ASEAN Economic Bulletin Vol. 27, No. 2 (2010), pp. 221–30 ISSN 0217-4472 print / ISSN 1793-2831 electronic

DOI: 10.1355/ae27-2e

Evaluating Vietnam's Changing Comparative Advantage Patterns

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This article provides an empirical analysis of Vietnam's comparative advantage and its changes since the country's reform programme began in 1986. The framework for analysis is the concept of revealed comparative advantage. The findings indicate that despite a rapid shift in comparative advantage structure from primary products towards labour-intensive manufacturing during 1991–96, and a further slow shift towards technology-intensive manufacturing since then, Vietnam's comparative advantage is still largely based on the country's endowments of labour and natural resources. So far Vietnam has been able to expand its exports mainly by exploring these favourable conditions. However, exports based on such existing comparative advantage do not deliver significant value-added earnings. It is therefore recommended that relevant policy be implemented to move the economy and its export sector towards a desirable comparative advantage structure by: (1) strengthening food-processing and mining-processing industries to increase value-addedness of exports of primary products; (2) building up strong supporting industries to move the manufacturing sector away from outward processing; (3) encouraging investment in technology-intensive industries; and (4) enhancing human capital and raising the technology capacity of firms.

Keywords: Vietnam, comparative advantage, revealed comparative advantage, factor endowments.

I. Introduction

In more than two decades since its economic reform began in 1986, Vietnam has expanded its export sector enormously. The country has moved from trading largely with a handful of former socialist countries of the Soviet bloc in the 1980s to dealing with almost 200 economies at present. Export volume has increased from less than US$800 million in 1986 to almost US$63 billion in 2008 (IMF). Vietnam joined various regional and multilateral trade and economic schemes such as AFTA, APEC and WTO, signed bilateral trade agreements with the U.S. and many other nations, and has duly implemented its commitments under these treaties.

This significant progress, in part, can be attributed to the fact that in the process of international economic integration, Vietnam has been able to utilize its comparative advantage based on factor endowment. To gain further in this

process, however, it is important not only to explore the existing comparative advantage, but also to move the economy and its export sector towards a more advanced structure of comparative advantage.

This study aims to provide an empirical analysis of Vietnam's comparative advantage and its shift over time since the reform programme began. The research is the expansion of the author's previous study in Quoc-Phuong Le, Nguyen, and Bandara (1997) and Quoc-Phuong Le (2002). Based on the study's findings, policy recommendations are made on how to shift the country's comparative advantage towards the desired structure.

II. Analytical Framework

II.1 Revealed Comparative Advantage

Traditional trade theories such as David Ricardo's theory of comparative advantage and Heckscher-Ohlin model of factor endowments postulate that the main basis for international trade is comparative advantage. A country's comparative advantage is reflected by its factor endowments (labour, capital, natural resources) and technology level.

Since it is hard to take account of all these factors to measure comparative advantage, Balassa (1965) offers quite a simple alternative approach. On the ground that exports of a country are usually dominated by its comparative advantage products (thus the country's pattern of comparative advantage is revealed by its export structure), he introduces an index of revealed comparative advantage of exports *RCAik* of country *i* in good *k* as:

$$RCAik = \frac{(Xik/Xi)}{(Xwk/Xw)}$$

where Xik = *i*'s exports of *k*,
Xi = *i*'s total exports;
Xwk = world exports of *k*,
Xw = world total exports.
The RCA index offers a convenient way to evaluate comparative advantage of a country vis-à-vis the rest of the world. RCA>1 reflects the comparative advantage of the country in good *k*, which exports this good more intensively relative to the world (as the share of this good in the country's exports is larger than the share of the same good in world trade). By contrast, RCA<1 indicates the country does not possess comparative advantage in this good.

This approach, however has certain limitations. First, RCA indices may not reflect the true comparative advantage. Since post-trade data are used to calculate RCA indices, the results may include many market distortions such as tariffs, quotas, export incentives, subsidies, embargoes, labour market distortions and so on, not just natural forces of comparative advantage. Second, RCA indices do not capture the future comparative advantage because they are calculated based on past trade data (however, the indices measured over time can show the trend, along which the pattern of comparative advantage is moving). Further, RCA indices appear irrelevant in the case of significant intra-industry trade.

