

Malaysia GVC Economic Impact and Its Implications.
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Introduction

Recent trend in global investment and trades encourages integration among economies. They become more connected to each others in production of output and thus of value-added. The sum of all individual country's value-added of a particular product will give the global value-added. Each country will share certain proportion from the global value chain (GVC). GVC is a new concept in the trade literature. A more integrated world becomes a reality with much easier unbundling production processes, occurring along the GVC. Since it will bring great impact to the economy, this concept is pertinent to many small open developing countries such as Malaysia, who intends to enhance GVC participation. The production of GVC products is normally carried out by trans-national cooperation, (TNCs) which is now undergoing rapid vertical disintegration. In order to deal effectively with such impact, a country must be prepared with appropriate technologies, labour skills and competitive business environment, which can be achieved only through robust investment and trade policies.

Vertical disintegration occurs because production process can now easily be fragmented, breaking into a lot of separate production blocks. Each of them is apart from inter-connected by the provision of services also buys output to be used as its intermediate input from other blocks; the final block produces output ready to serve the final consumers. What is more interesting is each block would have its own level of production technology where a participating country may choose to enter; the entire network produces value chain to be shared by many participating countries.

Earlier international trade models, Ricardian and Heckscher-Ohlin, try to explain the the international trade phenomenon but they are inadequate to explain the phenomenon of GVC. These models use the principle of comparative advantage a country may have in production and trade, resulting from endowment of natural resources, capital and labour it possesses; the country will adopt an optimal factor proportion to its production technique. The product explained in such models is not characterized by unbundling processes thus limits participation of many countries.

Since 1990s, GVC is a new phenomenon in trade flows of goods and services because production process of a particular product can now be fragmented. As a result the production process forms a network, involving many countries. Certainly, when there are many countries involved the network apart from produces a chain of value-added to be shared among them also changes the character of investment and trade. Today, the world is observing GVC as a norm in today's investment and trade. GVC depicts the entire activities carried out by many participating countries in producing a product, starting from the conception stage right up to the final stage readily to be consumed as well as the packaging and marketing. Unlike the old mode of production, a production unit brings in inputs, processes them while its output is the final product readily to be consumed by final consumers.

From an industrial and trade policy point of view, the above discussion implies that a country should not feel satisfied just letting itself with GVC participation but it should also make an attempt at enhancing its value-added share. Understandably, the world agencies concerning global investment, trade and development will urge as many countries as possible to participate in the GVC because there are immense potential

benefits and opportunities to be enjoyed. However, individual country needs to craft an appropriate strategy based on the strength and weaknesses of its technological and human resources in order to capture the highest possible share of the GVC, especially so when the product is its major production and trade item.

Important to note that generally a country's patterns and performances of international trade should be closely related to those of domestic production or else its export will be in the form of re-export, which is rather uncommon to Malaysia. Therefore, a policy formulation at promoting export needs to be considered together with that of industrialization policy at promoting efficiency. For example, a policy to promote electronic and electrical products (E&E) exports will bring larger benefits if its domestic production technology produces a high value-added product and employs large number of skilled workers. Such approach needs a careful analysis, aiming at integrating international trade and domestic production process. The present paper will discuss the economic implication of Malaysia's participation in the GVC, focusing on the export of manufactures with a special emphasis on E&E and its sub-sectors. Empirical investigation on Malaysia's industrial and trade data uses 2010 national input-output tables published by Malaysia Department of Statistics while that of bilateral Malaysia-China trades uses 2005 Institute of Developing Economies (IDE)'s International Input-output table.

