Malaysia-China Network Trade: A Note on Product Upgrading

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ABSTRACT This article addresses the importance of network trade between Malaysia and China and assesses the extent of product upgrading in components traded. The study brings to the fore the following points. First, China is emerging as an important market for component imports relative to component exports. As such, the increase in two-way flows of parts and components for further processing and development, implying a shift away from assembly-end operations, remains insignificant. Secondly, network trade appears to have improved the quality of exports destined to China (reflecting a "moving up of the value chain"), but the gaps between the unit values of export and imports have narrowed in the recent past, implying less product development.

KEY WORDS: Network trade, two-way trade, unit values, relative unit values, product upgrading

China has emerged as the fourth largest trading partner of Malaysia since 2001. Malaysia’s trade with China has grown tremendously, to account for 8.8% of total trade in 2005. In fact, Malaysia’s trade ties with China have grown faster than those with the rest of the world, particularly since the financial crisis in 1997-98 (Kwek and Tham, 2005; Li, 2006). The spectacular expansion in trade with China is attributed largely to China’s success in integrating into the regional and global/international production networks.

Though networks can be established at various phases of the entire commodity chain, which include research and development, product design, supply of inputs, production and distribution, China’s role in the network structure is inherently dominant from the production perspective. China’s rising importance, particularly in production networks/sharing, is further gleaned from Srhoclec’s (2006) study of the extent of countries’ integration within the network structure of trade in intermediate inputs and capital goods. His clustering of countries into “core” (centre) and “periphery” (three tiers – first, second and third peripheries, of which the third periphery are countries referred to as network isolates) of international production networks clearly indicates that China has shifted its role from the first periphery to the core of network trade between 1995 and 2004. This implies that China now has...
a high density of connections/links with other countries via trade in intermediate inputs and capital goods. In short, China has become more embedded in the production network structure over the last decade and thus no longer remains peripheral to international production sharing. Malaysia, however, remained firmly at the "core" of trade in intermediate inputs and capital goods over the same period. Since Malaysia and China are both positioned at the "core" of network trade, it is not surprising that international production systems dominate in merchandise trade between both countries, resulting in the expansion of trade in intermediate inputs and capital goods vis-à-vis that in finished goods. This development in trade does not only characterise Malaysia-China bilateral trade flows, but is also unique to the East Asian experience relative to other major regions.

China's rise at the centre of global production systems (Gill and Kharas, 2007) also resulted in some reconfiguration of the networks. First, since China's trade in intermediate goods has been concentrated heavily in East Asia, more economies within the region have become integrated closely at the level of production. Production networks have thus increasingly become a regional process. China's growing influence on the region's production networks is also indicative of some shifts in trading power from Japan to China, as the former is no longer considered a lead player in the region (Gaulier et al., 2007). Secondly, China's deeper integration into the network structure, from that of an assembler to component subcontracting, has heightened competition within the region. Countries within the region, who are also suppliers of components, have to contend with the rapid product imitation by China, in addition to the cost competitiveness of Chinese-produced components, to maintain market shares within the region and also with external markets.

In the context of the above developments, there are two key concerns for Malaysia. First, there are mounting fears that China, in particular, would eventually compete with Malaysia to become a more favourable location for developed countries, particularly in outsourcing activities (Kwek and Tham, 2005) or even for procurement purposes. These fears were manifest already in mid-2003, when electrical and electronic firms in Malaysia (particularly Penang) employed 17% fewer workers than in 2000 (Woo, 2004; see also Kit et al., 2005; Chin, 2007), due to the reallocation of the production base towards China. Secondly, there is a concern that China may outperform Malaysia in terms of product quality, given that the export structure of China (reflected in the import share from the Malaysian perspective) has rapidly shifted into complex high technology products (Engardio, 2007; Lall and Albaladejo, 2003; Rodrik, 2006; Rumbaugh and Blancher, 2004).