Despite these shortcomings, RCA indices have proven to be a simple but useful analytical tool to examine comparative advantage.

II.2 Data

This study uses data provided by the International Economics Databank (IEDB) and United Nations Statistical Division (UNSD) on trade commodity composition, based on the Standard International Trade Classification (SITC). The SITC offers five levels of commodity aggregation, beginning from 1-digit *sections* down to 2-digit *divisions*, 3-digit *groups*, 4-digit *subgroups* and 5-digit *items*.

This study uses 1-digit and 3-digit levels for analysis. The 1-digit level, with only ten commodity sections, provides an overall picture of trade, but it fails to give a detailed analysis. The 3-digit level, with 269 commodity groups, can facilitate a reasonably detailed analysis, while avoiding complexity of 4-digit and 5-digit levels, which contain thousands of categories.

III. Assessing Vietnam's Shifting Comparative Advantage

III.1 Patterns of Vietnam's Comparative Advantage

To analyse Vietnam's comparative advantage structure and its shift over time since the beginning of the reform programme in 1986, three representative years are selected as follows:

(i) 1991 to represent the early stage of economic reform;
(ii) 1996 to represent the mid-1990s when Vietnam's economy has grown rapidly before it was adversely affected by the Asian financial crisis in 1997–98;
(iii) 2005 to represent the recent period.

General picture. Vietnam's RCA index, calculated at 1-digit SITC for 1991, 1996 and 2005, provides an overall picture of Vietnam's comparative advantage structure since the beginning of the reform programme (Table 1).

Table 1 shows that in 1991, Vietnam's comparative advantage was based mainly on primary products. These include S0 (Food, live animals); S2 (Crude material excluding fuel) and S3 (Mineral fuel), which exhibit RCA>1. At the same time, Vietnam had no comparative advantage in most of processed and manufactured commodities. These are S1 (Beverage, tobacco), S5 (Chemicals), S6 (Basic manufactures), S7 (Machines, transport equipment) and S8 (Miscellaneous manufactured goods), which exhibit RCA<1.

In fact, Vietnam's economy and its exports were based largely on agriculture and natural resources. As the industrial sector was under-developed, exports from this sector were small. Accordingly, Vietnam exhibited its comparative advantage mainly in agriculture and natural resources, and displayed no comparative advantage in manufactured commodities.

By 1996 the picture changed quite dramatically. Vietnam's comparative advantage base had expanded to include S8 (Miscellaneous manufactured goods). This indicates that over the period 1991–96, the country's comparative advantage patterns started shifting towards labour-intensive products such as clothes and footwear. This reflects the fact that 1991–96 was the period when

TABLE 1
Patterns of Vietnam's Comparative Advantage
(At 1-digit SITC)

Commodity at 1-digit SITC	*RCA index*		
	1991	*1996*	*2005*
S0-Food, live animals	4.3	3.5	3.6
S1-Beverage, tobacco	0.1	0.1	0.6
S2-Crude material excluding fuel	4.7	1.1	1.1
S3-Mineral fuel	3.4	2.5	2.2
S4-Animals, vegetable oils, fats	0.2	1.6	0.1
S5-Chemicals	0.03	0.1	0.2
S6-Basic manufactures	0.3	0.4	0.5
S7-Machines, transport equipment	0.01	0.1	0.3
S8-Misc manufactured goods	0.8	3.0	2.9
S9-Unclassified goods	0.1	0.1	0.1

SOURCE: Author's calculations from IEDB and UNSD data.

Vietnam's economy grew quite rapidly. In particular, inflows of FDI capital grew rapidly year after year during this period and significantly contributed to this economic growth. Large parts of the FDI funds were invested in labour-intensive industries which produce garments and footwear for exports. FDI in this industry came mainly from NIEs such as South Korea, Taiwan and Hong Kong. At that time, rising labour costs in these economies forced their companies to shift labour-intensive production to other developing countries including Vietnam to take advantage of low labour cost and other investment incentives.

