

Vietnam's export in face of China's competition: an overview and assessment

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Abstract

This paper examines Vietnam's export in face of China's emergence as a major competitor in international markets. Indeed, China's WTO accession since 2001 presents both opportunities and challenges for the less developed East Asian countries, notably Vietnam. We first use CMS analysis to investigate the influence of separate crucial factors determining export performance of the two countries for the years 1997 to 2004. External trade indicators are then calculated in order to examine their position in several existing leading export commodities. The paper suggests that, although China has become a huge competitor in areas in which the country has comparative advantage, this phenomenon did not crowd out Vietnam's exports. Rather, should the country incur economic losses, it would not result from China's WTO accession but from its own specialization pattern.

Keywords: WTO accession, international integration, export performance, specialization pattern.

JEL Classification: F14, F15, O53, O57, P52

1. INTRODUCTION

Over the last 20 years of reforms, Vietnam has achieved great successes in terms of Gross Domestic Product (GDP) growth, macroeconomic stabilization, export expansion, Foreign Direct Investment (FDI) attraction and poverty reduction. The economy grew at an impressive level of 7.5% per year during 1990-2004, while GDP per capita increased by 5.7% per year. As a result of fast economic development, poverty rate sharply reduced from 70% in 1986 to 37% in 1998 and 19.5% in 2004.

Among crucial factors contributing to these remarkable achievements is the export sector, which constitutes more than 50% of GDP with an annual growth rate of 16% during the last ten years. Impressive performance of the export sector is attributed to a great deal of continuing efforts of improving trade policies toward a sound regime of trade liberalization through strengthened international economic integration. In 1992, Vietnam signed a trade agreement with the European Union (EU). In 1995, Vietnam joined the Association of Southeast Asian Nations (ASEAN) and committed to fulfill the agreements under the ASEAN Free Trade Area (AFTA) by 2006. Vietnam applied for WTO membership in 1995 and became the 150th WTO member on 11 January 2007. The country is also member of the Asia Pacific Economic Cooperation Forum (APEC) since 1998. In 2000, Vietnam and the United States (US) signed a Bilateral Trade Agreement (BTA) which became effective in December 2001. Since then, Vietnam has also joined several regional integration clubs such as ASEAN-China Free Trade Area (ACFTA) in 2002, ASEAN-Japan Comprehensive Economic Partnership in 2003, and ASEAN-Korea Free Trade Area in 2006.

Although such a remarkable performance, the East Asian crisis interrupted Vietnam's trade expansion in 1998. The export growth suddenly collapsed throughout the region beginning in mid-1995 and extending through 1996. This phenomenon raised new concerns about what was known as the "East Asian miracle". Several studies attempted to determine whether the emerging East Asian economies lose export competitiveness before the crisis in mid-1997 (ADB, 2002). Some others argued rather that China's merge into the global economy has slowed down the growth pace of the other East Asian countries compared to their pre-crisis performance (Eichengreen and alii, 2004; Ravenhill, 2006). Indeed, Chinese foreign trade has developed rapidly since the implementation of reform and opening-up policies in 1978. While trade policy reforms before 1987 were considered to be at an experimental stage, the Central government initiated from 1988 major reforms to the management of foreign trade. In particular, it facilitated expansion of multi-national corporation activities and cross-border production networks that used FDI and non-FDI relationships to exploit various advantages of China's location (low costs of labor, economies of scale, spatial concentration). In addition, China became a full member of the WTO on 11 December 2001. As a large developing country, with its rapid economic growth and huge volume of trade, this event has exerted and will continue to exert profound influence on the world economy (Pei and Peng, 2007). Along the last two decades, China has grown into one of the main competitors in international markets, has become the third largest exporter in the world in 2004 and is expected to become the first largest by the beginning of the next decade (Gaulier and alii, 2006).

This phenomenon is important for the rest of the world, especially for the other East Asian economies and for the less developed exporting countries like Vietnam. In particular, it raises concern about the nation's ability to compete in the world market, as the country has similar comparative advantage to its great neighbour. This requires efforts to find out what are determinants of Vietnam's export performance in global markets since the East Asian crisis.