There are, however, those who claim that the above fears are baseless. For example, Li (2006) stated that the Malaysia-China trade reflects comparative advantage in different technology-intensive manufactured goods (see also Kit et al., 2005), which are complementarities (instead of substitutes) in heterogeneous intermediate products. Conversely, Wong (2004) argued that product competition does exist between Malaysia and China as the index of commodity overlap between both countries has increased from 41% to 50% between 1997 and 2001. However, he ascertained that the rising similarities in products of Malaysia and China are not an issue, as the index of geographical overlap of their exports to the rest of the world is higher, at 72%. Both countries may therefore be able to expand their market shares simultaneously in third markets, mainly developed markets, as they are selling
somewhat different products to these markets. In actual terms, no such threat exists, as there are enough differences in products of Malaysia and China to ensure market expansion.

Despite the mixed arguments on the “China effect,” or rather the “China fear” for Malaysia, trade ties with China remain relevant for Malaysia. China has become a regional production base, importing intermediate goods for further processing and export to developed countries. It is also poised to become the world’s biggest export base. Further, China is amongst the world’s most important consumer market (one that is not monolithic but diverse). Networks with China are thus important for Malaysia to tap directly into the domestic market and to gain market access indirectly in advanced markets outside the region.

This article first examines the extent and shifts in network trade (referring only to trade in parts and components) between both countries; and, secondly, the relative position and strengths of Malaysia’s component exports in the quality ladder with China. The article draws evidence from the analysis of trade flows for the period 1990 to 2005.

**Internationalisation of Production**

Economic globalisation does not merely entail greater trade levels, but the international exchange of some factors and inputs into the production process (see Gereffi, 1999a). Trade development in the East Asian region, in particular, points to a rapid expansion in international production networks throughout the 1990s (Ando and Kimura, 2003; Athukorala and Yamashita, 2006; Gaulier et al., 2004; Jones and Kierzkowski, 2005; Jones et al., 2005; Ng and Yeats, 2003). This translates into the rising importance of trade in *parts and components*. In fact, component trade (“middle products,” “intra-product,” “intermediates” or “fragments of final products”) has grown at a faster pace than trade in final manufactured goods (Athukorala and Yamashita, 2006; Jones et al., 2005).

The “disintegration of production” processes, as identified by Feenstra (1998: 31), across borders can arise due to large factor price differentials or factor productivity differences between countries, which allow for some of the production segments to be produced more cheaply in another country (Findlay and Jones, 2001; Jones and Manjit, 2001). Findlay and Jones (2001) stated that such outsourcing is a natural concomitant of scale, in addition to reduction in service links (transportation, communication and co-ordination) brought about by technical progress.

Put simply, industries across the globe are now characterised by segments with varying skill requirements. The structure and composition of trade thus changes with the unskilled abundant country abandoning the production of the finished good, and instead assembling the imported skilled segment with domestic production (this reasoning follows the Heckscher-Ohlin lines for the basis for trade, see Jones et al., 2005) or even manufacturing certain components (segments) of the product. The striking feature of this structure of trade is the increasing interconnectedness of production processes in a sequential, vertical trading chain that stretches across countries, with each country specialising in a particular node/stage of a good’s production. The vertical integration of production across borders therefore does not merely allow unskilled labour-intensive countries to gain a comparative advantage in
low-end industries but also provides opportunities for them to be involved in low-end production stages of high-end industries (Arndt, 2004).

The structure of the networks has important implications for industrial upgrading. It shapes the capacity to upgrade production activities as the export role shifts. This may involve either product shifts, changes in economic functions, intra-sectoral progression or inter-sectoral shifts (Gereffi, 1999a, b). Product shifts involve a movement from cheap to expensive items and simple to more complex goods, while changes in economic functions refer to shifts towards phases of the production chain that include raw material supply, production, marketing and design. Intra-sectoral progression is a movement from simple assembly of imported inputs to higher value-added goods and services, involving forward and backward linkages along the supply chain and inter-sectoral shifts involving a movement from low-value labour-intensive industries to capital- and technology-intensive industries or mass production of standardised goods to flexible production of differentiated goods.