As a result, labour-intensive products such as clothes and footwear have become Vietnam's major exports and its comparative advantage products since the mid-1990s. Nevertheless, agricultural and resource-based sectors still maintained their relative importance in the country's comparative advantage structure, with RCA index for S0, S2 and S4 remaining greater than 1.

Since 1997, although Vietnam's comparative advantage structure continues its shift towards manufactured goods, the pace of change seems to be quite slow. As can be seen from Table 1, the structure of Vietnam's comparative advantage in 2005 remained largely similar to that of 1996, with commodity sections that exhibit comparative advantage being S0, S3 and S8.

More detailed analysis. The patterns of Vietnam's comparative advantage can be analysed in more details at 3-digit SITC (Table 2). Calculated RCA indices show the following characteristics.

(i) *The number of products with comparative advantage increases over time*, from 33 in 1991 to 41 in 1996 and 47 in 2005 (out of the total of 269 commodity groups at 3-digit SITC). Most of comparative advantage products are also Vietnam's major export items. This confirms Balassa's proposition that a country's exports are dominated by its comparative advantage commodities.

(ii) *The share of comparative advantage products in total exports has been high* (around 90 per cent). This indicates that Vietnam's exports are dependent on a relatively limited number of comparative advantage commodities.

(iii) *The pool of primary products among the comparative advantage commodities has declined over time while the number of manufactured products has consistently increased*. This suggests that the comparative advantage structure has shifted from the primary sector to the manufactured sector. This trend is analysed further below.

III.2 Changes in Vietnam's Comparative Advantage Patterns

Further analysis of Vietnam's changing comparative advantage structure in 1991–2005 (Table 3) indicates major trends in Vietnam's shifting comparative advantage as follows.

Gradual expansion of comparative advantage base. The gradual expansion of Vietnam's comparative advantage structure is indicated by the growing number of commodity sections with comparative advantage products from five in 1991 to six in 1996 and to nine in 2005 (all sections but S4). This is also evidenced by the growing number of comparative advantage groups from thirty-three in 1991 to forty-one in 1996 and forty-seven in 2005.

However, while Vietnam's comparative advantage structure has expanded, it is still chiefly based on a limited number of major export items, which in turn are based on the country's endowed factors (natural resources and labour).

Shift of comparative advantage structure from primary products towards manufactures. The shift away from primary products is indicated by a decrease in both absolute number and relative share of primary comparative advantage groups from 25 in 1991 (or 76 per cent of total number of comparative products) to 22 (or 47 per cent of total number) in 2005.

At the same time, the shift towards manufactured products is indicated by the rising number and increased relative share of manufactured comparative advantage products from eight (or 24 per cent of total number) in

