Servicification in Global Value Chains: Comparative Analysis of Selected Asian Countries with OECD

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Abstract

The paper studies the degree of servicification from a value added approach of the global value chains. Servicification in manufacturing is defined as the service value added share in manufacturing production. The service value added in manufacturing has two sources. The value added from domestic service activities is referred as domestic servicification while the service value added from foreign countries is regarded as foreign servicification. The study examines the degree of servicification at the sectoral level across 61 countries, especially for Asian countries, regarding Global value-chain activities from 1995 to 2011.The tendency of servicification is confirmed in the selected Asian countries and in particular with the 16 Asian countries associated with Regional Comprehensive Economic Partnership (RCEP) negotiation. However, the selected Asian countries tend to have a lower domestic servicification level, but a higher foreign servicification level as compared to the OECD countries. Countries with a higher participation and lower position in GVCs tend to have a higher level of foreign servicification and a lower level of domestic servicification in manufacturing. The study also highlights the role of technical improvement and institutions as the key factors in the development of services in global production value chains.

Key words: Global Value Chains; Servicification; institutions; RECP countries

JEL code: F14; F55

1. Introduction

Increasingly in trade and economic growth, services activities are closely linked with the manufacturing activities. As oppose to the traditional views of manufacturing activities independent of service activities, recent trends indicate that manufacturing industries are increasingly using services in the production, as well as providing services to the consumers (OECD 2014; Lodefalk 2015; Boddin and Henze, 2014). The increasing use, production and sales of services in manufacturing sectors are described as "servicification" of manufacturing (Elms & Low,2013, Lodefalk 2013).

The importance of services in manufacturing sectors was difficult to capture in traditional service trade measurement. For example, services account for about 20 percent of world trade in the balance of payment terms (BOP), but they take up almost 70 percent of world GDP in the national accounts (Lanz and Maurer,2015). The great discrepancy is determined by the distinctive pattern of services in production, in which most services are used as intermediate inputs in production instead of trading through cross-border transactions. The recent development of the global value chains (GVCs) makes it possible to identify the role of services in manufacturing sectors using the international input and output tables. The global value chains are mainly characterized by international fragmentation and specialization of production across borders (Timmer et al.,2015). The international input and output tables could decompose the global production in value added terms and identify the value added content of direct services exports and indirect service exports, i.e. the services value added as inputs embodied in manufacturing exports (Koopman et al., 2014; Timmer et al.,2015). Several studies use the new value-added data to measure servicification (Lanz and Maurer ,2015; Anukoonwattaka et al., 2015). The new measurement captures the input-output linkages across sectors and borders in the global production. Our paper also adopts the share of service value-added (service content) in manufacturing exports as the proxy for servicification.

The role of services as input into manufacturing production is substantial with services value added accounting for almost a third of manufacturing exports in developed countries and 26% in developing economies (Lanz and Maurer, 2015). In developed countries, manufacturing industries tend to increasingly use services as inputs as well as provide services directly to the consumers (Lodefalk, 2015). But there is a limited number of studies in developing countries for lack of data. Our paper tries to fill this gap by exploring the

servicification of the manufacturing activities in Asian developing economies. In fact, services and manufacturing activities related to GVC have spread more extensively through the Asia region than in the rest of the world implying the high importance of servicification, inter alia, to the development of industrial exports of the region (Anukoonwattaka et al., 2015). Baldwin et al. (2014) also highlight the trend of servicification in Asian countries by showing the share of value added in manufacturing products has shifted decisively away from manufacturing and towards service since the 1990s.

Servicification is an important way for manufacturing firms to move up the regional and global production value chains, especially for developing countries. First, services are recognized as "service-linkages" or "glue" of GVCs, in which countries specialize in specific tasks and rely intensively on services to link and coordinates activities across sectors and countries (Gereffi et al, 2010). For example, the rapid development of computer and information services has made India and Philippines an important link in GVCs to provide offshoring services for overseas manufacturing firms. Developing countries tend to use services as "enablers" to participate, connect and manage the global value chains (Lodefalk,2016). Second, manufacturing firms using service inputs intensively tend to have a higher productivity in production (Hoekman and Shepherd, 2017). And it also dramatically improves the efficiency and reduces production costs for manufacturing activities (Saggu and Anukoonwattaka, 2015). Third, adding services to manufacturing products is a good way for firms to differentiate themselves and keep competitive in the international market, for example, Apple launched the iPod with the iTunes services when entering the entertainment industry (Kelle,2013). Last but not the least, manufacturing firms upgrade their competencies from low-value added material production to high-value added services by servicification, an important way to improve their position in the global value chains (Lodefalk,2016).

Service inputs used in manufacturing production source either domestically or internationally, which can be measured by the domestic service value added in manufacturing exports and foreign service value added in manufacturing exports respectively. The domestic service value-added share measures the contribution of domestic services in the manufacturing production while the foreign service value-added share capturing the contribution of foreign service suppliers. The foreign service value-added share could also be seen as measurement of the extent of service offshoring for domestic manufacturing firms.

In the paper, we use the service value added in manufacturing exports as the measurement of servicification in manufacturing and examine the servicification of selected Asian economies with respect to the OECD countries in the global value chain. In the respect, we measure the degree of servicification at sectoral level across 61 countries in terms of global value chain activities with the content of the domestic and foreign service in manufacturing exports from 1995 to 2011. We compare the degree of servicification of the manufacturing sector for the selected Asian countries, in particular with the countries associated with the Regional Comprehensive Economic Partnership (RCEP) regional agreement, with that of the OECD countries. The research will fill the gap of limited studies on the servicification of developing Asian countries. The paper further explores the possible sources of servicification of the economies, including economic growth, information and telecommunications (ICT) technologies, institution empirically, and also the linkages with forward and backward activities in GVCs (Blinder 2006; Gereffi and Fernandez-stark 2011; Hernández et al. 2014). It aims to illustrate the reasons of servicification in Asian countries and reveal the relationship between servicification and global value chains. In particular, by tracing the origins of services, the paper stresses the unique role of foreign services, embodied in manufacturing exports in the form of service outsourcing, in determining servicification of Asian countries.

The paper will be organized as follows. Section 2 provides the key economic trends including the role of services and the trend of servicification in selected Asian countries. Section 3 discusses the factors underlying the servicification of the economy. With the empirical model, we identify and explain the effects of servicification in manufacturing sectors across countries. Section 4 shows the empirical results. And the policy conclusion is provided in section 5.

2. Services Value Chain in Selected Asian countries

2.1 Servicification in Asian countries

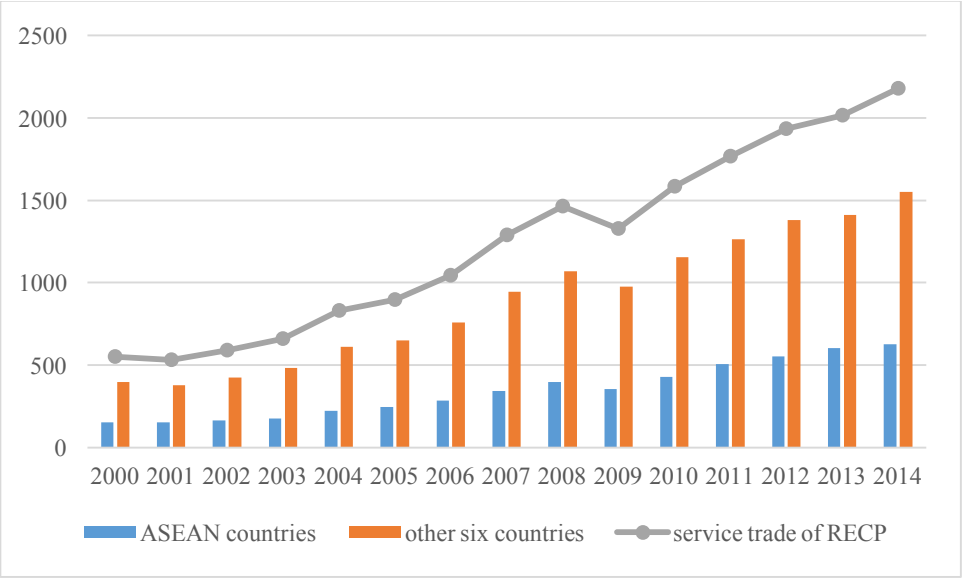
Over the past two decades, there has been a sharp increase in Free Trade Agreements (FTAs) in Asian countries, facilitating service trade and investment. The first major FTA for Southeast Asian countries was the ASEAN Free Trade Area (AFTA) enacted in 1992. Since the Asian financial crisis, ASEAN member countries began to establish FTAs actively bilaterally as well as regionally as ASEAN member countries as a group. Indeed, ASEAN has

set five FTAs with six countries including China, Japan, Korea, India, and Australia-New Zealand separately. In 2012, ASEAN joint the six countries together and formed the regional wide FTA named the Regional Comprehensive Economic Partnership (RCEP). The RECP FTA covers most Asian countries, which has a combined GDP of $17 trillion, and account for about 40 percent of world trade (Rahman and Ara, 2015). One of the objectives of RECP is to promote foreign trade in goods and services among the FTA members.

