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《Chapter 3》 FDI, Trade, Global Value Chains and Excahnge Rates Regimes

The Involvement in Global Value Chains and its Policy Implication: Evidence of Vietnam

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Abstract This article examines the involvement pattern in global value chains (GVCs) with its policy implication in Vietnam, in comparison with those of the other Asian countries, by using the OECD value-added-trade data. The study first identifies the "smile curve" as the average pattern of the Asian GVCs development paths in total manufactures, in which the domestic value share to exports declines at the early development stage and regains itself at the later stage with the turning point being at 1,972 US dollars as per capita GDP. The study then finds that the Vietnamese economy stood at the critical position in its GVCs development path, such that the Vietnamese current per capita GDP is very close to 1,972 US dollars, the Asian average turning point in total manufactures. The sectoral analysis in Vietnam also implies that sophisticated manufacturing sectors needs to be transformed from only assembling activities toward developing domestic capacities to produce parts and components. The government policies in Vietnam thus matter to nurture local productive capacities, and the "enterprise clustering" and "linkages development" should be the key strategies to facilitate technological transfers from international firms to local ones in line with the GVCs involvement.

Keywords Global value chains, Vietnam, Value-added-trade data, Manufactures, Local productive capacities

JEL Classification F14, L60, O53

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1 Introduction

The global value chains (hereafter GVCs) have been one of the driving forces for the economic growth in East Asia over the past two decades. According to UNCTAD (2013), namely, the World Investment Report 2013[4], the GVCs are characterized by the fragmentation of production processes and the international dispersion of tasks and activities among the economies with diversified development stages. The fragmentation theory, proposed by Jones and Kierzkowski (1990, 2005), tells us that a firm's decision on whether to fragment its production processes depends on the differences in location advantages (e.g. the differences in factor prices like wages) and the level of the service-link costs for linking fragmented production processes. The large differences in factor prices and the low service-link costs encourage a firm to facilitate its fragmentation behavior. In this context, East Asia seems to have the greatest momentum for the GVCs to spread over its area, since East Asia includes a variety of economies with different factor prices under different development stages and has made policy efforts to reduce the service-link costs through its infrastructure development. In this sense, East Asia can be said to be the most suitable area for the GVCs, and the GVCs extension and deepening have actually contributed to the economic growth and the greater convergence among the economies in East Asia (see e.g. Kimura, 2006).

Vietnam is not an exception as an economy involved in the GVCs extension. Since the Vietnamese economy has been classified into the latecomers in the ASEAN economies in terms of the lower per capita GDP and wage level, it has been an attractive target for foreign manufacturing industries to relocate their production processes with labor-intensive activities, thereby having accepted a lot of foreign direct investments during the recent decades. In fact, the participation in the GVCs has facilitated the Vietnamese economic growth and has accelerated its catch-up momentum toward the ASEAN forerunner economies such as Malaysia and Thailand.

From the long-term perspective, however, the GVCs participation in the form of labor-intensive production activities will not necessarily make the Vietnamese economy sustain its economic growth. As Gill and Kharas (2007) argued in the context of "middle-income trap", the growth strategies based on factor accumulation are likely to deliver steadily worse results, which is a natural occurrence as the marginal productivity of factor inputs declines. The heavy dependence on labor inputs for growth through the GVCs participation would simply lead to the "diminish returns" from them. Now that the Vietnamese economy has joined the middle-income group since 2009[5], it might encounter the danger of "middle-income trap", as long as the economy stuck to the labor-intensive activities in the GVCs involvement. There comes the necessity for the Vietnamese economy to transform its structure from factor-driven growth to

4 The World Investment Report was published by the United Nations Conference on Trade and Development (UNCTAD). See the website below: http://unctad.org/en/pages/DIAE/World%20Investment%20Report/WIR-Series.aspx.

5 It is based on “Income Classifications” by World Bank: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519.

productivity-driven one through industrial upgrading. In the context of the involvement in GVCs, while the Vietnamese economy accepts foreign investors in its manufacturing activities, it should upgrade its domestic productive capacities by obtaining technological transfers from foreign investors.

This article examines how the Vietnamese economy has been involved in GVCs and discusses its policy implication, in comparison with those of the other Asian countries by using the OECD value-added-trade data[6]. The value-added-trade data developed recently by several organizations enable us to identify the contributions of domestic and foreign value added embedded in grow exports. By using this data, UNCTAD (2013) and Taguchi (2014) described the development paths of GVCs for the host economies as follows: the initial stage of GVCs participation reduces domestic value-added contribution to exports through depending on the imports of intermediate goods for exporting processed goods, but the domestic value added share for exports is restored at a later stage of GVCs involvement with expanding and upgrading domestic productive capacities including the production of parts and components. The purpose of this article is to clarify what position the Vietnamese economy now stays at in this development process of GVCs, and the policy implication to realize its industrial upgrading. The study also demonstrates the Vietnamese position by total manufactures and individual manufacturing sectors that are classified into eight categories such as food products, textile products, wood products, chemical products, metal products, machinery, electrical equipment, and transport equipment.