Accordingly, our study provides a quantitative assessment of Vietnam's trade performance in face of China's competition. At the specific case of Vietnam, some studies attempted to determine whether China's emergence has diverted foreign trade from its Asian neighbour. However, most of them restricted their analysis to revealed comparative advantage calculation or only used qualitative methods to assess Vietnam's export performance (Nguyen, 2002; Ngo, 2005). To our acknowledgement, only one quantitative analysis attempted to measure Vietnam's export performance (Vo, 1998). However, the level of Vietnam's international integration during the period under consideration 1988-1996 was limited, so that the quantitative findings are somewhat unconvincing in explaining impacts of trade policy reforms on export growth, not to mention the difficulty to access reliable data at that time. Consequently, our novel contribution in this paper is to provide a quantitative assessment of Vietnam's trade performance following the East Asian crisis and China's WTO accession. We first use Constant Market Share (CMS) analysis to investigate the influence of separate crucial factors determining export performance of the two countries for the years 1997 to 2004. In order to deepen understanding of Vietnam's trade performance since the East Asian crisis, we then focus our analysis on its trade specialization and calculate two compared external trade indicators: the classic Balassa's Revealed Comparative Advantage (RCA) index and the Contribution to the Trade Balance (CTB) index. The major data source used for our analysis is the COMTRADE database, where import data provided by reporting countries will be compiled and grouped for 8 major trading partners of Vietnam during the period 1997-2004. Other data, mostly used for qualitative assessment, will be obtained from the General Statistics Office (GSO) and other reference books.

The rest of the paper is organized as follows. Section 2 presents an overview of Vietnam's export: it contains a brief review of trade policy reforms in Vietnam and an overall description of its exports. Section 3 then quantitatively analyzes factors determining Vietnam's export performance by using the CMS model. Section 4 examines its comparative advantage and trade specialization. We will apply the same methodology to China and compare our findings. Finally, section 5 concludes and summarizes our main results.

2. Overview of Vietnam's export

2.1. Trade reforms in Vietnam since Doi moi

Although *Doi Moi* was officially announced in 1986, trade reforms in Vietnam were, however, only initiated in 1988 and have experienced a lot of ups and downs so far. Vietnam's law on export-import tariffs was first launched on 1 January 1988. Trade reform process had been strongly supported between 1989 and early years of 1990s, suffering a standstill during mid-1990s, and has been resumed with a convincing speed since 1998. As pointed out by Vo (2005), trade reforms that are closely interconnected with export performance in Vietnam largely refers to trading rights, import protection, and export promotion, which are summarized in *Appendix 1*.

It can be seen that over more than the past 15 years, there has been significant liberalization of foreign trade regime in Vietnam: especially with regards to reduction in effective rate of protection for traded goods production. Non-tariff import restrictions which create trade distortions have been abolished gradually, while favourable mechanisms have been applied to exports. Also, the success of export sector is not without the government's prompt responses towards trade in determined moves for joining the WTO. A great harmonization in legal framework and policies has been made for consistency with international norms and practices.

Recent accession to the WTO and the implementation of AFTA mean that the Most Favoured Nation (MFN) and preferential tariff schedules have replaced the much higher previous tariff rates¹. Trade promotion activities become more diversified; management mechanism of export and import policies has been more flexible and predictable (CIEM, 2006).

Nevertheless, the current Vietnam's trade policy is characterized by a 'dual' approach that the country has been pursuing for a number of years. On one hand, Vietnam indicates its expectation to promote export-oriented sectors where private firms, especially the Foreign Invested Enterprises (FIEs) with regional and global competitiveness, play the leading roles. In so doing, trade reform has helped the private sector by enhancing its access to imported inputs and to export outlets. According to Ngo (2005), the private sector is mostly labour-intensive and exports on average around three-quarters of its production; this contrasts sharply with the state sector which is mainly capital-intensive and inward-looking, but still dominates the economy. However, considerable bias against exports still exists in several sub-sectors where Vietnam has an ample scope of achieving export success such as labour-intensive or primary processing industries. The anti-export bias in the incentive structure is creating a major constraint for a sound development of the private sector, especially with regards to small and medium-sized enterprises – which are considered to be a driving force for export expansion (Athukorala, 2005).

On the other hand, the foreign trade regime is still considered to be restrictive to protect specific industries such as steel, cement and fertilizer. The Vietnamese government maintains protection to capital intensive State-Owned Enterprises (SOEs) which are dominant in import-substituting sectors. Although they benefit from FDI inflows (FIEs establish joint-ventures with those SOEs to enjoy import-substitution measures), they remain generally weak and inefficient. Such issues reflect Vietnam's rather special circumstances as an Asian country making the transition both from a centralized planned economy to a market economy, and from a developing economy to an industrialized one. Indeed, the SOEs enjoy rents from existing barriers to trade because of their leading role in policy making, revenue collection and distribution in the absence of macroeconomic and budgetary management, or market institutions. To remove these irrationalities, Vietnam needs to conduct trade reforms in parallel with a wide range of macroeconomic and structural reforms of SOEs, State Owned Commercial Banks (SOCBs), and tax administration (Auffret, 2003; Vo, 2005).