The level and growth of the services export in Asian countries associated with RCEP are shown in Figures 1 and 2. Firstly, we observe a strong trade growth between ASEAN and its six partners in services. Service trade has more than quadrupled in 2014 as compared to 2000 in RECP countries (see Figure 1). ASEAN trade in services has been expanding over the years. The ASEAN service trade increased from US$150 billion in 2000 to nearly US$630 billion in 2014, with an average annual growth rate of almost 11.8%. In the similar trend, service trade of the other six countries other than ASEAN economies increased from the US $396 billion in 2000 to US $1550 billion in 2014, with an average growth rate of 10.6% annually.

Figure 1: The Service Trade of Asian Countries (RCEP), 2000–2014

(US$ billion)

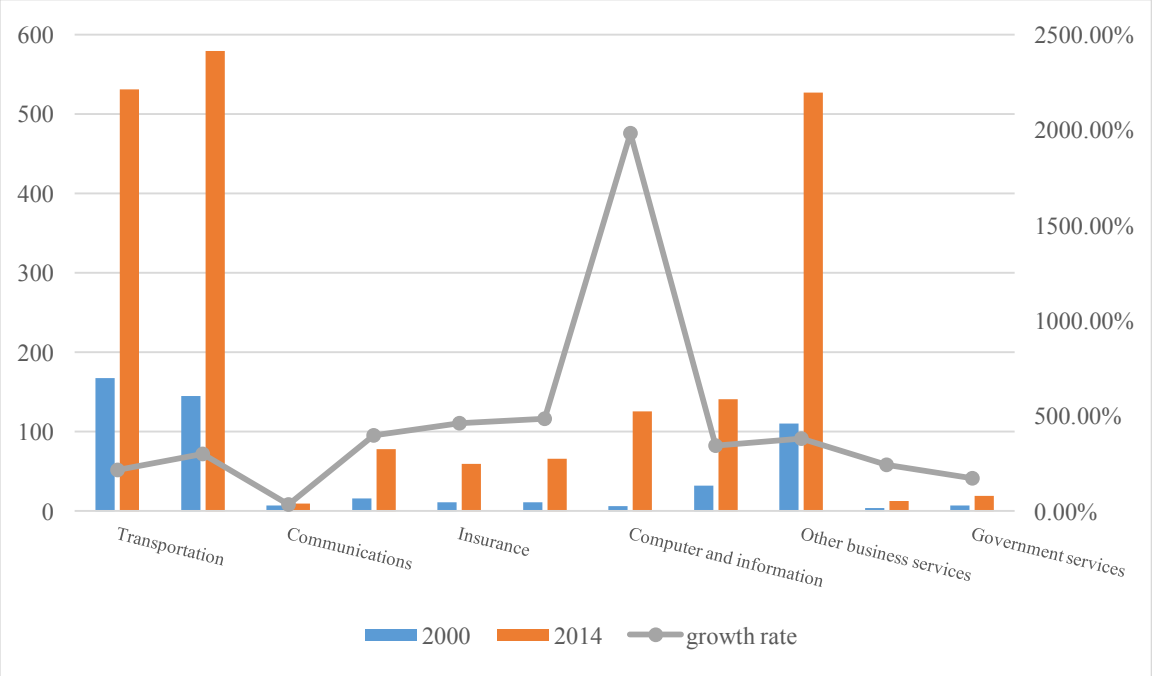


Source: UN COMTRADE Database

In Figure 2, we observe a strong total growth in service trade in 2014 as compared to 2000 for the RECP countries. In particular, the services sectors of transportation, tourism and other business services are three key sectors driving the service trade for RECP countries. We also observe positive and strong growth in construction services, financial and insurance services, computer and information services, royalties and license services and other business services. Computer and information service sectors have also experienced strong growth in recent years, but its growth rate is relatively higher than that of the other service sectors. The growth trends of the service trade for RECP countries suggest the growing importance of services trade in Asian countries.

Figure 2: Service Trade in Asian Countries (RCEP), by Sector, 2000–2014

(US $ billion)

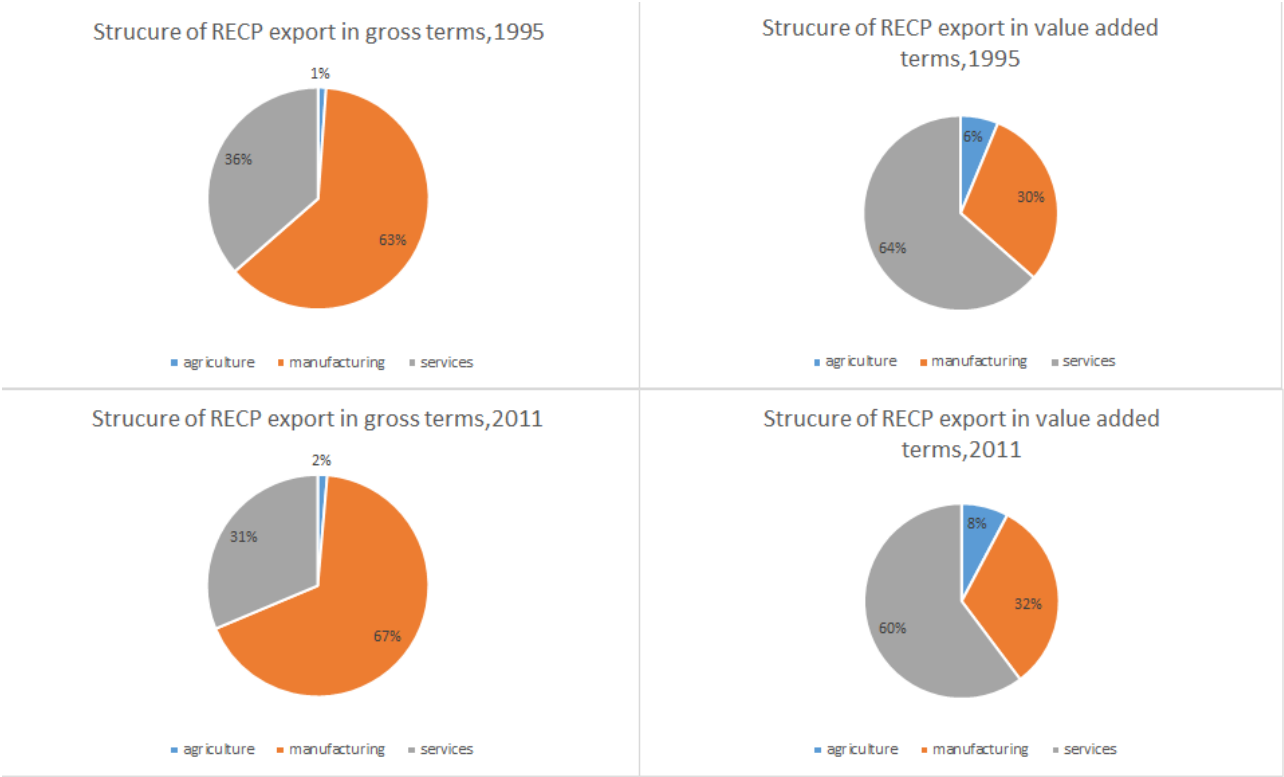


Source: UN COMTRADE Database

In fact, the trade and production of the East Asian countries are increasingly structured around "global value chains activities" (De Backer and Miroudot, 2014). Instead of producing in one individual country, production is fragmented across countries with each country specialize in one or several tasks of the global production value chain. Services fulfil a complex and essential role in the GVCs despite the fact that the cross-border service trade significantly

underestimates its importance. The estimated share of service trade is just over one-fifths of total trade (WTO,2012), but the story will be very different if considering the content of the service embodied in manufacturing products. The latter part is traded indirectly across borders so it is hardly captured by service trade but easy to measure in value added terms. For example, in 1995, the share of services in total trade of RECP countries account for 31% in gross terms, while it accounts for 64% in value added terms (Figure 3). Even though the share of services declines slightly in both gross trade and gross value-added in RECP countries, it is still larger than the other two components of economic activities.