The rest of the paper is structured as follows. Section 2 reviews previous studies on the economic impacts of GVCs in Asian countries and clarifies this study's contribution. Section 3 represents the empirical evidence on the GVCs development paths in Asian economies and clarifies the position of the Vietnamese economy as well as its policy implication. Section 4 summarizes and concludes.

2 Literature Review and this Study's Contribution

This section reviews previous studies on the economic impacts of GVCs in Asian countries and clarifies this study's contribution. There have been rather a plenty of literature on the "firm and industry level" analyses of GVCs impacts through some kinds of case studies. Picking up some examples, Nadvi et al. (2004) traced how Vietnamese garment and textile firms are inserted into global garment and textile value chains, and examined how the nature of insertion into global value chains leads to differentiated gains for state-owned and private enterprises, and for textile and garment workers. Lee and Gereffi (2013) examined how the GVCs of mobile phone manufacturing has changed the dynamics of trade, production and value creation in developing countries, and how those dynamics have affected the social upgrading of workers in GVCs in terms of employment and wages; and finally found that GVCs participation has a significant impact in terms of generating employment, but a limited impact on wage increase. Backer

6 See the website of OECD Stat.: https://stats.oecd.org/.

(2011) examined the distribution of value added within GVCs focusing on China, but referred only to the commonly cited study of the Apple iPod, showing that the actual value added in China - that from the pure assembly of parts and components imported from Japan, U.S. and Korea, represented a fraction of the final retail price in the U.S..

Another category of the discussion on the GVCs participation effect is the "smile curve" hypothesis with a focus on the value creation in production processes involved in GVCs. The concept of the smile curve was initially proposed by Stan Shin, the founder of Acer. Shin (1996) argued that in the case of personal computer industry, both ends of the value chain (concept/R&D, and sales/after service) create higher value added to the product than the middle part of the value chain (manufacturing), by describing the shape of a smile with a vertical axis for value added and a horizontal axis for value chain. This smile curve logic has been widely used mainly in case studies of individual firms. Ye, et al. (2015) applied this concept to an industry-level analysis by using the World Input-Output Tables for 1995-2011. Their analysis targeted exports of electrical and optical equipment from China and Mexico and exports of automobiles from Japan and Germany and identified the existence of the smile curve with a vertical axis for value added and a horizontal axis for a distance between producers and consumers along global value chains.

The literature on the "country" level analyses of GVCs impacts has, on the other hand, been scarce probably because such analytical instruments as value-added-trade have been just recently developed by several organizations. It was UNCTAD (2013) that addressed, for the first time, the country level analyses of GVCs impacts in the comprehensive angles by utilizing the UNCTAD-Eora value-added-trade data[7]. Chapter IV of UNCTAD (2013) demonstrated the GVCs economic impacts in terms of local-value capture, job creation, technology dissemination as direct effects as well as of upgrading and building long-term productive capabilities as indirect effects. We herein pick up two major analytical outcomes related to the country-level contributions of domestic value added in GVCs participation. First, a statistical analysis of GVCs participation and per capita GDP growth rates showed their significant and positive relationship for both developed and developing economies, even while GVCs participation requires higher imported contents. Second, the combinations of GVC participation and domestic value-added creation, derived from value-added trade patterns of 125 developing countries over 20 years, suggested that there might be a set of distinct "GVCs development paths" in host countries participating GVCs; some economies have managed, often after participating GVCs at the cost of domestic value share to exports, to regain the domestic value share, by upgrading within GVCs and by expanding into higher-value chains, as in the Philippines, Malaysia, and Thailand.

Taguchi (2014) applied the aforementioned county-level analyses of GVCs effects in UNCTAD (2013) to Asian developing economies for the reason that Asia can be the area which has the greatest potential for GVCs to spread all over the area. In addition, Taguchi (2014) modified the analysis of "GVCs development

7 The UNCTAD-Eora database was built by UNCTAD in collaboration with the Eora project.

paths" into much more sophisticated way as estimating a non-linear, quadratic curve in the relationship between domestic value-added share to exports and development stage (per capita GDP) so that the regaining point of domestic value share to exports could be identified in the dynamic GVCs participation process. The analysis covered the samples of the discrete four years (1995, 2000, 2005 and 2008) for eight Asian economies on eight-categorized manufacturing sectors as well as total manufactures, based on the data available in the OECD value-added-trade data. The findings of the study were summarized as follows. First, an economy's participation in GVCs in manufacturing sectors allowed an absolute domestic value added for exports to push up GDP growth, which was consistent with the first outcome above in UNCTAD (2013). Second, the GVC development path in terms of the combination between domestic value-added share to exports and per capita GDP followed the non-linear "smile curve". Third, the turning points of smile curves differed according to manufacturing sectors: the sectors of machinery, electrical, and transport equipment reached the turning point at the higher per capita GDP than those of food, textile, and wood products.

