta_l} l_{it} - \widehat{\beta_k} k_{it} \tag{4.1}$$

where $\widehat{\omega_{it}}$ is unobserved productivity;$y_{it}$ is log of value added; $l_{it}$ is the log of the labour input; $k_{it}$ is the log of the capital input.

To estimate the production function, I followed Olley and Pakes (1996) with Ackerberg et al. (2015) correction. The measurements of required variables were computed as in Newman, Rand, Talbot, and Tarp (2015). First, the output variable included in the

[35] See previous Chapter for the detailed review.

production function was value-added computed using data on profits from production activities and wages of firms. Capital was measured as the deflated value of assets at the beginning of the year, while labour was the total number of workers employed at the end of the year. Investment was measured as the change in the value of fixed and long-term assets over the year plus any accumulated depreciation. I assumed a standard depreciation ratio of 10% (Ha & Kiyota, 2014; Kyburz & Nguyen, 2016). The real values of these variables were measured by the nominal value deflated by GDP inflators.[36] In all regressions, I took the logarithm of the firms' TFP.

*4.3.1.2. Estimation of services policy impact on manufacturing firms' productivity*

According to the previous review on the theoretical framework and empirical evidence, I found one clear linkage between services industries as providers of manufacturing sectors. The expansion of the services sector as a result of liberalisation would improve performance of manufacturing sectors through more variety of high-quality and low-cost producer services. This relationship is a so-called forward linkage. Based on this relationship, I developed the first hypothesis on the impact of services reform on manufacturing firms.

*Hypothesis 4.1: There is a positive association between liberalisation on services sector and the performance of firms in manufacturing industries. Inversely, this linkage is negative between restrictiveness of services sector and the manufacturing firms' productivity.*

In addition to the forward linkage above, I also found another channel by which the reform of services sector may affect the productivity of manufacturing firms – backward linkage. Given the fact that services firms do not only provide services as intermediate inputs for manufacturing firms but also consume manufacturing good, the expansion of services sectors could shift the demand curve for machinery and equipment provided by manufacturing sectors. However, there are two possible changes in demand for manufacturing products from services firms with the occurrence of services trade liberalisation. As a result of reducing barriers to services trade, new services firms can be established through different ways including newly establishing or merging between existing domestic firms and foreign firms. The demand for domestic manufacturing products

[36] GDP deflators are based on prices in 2010, and the information on GDP of Vietnam is from the World Bank's database.

could go up or go down. It goes up when these new service firms choose to use domestic products and goes down when they choose to switch to imported original products. Alternatively, they may have to rely on supply from the parent overseas companies (Fernandes & Paunov, 2012). The clear answer, thus, depends on an empirical analysis. For this reason, in the baseline specification, I make the first attempt to control for the backward linkage between services and manufacturing sectors. The second hypothesis is as below:

*Hypothesis 4.2: Productivity of firms in manufacturing sectors which provide input for services sector is significantly impacted by the reduction of services sector restrictiveness.*

### *4.3.2. Endogeneity*

In estimating the baseline model, I was aware of several endogeneity issues that arise. First, the services input intensities in manufacturing sectors are likely to be influenced by services regulation. To solve this problem, I used I-O table version in 2000 of Vietnam, which is outside of the study period from 2004-2012. Thus, the input ratios of both manufacturing sectors and services sector are independent from the services reform. Additionally, I also follow the previous literature in the related topic on the economic impacts of goods trade liberalisation in dealing with this kind of endogeneity by using the I-O table of the United States in a robustness test.

Second, there are potential lobbying behaviours of the manufacturing sector for policy reforms in the services sector. As we discovered in the previous Chapter, services reform is associated with the increase in productivity of manufacturing firms. Given the potential benefit from removing barriers to services trade, manufacturing firms may have motives to lobby the government to liberalise which services benefit them the most. In the case of Vietnam, as we concluded in Chapter 3, most of the policy reform in the services sector was conducted as the result of implementing commitments of Vietnam in the GATS when joining the WTO. In the WTO, Vietnam was an acceding member who was put under more pressure to liberalise services sectors by different major partners during the bilateral negotiation – especially the United States. Therefore, there is no strong evidence on the political influence of the manufacturing sector on government's decision on services reform. However, to validate the models and to address this concern, I instrumented the services

restrictiveness index by the log of the sub-sector specific outward services FDI of the US to the rest of the world.[37]

The outflow FDI in services sector of the US to the rest of the world is valid as it satisfied two conditions: First, it is correlated with the linkage variables because the US was a major negotiators of Vietnam in WTO negotiations, so the US would put more pressure on Vietnam to open the services sector. Second, outflow FDI in services of the US and other policies which could affect TFP of manufacturing firms (error terms in the model) are not correlated. In this case, it is the FDI in services sector, so even FDI of the US account for a large share of FDI in services of Vietnam, it is not likely that it would affect policies of manufacturing sector. Moreover, FDI to services of Vietnam only account for a small share in the total services outflow FDI of the US to the world, then policies of manufacturing of Vietnam do not have relation with outflow FDI of the US to the rest of the world. Details of the IV regression will be discussed later in the section 4.4.2.5 on robustness tests.

### *4.3.3. Data and measurement of variables*

#### *4.3.3.1.Data*

This Chapter investigates the impact of services liberalisation on the performance of firms in downstream manufacturing industries. The assignment requires information on three kinds of measures: a measure of liberalisation of the services sector, a performance measure of industries at firm-level, and a measure to illustrate the linkage between the services sector and manufacturing firm operation. First, I use the service restrictiveness indexes, which were constructed and illustrated in the previous Chapter, as a proxy for the policy reform of the services sectors. Second, to measure the performance of manufacturing firms, I estimate the total productivity factor of firms using a unique firm-level dataset of Vietnam. Finally, the input-output ratio collected from GSO Vietnam is utilised to measure the linkage between the services and manufacturing production.

To estimate the firm-level productivity, the Vietnam Enterprises Survey is used (VES). The data has been collected annually since 2000 by GSO Vietnam. So far, it is the only official data source and the most comprehensive primary database available on Vietnamese firms

[37] This exercise is similar as the practice in Shepotylo and Vakhitov (2012).

across all sectors of the economy. Every year, GSO Vietnam conducts a survey of all firms, regardless of ownership, to collect information on the firms' operation. In the surveyed questionnaires, firms are asked to provide both financial statements and non-financial information from January to December of the previous year. Financial statements include assets and liability; revenue; profit; taxes; and non-financial statements, like the location; industry codes; the number of employees; ownership; activities related to environment; and training. However, the VES does not contain information on intermediate materials and services inputs of firms. Merchandise export status and sales from the export activities of firms was not available until 2010 and information on research and development activities only appears in some of years.

The data are stored in electronic format, and this study has access to the VES from 2004 to 2012. Each firm was given a unique identification number which allows us to construct the dataset in an unbalanced panel over nine years. In this study, sector 12 (the manufacture of tobacco products) and sector 19 (the manufacture of coke and refined petroleum products) are excluded because there is a too small a number of firms operating in these sectors. I also excluded sector 33 (repair and installation of machinery and equipment) because it is a service-based sector, which is different from the other manufacturing sectors. Since it is not a producing sector, there is also no data on tariffs and deflators available for this sector which are required for the regressions. The data cleaning process is described in Appendix III. After cleaning, 230,558 firm observations from 2004 to 2012 were left for analysis.

*4.3.3.2.Measurement of variables*

To measure two linkage channels above, I constructed a services linkage index and manufacturing linkage index. While the former measures the relationship of services reform and manufacturing sector that use services as input, the latter measures the linkage between services reform and manufacturing sector that is the input source of the services sector. The indexes were calculated by a weighted average of services reform indexes, which are proxied by the restrictiveness indexes of specific sectors concerned including distribution services, commercial banking, insurance, telecommunications, and transport (road freight transport and internal waterway transport.[38]) The weights should reflect the proportion of

[38] In Chapter 3, I measured STRI of maritime transport services, with a special emphasis on international maritime transport, which is in line with the study of OECD. However, in this Chapter, based on similar

inputs sourced by the manufacturing sector j from a particular services sector; and the proportion of inputs sourced by the services sector j from a particular manufacturing sector. It is ideal to compute these weights by using firm-level data on intermediate input compositions. Unfortunately, the VES does not include such information. Using industry-level input data has an advantage over firm-level data as it avoids the possible correlation between the productivity of firms and their services input intensities (Arnold et al., 2011).

In this study, I utilised the national input-output table (I-O table). The I-O table of Vietnam was published by GSO Vietnam in 1986, 2000, 2007, and the most recent version was in 2012. To avoid a problem of endogeneity, I used the version of the I-O table pertaining to 2000. Services regulations likely have effects on services input intensities in manufacturing sectors, which would cause a reserve causality link between the firm's performance and the services reform index as the main regressor of interest. An ideal solution is to use input-output weights, which are dependent on policy reform (Fiorini et al., 2017). In this case, the I-O table in 2000 is the most suitable as it meets two conditions. First, the year 2000 is closest to the period of the data sample. Second, it does not lie within the period that services reforms began in Vietnam.[39]

The I-O table contains average inter-industry sourcing input of firms in a given sector of the economy. To obtain the ratios, I first aggregated the 112 sectors in the I-O table at two-digit VSIC 2007 level, using the concordance table of GSO Vietnam. After the ratios were derived, I computed the services linkage index, and manufacturing linkage index follows:

$$Service\_index_t = \sum_k \alpha_{jk} * STRI_{kt} \tag{4.2}$$

methodology, I constructed STRI for the internal waterway transport as alternative of maritime transport. Two reasons for the change are: the VES does not contain data on international trade of firms which requires international maritime transport involvement, and the I-O table only contains the ratio of firms' input from the internal waterway transport.

[39] Appendix IX shows that the results are robust to using the I-O table in the year 2007, which lies approximately in the middle of the time period covered by the data sample, from 2004 to 2012.

$$Manufacturing\_index_t = \sum_k \beta_{jk} * STRI_{kt} \quad (4.3)$$

where $Services\_index_t$ is the aggregate service index at time t; $\alpha_{jk}$ is the proportion of services k in total intermediate input of manufacturing j; $Manufacturing\_index_t$ is the aggregate manufacturing index at time t; $\beta_{jk}$ is the ratio of manufacturing sector j in total intermediate input of service sector k; $STRI_{kt}$ is the restrictiveness index of services sector k at time t.

I tested two baseline specifications. The first specification follows the conventional previous studies as it contains only services linkage index as the interested regressor. In the second specification, to test the second hypothesis, I took a different approach by including both services linkage index and manufacturing linkage index as two main independent variables.

$$\begin{aligned} log\,TFP_{ijt} = {} & \beta_1 Services\_index^k_{jt-1} + \beta_2 Tariff_{jt-1} \\ & + \beta_3 Inputtariff_{jt-1} + \alpha_i + \alpha_t + foreign\_dum + \varepsilon_{it} \end{aligned} \quad (4.4)$$

$$\begin{aligned} log\,TFP_{ijt} = {} & \beta_1 Services\_index^k_{jt-1} + \beta_2 Manufacturing\_index^k_{jt-1} \\ & + \beta_3 Tariff_{jt-1} + \beta_4 Inputtariff_{jt-1} + \alpha_i + \alpha_t \\ & + foreign\_dum + \varepsilon_{it} \end{aligned} \quad (4.5)$$

The total factor productivity was used as a proxy of firm's performance; it was estimated as the residual of sector-specific Cobb-Douglas production function. The parameters of the production function were identified using methodology as in Olley and Pakes (1996) with Ackerberg et al. (2015) correction. The Vietnam Enterprises Survey from 2004 to 2012 was used to construct TFP at firm-level. During the period from 2004 to 2012,[40] Vietnam also continued reducing manufactured products tariffs rates as the country became a member of the WTO. To control the impact of tariffs reductions on the productivity of manufacturing firms, I followed Arnold et al. (2016) by adding lagged output tariffs in the same manufacturing sector ($Tariff_{jt-1}$) and a weighted measure of input tariffs

[40] Information on tariffs is not available in 2011. For that reason, I applied tariffs and input tariffs values in 2012 for the year of 2011.

($Inputtariff_{jt-1}$).[41] Input tariffs of manufacturing sector j are the weighted measures of input tariffs from other sectors, including agriculture, fishery, forestry, mining, and other manufacturing sectors. Weights of input tariffs are taken from the 2000 input-output matrix of Vietnam. The information on the tariffs was obtained from the World Bank's WITS database. Since there is no data on imports of Vietnam at the 2-digit sector level, it was not possible to calculate the import weights. Therefore, the individual tariffs used in this study were the MFN tariffs at the 2-digit sector level based on HS2002 and HS2007 and converted to 2-digit sector level of ISIC revision 4. Equation 4.4 and equation 4.5 also include a foreign_dum variable, which is a dummy variable of foreign ownership status of firms. Value of this variable is equal to 1 if firms are foreign-invested and zero if otherwise. Table 4.1 below summarises the main variables used in the regressions.

The main independent variables of interests are the linkage indexes, which are interaction between the restrictiveness indexes and the input ratios of services/manufacturing sectors. The restrictiveness indexes change over time and the input ratios are different across sectors. Then the services linkage index and the manufacturing linkage index – two main independent variables of interest vary at industry-year level. Then, in all specifications, standard errors are clustered at the industry-year level. When standard errors are clustered at industry level, the results do not change much.

**Table 4.1. Descriptive statistics**

| Variables | Observation | Mean | Std Dev. |
|---|---|---|---|
| Log TFP | 173855 | 0.315 | 0.711 |
| Log value added | 198867 | 6.519 | 1.987 |
| Log capital | 204095 | 8.56 | 1.895 |
| Log labour | 230623 | 3.156 | 1.588 |
| Log investment | 159789 | 6.084 | 2.196 |
| Services linkage index lagged | 230658 | 0.061 | 0.018 |
| Manufacturing linkage index lagged | 230658 | 0.034 | 0.036 |
| Output tariffs lagged | 230658 | 18.436 | 11.985 |
| Input tariffs lagged | 230658 | 6.323 | 4.216 |

[41] Input tariffs of sector i at time t are defined as $\tau_{it}^{input} = \sum_j \alpha_{ji}\, \tau_{jt}^{output}$ where $\tau_{jt}^{output}$ is the tariffs in manufacturing sector j at time t, and $\alpha_{ji}$ is the share of sector j as input of sector i.

For the convenience of interpretation and to make the study comparable with previous studies on the similar topic, the constructed services indexes, as well as output tariffs and input tariffs, were further standardised to have a mean of zero and a standard deviation of one. The regressions included firm fixed effects, year fixed effects, and controlled for different characteristics of firms including size of firms.

## 4.4. Results

### *4.4.1. Baseline estimation results*

The baseline regression results from equation (4.4) and (4.5) are presented in Table 4.2. In the regression, the logarithm values of TFP estimated by the Olley and Pakes (1996) method and corrected by the Ackerberg method were regressed on the indexes originating from barriers to services trade, controlling for different fixed effects.

**Table 4.2. Productivity effects of services liberalisation - Baseline regression results**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Services linkage index | -0.027** | -0.072*** | -0.051*** | -0.096** |
| | (0.012) | (0.026) | (0.014) | (0.027) |
| Manufacturing linkage index | | | 0.082** | 0.075** |
| | | | (0.033) | (0.031) |
| Output tariffs | -0.022* | -0.027** | -0.014 | -0.020* |
| | (0.012) | (0.012) | (0.012) | (0.011) |
| Input tariffs | -0.001 | 0.005 | 0.002 | 0.009 |
| | (0.012) | (0.013) | (0.012) | (0.012) |
| Observations | 173855 | 173855 | 173855 | 173855 |
| R-squared | 0.675 | 0.676 | 0.675 | 0.676 |
| Year fixed effect | No | Yes | No | Yes |
| Firm fixed effect | Yes | Yes | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. All specifications control for size and ownership of firms. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

Columns (1) and (2) in table 4.2 show the results of baseline regression (4.4) with different combinations of fixed effects. In all three columns, we found a negative and statistically significant coefficient of the aggregate services linkage index. It supports the hypothesis made in section 4.3.1.2 that increasing barriers to services trade could reduce the productivity of manufacturing firms that use services as a source of inputs. In other words,

these firms can enjoy productivity gains from the effects of liberal policy in the services sector. In terms of the magnitude of the effects, a decrease in the services linkage index by one standard deviation is associated with a 2.7-6.9 per cent increase in productivity. When the linkage index is transformed to a per centage form, the result is that a one percentage point reduction of services linkage index corresponds to a 1.5-3.9 per cent increase in TFP of manufacturing firms When I test for time-fixed effects, the P-value is 0.0014, which is smaller than 0.05, thus, I reject the null hypothesis that the coefficients for all years are jointly equal to zero. In this case, time-fixed effects are required. Thus, result from column 2 is the final outcome for model 4.4.

Column 3 and 4 in table 4.2 present results of baseline regression equation (4.5) with the conclusion of both services linkage index and manufacturing linkage index, and with the different combinations of fixed effects. In all columns, there is a significant and positive relationship between TFP of manufacturing firms and manufacturing linkage index. Similar to baseline regression equation (4.4), I tested and found that time-fixed effects should be included in the model. Then, column 4 is the most accurate. The results from this column illustrate a negative and strongly significant relationship between services linkage index to productivity of manufacturing firms. A 9.1 per cent increase in TFP of manufacturing firms is the result of a standard deviation decrease of services linkage index. When the linkage index is transformed to a per centage form, a one percentage point reduction of services linkage index corresponds to a 5.2 per cent increase in TFP of manufacturing firms. Compared to the results in column 3, it is clear that the magnitude of the services reform's impact on the productivity of firms in downstream manufacturing industries has been lessened by not taking into account the input provider's role of manufacturing industries to services firms.

Additionally, column 4 also shows how a positive and statistically significant link between manufacturing linkage index and productivity of firms. A one standard deviation decrease in the manufacturing linkage index corresponds to a loss of 7.8 per cent in productivity. When the linkage index is transformed to a per centage form, the result is that with a one percentage point decrease of the manufacturing linkage index, manufacturing firms would lose 2.1 per cent of productivity. This happens as demand for products of manufacturing sectors of newly established services firms switch from domestic to imported original, as discussed in section 4.3.1.2. For instance, foreign-owned logistics companies would prefer

to use imported vehicles instead of locally made vehicles or foreign distributors might want to use equipment, such as cashier machines, purchased from overseas. The argument can be empirically proven in the case that information on domestic and imported components of service firms' inputs, sourced from the manufacturing sector, is available. Unfortunately, neither the I-O table nor the data sample used in this study contains such information.

As in the baseline model, I controlled for other reform over the time of the data sample, particularly the reductions in goods trade protection. In both of the final results of the two models 4.4 and 4.5, as shown in columns 1 to 4, there is no significant relationship between productivity of manufacturers and input tariffs. Output tariffs had negative and statistically significant impacts on the productivity of manufacturing firms. Lowering output tariffs results in increasesd competition, causing firms to improve their efficiency (Topalova & Khandelwal, 2011). The productivity of firms is boosted as the result of improvements in efficiency. This finding is different from the result in Arnold et al. (2016). However, it is reasonable because most of the tariffs reductions in India took place prior to the period covered by their sample, while in this case, the goods trade reform was ongoing during the time period covered in this study.

