JOURNAL OF ECONOMIC DEVELOPMENT 81
Volume 47, Number 2, June 2022

DOMESTIC SHARE OF VALUE-ADDED AND THE DEVELOPMENT OF PRODUCTION CAPABILITIES OF LOCAL FIRMS WITHIN GLOBAL VALUE CHAINS

WOOCHEOL LEE

RMIT University, Vietnam

It is controversial whether the increase in the share of value-added created by developing economies has resulted from the upgrade of their production capabilities. This paper, using the trade data of Vietnam, estimates the weighted *sectoral* income elasticities of demand for exports over the period 1997-2017 and collates the weighted *sectoral* domestic share of value-added over the period 2005-2015. This paper finds the following. Firstly, the rise of exports demand in high value-added sectors happened. Secondly, the aggregate domestic share of value-added continued to decrease in Vietnam. Finally, the weighted domestic share of value-added the high-tech and the mid-tech sector grew at a slower speed than the weighted foreign value-added. The findings suggest that engaging in global value chains has not led to the upgrade of production capabilities of local Vietnamese firms.

Keywords: Domestic Share of Value-Added, Trade in Value-Added, Global Value Chains, Upgrade of Production Capabilities, Vietnam
JEL Classification: F14, F64

1. INTRODUCTION

Global value chains (GVCs) have become indispensable in international trade over the last two decades and a great number of economies and firms have unprecedentedly participated in GVCs. The key aspects of GVCs can be expressed by the 'fragmentation' and 'regionalization' of production process (Humphrey, 2019).[1] The key aspects have

[1] The fragmentation of production process does not simply mean the reallocation of some fabrication tasks but does include many other tasks such as R&D, design, sales and marketing, and consumption and recycling (Lee and Gereffi, 2015, p.321).

partly been derived from the strategic countermeasures of transnational corporations (TNCs) against their profit squeeze. This movement has enhanced the incorporation of local indigenous firms (LIFs) in developing economies (DEs) into GVCs. A recent OECD report states that 70% of international trade is produced through GVCs and their foreign affiliates accounted for 31% of global exports and 28% of global imports in 2014 (Cadestin et al., 2019, p.10).

Given the increasing engagement of LIFs in GVCs, it has become one of key issues in the study of GVCs whether this has led to the upgrade of the production capabilities of LIF that participate in GVCs. An optimistic and widely accepted view is that LIFs are likely to enhance and upgrade their production capabilities by participating in GVCs. For they can access and learn knowledges and technologies through the collaboration with TNCs within GVCs (Pietrobelli and Rabellotti, 2011). As a result, they can move to upper positions within GVCs. Advocates of free trade emphasize this optimistic virtuous circle.

Alternatively, some argue that upgrading production capabilities is not readily available for DEs because of various reasons. Neo-Schumpeterian and evolutionary economists argue that the upgrading demands a length of time and a combined innovation system to embody transmitted knowledges (Fagerberg, Lundvall and Srholec, 2018; Nelson and Winter, 1982). Biological evolutionary game theory predicts that asset owners (TNCs) win over intruders (LIFs) in an asymmetric game (Smith, 1982). TNCs strategically control their assets not to transfer more than required to partner LIFs (Bernard and Ravenhill, 1995; Hart-Landsberg and Burkett, 1998; Kaplinsky, Morris and Readman, 2002).

An increasing number of empirical studies on the impact of GVCs use value-added data in their discussion. It is reported that the share of global value-added trade captured by DEs increased from about 20% to over 40% between 1990 and 2010 (UNCTAD 2013, p. 133); the value-added share of developed economies in global manufactures fell from 74% to 56%, whereas that of DEs increased by 18% (Timmer, Erumban, Los, Stehrer and de Vries, 2014).

The empirical evidence can be read in various ways. One may say it supports the optimistic viewpoint as the share of value-added of DEs rapidly increases. Yet, other may interpret it differently by arguing that the share of value-added also increases when LIFs conduct an increasing volume of low value-added tasks. The second view point suggests that the engagement in GVCs probably has made LIFs carry extended scope of fabrication task without development of production capabilities. Those ambivalent viewpoints can become clearer by conducting a sectoral analysis. This paper categorized industries into five sectors following (Lall, 2000): primary product (PP), resource-based (RB), low-tech (LT), medium-tech (MT), and high-tech (HT).

Furthermore, most of existing studies of GVCs focus on the supply side of GVCs by including value-added data in the analyses. What DEs export and sell in the global market is the demand side of GVCs and should be included in the analysis. To consider the supply side, this paper collated the weighted sectoral domestic share of value-added

(DVA) of Vietnam from the OECD Trade in Value-added database (TiVA) 2018 edition. On the other hand, to consider the demand side, this paper estimated the weighted sectoral income elasticities of demand for exports (EEs) from the UN COMTRADE database over the period 1997-2017 for Vietnam.

The paper finds the following. The demand side evidence shows that the significance of high value-added sector increased in Vietnam. This suggests that Vietnam produces and sells more high value-added products in the world market year by year. On the other hand, the supply evidence shows that the aggregate DVA decreased in Vietnam. The weighted sectoral DVAs imply that it is doubt that the upgrade has been underway in Vietnam. The findings suggest that upgrading production capabilities cannot be done immediately soon after joining GVCs. Instead, it requires accumulated experience in production and learning-by-production.

The remaining part of this paper is structured as follows. It reviews existing discourse on the matter of upgrading production capabilities in DEs from various viewpoints in Section 2; explains the estimation model for the weighted sectoral EEs, the measurement for the weighted sectoral DVA, and data collection in Section 3; explains the outcome of estimation and discusses the upgrade in Vietnam in Section 4; followed by concluding remarks in Section 5.

2. THE RISE OF GVCS AND THE UPGRADE OF DES

2.1. Profit Squeeze, Financialization and the Rise of GVCs

The rise of GVCs has happened over the last few decades along the sweeping wave of free trade and globalization. Tradeable goods, instead of being produced in an integrated mode of production, are produced through fragmented production processes that are carried out globally and then they are concentrated into few regions to finish up the processes and to be delivered to the global market.

These changes have resulted from a tightened squeeze on profits. The profit squeeze has unprecedentedly been strengthened due to the dominance of maximizing shareholder value in global capitalism. Financialization and offshoring having been chosen by TNCs as a response to the profit squeeze gave rise to the rapid expansion of GVCs (Auvray and Rabinovich, 2017; Bogliacino, Guarascio and Cirillo, 2018; Demir, 2009; Milberg and Winkler, 2013; Orhangazi, 2008).