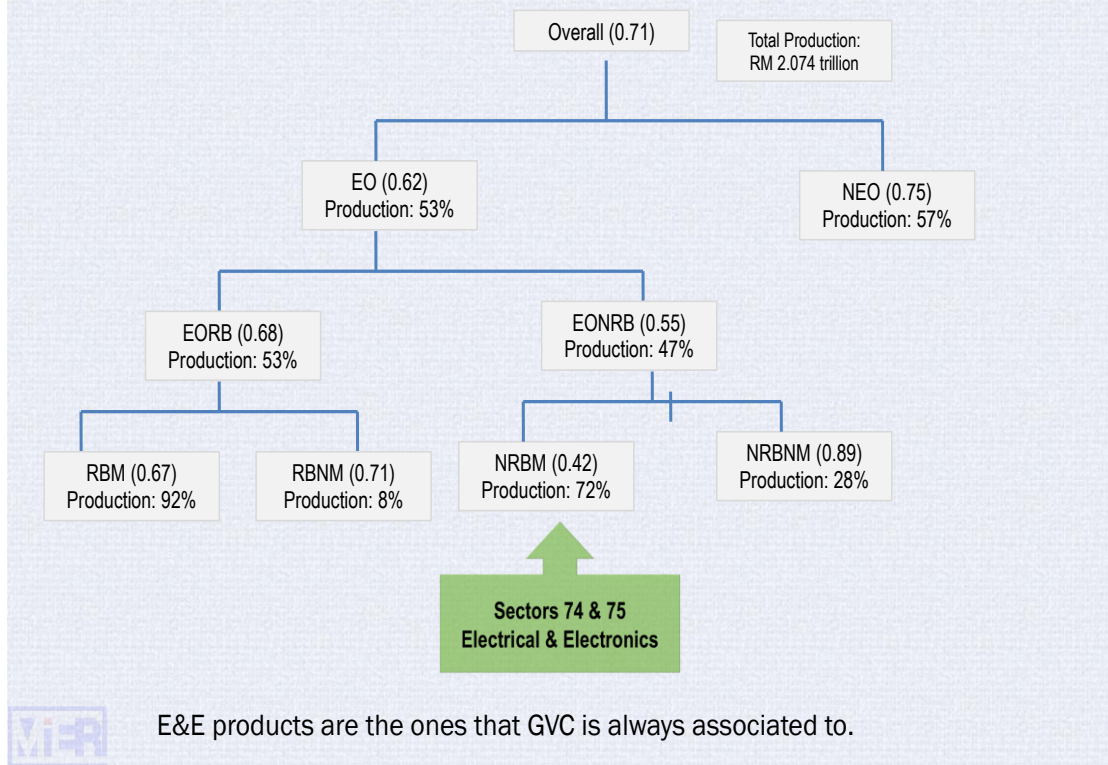
Sharing of Global Value-added

One of the important feature of GVC is sharing of value-added among participating countries. At an individual country level, it has to understand the the concept of value-added and how it is being shared among various sectors, from which sectoral value-added multipliers are estimated; key sectors of the economy will then be identified. These pieces of information illuminate structural and technological features of the economy, including those of the GVC products the economy are engaging on. In the final analysis, a country need to know to what extent its participation in the GVC has contributed to the overall economic growth. In addition, a participating country also need to know to what extent its participation has resulted in some form of leakages of the domestic production, which can be illuminated by estimates of import multiplier. In summary, both multiplier indices can be used to estimates the impact on overall economic growth and import leakages due to trades in GVC products.

Demand Orientation: domestic and export

The present paper begins with an empirical investigation on identifying export orientation among various sectors from estimates of their export to production ratio and then see how these sectors feature in terms of value-added content and multiplier. It reveals that the export oriented sectors have lower multiplier (0.416) than that of the domestic demand oriented sectors (0.636). Figures in parentheses represent index of value-added multiplier.

Value-added Multiplier of E&E is the lowest



Geographical concentration of export market is less important than commodity composition of export in determining overall export performances. This implies that value-added multiplier of a product, including that of GVC, exported should be given more attention to ensure strong economic growth. Multiplier size depends on the direct and indirect effects of production of a product, its backward linkages to the rest of the sectors and the employment of intermediate (domestic and imported) and primary (includes capital and skilled and unskilled labour) inputs. In summary, the size of the multiplier is determined by the structure of the economy. We found two E&E sub-sectors, *Semiconductor Devices, Tubes and Circuits* (sector 74) and *TV, Radio Receivers & Transmitters* (sector 75), are important GVC products in terms of besides they are among the largest producers of output also the most export oriented; but they have the lowest value-added multiplier. It is also important to note that they pay among the least per unit of output to their workers and have the highest dependency on materials import.