Figure 3: Sectoral Contribution Comparison to total trade and GVC trade for RECP countries,1995-2011

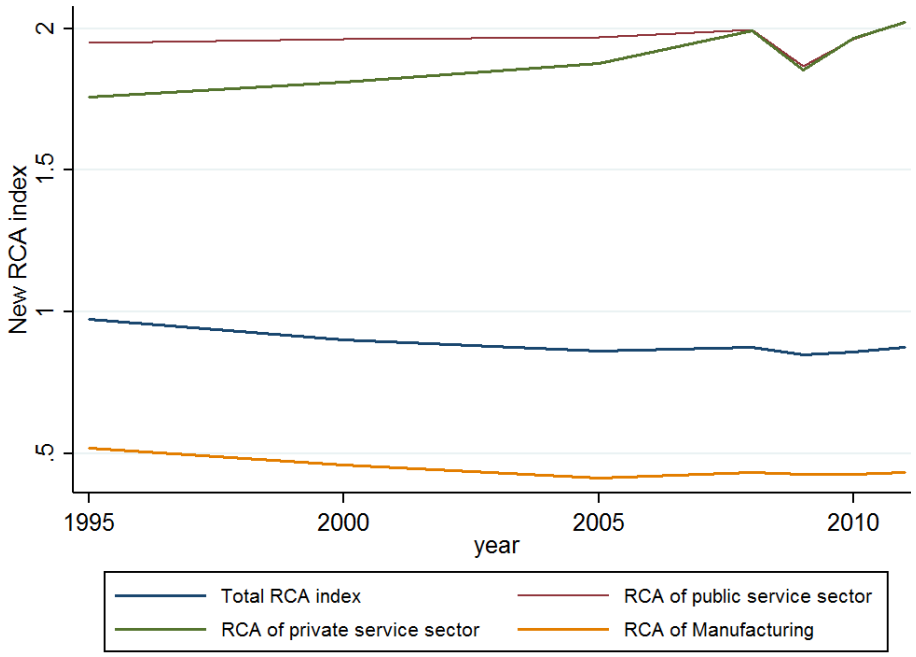


Source: OECD TIVA database

The great discrepancy of service trade statistics in gross terms and value-added terms has three possible reasons. Firstly, the traditional service trade only records service transactions across borders. But it hardly captures the value of service inputs embodied in products and exported indirectly by trade in goods. Secondly, the traditional service trade generates the double counting problem because goods and services would cross borders for several times.

Lastly, service trade not only contains the domestic service value added but the services from the other countries. The foreign service value added in exports represents the extent of using offshoring services of the country and should be distinguished from the total exports. In a nutshell, traditional service trade fails to capture the role of services in manufacturing, and we need to study servicification from a global value added perspective.

Figure 4: New RCA index of RECP countries



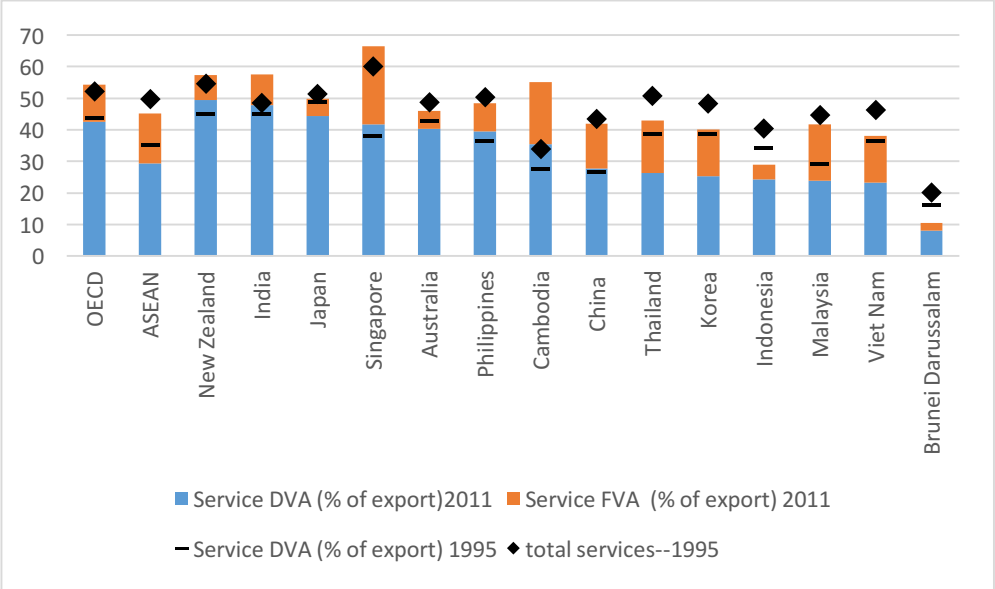
Source: Data from OECD TIVA (2015) database and calculated by the authors.

A new Revealed Comparative Advantage Index (RCA) based on the value added is developed by Wei (2015) to include the indirect exports of service value added through other sectors of the exporting country. Figure 4 describes the value-added based RCA index for RECP countries (the index is given as the average of the RCEP countries). As opposed to the traditional RCA[2], the new RCA excludes the foreign value added; pure double counted terms

[2] The traditional revealed comparative advantage uses the proportion of a sector's gross exports in specific country over the share of the industry's world exports in the total world's gross exports to show the country's

and domestic value added generated in other sectors, but includes the indirect exports of service value added in manufacturing sectors (Wei, 2015). It corrects the distorted image of services in international production patterns (Wei, 2015).

Figure 5: Service Content of Gross Export (%) for RECP countries



Source: Data from OECD TIVA (2015) database and calculated by the author.

The services value added in the gross export of the RCEP countries is given in Figure 5. From the value added perspective, service accounts for 54% of total exports for OECD countries while taking more than 45% of the gross exports of ASEAN countries. Singapore has the highest proportion of service content in gross export at about 66%. But around 25% of the service content in exports of Singapore comes from overseas, which is measured by the foreign service value added in exports. We also observe the domestic service value added in exports have increased in New Zealand, India, Singapore, Cambodia, Philippines and China from 1995 to 2011. But there is a decline in using domestic services for exports for Japan, Australia, Thailand, Korea, Indonesia, Vietnam, Malaysia and Brunei Darussalam. Most of

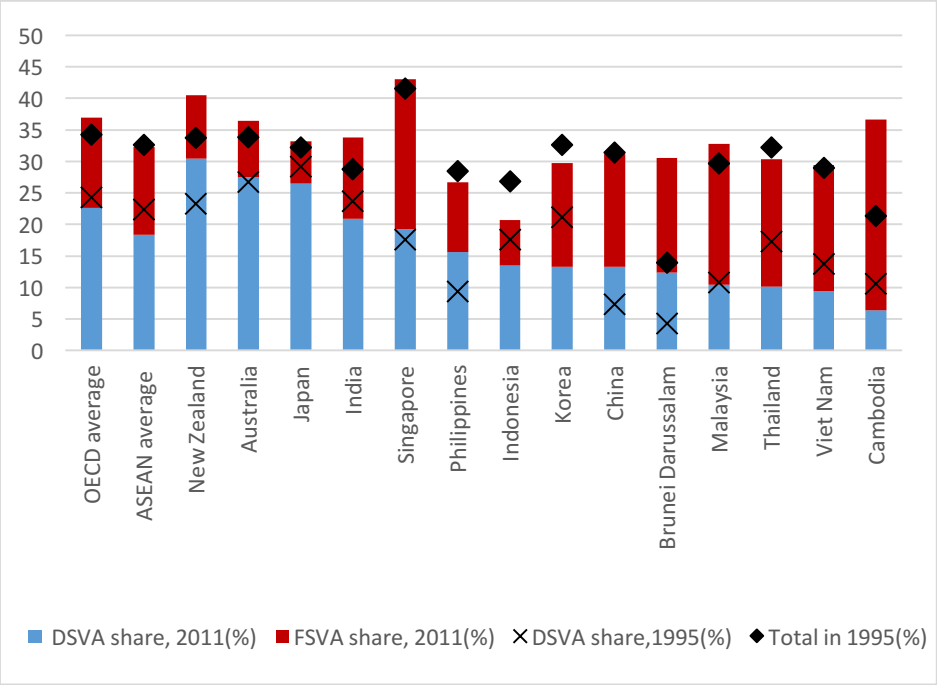
relative advantage in the sector. If RCA>1, the country is considered as having comparative advantage in the sectors. But Wei(2015) has pointed out that the measurement of traditional RCA with gross exports is problematic as the gross trade can't represent the true value-added of production.

ASEAN countries use more foreign services instead of domestic services in gross exports with their average domestic service value added share decreasing from 35% in 1995 to 29% in 2011.

2.2 Servicification of Manufacturing

There are only a few studies considering servicification, the trend of using services in manufacturing sectors, as an important structural shift in domestic and international production for OECD countries (Lodefalk, 2015). For example, Lodefalk (2013) decompose the 1975-2005 input and output tables of Sweden and finds that services account for the major share of exports in manufacturing sectors. A similar trend is also found in Germany (Boddin and Henze, 2014) and France (Kelle, 2013; Kelle and Kleniert, 2010). But there were rare studies on developing countries.