TABLE 2
Vietnam's Comparative Advantage Products at 3-digit SITC

1991			*1996*			*2005*		
Commodity groups	*% EX*	*RCA*	*Commodity groups*	*% EX*	*RCA*	*Commodity groups*	*% EX*	*RCA*
025-Eggs	0.7	16.7	025-Eggs	0.3	9.0	022-Milk pr exc buttr/cheese	0.3	1.1
031-Fish fresh, simply presvd	16.5	18.5	031-Fish fresh, simply presvd	8.1	11.1	034-Fish-dried, salted	2.0	5.6
032-Fish etc tinned, prepared	1.0	4.9	032-Fish etc tinned, prepared	0.8	4.6	035-Fish,dried/salted/smoked	0.2	4.4
042-Rice	8.0	64.0	042-Rice	6.1	48.2	036-Crustaceans molluscs etc	5.4	27.1
044-Maize unmilled	0.5	1.8	044-Maize unmilled	0.6	2.4	042-Rice	4.3	41.6
051-Fruit fresh, nuts frsh dry	2.6	4.4	051-Fruit fresh, nuts frsh dry	0.6	1.2	057-Fruit/nuts, fresh/dried	1.9	3.9
055-Vegetables etc prsvd, prepd	0.2	1.2	052-Dried fruit	0.1	1.0	058-Fruit presvd/fruit preps	0.1	1.1
071-Coffee	2.2	8.9	053-Fruit preserved, prepared	0.3	1.1	071-Coffee/coffee substitute	2.3	14.5
074-Tea and mate	0.3	3.5	054-Veg etc frsh, simply prsrvd	0.6	1.4	074-Tea and mate	0.3	8.6
075-Spices	0.6	14.9	055-Vegetables etc prsvd, prepd	0.2	1.9	075-Spices	0.5	17.6
211-Hides, skins undressed	0.8	6.5	071-Coffee	5.8	21.5	122-Tobacco, manufactured	0.4	2.2
221-Oil seeds, nuts, kernels	4.1	13.7	074-Tea and mate	0.3	6.5	223-Oil seeds-not soft oil	0.1	6.1
231-Rubber rude, synthetic	0.5	2.3	075-Spices	1.0	26.0	231-Natural rubber/latex/etc	2.2	21.2
241-Fuel wood and charcoal	0.1	4.3	221-Oil seeds, nuts, kernels	1.1	3.8	232-Rubber synth/waste/etc	0.1	1.2
242-Wood rough	3.1	13.1	231-Rubber rude, synthetic	1.1	4.0	245-Fuel wood/wood charcoal	0.1	3.5
243-Wood shaped	6.0	11.3	241-Fuel wood and charcoal	0.0	4.9	246-Wood chips/waste	0.3	10.3
261-Silk	0.4	28.0	243-Wood shaped	0.5	1.1	261-Silk	0.1	1.3
264-Jute	0.1	23.3	261-Silk	0.1	2.3	264-Jute/bast fibre raw/retd	0.1	3.1
265-Vegetable fibre	0.1	4.5	265-Vegetable fibre	0.1	5.7	265-Veg text fibre ex cot/ju	0.1	5.0
273-Stone, sand and gravel	0.1	1.5	273-Stone, sand and gravel	0.1	1.6	277-Natural abrasives n.e.s	0.1	4.2
282-Iron and steel scrap	0.6	11.8	291-Crude animal matters NES	0.3	4.7	321-Coal non-agglomerated	2.1	4.2
291-Crude animal matters NES	0.9	11.9	292-Crude veg materials NES	0.5	1.6	333-Petrol./bitum. oil, crude	22.7	3.8
292-Crude veg materials NES	1.9	5.3	321-Coal, coke, briquettes	1.7	3.8	592-Starches/glues/etc.	0.3	2.1
321-Coal, coke, briquettes	5.8	9.5	331-Crude petroleum, etc	19.7	4.4	612-Leather manufactures	0.1	1.1
331-Crude petroleum, etc	24.2	4.8	421-Fixed vegetable oil soft	0.2	1.1	621-Materials of rubber	0.2	1.3
632-Wood manufactures NES	0.4	1.5	422-Fixed vegetable oil non-soft	0.5	3.4	635-Wood manufactures n.e.s	0.3	1.2
656-Textile etc products	0.7	3.0	612-Leather etc manufactures	0.3	2.3	651-Textile yarn	0.7	1.7
657-Floor cover tapestry etc	0.3	1.3	631-Venners plywood etc	0.5	1.6	658-Made-up textile articles	0.8	2.5
666-Pottery	0.4	3.1	632-Wood manufactures NES	0.7	2.4	663-Mineral manufactures nes	0.5	2.3
671-Pig iron etc	0.2	1.1	654-Lace ribbons tulle	0.1	1.2	666-Pottery	0.1	1.5
687-Tin	1.0	27.6	656-Textile etc products	1.1	5.1	687-Tin	0.1	1.2
831-Travel goods, handbags	2.3	2.3	657-Floor cover tapestry etc	0.2	1.1	696-Cutlery	0.2	2.9
841-Clothing not fur	2.4	2.4	666-Pottery	0.6	5.9	697-Base metal h'hold equipms	0.2	1.1
			686-Zinc	0.3	10.8	716-Rotating electr plant	0.6	1.1
Total 33 groups	88.8		821-Furniture	2.7	2.9	773-Electrical distrib equip	1.6	2.5
			831-Travel goods, handbags	2.6	6.4	785-Motorcycles/cycles/etc	0.7	1.9
			841-Clothing not fur	17.1	5.6	821-Furniture/stuff furnishg	4.3	4.2
			851-Footwear	12.4	18.6	831-Trunks and cases	1.0	4.9
			894-Toys sporting goods etc	0.6	1.0	841-Mens/boys wear, woven	4.1	8.2
			895-Office supplies NES	0.1	1.0	842-Women/girl clothing wven	3.7	6.0
			899-Other manufactured goods	0.6	1.7	843-Men/boy wear knit/croch	1.3	9.5
						844-Women/girl wear knit/cro	1.9	7.8
			Total 41 groups	90.3		845-Articles of apparel nes	2.9	3.4
						846-Clothing accessories	0.2	1.3
						848-Headgear/non-text clothg	0.4	1.8
						851-Footwear	9.5	15.0
						899-Misc manuf articles nes	0.8	1.7
						Total 47 groups	90.1	