This study contributes to updating the empirical analysis of the GVCs development paths, namely, the "smile curve" presented by Taguchi (2014). To be specific, this study samples the annual data from 1995 to 2014 so that the smile curve can be estimated more accurately than that of Taguchi (2014) with the discrete sample of 1995, 2000, 2005 and 2008. This study also examines the position of the Vietnamese economy in the smile curve and extracts the policy implication, through investigating total manufactures and eight-categorized manufacturing sectors.

3 Empirical Evidence

This section first confirms the hypothesis of the GVCs development paths, provides the empirical evidence on the updated GVCs development paths in Asian economies and clarifies the position of the Vietnamese economy as well as its policy implication.

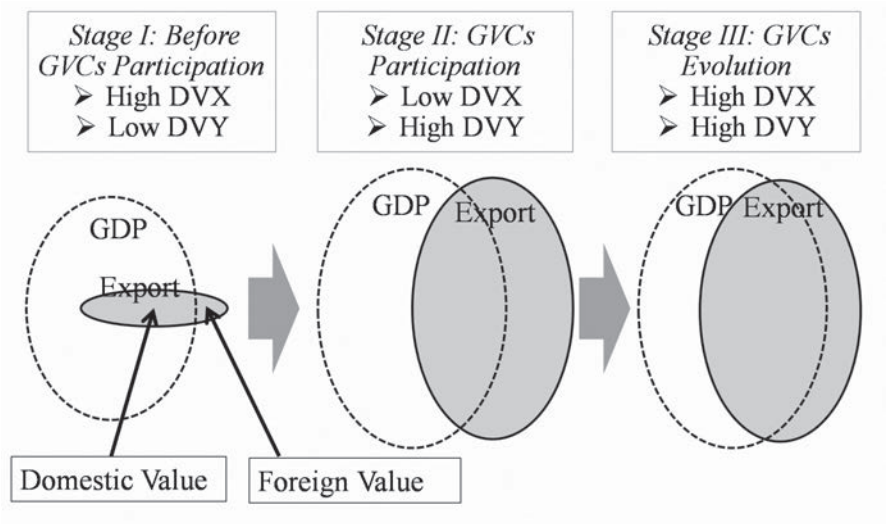
3.1 Hypothesis of GVCs Development Paths

We herein confirm the hypothesis behind the GVCs development paths based on Taguchi (2014). Figure 1 illustrates the dynamic evolution process of domestic value-added creation for GVCs participants. DVX and DVY represent "domestic value added as a share of gross exports" and "domestic value added in exports as a ratio of GDP", respectively.

At the early stage before GVCs participation, an economy stays at high DVX and low DVY, in which most of the exports are domestically produced and their contribution to GDP is small. When an economy participates in GVCs, it moves to the stage with low DVX and high DVY, since an economy's production for its exports has to depend highly on imports of parts, components, and machinery from foreign countries, whereas the absolute production value for exports contributes a lot to GDP expansion. At the matured

stage of GVCs involvement, an economy can enjoy a combination of high DVX and high DVY; its production for exports continues to contribute to GDP growth, and at the same time, the dependence on imports of intermediate goods for exports declines due to the expansion of domestic productive capacities.

Fig.1 Hypothesis behind GVCs Development Paths



Note: DVX denotes domestic value added as a share of gross exports, and DVY denotes domestic value added in exports as a ratio of GDP.
Source: Author's description based on Taguchi (2014)

The process of enhancing local productive capacities may involve a number of mechanisms. First, the key exporting industries that are often developed by foreign investors may provide opportunities for local industries to participate in GVCs, which will lead to generating additional domestic value added through local outsourcing within and across industries. Second, local industries may contribute to producing and supplying parts and components by obtaining technological transfers from the key exporting industries and foreign investors, which will help local economies develop and consolidate their supporting industries. Third, the key exporting industries including supporting industries themselves attain their industrial upgrading through technology dissemination and skill building, which improves their productivity and facilitates their entries and expansions towards higher valued sectors. In particular, the latter two mechanisms could be a significant momentum to transform local economic structures from "thin" industrialization with low-value-added tasks and activities towards "thick" industrialization with high-valued production, thereby contributing to avoiding "middle-income trap". It should be noted that these development paths are not always realized automatically and its achievements differ according to the characteristic of the GVCs and the involved economies. Government policies also matter to optimize the economic contributions of GVCs participation and involvement. When we focus on the evolution process of

DVX in the GVCs development hypothesis, the DVX would follow not one-off moves but such a sequence of moves as high, low and high ones along development process, thereby creating the "smile curve".