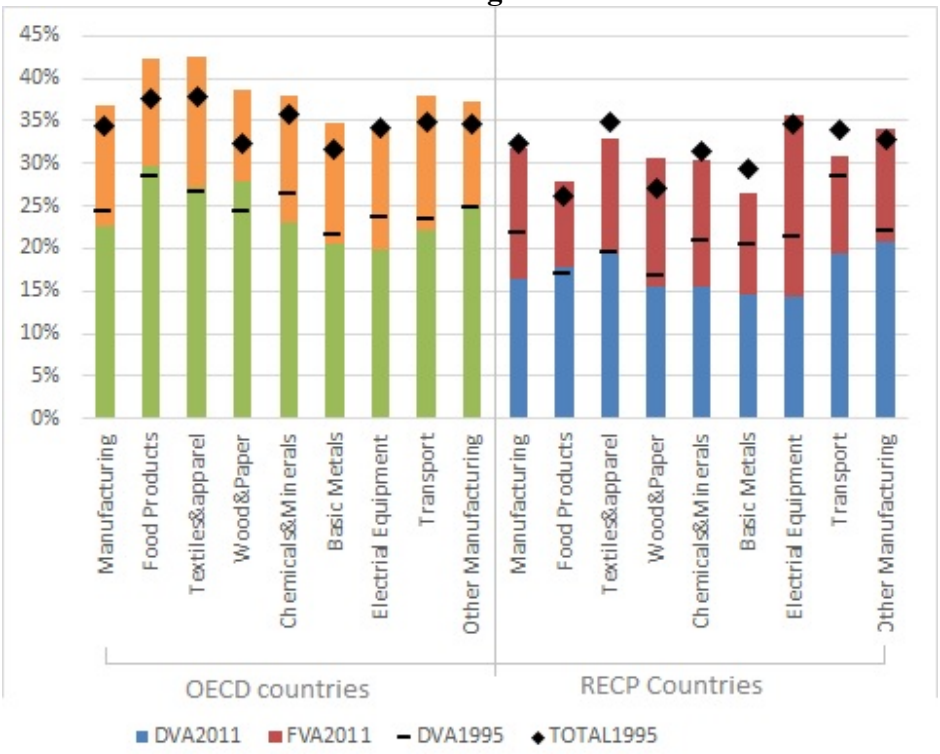
Figure 6: Share of Service value added in manufacturing exports for RECP countries



Source: Data from OECD TIVA (2015) database and calculated by the author.

In this paper, we study the servicification in East Asian countries and compare to that of OECD countries. Following the previous studies, the servicification index is calculated as the share of service value added in manufacturing exports. The importance of service activities for manufacturing is given in Figure 6. On average, service activities account for 37% of the total value of manufacturing exports in OECD countries and take up to 32% in ASEAN countries. It means the servicification level in OECD countries is higher than ASEAN countries. The share of service value added in manufacturing export varies from 22% for Indonesia to 47% for Singapore across ASEAN countries. From 1995, most of the RCEP countries, except Indonesia, Philippines, Thailand and Korea, have experienced the expansion of servicification in manufacturing. Another characteristic of the Asian servicification is the rising foreign service content in manufacturing exports, which captures the extent of using service offshoring in RECP countries. The increasing use of foreign services in manufacturing indicates a high reliance on the foreign firms to provide services to domestic manufacturing industries.

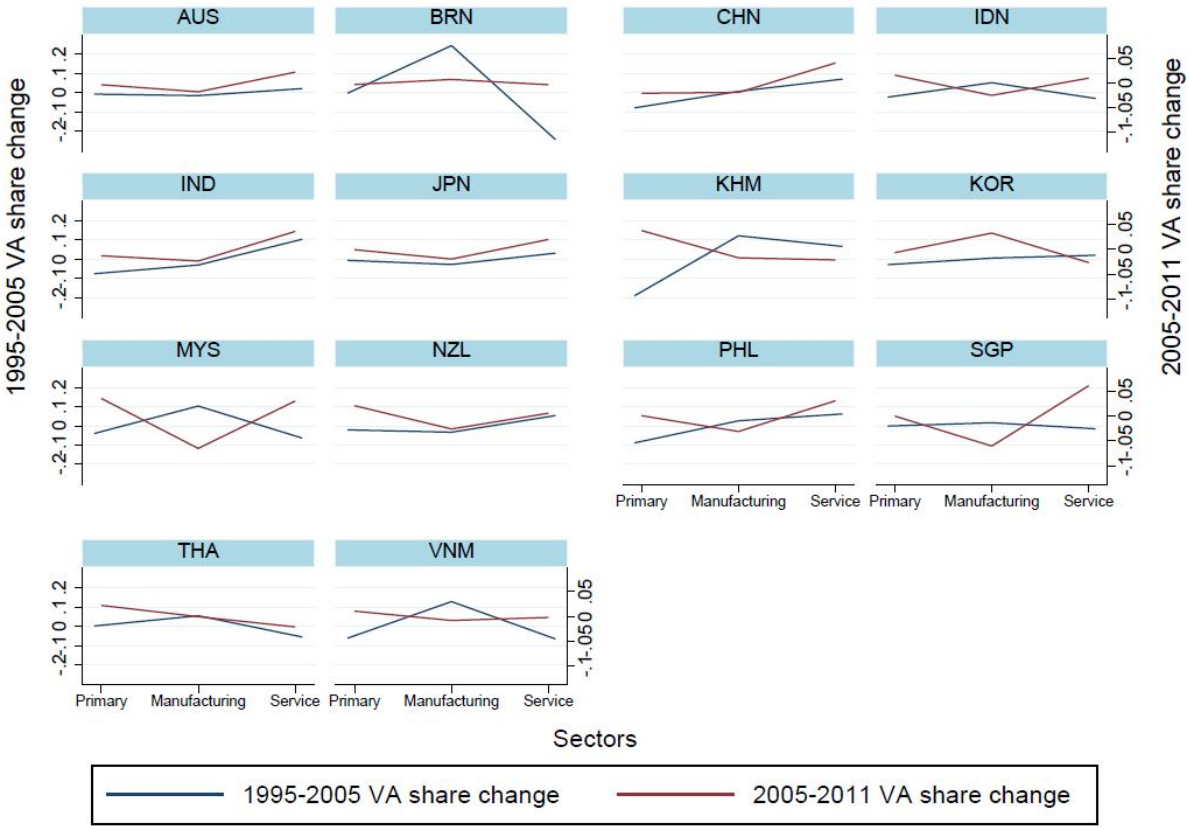
Figure 7: Servicification in Manufacturing Sectors: OECD and RECP Countries



Source: Data from OECD TIVA (2015) database and calculated by the author(s).

We also compare the degree of servicification of the Asian economies with that of OCED economies. In 2011, the service content in manufacturing exports of Asian countries was slightly lower than that of the OECD countries, where Asian service content is nearly 34% as compared to 37% for OECD (see Figure 7). The servicification of OECD countries increased by 4% during 1995-2011, but there was a slight decline in servicification for the Asian countries from 32% to 31%. One possible reason for the decrease might be the decline in services content for textile and apparels, chemical and minerals, basic metals and transport sectors. In contrast, services content increased in all the manufacturing sectors of OECD countries, in particular for food products, textile and apparels, wood and paper and transport sectors.

Figure 8: Servicification in manufacturing sectors of OECD and RECP countries



Source: Data from OECD TIVA (2015) database and calculated by the author (s).

One of the most commonly used diagrams in describing the trend of servicification in global value chains is the "smile curve." By decomposing the origins of value added in

manufacturing exports into the primary sector, manufacturing sector and service sector, the recent trends of servicification could be examined by the share change of each sector (Figure 8). During 1995-2005, services have no advantage over manufacturing and primary activities for most RECP countries. In countries such as Brunei Darussalam, Cambodia, Malaysia, Philippines and Vietnam, manufacturing activities experienced the fastest growth in value added share during 1995-2005. However, in recent years during 2005-2011, we observe a stronger emergence of servicification in manufacturing sectors for most of the Asian countries. The rising importance of services in value added activities across the Asian countries is clearly visible from the "smile curve" of servicification, an indication of the shift from manufacturing activities to more services activities and trade[3].

Our results have confirmed the existence of servicification in manufacturing sectors in RECP countries as well as OECD economies. Although the servicification level is slightly lower in RECP countries than OECD economies, we do observe a higher level of foreign service value added share in manufacturing exports for the RECP countries. In the next section, we empirically examine the principal sources of the servicification in OECD and RCEP countries. In particular, we will identify the determinants of servicification and estimate their impacts on servicification of manufacturing sectors in OECD and RECP countries.

3. Empirical Model

3.1 Determinants of Servicification

Servicification is an important activity that increases the opportunity for developing countries to move up the regional and global production value chains. While some of the bundling or modularization occurring along the global value chains, servicification may appear by the exigencies of locational dispersion in output and consumption, or by regulatory requirements (Low, 2013). Moreover, the servicification is likely to be fed by the strategic motivations of firms to move upwards along the global value chains (Kommerskollegium, 2012). Baldwin et. al (2015) identifies four possible sources of servicification: (a)

[3] Baldwin et. al. (2014, 2015) propose the changes in "smile curves" as a process that value added shifted from "fabrication" towards service value-added activity. In graph 8, we follow their approach to analyze the source of value-added from three sectors. It has showed that most Asian countries has shifted their main source of value-added from manufacturing sectors to service sectors, which is a typical trend of "servicification".

reclassification of services, (b) increase in the participation of GVCs, (c) motivation to move upwards along GVCs, and (d) increase in inter-country connectivity through technical and transportation improvement.