Financialization is a trend that the growing influence of financial forces and financial markets on non-financial companies has made the cash flows of them increasingly dependent upon financial investment (Crotty, 2003; Orhangazi, 2008). Non-financial TNCs have transferred their earnings to financial markets rather than to physical investment (Stockhammer, 2004) and cause the fall in real investment in the economies that TNCs are headquartered (Clévenot, Guy and Mazier, 2010; Krippner, 2005; Lee and Kim, 2019). In contrast, the offshore production facilities of TNCs have been expanded

as TNCs have kept core tasks such as R&D and design onshore (Gereffi, Humphrey and Sturgeon, 2005; Lee and Gereffi, 2015).[2]

The correlation among the shareholder value maximization, the profit squeeze, the financialization and offshoring of TNCs suggests that the strongest motivation of TNCs that manipulate GVCs probably is saving the costs of production, marketing, and shipping. They strategically choose production bases considering those factors and the regionalization is predictable. The position of partner LIFs within GVCs is likely to be an entity that carries simple tasks that LIFs can quickly learn and embody. Therefore, it is not surprising if the transfer of technology from TNCs to LIFs would happen up to this extent.

2.2. The Upgrade of Production Capabilities of DEs and GVCs

Like TNCs have steered GVCs to serve their best interests, LIFs also decide to participate in GVCs to serve their best interests given TNCs' designs. They can access unprecedented opportunities without developing a full set of building bloc such as product design, marketing and R&D by themselves (Baldwin, 2013). This would be important asset for LIFs that can be used for the upgrade of their production capabilities. This is a typical snapshot of a virtuous circle that mainstream neoclassical economic models emphasize. In these models, it is supposed that engaging in GVCs is a win-win game for all participants and that the upgrade of production capabilities of DEs is ancillary achievable.

Yet, we do not have had many cases supporting this viewpoint. Fagerberg et al. (2018) argue that the participation in GVCs itself, measured by the foreign value-added in country's export, does not explain faster economic growth from the sample of 125 countries over the period 1997-2013. Critics argue that these models ignore the complicated nature of learning and transferring of technologies between TNCs and LIFs. Channels that LIFs can learn advanced technologies from GVCs include technology licensing, reverse engineering, labor mobility, information and knowledge exchanges with suppliers and buyers, learning by exporting, and foreign direct investment (FDI) spillover (Barba Navaretti and Venables, 2004; Lall, 1996). There are various hindrances that LIFs would encounter over the course of the upgrade. TNCs not only determine how financial, material, and human resources are allocated flow within GVCs (Gereffi, 1994) but play highly sophisticated strategies against LIFs by controlling firm-specific assets such as technological know-why as well as regulating and limiting technology diffusion (Bernard and Ravenhill, 1995; Hart-Landsberg and Burkett, 1998; Kaplinsky et al., 2002; Machado, 1999).[3]

[2] This task reshuffling has weakened the negotiation power of the working class in developed economies. As a result, the income distribution has been deteriorated and the wage of low-skilled worker is stagnant (Durand and Miroudot, 2015; Feenstra and Hanson, 1999; Foster-McGregor, Stehrer and de Vries, 2013).

[3] One recent event happened in Vietnam during the COVID-19 Pandemic demonstrates this situation

Furthermore, TNCs tend to outsource activities where there is or where they can create competition among LIFs (Pietrobelli and Staritz, 2018) or they discourage, if not obstruct, design, marketing and branding by LIFs as their upgrading implies an infringement of TNCs' core competence (Bazan and Navas-Alemán, 2004; Giuliani, Pietrobelli and Rabellotti, 2005). As a result, LIFs are likely to be locked in a specific technology, which deters further development of technological capabilities (Chang and Andreoni, 2020). The upgrade of production capabilities of LIFs is continuously challenged. As a result, it is overlooked that TNCs and LIFs are likely to capture benefits unequally from participating GVCs.

Given limited sectoral data for DEs, there are key empirical studies this paper refers to. de Vries, Chen, Hasan, and Li (2019) explain the premature deindustrialization observed in Asia by using Asian Development Bank's multi-regional input-output (MRIO) table between 2000 and 2011. They estimate the impact of the upgrade on the job market in 11 Asian countries. They observe that the upgrade has extended upstream and downstream service activities such as R&D and sales and marketing within GVCs relative to fabrication activities and argue that this change in the job market has led to the premature deindustrialization in Asia. One important argument of them is that "technological change lowered demand for fabrication workers relatively much more compared to workers involved in upstream and downstream GVCs activities in all Asian countries" (ibid., p.34), which suggests that the upgrade does not necessarily increase the DVA as the labor-saving technology is often installed by TNCs.

Timmer et al. (2014) analyze the World Input-Output Database (WIOD) and find out four trends in GVCs. 1) international fragmentation of production is expanding 2) more value added from high-skilled labor and capital 3) enhanced specialization in high-skilled labor in high-income countries 4) enhanced specialization in capital in emerging economies. These trends are compatible to uneven capture of benefits from the rise of GVCs. DEs and their LIFs have been doing low value-added tasks combined with imported advanced machines. They find that the value-added share of low-skilled workers decreased from 24% to 18% between 1995 and 2008. Interestingly, not only the value-added share of the mid-skilled and high-skilled workers but also that of capital in developing economies increased over the same period (ibid., p.112-113).

Tajoli and Felice (2018) examine how the participation in GVCs is correlated to the innovation performance of participants using the share of FVA in a country's gross exports and the offshoring index extracted from the World Input-Output Database (WIOD) in which 43 countries data are collated. They find that engaging in GVCs is

clearly. Because of the outbreak of COVID-19 in Daegu, South Korea, Samsung Electronics had to adjust their production line of LCD panels from Korea to Vietnam in which its one of the largest factories are located. No engineers were available in Vietnam to perform this task and few hundred engineers flew from Korea to Vietnam with their health certificate in hands to complete this task. The local factory in Vietnam plays an important role, but its functional role is limited to fabrication tasks which do not require highly skilled engineers.

positively correlated to a country's innovation outcome. They interpret this as evidence supporting that GVCs have functioned as a channel for international technology transfer from developed economies to DEs.

The findings and arguments of existing studies can be enhanced through a sectoral analysis that include both the demand side and the supply side of GVCs. The upgrade does not happen at the same speed in all sectors. From the examination of the sectoral share of value-added, the sectoral income elasticities of demand for exports, and their trajectories will help understand better the relationship between the upgrade and the participation in GVCs.