The various forms of industrial upgrading iterated above imply that it is a complex and dynamic phenomenon, involving an interaction of a host of factors. Networks provide the opportunity for industrial upgrading and have thus contributed to the development of new comparative advantages (“recycling comparative advantages”), which is said to be at the core of East Asian industrialisation (Gaulier et al., 2004).

**Extent of Production Networks**

**Component Trade**

Since industries based on the Standard International Trade Classification (SITC) scheme do not separate component trade from finished goods, the study adopts Athukorala’s (2003) classification of intermediate goods, inferred from trade statistics (of the SITC, Revision 3) for the industries in sections SITC 7 and 8. For the study, only items termed as “parts and accessories” at the 5-digit level SITC are counted as components, while others are treated as finished goods. The data are sourced from the United Nations (UN) COMTRADE database.

Data on trade in parts and components are compiled for 212 components in six industries (including electrical and electronics, machinery manufacturing, transport equipment and scientific and measuring equipment, furniture and fixtures and miscellaneous items). These six industries are fairly representative of trade flows with China as they constitute a combined trade share of 68% in 2005, with combined export and import shares of 53% and 78%, respectively.

The electrical, electronics, machinery manufacturing and transport equipment industries are highly structured. In the electrical industry, components refer to wires, conductors, power cables, telecommunication cables and fibre optic cables, whilst electronic components comprise semiconductor components, passive components and other components (printed circuit board, metal-stamped parts and precision plastic parts). As for machinery manufacturing, the parts and components form an integral part of the industry since they include moulds and dies, jigs and fixtures, actuators, motors, gear boxes and control systems for the four main categories of machinery (power-generating machinery and equipment; specialised machinery and equipment for specific industries; metalworking machinery and equipment; and
general industrial machinery and equipment). Components for the transport equipment industry include parts and components for motor vehicles (passenger and commercial vehicles) and aircraft.

Figure 1 compares the development of network trade between Malaysia and China over the period 1990-2005 for six manufacturing industries in Malaysia. From Figure 1, we can see that there was hardly any production sharing between both countries in 1990. Component trade represented only 2% of total trade with China in 1990. However, in 2005, trade shares in parts and components for the six industries had increased to 55%, recording an annual average growth rate of 34%. The increase in networks between Malaysia and China is much larger from the import relative to the export side. The share of components in total imports had increased remarkably from 2% in 1990 to 64% in 2005.6

By industry, Malaysia is a net importer of components in electrical and electronics and machinery manufacturing, whilst she remains a net exporter of components for the remaining four industries. In 2005, China remained as Malaysia’s fourth major source of imports, which mainly comprised parts and accessories for office machines, transistors and valves and automatic data processing equipment (Ministry of Finance, 2005). Similar to the upward trend in component imports, the share of components in total imports had increased from 2% to 43% for the period of review. In fact, trade in components recorded a higher annual average growth rate than that of total trade with China.

The trends outlined above do not only signify the importance of networks in trade in manufactures with China, but also indicate that networks with China are no longer driven just by cost considerations. The increase in component exports (though lagging behind component imports) to China clearly indicates that market expansion strategies are also important. The findings concur with the belief that China complements Asian exports in intermediates, thus any exogenous increase in its exports will result in an associated increase in the partner countries’ exports of the

Figure 1. Extent of Malaysia-China network trade (in percent). Ftot, share of trade in parts and components in total trade; Fx, share of exports of parts and components in total exports; Fm, share of imports of parts and components in total imports.

Source: Computed from the UN COMTRADE
same product (Eichengreen and Hui, 2005). This is particularly true given that China's foreign trade heavily relies on processing operations; imports of goods into China are assembled or transformed and re-exported within international assembly and subcontracting operations.