The reclassification of services has been discussed in the former analysis regarding the discrepancy of gross trade and GVC trade. For example, service inputs used in manufacturing production were classified as manufacturing exports in trade statistics. But it is possible to decompose the value of manufacturing exports by its source sectors and recognize the role of services in manufacturing sectors with the value-added approach. The servicification from the reclassification of services is mainly due to statistic errors rather than changes in the structure of the economy. Secondly, firms in developing countries take GVCs as a good opportunity of globalization. Participating in GVCs specializes their production activities and strengthen their access to foreign markets. The fragmentation of manufacturing production in GVCs are accompanied with higher service inputs such as telecommunication, transportations and research & development services. Concurrently, countries at a relative upstream position in GVCs tend to use servicification to realize the reindustrialization, a strategy to bring back advantageous manufacturing industries in the OECD countries. Furthermore, the progress in transport and information and telecommunications (ICT) will improve the tradability of services and promote outsourcing. It would be easier for domestic manufacturing firms to get access to foreign services, especially for high-end manufacturing products, which seek more content of services, such as software, design and research & development services, to be more competitive in the international market.

Recent studies have identified institutions as another key factor of the servicification (Miroudot and Shepherd, 2014). For example, the regulation in telecommunication services would bring extra cost and unnecessary barriers to servicification. Countries with better institutions in services could create more flexibility of using services in production activities and lead to a higher proportion of servicification.

3.2 Data and Empirical Model

In the section, we use the empirical model to explore the key factors driving the servicification in manufacturing. As highlighted above, there are four key factors determining servicification: reclassification of services, participation and upgrading in GVCs, technical

improvement, and institutions. The first factor can be controlled by using the service value added in manufacturing exports, which eliminates the reclassification problem and describes the real contribution of service sectors in manufacturing industries[4].

We define servicification as the share of service value added in manufacturing exports. It could have two sources: (a) the domestic service value added ($DSVAshare_{ijt}$) from local companies or local presence of foreign companies and (b) the foreign service value added ($FSVAshare_{ijt}$) from the foreign countries. The $DSVAshare_{ijt}$ measure the domestic servicification level while the $FSVAshare_{ijt}$ describes foreign servicification level in domestic production and exports. The $FSVAshare_{ijt}$ could also describe the extent of home country using service outsourcing from the foreign countries.

We identify the other key factors in our analysis. For participation in the GVCs, we derive the GVC participation index to measure the engagement in GVCs. The GVC participation index is defined as the sum of the foreign value-added in exports (backward participation) and the share of domestic value added in intermediate exports for the third countries (forward participation)[5]. We also define GVC position index to identify upstream activities of countries in GVCs. Countries with high forward participation relative to backward participation are referred as high value in the GVC position.

We also incorporate other control variables (X_{it}) such as technology improvement and institutions. Technology improvement is measured by R&D expenditure share in GDP and computer users in 100 persons. Institutions are measured by government efficiency and regulation quality in the empirical model. Besides, we include country specific characteristics (X_{it})such as GDP per capita and service workers in total employment. We also add the fixed effects of country, industry and time to control the effects of country- or time- invariant variables such as country size and population. The empirical model could be written as follows:

[4] The discussion of the reclassification in the value-added activities are given at the Appendix 1. It indicates that the traditional service trade fails to identify the service inputs in manufacturing sectors, but we can identify it by using the Input and output approach to get the service value added share in manufacturing exports. We use the share of service value added in manufacturing exports as a proxy for servicification.

[5] See Koopman et al. (2014) for detail description of GVC participation index and GVC position index.

$$DSVAshare_{ijt} = \beta_0 + \beta_1 GVCparti_{ijt} + \beta_2 GVCposition_{ijt} + \sigma_i X_{it} + \delta_{it} + \theta_{jt} + \varepsilon_{ijt} \quad (1)$$

$$FSVAshare_{ijt} = \beta_0 + \beta_1 GVCparti_{ijt} + \beta_2 GVCposition_{ijt} + \sigma_i X_{it} + \delta_{it} + \theta_{jt} + \varepsilon_{ijt} \quad (2)$$

where δ_{it} and θ_{jt} are country and industry specific fixed effects. Table 1 describes the variables in the model. The value added data of GVCs are from OECD TIVA database. The database contains 61 economies including OECD countries and other developing countries. There are 14 RECP countries in the database except for Laos and Myanmar[6]. The panel data covers 24 sectors with 16 manufacturing sectors and 14 service sectors. The data range from 1995 to 2011 with intervals. We obtain our country specific indicators, such as GDP per capita, service labour shares to total employment, R&D expenditure share in GDP and computer users in 100 persons, from the World Bank database. The regulation indicators are obtained from the Doing Business database of the World Bank.

Table 1 Descriptive Statistics

Variable	Description	Obs	Mean	Std.	Min	Max
SDVA	share of service	20,491	46.14	31.89	0.31	97.81
SFVA	share of foreign service	20,491	8.12	5.49	0.25	35.03
Participation	GVC participation Index	20,491	62.27	27.02	0.68	100.00
Position	GVC position index	20,491	0.67	1.35	-3.70	3.34
SSE	Service labour share of total employment	20,491	56.79	15.06	12.20	75.40
RDS	R&D share in GDP	20,491	1.84	1.09	0.08	3.74
Computer	computer user in 100 persons	20,491	42.26	33.81	0.00	83.76
GDP	GDP per capita (1000 USD)	20,491	15.95	14.20	0.47	36.71
GE	Government Effective Index	20,491	0.84	0.78	-0.42	1.94
ReguQ	Regulation Quality Index	20,491	0.64	0.83	-0.44	1.97
Manu	dummy for manufacturing sector	20,491	0.44	0.50	0.00	1.00
Srecp	interaction of SSE and RCEP	20,491	56.79	15.06	12.20	75.40
Rrecp	interactions of RDS and RCEP	20,491	1.84	1.09	0.08	3.74
Crecp	computer * RCEP	20,491	42.26	33.81	0.00	83.76

[6] Although the countries not covered in the current study may be important, they only account for small component of the economic and GVC activities for ASEAN and Asia. We hope we could be able to include them in the future studies if more data are available.

Grecp	interactions of GE and RCEP	20,491	0.84	0.78	-0.42	1.94
RQrecp	ReguQ * RCEP	20,491	0.64	0.83	-0.44	1.97
ΔParti	five year change in participation	8,765	-.076	7.88	89.21	88.40
Δ Posit	The five year change of position	8,765	-0.01	-0.51	-5.27	4.56
MP	manufacturing*ΔParticipation	20,491	32.74	38.74	0.00	98.40
MPOSIT	manufacturing*ΔPosition	20,491	0.22	0.57	-1.87	2.71
Precp	Δparticipation * RCEP	20,491	62.27	27.02	0.68	100.00
Positrecp	Δposition * RCEP	20,491	0.67	1.35	-3.70	3.34

4. Results Analysis of the Empirical Model

4.1 Baseline Results for all countries

Table 2 shows the results of the above models (1) and (2) for all the countries. The GVC participation and position are important factors affecting the servicification, which has been analysed above. But there may be a reverse causality in the regression. It is possible for manufacturing firms with higher level of servicification to participate more or upgrade in the GVCs. For example, as we discussed, high-end manufacturers tend to use servicification to differentiate their products and strengthen their competitiveness, which in turn may deepen their engagement in the global value chains. To deal with the possible endogenous problem, we adopt the Hausman test in our model with the lagged variables as instruments. The test has the p-value at 0.25, which indicates there is no significant difference of the coefficient using OLS and IV approach. To establish the further robustness of our results, we also estimate the model with GMM estimation. We report the results of the fixed effect estimation of all the 61 countries in Table 2 and give the results of GMM estimations of all the countries in Table 3.

In Table 2, the first column reports the results on domestic servicification. The GVC participation variable has a negative and significant effect on the domestic service value added in manufacturing, which suggests that greater participation in GVC activities reduce the use of domestic service in manufacturing. The high GVC participation index represents high fragmentation and internationalization of production processes across the world. With the participation in the GVC, countries tend to use more foreign contents in production instead of producing them domestically. The second column reports the degree of foreign servicification in GVC activities. The positive coefficient of GVC participation in column 2 verifies that participation in GVCs will significantly increase the use of foreign services in manufacturing.

These results are also verified in our GMM estimations. The robustness of the results is also checked by different model specifications given from columns 3 to 6 at Table 2.

The GVC position is an indicator of upstream activities of countries in GVCs. The position in GVCs is believed to affect the values gained from the GVCs. For example, the upstream industries (innovation, R&D, design, etc.) are hypothesized to create more values than the lower-position industries (manufacturing, assembling, branding). And upstream manufacturing sectors (computer, vehicle and electronic equipment) are considered of higher value than downstream manufacturing industries (textile, rubber, wood processing) (Antras et al,2012). Does the position of GVCs affect the servicification too? The effects of GVC position on servicification is captured by the significant and positive coefficient in column 1. Countries in an upstream position of the GVCs use a higher level of domestic services in manufacturing; while using less services from foreign countries. The results are also confirmed by the GMM results in Table 3. Different specifications of the model are tested in Table 2 and both GVC participation and position variables are robust in our analysis.