3. MODEL AND DATA

3.1. Data Collection

Vietnam is one the most dynamic DEs in the world whose economic growth has largely been relied on its exponentially growing exports. Its exports on average reach 55% of its GDP over the period 1986-2018. The highest share, 102%, was recorded in 2017. It becomes clearer when we compare Vietnam to other middle-income countries whose average is 24% and to other Asia and Pacific region countries whose average is 27%. same region.

Commodities trade data are collected from the United Nations Commodity Trade Statistics Database (UN Comtrade) over the period 1997-2017. The values of trade are measured in the current US dollar (USD). They are deflated by using the export and import price index collected from the Statistical Yearbook of Vietnam. Real GDP data is collected from the World Development Indicators. Nominal exchange rate data is collected from the IMF's International Financial Statistics to calculate real exchange rates defined as the product of period average nominal exchange rates (the amount of Vietnamese dong per USD) and the ratio of the price level measured by consumer price index. The calculated aggregate real exchange rate is used as a proxy for the sectoral real exchange rate since the sectoral price index is not available.

As this paper aims to analyze at the sectoral level, the deflated trade data is sorted according to three-digit Standard International Trade Classification (SITC) Revision 2 and is grouped into five sectors: primary products (PP - raw food, cotton, and coal), resource-based manufactures (RB - processed food, beverages and processed minerals), low-technology manufactures (LT - textile and footwear), medium-technology manufactures (MT - automobiles, machinery and processing), and high-technology manufactures (HT - electronics and telecommunications) following the work of Lall (2000).

The value-added data is collected from the OECD's Trade in Value-Added (TiVA) Database for the period 2000-2015. As the industry classification of the TiVA data follows International Standard Industrial Classification (ISIC) Revision 4 in two-digit,

this paper regroups them to the five sectors above as follows: 01-09 to PP; 10-12, 16-18, 22-23 to RB; 13-15 to LT; 19-21, 24-25, 28-30 to MT; and 26-27 to HT.

3.2. Model Setting

This paper estimates the sectoral income elasticities of demand for exports by using a typical current account balance condition as follows:

$$P_t^d X_t = P_t^f M_t E_t, \tag{1}$$

where P^d denotes domestic prices of exports, P^f foreign prices of imports, X exports, M imports, E the nominal exchange rate measured as the amount of domestic currency per foreign currency unit, and t the time index. The export and import demand functions are assumed to be:

$$X_t = A\left(\frac{P_t^d}{P_t^f E_t}\right)^{\eta} Z_t^{\varepsilon},\ \eta < 0,\ \varepsilon > 0, \tag{2}$$

$$M_t = B\left(\frac{P_t^f E_t}{P_t^d}\right)^{\Psi} Y_t^{\pi},\ \Psi < 0,\ \pi > 0, \tag{3}$$

where η is the price elasticity of demand for exports, Z_t world real income, ε the income elasticity of demand for exports, Ψ the price elasticity of demand for imports, Y_t domestic income, and π the income elasticity of demand for imports. Meanwhile A and B are constants capturing other effects (Thirlwall, 2013).[4]

This paper employs the equations used in Gouvea and Lima (2010) to estimate parameters in Equation (2) as follows:

$$\ln X_t = \alpha \ln Y_t^* + a \ln RER_t, \tag{4}$$

$$\ln X_{it} = \beta_i \ln Y_t^* + b_i \ln RER_t, \tag{5}$$

where Y^* is world income, Y is domestic income, parameters (α, β, a and b) are elasticities, and the subscript i and t are the sectoral and time index each. For example,

[4] Post-Keynesians use the income elasticity of demand for exports to show that the economic growth of developing economies (DEs) is constrained by their exports demand. For example, DEs that have higher income elasticity of demand for imports compared to its income elasticity of demand for exports would face a shortage of foreign exchange which are supposed to be spent to purchase capital goods from abroad, so that their growth is constrained by their balance of payments condition (Thirlwall, 1979). Hence having high income elasticities in exports demand in the high value-added sectors is critical for DEs to achieve sustainable economic growth.

an aggregate income elasticity of demand for exports of Vietnam can be estimated from Equation (4) and a sectoral income elasticity of demand for exports of the HT sector of Vietnam can be estimated from Equation (5).

For the stationarity of time series data is required to estimate the parameter, this paper performs a unit root test first by adopting the augmented Dickey-Fuller (ADF) test based on the Schwarz criterion (SC). The test results indicate that I(0) and I(1) processes are mixed in the data series. Consequently, this paper employs an autoregressive distributed lag model (ADRL) with an error correction term that can be used under the coexistence of I(0) and I(1) processes. The ARDL model used for the estimation of a sectoral export demand function is

$$\Delta lnX_{it} = b + \sum_{k=1}^{K} c_k \Delta lnX_{it-k} + \sum_{k=1}^{K} d_k \Delta lnY^*_{t-k} + \sum_{k=1}^{K} e_k \Delta lnRER_{t-k} + \rho_1 lnX_{t-1} + \rho_2 lnY^*_{it-1} + \rho_3 \ln RER_{t-1} + \epsilon_t. \quad (6)$$

This paper conducts the Bounds test developed by Pesaran, Shin, and Smith (2001) to check cointegration relations exist among the series. If series are cointegrated, we can not only avoid the spurious regression problem (Engle and Granger, 1987; Granger and Newbold, 1974) but assume that there is a long-run relationship among variables in the regression equations. Lag orders of the ARDL models are chosen based on the model stability and the residual diagnostics. The former is tested by the Ramsey RESET test, the CUSUM test, and the CUSUM square test, and the latter by the Jarque-Berra normality test, the Breusch-Godfrey serial correlation Lagrange multiplier (LM) test, and the Breusch-Pagan-Godfrey heteroscedasticity test.[5] All chosen ARDL models pass the Bounds test, which indicates that there is a long-run relationship among the variables. No chosen ARDL model fails to pass the three stability tests at the time. Almost all chosen ARDL model pass the residual tests. Three chosen ARDL models fail to pass the normality test even under higher model lag orders.

4. ESTIMATION RESULTS AND DISCUSSION

As explained above, the weighted sectoral income elasticity of demand for exports (EEs) is a proxy used to measure the demand side of GVCs. A typical interpretation for a higher weighted sectoral EE is that this sector faces high demand in the world market. This paper assumes that the main export items of Vietnam would shift from low value-added products to high value-added ones if any upgrade in production capabilities has occurred.