Network trade with China is of very different importance for the six selected industries. Overall, component trade with China is highest in the electrical and electronics industry, followed by machinery manufacturing. From the export perspective, network trade is found to be highest in the transport equipment, followed by the electrical and electronics and machinery manufacturing (see also Lemoine and Unal-Kesenci, 2002). Export shares of components in transport equipment increased substantially in the late 1990s. The high shares of component exports in electrical, electronics and transport equipment is hardly surprising since China is the world's third largest car market and on pace to become the biggest market for personal computers, broadband telecommunication services and digital televisions. At present, China is already the world's biggest consumer of wireless phones, with 350 million cellular subscribers (Engardio, 2007).

In contrast to the above industries, the importance of component trade remains relatively low in scientific and measuring equipment, furniture and fixtures and miscellaneous products. The small component trade shares with China in furniture and fixtures are expected given that China has already established its own large furniture makers such as Lacquer Craft, Fine Furniture and Starcorp. These companies import most of their components, including wood, from the USA. Nevertheless, production sharing with China has increased in most industries, with the exception of miscellaneous items. The decline in production sharing for miscellaneous items plausibly reflects that China records a comparative advantage in such items (Lemoine and Unal-Kesenci, 2002) and the recent decline in export shares of these items in China's trade (see Rumbaugh and Blancher, 2004).

The above discussion highlights a key point. Malaysia is essentially a net importer of components from China. Malaysia also specialises in assembly similar to that undertaken in China (see Gaulier et al., 2004; Huang, 2007; Lemoine and Unal Kesenci, 2002), whereby imported components are assembled into finished products for the domestic and export markets. The growing networks with China from the import perspective clearly indicate that Malaysian industries have become increasingly reliant on suppliers in China for essential manufacturing inputs. Conversely, China's appetite for Malaysia's component exports seems to have slowed down as China is becoming increasingly dependent on developed markets for component supplies. Lemoine and Unal-Kesenci (2002) noted that China has no strong bias in favour of Asian sourcing, particularly in machinery. Further, the shift by Taiwanese and South Korean multinationals to manufacture in China has resulted in China becoming more self-sufficient in key materials and components (Engardio, 2007; see also Gill and Kharas, 2007).

This poses a challenge for Malaysia to step up into a higher level of integration with China by strengthening its network ties from the export perspective, particularly in electrical and electronics, machinery manufacturing and transport equipment. Market shares in China will ultimately depend on how fast Malaysia goes through the middle-income status. The growing similarities of both countries, arising from the emphasis on assembly-like operations, is a bane to Malaysia, as
China, with its cheaper labour costs, is undeniably a more attractive location for such activities. Malaysia, therefore, needs to stay ahead of China by progressing beyond an assembler to that of a key component supplier.

*Two-Way Trade in Components*

Figure 2 presents the extent of trade overlap (two-way trade) in parts and components, as measured by the aggregate Grubel-Lloyd (AGL) index (see Grubel and Lloyd, 1975). The extent of overlap in network trade has increased from 3% to 38% of total trade between 1990 and 2005. The numbers do not suggest that two-way trade in components between the two countries is significant. Trade overlap with China only surpassed the 50% benchmark in 1998, soon after the financial crisis and, in 2002, just after the downturn in the global electronics industry. Since then, two-way trade in components has been on the decline.

The decline in two-way trade in components in the recent past is noted across all six industries. However, though the global slowdown in electronics has exposed the downside of network trade with China in this industry, sales in semiconductors are said to have picked up in the second half of 2005 (Bank Negara Malaysia, 2006; Ministry of Finance, 2005). Similarly, exports of automotive parts and components, such as oil filters, wipers, absorbers and suspension systems, had also reached newer heights in 2005. In fact, the increase in two-way trade in parts and components of the transport equipment sector after 2001 may be attributed to the phasing out of protection in the automobile sector with China’s accession to the WTO and the abolishment of the local content programme in the automotive sector by the Malaysian government in 2002.