Table 2: Baseline Regression for all countries (Fixed Effects)

	DSVA	FSVA	DSVA	FSVA	DSVA	FSVA
GVC Participation	-0.113***	0.234***	-0.097***	0.090***	-	-
	(0.024)	(0.011)	(0.011)	(0.010)		
GVC Position	2.799***	-5.636***	-	-	2.763***	-2.932***
	(0.420)	(0.234)			(0.234)	(0.190)
SSE	0.046***	0.001	0.038***	-0.022***	0.032***	-0.015**
	(0.015)	(0.007)	(0.011)	(0.008)	(0.011)	(0.007)
RDS	0.561*	-0.044	-0.125	-0.050	-0.346	0.173
	(0.333)	(0.142)	(0.250)	(0.139)	(0.240)	(0.118)
Computer	0.030***	0.006	0.026***	-0.001	0.024***	0.001
	(0.009)	(0.004)	(0.006)	(0.004)	(0.006)	(0.003)
GDP	-0.033	0.252***	-0.000***	0.000***	-0.000***	0.000***
	(0.043)	(0.032)	(0.000)	(0.000)	(0.000)	(0.000)

GE	0.751	-0.970***	0.329	-0.799***	0.525	-0.984***
	(0.509)	(0.212)	(0.338)	(0.205)	(0.323)	(0.183)
ReguQ	1.179*	0.150	1.438***	0.023	1.334***	0.135
	(0.624)	(0.198)	(0.379)	(0.159)	(0.351)	(0.162)
Constant	25.801***	-1.107	25.182***	-3.687***	14.568***	6.800***
	(1.973)	(0.879)	(1.373)	(0.956)	(1.324)	(0.721)
Global Financial Crisis dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2961	2961	11091	11091	11091	11091
Time effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Sector effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Country effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Notice: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The results of the country fundamentals show impressive results. The coefficient of service labor share in total employment is statistically significant and positive in domestic servicification. However, it is negative and statistically significant in foreign service value added share in manufacturing exports as given in Table 2 (statistically significant from columns 3 to 6). The result is robust with the GMM estimation in table 3. It indicates that the increase in employment of service workers would substitute the needs of foreign services with domestic services. Countries with more service workers would use more domestic services instead of foreign services in the manufacturing production. The R&D expenditure to GDP (RDS) has a positive impact on servicification, which is only statistically significant for the domestic service content in manufacturing in Table 2. The coefficient of R&D on FSVA turns to be significantly negative with the GMM estimation at Table 3. It indicates increasing R&D expenditure reduces foreign services value added of manufacturing exports and promote manufacturing firms to shift towards domestic services. The technology variable "computer users in 100 persons" is significantly positive in domestic servicification. The result provides evidence of improvements in technology and telecommunication technologies will accelerate the tradability of services and promote the servicification of manufacturing. We also observe that GDP per capita has no significant effect on domestic servicification. However, it has a positive effect on foreign services content in manufacturing. It might indicate that countries with higher GDP tend to use more foreign services in manufacturing exports.

It is quite interesting to observe institutional variables to have important but different impacts on the servicification of manufacturing activities. We used two different institutional variables from the World Bank database: (a) Government effectiveness (GE) is given as perceptions of the quality of public services, quality of civil services, and degree of independence from political pressures. (b) Regulatory quality (ReguQ) that captures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Both these variables have different impact on the level of domestic servicification in the manufacturing activities. Increase in government effectiveness tends to reduce foreign service value added activities and increase domestic services in the manufacturing and export activities (it is negative and statistically significant in the foreign service value added regressions). We do observe positive impact on domestic service value added activities but it is not statistically significant in our analysis. However, improvements in regulation quality in terms of promoting private sector activities tend to have a larger and positive impact on both domestic and foreign service value added activities as compared to government effectiveness variable. This suggests better and well formulated policies to promote private and market activities tend to increase domestic services and value added activities in manufacturing and exports of the domestic economy.

4.2 Servicification in RCEP Countries

Apart from reporting the GMM estimation for all countries, Table 3 also shows the estimation about the degree of servicification in RECP countries. Compared to the whole sample, the majority of RECP countries are developing countries with relatively lower position in the GVCs, less technical advantage and weak institutions. We try to capture the determinants of servicification in RECP countries and compare the results with the estimation of the whole sample.

Table 3: Fixed Effects and GMM Results for All and RECP countries

	All Countries		RCEP Countries			
	DSVA (GMM)	FSVA (GMM)	DSVA (GMM)	FSVA (GMM)	DSVA (Fixed)	FSVA (Fixed)
GVC participation	-0.977***	0.212***	-0.145***	0.131***	-0.155***	0.228***
	(0.011)	(0.003)	(0.019)	(0.010)	(0.036)	(0.013)

GVC position	15.926***	-5.002***	3.990***	-7.178***	3.156***	-6.123***
	(0.330)	(0.071)	(0.602)	(0.307)	(0.452)	(0.199)
SSE	0.055	-0.023***	0.093**	-0.036**	0.008	-0.010
	(0.044)	(0.008)	(0.037)	(0.015)	(0.015)	(0.006)
RDS	1.079**	-0.962***	-0.436	0.548	2.099***	0.380
	(0.466)	(0.084)	(0.889)	(0.460)	(0.586)	(0.356)
Computer	0.077**	0.019***	0.031	0.112***	0.037**	-0.005
	(0.032)	(0.006)	(0.053)	(0.026)	(0.014)	(0.009)
GDP	-0.000	0.000	-0.203	-0.073	-0.192***	0.251***
	(0.000)	(0.000)	(0.113)	(0.057)	(0.065)	(0.048)
GE	0.954	-1.320***	-3.448*	-6.151***	-4.544***	-1.569**
	(1.397)	(0.284)	(1.928)	(1.056)	(1.360)	(0.783)
ReguQ	4.403***	1.873***	5.364***	-1.900**	0.441	-2.172***
	(1.352)	(0.236)	(1.792)	(0.887)	(0.892)	(0.418)
Constant	98.075***	-0.628	28.433***	5.948***	40.445***	-0.534
	(2.790)	(0.489)	(2.882)	(1.046)	(3.328)	(1.955)
Global Financial Crisis Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5082	5082	207	207	468	468
Adjusted R2	0.507	0.724	0.671	0.905	-	-
Time effect	-	-	-	-	Fixed	Fixed
Sector effect	-	-	-	-	Fixed	Fixed
Country effect	-	-	-	-	Fixed	Fixed

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The selected Asian countries in our sample tend to have a lower domestic servicification level, but a higher foreign servicification level compared to OECD countries. We also observe a significantly negative effect of GVC participation and a positive effect of GVC position on the domestic servicification. It indicates more upstream manufacturing activities lead to a higher level of domestic servicification. And deeper participation in the GVCs leads to higher level of foreign servicification. These results are also verified in both fixed-effects and GMM estimations[7]. If we compare the absolute value of the coefficients of GVC participation and position, we will find that the coefficients for GVC position variables are larger than that of

[7] Both participation and position variables are very stable and robustness to different model specifications as given in Table A1 of Appendix 2.

GVC participation, which means GVC positioning has a greater influence on servicification as compared to GVC participation. It suggests the decision to move upstream in the global production value chain allows the economy to optimize the domestic resources for value added activities effectively as compared to just participating in the value-chain activities. It also indicates the need to undertake more upstream activities in the global value chains to add value to domestic services used in manufacturing services, which might be critical to develop domestic services in Asian countries.

The fixed effects estimations have no statistical significance for service labor share, but the GMM estimation shows that the increase in the employment share of service workers will improve domestic servicification and decrease the foreign servicification. It highlights the importance of increasing human capital, especially those engaged in services, in domestic services activities in global production value chain for Asian countries. The positive coefficient of computer index indicates the improvement of technology will reduce the cost of using outsourcing services, thereby leading to an increase of foreign servicification in manufacturing. Again, we observe that higher GDP per capita tends to increase the foreign service (outsourcing) content as compared to domestic service content in the manufacturing sector. However, this variable is not very robust as compared to the GMM estimation as it tends to be statistically insignificant.

Again, we observe the institutional variables tend to have different effects on the servicification in manufacturing. The coefficient of government effectiveness index is significantly negative on both domestic and foreign servicification. Compared to the positive effect of government effectiveness on domestic servicification in the whole sample, the negative effect in RECP countries is likely due to the linkages between government institutions of Asian countries and large monopolies or state-owned enterprises (SOEs). The ties restrict the marketization of core service sectors in Asian countries, which favors SOEs and large monopolies and creates excessive bottlenecks for service development as well as servicification. We also observe impressive results with regulation quality that aims to reduce burdens to promote and develop private sectors, for Asian countries. Regulation quality has a positive impact on domestic servicification but reduces the share of foreign services value added activities in manufacturing. The results are robust with the GMM estimation. In Asian countries, better regulation quality tends to encourage greater use of domestic service in manufacturing

while restricting the use of foreign services in manufacturing. It indicates that the regulations in Asian countries have a preference to use domestic service content in manufacturing sectors.