[5] The full estimation results, model stability test results, and residual test results are readily available upon request.

The supply side of GVCs is measured by the weighted sectoral share of value-added in the exports of Vietnam kept by domestic firms (DVA) or by foreign-invested firms (FVA). It is supposed that the upgrade would result in a continuous increase in DVA because the upgrade would make LIFs undertake the tasks creating more value-added instead of carrying out simple fabrication under the supervision of TNCs. It also is expected to see the rising share of the so-called high-technology sectors. The MT and HT sectors in this paper belong to this. For the upgrade would make these sectors more significant within the economy.

4.1. Changes in the Weighted Sectoral EEs: The Demand Side of GVCs

The estimates of the sectoral EEs are reported in Table 1.[6] The estimates of four sectors out of five are significant at the 5% level and the size of coefficients are considerably large. For example, when there is a one percent increase in world income the export of the HT sector in Vietnam would increase by 3%. Similarly, the MT sector 7.7%, the LT sector 5%, and the RB sector 5.5%. The export of the PP sector would also increase by 0.6% but it is not statistically meaningful. It can be understood that the export of the PP of Vietnam might not be influenced by the changes in world income.

Table 1. Estimated Sectoral Income Elasticities of Demand for Exports of Vietnam

Country	Sector	Variable	Coefficient	t-Statistics	p-value
Vietnam	HTX	LOG(WGDP)	3.150	60.276	0
	MTX	LOG(WGDP)	7.752	12.813	0
	LTX	LOG(WGDP)	5.132	11.150	0
	RBX	LOG(WGDP)	5.585	6.523	0
	PPX	LOG(WGDP)	0.674	0.799	0.435

Notes: The bold numbers indicate that they are significant at the 5% level.

The highest coefficient is reported in the MT sector followed by the RB sector, indicating that goods belonging to these sectors face the strongest demand in the global

[6] Equation (5) includes both income elasticities and price elasticities of demand for exports. In general, the income factor measured in world real income is far greater significant than the price factor measured in real exchange rates in explaining the exports of each country – two cases out of fifteen are significant at the 5% level. This implies that the exports growth of each country has largely been affected by foreign income rather than by relative price adjustments. This paper does not use the price elasticities and they are not reported in Table 1 because that result is not the main interest of this paper.

market or that these sectors that have a comparative advantage. Main products belonging to the MT sector are machinery and equipment and those to the RB sector are processed foods, crude oil and gas, and tobacco. The implication of the sectoral EEs become clearer when they are considered together with the sectoral shares in the exports over the time. As Figure 1 demonstrates, the significance of the PP sector rapidly decreased over the last 20 years, whereas that of the HT sector rapidly rose. One may speculate that there has been upgrade in this sector in Vietnam. Nonetheless, the key indicator representing the upgrade of production capacity is the domestic share of value-added. Therefore, what we can conclude from Figure 1 is that Vietnam began to export the products belonging to the HT sector more and the product belonging to the PP sector less over the last two decades. This is the demand side interpretation of the export of Vietnam.

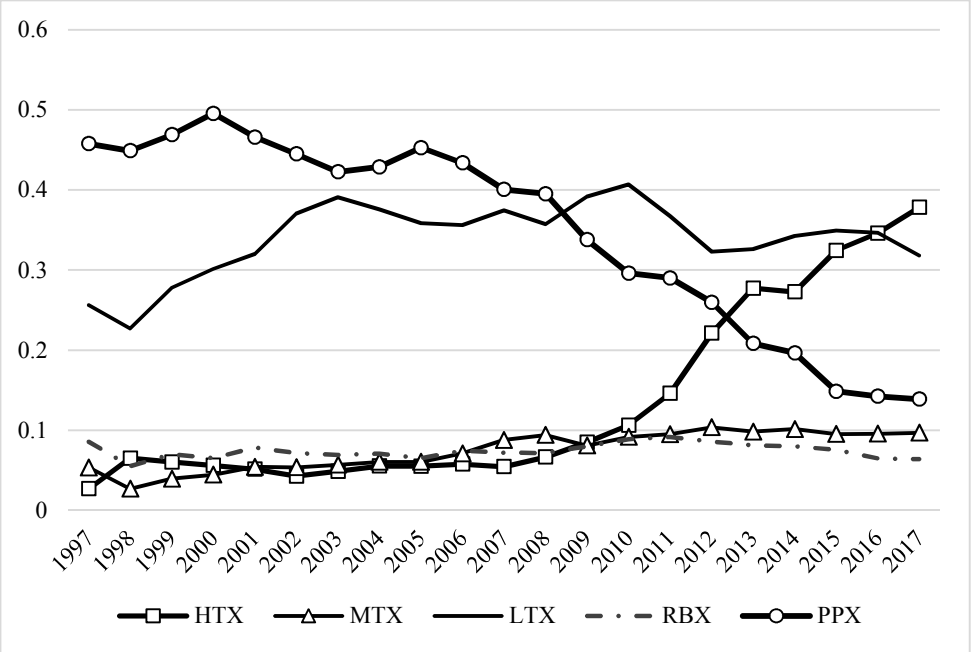
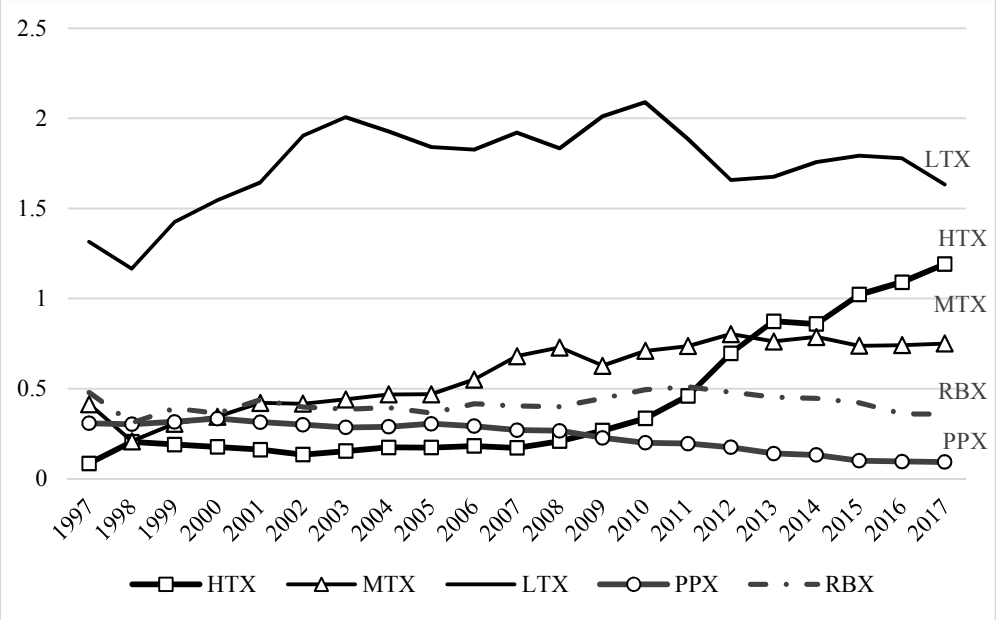