SOURCE: Author's calculations from IEDB and UNSD data.

TABLE 3
Changing Structure of Vietnam's Comparative Advantage

Commodity sections (1-digit SITC)	*Number of products at 3-digit SITC with RCA>1*		
	1991	*1996*	*2005*
S0-Food, live animals	10	13	12
S1-Beverage, tobacco	—	—	1
S2-Crude material excluding fuel	13	9	7
S3-Mineral fuel	2	2	2
S4-Animals, vegetable oils & fats	—	2	—
Subtotal primary (S0+S1+S2+S3+S4)	*25 (76%)*	*26 (63%)*	*22 (47%)*
S5-Chemicals	—	—	1
S6-Basic manufactures	6	8	10
S7-Machines, transport equipment	—	—	3
S8-Misc manufactured goods	2	7	10
Subtotal manufactures (S5+S6+S7+S8)	*8 (24%)*	*15 (37%)*	*24 (51%)*
S9-Unclassified goods	0%	0%	2%
Total	33 (100%)	41 (100%)	47 (100%)

SOURCE: Author's calculations from IEDB and UNSD data.

1991 to twenty-four (or 51 per cent of total number) in 2005.

Although the relative importance of primary products has declined, these products still play a significant role in Vietnam's exports. It is worth noting that a large number of primary commodities have been exported as raw materials which are low value-added.

Further shift towards more sophisticated manufacturing. In 1991–96, manufactured comparative advantage products were seen mainly in simple manufacturing sections S6 (Basic manufactures) and S8 (Miscellaneous manufactured goods). In 2005, they were seen in more sophisticated manufacturing sections such as S5 (Chemicals) and S7 (Machinery and transport equipment).

This indicates that Vietnam's comparative structure has moved initially towards labour-intensive manufactured products (such as garments, footwear, furniture), then further towards technology-intensive products (such as motorbikes, electrical appliances, and electronic consumer goods). Most of these products, however, are outwork-based and outsourced by foreign companies. To complete these products, Vietnam imports virtually full materials and parts, necessary to produce final products using mainly the country's cheap labour. This outsourcing-based exports is low value-added, and its benefit to the economy lies largely in providing jobs (mainly low-paying).

IV. Comparative Analysis of Vietnam and Selected ASEAN Countries

How does Vietnam fare compared to other countries with similar experience? For a comparative assessment, it is useful to see Vietnam in

light of the experience of some ASEAN neighbour countries such as the Philippines and Malaysia (see Table 4).

IV.1 Philippines

A quick look at Table 4 may give an impression that the Philippines is a successful story of changing comparative advantage structure. Data in Table 4, indeed shows that the Filipino comparative advantage patterns have shifted quite dramatically, from being based on a combination of various primary sections (S0, S2 and S4) and labour-intensive section (S8) in 1991 to being based on a combination of a primary section (S4) and a capital-intensive section (S7) in 2005.