At the firm level, Vietnamese entrepreneurs and traders have gradually become more experienced, professional and dynamic, resulting in an improvement and expansion of production, business and trade capacity. However, export-supporting measures are still weak and insufficient. Infrastructure for export activities lacks both in quantity and quality; information provision for analysis and forecast of import sources and export markets is not timely and sufficient. The linkage between domestic firms in trade activities are still weak, failing to take advantages of industry and trade associations for better trade promotion (CIEM, 2006).

According to Nguyen (2002), many Vietnamese managers of enterprises are facing various difficulties in the export processing industries: a shortage of funds, a large debt, out-of-date machinery and technology, insufficient information and limited knowledge, not to mention the environment of unequal competition between local and foreign-owned capital firms. Creating a favourable incentives environment, increasing competitiveness of Vietnamese products and enterprises through economic efficiency and product quality should be the first current priorities of the Government's policy.

2.2. General trends in Vietnam's exports

Vietnam was one of the fastest growing economies during the period 1990-2004, registering an annual average growth rate of 7.5%. It also stands out for its progress in achieving global, as well as regional economic integration. The country currently has wide trade relations with more than 220 nations and territories. During the period 1993 to 2004, Vietnam's trade openness (exports + imports of goods in percent of GDP) rose from 54.2% to 123.9%, while market share of its exports (exports of goods in percent of world imports of goods) more than trebled, from 0.08% to 0.29% (Tumbarello, 2006). It is an impressive record of performance compared with other countries in the East Asian region: China, in particular, was less open to trade (26.9% in 1993 and 68.2% in 2004) and 'only' doubled its export market share (from 5.74% to 9.64% during the same period). Obviously, Vietnam belongs to the club of nations which achieved high rates of export-led growth. Between 1993 and 2003, China, India and Vietnam were the only Asian countries which strengthened their positions in world imports.

Insert Figure 1 and Table 1

The trade liberalization measures implemented under various preferential trade agreements during the 1990s, together with the region's rapid economic growth, have led to significant growth of Vietnam's trade with its East Asian neighbours. This phenomenon also suggests the ongoing participation of Vietnam to the regional sharing production and outsourcing networks that China has contributed to intensify. As Asian trade is more and more centred on China, the latter has been overtaking Japan as the major trading partner in the region, including Vietnam. However, the country is still heavily dependent on markets outside the region, as domestic consumption still remains a relatively weak component of demand in most Asian economies. Thanks to the VN-US BTA effective since late 2001, Vietnam has dramatically increased its exports to the US, from around 1 billion USD in 2001 to nearly 6 billion USD in 2005 (GSO, 2005). The market share of Vietnam on the US market, totally insignificant in 1995, grew up to 14% in 2004 (Chaponnière and Cling, 2007). As the US Government has granted MFN status (reducing the average tariff on Vietnamese imports from 40% to 3-4%), US is currently among the largest importers of Vietnam, together with the EU, Japan, China and ASEAN4 (*Figure 1*). In recent years, growth in Vietnam's exports to almost all major destinations has accelerated, but these rates were uneven among importing regions. Notably, while Vietnam's export to the EU market just increased modestly from 15% per annum during 1997-2001 to 18% per annum during 2001-2004, its export growth to the US market quickly went up considerably from 29% per annum to over 70% per annum during the corresponding periods (*Table 1*).

Insert Table 2

In accordance with the export-led growth strategy, there is a sign of improvement in export structure with an apparent increase of manufactured products to approximately 60% in 2004 from around 52% in 1997, at the expense of primary products (*Table 2*). In comparison, the 50% threshold was reached by China in 1986, by Philippines in 1984, by Thailand and Malaysia in 1989 and by Indonesia in 1995 (Chaponnière and Cling, 2007). This development indicates a positive move towards trade diversification, highlighted with a notable increase trend of SITC-8 (miscellaneous manufactured articles) from 39.2% to 42.5%. And like the other Asian countries, Vietnam's external trade becomes more and more driven by its involvement in the regional segmentation of production processes, as shown by the rise of SITC-7 (which includes parts and components) from 6.8% to 9.3%.