Figure 1. The Share of Each Sector in the Exports of Vietnam, 1997-2017

Figure 2 displays the weighted sectoral EEs that are calculated by multiplying the sectoral EEs and the sectoral share. The significance of each sector is exaggerated if its share in the export is greater and if its export elasticity is bigger. The outcome is not different from Figure 1. The PP sector declined, and the HT sector rose. Figure 2 reveals that the most important sector in the export of Vietnam is the LT sector in which garments and footwear are included. Nonetheless, the tail shows a declining trend since

2016 whereas that of the HT sector was about to jump. From these two figures, it can be said that Vietnam faced an increasing demand for the product belonging to the LT sector and the HT sector over the last two decades and the demand for the LT sector recently began to fall.



Notes: The shaded area indicates the period covered by the TiVA database 2018.

Figure 2. Weighted Sectoral Income Elasticity of Demand for Exports of Vietnam, 1997-2017

4.2. Changes in the Weighted Sectoral Domestic Value-Added Share (DVA): The Supply Side of GVCs

We can examine the supply side of GVCs by analyzing sectoral value-added data. As predicted, Figure 3 shows that the share of value-added of the PP sector declined rapidly. Both the MT and the HT's value-added increased over the last decade. The LT sector dominated in the share of value-added. For it has been the main export sector of Vietnam. Figure 4 demonstrates the key measurement of this paper - the domestic share of value-added. Aggregate DVA, indicated by DVA, declined over the decade, implying that LIF took less and less proportion of value-added whenever they sell their goods to foreign countries. In other words, foreign-invested firms had taken more and more proportion of value-added over the same period. A general trend we can observed from

sectoral DVA is not different from the aggregate DVA. The DVAs in all sectors had reduced. Striking outcome is found in the HT sector. We examined that Vietnam faces increasing demand for the products belonging to the HT sector. As a result, it is expected that the LIFs in Vietnam are likely to take more share of DVA or at least to maintain it. On the contrary, the LIFs Vietnam in the HT sector had failed to do this. This suggests that the nature of tasks that the LIFs of Vietnam do in the HT sector is mostly likely simple assembly in which cheap labor plays the most important role.

Another important aspect is that the highest DVA is recorded in the PP sector, followed by the RB sector. Both sectors are often referred to as low-technology industries. Roughly speaking, the LIFs in Vietnam in terms of DVA play an important role in low-technology industries but not in high-technology industries. This paper presumes that the LIFs are likely to take more share of value-added if there were upgrade in production capabilities, which we fail to observe. The examination of the supply side of the GVCs suggests that the LIFs in Vietnam in general has been not successful in upgrading their production capabilities. Particularly, the matter is more serious in the HT sector. Furthermore, it should be noted that the weighted FVA grew significantly faster compared to the weighted DVA in these sectors, implying that TNCs took a greater proportion of the value created from the exports.