### *4.4.2. Robustness tests*

Before making any further extension of the baseline models, I first conducted different checks to test the robustness of the models. This section presents four types of test including (1) testing the impacts of services restrictiveness on markup of firms; (2) using alternative methodology to measure TFP; (3) using an alternative method of services restrictiveness index; (4) using alternative I-O table; (5) solving the endogeneity issue arisen from the possible lobbying activities of the manufacturing sectors, using Instrumental Variables estimation. The results, which are illustrated in this section, reveal that the baseline models are robust in all of the tests.

#### *4.4.2.1.Impacts of services restrictiveness on the markup of manufacturing firms*

To make sure that the estimated productivity changes during the liberalisation of the services sector are not driven by changes in price-cost margins, we conducted the same procedure as for baseline model with firms' markups as the dependent variables.

De Loeker and Warzynski (2012) identify markup as the ratio of an input-output elasticity by estimating the production function. Following this approach, we use labour coefficients obtained from the production function estimate in the earlier part of the study. The markup is computed as in this below equation.

$$\mu_{it} = \theta_{it}^{X}(\alpha_{it}^{X})^{-1} \tag{4.6}$$

where $\mu_{it}$ is the markup of firm i at time t, $\alpha_{it}$ is the share of expenditures on input $X_{it}$ (wage) in the total sales (revenue), and $\theta_{it}^{X}$is the coefficient of input X obtaining from the production function estimation.

I expect that service restrictiveness does not have an impact on the markup of firms, which means that impacts of services reform on the performance of the firm do not go through markup channel.

**Table 4.3. Services liberalisation impacts on markup**

| | (1) | (2) |
|---|---|---|
| Services linkage index | 0.014 | 0.033 |
| | (0.059) | (0.058) |
| Manufacturing linkage index | | -0.061 |
| | | (0.045) |
| Tariffs | -0.021 | -0.017 |
| | (0.025) | (0.021) |
| Input tariffs | 0.02 | 0.017 |
| | (0.022) | (0.023) |
| Observations | 212,520 | 212,520 |
| R-squared | 0.732 | 0.732 |
| Year fixed effect | Yes | Yes |
| Firm fixed effect | Yes | Yes |

Note: The dependent variable is logarithm of firm's markup, calculated using coefficients estimated by Olley and Pakes (1996) corrected using Ackerberg et al.(2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. All specifications control for size and ownership of firms. Robust standard errors clustered at industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

The results, presented in column 1 and 2 of Table 4.3, indicate that markup of downstream manufacturing firms that rely on services are not affected by the changes in the services linkage index and manufacturing linkage index. In this case, we also find that there is no significant impact of changes in tariffs and input tariffs on the markup of firms. Hence, I

can conclude that the performance of manufacturing firms improves by reduction of barriers to services trade through other channels rather than the increase of a firm's markup.

*4.4.2.2.Alternative productivity estimate methodology*

It is well known that simultaneity and selection bias are typical methodological problems of the Ordinary Least Squares method for firm-level production function estimation (Beveren, 2010). A body of literature proposing several methodological improvements began to emerge from the mid-1990s (Ackerberg et al., 2006). Given the fact that estimation of the production function is a crucial step in this empirical exercise, to the best fit of the data sample, we test the robustness of the results using another method developed by Olley and Pakes (1996) without correction from Ackerberg et al. (2015).[42]

**Table 4.4. Productivity effects of services liberalisation - An alternative method of productivity estimation**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Services linkage index | -0.032*** | -0.083*** | -0.046*** | -0.097*** |
| | (0.011) | (0.024) | (0.011) | (0.025) |
| Manufacturing linkage index | | | 0.047* | 0.044* |
| | | | (0.028) | (0.026) |
| Output tariffs | -0.025** | -0.03*** | -0.019* | -0.025** |
| | (0.01) | (0.01) | (0.011) | (0.01) |
| Input tariffs | 0.001 | 0.008 | 0.003 | 0.01 |
| | (0.011) | (0.011) | (0.01) | 0.011 |
| Observations | 176089 | 176089 | 176089 | 176089 |
| R-squared | 0.731 | 0.731 | 0.731 | 0.731 |
| Firm fixed effect | Yes | Yes | Yes | Yes |
| Year fixed effect | No | Yes | No | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. All specifications control for size and ownership of firms. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

Results of the regressions using Olley and Pakes (1996) as an alternative method of estimation of the production function are reported in Table 4.4. The baseline specification results in all of the four columns indicating a negative, strong significant impact of services

[42] In the dataset, there is no information on intermediate inputs of firms. However, I try to measure this data by a number of calculations utilising other existing information. Using this calculated intermediate input, I attempt to test the robustness of our model with the TFP of firms estimated using Woodridge (2009). The results are presented in Appendix VII and these are consistent with the results of the baseline models, which indicates the robustness of the models.

linkage index on the productivity of manufacturing firms, which reassures the robustness of the results. Though, the coefficient of the index here is slightly larger than in the baseline model. When we control for the backward linkage between services and manufacturing industries, the results are consistent with results of the baseline specification presented in Table 4.2, yet the magnitude of effect is smaller.

*4.4.2.3.Alternative of services restrictiveness index*

The construction of the services restrictiveness index in Chapter 3 is indeed comprehensive, yet the quantification of the index requiring a weighting system that depends on experts' judgments is then subjected to a certain level of subjectivity. For that reason, in this section, I validate that the results are robust while using measures of services liberalisation different from the measures used in this study.

Following the approach of Arnold et al. (2016) and Shepotylo and Vakhitov (2012), I calculated an outcome-based alternative measure, which reflects the degree of reform in the services sector. Similarly, I constructed the alternative measures based on (1) the average share of services industry revenue/employee of domestic private firms; and (2) the average share of services industry revenue/employee of foreign-invested suppliers. Since our data sample also include state-owned firms, it is worth noting that the share in terms of revenue or employee of domestic private firms and foreign-invested firms do not sum up to one. After obtaining the share information, the alternative services index is computed as follows:

$$Services\_FDI_t = \sum_k \alpha_{jk} fdis\square are_{kt} \tag{4.7}$$

$$Services\_Pri_t = \sum_k \alpha_{jk} pris\square are_{kt} \tag{4.8}$$

$$Manufacturing\_FDI_t = \sum_k \beta_{jk} fdis\square are_{kt} \tag{4.9}$$

$$Manufacturing\_Pri_t = \sum_k \beta_{jk} pris\square are_{kt} \tag{4.10}$$

where $Services\_FDI_t$ and $Services\_Pri_t$ are the aggregate services linkage index at time t; $\alpha_{jk}$ is the proportion of service sector k in total intermediate input of manufacturing j; $fdis\square are_{kt}$is the average share of employee/revenue of foreign-invested firms in service sector k at time t; $pris\square are_{kt}$is the average share of revenue/employee of domestic private

firms in the services sector k at time t; $Manufacturing\_FDI_t$ and $Manufacturing\_Pri_t$ are the aggregate manufacturing linkage index at time t; $\beta_{jk}$ is the ratio of manufacturing sector j in total intermediate input of service sector k.

While the private share reflects the level of privatisation, the FDI share is a proxy of the degree of openness for foreign-invested firms in the services sector. To make an equivalent result with the restrictiveness index, in the regressions, I transformed the FDI share and private share into negative values. Thus, I expect negative relationships between these shares and the productivity of manufacturing firms.

**Table 4.5. Productivity effects of services liberalisation – Alternative measures of STRI**

| **Share of employee - baseline model (4.4)** | | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Services linkage FDI | -0.02** | | -0.019** |
| | (0.009) | | (0.009) |
| Services linkage Privatisation | | -0.041 | -0.025 |
| | | (0.047) | (0.044) |
| Observations | 173855 | 173855 | 173855 |
| R-squared | 0.694 | 0.694 | 0.694 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |
| **Panel B: Share of employee - baseline model (4.5)** | | | |
| Services linkage FDI | -0.027** | | -0.034*** |
| | (0.014) | | (0.014) |
| Services linkage Privatisation | | -0.072* | -0.034 |
| | | (0.051) | (0.035) |
| Manufacturing linkage FDI | -0.013 | | -0.018 |
| | (0.01) | | (0.014) |
| Manufacturing linkage Privatisation | | 1.578*** | 1.895*** |
| | | (0.625) | (0.637) |
| Observations | 173,855 | 173,855 | 173,855 |
| R-squared | 0.694 | 0.694 | 0.694 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Robust standard errors clustered at the industry-year level are reported in parentheses. Each estimation includes tariffs, input tariffs, which are not reported for brevity. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

Panel A of Table 4.5 presents the results of the baseline model (4.4) specification using the average employee share at the sector level of foreign-invested and domestic private services

firms.[43] In all specifications, I found that the extent of private firms participating in a given services sector have a positive and strongly significant effect on firms' productivities in the downstream manufacturing sector. In the case of the openness for foreign firms, the effect is positive and statistically significant when entering the variable proxied for FDI separately in the baseline model. In the next regression, when including both proxies for FDI and privatisation, both the coefficients for FDI and privatisation are negative, which is consistent with the results of the baselines model. However, only coefficients for FDI is statistically significant.

In panel B, we present results of the baseline model (4.5) with both forward and backward linkage between services and manufacturing sectors. In terms of the forward linkage, Columns 1 and 3 show consistent results with panel A where we found that the openness of services sector to foreign investment is positively and significantly correlated with the productivity of manufacturing firms. However, regarding the backward linkage, the coefficient for manufacturing linkage FDI is negative, which is as we expected, but not statistically significant. Meanwhile, the coefficients for manufacturing linkage privatisation are strongly significant, but these parameters are not realistic nor meaningful. The coefficients at values of 1.578 and 1.895 are interpreted as a one standard deviation increase in the openness in services policy for private sector and would result in 384 per cent and 565 per cent gains in productivity of manufacturing firms.

Findings in the two panels in Table 4.5 have proven that baseline model 4 is robust, while model 5) is not in this practice. It shows that through forward linkage, services liberalisation has positive impacts on the productivity of manufacturing firms that use services as intermediate inputs. The impacts are consistent and do not depend on how the liberalisation is measured.

*4.4.2.4.Alternative of services input ratio*

Discussion in section 4.3.2 pointed out an endogeneity concern of the I-O component in the services index while estimating the baseline model. The root of the problem is that the service input to the manufacturing sectors is likely affected by regulations in the services

[43] I also conduct the same practice using the average share of revenue at sector-level of foreign-invested and domestic private services firms. The similar results are presented in Appendix VIII.

sector. When the sector becomes more liberalised, prices of services become cheaper and lead to an increase in services consumption of manufacturing firms and vice versa. The standard solution here is to use input-output coefficients that are independent of the reform of services sector. Input-output of a reference country, and in most cases, the US, is commonly used as a proxy for the technical relationship between sectors (Fiorini et al., 2018, Van de Marel et al., 2016). The reason behind this is that the services sector in the US is unrestricted and thus the input-output data of the US is less likely influenced by services regulation. Therefore, this study also tests the models using input-output coefficients of the US in 1995 as an alternative measure for the services input ratio.

Table 4.6 reveals that using the input-output table of the US in 1995 to compute the linkage indexes generates the same results as using the version in 2000, though the magnitudes of effects are stronger. This result holds for the negative impacts of services linkage index to productivity of manufacturing firms. When we control for other unobserved heterogeneity, including firm size and ownership of firms, the results are consistent as in the baseline regression model. In another test, I also used the input-output table of Vietnam in 2007, the year that lies in the middle of this study timeframe, to test for the robustness of the baseline estimation models. The results are similar and presented in Appendix IX.

**Table 4.6. Productivity effects of services liberalisation – I-O table of the USA in 1995**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Services linkage index | -0.026** | -0.100** | -0.021 | -0.163*** |
| | (0.013) | (0.043) | (0.015) | (0.044) |
| Manufacturing linkage index | | | 0.018 | 0.086** |
| | | | (0.035) | (0.042) |
| Output tariffs | -0.018 | -0.007 | -0.020 | -0.011 |
| | (0.013) | (0.013) | (0.015) | (0.01) |
| Input tariffs | -0.009 | 0.004 | -0.006 | 0.013 |
| | (0.011) | (0.01) | (0.012) | (0.011) |
| Observations | 173855 | 173855 | 173855 | 173855 |
| R-squared | 0.675 | 0.676 | 0.675 | 0.676 |
| Year fixed effect | No | Yes | No | Yes |
| Firm fixed effect | Yes | Yes | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

*4.4.2.5.IV estimation*

To solve the endogeneity issue on the potential lobbying behaviours of manufacturing sector, as discussed in section 4.3.2, I use the log of sub-sector specific outward services FDI of the US to the rest of the world to instrument the services restrictiveness index. Because the US was the major bilateral negotiator over the WTO accession of Vietnam, it is likely that the US put pressure on Vietnam to open the services sub-sector such that the US's firms have advantages. The outflow FDI in services of the US is likely correlated with the liberalisation of the services sector in Vietnam. Also, as Vietnam is a small country, the manufacturing sectors and economic policy of Vietnam cannot affect FDI of the US in services to the rest of the world. Therefore, the US FDI data is likely a good instrument for the restrictiveness index in services of Vietnam. Moreover, reforming specific sectors in Vietnam is not necessarily due to the lobbying of manufacturing firms, and thus, the link between services liberalisation and productivity of manufacturing firms is not a reverse causality. The instruments procedure is as below.

**Table 4.7. Productivity effects of services liberalisation - Instrumental Variables approach**

| | |
|---|---|
| *Second stage regression* | |
| Services linkage index | -0.096*** |
| | (0.011) |
| Manufacturing linkage index | 0.057*** |
| | (0.009) |
| Observations | 159467 |
| R-squared | 0.01 |
| Year fixed effect | Yes |
| Firm fixed effect | Yes |
| *First stage regression* | |
| Services linkage index – US FDI | -61.834*** |
| Manufacturing linkage index – US FDI | -36.539*** |
| F-stat | 942 |
| p-value | 0.0000 |

*Notes* The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). Coefficients of output and input tariffs are not reported for brevity. All specifications control for size of firms, ownership of firms. Robust standard errors are clustered at industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

First, I use the I-O weights on the outward services FDI data to construct aggregate weighted US FDI measures for services and manufacturing linkage indexes using equations (4.2) and (4.3). Then, in the first stage of the IV regression, I regress the original services and manufacturing linkage indexes on the log of aggregate weighted US FDI measures for services and manufacturing linkage indexes to obtain the predicted values. Results of the first stage IV regression, presented in Table 4.7 show that the outflows FDI in services of the US to the rest of the world are good instruments for the services restrictiveness index. The null hypothesis of weak identification under the Stock-Yogo test is rejected and the F-statistic suggests that the instruments perform well.

In the second stage IV regression, I replace the services linkage index and manufacturing linkage index with the indexes instrumented with outward FDI in services of the US as constructed above. The results of this second stage are presented in Table 4.7 and confirm the earlier findings that service restrictiveness index has a negative impact on productivity of manufacturing firms through the forward linkage and a positive impact through the backward linkage. In other words, through the forward linkage, services liberalisation has a positive impact on productivity of manufacturing firms and a negative impact through backward linkage. These gives us confidence that the results are not driven by reverse causality between services liberalisation and productivity of manufacturing firms.

### *4.4.3. Baseline extension*

Once the robustness of the baseline model was confirmed, I conducted further tests to take into account other factors that could affect the link between services liberalisation and productivity of manufacturing firms. First, I divided the data sample into two different subsets based on size of firms and ownership of firms. Second, I tested the individual impacts of each component in the services restrictiveness index based on different regulation classifications. The results of the baseline specifications are presented as follows:

#### *4.4.3.1.Differentiate effects based on foreign firms*

From a policy perspective, it is important to reform in a way in which domestics firms can benefit just as much as foreign firms, even though these foreign firms may already have links with foreign services suppliers (Arnold et al., 2016). Besides, foreign manufacturing firms could possibly perform better than local producers in price negotiations with services

suppliers. These advantages could provide more cost savings and higher productivity to foreign-owned producers. The case of India supports this argument where foreign affiliates, as a result of services liberalisation, gain about 12 per cent more than the local manufacturing firms (Arnol et al., 2010). In other cases, Duggan et al. (2013), and Fernandes and Paunov (2012) found that domestic and foreign-owned firms seem to derive a similar benefit from services liberalisation. Ukraine is a different example where significant effects of services liberalisation were only found in a sub-sample comprising domestic firms – not the sub-sample containing foreign-owned firms (Shepotylo and Vakhitov, 2012). It has shown that there is no universal result across the literature on this issue.

To assess whether the impacts of services liberalisation are different between foreign and domestic manufacturing firms, all specifications control for foreign ownership of firms. Previous studies such as Arnold et al. (2014) and Arnold et al. (2011) define a firm as foreign-owned if the foreign capital participation in a firm is above 10 per cent. However, in the VES, information on the foreign ownership share in each firm is not included. Instead, firms were asked to identify their legal forms, which were categorised into 14 types indicated in the VES questionnaires. Based on the characteristics of these ownership types, these legal forms are further broken down into three groups. SOE is a dummy for State-Owned Enterprises, and it takes the value of 1 if the firm is in one of these forms: Central State-owned, Local State-owned, Central State-owned Limited liability, Local share Limited liability, and Joint-stock company with more than 50% state capital. DP is a dummy for Domestic private firm, and it takes the value of 1 if the firm is in one of these forms: Collective, Private enterprise, Collective name, Private Limited liability, Joint-stock company without state capital, and Joint-stock company with less than 50% state capital. FIE is a dummy for Foreign-invested Enterprises, and it takes the value of 1 if the firm is in one of these forms: 100% Foreign capital, Joint-venture between State-owned and foreign firms, and Joint-venture between private and foreign firms. SOE dummy is used as the baseline. Appendix IV demonstrates the firm distribution of ownership types.

The estimated impacts found from Table 4.8 for the State-Owned firms are consistent with results for the pooled sample. While barriers to services trade have a negative impact on the productivity of manufacturing firms that use services as intermediate input, these barriers have a positive link with the productivity of manufacturing firms that provide input for services firms.

In relation to impacts on domestic private firms and foreign-invested firms, the estimated coefficients of the interaction terms between services linkage index and domestic private firms dummy are negative, while the same coefficients for FIE are positive. Only the coefficient of services linkage index*DP is statistically meaningful at 10 per cent levels of confidence. It indicates that through the forward linkage, compared to SOE, relaxing barriers to trade services or increasing services reform creates a smaller increase in the productivity of private domestic firms. It is likely that when services become more liberalised, SOE seems to have the biggest benefits from low cost and high-quality services to increase productivity.