However, when we have a deeper look of the export structure corresponding to a 2-digit SITC aggregates, we find that almost three-quarters of export revenues in 2004 were still attributed to seven key commodities: namely, crude oil (20.2% of total export²), garments (16.6%), footwear (16%), seafood (8%), furniture (5.2%), electronics appliances (4.3%) and tea, coffee (3.3%). In short, the export sector is still dominated by natural-resource intensive, labour-intensive and low value-added products; many of them are also vulnerable to fluctuations in the world markets. Such international specialization raises concerns about the appropriate export pattern so as the country could pursue its export-led growth strategy in the long run.

3. CMS analysis of Vietnam's export performance

3.1. Data and methodology

Constant Market Share (CMS) analysis is a methodology which was applied for the first time to international trade flows by Tyszynski (1951). It was formerly used in the empirical studies of structural change in industrial and regional economics. Basically, the CMS model is built on the assumption that without changes abroad and maintained competitiveness at home, a country's export share in the world market should remain unchanged over time. Any deviation of the actual export growth from this constant market share norm is broken down into four components: world trade, commodity composition, market distribution, and a residual usually referred to as an *ex-post* competitiveness. The decomposition method has to be applied to export data at a disaggregated level with respect to markets and products. It then allows analysis of the separate influence of these different factors on export performance.

Following Leamer and Stern (1970), the CMS identity decomposes actual change in a country's exports between two periods as follows:

$$V' - V = \underbrace{(rV)}_{(1)} + \underbrace{\sum_i (r_i - r)V_i}_{(2)} + \underbrace{\sum_i \sum_j (r_{ij} - r_i)V_{ij}}_{(3)} + \underbrace{\sum_i \sum_j (V'_{ij} - V_{ij} - r_{ij}V_{ij})}_{(4)}$$

Where:

V (respectively V') is the value of country X 's total exports in period 1 (period 2)

V_i (respectively V'_i) is country X 's exports of commodity i in period 1 (period 2)

V_j (respectively V'_j) is country X 's exports to country j in period 1 (period 2)

V_{ij} (respectively V'_{ij}) is country X 's exports of commodity i to country j in period 1 (period 2)

r percentage increase in total world exports from period 1 to 2

r_i percentage increase in world exports of commodity i from period 1 to 2

r_{ij} percentage increase in world exports of commodity i to country j from period 1 to 2

Appendix 2 describes the decomposition procedures for producing the aforementioned CMS identity. Country X 's export growth can then be attributed to:

1. *Overall trade effect*. It represents what the country's growth in exports would have been if they had grown at the same rate as the total value of world exports, *i.e.* if the country maintained its market share.
2. *Commodity composition effect*. It indicates the difference in the growth rate of exports that each commodity may have experienced compared to the world average. A country's export may grow because it concentrates in commodities with growth rates higher than the world average.

3. *Market distribution effect.* A country's export may grow because it exports to geographical markets experiencing high growth.
4. *Competitiveness effect.* It indicates the difference between the actual increase in exports and the hypothetical increase if the country maintained its export share in each market, with respect to each commodity group and to each country. A positive sign of the residual will reveal an improvement in export competitiveness.

In spite of some conceptual and empirical limitations as indicated by Richardson (1971), the CMS approach is a commonly accepted procedure of accounting for the sources of a country's export growth, depending on the availability of data. In empirical studies on the East Asian countries, the CMS approach can be seen in Chen and *alii* (1999) who evaluated the *ex-post* competitiveness of China's export in agri-food products during 1980-96. Indeed, China was a net exporter of agri-food to the world market over the period under consideration and the authors attempted to examine whether the rise of China's export in agri-food products was associated with a rise in its international competitiveness. The CMS results revealed that the observed increase in agri-food exports was mainly due to growth of world import demand and a favourable market distribution effect. Similarly, Juswanto and Mulyanti (2003) examined Indonesia's manufactured exports during the 1990s. The analysis revealed that Indonesia's export growth had a severe problem with commodity composition and low response to world demand. The ADB Institute (2002) also used CMS estimates as standard export performance indicators to determine whether the emerging East Asian economies lose export competitiveness before the crisis in mid-1997. Contrary to the belief that Asia was no longer a dominant force, the study found that the East Asian economies registered high export growth in the early 1990s.

To our acknowledgement, there is only one research by Vo (1998) dealing with the use of CMS approach in analyzing Vietnam's export performance for the years 1988 to 1996. During that period however, despite strong pace of trade reforms, Vietnam just came in the initial stage of international integration, so that exports were not actually seen as a leverage of the Vietnam's economy.