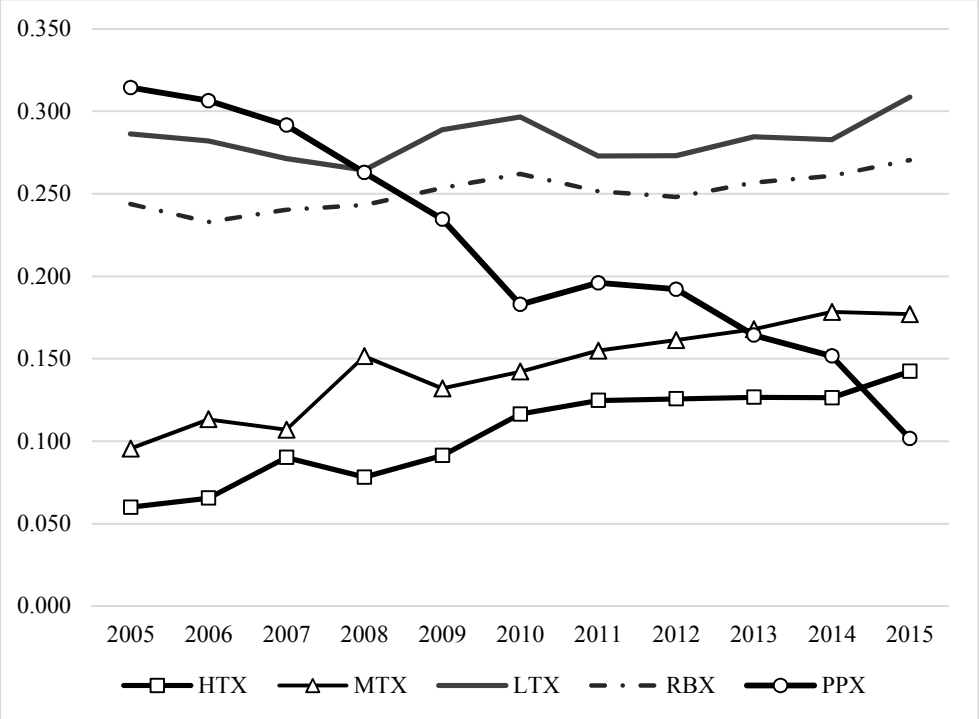


Figure 3. Sectoral Share of Value-Added in the Exports of Vietnam, 2005-2015

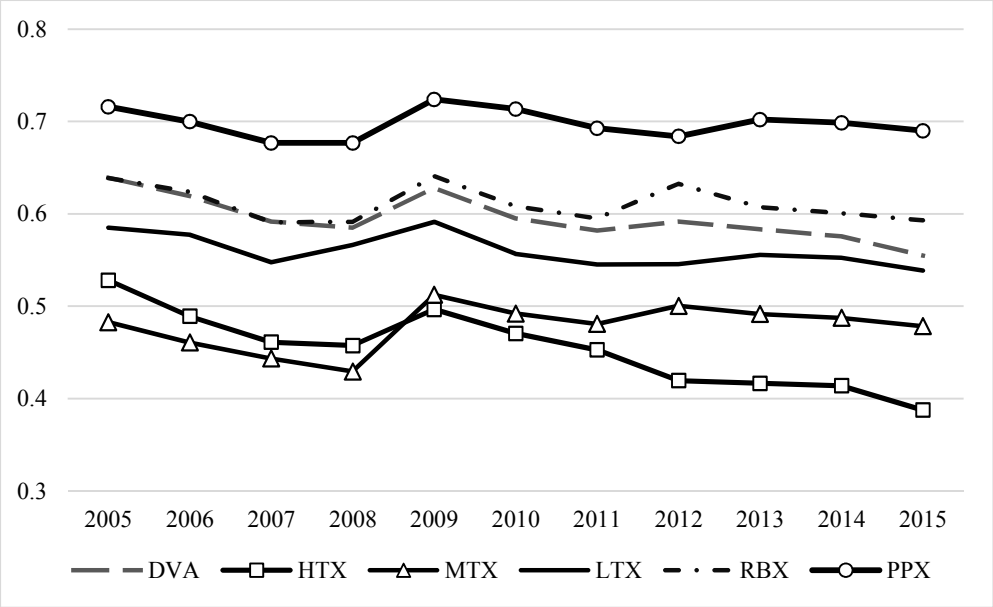
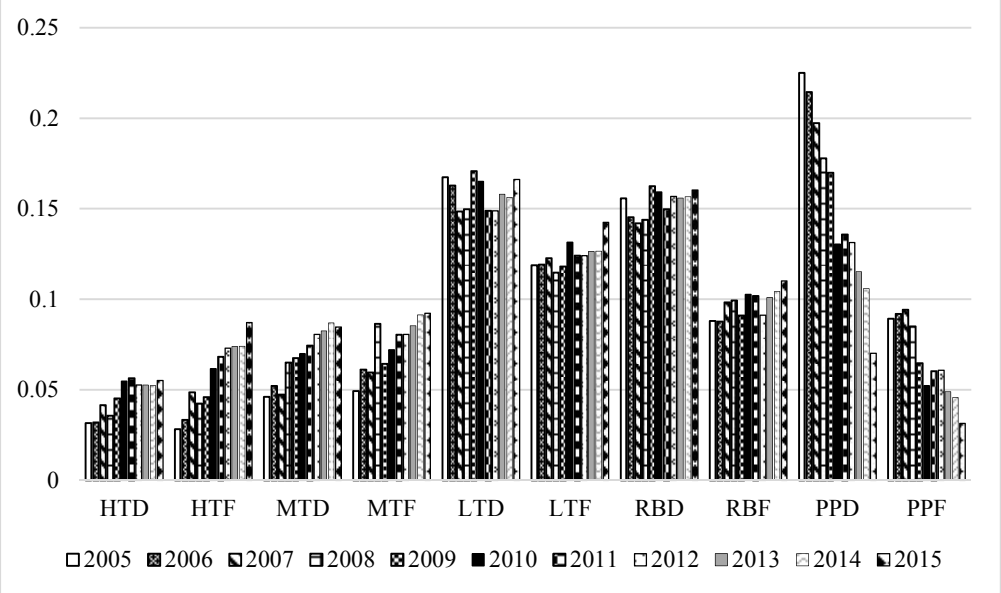


Figure 4. Share of DVA in the Exports of Each Sector in Vietnam, 2005-2015



Notes: HTD indicates the DVA in the HT sector and HTF the FVA in the HT sector. Other sectors are named in the same way.

Figure 5. Changes in the Weighted Sectoral DVA and FVA in Vietnam, 2005-2015

The weighted sectoral DVAs and FVAs, shown in Figure 5, provide us a slightly different aspect. Unlike Figure 4, the weighted sector DVAs show an increasing trend in the HT and the MT sector. Nonetheless, the FVAs in both sectors are still higher than the DVAs and the FVAs increased faster than the DVAs. The plunge of the PP sector is as noticeable as the increase of the HT sector.

4.3. Has the Participating in GVCs Enabled the Upgrade in Vietnam?

As this paper presumes that the upgrade in production capabilities would switch the sector that records a high EE from a low value-added sector to a high value-added one. The demand side data (see, Figure 2) shows that the expected switch happened in Vietnam since 2009. This switch can be the evidence for the upgrade is in progress. Yet, we need to be cautious of the fact that this switch was certainly related to TNCs' investment projects. For example, there was a great amount of investment by Korean, Japanese and the US invested firms in the MT and the HT sector. This ambiguous interpretation leads the author to consider the supply side of GVCs.

Value-added share data (see, Figures 3, 4 and 5) reveals the following: TNCs dominated high value-added sectors in Vietnam; both the aggregate DVA and the sectoral DVAs decreased; and both the weighted DVA and the weighted FVA increased in the HT, the MT and the RB sector, but the weighted FVA increased considerably faster.

The key idea of this paper is that the upgrade in production capabilities is likely to raise the size of the aggregate DVA and that of the sectoral DVA in the MT and the HT sector, which we have failed to observe. This probably reflects the difference in learning of among these countries. Learning-by-doing and learning-by-production requires a considerable length of time to embody and materialize in terms of production capabilities. Vietnam has participated in GVCs a relatively short period compared to other Southeast Asian economies such as Malaysia and Thailand that have had enough time to enhance their production capabilities.

Finally, the weighted DVA and FVA of the HT sector continuously increased. This is partly related to the strategic decision of TNCs. The rise of the HT sector in Vietnam is largely explained by the movement of Japanese and Korean TNCs producing HT products and their suppliers. It should not be overlooked that they played a vital role in innovation whereas the R&D capability of LIFs were still low (Ngo, 2017; Rasiah, 2004).

5. CONCLUSION

This paper questions whether the participation of DEs in GVCs has led them to upgrade their production capabilities. Some argue that the upgrade is likely to be followed by engaging in freer trade and GVCs, and others argue that the upgrade

requires considerable time and efforts because TNCs strategically control the transfer of their assets including technology which is the main source of the upgrade. It is claimed that the increasing share of value-added of DEs in GVCs is the strong evidence for the upgrade of DEs. Yet, this can happen not because of the upgrade but because of the expansion of low value-added tasks in DEs. This paper conducts a sectoral analysis to fill this gap.