Regarding the backward linkage, the estimated coefficient of the interaction terms between manufacturing linkage index and DP dummy and between manufacturing linkage index and FIE dummy have positive signs, and yet are not statistically significant at the conventional levels of confidence. Thus, there is no statistical evidence to compare to the productivity effects of services reform on the productivity of firms with different types of ownership.

**Table 4.8. Productivity effects of services liberalisation - Different effects based on firms' ownerships**

| | (1) | (2) |
|---|---|---|
| Services linkage index | -0.138*** | -0.102*** |
| | (0.038) | (0.036) |
| Manufacturing linkage index | 0.051 | 0.04* |
| | (0.086) | (0.079) |
| Services linkage index*DP | 0.054** | 0.05* |
| | (0.026) | (0.026) |
| Services linkage index*FIE | -0.023 | -0.034 |
| | (0.03) | (0.029) |
| Manufacturing linkage index*DP | 0.012 | 0.01 |
| | (0.063) | (0.062) |
| Manufacturing linkage index*FIE | 0.11 | 0.121 |
| | (0.093) | (0.092) |
| Observations | 173855 | 173855 |
| R-squared | 0.676 | 0.677 |
| Year fixed effect | No | Yes |
| Firm fixed effect | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Each estimation includes tariffs, input tariffs, which are not reported for brevity. All specifications control for size and age of firms. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

*4.4.3.2.Differential impacts of services liberalisation based on firm sizes*

This section tests the potentially different impacts of services liberalisation on firm sizes. In the existing literature (Arnold et al., 2008, Shepotylo and Vakhitov, 2012), firms are split into two types, small and large firms. A small firm is defined as having less than 50 workers, and medium and large otherwise. Following the common approach in the literature, this study first divided the dataset into two sub-samples, one included firms that have less than 50 workers and the other is those with more than 50 (referred as 'large firms'). However, once confirming that firms with less than 10 workers are informal sector firms, then I further split up the first sub-sample into two: One sample consists of firms that have less than 10 employees (referred as 'small firms') and the other includes firms with the number of employees in the range of 10 to 50 (referred as 'medium firms'). I used the small firms dummy as the baseline.

Similar to previous studies, it is expected that with the acceleration of services reform, the small firms gain the most, followed by the medium and large firms. Compared to small firms, medium and large firms tend to have resources to produce some in-house services, while small firms usually rely heavily on external services. For example, medium and large firms often have their own transportation departments or distribution systems, while small firms must outsource these services.

Table 4.9 reveals the results of the full baseline model 4.5 with different combinations of fixed effects. As time-fixed effects have been proven necessary, I took the results of column 2 as the final. This shows that in terms of the forward linkage, service restrictiveness has a negative impact on the productivity of small firms, which is consistent with the results of the pooled sample. In other words, it means that when services sectors become less restrictive or more liberal, small firms would gain in productivity. Similar effects are found in the case of medium firms, yet the magnitude of effects is smaller than that for small firms. The coefficient of services linkage index for large firms is not significant at any conventional levels of confidence, hence the impacts are not comparable.

With regard to the backward linkage, the results are quite similar to impacts through the forward linkage. It shows that medium firms are found to have less loss of productivity impacts than small firms. The reason is because medium firms tend to have stronger competitiveness in the market compared to small firms, so that they are able to absorb the new service-providing agents while retaining their existing customers from the services

sector, and hence retain and increase their supply. In the other case, the coefficient of manufacturing linkage index for large firms is not significant at any conventional levels of confidence, hence the impacts are not comparable.

**Table 4.9. Productivity effects of services liberalisation - Different effects based on firm sizes**

| | (1) | (2) |
|---|---|---|
| Services linkage index | -0.112*** | -0.099*** |
| | (0.034) | (0.032) |
| Manufacturing linkage index | 0.089** | 0.078** |
| | (0.043) | (0.038) |
| Services linkage index*Medium firms | 0.036*** | 0.037*** |
| | (0.014) | (0.014) |
| Services linkage index*Large firms | -0.001 | -0.001 |
| | (0.017) | (0.017) |
| Manufacturing linkage index*Medium firms | -0.03* | -0.029* |
| | (0.017) | (0.016) |
| Manufacturing linkage index*Large firms | 0.009 | 0.011 |
| | (0.026) | (0.026) |
| Observations | 173855 | 173855 |
| R-squared | 0.675 | 0.676 |
| Year fixed effect | No | Yes |
| Firm fixed effect | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Each estimation includes tariffs, input tariffs, which are not reported for brevity. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

*4.4.3.3.Role of different regulations*

The services restrictiveness indexes that were constructed in Chapter 3 comprise five groups of regulation: restrictions on foreign entry, restrictions to movement of people, other discriminatory measures, barriers to competition, and regulatory transparency. The way I constructed these groups allows us to define regulations that are imposed exclusively on foreign-invested firms, and regulations that are applied to both domestic and foreign-invested firms. In this exercise, I tested whether types of regulation would affect differently to manufacturing firms' performance. The construction of the services linkage index based on different types of regulation is similar to the aggregate services linkage index used in the baseline model. Table 4.10 presents the result of specifications using the group of two

regulation types, discrimination, and non-discrimination.[44] Table 4.11 reports results from estimating the baseline model with five components of the services restrictiveness indexes.

**Table 4.10. Productivity effects of services libearlisation - Result by types of regulation**

| | (1) | (2) | (3) |
|---|---|---|---|
| Services linkage index- Discriminatory | -0.065*** | | -0.029 |
| | (0.022) | | (0.024) |
| Manufacturing linkage index - Discriminatory | 0.043** | | 0.008 |
| | (0.019) | | (0.024) |
| Services linkage index- Nondiscriminatory | | -0.152*** | -0.122*** |
| | | (0.04) | (0.044) |
| Manufacturing linkage index - Nondiscriminatory | | 0.165*** | 0.156** |
| | | (0.058) | (0.069) |
| Observations | 173855 | 173855 | 173855 |
| R-squared | 0.676 | 0.676 | 0.676 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al0. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level)0. All regressors are lagged one year. All specifications control for size and ownership of firms. Coefficient of output tariffs and input tariffs are not reported for brevity. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

In Table 4.11, when entering the index of discriminatory regulations and non-discriminatory regulations separately and one by one in the regressions, the results, which are indicated in column 1 and column 2, show that through the forward linkage, the effects of discriminatory regulations on the productivity of manufacturing firms are negative while the sign of effects are positive through the backward linkage. Similar results were found in the case of nondiscriminatory regulations, which are all consistent with the results of the aggregate indexes. The coefficients for both the non-discriminatory index and discriminatory index are found to have strong, significant impacts at 5 per cent and 10 per cent levels of confidence. In terms of the effect's magnitude, it is found that the productivity effect of non-discriminatory measures is stronger than that of discriminatory measures. The results indicate that the effect of services liberalisation on the performance of manufacturing firms is mostly contributed by nondiscriminatory regulations that are imposed on both domestic and foreign-invested firms. In column 3, including both proxies in the same specification,

[44] In the Appendix X, I also present the result of the baseline model using the group of establishment and operation types of restrictions.

the signs of effects are similar as in columns 1 and 3, however, the effects are not statistically significant in the case of discriminatory measures. Given that the two groups of measures are highly correlated (correlation coefficients between services linkage indexes and manufacturing linkage indexes are 0.8 and 0.87 respectively), this result is understandable.

The results presented in Table 4.11 show that, in terms of the forward linkage, the coefficient for all of the five policy areas is negative, which is consistent with the result of the baseline model. All of the coefficients are significant, except the one for Restriction to movement of foreign labour. The reason might be because of its minimal changes during the studied period, and according to experts' opinion, this policy area takes a lesser weighting than the other areas. Similar consistent results with the baseline models are found in the case of the backward linkage, except for the estimated coefficients of restrictions on foreign entry and the discriminatory measures, which are not statistically significant at any conventional levels.

**Table 4.11. Productivity effects of services liberalisation – Effects of different policy areas**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Services linkage index – Restrictions on Foreign entry | -0.067*** | | | | |
| | (0.023) | | | | |
| Manufacturing linkage index – Restrictions on Foreign entry | 0.036 | | | | |
| | (0.023) | | | | |
| Services linkage index – Restrictions to Movement of Foreign Labour | | -0.046 | | | |
| | | (0.033) | | | |
| Manufacturing linkage index – Restrictions to Movement of Foreign Labour | | 0.074* | | | |
| | | (0.041) | | | |
| Services linkage index – Discriminatory measures | | | -0.068** | | |
| | | | (0.031) | | |
| Manufacturing linkage index – Discriminatory measures | | | 0.022 | | |
| | | | (0.018) | | |
| Services linkage index – Barriers to competition | | | | -0.084*** | |
| | | | | (0.032) | |
| Manufacturing linkage index – Barriers to competition | | | | 0.175*** | |
| | | | | (0.062) | |
| Services linkag index – Regulatory transparency | | | | | -0.086*** |
| | | | | | (0.025) |
| Manufacturing linkage index – Regulatory transparency | | | | | 0.065** |
| | | | | | (0.028) |
| Observations | 173855 | 173855 | 173855 | 173855 | 173855 |
| R-squared | 0.676 | 0.676 | 0.676 | 0.676 | 0.676 |
| Year fixed effect | Yes | Yes | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes (1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Robust standard errors clustered at the industry-year level are reported in parentheses. All regressors are lagged one year. Each estimation includes tariffs, input tariffs, which are not reported for brevity. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

## 4.5. Conclusion

Services sector has recently become a driving force of economic growth in many nations. The importance of the sector is both direct and indirect. As a direct role, services sector accounts for increasing shares in the world's GDP, trade, and investment while the sector affects industry and agriculture indirectly through providing intermediate inputs for these sectors. The indirect impacts of the services sector are less well-documented in the literature, especially in the case of developing countries due to the lack of required data. This study is the first attempt to investigate the extent to which productivity of Vietnamese manufacturers is related to the reform of services sector. It contributes to the empirical literature on proving these impacts in transitioning and developing nations.

The Chapter utilised the measures of reform in services sectors computed in the previous Chapter and combined them with information on services intensities of manufacturing firms. This combination enabled an analysis of the relationship between the liberalisation of the services sector and the performance of firms in manufacturing industries. The study examined this relationship during the period from 2004 to 2012. This timeframe is ideal for this study's research topic as it was when the reform of the Vietnamese services sector mainly occurred.

Using the standard method, the results revealed that the effect of removing barriers to services trade on manufacturing firms in Vietnam is positive and meaningful. During the period from 2004 to 2012, through the forward linkage, the improvement of 9.1 per cent in the productivity of Vietnamese manufacturers is explained by one standard deviation decrease in the STRI When the STRI is transformed to percentage form, a one percentage point reduction of the STRI corresponds to a 5.2 per cent increase in TFP of manufacturing firms. In terms of the backward linkage, a one standard deviation decrease in the STRI corresponds to a loss of 7.8 per cent in productivity. When the STRI is in a percentage form, the similar result is 2.1 per cent. These results are interpreted when I-O coefficients remain constant.

The finding is robust to several different econometric specifications, including using an alternative methodology to measure firms' productivities, alternative measures for services reform, and controlling for unobserved firm heterogeneity. I also reinforced that the effects of services reform on the performance of manufacturing firms is not through increasing

firms' markups. When including the relationship between productivity of manufacturing firms and services liberalisation through the backward linkage, the productivity effect is stronger. The results are robust through different tests. Thus, in this study, both of the two hypotheses on an association between productivity of firms in manufacturing sectors through the backward linkage and forward linkage are proven. Additionally, to deal with the endogeneity raising from the potential lobbying activities of the manufacturing sector, this Chapter used outward FDI in services sectors of the US – a major WTO negotiator of Vietnam as instruments for the STRI. The results of IV regression confirm the validity of the main findings.

The productivity gains are not equal to all firms. Controlling for different characteristics of firms, the results showed that the smaller size of the firms, the larger the productivity effects from services reform that firms could gain. Regarding firms' ownerships, through the forward linkage, reduction of barriers to services trade has positive and larger impacts on state-owned firms compared to domestic private firms. State-owned firms are often criticised as not being active as private firms with international cooperation to have access to services from the international services providers. The results advise that services liberalisation would be an effective policy strategy for the government in accelerating the growth of small manufacturers and state-owned firms. Through the backward linkage, there is no statistical evidence to conclude the different impacts of services liberalisation on the productivity of manufacturing of firms that have different types of ownership.

The study also documents the different effects of different policy areas and types of regulations on firms' productivities. Through the forward linkage, the effects on the productivity of firms of most of the policy areas are found to be negative and statistically meaningful, except in the case of restrictions to movement of foreign labour. Through the backward linkage, the impacts are positive and significant across three policy areas, except the restrictions on foreign entry, and discriminatory measures. When looking at regulations in terms of discrimination, it appears that non-discriminatory regulations have stronger impacts than discriminatory regulations. These findings suggest that besides removing barriers related to regulations affecting only foreign firms, policymakers should also focus on reforming regulations that also hinder the business of domestic firms.

Manufacturing exporters and those that change their status from non-exporter to exporters tend to benefit more from reducing barriers to services trade. This argument is supported by

both theory and empirical evidence (Deardorff, 2001; Francois & Woerz, 2008; Francois & Hoekman, 2010; Shepotylo & Vakhitov, 2015). The export of manufacturing sectors plays a remarkable role in the growth of Vietnam's economy as it usually accounts for about 90 per cent of the total export of the country.[45] For that reason, boosting the productivity of manufacturing firms that export is crucial for the continued growth of Vietnam's GDP. A study on how exporting manufacturing firms gain differently from services liberalisation is indeed needed and valuable for policymakers. Unfortunately, the data sample from 2004-2012 obtained from the VES does not contain sufficient information on merchandise export status or export sales of firms for the implementation of such tests. Future research on this topic is encouraged when adequate data becomes available.

[45] According to GSO, in 2018, about 93 per cent of Vietnam's export value is contributed by manufacturing sector, while the ratio of agriculture and mining sectors, and services sector are 4.6 per cent and 2.3 per cent, respectively. See https://gso.gov.vn/default.aspx?tabid=720 for more details.

# Chapter 5. The impacts of barriers to services trade on the employment of manufacturing firms

## 5.1. Introduction

The expansion of employment is arguably one of the most important policy concerns for any nation, especially in the case of a labour-abundant economy like Vietnam. Among all sectors, manufacturing sectors no doubt play a critical role in absorbing the unskilled and low-skilled employment that are shifted from the rural regions and from the agricultural sector.

The relationship between economic integration and employment has received the attention of both economists and policymakers in the past few decades. On top of this attention is the impact of goods trade liberalisation on manufacturing employment. This has been comprehensively analysed in the literature. Baldwin (1995) presents a survey on the impacts of trade liberalisation on employment in OECD countries and found that the employment effects of trade liberalisation are not significant in OECD countries, and employment in low-technology industries have been negatively impacted by increasing imports. Hoekman and Winters (2005) concluded that the impacts of trade reform on employment were found to be greater in the 2000s literature than in the literature in the 1990s, even though the link between trade liberalisation and firm-level employment was not clear as mixed empirical results have been found. The relationship is positive and significant in the case of some developing countries (Fu & Balasubramanyam, 2004; Sen, 2002). It was found to be negative by Greenaway, Hine and Wright (1999) and found to have no significant impacts by Turrini (2002). Other studies found that the employment effects of trade liberalisation depend on the different characteristics of firms (Lee, 2007; Mouelhi, 2007). In the case of Vietnam, results from Kien and Heo (2009) suggest that exports are positively associated with labour demand, while the correlation between imports and employment growth is not statistically significant.

We can see that the employment effects of goods trade liberalisation have been widely analysed in the literature, at either cross-country level or firm-level. However, the similar effects of services trade liberalisation have not been studied well. Despite growing literature on the role of services in economic development (Fontagné & Harrison, 2017; Sáez,

Taglioni, Marel, Hollweg, & Zavacka, 2015), there is a lack of both theoretical and empirical studies on how reform in services sectors impacts employment in manufacturing sectors. As suggested by Hoekman and Winters (2005), future research should prioritise the area of employment effects of services trade reforms. To date, only one paper has touched on this topic, conducted by Fiorini, Hoekman, and Malgouyres in 2018. Using sectoral-level data of 24 transition economies, the authors found a negative effect of services reform on the employment of downstream manufacturing sectors. Additionally, it is suggested that economic governance and human capital play the role of mitigating the negative effect of services liberalisation on manufacturing sector employment.

This study serves as the first attempt to investigate the relationship between services liberalisation and employment of manufacturing sectors in the case of Vietnam, at a firm-level. The key hypothesis of this Chapter is that removing barriers to services trade could possibly lead to significant variation in labour demand of downstream manufacturing firms, which either use services as intermediate inputs or provide inputs to services firms. The analysis is based on a newly constructed database on the measurement of barriers to services trade and a firm-level dataset derived from the annual Enterprise Survey, undertaken by the General Statistics Office of Vietnam from 2004 to 2012.

The main finding is that relaxing barriers to services trade was associated with a reduction in demand of labour of firms that consume services as intermediate inputs (through a so-called forward linkage) and an increase in employment of firms that provide input to services sectors (through a so-called backward linkage). Through the forward linkage relationship, the employment effects of services liberalization on manufacturing firms can be of three kinds, which are substitution effect, upward scale effect, and downward scale effect. On the other hand, through the backward linkage, the similar effects are upward and downward scale effects. The section 5.2 further explain these effects. In terms of the magnitude of the effects, with other factors constant, the services input ratios in the total inputs of manufacturing sectors include the following: Through forward linkage, a one percentage point decrease in the aggregate services restrictiveness index corresponds to a 4 per cent reduction in labour demand of manufacturing firms; through backward linkage, a one percentage point decrease in the aggregate services restrictiveness index associates with an increase of 1 per cent in demand of labour of manufacturing firms. The impact magnitudes are not equal among firms but depend on different features of firms such as size

and ownership. The findings are robust to several different econometric specifications, including using more data-driven alternative measures for services restrictiveness index, and using the input-output table of relatively unrestricted services sectors such as the US. Through running Instrument Variable (IV(2004)) regression, the study also proves that the results are not driven by reverse causation sourced from the potential lobbying behaviour of the manufacturing sector. In further extensions, I found the employment effects of services liberalisation through different channels include upward scale effects as positive impacts on value-addition and positive impacts on productivity and labour output.

The remainder of this Chapter is organised as follows. Section 5.2 provides a theoretical framework on how liberalisation of services trade affects the employment of manufacturing firms. Section 5.3 provides an overview on the employment situation of Vietnam. Section 5.4 establishes the empirical study model examining the effects of services trade barriers reduction on the employment of downstream manufacturing firms. This section also discusses data compilation, variables, and estimation strategy. The main results, robustness tests, and further extensions to the core analysis are discussed in section 5.5. Section 5.6 provides a conclusion and adds some policy relevance from this study's findings.

## 5.2. Theoretical framework

Similar to the linkage between services liberalisation and productivity of manufacturing firms, there has been no clear theory on the employment impacts of services liberalisation on manufacturing firms. Instead, the literature has touched on an indirect channel through which the manufacturing and services industries interact with each other.