3.2 Data and Methodologies

For estimating the GVCs development paths in Asian economies, the following two variables are targeted for the estimation. One is "domestic value added as a share of gross exports (DVX)" in manufacturing sectors, representing domestic productive capacities to produce export goods. The other is "per capita GDP (PCY)", denoting the development stage of local economies. The data of DVX are retrieved from OECD value-added-trade data, and those of PCY are from World Economic Outlook Database (WEO) October 2017 of International Monetary Fund (IMF)[8] by the series of "Gross domestic product per capita, current prices, U.S. dollars".

The OECD value-added-trade data confine the sample period, countries and manufacturing sectors as follows. The data are divided into the series of "Trade in Value Added (TiVA) - December 2016" for 1995-2011, and those of "TiVA Nowcast Estimate" for 2012-2014. The sample period should thus be for 1995-2014 by combining these two series. The sample countries focus on Asian eight economies available in the OECD data: Cambodia, China, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam. The sample manufacturing sectors are composed of the following eight categories as well as total manufactures: "Food products, beverages and tobacco (hereafter food products)", "Textiles, textile products, leather and footwear (textile products)", "Wood, paper, paper products, printing and publishing (wood products)", "Chemicals and non-metallic mineral products (chemical products)", "Basic metals and fabricated metal products (metal products)", "Machinery and equipment, nec. (machinery)", "Electrical and optical equipment (electrical equipment)" and "Transport equipment". In sum, we construct panel data with eight Asian countries for 1995-2014 in each of eight manufacturing sectors and total manufactures. The data for DVX and PCY are converted into natural logarithm form for the estimation to avoid the heteroskedastic in the error terms.

Before conducting the VAR model estimation, we investigate the stationary property of each data by employing a panel unit root test. For the test, we adopt the Levin, Lin and Chu unit root test (developed by Levin et al., 2002), which assumes that the parameters of the series lagged are common across cross-sections. We specify the test equation by containing "individual intercept" and "individual intercept and trend", and by adopting automatic lag length selection. The test result in Table 1 showed that all the data were stationary at conventional significant levels when the equation focuses on the one containing "individual intercept and trend". The data is thus justified for a panel estimation.

Based on the panel data, the association between DVX and PCY will be examined by a quadratic equation as well as a linear one, so that the applicability of the "smile curve" can statistically be compared

8 See the website: http://www.imf.org/en/data.

with that of linear correlation.

Table 1 Unit Root Test for DVX and PCY

	Unit Root Test (Levin, Lin & Chu Test)	
	Individual intercept	Individual intercept & trend
PCY	1.891	-2.846 ***
DVX		
Total manufactures	-4.016 ***	-2.487 ***
Food products	-3.278 ***	-2.880 ***
Textile products	-1.649 **	-1.453 *
Wood products	-2.574 ***	-2.104 **
Chemical products	-3.109 ***	-1.544 *
Metal products	-2.991 ***	-3.908 ***
Machinery	-3.801 ***	-5.012 ***
Electrical equipment	-3.832 ***	-2.804 ***
Transport equipment	-2.332 ***	-3.761 ***

Note: DVX denotes domestic value added as a share of gross exports, and PCY denotes per capita GDP. ***, **, * denote the rejection of the null hypothesis at the 99%, 95% and 90% level of significance.

Source: Author's estimation based on OECD value-added-trade data and World Economic Outlook Database of International Monetary Fund

In all cases, a fixed-effect model is applied in the panel estimation. From the statistical perspective, it is usual that the Hausman-test statistics (see Hausman, 1978) is utilized for the choice between a fixed-effect model and a random-effect one. This study, however, placed a premium on the existence of exogenous factors that are supposed to affect the domestic value added share to exports. For instance, non-time-varying factors such as political system, institutional quality, technology-absorbing capacity, and economic strategies might differ widely among the sample economies, and these country-specific factors might also be correlated with the domestic value added share to exports. Insofar as these factors cause the error term to be correlated among the sample economies for the given sample period, pooled cross-section estimates that ignore this correlation would lead to an inefficient estimation. To capture those factors that are not randomly distributed among the sample economies, a fixed-effect model is adopted for all the estimations in this study.