Sectors 74 and 75 of E&E have very high values of production and export but very low in VA multiplier

Input-output Commodity code	74 Semiconductor Devices, Tubes and Circuits	75 TV, Radio Receivers & Transmitters	Overall Average (weighted)
Production (RM'000)	97,745,496.49	69,468,629.83	
a) Export Production Ratio	0.9348	0.9143	0.3114
b) Multipliers			
VA	0.3578	0.4767	0.6963
CE	0.10	0.16	0.20
Import	0.64	0.52	0.3005
Gross profit	0.31	0.38	0.4862
Taxes on production	0.0019	0.0015	0.0086
Taxes on product	0.0049	0.0033	0.0112
Subsidies	0.0022	0.0013	

Malaysia is considered among an active participant of GVC in E&E, whose respective export and import shares are the highest in total total export and total import of the country. Therefore, their significant contribution to the country's economic growth is due more to the volume rather than to the multiplier effects. Thus, it is appropriate to suggest a policy for the sector to improve its value-added multiplier so as to turn it into a more robust sector, contributing more sustainably to overall economic growth. Currently, such role is played by resource-based sectors of *crude oil and natural gas* and *palm oil based*. Other E&E sub-sectors, namely *Electrical machinery and Apparatus* (sector 70), *Other electrical machinery* (sector 71), *Insulated wires and cables* (sector 72), and *electrical lamps & lighting equipment* (sector 73) are not that significant in contributing to overall economic growth, due mainly to their limited size of export and lower multiplier indices.

Participation of E&E product in GVC with weak domestic value-added content.

Electrical and Electronics					
	Input-Output Commodity Name	Domestic VA % Ratio	Exports (RM '000)	Export Production Ratio	Domestic VA generated from Export
70	Electrical Machinery and Apparatus	0.1010	3,284,601	1.4524	331,745
71	Other Electrical Machinery	0.2740	4,738,169	0.9241	1,298,258
72	Insulated Wires and Cables	0.0710	7,621,136	0.8970	54,101
73	Electric Lamps and Lighting Equipment	0.3310	1,674,184	0.8104	554,155
74	Semi-Conductor Devices, Tubes and Circuit Boards	0.2180	91,371,653	0.9348	19,919,120
75	TV, Radio Receivers & Transmitters & Asso. Goods	0.3700	63,515,511	0.9143	23,500,739

VA multiplier for E&E = 0.40. Sectors 74 and 75 contributed the highest VA from their exports due to high value of export and strong VA multiplier. More than 90% of the E&E export are represented by these sectors and also more than 90% of their production are for export.



Crude Oil and Natural Gas sub-sector (sector 13) supplies raw material to the manufacturers of *Petroleum Refinery* (sector 41), *Fertilizers* (sector 46), and *Paints and Varnishes* (sector 47). The highest value-added content is found in the upstream activity while the down stream activities have moderate content of value-added. It is important to note that beside the demand for output of *Crude Oil and Natural Gas* and *Petroleum Refinery* are highly export oriented they also have the highest value-added multiplier among all sectors in the economy. Hence, *Crude Oil and Natural Gas* and *Petroleum Refinery* sub-sectors are most influential among all sectors in contributing to overall economic growth and they can be considered as less attributed to GVC. Manufactures of *Oil & fats* sector (sector 21) and *Soap, detergents, Perfumes, Cleaning & Toilet Preparations* (Sector 49) receive their raw materials from oil palm plantation sector and their demand is highly export oriented. The former in particular has very high content of domestic value-added thus has high value-added multiplier (0.81) and therefore represents among the strongest contributor to economic growth after the *crude oil and natural gas* sector.

Export Demand Orientation and GVC

It is important to note that participation in GVC will spur economic growth through an opportunity obtained in producing exportable gross output but more specifically it is through the creation and capturing of value-added. Therefore, in the final analysis, it is the export of value-added rather than of gross output that finally matters. Undeniably, when a country participates in the regional production network or regional cooperation and economic partnership it will provide better market access but as we have pointed out earlier market access alone is insufficient to guarantee strong economic growth unless the product exported have strong value-added multiplier.

Major Export Commodity

Malaysia exports various commodities, each has its own value-added multiplier. Some commodities have high export volume and will to a large extent become major contributors to economic growth. Value-added multiplier varies among different commodities thus also their potential contribution to economic growth. E&E is Malaysia's major export commodity and has the lowest index of value-added multiplier whereas O&G is another major export commodity but has the highest index. Multiplier for palm oil is quite high. In general, value-added ratio and multiplier for resource-based commodity is higher than that of the non-resource base. Major importers of Malaysia E&E are China, Singapore, USA and Hong Kong; while for O&G are Singapore, Australia and Korea; and for palm oil are China, USA and Netherland.