Generally, two-way trade in components has increased with time, except for furniture and fixtures and miscellaneous items. However, in the electrical and electronics industry, the extent of trade overlap still remains below 50%. A possible reason for this is that massive foreign and domestic investments in China have
resulted in some milestones in science and technology. Of significance is the increase in semiconductor plants producing chips, putting China on track to be the world's second largest chip producer (Engardio, 2007). China has also developed competency in heavy machineries. Recent evidence indicates that China has already become an important auto supplier to the USA (Lum and Nanto, 2007). China is expected to gain further strength in heavy industries, under the tutelage of foreign companies that have invested in China (Engardio, 2007).

Overall, the upward trend in overlap in component trade implies that Malaysia is not just a receiver but also a sender of network links in trade with China. Prior to 2000, the trends in two-way trade depicted a gradual change, albeit small, in Malaysia's role from a “sink” (receive links in the network; import inputs and assemble into finished products for the export market) to a “transmitter” (send and receive links; import components and export the same product further down the value chain) of intermediate inputs into the production network with China. This gradual shift towards component-supply subcontracting (production of component parts or sub-assemblies for exports) to China, however, seems to be diminishing since 2000. Of importance to the Malaysian economy is whether component exports with China are sustainable over the medium to long term.

**Product Development for Selected Components**

The quality of components traded becomes a key issue, as products belonging to the same category may be characterised by different qualities. Further, the scope for product diversification occurs more in components than in finished goods.

Product development in components is confined generally to that of the electrical and electronics industry due to it being the fastest-growing commodity in world trade, given the scope for scale economies and vertical specialisation. The electrical and electronic components are also reflective of network trade between Malaysia and China as they command the largest shares in total component trade. Specifically, Malaysia is said to exceed other Asian electronics producers in terms of its exposure to network trade (Ernst, 2003). Similarly, from the perspective of China, networks play an outstanding role in this sector since parts and components of electrical machinery make up more than two-thirds of China’s imports (Lemoine and Unal-Kesenci, 2002).

To capture one aspect of industrial upgrading from the production side, represented by shifts from a low quality (cheap) to a high quality (expensive) product of the same type, the unit values of exports ($UVX^h$) and imports ($UV^M$) are calculated at the 5-digit SITC to reflect the respective prices/quality. Product development through higher quality of exports is then assessed via the relative prices of exports to imports ($RUV = UVX/UV^M$) of the same product. If the $RUV$ is above unity, it can be inferred that Malaysia exports higher quality components, of which it imports lower quality varieties, and vice versa if the $RUV$ is below unity. Growing values of $RUV$ above unity reflect a widening gap between $UVX$ and $UV^M$, which further implies that there is some form of product development taking place in the components traded via increments to value-added.

Prior to describing the trends in unit values for the selected components, three limitations in the data are worth mentioning. First, there is a large proportion of
bilateral export-import pairs with zero trade. Thus, the pairs with zero-trade are not considered for quality comparison. Secondly, the quantity data are missing for numerous products prior to 1998, thus limiting the time series. Thirdly, the measurement units for quantity differ, shifting from number of items to kilogramme. The choice of measurement unit is based on that which represents the component most heavily traded.

Figure 3 plots the unit values of exports and imports and the relative unit values for components of four SITC categories, SITC 776 (thermionic valves, tubes, photocells etc.), SITC 764 (telecommunications equipment), SITC 778 (electrical machinery and apparatus) and SITC 759 (office machines and automatic data-processing machines and units thereof). Based on a study by Kit and colleagues (2005), China outperformed Malaysia in categories 764, 778 and 759, which are considered as low and mid-end electrical and electronics. Thus, it is interesting to identify if the same holds in the case of components within those categories.