3.3 Empirical Evidence on Updated GVCs Development Paths

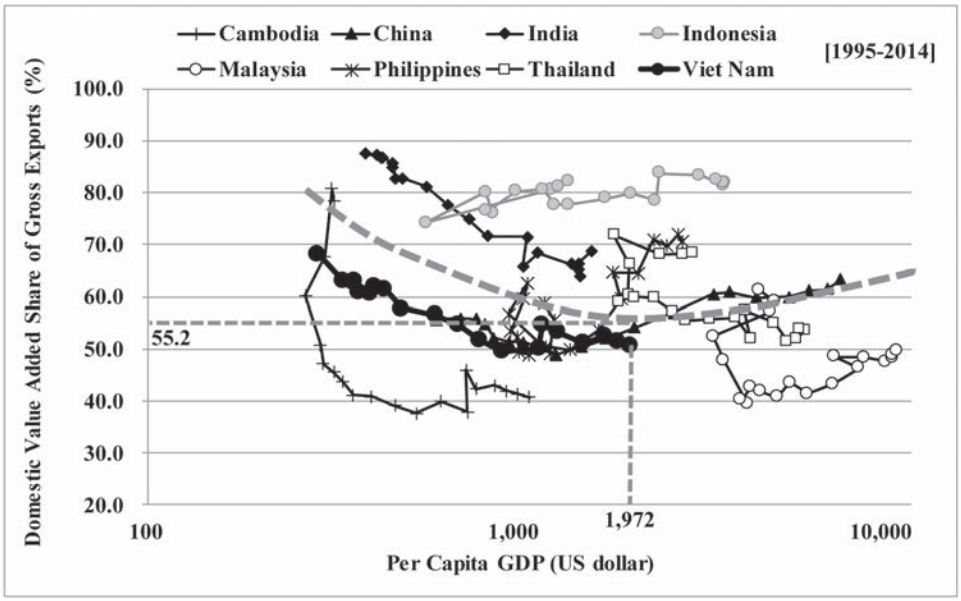
Table 2, Table 3 and Figure 2 represent the estimation outcomes on the GVCs development paths on total manufactures and eight manufacturing sectors.

Table 2 Estimation on Total Manufactures

Variales	DVX	DVX
Const.	4.250 ***	7.760 ***
	(22.629)	(13.741)
PCY	-0.024	-0.988 ***
	(-0.935)	(-6.392)
PCY^2		0.065 ***
		(6.180)
Turning Point USD (share %)		1,972 (55.2)
Adj R^{**2}	0.721	0.748
Sample size	160	160

Note: DVX denotes domestic value added as a share of gross exports, and PCY denotes per capita GDP.
***, **, * denote the rejection of the null hypothesis at the 99%, 95% and 90% level of significance.
Source: Author's estimation based on OECD value-added-trade data and WEO of IMF

Fig.2 GVCs Development Path on Total Manufactures



Source: OECD value-added-trade data and WEO of IMF

Focusing on the case of total manufactures in Table 2 and Figure 2, the estimation by a linear equation shows that the coefficient of PCY is insignificant. On the other hand, the estimation by a quadratic equation indicates that the coefficient of PCY is significantly negative; the one of a square of PCY is significantly positive; and the turning point in PCY is in a reasonable level of PCY, namely, 1,972 US dollars with DVX being 55.2%. This means that the U-shaped smile curve is clearly identified while the linear correlation is not valid, as the GVCs development path of Asian economies. This outcome seems to be consistent with Taguchi (2014), although there is some difference in the turning point of per capita GDP. It could also be observed from Figure 2 that such forerunners as Malaysia, China, Thailand, Indonesia, and the Philippines are already passing the turning point by regaining DVX, whereas such latecomers as Cambodia, India, and Vietnam are still staying at the declining phase of DVX, during their GVCs participation.

Regarding the analysis of eight manufacturing sectors in Table 3, the quadratic estimation shows that the coefficients of PCY are significantly negative; the ones of a square of PCY are significantly positive, and the turning points represent the reasonable levels, in all sectors. On the other hand, in the linear estimation, the coefficients of PCY are insignificant at the 95 % level except for only the cases of wood products and transport equipment. The association between DVX and PCY can, therefore, be said to follow the smile curve in all manufacturing sectors.

The smile curves differ, however, in their shapes and turning points according to sectors in the following ways. First, the PCYs in their turning points range from 1,241 to 3,223 US dollars. For instance, the PCYs in textile products (1,533) and food products (1,643) are below the average, while those in metal products (3,223) and transport equipment (2,781) are above the average. Second, the DVXs in their turning points also have a wide range from 44.9 to 79.5 percent. The DVXs in food products (79.5) and wood products (68.1) are above the average, whereas those in electrical equipment (44.9) and machinery (50.5) are below the average. It can roughly be argued that the sectors depending on local resources, such as textile and food products, tend to have the lower per capita GDP and the higher domestic-value share to exports in their turning points, whereas the sectors depending on sophisticated technologies and long production processes, such as metal products and transport equipment, are inclined to have the higher per capita GDP and the lower domestic-value share to exports in their turning points.

From the perspective of individual Asian economies, Table 3 displays some variety in the locational positions of smile curves among manufacturing sectors. In the textile products, for instance, all of the economies except Cambodia already pass the turning point in their smile curves. In the metal products, on the other hand, only the smile curves of Malaysia, China, Thailand, and Indonesia go through the turning point whereas the others still stay at the stage before the turning point.