Commodity and geographical market concentrations of export to a large extent determine export performance. For example, Malaysia exports large amount of E&E and O&G while the former has the lowest but the later has the highest value-added multiplier. Concentration of export on O&G will certainly contribute to stronger overall economic growth due to both volume and multiplier effects whereas concentration of export on E&E does contribute to overall economic growth due to volume but nor multiplier effects. To improve overall economic growth further, therefore, E&E export has to be made stronger in terms of its ability in contributing to economic growth for each unit exported. Different sizes of multiplier among various products are reflection of their structural characteristics of which value-added content is among the most important one.

Import dependent

Export of manufactures has a to be analysed together with their imports because apart from the balance of trade in the products matters in determining overall trade performance it also varies among different manufactures. For instance, non-resource based manufactures are more import dependent than those of the resource based. In the case of highly import dependent manufactures, both export and import move parallelly. Therefore, it is more appropriate if its export and import be analysed together. That is, export performance of such product be analysed together with that of its import; in other words we refer to its balance of trade.

Malaysia's participation in the GVC does not show much changes in its import dependency, continue to remain high dependency on import. This is reflected by high index of aggregate import multiplier over the period 1978-2005 without any sign that it is going to fall while the import multiplier for E&E remain the highest among all products. During the period, aggregate import multiplier move erratically in a narrow range between 0.219 to 0.375, as shown in the figureⁱ. Looking at the same issue but in a different angle, we might be interested to know the amount of import generated by export, including export of GVC products. We found that the amount of import generated by export of each of all E&E sub-sectors is bigger than that in palm oil and crude oil and natural gas sectors. This is further shown by the figures, explaining why the export share in each of all E&E sub-sectors are smaller than their amount of import generated by export while in each of all palm oil and crude oil and natural gas sector is bigger than their amount of import generated by export.

For example, export share of Semi-Conductor Devices, Tubes and Circuit Boards is 12.9% while its amount of import generated by export is 20.3%. Similar pattern is also found in TV, Radio Receivers & Transmitters & Asso. Goods and other E&E products. On the contrary, export share of crude oil and natural gas is bigger (7.61%)

than its amount of import generated by export (0.89%); similar pattern is also found in oil and fat sector.

Malaysia-China bilateral trades in E&E products in 2005.

China is Malaysia’s major trading nation, including in E&E. In 2005, Malaysia enjoyed 74% surplus in intra-industry balance of E&E trade with China and the commodity composition was concentrated in two products, namely Semiconductors & integrated circuits and Electronic computing equipment. Malaysian commodity composition of E&E export was more concentrated (93.21%) than its import (76.63%).

Malaysia and China share similar distributional pattern of gross value-added (GVA) and compensation of employee (CE) among all the E&E products, concentrating on Semiconductors & integrated circuits, Electronic computing equipment, Television sets, radios, audios & communication equipment, and Lighting fixtures, batteries, wiring & others. Malaysia’s gross value-added (GVA) coefficient and unit labour cost (ULC) was one-half of those of China; implying that Malaysia produced lower value-added products and employed higher ratio of lower skilled workers. Similar pattern is also observed in the manufacturing of Television sets, radios, audios & communication equipment. In other E&E products, it shows the opposite pattern where GVA coefficient is higher but ULC is lower, implying that although productivity is higher but workers are not being paid higher.