4.3 Robustness Check

Baldwin et al. (2015) use the "smile curve" of to describe the trend that value added shifted away from 'fabrication' towards service value-added activities. As illustrated in Figure 8, in the recent years (2005-2011), services enjoy the highest growth rate in adding value to manufacturing sectors compared to the other two value sources of manufacturing products: primary industries and fabrication. The "smile curve" provides further evidence of the existence of servicification in Asian countries that service inputs add more value to manufacturing products than manufacturing activities themselves. Following Baldwin et al.(2015)'s approach[8], we unveil the source of value added in exports and prove the existence of servicification with the empirical model.

The empirical model to examine the existence of servicification is as follows:

$$\Delta Service\ VAshare_{ijt} = \beta_0 + \beta_1 \Delta GVC\ Partic_{ijt} + \beta_2 \Delta GVCposition_{ijt} + \gamma_{it} X_{it} + \delta_{it} + \theta_{jt} + \varepsilon_{ijt} \quad (3)$$

Different from the baseline model, the '$\Delta Service\ VAshare_{ijt}$' in the above model is the five-year change of service value added share in gross exports instead of manufacturing exports. It covers the service value added embodied in primary sectors, manufacturing sectors as well as service sectors. Similarly, according to the source of service value added, we distinguished the changes of service value added share in exports by the domestic service value added changes in exports (ΔSDVA) and the foreign sourcing service value added changes in exports (ΔFDVA). '$\Delta GVC\ Partic_{ijt}$' and '$\Delta GVCposition_{ijt}$' are the change in GVC participation and

[8] Baldwin et al. (2015) first examine the effect of GVC participation changes on the existence of "smile curve," and use the fixed effect to control the country and industrial variables. But the lack of control variables leads to omitted variable and questions the robustness of their analysis. In fact, the country or industry fixed effect could only control country-industry specific bias. It turns out that most coefficients in their analysis are not statistically significant and the sign of GVC participation is opposite to the expected hypothesis. We improve the model of Baldwin et al (2015) and include national variables to control the unobservable factors affecting the servicification of the manufacturing sector.

position index. 'X_{it}' is the national control variables similar to the basic model. The regression also contains the dummy variables for manufacturing sectors and RECP countries. The interaction of control variables with the dummy variables are also included in the regression, which aims to test the effect of servicification in manufacturing sectors and RECP countries. The panel data consists of 61 countries, 34 sectors and has three periods (1995-2000, 2000-2005, and 2005-2010). Table 4 reports the estimation results.

The results support the hypothesis that GVC variables are important for the servicification of the manufacturing activities. Most of the key variables are statistically significant, highlighting the robust fit of the model. Column 1 and 4 in Table 4 suggest that the participation of GVCs has a negative impact on domestic servicification but positive effect on foreign servicification. Countries with more participation in GVCs tend to import service from foreign countries, which is also consistent with the above results. However, countries at the upstream of GVCs will shift foreign services to domestic services, which suggest that countries at the upstream of GVCs prefer to use the domestic services. The service employment share does not affect domestic servicification but negatively affect foreign servicification. Regulation Quality of regulations is significantly positive in both domestic and foreign servicification, which means countries with better regulations will use more services in production. The strength of government effectiveness reduces the foreign servicification but does not affect domestic servicification.

Table 4: Robustness check to "Smile Curves"

	ΔSDVA			ΔFDVA		
	1	2	3	4	5	6
ΔGVC participation	-0.215***	-0.245***	-0.199***	0.220***	0.216***	0.225***
	(0.015)	(0.014)	(0.017)	(0.010)	(0.011)	(0.011)
ΔGVC position	4.415***	4.896***	4.340***	-4.588***	-4.346***	-4.863***
	(0.258)	(0.293)	(0.299)	(0.202)	(0.231)	(0.237)
Service labor	0.028	0.034	0.062*	-0.026**	-0.022**	0.037***
	(0.024)	(0.023)	(0.032)	(0.011)	(0.011)	(0.014)
RDE	-0.520	-0.529	-0.196	0.026	0.024	0.369**
	(0.331)	(0.331)	(0.353)	(0.169)	(0.169)	(0.183)
Computer	0.007	0.005	0.011	-0.007	-0.006	-0.007

	(0.010)	(0.009)	(0.010)	(0.005)	(0.005)	(0.005)
GDP	-0.082	-0.069	-0.100	0.399***	0.397***	0.372***
	(0.059)	(0.059)	(0.062)	(0.037)	(0.038)	(0.039)
GE	-0.318	-0.275	0.556	-1.314***	-1.289***	-1.064***
	(0.479)	(0.477)	(0.546)	(0.261)	(0.260)	(0.281)
ReguQ	1.809***	1.748***	1.669***	0.535**	0.510**	1.016***
	(0.470)	(0.475)	(0.517)	(0.262)	(0.255)	(0.279)
Manufacturing		-0.240			0.000	
		(0.398)			(0.202)	
Manu*Δpart		0.215***			-0.039	
		(0.063)			(0.026)	
Manu* Δposit		1.114**			-1.442***	
		(0.563)			(0.412)	
RECP			4.072			7.026***
			(2.499)			(1.179)
Δpart* RECP			-0.098***			-0.012
			(0.033)			(0.019)
Δposit * RECP			0.124			-1.328***
			(0.565)			(0.384)
SSE * RECP			-0.057			-0.101***
			(0.046)			(0.019)
R&D * RECP			0.792			-0.450
			(0.837)			(0.421)
computer*RECP			-0.023**			0.011
			(0.012)			(0.007)
GE* RECP			-1.318			0.466
			(1.667)			(1.116)
ReguQ* RECP			0.061			-3.654***
			(1.106)			(0.681)
Constant	-1.265	-1.778	-3.804	0.543	0.319	-3.945***
	(1.717)	(1.710)	(2.331)	(0.851)	(0.837)	(1.089)
Global Financial Crisis Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6526	6526	6526	6526	6526	6526
Time effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Country effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Sector effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Notice: Standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

Column 2 and Column 5 compares the servicification determinants in manufacturing and the other sectors. Deepening the participation in GVCs increases the domestic servicification of manufacturing sectors while reducing the use of domestic services in the other sectors, such as primary sectors. Countries with higher participation in GVCs also use more foreign service value added in the production. Upgrading in the GVCs will significantly improve the use of domestic services in manufacturing exports but reduces the foreign service value added share in manufacturing exports. The effects of GVC position upgrading is similar to the other sectors. The results indicate that countries participation and upgrading in the GVCs could improve the development of domestic services while declining the use of foreign services. And this is the reason why some OECD countries, which have relatively high participation and upstream position in the GVCs, make the strategy of reindustrialization. One of the aims of the policy is not to bring the low-end manufacturing back but to develop the domestic services embodied in high-end manufacturing industries.

The third and last column of Table 4 compares the factors of servicification in RECP countries and OECD countries. RECP countries with lower participation in GVCs have a higher level of domestic servicification, which is similar to the effect in OECD countries. But the GVC position upgrading has no significant effect on domestic servicification in RECP countries while having a significant negative impact on foreign servicification. Meanwhile, the human service capital has more significant effect on domestic servicification for OECD countries than RECP countries. The lack of service labour and poor quality of regulations increase the foreign servicification in RECP countries but has no significant effect on domestic servicification. But the OECD countries could get the higher level of domestic servicification and foreign servicification from better regulation quality or higher employment share of service workers. The reason mainly lies in the fact that most of RECP countries are lack of the institutional environment and service skills to produce services that could meet international standards used in manufacturing. In addition, the development of technology has improved the connectivity of RECP countries with the world, which decrease the domestic servicification but raise the level of foreign servicification in RECP countries.

5. Policy Discussions and Conclusion

It is widely recognized that services are playing an indispensable role in international trade and economic development in developed and developing countries. The current globalization, also described as the second unbundling with internationalization and fragmentation of production process across the world, is changing the production and trade pattern of services. From a value added perspective, services accounts for more than 60% of the world output with most of the services used as intermediates for production instead of trading directly. The increase of service value added share in economic activities, in particular for manufacturing sectors, is called servicification.

In this paper, we explore the trend of servicification in manufacturing sectors of Asian countries (RECP countries). The servicification in the paper is classified into two types according to the source of service value added, the domestic servicification and foreign servicification. The domestic servicification uses the share of domestic services value added in manufacturing exports as measurement, while the foreign servicification measures the share of using foreign service value added in domestic manufacturing exports. Our results indicate that RECP countries have a higher foreign servicification level, despite the slight decline in the domestic servicification, than that of OECD countries. We also observe a high relative advantage in services compared to manufacturing in RECP countries. And the importance of services in RECP countries has triggered a shift of value added from manufacturing to services activities in the region, which is confirmed by the "smile curve" that indicates an increasing servicification in Asia.