To sum up, in total manufactures, the smile curve in which the domestic value share to exports declines at the early stage and regains itself at the later stage is clearly identified with the turning point being at 1,972 US dollars as per capita GDP and at with 55.2% as domestic value share to exports. Looking at the eight-categorized manufacturing sectors, the sectors depending on sophisticated technologies,

compared with those depending on local resources, reach the turning point at the higher per capita GDP with the lower domestic value share to exports, so that a half of individual economies does not pass the turning point.

3.4 Vietnamese Position in GVCs Development Path and its Policy Implication

This section clarifies the position of the Vietnamese economy in the GVCs development paths and extracts its policy implication. Focusing on total manufactures in Figure 2 again, Vietnam now stands at the critical position such that its per capita GDP in 2014, 2,049 US dollars, is very close to the Asian average turning point, 1,972 US dollars. This means that Vietnam faces the branching-off point on whether the domestic value share to exports regains itself or continues to decline since the smile curve is not necessarily realized automatically as was mentioned before. On that point, the government policies to enhance domestic productive capacities matter to keep the smile curve.

Looking at each manufacturing sector, the Vietnamese positions are various and roughly summarized as follows: food products and textile products already pass the average turning point and the textile products particularly enters the phase of regaining the domestic value share to exports; wood products and chemical products nearly reach the turning point and start to regain domestic value share to exports; metal products and transport equipment are far behind the turning point and still stay at the declining phase of domestic value share to exports; and machinery and electrical equipment already pass the average turning point of per capita GDP but still continue to have domestic value share to exports declines. The Vietnamese positions in each manufacturing sector imply that the government needs to take double-track actions in its GVCs involvement: to consolidate the recovery of domestic value share to exports in the sectors depending local resources such as food and textile products by the maximum use of local productive capacities, and to transform domestic value share to exports into its regaining phase in the sectors depending on sophisticated technologies such as machinery and transport equipment through obtaining technology transfers intensively from foreign investors.

The Vietnamese positions in the GVCs involvement can be illustrated by another angle, i.e., the degree of development in supporting industries in manufacturing sectors. Figure 3 compares the trade structure of precision machinery and textile products between Vietnam and Thailand. Focusing on precision machinery in Vietnam in terms of trade value, the import of intermediate goods including parts and components has been slightly exceeding the export of final goods, while both have been in increasing trends[9]. It is in clear contrast to the case of Thailand where the export of final goods has been clearly exceeding the import of intermediate goods. It implies that Vietnam has less domestic capacities to produce parts and components due to the underdevelopment of supporting industries in the transportation equipment sector. Regarding the textile sector, on the other hand, the export of final goods has been more

9 It should be noticed that the import of intermediate goods is used not only for the export of final goods but also for their domestic selling.

Table 3 Sectoral Estimation on Manufactures

	Food		Textile		Wood		Chemical	
Const.	4.393 ***	5.236 ***	4.217 ***	5.773 ***	4.621 ***	6.758 ***	4.320 ***	6.654 ***
	(89.886)	(27.228)	(36.038)	(9.896)	(55.182)	(17.073)	(35.078)	(16.114)
PCY	-0.000	-0.232 ***	-0.001	-0.434 ***	-0.047 ***	-0.643 ***	-0.032 *	-0.668 ***
	(-0.071)	(-4.413)	(-0.093)	(-2.713)	(-4.184)	(-5.918)	(-1.934)	(-5.912)
PCY2		0.015 ***		0.029 ***		0.040 ***		0.042 ***
		(4.372)		(2.714)		(5.504)		(5.527)
Turning Point USD (share %)		1,643 (79.5)		1,533 (65.3)		2,667 (68.1)		2,556 (56.3)
Adj R**2	0.855	0.863	0.792	0.800	0.679	0.731	0.836	0.849
Sample size	160	160	160	160	160	160	160	160
Countries passing tuning point		Vietnam Phillipines Indonesia Thailand China Malaysia		India Vietnam Phillipines Indonesia Thailand China Malaysia		Phillipines Indonesia Thailand China Malaysia		Phillipines Indonesia Thailand China Malaysia
	Metal		Machinery		Electrical		Transport	
Const.	4.240 ***	5.939 ***	4.170 ***	7.502 ***	3.681 ***	6.614 ***	4.290 ***	5.828 ***
	(28.400)	(11.732)	(31.470)	(11.970)	(21.754)	(8.642)	(38.720)	(11.109)
PCY	-0.032	-0.490 ***	-0.025	-0.954 ***	0.023	-0.788 ***	-0.033 **	-0.459 ***
	(-1.578)	(-3.539)	(-1.427)	(-5.544)	(1.037)	(-3.753)	(-2.228)	(-3.189)
PCY2		0.030 ***		0.063 ***		0.055 ***		0.0278**
		(3.213)		(5.419)		(3.865)		(2.950)
Turning Point USD (share %)		3,223 (52.4)		1,818 (50.5)		1,241 (44.9)		2,781 (55.0)
Adj R**2	0.826	0.824	0.794	0.828	0.784	0.797	0.775	0.781
Sample size	160	160	160	160	160	160	160	160
Countries passing tuning point		Indonesia Thailand China Malaysia		Vietnam Phillipines Indonesia Thailand China Malaysia		India Vietnam Phillipines Indonesia Thailand China Malaysia		Phillipines Indonesia Thailand China Malaysia