Antras and Helpman (2004) and Grossman and Helpman (2003) argue that manufacturing firms can choose to keep the production of an intermediate input within its boundaries or to buy components from outside. The formal is called vertical integration, and the latter is outsourcing. Whether it is vertical integration or outsourcing, firms have two choices. The first choice is to keep the intermediate input production in the home country, while the second choice is to produce the input within the firm boundaries but in a different country through engaging in foreign direct investment. Similarly, in the case of outsourcing, firms can choose to buy services and intermediate inputs from a domestic supplier (domestic outsourcing) or from a supplier abroad (foreign outsourcing or offshoring). In the scope of

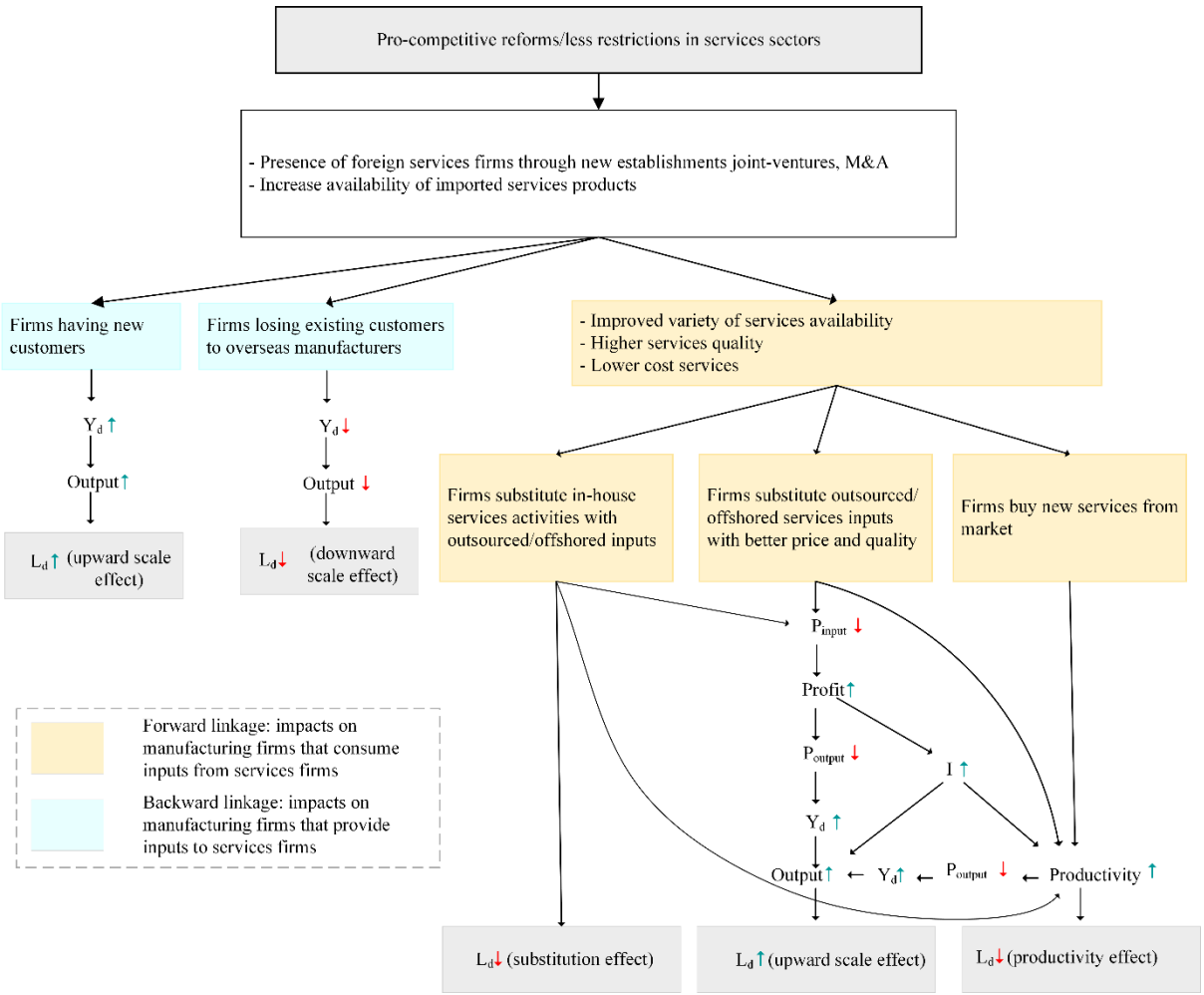
this study, we look at the interaction between manufacturing and services industries through outsourcing, particularly in the scenario when services have become more liberal.

The employment effects of services outsourcing on manufacturing firms, again, has not been theoretically proven. Amiti and Wei (2009), Milberg and Winkler (2010), and Winkler (2010) developed an ambiguity theory on the negative impact of services liberalisation on the labour demand of the manufacturing sector. Outsourcing services can result in higher quality and lower price of services input, which may replace the employment used in in-house services production and lead to a decrease in demand for labour. On the other hand, where there is free entry and exit in the output and input market, outsourcing services would enable manufacturing firms to produce at lower costs and increase their profit (Fiorini et al., 2018; Fixler & Siegel, 1999; Pilat & Wölfl, 2005). This increase in profit could possibly expand the production of firms and result in an expansion of demand in labour.

From an empirical point of view, the impacts of services outsourcing on the employment of manufacturing firms are also mixed. Falk and Koebel (2002) find that the use of purchased services negatively affects firms' demand for labour of all skills levels. In particular, Crino (2010) and Fuster, and Lillo-Banuls and Martinez-Mora (2019) provide excellent reviews of the wide literature on the effects of offshoring on the employment of downstream manufacturing, though the results are also mixed. Regarding effects on total employment, Amiti and Wei (2005) found a positive and significant relationship between service offshoring and total employment. A study by OECD in 2007 also found similar impacts, although they were not significant. On the other hand, using sector-level data of 450 sectors in the US, Amiti, and Wei (2009) found a negative impact on employment of services offshoring. A similar effect is found in the case of Germany as in Scholler (2007), for the period of 1991-2000 and Winkler (2010), for the 1995-2006 period. The employment effects of services offshoring are found to be positive in the case of highly-skilled, white-collar employment and negative in the case of lower-medium and low-skilled, white-collar employment (Crino, 2010).

To develop a theoretical linkage between services reform and employment of manufacturing firms, Fiorini et al. (2018) based their framework on the role of services outsourcing (both domestic outsourcing and offshoring). While their theoretical framework only focuses on the employment of downstream manufacturing firms that use services as intermediate inputs, in this study, for the first time, we extend the framework to take into account the

potential effects on manufacturing firms that provide inputs to the services sector. Figure 5.1 describes the theoretical framework that serves as the base of the empirical analysis.




Notes. $P_{input}$ : the price of input; $P_{output}$ : the price of output; $Y_d$ : demand for output; I: investment; $L_d$ : demand for labour. The figure has been adapted from Winkler (2010) and Fiorini et al. (2018).

**Figure 5.1. Theoretical framework**

I will start with the direct consequences of services liberalisation. With the expansion of the pro-competitive reforms in services, there are several benefits to both foreign investors and domestic services suppliers. First, policy reform tends to reduce restrictions and barriers to market entry for foreign direct investment. Once the cost of FDI establishment decreases, the services market of hosting countries becomes more attractive to foreign investors. Second, reforms also remove barriers to entry for domestic private firms as well as reducing the barriers that hinder the operation of existing firms. It creates more freedom in the market for both domestic and foreign firms, the market becomes more competitive, and this is

expected to result in an increase in the availability of lower-cost services and a wider variety of services products. The services restrictiveness index, constructed and analysed in Chapter 3, demonstrates exactly how much liberalisation in services of Vietnam and what regulations have been reformed. The indicators are unique and available on an annual basis from 2003 to 2019.

Conventionally, the literature in the interaction between services and the manufacturing sector only looks at the services as an input to the manufacturing sector. However, firms in the services sector also consume products from the manufacturing sector. As in the previous Chapter, for the first time, this study looks at both aspects of this relationship. The former is the so-called forward linkage, and the latter is backward linkage. In Figure 5.1, I separate these two linkages in yellow and blue colours.

Firstly, following the common approach, I look at the forward linkage between the manufacturing and services sectors. Through this linkage, the ultimate purpose of this study is to investigate the mechanism through which reform in the services sector affects the labour demand of manufacturing firms that use services as intermediate inputs.

The increasing accessibility to cheaper and more variety of services products in the market gives manufacturing more choices in deciding their behaviour in using services as intermediate inputs. Services not only provide manufacturing firms with missing inputs but also substitute for services produced in-house at a lower cost (Markusent et al., 2005). Under the situation of imperfect competition, when firms substitute existing outsourced/offshored services inputs with better priced and higher-quality services and as the cost of production input decreases, firms would be able to lower prices of final products and resulting in higher profit margins (De Loecker et al., 2016).

Increasing profit possibly leads to an expansion in the production scale and ultimately results in an increase in demand for labour. This positive relationship is marked as the ‘scale effect.’ However, by accessing the new services in the market as substitutes for in-house services, firms would improve production and labour efficiencies, which may reduce their need to use labour. This is denoted as the ‘productivity effect.’ The theoretical linkage between the productivity of manufacturing firms and reform in services trade has already been discussed carefully in section 4.2.1 of the previous Chapter. Next, when the firm substitutes the lower-cost services in the market for their existing services produced in-house, the labour for that part of services production directly becomes redundant. This

demand for labour reduces as it is relocated to services sectors in the same country (in the case of domestic outsourcing) or foreign countries (in the case of offshoring). In Figure 5.1, we refer to this direct linkage as a 'substitution effect.'

Secondly, regarding the backward linkage, in which manufacturing firms play the role as input providers to firms in services sectors, there is one kind of employment effect of liberalisation in services trade on manufacturing firms here – scale effect. However, the effect could be either positive or negative, depending on the situation of the manufacturing firms when the services sector becomes more liberal. Assuming other conditions are unchanged, services liberalisation makes the services market encourage the establishment of new services firms – both foreign-invested and domestic firms. As analysed in section 4.3.1.2, the expansion of services sectors could shift the demand curve for machinery and equipment provided by manufacturing sectors to services firms. The demand for manufacturing products may increase if manufacturing firms are successful in absorbing these newly established services firms. This results in an increase in demand for the output of firms and possibly leads to an expansion of labour demand. On the other hand, the newly established services firms, through fully FDI, joint-ventures, or merger and acquisitions, could decide to switch their current use of domestic manufacturing products to imported original products, or they may have to rely on supply from the overseas parent companies (Fernandes & Paunov, 2012). In this case, the demand for manufacturing products of domestic firms falls, which likely results in a reduction in their demand for labour. In this case, through backward linkage, there is one hypothesis on the linkage between upstream manufacturing firms and reform in the downstream services sector.

In summary, through the forward linkage, there are three kinds of employment effects of policy reforms in the services sector on labour demand of manufacturing firms: substitution effect, scale effect, and productivity effect. Through the backward linkage, there is one relationship, which is the scale effect. Therefore, we have two hypotheses, as follows:

*Hypothesis 5.1: Through the forward linkage, there is a meaningful impact of services liberalisation on labour demand of the manufacturing sector. The sign of the effect is a priori ambiguous depending on which effects including upward scale, substitution or productivities dominates.*

*Hypothesis 5.2: Through the backward linkage, there is a scale effect of services liberalisation on the labour demand of manufacturing firms. The sign of the effect is a priori ambiguous depending on which effects upward scale or downward scale dominates.*

## 5.3. The employment situation in Vietnam

According to the GSO, Vietnam has been a predominantly agricultural country with a majority of the population living in rural areas and involved in agricultural production. As of 1995, the rural population accounted for almost 80 per cent of the population, and this number reduced to less than 70 per cent in 2009; it has gradually decreased since then. The movement of employment from the agricultural sector to the non-agricultural sector is, however, faster than the movement of the population from rural to urban areas. It started in the 1990s when the agricultural sectors' share of total employment fell dramatically from 73% to 58.8% between 1992 and 2004 (Kien & Heo, 2009). This trend has continued recently, as demonstrated in Table 5.1.

During the period from 2005-2012, the total employment of Vietnam increased at an average growth rate of 2.89 per cent per year, while the average rate of employment in the agricultural sector increased by only 0.48 per cent, with two negative growth rate years in 2010 and 2012. At the same time, the share of agricultural sectors in total employment reduced significantly from 55.09 per cent in 2005 to 47.37 per cent in 2012. On the other hand, the manufacturing sector experienced a higher average growth rate of 5.89 per cent. Especially in the three main sectors of the economy, the services sector has played a leading role in creating more jobs and absorbing a substantial number of workers that move from the other sectors.

Employment in the services sector increased at the highest average rate during 2005-2012, at 7.13 per cent with nearly six million new jobs. The number of new jobs generated by the services sector accounted for 68 per cent of the total new employment of the country during this period of time. Meanwhile, there are similar numbers in the manufacturing sector and

agricultural sectors – 24 per cent and 8.0 per cent, respectively. These numbers have shown the trend of employment moving from the agricultural sector to industrial and services sectors, where they possibly receive higher and more stable wages (Kien & Heo, 2009). Additionally, during the period studied from 2005-2012, the share of new employment created by the services sector was almost three times higher than that of manufacturing industries; it is possible that there is a part of the labour force departing from manufacturing sector to services sector. While labour from rural areas and agricultural sector move to urban areas for jobs in the manufacturing sector – especially in industrial zones – a part of the labour force in urban areas which have higher skills could move to work in the higher paid services sector. These trends of movement are suitable with the reform pattern of Vietnam trade policy as the industrial sector was the priority in the 1990s and early 2000s, while the services sector has started to receive attention since Vietnam became a member of the WTO in 2007.

**Table 5.1. Total employment by sector, 2005-2012 (thousands of people)**

| **Sector** | **2005** | **2007** | **2009** | **2010** | **2012** | **2005-2012** |
|---|---|---|---|---|---|---|
| **Total employment** | 42774.9 | 45208 | 47743.6 | 49048.5 | 51422.4 | 8647.5 |
| Per centage changes (%) | (-) | 5.69 | 2.76 | 2.73 | 2.13 | 2.89 |
| **Agriculture, forestry and fishery** | 23563.2 | 23931.5 | 24606 | 24279 | 24357.2 | 794 |
| Per centage changes (%) | (-) | 1.56 | 1.25 | -1.33 | -0.02 | 0.48 |
| Per centage in total employment | 55.09 | 52.94 | 51.54 | 49.50 | 47.37 | |
| **Manufacturing** | 5031.2 | 5665 | 6449 | 6645.8 | 7102.2 | 2071 |
| Per centage changes (%) | (-) | 12.60 | 7.50 | 3.05 | 1.86 | 5.89 |
| Per centage in total employment | 11.76 | 12.53 | 13.51 | 13.55 | 13.81 | |
| **Services** | 11793.1 | 13237.1 | 14386.8 | 15831.7 | 17680.8 | 5887.7 |
| Per centage changes (%) | (-) | 12.24 | 4.07 | 10.04 | 5.47 | 7.13 |
| Per centage in total employment | 27.57 | 29.28 | 30.13 | 32.28 | 34.38 | |
| **Others** | 2387.4 | 2374.4 | 2301.8 | 2292 | 2282.2 | -105.2 |
| Per centage changes (%) | (-) | -0.54 | -1.41 | -0.43 | 1.28 | -0.63 |
| Per centage in total employment | 5.58 | 5.25 | 4.82 | 4.67 | 4.44 | |

*Source: Compiled from data on the website of the General Statistics Office of Vietnam.*

## 5.4. Empirical strategy, endogeneity and data

### *5.4.1. Estimation strategy*

Modelling began by adopting a simple profit maximising model of firm behaviour as developed by Hamermesh (1993) and widely used in the literature (Fabbri, Haskel, & Slaughter, 2003; Greenaway et al., 1999; Holger & David, 2004; Navaretti, Checchi, & Turrini, 2003). The model begins with a simple Cobb-Douglas production function for firm i at time t:

$$Q_{it} = A^{\gamma} K_{it}^{\alpha} L_{it}^{\beta} \tag{5.1}$$

where $Q$ is real output; A is total factor productivity, K is capital stock, L is unit of labour, α and β denotes the capital and labour factor input share coefficients, and $\gamma$ captures factors changing the efficiency of the production process.

When firms maximise profit, they will employ labour and capital at a level for the marginal revenue product of labour ($MRP_L$) equals wage (w) and the marginal revenue product of capital ($MRP_{k)}$ equals the user cost (c).

$$MRP_L = p\beta A^{\gamma} K_{it}^{\alpha} L_{it}^{\beta-1} = w \tag{5.2}$$

$$MRP_K = p\alpha A^{\gamma} K_{it}^{\alpha-1} L_{it}^{\beta} = c \tag{5.3}$$

Simulating from these two equations we have:

$$K_{it} = \frac{w\alpha}{c\beta} L_{it} \tag{5.4}$$

Substituting $K_{it}$ into equation (5.1) we have:

$$Q_{it} = A^{\gamma} (\frac{w\alpha}{c\beta} L_{it})^{\alpha} L_{it}^{\beta} \tag{5.5}$$

Taking logarithms and rearranging the above equation allows us to derive the firm's demand for labour as follows:

$$logL_{it} = \theta_0 + \theta_1 \log\left(\frac{w}{c}\right) + \theta_2 logQ_{it} \tag{5.6}$$

where $\theta_0 = -(\gamma logA + \alpha log\alpha - \alpha log\beta)/(\alpha + \beta)$ ; $\theta_1 = -\alpha/(\alpha + \beta)$ and $\theta_2 = 1/(\alpha + \beta)$

To estimate the labour demand of a firm, it is necessary to have data of the user cost of capital (c), which is not available in the dataset. However, according to Görg et al. (2009) and Greenaway, Hine and Wright (1999), this capital cost only varies over time and can be captured by controlling for time-fixed effects. Therefore, I assume that excluding this variable does not likely lead to an omitted variable bias. Moreover, since the data used in this study is a panel of firms, then the estimating labour equation, which serves as the basis of the estimation model, is of the following form:

$$logL_{it} = \beta_0 + \beta_1 \log W_{it} + \beta_2 logQ_{it} + \beta_3 X_{it} + u_{it} \qquad (5.7)$$

where $W_{it}, Q_{it}, and\ L_{it}$ are average wage rate at sector level, real output of firms, and the number of employees of a firm at the end of the year. X represents a vector of other variables that affect the behaviour of firms in deciding the number of labourers used in a year. For the purpose of this study, I included in the model two main regressors in X that are proxied for the barriers to services trade, services linkage index, and manufacturing linkage index. To avoid the potential omitted variables bias, we also take into account the employment impacts of the liberalisation of goods trade. The output tariffs and input tariffs are two independent variables that represent the goods trade liberalisation. Given the delayed impacts of policy, I take a lagged one year of all the policy-related variables including the services linkage index, manufacturing linkage index, and tariffs. Detail of variables measurement is described in the next section. In all specifications, I control for different characteristics of firms including size, ownership, and age of firms.