For all four categories in Figure 3, the RUVs are above unity in most years. This is a positive indication that components exported to China have a higher value-added content than their corresponding imports. This is not surprising as the electrical and electronics industry has remained the key sector in Malaysian manufacturing and, if improvements in product quality were to take place, this sector is the most probable candidate given its high levels of export orientation dominated by multinationals.9 The findings of Norlela and Figueiredo (2004) also indicated a steady progression in the electronics industry of Malaysia, involving the production of complex and higher value products since 2000. There is even a move from assembly of electronic and semiconductor devices to sub-assembly and component assembly of more complex devices. Rodrik (2006) added that, in the case of China, the export unit values for most of its electronic products in 2003 were lower than those of Malaysia (see also Azhar et al., 2008). Rodrik claimed, therefore, that there is some truth to the argument that Chinese exports of electronic products tend to be low cost without much technological sophistication.

However, the trends in unit values of exports should not be misconstrued to imply that Malaysia is doing relatively better than China in terms of product development. For example, though the RUV of components within SITC 759 (see Figure 3) remains above unity for the entire period of review, it has been on a downward trend since 2000. Clearly, this indicates that the quality gap between exports and imports has reduced for this category of components. This implies that value-added increments have not been realised and Malaysia is losing out in terms of product development, which concurs with Huang’s (2007) assertion that China has made substantial gains in automated data-processing machines.

In the context of product development, the critical question therefore is: are there significant amounts of domestic value-added in component trade with China? The answer is no. Malaysia can no longer rest on its laurels, given that the gap between UVM and UVX is narrowing in the recent past. Best (2007) emphasised that the success of the Malaysian electronics industry in the past lies in the growth of output but not value-added. Conversely, the value-added realised in China has increased as it now includes more stages of production, which used to be made abroad. The increased integration of production in the mainland reflects the rapid escalation of parts transactions among foreign affiliates (Lemoine and Unal-Kesenci, 2002).
Figure 3. Unit values and relative unit values for selected parts and components. UVX, unit value of exports; UVM, unit value of imports; RUV, relative unit value of exports to unit value of imports. UVX and UVM are on the left axis, whilst RUV is on the right axis. UVX and UVM for SITC 776 are measured as price per item, whilst that for SITC 764, 778 and 759 are in price per kilogramme. For SITC 764 and 759, quantity data are not available for the years prior to 1997, whilst for SITC 778 quantity data are not available for the years prior to 1998.

Source: Computed from the UN COMTRADE
Thus, China’s emerging capabilities in high-volume production will intensify the tendency of mass production manufacturing to be commodified. According to McKibbin and Woo (2003), much needs to be done, given that China ranks almost as high as Malaysia in the indigenous innovation index. Furthermore, Lemoine and Unal-Kesenci (2001, 2002) noted that the specialisation pattern of China is becoming almost similar to that of Malaysia, given the rapid rate of imitation in the latter, which has shortened the product cycle tremendously (Tham, 2005).

China is also fast gaining strength in producing sophisticated products at competitive prices. China’s accession to the WTO has brought about reductions in its export prices and thereby enhanced her appeal as an efficient supplier of intermediate inputs. Prices of Chinese produced goods are generally 30-50% below that of the USA (Engardio, 2007). Product development is undeniably an important issue for Malaysia or it may face the reality of being squeezed out by China (see Best, 2007). The scope for greater network trade with China can be harnessed if Malaysia specialises in higher quality components.

Concluding Remarks

The study has three conclusions. First, Malaysia’s participation in production networks with China has increased, while Malaysia remains a net importer of components. Secondly, although there is an increase in two-way flows of parts and components for further processing and development, implying a shift away from assembly-end operations, the numbers remain insignificant. Thirdly, network trade appears to have improved the quality of exports (reflecting the “moving up of the value chain”) destined to China, but the trends remain indeterminate in the recent past.