The examination of the weighted sectoral EEs as a measurement of the demand side of GVCs and the weighted sectoral DVAs as the supply side of GVCs reveals the followings. Firstly, the rise of a high value-added sector is observed in Vietnam. This indicates that the proportion of high value-added goods in their exports has continued to increase. This can be interpreted as the participation in GVCs has caused the upgrade in DEs. Yet, it is undeniable that the huge inflow of FDI in these countries lies at root of the rapid development of high value-added sectors.

The sectoral value-added data analysis enables this paper to identify whether LIFs could capture benefits from the learning in cooperation with TNCs within GVCs. The findings support the idea of this paper that joining GVCs is not sufficient to cause the upgrade in production capabilities of DEs. Firstly, TNCs are dominant in high value-added sectors as predicted. TNCs take the upper positions and LIFs the lower one within GVCs. Secondly, the aggregate DVA decreased over the last ten years. This suggests that the LIFs in Vietnam has conducted low value-added tasks. Learning-by-doing and learning-by-producing has probably been kicked off but it has not been visible yet.

Thirdly, in Vietnam, the DVA in the RB and the LT sector continued to fall. These two sectors are LIFs dominant sectors producing main export items such as processed foods, clothes, footwear, and furniture. The falling DVA in these sectors suggests that LIFs are unlikely to have achieved the upgrade over the last decade. This may be explained by the fact that Vietnam has been an assembly base within GVCs whose merit is largely from its comparative advantage in labor costs. For the same reason, it is skeptical to view the increase of DVA in the MT and the HT sector in Vietnam as the evidence for the upgrade. The size of DVA and FAV was nearly the same in both sectors in 2005. DVA grew less than two times whereas FVA did around three times for the next ten years (see, Figure 5). This supports the idea that the increase in the weighted DVA in the MT and the HT sector is probably the outcome of the expansion of fabrication tasks (Hollweg, Smith and Taglioni, 2017). The length of exposure to GVCs can matter as well because the upgrade requires time-consuming process of acquiring knowledge and skills and digesting them to lead to innovation and technological progress.

Analyzing only one country, the conclusion of this paper cannot be generalized without caution. Nonetheless, it would be worth including more countries and iterate the same analysis. In addition, this paper aims to measure the value-added taken by LIFs and TNCs, whose proxies are the DVA and the FVA. Unfortunately, it is possible that some foreign affiliates of TNCs that operate in a hosting country are included in DVA as domestic firms. Similarly, not all foreign firms are TNCs. Better methods or statistics

can be employed in a further study to improve the accuracy of measurement.

REFERENCES

Araujo, R.A. and G.T. Lima (2007), "A Structural Economic Dynamics Approach to Balance-of-Payments-Constrained Growth," *Cambridge Journal of Economics,* 31(5), 755-774.

Auvray, T. and J. Rabinovich (2017), "The Financialisation-offhsoring Nexus and the Capital Accumulation of U.S. Nonfinancial Firms," CEPN Working Papers, 2017(2).

Baldwin, R. (2013) "Global Supply Chains: Why They Emerged, Why They Matter, and Where They Are Going," in D. K. Elms and P. Low (Eds.), *Global Value Chains in a Changing World* (pp. 13-59), Geneva: WTO.

Barba Navaretti, G. and A.J. Venables (2004), *Multinational Firms in the World Economy*, Princeton: Princeton University Press.

Bazan, L. and L. Navas-Alemán (2004), "The Underground Revolution in the Sinos Valley: a Comparison of Upgrading in Global and National Value Chains," in H. Schmitz (Ed.), *Local Enterpriess in the Global Economy: Issues of Governance and Upgrading* (pp. 110-139), Cheltenham: Elgar.

Bernard, M. and J. Ravenhill (1995), "Beyond Product Cycles and Flying Geese: Regionalization, Hierarchy, and the Industrialization of East Asia," *World Politics,* 47(2), 171-209.

Bogliacino, F., D. Guarascio and V. Cirillo (2018), "The Dynamics of Profits and Wages: Technology, Offshoring and Demand," *Industry and Innovation,* 25(8), 778-808.

Cadestin, C., K.D. Backer, S. Miroudot, L. Moussiegt, D. Rigo and M. Ye (2019), "Multinational Enterprises in Domestic Value Chains," OECD Science, Technology and Industry Policy Paper, No. 63, Paris: OECD Publishing.

Chang, H.-J. and A. Andreoni (2020). "Industrial Policy in the 21st Century," *Development and Change,* 51(2), 324-351.

Clévenot, M., Y. Guy and J. Mazier (2010), "Investment and the Rate of Profit in a Financial Context: the French Case," *International Review of Applied Economics,* 24(6), 693-714.

Crotty, J. (2003), "The Neoliberal Paradox: The Impact of Destructive Product Market Competition and Impatient Finance on Nonfinancial Corporations in the Neoliberal Era," *Review of Radical Political Economics,* 35(3), 271-279.

de Vries, G., Q. Chen, R. Hasan and Z. Li (2019), "Do Asian Countries Upgrade in Global Value Chains? A Novel Approach and Empirical Evidence," *Asian Economic Journal,* 33(1), 13-37.

Demir, F. (2009), "Financial Liberalization, Private Investment and Portfolio Choice: Financialization of Real Sectors in Emerging Markets," *Journal of Development Economics,* 88(2), 314-324.

Durand, C. and S. Miroudot (2015), "Is Labour the Fall Guy of a Financial-led Globalisation? A Cross-country Inquiry on Globalisation, Financialisation and Employment at the Industry Level," *Review of World Economics,* 151(3), 409-432.

Engle, R.F. and C.W.J. Granger (1987), "Co-Integration and Error Correction: Representation, Estimation, and Testing," *Econometrica,* 55(2), 251-276.

Fagerberg, J., B.A. Lundvall and M. Srholec (2018), "Global Value Chains, National Innovation Systems and Economic Development," *European Journal of Development Research,* 30(3), 533-556.

Feenstra, R.C. and G.H. Hanson (1999), "The Impact of Outsourcing and High-Technology Capital on Wages: Estimates For the United States, 1979-1990," *Quarterly Journal of Economics,* 114(3), 907-940.

Felker, G.B. (2003), "Southeast Asian Industrialisation and the Changing Global Production System," *Third World Quarterly,* 24(2), 255-282.