Consequently, the CMS decomposition is estimated here by compiling data from the COMTRADE on an annual basis at a two-digit SITC level of commodity aggregation, where import data provided by reporting countries are used as proxies for export value. The highly aggregative nature of the commodity data used here is due to statistical constraints; specifically, it is still difficult to get data on Vietnam's external trade. Vietnam's world trading partners are also grouped into eight destinations: ASEAN4 (*Indonesia, Malaysia, Philippines, Thailand*), CHINA, EU15³ (*Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, United Kingdom*), JAPAN, NICs⁴ (*Singapore, Hong Kong, South Korea*), OCEANIA (*Australia, New Zealand*), US, and ROW (Rest Of the World, *i.e.* remaining countries).

Our analysis focuses on the period from 1997 to 2004, taking consideration of data availability on Vietnam and its major trading partners. The CMS decomposition of Vietnam's exports for the period under consideration allows us to analyze the performance of Vietnam's exports over the last ten years. However, in an attempt to link export performance with major influential events or reforms during the past ten years, the CMS analysis is carried out at the same time for the two consecutive sub-periods 1997-2001 and 2001-2004. The year 2001 is chosen as a breaking point in order to capture the impact of the VN-US BTA (effective since December 2001), which has been thought to accelerate Vietnam's exports to the US significantly. Correspondingly, it also benchmarks China's entry into the WTO. Because many of its obligations reflected similar commitments required by Vietnam's entry, it should

facilitate trade prospects for the latter after joining the WTO. Therefore, the same CMS-based analysis is also conducted for China under the two sub-periods 1997-2001 and 2001-2004 in order to assess the impact of WTO accession on its export performance.

3.2. Decomposition results

As illustrated in *Table 3*, decomposition for the period 1997-2004 as a whole shows that the rise in Vietnam's export can be largely explained by a competitiveness effect (which accounted for 82.5%) and a world trade effect (which contributed about 30% to the overall export performance), whereas commodity and market effects are seen to have negative contribution. The *competitiveness effect* attests to the impressive progress Vietnam has made towards reforming its trade system since the early 1990s. However, decomposition for the two sub-periods reveals a significant difference. During the first sub-period 1997-2001, the competitiveness effect dominated Vietnam's export growth, explaining up to 95% of rising exports. This development attests to the considerable speed in trade reform process following the regional crisis in mid-1997. In contrast, the second sub-period 2001-2004 was marked by a rapidly increased contribution of world trade effect to Vietnam's export growth (almost half of the overall export performance), although the competitiveness effect still prevailed. The decline in the latter after 2001 may also reflect China's crowding out effect on global markets since it joined the WTO.

Impressive export achievements were contributed significantly by *world trade growth*. A calculation from COMTRADE statistics indicates that world trade growth has accelerated from 3% per annum during 1997-2001 to 13% per annum during 2001-2004. However, as analyzed in CIEM (2006), the dramatic increase in merchandise export resulted from the increases in both commodity price and export volume. Higher world prices benefited Vietnam's exports in a number of leading export goods like crude oil, rice, coffee, rubber and coal (World Bank, 2005). The average growth of 11.5% in export price led to the increase by 3.3 billion USD in export value. The largest rises in export prices were for crude oil (40.7%), coffee (24.7%), coal (20.7%), rubber (17.9%), tea (15.9%), rice (14.5%) and cashew nuts (12.5%). Meanwhile, export volume went up by about 9.4% on average, resulting in a climb of about 2.4 billion USD in export turnover. The items with the greatest increase in export volume were coal (53.8%), rice (28.1%), peanut (26.1%), and rubber (11.9%).

Insert Table 3

After its WTO accession, China's export growth increased sharply, from an average annual level of 10% during 1997-2001 to 23% during the period 2001-2004. The two most important factors contributing to rising exports are world trade and competitiveness effects, with no substantial change between the two sub-periods (*Table 4*). However, Vietnam stands out for its impressive competitiveness effect on the whole compared to China, albeit more moderately during 2001-2004. The difference in the results may be explained by the fact that Vietnam has liberalized its trade regime to a considerably greater extent than China. In comparison, China's export competitiveness less eroded than Vietnam in the second sub-period 2001-2004 due to its WTO entry and all that has gone with it (market access, business facilitation, etc.). In contrast to Vietnam, the post-WTO accession period also witnessed a positive contribution of commodity composition effect (changing from -17% to 2%). This suggests that China has significantly improved its product composition by concentrating its exports on commodities in which demand has been more dynamic than the world average. For instance, the leading export commodity during the sub-period 2001-2004 were scientific and controlling

instruments and apparatus (+11.1% increase per year on average), contrasting with miscellaneous primary products (SITC 09) which grew around the same rate (+11.9%) within the sub-period 1997-2001.