### *5.4.2. Endogeneity*

In this Chapter, the endogeneity issues are similar to in the previous Chapter. These are because of the linkage between the services input intensities in manufacturing sectors and services regulations, and the potential lobbying behaviours of the manufacturing sector for services reform.

The same solutions as in the previous Chapter are applied to solve these endogeneity issues. To resolve the first problem, I also used the I-O table version in 2000 of Vietnam, and the I-O table of the US as alternative for the I-O table of Vietnam in a robustness test. About

the second problem, similarly, the services outward FDI of the US are used as instrument for the STRI of Vietnam. Details of the IV regression will be discussed later in the section 5.5.2 on robustness tests.

### *5.4.3. Data and measurement of variables*

This Chapter continues utilising the unique firm-level dataset collected by GSO Vietnam through the annual Vietnam Enterprises Survey or the VES. As described in the previous Chapter, VES is the most comprehensive dataset of Vietnamese firms operating across different sectors in the economy. Relevant to this Chapter, the VES provides information on employment of firms (including female and formal employment), wages, output, and other information including location, ownership, and establishment year. Accession to the VES is available from 2004 to 2012.

Data is cleaned in the same manner as the previous Chapter. Sector 12, the manufacture of tobacco products, and sector 19, the manufacture of coke and refined petroleum products are excluded from the data sample. The reason is that there are only a small number of firms operating in these two sectors. After cleaning, an unbalanced panel data containing 230,658 observations from 2004 to 2012 was left for analysis.

The main dependent variable of interest is firms' employment, which is proxied by the number of employees at the end of the year. In other specifications, to find out the impacts on employment with different features such as gender and formality,[46] I took the number of female employees at the end of the year and the number of formal employees at the end of the year as dependent variables.

The main regressors of concern are the services linkage index and the manufacturing linkage index, which are proxied for policy reform of services sector. Similar to the previous Chapter, I use an input-output table to calculate the input-output ratio to measure the linkage between the services sectors and manufacturing sectors. The measurements of the services linkage index and manufacturing linkage index are the same as in Chapter 4, as in equation

[46] Results of this exercises are presented in Appendix XI.

(4.2) and equation (4.3). For the convenience of interpretation, the indexes are transformed to per centage form.

In the models, other determinants of firms' employment are real output and wage rate. While output is proxied by value-added features, as in Haouas, Yagoubi, and Heshmati (2005), wage rate is measured at a sectoral level by the average wage of workers in the same sector. The nominal values of these variables are derived from the VES and are then deflated using producer price index and consumer price index.

To solve the potential endogeneity of omitted variables bias, I also controlled for different liberalisation, which took place during the period studied – particularly the liberalisation of trade in goods. Output tariffs and input tariffs are two proxies of the goods trade reform. The measurements of output tariffs and input tariffs are as in the previous Chapter. Table 5.2 provides a brief summary of variables included in the regressions.

**Table 5.2. Descriptive statistics**

| Variables | Observations | Mean | Std. Dev. |
|---|---|---|---|
| Services linkage index lagged | 230658 | 6.123 | 1.802 |
| Manufacturing linkage index lagged | 230658 | 3.425 | 3.553 |
| Logarithm of employee | 230623 | 3.156 | 1.558 |
| Logarithm of Value added | 198867 | 6.519 | 1.987 |
| Logarithm of Wage rate | 230658 | 3.611 | 0.324 |
| Output tariffs lagged | 230658 | 18.436 | 11.985 |
| Input tariffs lagged | 230658 | 6.323 | 4.216 |
| Capital | 216018 | 7.184 | 2.162 |
| Logarithm of capital-labour ratio | 211506 | 3.941 | 1.496 |
| Profit | 135777 | 4.705 | 2.557 |
| Investment | 159789 | 6.084 | 2.196 |
| Formal worker ratio | 159962 | 53.696 | 37.682 |
| Female worker ratio | 209470 | 39.944 | 23.974 |
| Age of firms | 230658 | 5.017 | 5.862 |

## 5.5. Results

### *5.5.1. Baseline estimation results*

Results for the estimation of the baseline model are given in the first two columns of Table 5.3 with different combinations of fixed effects. In all specifications, the coefficients of services linkage index are positive which show that services restrictiveness have a positive linkage with employment of firms or in other words, services liberalisation has a negative

and statistically significant effect on employment of downstream manufacturing sector. This result holds true when the specification is augmented with the lagged output tariffs and input tariffs as the proxies for liberalisation of trade in goods, as shown in columns 3 and 4. This result is consistent with what was found in Fiorini et. al. (2018). It implies that labour demand of manufacturing firms that use services as intermediate inputs tend to reduce with the expansion of services liberalisation. The combination of substitute effect and productivity effect on these manufacturing firms outweigh the scale effects. Referring back to the theoretical framework in Figure 5.1, it is likely that when services become more liberal, manufacturing firms can utilise the lower costs and higher quality services to replace their in-house services activities, which leads to a reduction of employment. Moreover, efficiency or labour productivity of firms improve as new services inputs are available in the market, which results in a decrease in the demand of labour.

**Table 5.3. Employment effects of services liberalisation - Baseline regression results**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Services linkage index | 0.046*** | 0.041*** | 0.042*** | 0.039** |
| | (0.006) | (0.015) | (0.007) | (0.015) |
| Manufacturing linkage index | -0.016*** | -0.016*** | -0.011** | -0.01* |
| | (0.005) | (0.005) | (0.006) | (0.005) |
| Value added | 0.272*** | 0.274*** | 0.272*** | 0.274*** |
| | (0.008) | (0.008) | (0.008) | (0.008) |
| Wage rate | -0.094*** | -0.063*** | -0.09*** | -0.06*** |
| | (0.03) | (0.02) | (0.029) | (0.021) |
| Output Tariffs | | | 0.001* | 0.001*** |
| | | | (0.001) | (0.001) |
| Input Tariffs | | | 0 | 0.001 |
| | | | (0.002) | (0.002) |
| Observations | 198,851 | 198,851 | 198,851 | 198,851 |
| R-squared | 0.961 | 0.962 | 0.961 | 0.962 |
| Year fixed effect | No | Yes | No | Yes |
| Firm fixed effect | Yes | Yes | Yes | Yes |

*Notes:* The dependent variable is the logarithm of the firms' number of employees. Value-added and wage rates are in the logarithm forms. All specifications control for size, age of firms and ownership of firms. Robust standard errors are clustered at industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level

In terms of employment impacts on manufacturing firms that provide inputs to services firms, the coefficients of the manufacturing linkage index are negative in all specifications as in column 1 to 4. The results suggest that less restrictive or more liberalisation of the

services sector leads to an increase in the demand for labour of manufacturing firms that provide inputs to services firms. It implies that these manufacturing firms have successfully utilised the scale effects generated by the establishment of new services firms as a result of services sector reform. This effect is demonstrated in Figure 5.1.

When I test for time-fixed effects, the P-value is 0.0000, which is smaller than 0.05, therefore, I reject the null hypothesis that the coefficients for all years are jointly equal to zero, and time-fixed effects are needed in this case. Thus, I take the results from column 4 as the final outcome. In terms of the magnitude of the effects, with other factors constant, including the services input ratios in the total inputs of manufacturing sectors: through forward linkage, a one percentage point decrease in the aggregate services restrictiveness index corresponds for a 4 per cent reduction in labour demand of manufacturing firms; and through backward linkage, a one percentage point decrease in the aggregate services restrictiveness index associates with an increase of 1 per cent in demand for labour of manufacturing firms.

Similar to previous studies on impacts of goods trade liberalisation on the employment of manufacturing firms, as reviewed earlier, the results show that increasing a firm's output is associated with an increase in labour demand, whereas increasing wage rates is followed by reduced labour level of firms with statistical significance at a high level – one per cent. Moreover, across all specifications, the magnitudes of the output coefficients are much larger than those of wage rate, suggesting that output is a more critical factor than wage rate in explaining the labour demand of manufacturing firms in a developing country like Vietnam.

Regarding employment effects of goods trade reform, the coefficients of output tariffs are positive and statistically significant in all of the specifications implying that the reduction of output tariffs lead to a decrease in firms' demand of labour. In terms of input tariffs, the impacts found are not significant at any conventional level.

### *5.5.2. Robustness tests*

The results presented so far indicate that services liberalisation has a negative impact on employment of manufacturing firms through the forward linkage and a positive impact through the backward linkage. In this section, I conduct several tests to check the robustness

of these findings. The robustness tests consider a number of factors, including alternative measures of the services restrictiveness index, alternative use of input-output table, and solving the endogeneity issue arisen from the possible lobbying activities of the manufacturing sectors.

*5.5.2.1.Alternative measure of services restrictiveness index*

To solve the potential endogeneity caused by the subjectivity of the services restrictiveness index, similar to the previous Chapter, I tested the validation of the baseline model using an alternative measure of the services restrictiveness index. While the services linkage FDI and services linkage privatisation are alternatives for the services linkage index, the manufacturing linkage FDI and manufacturing linkage privatisation are alternatives for the manufacturing linkage index. These indexes are measured by a weighted sum of the average share of employee/revenue of foreign-invested firms and private-domestic firms in a particular services sector. The weights are the proportions of a services sector in total intermediate input of a specific manufacturing sector, which are derived from the input-output table. The construction of these indexes is explained in section 4.4.2.3.

Table 5.4 presents the results of the baseline model using the average employee share at the sector level of foreign-invested and domestic private firms.

In terms of the forward linkage, the results shown in columns 1 and 2 are consistent with results in the baseline models as the positive and significant relationship between restrictions in services sectors and the employment of firms in manufacturing sectors that use services as intermediate inputs. Through backward linkage, the results are also consistent with results in the baseline models as the negative and significant relationship between restrictions in services sectors and the employment of firms in manufacturing sectors that provide inputs for services firms. However, when we entered all the indexes in one regression, as results shown in column 3 show, the coefficient of services linkage FDI is not significant as I found a high correlation between services linkage FDI and services linkage privatisation (0.8).

**Table 5.4. Employment effects of services liberalisation – Alternative measures of STRI**

| | (1) | (2) | (3) |
|---|---|---|---|
| Services linkage FDI | 0.122** | | 0.095 |
| | (0.056) | | (0.065) |
| Services linkage Privatisation | | 0.032** | 0.029** |
| | | (0.014) | (0.014) |
| Manufacturing linkage FDI | 0.005 | | 0.001 |
| | (0.007) | | (0.007) |
| Manufacturing linkage Privatisation | | -0.008** | -0.009** |
| | | (0.004) | (0.004) |
| Value added | 0.263*** | 0.263*** | 0.264*** |
| | (0.008) | (0.008) | (0.008) |
| Wage | -0.058*** | -0.061*** | -0.058*** |
| | (0.02) | (0.019) | (0.019) |
| Output tariffs | 0.001*** | 0.001* | 0.001** |
| | (0) | (0.001) | (0.001) |
| Input tariffs | 0.002 | 0.003 | 0.002 |
| | (0.002) | (0.002) | (0.002) |
| Observations | 198851 | 198851 | 198851 |
| R-squared | 0.962 | 0.962 | 0.962 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

*Notes:* The dependent variable is the logarithm of the firms' number of employees. Services and manufacturing linkages are constructed using the employee shares of foreign and private domestic manufacturing firms in the pool data. All specifications control for size of firms, ownership of firms, and age of firms. Robust standard errors are clustered at industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

*5.5.2.2.Alternative of services input ratio*

As discussed in section 5.4.2, there is a potential endogeneity concern of the input-output components of the linkage index while estimating the baseline model. To resolve the problem, similar to the previous Chapter, I followed the common solution in the literature by using the input-output data from the US in the 1990s (Fiorini et al 2018; Barone & Cingano, 2011; Bourles et al 2013; Rajan & Zingles, 1998). The reason behind this is that the services sector in the US has been unrestricted and thus the input-output data of the US is less likely influenced by services regulation.

Table 5.5 reveals that using the input-output table of the US in 1995 to construct the linkage indexes produces similar results as using the input-output table of Vietnam, even though the magnitude of the effect is weaker. This result holds for the positive impacts of services linkage index to labour demand of manufacturing firms. When I control for other

unobserved heterogeneity, including firms size, ownership of firms, and age of firms, the results are consistent with the baseline regression model. However, the employment effects of services barriers to manufacturing firms that provide input to services firms are not robust in this test.

**Table 5.5. Employment effects of services liberalisation - Input-Output table of the US in 1995**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Services linkage index | 0.01*** | 0.013*** | 0.008*** | 0.009** |
| | (0.002) | (0.004) | (0.002) | (0.004) |
| Manufacturing linkage index | 0.003 | 0.004 | 0.006 | 0.002 |
| | (0.007) | (0.009) | (0.007) | (0.009) |
| Value added | 0.271*** | 0.273*** | 0.271*** | 0.273*** |
| | (0.008) | (0.008) | (0.008) | (0.008) |
| Wage | -0.114*** | -0.052** | -0.112*** | -0.054** |
| | (0.033) | (0.021) | (0.032) | (0.021) |
| Output tariffs | | | 0.001 | 0.001 |
| | | | (0.001) | (0.001) |
| Input tariffs | | | 0.004* | 0.002 |
| | | | (0.002) | (0.002) |
| Observations | 198851 | 198851 | 198851 | 198851 |
| R-squared | 0.961 | 0.962 | 0.961 | 0.962 |
| Year fixed effect | No | Yes | No | Yes |
| Firm fixed effect | Yes | Yes | Yes | Yes |

*Notes:* The dependent variable is the logarithm of the firms' number of employees. Value-added and wage are in the logarithm forms. All specifications control for size of firms, ownership of firms, and age of firms. Robust standard errors are clustered at the industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

*5.5.2.3.IV regression*

As discussed in section 5.4.2, while estimating the baseline model, there is a potential endogeneity concern arisen from potential lobblying behaviours of the manufacturing firms for reform in the services sector. To resolve the problem, similar to the previous Chapter, I use the log of outward services FDI of the US to the rest of the world to instrument the STRI. The same method as in Chapter 4 is used to construct aggregate weighted US FDI measure for services and manufacturing linkage indexes. Results of the IV estimation are presented in Table 5.6.

Results of the first stage IV regression show that the outflows FDI in services of the US to the rest of the world are good instruments for the services restrictiveness index. The null

hypothesis of weak identification under the Stock-Yogo test is rejected and the F-statistic suggests that the instruments perform well.

**Table 5.6. Employment effects of services liberalisation - Instrumental Variables approach**

| | |
|---|---|
| *Second stage regression* | |
| Services linkage index | 0.029*** |
| | (0.009) |
| Manufacturing linkage index | -0.017*** |
| | (0.005) |
| Observations | 191095 |
| R-squared | 0.414 |
| Year fixed effect | Yes |
| Firm fixed effect | Yes |
| *First stage regression* | |
| Services linkage index – US FDI | -62.034*** |
| Manufacturing linkage index – US FDI | -38.576*** |
| F-stat | 1354 |
| p-value | 0.0000 |

*Notes:* The dependent variable is the logarithm of the firms' number of employees. Coefficients of value-added wage rate, output and input tariffs are not reported for brevity. All specifications control for size, age of firms, ownership of firms. Robust standard errors are clustered at industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

In the second stage IV regression, I replace the services linkage index and manufacturing linkage index with the indexes instrumented with outward FDI in services of the US as constructed above. The results of this second stage confirm the earlier findings that service restrictiveness index has a positive impact on labour demand of manufacturing firms through the forward linkage and a negative impact through the backward linkage. In other words, through the forward linkage, services liberalisation has a negative impact on the labour demand of manufacturing firms and a positive impact through backward linkage. These gives us confidence that the results are not driven by reverse causality between services liberalisation and employment of manufacturing firms.

### *5.5.3. Baseline extension*

In this section, I first test the different channels through which services reform affects employment of manufacturing firms, including scale effect (output/value-added) and productivity effect, as demonstrated in the theoretical framework in section 5.2. Second, I

take further tests to take into account different characteristics of firms which could affect the link between services trade barriers and the manufacturing firms' demand for labour. I divide the data sample into different subsets based on the size of firms, and ownership of firms. Next, I further examine the individual impacts of each policy component in the services restrictiveness index based on several classifications.

*5.5.3.1.Effects of services liberalisation through different channels*

*Value-added:*

In terms of forward linkage, the study found a significant and negative impact on value-added, which is a proxy for firms' outputs. The reduction of services linkage index (-) creates more liberalisation in services sectors. Labour demand in manufacturing firms that use services inputs can substitute outsourced/offshored services input with cheaper and higher quality services. Their input cost reduces, profits increase, and then output prices decrease and lead to an increase in their sale demand and Value-added/output would be gained (+). Then, firms would want to increase their use of labour (+). However, I found in the results of the baseline models which are indicated in Table 5.3 that overall services reform leads to a reduction in labour demand as the results of direct substitution effects and productivity effects are stronger than the increase in labour demand caused by scale effects. Regarding backward linkage, the reduction of the manufacturing linkage index creates (-) more liberalisation in services sectors so manufacturing firms that provide inputs to services firms could lose their existing services customers to overseas manufacturers. The demand for their products could go down and lead to a decrease in Value-added/output (-).

**Table 5.7. Employment effects of services liberalisation through different channels**

| | (1) Value added | (2) Productivity | (3) Labour productivity | (4) Capital | (5) Capital-labour ratio |
|---|---|---|---|---|---|
| Serivces linkage index | -0.097** | -0.051*** | -0.108*** | 0.052* | 0.055** |
| | (0.04) | (0.015) | (0.035) | (0.032) | (0.028) |
| Manufacturing linkage index | 0.022* | 0.019** | 0.026** | 0.009 | 0.011 |
| | (0.012) | (0.008) | (0.01) | (0.012) | (0.013) |
| Observations | 198867 | 173855 | 198851 | 216018 | 211506 |
| R-squared | 0.895 | 0.694 | 0.635 | 0.915 | 0.81 |
| Year fixed effect | Yes | Yes | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variables are in the logarithm forms. All specifications control for the size of firms, ownership of firms, and age of firms. Robust standard errors are clustered at the industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

*Productivity and labour productivity:*

To test the employment effects of services trade reform through the productivity channel, I measured two types of firm productivity, the total factor productivity and labour productivity. Chapter 4 measured TFP at the firm level using the parameters derived from the production functions using Olley and Pakes (1996) methodology. In this Chapter, labour productivity is calculated by the ratio of output or value-added and the total employment of firm in a year.

In regard to the forward linkage, the results in Table 5.7 indicate the negative relationship between services linkage index and productivity and labour productivity of a firm. This relationship is as described in Figure 5.1. With the expansion of services liberalisation or reduction in services linkage index (-), new services are available in the market, manufacturing firms that use services as intermediate inputs can utilise these services to improve their production efficiency, and also increase the productivity of labour (+). Regarding the backward linkage, both columns 2 and 3 show positive and statistically significant links between manufacturing linkage index and two types of productivity. The explanation for this case is detailed in section 4.4.1 of the previous Chapter.