Foster-McGregor, N., R. Stehrer and G. de Vries (2013), "Offshoring and the Skill Structure of Labour Demand," *Review of World Economics (Weltwirtschaftliches Archiv),* 149(4), 631-662.

Gereffi, G. (1994), "The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks," in G. Gereffi and M. Korzeniewicz (Eds.), *Commodity Chains and Global Capitalism* (pp. 95-122), WestPort and London: Praeger.

Gereffi, G., J. Humphrey and T. Sturgeon (2005), "The Governance of Global Value Chains," *Review of International Political Economy,* 12(1), 78-104.

Giuliani, E., C. Pietrobelli and R. Rabellotti (2005), "Upgrading in Global Value Chains: Lessons from Latin American Clusters," *World Development,* 33(4), 549-573.

Gouvea, R.R. and G.T. Lima (2010), "Structural Change, Balance-of-Payments Constraint, and Economic Growth: Evidence from the Multisectoral Thirlwall's Law," *Journal of Post Keynesian Economics,* 33(1), 169-204.

Granger, C.W.J. and P. Newbold (1974), "Spurious Regressions in Econometrics," *Journal of Econometrics,* 2(2), 111-120.

Hart-Landsberg, M. and P. Burkett (1998), "Contradictions of Capitalist Industrialization in East Asia: A Critique of "Flying Geese" Theories of Development," *Economic Geography,* 74(2), 87-110.

Hollweg, C.H., T. Smith and D. Taglioni (2017), *Vietnam at a Crossroads: Engaging in the Next Generation of Global Value Chains*, Washington, D.C.: World Bank.

Humphrey, J. (2019), *Global Value Chains*, Cheltenham: Edward Eglar.

Humphrey, J. and H. Schmitz (2002), "How Does Insertion in Global Value Chains Affect Upgrading in Industrial Clusters?" *Regional Studies,* 36(9), 1017-1027.

Kaplinsky, R., M. Morris and J. Readman (2002), "The Globalization of Product Markets and Immiserizing Growth: Lessons From the South African Furniture Industry," *World Development,* 30(7), 1159-1177.

Kim, J. and W. Lee (2016), "Firm's Investment, Financial Constraints and Ownership Structures: the Case of Vietnam," *Journal of Industrial Innovation,* 32(2), 177-200.

Krippner, G.R. (2005), "The Financialization of the American Economy," *Socio-Economic Review,* 3(2), 173-208.

Lall, S. (1996), *Learning from the Asian Tigers: Studies in Technology and Industrial Policy*, New York: Palgrave.

_____ (2000). "The Technological Structure and Performance of Developing Country Manufactured Exports, 1985□98," *Oxford Development Studies,* 28(3), 337-369.

Lee, J. and G. Gereffi (2015). "Global Value Chains, Rising Power Firms and Economic and Social Upgrading," *Critical Perspectives on International Business,* 11(3/4), 319-339.

Lee, W. and J. Kim (2019), "How Have Financialization and Offshoring Affected the Firm's Investment in Korea?," *Asian Pacific Journal of Business,* 10(3), 1-16.

Machado, K. (1999), "Complexity and Hierarchy in the East Asian Division of Labour: Japanese Technological Superiority and ASEAN Industrial Development," in Jomo K.S. and G.B. Felker (Eds.), *Technology, Competitiveness and the State: Malaysia's Industrial Technology Policies* (pp. 65-97), London: Routledge.

Milberg, W. and D. Winkler (2013), *Outsourcing Economics: Global Value Chains in Capitalist Development*, Cambridge: Cambridge University Press.

Nelson, R. and S. Winter (1982), *An Evolutionary Theory of Economic Change*, Cambridge, MA: Harvard University Press.

Ngo, C.N. (2017), "Local Value Chain Development in Vietnam: Motorcycles, Technical Learning and Rents Management," *Journal of Contemporary Asia,* 47(1), 1-26.

Orhangazi, Ö. (2008), "Financialisation and Capital Accumulation in the Non-Financial Corporate Sector:A Theoretical and Empirical Investigation on the US Economy: 1973–2003," *Cambridge Journal of Economics,* 32(6), 863-886.

Pesaran, M.H., Y. Shin and R.J. Smith (2001), "Bounds Testing Approaches to the Analysis of Level Relationships," *Journal of Applied Econometrics,* 16(3), 289-326.

Pietrobelli, C. and R. Rabellotti (2011), "Global Value Chains Meet Innovation Systems: Are There Learning Opportunities for Developing Countries?," *World Development,* 39(7), 1261-1269.

Pietrobelli, C. and C. Staritz (2018), "Upgrading, Interactive Learning, and Innovation Systmes in Value Chain Interventions," *European Journal of Development Research,* 30(3), 557-574.

Rasiah, R. (2004), "Technological Intensities in East and Southeast Asian Electronics Firms: Does Network Strength Matter? *Oxford Development Studies,* 32(3), 433-455.

Smith, J.M. (1982), *Evolution and the Theory of Games*, Cambridge: Cambridge University Press.

Stockhammer, E. (2004), "Financialisation and the Slowdown of Accumulation," *Cambridge Journal of Economics,* 28(5), 719-741.

Tajoli, L. and G. Felice (2018), "Global Value Chains Participation and Knowledge Spillovers in Developed and Developing Countries: An Empirical Investigation," *European Journal of Development Research,* 30(3), 505-532.

Thirlwall, A.P. (1979), "The Balance of Payments Constraint as an Explanation of International Growth Rate Differences," *Banca Nazionale del Lavoro Quarterly Review,* 32(128), 45-53.

Thirlwall, A.P. (2013), *Economic Growth in an Open Developing Economy: The Role of Structure and Demand*, Cheltenham, UK: Edward Elgar Publishing.

Timmer, M.P., A.A. Erumban B. Los, R. Stehrer and G.J. de Vries (2014), "Slicing Up Global Value Chains," *Journal of Economic Perspectives,* 28(2), 99-118.

United Nations Conference on Trade and Development (UNCTAD) (2013), *World Investment Report 2013 - Global Value Chains: Investment and Trade for Development*, New York and Geneva: United Nations.

Mailing Address: Woocheol Lee, RMIT University Vietnam, Department of Economics and Finance, 702 Nguyen Van Linh, District 7, Ho Chi Minh City, Vietnam, E-mail: woo.lee@rmit.edu.vn.

Received September 07, 2020, Revised July 06, 2021, Accepted August 12, 2021