Note: DVX denotes domestic value added as a share of gross exports, and PCY denotes per capita GDP.
***, **, * denote the rejection of the null hypothesis at the 99%, 95% and 90% level of significance.
Source: Author's estimation based on OECD value-added-trade data and WEO of IMF

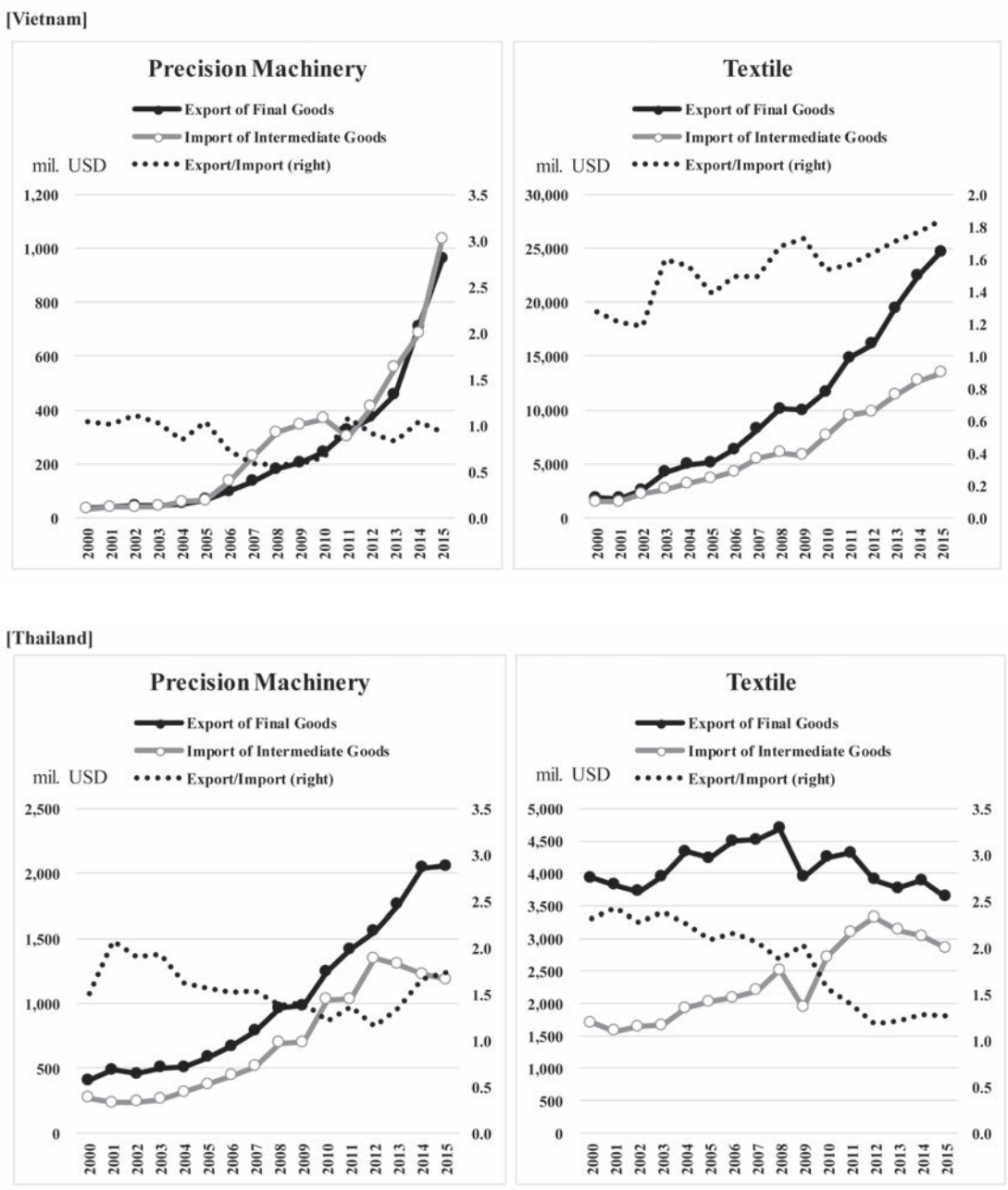
than the import of intermediate goods in Vietnam as well as in Thailand. As for its export-import ratio, that of Vietnam even exceeds that of Thailand. This evidence also suggests the needs for the sectors depending on sophisticated technologies to be transformed from only assembling activities toward developing domestic capacities to produce parts and components.