*Capital and capital-labour ratio:*

Through forward linkage, the result in column 4 reveals a significant and positive impact on the use of physical capital of manufacturing firms. The reduction of services linkage index (-) generates more liberalisation in the services sector and labour demand in manufacturing firms that use services inputs can substitute outsourced/offshore services inputs with cheaper and higher quality services. Their input cost reduces, and their profit increases. Even though this increase may not be associated with an increase in the use of physical capital, in this case, I found that firms reduce their use of physical capital (-) with a coefficient of 0.052. On the other hand, through backward linkage, I find a positive linkage between manufacturing linkage index and capital, however, it is insignificant.

Regarding the impacts of services reform on capital-labour ratio, through the forward linkage, I find from the results in column 4 of Table 5.7 that manufacturing firms reduce their use of physical capital (-) with a coefficient of 0.052. However, the results from the Table 5.3 'Baseline regression results' show a reduction of labour (-) with the biggest coefficient of 0.046 (column 1). Therefore, the use of capital decreases at a faster level than

the reduction of labour. Thus, the capital-labour ratio reduces (-) as the results of a reduction of the services linkage index (-). Through the backward linkage, I do not find any statistically meaningful impacts.

*5.5.3.2.Impacts of services restrictiveness based on firm sizes*

In this section, I test the impacts of services restrictiveness on employment of firms depending on different features of firms. In this case, it is the size of firms. The data sample is split up into three sub-samples depending on the number of employees as in section 4.4.3.2. The sample that consists of firms that have less than 10 employees is referred to as 'small firms', and the sample that includes firms with the number of employees in the range of 10 to 50 is referred as 'medium firms'. 'Large firms' refers to the sample of firms with more than 50 employees. The dummy for small firms is used as the baseline.

**Table 5.8. Employment effects of services liberalisation – Different effects based on Firm size**

| | (1) | (2) |
|---|---|---|
| Services linkage index | 0.037*** | 0.033*** |
| | (0.007) | (0.012) |
| Manufacturing linkage index | 0.012* | 0.012** |
| | (0.006) | (0.006) |
| Services linkage index*Medium firm | -0.019*** | -0.018*** |
| | (0.005) | (0.005) |
| Services linkage*Large firm | -0.021** | -0.02** |
| | (0.009) | (0.009) |
| Manufacturing linkage index*Medium firm | -0.011** | -0.011** |
| | (0.005) | (0.005) |
| Manufacturing linkage index*Large firm | -0.029*** | -0.028*** |
| | (0.009) | (0.009) |
| Observations | 198851 | 198851 |
| R-squared | 0.973 | 0.973 |
| Year fixed effect | No | Yes |
| Firm fixed effect | Yes | Yes |

*Notes:* The dependent variable is the logarithm of the firms' number of employees. All specifications control for size of firms, ownership of firms, and age of firms. Coefficients of value-added, wage rate, output tariffs and input tariffs are not reported for brevity. Robust standard errors are clustered at the industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

Table 5.8 reveals the results of the full baseline model with different combinations of fixed effects. As time-fixed effects have been proven to be necessary, I take the result of column 2 as the final. From this result, I found that, in terms of the forward linkage, service restrictiveness has a positive impact on employment of the small firms. It means that when

services sectors become less restrictive or more liberal, the demand of labour in small firms goes down, which is consistent with the pooled sample. Similar effects are found in the case of medium and large firms, yet the magnitudes of the effects are much smaller than for small firms.[47] This result is expected because small firms are less likely to suffer from substitution effects as they tend not to have resources to produce in-house services themselves. Moreover, with the increasing accessibility to lower-cost, higher quality, and wider variety of new services, compared to medium and large firms, I expect the scale and productivity effects are stronger for small firms.

With regard to the backward linkage, the results indicate that small firms reduce their use of labour when services sectors are less restrictive or more liberal as the coefficient of manufacturing linkage index is positive. This is because small firms tend to suffer from downward scale effects as they lose the existing customers in services sectors to imported sources. On the other hand, the coefficients of manufacturing linkage index for medium and larger firms are negative, which show negative impacts of barriers to services trade on employment of these manufacturing firms.[48] Reduction in restrictions in the services sector is associated with an increase in demand for labour in medium and large firms. This result is reasonable as these firms tend to have strong competitiveness in the market compared to small firms, so that they are able to absorb the new customers in the services sectors and enjoy the upward scale effect.

*5.5.3.3.Impacts of services restrictiveness on ownership of firms*

This section tests whether there are different employment impacts of services restrictiveness on manufacturing firms depending on ownership of firms. Three ownership dummies were used in this practice including SOE, DP, and FIE. SOE is a dummy for State-Owned Enterprises, DP is a dummy for Domestic private firm, and FIE is a dummy for Foreign-invested Enterprises. The definitions of these dummies are defined as in section 4.4.3.1 of Chapter 4. SOE dummy is used as the baseline.

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[47] The coefficients of services linkage index for small, medium and large firms are 0.033, 0.015 and 0.013 respectively.

[48] The coefficients of manufacturing linkage index for small, medium and large firms are accordingly 0.012, -0.001 and -0.016.

The estimated impacts found in Table 5.9 for the State-Owned firms are consistent with results for the pooled sample. While barriers to services trade have positive impacts on employment of manufacturing firms that use services as intermediate inputs, these barriers have negative links with employment of manufacturing firms that provide input for services firms.

**Table 5.9. Employment effects of services liberalisation - Different effects based on ownership of firms**

| | (1) | (2) |
|---|---|---|
| Services linkage index | 0.044*** | 0.051*** |
| | (0.01) | (0.016) |
| Manufacturing linkage index | -0.014* | -0.012* |
| | (0.007) | (0.007) |
| Services linkage index*DP | -0.014*** | -0.015*** |
| | (0.005) | (0.005) |
| Manufacturing linkage index*DP | -0.029*** | -0.031*** |
| | (0.009) | (0.009) |
| Services linkage index *FIE | 0.007* | 0.008* |
| | (0.004) | (0.004) |
| Manufacturing linkage index*FIE | -0.005 | -0.005 |
| | (0.011) | (0.011) |
| Observations | 198851 | 198851 |
| R-squared | 0.962 | 0.962 |
| Year fixed effect | No | Yes |
| Firm fixed effect | Yes | Yes |

*Notes:* The dependent variable is the logarithm of the firms' number of employees. All specifications control for size of firms, and age of firms. Coefficients of value-added, wage rate, output tariffs and input tariffs are not reported for brevity. Robust standard errors are clustered at the industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

In relation to impacts on domestic private firms and foreign-invested firms, the estimated coefficients of the interaction terms between services linkage index and domestic private firms dummy carries the negative sign, while the same coefficient for FIE is positive. The impact differences are statistically meaningful at 1 per cent and 10 per cent levels of confidence. It indicates that through forward linkage, compared to SOE, relaxing barriers to trade services or increasing services reform results in a smaller decrease of labour demand in private domestic firms, and a larger decrease of labour demand in foreign-invested firms. It is likely that when services become more liberalised, FIE faces a stronger substitution effect than SOE and DP firms as prior to liberalisation, they could have more resources to

produce their own services. Meanwhile, SOE seems to have the biggest benefits from new and high-quality services to increase productivity and labour productivity, which results in a reduction in employment.

Regarding the backward linkage, the estimated coefficient of the interaction terms between manufacturing linkage index and DP dummy has a negative sign and is strongly significant. It implies that compared to SOE, there are more jobs generated by DP firms as the results of liberalisation in the services sector. It is reasonable that DP firms often have better competitiveness in the market, compared to SOE, which are often criticised as uncompetitive groups. By contrast, the coefficient of Manufacturing linkage index*FIE is negative but not significantly different from zero. Thus, there is no statistical evidence to compare the employment impact of services reform on FIE and other types of ownership.

*5.5.3.4.Impacts of different policy areas*

This section tests the impacts of each component comprising the services restrictiveness index on employment of manufacturing firms. As the STRI can be categorised in three ways, I have three groups of regulations in this practice, including five policy areas, regulations on establishment and operation, and discriminatory and nondiscriminatory regulations. Explanations on these types of policy measures are demonstrated in section 2.2.2.2 of Chapter 2. The construction of the services linkage index and manufacturing linkage index based on these different groupings of regulations is the same as the aggregate services linkage index and manufacturing linkage index used in the baseline model. Table 5.10 presents the results of specifications using the group of two regulation types, discrimination and nondiscrimination.  reports results from estimating the baseline model using the group of regulations affecting the establishment and operation of firms. demonstrates results of the specification where main regressors are constructed using five policy areas making up the STRI. Table 5.12 demonstrates results of the specification where main regressors are constructed using five policy areas making up the STRI.

**Table 5.10. Employment effects of services liberalisation - Result by types of regulation: Discriminatory and nondiscriminatory**

| | (1) | (2) | (3) |
|---|---|---|---|
| Services linkage index – Discriminatory | 0.043*** | | 0.034* |
| | (0.016) | | (0.017) |
| Manufacturing linkage index - Discriminatory | -0.01 | | -0.001 |
| | (0.006) | | (0.007) |
| Services linkage index – Nondiscriminatory | | 0.12** | 0.059 |
| | | (0.054) | (0.063) |
| Manufacturing linkage index - Nondiscriminatory | | - | - |
| | | 0.048*** | 0.048** |
| | | (0.019) | (0.022) |
| Observations | 198851 | 198851 | 198851 |
| R-squared | 0.962 | 0.962 | 0.962 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

*Notes:* The dependent variable is logarithm of firms' number of employee. All specifications control for size of firms, ownership of firms, and age of firms. Robust standard errors clustered at the industry-year level are reported in parentheses. All regressors are lagged one year. Each estimation includes logarithm of value added, wage rage, output tariffs, input tariffs, which are not reported for brevity. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

In Table 5.10, when I enter the index of discriminatory regulations and non-discriminatory regulations separately, and one by one in the regressions, the results which are indicated in column 1 and column 2 show positive effects of services linkages index on the employment of manufacturing firms. The coefficients for both the discriminatory index and nondiscriminatory index were found to have strong significance at 1 per cent and 5 per cent levels of confidence. In terms of the effect's magnitude, it was found that the employment effect of non-discriminatory measures is stronger than that of discriminatory measures. Regarding the backward linkage, the effect of discriminatory manufacturing linkage index is negative, which is consistent with the result of the baseline model. However, it is not statistically significant. On the other hand, I found that the coefficient of nondiscriminatory manufacturing linkage index is negative and strongly meaningful at a one per cent level of confidence. These results imply that the effect of services liberalisation on the demand of labour of manufacturing firms is mostly contributed by regulations that are imposed on both domestic and foreign-invested firms. In column 3, I included both proxies in the same specification found that the coefficient sign of all concerned indexes are consistent with the results of the baseline model. However, the effects of discriminatory manufacturing linkage

index and nondiscriminatory services linkage index are not statistically significant. Given that the two groups of regressors are highly correlated,[49] this result is understandable.

**Table 5.11. Employment effects of services liberalisation - Result by types of regulation: Establishment and Operation**

| | (1) | (2) | (3) |
|---|---|---|---|
| Services linkage index- Establishment | | 0.052** | 0.023 |
| | | (0.024) | (0.024) |
| Manufacturing linkage index- Establishment | | -0.009 | 0.015* |
| | | (0.009) | (0.009) |
| Services linkage index- Operation | 0.089*** | | 0.07** |
| | (0.028) | | (0.029) |
| Manufacturing linkage index- Operation | -0.03*** | | -0.044*** |
| | (0.009) | | (0.011) |
| Observations | 198851 | 198851 | 198851 |
| R-squared | 0.962 | 0.962 | 0.962 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

*Notes:* The dependent variable is the logarithm of the firms' number of employees. All specifications control for size of firms, ownership of firms, and age of firms. Robust standard errors clustered at the industry-year level are reported in parentheses. All regressors are lagged one year. Each estimation includes logarithm of value-added, wage rage, output tariffs, input tariffs, which are not reported for brevity. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

Regarding the results in Table 5.11, when the individual linkage index regarding establishment and operation are examined separately in the first two columns, it is found that impacts of all the concerned regressors are consistent with results in the baseline model. Only the effect of the manufacturing linkage index on establishment regulations is not statistically significant. In terms of effects' magnitudes, the results reveal that regulations affecting the operation of firms seem to have stronger impacts than regulations affecting the establishment of firms. In the last column, where all the indexes are investigated together, the sign of the coefficient for manufacturing linkage index on establishment changes from negative to positive when coefficients of other regressors stay the same. Again, the reason is similar to before as services linkage index on establishment and operation is highly correlated with a correlation coefficient of 0.85 and manufacturing linkage index on establishment and operation is also highly correlated with a correlation coefficient of 0.92.

[49] Correlation efficient between Discriminatory services linkage index and Nondiscriminatory services linkage index is 0.8, and correlation efficient between Discriminatory manufacturing linkage index and Nondiscriminatory manufacturing linkage index is 0.86.

The results presented in Table 5.12 show the impacts of each of the policy areas on the employment of manufacturing firms. All the signs of the estimated coefficients are consistent with the result of the baseline model in which services linkage index has a positive, and manufacturing linkage index has a negative relationship with the employment variable. In terms of forward linkage, the estimated coefficients become larger while their significance level is maintained at the 5 per cent level or increases to 1 per cent level of confidence. Similar results are found in the case of backward linkage, except for the estimated coefficients of restrictions on foreign entry and the movement of foreign labour, which are not statistically significant at any conventional levels.

**Table 5.12. Employment effects of services liberalisation - Effects of different policy areas**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Services linkage index – Restrictions on Foreign entry | 0.046** | | | | |
| | (0.022) | | | | |
| Manufacturing linkage index – Restrictions on Foreign entry | -0.009 | | | | |
| | (0.007) | | | | |
| Services linkage index – Restrictions to Movement of Foreign Labour | | 0.517** | | | |
| | | (0.215) | | | |
| Manufacturing linkage index – Restrictions to Movement of Foreign Labour | | -0.073 | | | |
| | | (0.062) | | | |
| Services linkage index – Discriminatory measures | | | 0.349*** | | |
| | | | (0.114) | | |
| Manufacturing linkage index – Discriminatory measures | | | -0.079** | | |
| | | | (0.033) | | |
| Services linkage index – Barriers to competition | | | | 0.308*** | |
| | | | | (0.1) | |
| Manufacturing linkage index – Barriers to competition | | | | -0.117*** | |
| | | | | (0.034) | |
| Services linkage index – Regulatory transparency | | | | | 0.231** |
| | | | | | (0.089) |
| Manufacturing linkage index – Regulatory transparency | | | | | -0.11** |
| | | | | | (0.045) |
| Observations | 198851 | 198851 | 198851 | 198851 | 198851 |
| R-squared | 0.962 | 0.962 | 0.962 | 0.962 | 0.962 |
| Year , Firm fixed effect | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variable is the logarithm of firms' number of employee. All specifications control for size of firms, ownership of firms, and age of firms. Robust standard errors clustered at the industry-year level are reported in parentheses. All regressors are lagged one year. Each estimation includes logarithm of value-added, wage rate, output tariffs, input tariffs, are not reported for brevity. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

## 5.6. Conclusion

This Chapter has explored the employment impacts of services barriers to manufacturing firms. The issue has not been studied at a firm-level, especially in the case of developing countries such as Vietnam. The Chapter continued utilising the measures of reform in services sectors computed in Chapter 3 and combined them with information on services intensities of manufacturing firms. Moreover, for the first time, I attempted to investigate the employment response of manufacturing firms that provide input to services firms toward liberalisation in services sectors.

I first developed existing mechanisms through which service reforms affect the demand for labour in manufacturing firms. Two impact channels were identified, the forward linkage and backward linkage. The results confirm that, through forward linkage, there is a negative relationship between labour demand of manufacturing firms and the relationship is positive in the case of backward linkage. In terms of the magnitude of the effects, with other factors constant, including the services input ratios in the total inputs of manufacturing sectors: through the forward linkage, a one percentage point decrease in the aggregate services restrictiveness index corresponds to a 4 per cent reduction in labour demand of manufacturing firms; through the backward linkage, and a one percentage decrease in the aggregate services restrictiveness index associates with an increase of 1 per cent in demand of labour of manufacturing firms. The results suggest an explanation for the movement of employment from the manufacturing sectors to the services sectors of Vietnam, as discussed in section 5.3.

The findings are robust to several different econometric specifications, including using more data-driven alternative measures for services restrictiveness index, using the input-output table of a relative open services sector such as the US, and controlling for unobserved firm heterogeneity. I also tested and confirmed the validity of the mechanism as built in Figure 5.1. It shows that when services become more liberalised, the employment of manufacturing firms that use services as intermediate inputs suffer from substitution effects, productivity effects, and scale effects. On the other hand, manufacturing firms that provide input to services firms face both upward and downward scale effects as the result of services reform – however, the magnitude of effects is not equal for all firms. The Chapter also solved the possible endogeneity concern over the lobbying activities of the manufacturing sectors.

Using outward FDI in services sectors of the US – a major WTO negotiator of Vietnam as instruments for the services restrictiveness index – the IV regression confirms the validity of the main findings.

Controlling for different characteristics of firms, the results showed that the smaller size of the firms, the smaller the negative employment impacts. In terms of forward linkage, small firms are less likely to suffer from substitution effects as they do not have the resources to produce in-house services. It is also expected that small firms enjoy a larger scale effect and productivity effect than medium and large firms. Regarding the backward linkage, when services sectors are less restrictive, small firms tend to reduce the use of labour, while medium and large firms seem to increase their employment. Regarding ownership of firms, through forward linkage, the Chapter found that the employment of private domestic firms faced a smaller negative impact from services reform than the state-owned firms, but a larger impact than foreign-invested firms. Meanwhile, the state-owned firms are found to reap the biggest productivity effects, which leads to a decrease in employment.

Additionally, I investigated the relative contribution of barriers in different types of regulation on the employment of manufacturing firms. The effects of all five policy areas, including regulation on foreign entry, barriers to the movement of foreign labour, transparency of regulations, regulations on competition, and discriminatory measures, are found to be economically meaningful. Similar to productivity impacts, when looking at regulations in terms of discrimination, it was found that non-discriminatory regulations appear to have stronger impacts than discriminatory regulations. These findings suggest that in reforming services sectors, the government should balance between different types of regulations.

In this Chapter, I have tried to cover as many aspects of the linkage between services reform and manufacturing firms' demand of labour as possible. However, there are several questions that need further investigation. First, similar to impacts on productivity as in the previous Chapter, the literature has shown the role of manufacturing exporters in creating new employment. Thus, studying the employment impacts of services barriers to manufacturing exporters is important. Second, the theoretical framework was based on the role of services offshoring and domestic outsourcing. It would be ideal if were possible to distinguish these two sources because when services become less restrictive, the changes in supply and demand of services from these two sources can affect labour demand of

manufacturing firms in different ways. Third, the hypotheses are based on the forward linkage and backward linkage between services and manufacturing sectors, in which the two industries are input providers of the others. The study assumes that firms in one sector have a similar input-output ratio. However, it might not reflect the actual situation, and this input-output ratio can be different among firms with certain characteristics, such as size, ownership, location, and innovation level. Therefore, the estimation impacts would be more accurate.