However, more in-depth analysis, for example in Lall (2000) and Abrenica and Tecson (2003), indicates that the Philippines' capital-intensive section S7 is primarily dominated by the semiconductor industry, which specializes in low-end final assembly and testing phase. In labour-intensive section S8, the dominating garment industry — the forerunner in the Philippines' manufactured exports in the early 1990s — lost its comparative advantage status mainly because it suffered from poor utilization of cheap but relatively skilled labour. Both these industries suffered from low technological and design activities, weak technical support for firms and inadequate quality of training systems in the country compounded by incompatibility between the industry needs for employment and the school system.

Thus, while the Philippines' major export-oriented manufacturing industries have realized their comparative advantage in the world markets, the country failed to catch up with its technologically progressing Asian neighbours such as Japan, South Korea and Taiwan. The main reason for it is the country's failure to raise the domestic technological capacity and to base its export sector on this firm foundation.

IV.2 Malaysia

Like in the Philippines, Malaysia's comparative advantage structure has also changed dramatically for the same period. In 1991, Malaysia's comparative advantage structure was quite similar to that of Vietnam, based mainly on primary sections (S2, S3 and S4). In 2005, except for S4 still remaining as a strong export section, Malaysia's comparative advantage structure has shifted to the capital-intensive manufacturing section S7.

TABLE 4
Comparative Advantage Patterns of Vietnam, Malaysia and Philippines

Commodity sections (1-digit SITC3)	*RCA 1991*			*RCA 2005*		
	Vietnam	*Malaysia*	*Philippines*	*Vietnam*	*Malaysia*	*Philippines*
0-Food & live animals	4.3	0.5	1.8	3.6	0.4	0.7
1-Beverages and tobacco	0.1	0.1	0.8	0.6	0.4	0.6
2-Crude mate excl food/fuel	4.7	2.7	1.5	1.1	0.8	0.5
3-Mineral fuel/lubricants	3.4	1.7	0.3	2.2	1.1	0.2
4-Animal/veg oil/fat/wax	0.2	16.2	8.7	0.1	11.8	4.3
5-Chemicals/products n.e.s	0.03	0.2	0.4	0.1	0.5	0.1
6-Manufactured goods	0.3	0.5	0.6	0.5	0.5	0.3
7-Machiner/transp equip	0.1	1.0	0.8	0.3	1.4	1.9
8-Miscellaneous manufac	0.8	1.1	2.4	2.9	0.7	1.1

SOURCE: Author's calculations from UN Comtrade database.

But unlike the Philippines' comparative advantage based on the weak technological capability and inadequate education system, Malaysia's comparative advantage is based on a more adequate R&D and education system. As a result, Malaysia has been able to capture significant benefits from its export sector. In that sense, although Malaysia and the Philippines have followed similar paths in changing their comparative advantage patterns, Malaysia can be seen as a successful story while the Philippines may be assessed as an unsuccessful case.

The experience of these two ASEAN countries in shifting their export structure is valuable to Vietnam, each in its own right. Vietnam should learn to avoid the Philippines' problems and to follow Malaysia's strategies in establishing a sound foundation for the economy and its export sector.

V. How Vietnam's Comparative Advantage Patterns Should Be Changed

V.1 Factors Influencing Changes in Comparative Advantage Patterns and Vietnam's Current Situation

The research body on comparative advantage and export performance, for example Fugazza (2004), Alvarez (2002), Panagaria (2000), Kojima (1975), highlights not only domestic but also international factors influencing changes in comparative advantage patterns. Among the domestic factors, perhaps the most important are the country's factor endowments (labour, capital and natural resources), technology capacity of domestic firms, and the distribution of FDI across domestic industries. The most significant international factors include world demand for specific commodities, outward processing arrangements, and bilateral and regional trading arrangements. The effect of each factor on export performance and changes in comparative advantage patterns varies from country to country.

As the above analysis indicates, in the past two decades since its economic reform began in the late 1980s, Vietnam has been able to expand its export sector mainly by exploring comparative advantage based on the country's endowments of labour and natural resources, utilizing the concentration of FDI in some domestic industries, and relying heavily on outward processing arrangements.