The serious question then arises on how to nurture local productive capacities in sophisticated manufacturing sectors in the context of the GVCs involvement in Vietnam. UNCTAD (2013) proposed the following key strategies as well as such general policies as workforce skills development, for building domestic productive capacities of developing economies: "enterprise clustering" and "linkages development". The enterprise clustering enables the local small and medium-sized enterprises (SMEs) to enjoy "collective efficiency" to enhance their productivity with clustered firms. The linkage development provides the local SMEs with the necessary externalities for successful participation in GVCs as first, second, or third-tier suppliers. These two strategies in line with the GVCs involvement facilitate technological transfers from international firms to local ones, thereby contributing to enhancing the local productive capacities even in sophisticated manufacturing sectors. Kuchiki (2005, 2008) also emphasized the significance in industrial cluster policy for promoting economic restructuring.

Another aspect to enhance domestic value added in sophisticated manufacturing sectors is the resource allocation on research and development (R&D) expenditure. Figure 4 shows that in the R&D expenditure as a percentage of GDP, Vietnam and the other sample economies are far behind the average of OECD economies, and even in the lower position than the average of middle-income economies except for China and Malaysia. Hence comes the necessity for Asian emerging market economies to facilitate R&D for domestic value creation in exports.

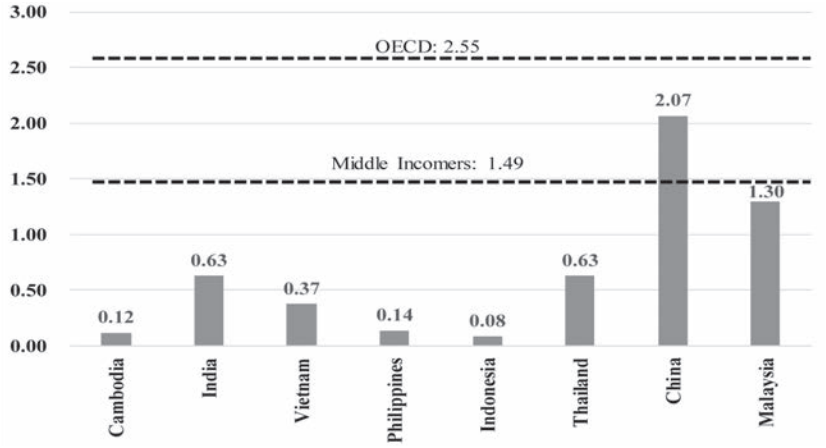
The Vietnamese Government has so far promoted enterprise agglomeration by setting up special economic zones and inviting foreign and local investors. In particular, since 2011 the government has established legal frameworks to foster supporting industries in the area such as machinery, transport equipment, and electronic products: customs duty exemption for high-tech importing goods, preferential corporate tax for specific industries, financial support for R&D and human resource development, etc. These policies should be reviewed from the viewpoint of enhancing local productive capacities.

Fig.3 Comparison in Trade Structure between Vietnam and Thailand



Source: RIETI-TID2015: http://www.rieti-tid.com/

Fig.4 Comparison in Research and Development Expenditure (% of GDP)



Source: World Bank Open Data: https://data.worldbank.org/

4 Concluding Remarks

This article examined the involvement pattern in GVCs with its policy implication in Vietnam, in comparison with those of the other Asian countries, by using the OECD value-added-trade data. The study first identified the "smile curve" as the average pattern of the Asian GVCs development paths in total manufactures, in which the domestic value share to exports declines at the early development stage and regains itself at the later stage with the turning point being at 1,972 US dollars as per capita GDP. Regarding the sectoral analysis, the sectors depending on sophisticated technologies and long production processes, such as metal products and transport equipment, tended to reach the turning point at the higher per capita GDP with the lower domestic value share to exports, compared with the sectors depending on local resources, such as textile and food products.

The study then found that the Vietnamese economy stood at the critical position in its GVCs development path, such that the Vietnamese current per capita GDP is very close to 1,972 US dollars, the Asian average turning point in total manufactures, thereby facing the branching-off point on whether the domestic value share to exports regains itself or continues to decline. The sectoral analysis in Vietnam also implied that sophisticated manufacturing sectors need to be transformed from only assembling activities toward developing domestic capacities to produce parts and components. The government policies in Vietnam thus matter to nurture local productive capacities, and the "enterprise clustering" and "linkages development" should be the key strategies to facilitate technological transfers from international firms to local ones in line with the GVCs involvement.

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