# Chapter 6. Conclusion

The measurement of services liberalisation and its economic impacts have not been explored widely, especially in the case of developing countries. This dissertation comprises three main studies (Chapters 3, 4, and 5) conducting a quantification of services liberalisation in the context of a developing country like Vietnam and empirically investigating the productivity and employment impacts of liberalisation on services trade.

The focus of the first study, as presented in Chapter 3, is on constructing an index representing the actual restrictiveness of the services sector on a time-series basis. The construction of the index required a collection of detailed information on regulations applying to each services sector. Since this study covers a period of 17 years, from 2003 to 2019, it became an enormously complex and time-consuming. Each type of regulation is assigned a weight according to its assessed potential importance in restricting trade, and each individual regulation must be classified and scored according to whether it does restrict trade. The weighted scores are then aggregated to create a restrictiveness index for each services sector. In building the index on a time series basis each regulatory change is assessed as to whether it requires a change in the score of the relevant regulation, which in turn will affect the overall value of the restrictiveness index.

This study is the first of its kind and unique in that it quantifies the level of restrictiveness in multiple service sectors of Vietnam on a time-series basis. It also expands the literature on regulatory restrictiveness in the services sector of transitional and developing economies. Second, it provides empirical evidence that the WTO accession is a major factor creating actual liberalisation of services trade in an acceding member. Additionally, the results from this study also suggest that compared to more developed economies, services sectors in Vietnam remain quite restrictive and further reform is still needed. The indexes created in Chapter 3 are important data inputs for the two econometric analyses in Chapter 4 and Chapter 5.

The second and third studies empirically investigated the impacts of services liberalisation through cross-sector interaction with the manufacturing sector. The conventional approach in the literature looks at this interaction in one aspect, which is that the services sector as

input providers of manufacturing sectors and does not take into account the interaction when the services sector consumes input provided by the manufacturing sectors. These two linkages are called forward and backward linkage. The ignoring of impacts through the backward linkage led to a bias of omitted necessary variables. In this dissertation, for the first time, I examined the relationship between services liberalisation and productivity and employment of the manufacturing sector in both these two aspects, as shown in Chapters 4 and 5. The main contribution of these two studies is to examine the effects of services liberalisation on the productivity and employment of manufacturing firms through both conventional and unconventional channels: the manufacturing sector both as providers of input for firms in the services sector and as consumers of services products. . These studies also complement the literature on the economic impacts of services reform on the manufacturing sector – especially in the case of developing countries. In the case of Vietnam, these are the first attempts. Both studies were conducted using firm-level data.

The second study examined the impacts of liberalisation of services trade on the productivity of manufacturing firms using data from Vietnam Enterprises Survey, from 2004 to 2012. Through the forward linkage, the findings in this Chapter confirm the results of previous studies that removing barriers to services trade positively affects the productivity of manufacturing firms. The impacts on state-owned firms are found to be stronger than on private domestic firms. In terms of firm size, small firms tend to benefit more from liberalisation of the services sector compared to medium and large firms. However, the results through the backward linkage show that more liberalisation in services sector leads to a loss in productivity of manufacturing firms. The findings are robust through different robustness tests including using alternative measures of the services restrictiveness index, I-O table, and productivity estimation methodologies. When looking at different types of regulations, nondiscriminatory regulations are found to have stronger impacts on the productivity of manufacturing firms than discriminatory regulations. It suggests that together with removing barriers that specifically hinder the business of foreign-invested firms, policymakers should also pay attention to relaxation of regulations that affect business activities of domestic firms.

The third study, as presented in Chapter 5, investigated another impact of services liberalisation on firms in the manufacturing sector, which is the impact on the demand for

labour. This study continued utilising data from the VES and the STRI constructed in the first study. The results confirm that, through forward linkage, there is a negative relationship between services liberalisation and labour demand of manufacturing firms, and the relationship is positive in the case of backward linkage. The impacts magnitudes are not equal among firms but depend on different features of firms such as size and ownership. The findings are robust to several different econometric specifications, including using more data-driven alternative measures for the services restrictiveness index, using the input-output table of relatively unrestricted services sectors such as the US. In further extensions, I found the employment effects of services liberalisation through different channels including upward scale effects as positive impacts on value-added and positive impacts on productivity and labour productivity.

In both the second and third studies, through running IV regression – using the outward FDI of the US to the rest of the world as instruments for the STRI - it is shown that the main results of the two studies are not driven by reverse causation sourced from the potential lobbying behaviours of the manufacturing sector.

Despite the results and contributions as described above, I am aware of several limitations of this dissertation that can be improved in future research. First, the measure of the STRI was based on regulations as stated in the legal documents of Vietnam without taking into account the actual practice of these regulations as well as perspectives of different stakeholders. Therefore, future research, by including this factor, could remove a potential source of bias. Another limitation of this study is that the finding of negative impact of services liberalisation on the productivity of manufacturing firms through the backward linkage is ambiguous. To empirically demonstrate this impact requires having information on domestic and imported components of services firms' input sourced from the manufacturing sector, which are available neither in this study's data sample nor the I-O table. Given the importance of export in the growth of Vietnam's GDP, it would be valuable for policymakers in shaping services reform to boost the productivity of manufacturing exporters. With the limitation of access to firm-level data, examination of services reform impacts specifically on the productivity of manufacturing exporters in this study was not possible. Future research on this topic is then encouraged when adequate data becomes available.

# Appendices

## Appendix I . Policy measures for Commercial banking services

| Codes | Measures | E/O | N/D | Weight |
|---|---|---|---|---|
| | **Restrictions on foreign entry** | | | |
| 1_1_1 | Foreign equity restrictions: maximum foreign equity share allowed (%) | E | D | 0.04794 |
| 1_1_3 | There are limits to the proportion of shares that can be acquired by foreign investors in publicly controlled firms | E | D | 0.011985 |
| 1_2_1 | Legal form: only joint-ventures are allowed | E | D | 0.011985 |
| 1_2_3 | Legal form: foreign branches are prohibited | E | D | 0.011985 |
| 1_2_4 | Legal form: restrictions on foreign branches | E | D | 0.011985 |
| 1_4_1 | Board of directors: majority must be nationals | O | D | 0.011985 |
| 1_4_2 | Board of directors: majority must be residents | O | D | 0.011985 |
| 1_4_3 | Board of directors: at least one must be national | O | D | 0.011985 |
| 1_4_4 | Board of directors: at least one must be resident | O | D | 0.011985 |
| 1_4_5 | Managers must be national | O | D | 0.011985 |
| 1_4_6 | Managers must be resident | O | D | 0.011985 |
| 1_5_1 | Screening explicitly considers economic interests | E | D | 0.011985 |
| 1_5_2 | Screening exists without exclusion of economic interests (approval unless contrary to national interest) | E | D | 0.011985 |
| 1_5_3 | Memo: thresholds for screening projects | E | D | 0 |
| 1_7_1 | Acquisition and use of land and real estate by foreigners is restricted | E | D | 0.011985 |
| 1_8_1 | Restrictions on the type of shares or bonds held by foreign investors | E | D | 0.011985 |
| 1_9_1 | Conditions on subsequent transfer of capital and investments | E | D | 0.011985 |

| | | | | |
|---|---|---|---|---|
| 1_10_1 | Restrictions on cross-border mergers and acquisitions (M&A) | E | D | 0.011985 |
| 1_3_2 | Quotas or economic needs tests are applied in the allocation of licenses | E | ND | 0.011985 |
| 1_3_6 | Criteria to obtain a license are more stringent for foreign companies | E | D | 0.011985 |
| 1_14_2 | Restrictions on the branch network | E | D | 0.011985 |
| 1_15_5 | Restrictions on ATM networks | E | ND | 0.011985 |
| 1_25_31 | Some financial products are reserved for statutory monopolies | E | ND | 0.011985 |
| 1_17_21 | Some banking services are reserved for domestic suppliers | E | D | 0.011985 |
| 1_12_1 | Performance requirements | O | ND | 0.011985 |
| 1_16_11 | Commercial presence is required: deposit-taking | E | D | 0.011985 |
| 1_6_12 | Commercial presence is required: Lending | E | D | 0.011985 |
| 1_16_13 | Commercial presence is required: Payment services | E | D | 0.011985 |
| 1_16_2 | Local presence is required for cross-border supply | E | D | 0.011985 |
| 1_17_22 | Limitations on cross-border transfers by customers | E | D | 0.011985 |
| 1_17_23 | Restrictions on internet banking | E | ND | 0.011985 |
| 1_20_1 | Memo: Free cross-border transfer of personal data or application of the accountability principle | E | ND | 0 |
| 1_20_2 | Cross-border transfer of personal data is possible when certain private sector safeguards are in place | O | ND | 0.011985 |
| 1_20_3 | Cross-border data flows: cross-border transfer of personal data is possible to countries with substantially similar privacy protection laws | O | ND | 0.011985 |
| 1_20_4 | Cross-border data flows: cross-border transfer is subject to approval on a case-by-case basis | O | ND | 0.011985 |
| 1_20_5 | Cross-border data flows: certain data must be stored locally | O | ND | 0.011985 |
| 1_20_6 | Cross-border data flows: transfer of data is prohibited | O | ND | 0.011985 |

| | | | | |
|---|---|---|---|---|
| 1_50_1 | Other restrictions on foreign entry | E | D | 0.011985 |
| | **Restrictions to movement of people** | | | |
| 2_1_1 | Quotas: intra-corporate transferees | O | D | 0.005536 |
| 2_1_2 | Quotas: contractual services suppliers | E | D | 0.005536 |
| 2_1_3 | Quotas: independent services suppliers | E | D | 0.005536 |
| 2_2_1 | Labour market tests: intra-corporate transferees | O | D | 0.005536 |
| 2_2_2 | Labour market tests: contractual services suppliers | E | D | 0.005536 |
| 2_2_3 | Labour market tests: independent services suppliers | E | D | 0.005536 |
| 2_3_1 | Limitation on duration of stay for intra-corporate transferees' months | O | D | 0.011072 |
| 2_3_2 | Limitation on duration of stay for contractual services suppliers' months | E | D | 0.011072 |
| 2_3_3 | Limitation on duration of stay for independent services suppliers' months | E | D | 0.011072 |
| 2_50_1 | Other restrictions to movement of people | E | D | 0.005536 |
| | **Other discriminatory measures** | | | |
| 3_1_1 | Foreign suppliers are treated less favourably regarding taxes and eligibility to subsidies | O | D | 0.008517 |
| 3_2_1 | Public procurement: Explicit preferences for local suppliers | O | D | 0.008517 |
| 3_2_2 | Public procurement: Procurement regulation explicitly prohibits discrimination of foreign suppliers | O | D | 0.008517 |
| 3_2_3 | Public procurement: The procurement process affects the conditions of competition in favour of local firms | O | D | 0.008517 |
| 3_2_25 | Memo: thresholds above which tender is mandated | O | D | 0 |
| 3_2_26 | Memo: The procurement process below the value thresholds affects the conditions of competition in favour of local firms | O | D | 0 |
| 3_4_14 | Restrictions on extending loans or taking deposits in foreign currency | O | ND | 0.008517 |

| | | | | |
|---|---|---|---|---|
| 3_5_3 | Restrictions on lending to non-residents for domestically licensed banks | O | ND | 0.008517 |
| 3_6_41 | Restrictions on raising capital domestically for foreign banks | O | D | 0.008517 |
| 3_7_3 | Discrimination in the access of foreign-owned banks to the central bank discount window | O | D | 0.008517 |
| 3_8_21 | Non-discriminatory access to payment systems: wholesale payment systems | O | D | 0.008517 |
| 3_8_22 | Non-discriminatory access to payment systems: retail payment systems | O | D | 0.008517 |
| 3_3_61 | Deviation from international standards: Risk weighting (BCBS) | O | ND | 0.008517 |
| 3_3_62 | Deviation from international standards: Accounting rules (IFRS) | O | ND | 0.008517 |
| 3_3_63 | Deviation from international standards: Transparency and AML/CFT rules (FATF 40) | O | ND | 0.008517 |
| 3_50_1 | Other restrictions in other discriminatory measures | O | ND | 0.008517 |
| | **Barriers to competition** | | | |
| 4_1_1 | Decisions by the regulatory body can be appealed | O | ND | 0.009506 |
| 4_2_1 | Firms have redress when business practices restrict competition in a given market | O | ND | 0.009506 |
| 4_3_1 | National, state or provincial government control at least one major firm in the sector | E | ND | 0.009506 |
| 4_4_1 | Publicly controlled firms are exempted from the application of the general competition law | E | ND | 0.009506 |
| 4_12_171 | Contractual interest rates on loans are regulated | O | ND | 0.009506 |
| 4_12_172 | Default interest rates on loans are regulated | O | ND | 0.009506 |
| 4_12_174 | Interest rates on deposits are regulated | O | ND | 0.009506 |
| 4_13_5 | Approval by the regulatory authority required for new products or services | O | ND | 0.009506 |
| 4_13_6 | Approval by the regulatory authority required for new rates or fees | O | ND | 0.009506 |

| | | | | |
|---|---|---|---|---|
| 4_11_117 | Directed credit schemes | O | ND | 0.009506 |
| 4_13_7 | Early repayment conditions and fees are regulated | O | ND | 0.009506 |
| 4_14_4 | Product tying is regulated | O | ND | 0.009506 |
| 4_15_4 | Existence of a collateral registry with equal access of all lending institutions | O | ND | 0.009506 |
| 4_16_4 | Existence of a credit registry with equal access of all lending institutions | O | ND | 0.009506 |
| 4_7_1 | Restrictions on advertising | O | ND | 0.009506 |
| 4_9_51 | The supervisor has full authority over licensing and the enforcement of prudential measures | O | ND | 0.009506 |
| 4_9_12 | The government can overrule the decisions of the supervisor | O | ND | 0.009506 |
| 4_9_52 | Length of term of heads of the supervisory authority | O | ND | 0.009506 |
| 4_9_4 | The government has discretionary control over funding of the supervisory agency | O | ND | 0.009506 |
| 4_50_1 | Other restrictions in barriers to competition | O | ND | 0.009506 |
| | **Regulatory transparency** | | | |
| 5_1_1 | There is a legal obligation to communicate regulations to the public within a reasonable time prior to entry into force | O | ND | 0.010084 |
| 5_2_1 | There is an adequate public comment procedure open to interested persons, including foreign suppliers | O | ND | 0.010084 |
| 5_3_1 | Range of visa processing time days | O | D | 0.010084 |
| 5_3_2 | Multiple entry visa for business visitors | O | D | 0.010084 |
| 5_3_3 | Cost to obtain a business visa USD | O | D | 0.010084 |
| 5_3_4 | Number of documents needed to obtain a business visa | O | D | 0.010084 |
| 5_4_1 | Number of working days to complete all mandatory procedures to register a company | O | ND | 0.010084 |

| | | | | |
|---|---|---|---|---|
| 5_5_1 | Total cost to complete all official procedures required to register a company (in % of income per capita) | O | ND | 0.010084 |
| 5_6_1 | Number of mandatory procedures to register a company | O | ND | 0.010084 |
| 5_9_1 | Licenses are allocated according to publicly available criteria | E | ND | 0.010084 |
| 5_9_2 | Applicants must be informed of the reasons for denial of Licenses | E | ND | 0.010084 |
| 5_9_3 | There is a maximum time allowed to the regulator for decisions on applications | E | ND | 0.010084 |
| 5_10_21 | Time of resolving insolvency (in years) | O | ND | 0.010084 |
| 5_10_22 | Cost of resolving insolvency (in % of the estate's value) | O | ND | 0.010084 |
| 5_50_1 | Other restrictions in regulatory transparency | O | ND | 0.010084 |
| | Total | | | 1 |

## Appendix II. A note on overview of Economic Needs Test (ENT) and practice of ENT in Vietnam

There is no definition of ENT in the GATS and later FTAs, and to understand the applications of ENT, one should refer to Article XVI of the GATS.

Because there is no official definition of ENT, the applications of this barrier are different between member countries. According to the WTO (2011), the countries' schedule of commitments in the GATS reveals that there are two ways of implementing ENT, one is conducting the test on a case-by-case basis, and the other is periodically performing the test. An example for the first situation is when a firm submits a request to open a second retail store (after the first store), the government agency can approve or reject this application after conducting ENT. For the second case, the government sets a reviewing schedule on operation of foreign firms and applies ENT as a tool of the review.

In distribution services, most of the ENT relates to retailing service and the concern is mainly about the establishment of a new store. Examples include: the establishment of the second store, beyond the first store, and larger than 500 square meters (Vietnam), the establishment of large stores (European Union countries, Korea), or the distribution of certain products (used car and gaseous fuel – Korea, clothing, shoes and foodstuff – Sweden).

Furthermore, the lack of a guidance on the assessment criteria of ENT in distribution services also contributed to the arbitrary practice of this barrier. However, it can be observed that the following criterias are typically used:

- Number of existing stores and impacts on existing stores
- Population density and purchasing power of the population
- Impact on environment, traffic
- Employment creation.

Different from other members of the WTO, Vietnam does not impose any restrictions on the scale of the store or opening hours unlike Korea and Japan (Kalirajan, 2000). Likewise, Viet Nam does not apply the ENT to the opening of large stores like in Portugal or wholesale licensing as in Korea (Kalirajan, 2000). In Vietnam, ENT is used as a restriction to the establishment of an additional retailing outlet beyond the first one. The criteria for approval includes but is not limited to the number of service-suppliers in a geographical area and the

stability of market and geographic scale. According to the administrative structure of Vietnam, local government agencies are authorized to conduct ENT with the advice of central government authorities.

In terms of national legislation, Decree 23/2007/ND-CP was the first to legalize and guide the use of ENT. After registration, foreign service-suppliers are automatically permitted to establish the first retail outlet in Vietnam. The establishment of the second retail outlet is subject to the approval of relevant authorities on the basis of ENT. The criteria for approval includes but is not limited to to the number of service-suppliers in a geographical area and the stability of market and geographic scale. According to the administrative structure of Vietnam, local government agencies are authorized to conduct ENT with the advice of central government authorities. In this case, these are the People's Committee of provinces and the Ministry of Industry and Trade. The conduct of ENT is based on priority and administrative capacity of the local government; therefore, the procedure and specific criteria are not transparent, and these vary across 63 provinces of Vietnam. Therefore, there would be great burden for foreign distributors who want to expand business in Vietnam. For that reason, the application and efficiency of ENT was highly contested by foreign service suppliers and even domestic suppliers.[50] The Circular 08/2013/TT-BCT detailing goods trade and related activities of international firms over the period 7/6/2013 to 21/2/2018 relaxed the restriction concerning ENT. As discussed in Section 3.4.1.5, this legal document allowed foreign services supplier to open stores that are smaller than 500 squares meters automatically. It is an advanced regulation, however, there is still ENT requirement applied to stores that are larger than 500 squares meters, and more importantly, it has not fixed the discrepancy in practice of ENT across localities of Vietnam.