As a result, a number of manufactured products, both labour-intensive (garment, footwear, furniture) and technology-intensive (motorbikes, electrical appliances, electronic consumer goods) are now specified as Vietnam's comparative advantage commodities. However, the production of these products is based mainly on outward processing, which requires Vietnam to import most of its materials and parts to make final products using relatively cheap labour. Exports based on such principles do not create much value-added.

V.2 Policy Recommendations

To increase value-addedness of exports, Vietnam should not continue speeding up the export growth year on year, as it has done in the past. Instead, more relevant policy should be implemented to move the economy and its export sector towards a desirable comparative advantage structure. Based on the above analysis, some policy recommendations are made as follows.

(a) Strengthening food-processing and mining-processing industries to increase value-addedness of exports of primary products. Primary products including agricultural and fishery commodities (such as rice, coffee, tea, seafood, vegetable, rubber, etc.) and mining products (such as crude oil, coal, and various metal ores) have been among Vietnam's major exports. However, exports of these products mainly as raw and unprocessed commodities do not bring much value-add, despite the fast-growing export volume. To increase value-addedness of the primary sector, Vietnam needs to move from exports of raw materials to exports of processed products.

To realize this move, the government should implement measures to develop the food processing and mining processing industries. Strong food-processing and mining-processing

industries will help Vietnam to export processed materials instead of raw materials, thus earning considerably higher value-addedness from exports.

(b) Building up strong supporting industries to help move the manufacturing sector away from outward processing. Vietnam currently holds considerable comparative advantage in a number of manufactured commodities including labour-intensive (such as garment, footwear, trunks and cases, wooden furniture) and technology-intensive (such as motorbikes, electrical and electronic consumer goods) products. The problem is, the respective industries have to import nearly all materials or parts to complete goods in the last stage using cheap labour.

This way of manufacturing (known as outward processing or subcontract processing) might be relevant for Vietnam in the past in terms of providing jobs and expanding export volume. However, it does not create much value-added earnings while contributing measurably to the country's fast rising trade deficit, as the export sector requires not only large imports of machinery and equipment, but also rising volumes of imported materials and parts. These include fabrics and yarns for the garment industry, leather for the footwear industry, semiconductor devices and components for the electronic industry, parts for the car and motorbike industry, and so on. It is estimated that for every dollar of exports of manufactured products, Vietnam has to spend some US$0.7–0.8 on imports of materials and parts, which are needed to complete the final products. The main reason for this behaviour is that Vietnam so far has failed to develop adequate supporting industries, which could provide necessary materials and parts for the manufacturing sector.

To move the manufacturing sector away from its largely outward processing nature, it is necessary to establish strong supporting industries. Experience from more advanced Asian economies (Japan, South Korea and Taiwan) or even from neighbouring ASEAN countries (Malaysia and Thailand) shows that small and medium-size enterprises (SMEs) play a crucial role in supporting industries.

The relevant policy to build up the supporting industries is, therefore, to provide adequate framework and support for SMEs in order to raise their technology capacity and competitiveness.

(c) Encouraging investment in technology-intensive industries. In order to earn higher value-addedness from exports, Vietnam's comparative advantage structure should be shifted from primary products and labour-intensive manufactures to technology-intensive manufactures.

To achieve this target, the government should offer relevant incentives to attract more investment (both domestic and FDI) into building up technology-intensive industries, such as chemicals and electronics. The development of these industries should be based on the upgraded domestic technological capabilities, rather than on cheap labour.

(d) Enhancing human capital and raise technology capacity of firms. In recent years, a large number of both domestic and FDI firms in Vietnam have capitalized on outward processing using the country's unskilled and cheap labour. This outward processing does not generally require very high levels of technology. The excessive reliance on cheap labour and backward technology to promote exports has prevented Vietnam from moving up the comparative advantage ladder.

Experience of Asia's successful economies, such as Japan, the NIEs and some ASEAN countries, shows that quality human capital is pivotal in raising technology levels and competitiveness of firms, which in turn will eventually lead to favourable changes in comparative advantage patterns of the whole economy.

Vietnam, therefore, should reform its education and training system to make it capable of providing a trained labour force that meets the needs of firms. The government also needs to provide incentives and practical support for firms to raise their technology capacity through R&D activities.

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