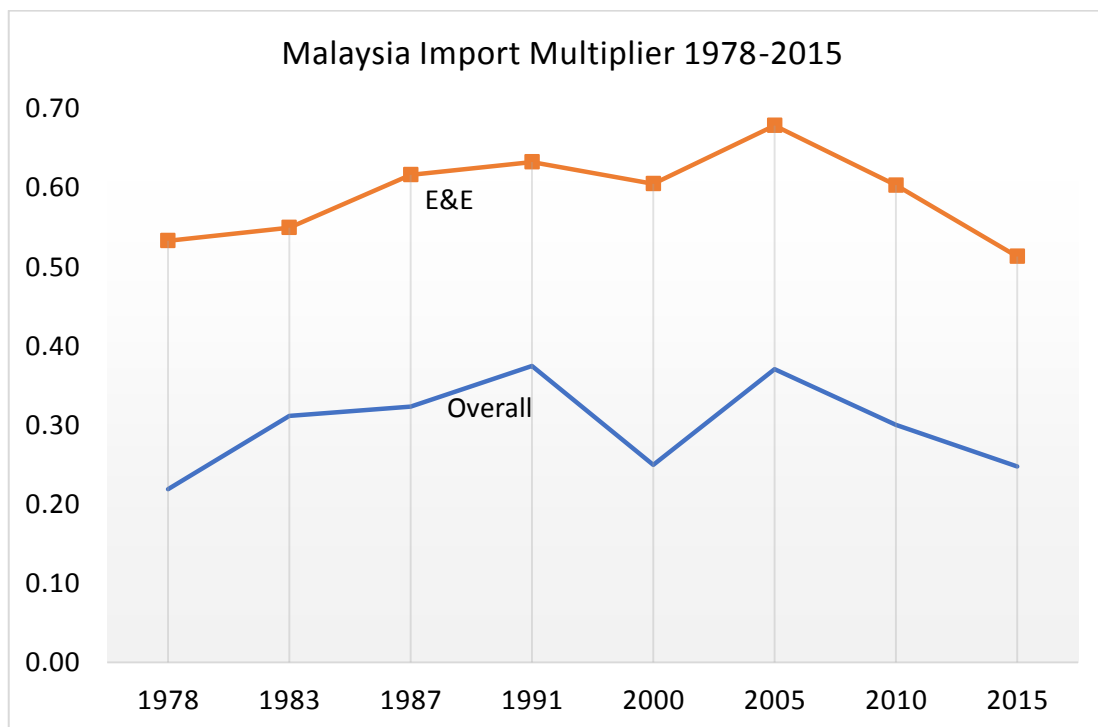


Figure XX: Malaysia Import Multiplier

Table XX: Malaysia Import Generated by Export, 2015

N o.	Sector*	Co de	Import multipl ier	Import Generated by Export		Export share
				Value ('000)	Share	
1	Crude Oil and Natural Gas	13	0.0383 9	1,866,395	0.89143	7.60970
2	Petroleum Refinery	44	0.2045 5	16,713	0.00798	0.01279
3	Oil Palm	6	0.1084 5	257	0.00012	0.00037
4	Oils and Fats	21	0.2395 8	14,184,94 9	6.77501	9.26788
5	Electrical Machinery and Apparatus	70	0.4639 8	860,017	0.41076	0.29015
6	Other Electrical Machinery	71	0.5000 9	4,730,055	2.25917	1.48058
7	Insulated Wires and Cables	72	0.4651 9	2,813,807	1.34393	0.94684
8	Electric Lamps and Lighting Equipment	73	0.4666 5	1,524,556	0.72816	0.51140
9	Semi-Conductor Devices, Tubes and Circuit Boards	74	0.5148 8	42,627,19 0	20.3595 7	12.95957
10	TV, Radio Receivers & Transmitters & Asso. Goods	75	0.5222 2	14,487,53 9	6.91953	4.34265

Note that sectors number 13 and 44 represent for Oil & Gas, sectors number 6 and 25 represent for Palm Oil and the rest represent for E&E.

ⁱ Note that E&E* is defined by their following sectors in weighted average value. Note that the input-output classification of sectors differs for different years. For the year 1978, 1983 and 1987 the multipliers were represented by Electrical Machinery Sector (35), while those for the 1991 and 2000 by Radio, TV and Computer Equipment (57), Electrical Appliances and Houseware (58), and Other Electrical Machinery (59) sectors, and for 2005, 2010 and 2015 by Electrical Machinery and Apparatus (70), Other Electrical Machinery (71), Insulated Wires and Cables (72), Electric Lamps and Lighting Equipment (73), Semi-Conductor Devices, Tubes and Circuit Boards (74), TV, Radio Receivers & Transmitters & Asso. Goods (75) sectors. The data can be shown the following figure.

Table XX: Malaysia Import Multiplier

Year	Overall	E&E*
1978	0.21917	0.53329
1983	0.31181	0.54985
1987	0.32361	0.61673
1991	0.37480	0.63294
2000	0.25000	0.60526
2005	0.37070	0.67892
2010	0.30051	0.60361
2015	0.24773	0.51336