[50] Translated from http://mutrap.org.vn/index.php/vi/tin-tuc/tin-mutrap/262-toa-dam-tham-van-va-doi-thoai-voi-cac-doanh-nghiep-ve-cac-quy-tac-kiem-tra-nhu-cau-kinh-te-doi-voi-viec-thanh-lap-co-so-ban-le-cua-doanh-nghiep-fdi-tai-viet-nam, accessed on 15 January 2018.
Amcham's position paper: Concerns re WTO implementation: Trading and Distribution Rights, http://www.amchamvietnam.com/position-paper-concerns-re-wto-commitments-trading-rights-and-distribution-rights/, accessed on 15 January 2018.

## Appendix III. Data cleaning

In this Appendix, I describe the cleaning process for the VES sample to estimate the firm-level productivity in manufacturing industries.

*Sector codes*: The year 2004 to 2006, the data used VSIC 1993 to classify sectors of firms, while from 2007 to 2011, VSIC 2007 was used. Therefore, sector codes in 2004, 2005, and 2006 have been converted from VSIC 1993 to VSIC 2007. The sector classification system here is based on VSIC 2007. The construction of this classification was based on ISIC revision 4, and at the 2-digit level, VSIC 2007 is fully in accordance with ISIC revision 4. Codes for other variables used in regressions are made consistent across years.

*Provincial code*s: As Ha Tay province merged with the city of Hanoi in 2008, from the survey in 2008 and onwards, Ha Tay became omitted. Also, the number of provinces reduced from 64 to 63. For the consistency of data, from the first year of the data sample (2004) to the year of 2007, we switched the provincial code of Ha Tay (28) to the provincial of Hanoi (01).

*Identification of firms*: Although each firm has a unique tax code, this code is not sufficient to ensure ID uniqueness. Instead, up to 2009, in the data, to identify a firm, the combination between 'tinh' and 'macs', and 'tinh' and 'madn' are needed. From 2010 and onwards, the 'tinh' and 'macs' combination ensures that a firm has a unique ID. Therefore, for the consistency, we group 'tinh', 'macs' and 'madn' into one variable to create a new and unique IDfor the firm. Prior to that, we removed observations that were missing one of the identifiers 'tinh', 'macs' and 'madn'. Also, firms that have the same new ID have been dropped off of the data sample.

*Within year duplicates and inaccurate value of variables:* Firms with identical characteristics within the year (exact value of revenues, wages, profits, assets, employments, sectors…) have been removed. I also removed observations that contain the negative value of wages, revenue, total assets, fixed assets, and depreciation.

*One-time surveyed firms:* In the case that a firm was surveyed in only one year, there is no variance in the productivity of that firm. Therefore, for the purpose of this study, I excluded firms that appear only once in the dataset.

*Missing values:* I excluded observations where accounting variables are all missing (wages, profit, revenue, fixed assets, total assets, depreciation, employment…) on the assumption that the firms were not in operation that year or it was faulty in entering data from the survey.

**Appendix IV. Number of firms by ownership**

| Code | Ownership types | Classification | Number of firms |
|---|---|---|---|
| 1 | Central State-owned | SOE | 477 |
| 2 | Local State-owned | SOE | 490 |
| 3 | Central State-owned Limited liability | SOE | 66 |
| 4 | Local share Limited liability | SOE | 72 |
| 5 | Joint-stock company with more than 50% state capital | SOE | 489 |
| 6 | Collective | DP | 1695 |
| 7 | Private enterprise | DP | 12624 |
| 8 | Collective name | DP | 4 |
| 9 | Private Limited liability | DP | 33701 |
| 10 | Joint-stock company without state capital | DP | 7695 |
| 11 | Joint-stock company with less than 50% state capital | DP | 619 |
| 12 | 100% Foreign capital | FIE | 5440 |
| 13 | Joint-venture between State-owned and foreign firms | FIE | 368 |
| 14 | Joint-venture between private and foreign firms | FIE | 417 |

*Note: SOE denotes State-owned Enterprise; DP denotes Domestic private; FIE denotes Foreign Invested Enterprise.*

## Appendix V. Distribution of firms by industry

| Code | Industry | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | Food products | 2323 | 2211 | 2221 | 3589 | 4039 | 4533 | 4547 | 5082 | 4776 |
| | | 19.37% | 21.30% | 20.85% | 16.23% | 14.82% | 14.02% | 13.18% | 12.13% | 12.07% |
| 11 | Beverages | 428 | 369 | 387 | 964 | 1259 | 1471 | 1514 | 1810 | 1683 |
| | | 3.57% | 3.55% | 3.63% | 4.36% | 4.62% | 4.55% | 4.39% | 4.32% | 4.25% |
| 13 | Textiles | 455 | 338 | 347 | 838 | 1010 | 1213 | 1317 | 1602 | 1507 |
| | | 3.79% | 3.26% | 3.26% | 3.79% | 3.71% | 3.75% | 3.82% | 3.82% | 3.81% |
| 14 | Wearing apparel | 1020 | 601 | 614 | 1932 | 2443 | 2926 | 3243 | 3940 | 3710 |
| | | 8.50% | 5.79% | 5.77% | 8.74% | 8.97% | 9.05% | 9.40% | 9.41% | 9.38% |
| 15 | Leather and related products | 323 | 210 | 216 | 526 | 614 | 732 | 833 | 1007 | 945 |
| | | 2.69% | 2.02% | 2.03% | 2.38% | 2.25% | 2.26% | 2.41% | 2.40% | 2.39% |
| 16 | Wood and products of wood and cork, except furniture; articles of straw and plaiting material | 769 | 779 | 794 | 1553 | 2219 | 2550 | 2658 | 3293 | 3016 |
| | | 6.41% | 7.50% | 7.46% | 7.02% | 8.14% | 7.89% | 7.70% | 7.86% | 7.62% |
| 17 | Paper and paper products | 555 | 422 | 427 | 924 | 1117 | 1280 | 1323 | 1493 | 1429 |
| | | 4.63% | 4.06% | 4.01% | 4.18% | 4.10% | 3.96% | 3.83% | 3.56% | 3.61% |
| 18 | Printing and reproduction of recorded media | 624 | 456 | 536 | 1366 | 1692 | 2205 | 2526 | 2948 | 2866 |
| | | 5.20% | 4.39% | 5.03% | 6.18% | 6.21% | 6.82% | 7.32% | 7.04% | 7.25% |
| 20 | Chemicals and chemical products | 492 | 429 | 433 | 837 | 1011 | 1226 | 1337 | 1668 | 1608 |
| | | 4.10% | 4.13% | 4.07% | 3.79% | 3.71% | 3.79% | 3.87% | 3.98% | 4.07% |
| 21 | Pharmaceuticals, medicinal chemical and botanical products | 120 | 100 | 100 | 175 | 196 | 218 | 231 | 262 | 254 |
| | | 1.00% | 0.96% | 0.94% | 0.79% | 0.72% | 0.67% | 0.67% | 0.63% | 0.64% |
| 22 | Rubber and plastics products | 738 | 531 | 539 | 1430 | 1636 | 1968 | 2118 | 2592 | 2489 |
| | | 6.15% | 5.11% | 5.06% | 6.47% | 6.00% | 6.09% | 6.14% | 6.19% | 6.29% |
| 23 | Other non-metallic mineral products | 1116 | 1121 | 1125 | 1788 | 2190 | 2529 | 2713 | 3252 | 3074 |
| | | 9.31% | 10.80% | 10.56% | 8.09% | 8.04% | 7.82% | 7.86% | 7.76% | 7.77% |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 24 | Basic metals | 195 | 163 | 165 | 405 | 479 | 554 | 596 | 704 | 655 |
| | | 1.63% | 1.57% | 1.55% | 1.83% | 1.76% | 1.71% | 1.73% | 1.68% | 1.66% |
| 25 | Fabricated metal products, except machinery and equipment | 1172 | 1050 | 1129 | 2667 | 3503 | 4413 | 4863 | 6614 | 6277 |
| | | 9.77% | 10.11% | 10.60% | 12.06% | 12.86% | 13.65% | 14.09% | 15.79% | 15.87% |
| 26 | Computer, electronic and optical products | 125 | 107 | 108 | 253 | 311 | 393 | 411 | 472 | 438 |
| | | 1.04% | 1.03% | 1.01% | 1.14% | 1.14% | 1.22% | 1.19% | 1.13% | 1.11% |
| 27 | Electrical equipment | 250 | 211 | 212 | 413 | 495 | 589 | 613 | 749 | 703 |
| | | 2.08% | 2.03% | 1.99% | 1.87% | 1.82% | 1.82% | 1.78% | 1.79% | 1.78% |
| 28 | Machinery and equipment | 196 | 155 | 163 | 388 | 467 | 542 | 567 | 737 | 715 |
| | | 1.63% | 1.49% | 1.53% | 1.75% | 1.71% | 1.68% | 1.64% | 1.76% | 1.81% |
| 29 | Motor vehicles, trailers and semi-trailers | 88 | 99 | 95 | 155 | 188 | 198 | 202 | 224 | 207 |
| | | 0.73% | 0.95% | 0.89% | 0.70% | 0.69% | 0.61% | 0.59% | 0.53% | 0.52% |
| 30 | Other transport equipment | 242 | 208 | 208 | 387 | 437 | 506 | 475 | 443 | 404 |
| | | 2.02% | 2.00% | 1.95% | 1.75% | 1.60% | 1.57% | 1.38% | 1.06% | 1.02% |
| 31 | Furniture | 585 | 665 | 669 | 1179 | 1493 | 1665 | 1763 | 2246 | 2121 |
| | | 4.88% | 6.41% | 6.28% | 5.33% | 5.48% | 5.15% | 5.11% | 5.36% | 5.36% |
| 32 | Other manufacturing | 177 | 157 | 162 | 344 | 448 | 610 | 659 | 750 | 678 |
| | | 1.48% | 1.51% | 1.52% | 1.56% | 1.64% | 1.89% | 1.91% | 1.79% | 1.71% |
| | Total | 11993 | 10382 | 10650 | 22113 | 27247 | 32321 | 34509 | 41888 | 39555 |

**Appendix VI. Production Function Coefficients**

| | Olley and Pake (1996) | | | Woodrigde (2009) | | | Olley and Pake (1996) Ackerberg et al (2015) correction | | |
|---|---|---|---|---|---|---|---|---|---|
| **Code** | Labour | Capital | Sum | Labour | Capital | Sum | Labour | Capital | Sum |
| 10-11 | 0.7309 | 0.2357 | 0.9666 | 0.6700 | 0.2211 | 0.8912 | 0.8408 | 0.2339 | 1.0747 |
| 13 | 0.7313 | 0.3573 | 1.0886 | 0.7446 | 0.1949 | 0.9396 | 0.7653 | 0.3265 | 1.0919 |
| 14 | 0.8917 | 0.2044 | 1.0961 | 0.9182 | 0.0464 | 0.9647 | 0.8887 | 0.1722 | 1.0609 |
| 15 | 0.8868 | 0.1854 | 1.0722 | 0.9195 | 0.0707 | 0.9902 | 0.8831 | 0.1433 | 1.0264 |
| 16 | 0.8451 | 0.2948 | 1.1399 | 0.7764 | 0.1441 | 0.9205 | 0.8833 | 0.2733 | 1.1566 |
| 17 | 0.8401 | 0.3116 | 1.1518 | 0.7826 | 0.1289 | 0.9116 | 0.9355 | 0.1178 | 1.0533 |
| 18 | 0.8174 | 0.2173 | 1.0347 | 0.8668 | 0.1624 | 1.0291 | 0.8739 | 0.2762 | 1.1501 |
| 20-21 | 0.7219 | 0.5096 | 1.2314 | 0.5847 | 0.3474 | 0.9322 | 0.7607 | 0.5142 | 1.2748 |
| 22 | 0.8148 | 0.3613 | 1.1761 | 0.7518 | 0.2050 | 0.9568 | 0.8493 | 0.3241 | 1.1735 |
| 23 | 0.8647 | 0.2158 | 1.0805 | 0.8205 | 0.2011 | 1.0216 | 0.8709 | 0.3078 | 1.1787 |
| 24 | 0.8350 | 0.1860 | 1.0210 | 0.7900 | 0.1970 | 0.9870 | 0.8642 | 0.2765 | 1.1407 |
| 26-28 | 0.7426 | 0.4236 | 1.1661 | 0.6697 | 0.2143 | 0.8840 | 0.8112 | 0.3877 | 1.1990 |
| 29,30,32 | 0.8326 | 0.3572 | 1.1898 | 0.7596 | 0.1929 | 0.9525 | 0.9143 | 0.3524 | 1.2667 |
| 31 | 0.8890 | 0.1548 | 1.0439 | 0.8344 | 0.1399 | 0.9743 | 0.9010 | 0.1928 | 1.0937 |

**Appendix VII. Productivity effects of services liberalisation - Results using Wooldridge (2002) methodology to estimate TFP**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Services linkage index | -0.025*** | -0.056*** | -0.039*** | -0.069*** |
| | (0.007) | (0.019) | (0.008) | (0.019) |
| Manufacturing linkage index | | | 0.048** | 0.042** |
| | | | (0.015) | (0.013) |
| Output tariffs | -0.012* | -0.016** | -0.007 | -0.012* |
| | (0.007) | (0.006) | (0.007) | (0.007) |
| Input tariffs | 0 | 0.002 | 0.001 | 0.004 |
| | (0.008) | (0.008) | (0.007) | (0.)007 |
| Observations | 185355 | 185355 | 185355 | 185355 |
| R-squared | 0.631 | 0.633 | 0.631 | 0.633 |
| Firm fixed effect | Yes | Yes | Yes | Yes |
| Year fixed effect | No | Yes | No | Yes |

Note: The dependent variable is the logarithm of TFP estimated using production functions methodology from Wooldridge (2009) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. All specification control for size and ownership of firms. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

**Appendix VIII. Productivity effects of services liberalisation - Alternative measures of STRI**

| Panel A: Share of revenue - baseline model (4) | | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Services linkage FDI | -0.014 | | -0.016 |
| | (0.012) | | (0.012) |
| Services linkage Privatisation | | -0.045* | -0.051* |
| | | (0.043) | (0.044) |
| Observations | 173,855 | 173,855 | 173,855 |
| R-squared | 0.694 | 0.694 | 0.694 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

| Panel B: Share of revenue - baseline model (5) | | | |
|---|---|---|---|
| Services linkage FDI | -0.008 | | -0.017 |
| | (0.011) | | (0.012) |
| Services linkage Privatisation | | -0.056** | -0.063 |
| | | (0.021) | (0.044) |
| Manufacturing linkage FDI | 1.157 | | 0.26 |
| | (0.77) | | (0.896) |
| Manufacturing linkage Privatisation | | 2.247*** | 2.256** |
| | | (0.746) | (0.926) |
| Observations | 173,855 | 173,855 | 173,855 |
| R-squared | 0.694 | 0.694 | 0.694 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes(1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Robust standard errors clustered at the industry-year level are reported in parentheses. Each estimation includes output tariffs, input tariffs, which are not reported for brevity. *** denotes significant at 1% level, ** at 5% level, and * at 10% level

**Appendix IX. Productivity effects of services liberalisation - Using input-output table version in 2007**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Services linkage index | -0.037* | -0.102** | -0.032* | -0.097** |
| | (0.019) | (0.043) | (0.019) | (0.035) |
| Manufacturing linkage index | | | -0.014 | -0.035 |
| | | | (0.032) | (0.039) |
| Output tariffs | -0.02* | -0.024*** | -0.02* | -0.024** |
| | (0.011) | (0.008) | (0.011) | (0.008) |
| Input tariffs | -0.001 | 0.005 | -0.005 | 0.005 |
| | (0.009) | (0.01) | (0.009) | (0.01) |
| Observations | 173,855 | 173,855 | 173,855 | 173,855 |
| R-squared | 0.007 | 0.01 | 0.007 | 0.01 |
| Firm fixed effect | Yes | Yes | Yes | Yes |
| Year fixed effect | No | Yes | No | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes(1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

**Appendix X. Productivity effects of services liberalisation: Result by types of regulation - Establishment and Operation**

| | (1) | (2) | (3) |
|---|---|---|---|
| Services linkage index- Establishment | -0.058*** | | -0.051** |
| | (0.02) | | (0.025) |
| Services linkage index- Operation | | -0.064** | -0.014 |
| | | (0.032) | (0.035) |
| Output tariffs | -0.028* | -0.024* | -0.028* |
| | (0.012) | (0.011) | (0.012) |
| Input tariffs | 0.006 | 0.001 | 0.006 |
| | (0.013) | (0.013) | (0.012) |
| Observations | 173,855 | 173,855 | 173,855 |
| R-squared | 0.676 | 0.676 | 0.676 |
| Year fixed effect | Yes | Yes | Yes |
| Firm fixed effect | Yes | Yes | Yes |

Note: The dependent variable is the logarithm of TFP estimated using Olley and Pakes(1996) corrected using Ackerberg et al. (2015) method for 21 manufacturing sectors (VSIC at 2-digit level). All regressors are lagged one year. Robust standard errors clustered at the industry-year level are reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

**Appendix XI. Effects of services liberalisation on female employee and formal employee**

| | (1)<br>Female workers | (2)<br>Formal workers |
|---|---|---|
| Services linkage index | -0.349 | -2.562 |
| | (0.326) | (10.722) |
| Manufacturing linkage index | -0.261** | -0.775 |
| | (0.127) | (0.563) |
| Observations | 191779 | 146633 |
| R-squared | 0.843 | 0.764 |
| Year fixed effect | Yes | Yes |
| Firm fixed effect | Yes | Yes |

*Notes:* The dependent variables are the shares of female workers and formal workers in total employment of firms. All specifications control for size of firms, ownership of firms, and age of firms. Robust standard errors are clustered at the industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

**Appendix XII. Employment effects of services liberalisation before and after membership of the WTO**

| | (1) | (2) |
|---|---|---|
| Services linkage index | 0.032*** | 0.035** |
| | (0.008) | (0.015) |
| Manufacturing linkage index | -0.011** | -0.008* |
| | (0.005) | (0.004) |
| Services linkage index*WTO | -0.008* | -0.006 |
| | (0.005) | (0.006) |
| Manufacturing linkage index*WTO | 0.005*** | 0.005*** |
| | (0.002) | (0.001) |
| Observations | 198851 | 198851 |
| R-squared | 0.962 | 0.962 |
| Year fixed effect | No | Yes |
| Firm fixed effect | Yes | Yes |

*Notes:* The dependent variable is the logarithm of firms' number of employees. All specifications control for size of firms, ownership of firms, and age of firms. Robust standard errors are clustered at the industry-year level and reported in parentheses. *** denotes significant at 1% level, ** at 5% level, and * at 10% level.

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