It is thus crucial for Malaysia to capitalise on China’s booming demand for high-end parts and components that feed into its assembly plants, to maintain China as its big customer. The intensity of competition for market share in China will be based on goods exported on the quality ladder. Engardio (2007) argued that China has the capacity to accelerate industrial upgrading, forming horizontal differentiated products at a more advanced technology level. In this context, Woo (2004) added that technological versatility becomes necessary for countries like Malaysia to capitalise on the lengthened production chains (see Rajan, 2005) in manufacturing activities, or face the dismal possibility of de-industrialisation (see also Lall and Albaladejo, 2003) or a hollowing-out of the sector (Tham, 2005). To reap benefits from mutual trade dependence, Malaysia needs to enhance its technological capacity (see also Tham, 2001, 2005), which is to innovate indigenously, particularly to upgrade exports.

In short, given that Malaysia’s competitiveness will be based on product quality, moving up the value chain becomes an inevitable option. Malaysia needs to ensure constant product upgrading to remain an important cog in network trade with China, particularly through component supply subcontracting, lest it loses out to the newly industrialising economies, such as Taiwan, South Korea and Singapore. The network links with China are also important, given that if China displaces Malaysia’s export share in advanced markets for a particular product, the net welfare effect experienced by Malaysia will depend on the extent to which China resorts to sourcing components for that product from Malaysia.
Notes

1 The leading export product category to China from the rest of the world is electrical and electronic products, particularly key components (electronic integrated circuits and micro-assemblies) used in the assembly of electronic products (Li, 2006).

2 Alternative terms have been given to reflect the same concept, such as segmentation, integrated production, outward processing (Lall et al., 2004), intra-product specialisation, super-specialisation (Helg and Tajoli, 2004), multi-stage production (Hummels et al., 2001), de-localisation, disintegration (Hijzen et al., 2003), production sharing, vertical specialisation, slicing the value chain and outsourcing (Feenstra and Hanson, 1996; Athukorala and Yamashita, 2006), kaleidoscope comparative advantage and intra-mediate trade (Rajan, 2005).

3 Athukorala's (2003) classification of “parts and components” is found to be more comprehensive than that of Ng and Yeats (1999), given that the latter does not include semiconductor products in their classification. Therefore, the Ng and Yeats classification will underestimate the true importance of this exchange. However, it is acknowledged that this classification is not an exhaustive measure of the phenomenon of international fragmentation.

4 There is no comprehensive relevant statistics that allow for measuring the role of international production and trade networks precisely. Various ways have been adopted in the literature to identify trade in parts and components. Athukorala and Yamashita (2006) identified 225 products at the 5-digit level SITC as parts and components belonging to sections SITC 7 (machinery and transport equipment) and SITC 8 (miscellaneous goods), while Lall and colleagues (2004) concentrated on the 4-digit SITC 7.

5 See Lall and colleagues (2004) for the limitations in capturing fragmentation (partially) by merely separating finished goods from parts and components.

6 The UNDP (2006) report also underlines similar changes in the patterns of imports that reflect a growing share of intermediate goods with a concurrent decline in the share of consumption goods.

7 The study by Eichenberg and Hui (2005) indicated overall positive effects for Malaysia due to trade with China, reflecting the specialisation of Malaysia in exports of components and other capital goods, which are much demanded by the latter.

8 Average unit values are used as a proxy for determining the quality of goods traded (see Appelbaum (2004) for other measures that tap into dimensions of the production side of industrial upgrading). Unit values measured at the finest level of aggregation, for which data are available, minimise the incidence of composition problems (Hallak, 2006). See Silver (2007) for the unreliable use of unit value indices, given biases arising from compositional changes in quantities and quality mix of what is exported and imported.

9 See also Ministry of International Trade and Industry (2006) for discussion on the high value and higher technology content of electrical and electronic parts and components exported by Malaysia to the rest of the world.

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