The emerging trend of servicification, especially for foreign servicification, has changed the way to set up industrial policies. The growing services in manufacturing provide a good strategy that using more services in manufacturing strengthen the competitiveness of domestic manufacturing industries. It indicates a possibility of the joint development of manufacturing and service industries at the same time. It also highlights the possibility to develop domestic manufacturing industries with foreign services. The importance of foreign servicification in manufacturing indicates that opening up service markets is essential to keep their manufacturing industries competitive for Asian countries. The implication is essential to reduce the service trade barrier in most Asian countries to have a better access to foreign services.

Our empirical model also identifies the role of GVC participation, GVC positions, technological and institutions in affecting the servicification. The more involvement in GVCs could shift the usage of domestic services to foreign services in manufacturing. Because participating in the GVC provide better access for manufacturing firms to the overseas market to get the foreign services. Our results also indicate that the upgrading in the position of GVC will improve the usage of domestic services in manufacturing sectors while reducing the foreign services in manufacturing. The results also indicate that the development of ICT (information and telecommunication technologies) will improve the level of servicification in manufacturing by reducing costs, improving transaction efficiency and increasing the tradability of services.

The results of our study indicate that the quality of institutions plays a significant role in the process of servicification in manufacturing. For OECD countries, the effectiveness of government has a significant effect on foreign servicification and insignificant on domestic servicification. However, the effectiveness of government in RECP countries is significantly negative for both domestic and foreign service activities. The results indicate that institutions in Asian countries tend to restrict the use of services in manufacturing sectors as compared to OECD countries, thereby indicating greater barriers for service liberalization in the region. The results also indicate that the improvements in the employment of service human capital have the positive effect on domestic service value added. It will shift the needs for foreign services with domestic services in manufacturing. Thus, increasing the share of service workers has a greater impact on domestic servicification in the global production value-chain. It is particularly important for Asian countries as there is a lack of clear policies to develop human capital and critical skills for global value chain activities in the region.

This paper contributes to the ongoing debate about the servicification in manufacturing for developing countries. It conveys an important implication that the high-value activities in manufacturing would be services instead of manufacturing itself. It also has great implications for the labour market where there will be a higher demand for skilled service workers in manufacturing sectors. In fact, technology or outsourcing may easily replace the traditional assembling workers in manufacturing. It is the high skilled service workers needed to add value to manufacturing industries. Our research also emphases the role of GVCs in improving servicification and points out that countries should engage more upstream activities in the GVCs to develop their domestic servicification. For developing countries, upgrading GVCs is

a good way to improve manufacturing structure as well as domestic services as a result of servicification. For developed countries, upgrading GVCs will bring the high-skilled service jobs in manufacturing sectors back to domestic countries, a trend called reindustrialization.

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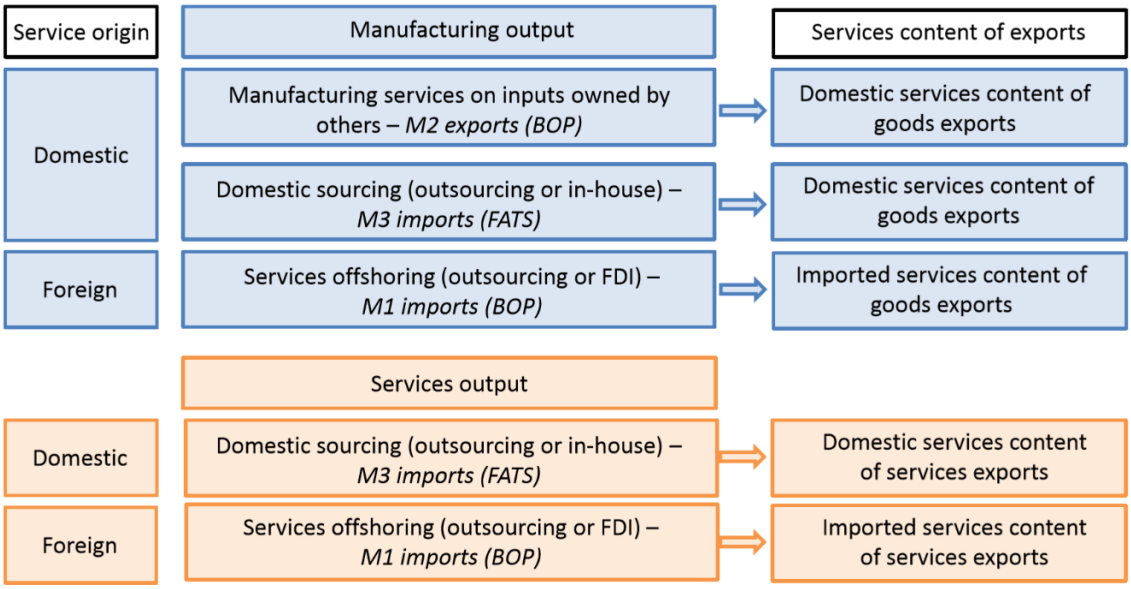
Appendix 1

The General Agreement on Trade Services (GATS) defined four modes of international service supply: cross border supply (mode 1), consumption abroad (mode 2), commercial presence (mode 3) and the presence of natural persons (mode 4). But it failed to capture service as inputs or intermediates, which is in very important in GVCs and trade patterns. As Figure 1A shows, services, which origin domestically or aboard, can be used as inputs for both manufacturing and service sector. The domestic supply of services could be either from domestic service companies or from local affiliates of foreign companies (Mode 3), which is called the domestic service content of goods. Also, manufacturers may also import service overseas, constructing the imported service content of goods. Similarly, the export of service sectors contains domestic service content and imported service content. Obviously, BOP can capture the direct cross-border service trade, but it fails to recognize indirect trade of services that embodied in goods export, let alone services content produced by the movement of labour (mode 4) and capital (mode 3).

Figure 1A the role of service in GVCs and trade patterns

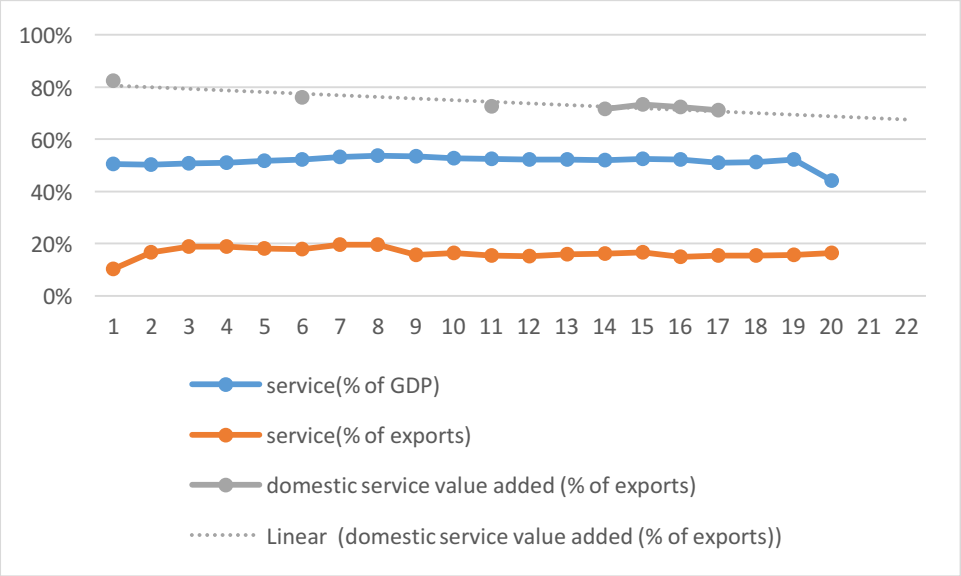


Source: From Lanz and Maurer(2015).

The international input and output tables create a multinational multi-industry framework that make it possible to trace the origin of value added in international trade. In the table, value added of service export thus could be estimated as the direct export of service and the indirect export of service embodied in goods. Furthermore, service supplied by foreign affiliates (Mode 3) could be measured as foreign value added in exports. Recent years have seen an emerging rise in international input and output database such as OECD TIVA database, WIOD database and JETRO AIIO database. In the paper, we will use the OECD TIVA database.

Figure 2A depicts the share of service in exports with conventional measurement and new value-added database. It is striking that the share of service value added reaches 70% of gross export in TIVA database compared to 20% in the BOP. It reveals the high proportion of service content in goods export that neglected by the conventional measurement. The vast service input used in manufacturing process has been described as "servicification" of manufacturing, also termed as "servicizing" or "manuservice" (Elms & Low,2013).

Figure 2A: The share of service from GDP, Trade and GVCs' perspective



Source: Data from OECD TIVA (2015) database and calculated by the author.

Appendix 2

Table A1: Baseline Results for RECP countries (Fixed Effects)

	DSVA	FSVA	DSVA	FSVA	DSVA	FSVA
GVC Participation	-0.155***	0.228***	-0.217***	0.357***	-	-
	(0.036)	(0.013)	(0.049)	(0.042)		
GVC Position	3.156***	-6.123***	-	-	3.808***	-7.187***
	(0.452)	(0.199)			(0.745)	(0.431)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Global Financial Crisis Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	468	468	468	468	468	468
Time effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Sector effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Country effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Notice: Standard errors in parentheses; Control variables as at Table 1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$