Insert Table 4

China's case puts strong evidence that WTO membership will influence Vietnam's export growth through a *product composition effect*. A country's export shares may fall independently of its industries' competitiveness if there's a shift in the structure of demand in world trade. Further discussion should therefore be given to Vietnam's export structure by commodity (Section 4 below), and also in support of an explanation for the negative contribution of the commodity effect to Vietnam's export growth. The latter implies that Vietnam had concentrated on commodities in which the market was growing relatively slower than the world average. Indeed, an analysis of COMTRADE data shows that except crude oil, the majority of Vietnam's leading export commodities under SITC 03 (seafood), SITC 07 (tea, coffee), SITC 84 (garments), and SITC 85 (footwear) registered growth of import demand at a lower rate than the average level of world demand. However, the positive move towards trade diversification in accordance with the export-led growth strategy (as shown in *Table 2*), is consistent with the findings of CMS-based analysis, where the commodity composition effect in the sub-period 2001-2004, despite still negative, was less severe than the previous one.

Insert Table 5

Finally, the CMS decomposition points to the negative sign of *market distribution*, with a larger extent than the product composition effect. China registered the same negative effect (even worse), although its exports increased sharply during the period under consideration. It implies that WTO accession in 2001 did not improve the market distribution effect as the latter still contributed negatively (about 16%) to the overall export performance. This result indicates that both countries traded in sluggish export markets. As Vietnam's trade flows with its East Asian neighbours have increased rapidly over the last decade, negative contribution of the market distribution effect were largely due to growth collapse throughout the region beginning in mid-1997, as well as Japan's stagnation during the whole period under consideration.

Table 5 reports the average annual rates of import growth for the 8 major trading partners of Vietnam during the period 1997-2004. While the first sub-period was marked by the East Asian crisis, we can see that Japan, US and ROW registered a lower import growth than the world demand during the second sub-period. However, these markets concentrated up to 40% of Vietnam's exports. Moreover, the negative sign of market distribution effect in the second sub-period 2001-2004 seems to contradict with the expectation that the VN-US BTA would have a great impact on Vietnam's export performance. Hence, CMS analysis reveals that Vietnam and China had a severe problem with market distribution.

4. Comparative advantage and competitiveness

Vietnam's impressive performance both in terms of GDP and export growth rates have been among the highest worldwide. However, the former CMS decomposition points to the negative contribution of the commodity composition effect on the whole period 1997-2004, in contrast to China. Many studies have pointed out the limited competitiveness of Vietnamese

commodities and have raised some doubts concerning the country's ability to improve its position in the world. In order to look deep into the sources of export growth, especially to support the former CMS analysis, we need to identify sectors in which Vietnam enjoys relative competitive strength. In consequence, an analysis of Vietnam's trade specialization is conducted here in order to assess how the country is confronted with China's competition in world markets.

Traditionally, the index of Revealed Comparative Advantage (RCA) proposed by Balassa (1965) measures comparative advantage by dividing a country's share of exports in a particular product by the same world's share.

$$RCA_{ij} = \frac{X_{ij}}{\sum_i X_{ij}} \bigg/ \frac{\sum_j X_{ij}}{\sum_i \sum_j X_{ij}}$$

Where:

X_{ij} is country j's exports of commodity i and $\sum_i X_{ij}$ is country j's total exports

$\sum_j X_{ij}$ is world's exports of commodity i and $\sum_i \sum_j X_{ij}$ is world's total exports

RCA_{ij} reveals a comparative advantage if country j's share of exports of a certain commodity i is greater than the world's share; that is, the RCA is greater than 1. The index allows comparisons between countries at any time, and allows changes in structure of comparative advantage to be tracked over time. Thus, RCA indices and their evolution provide broad information about a country's specialization pattern relatively to the structure of world trade. However, the RCA indices are derived from export data only. The conclusion might be incorrect, since product-based RCA might reveal a country's comparative advantage in one product, but in fact it imports parts and does the labour-intensive activities of assembling. Furthermore, it might be biased by the size of the country's market and the influence of changes which are not specific to the country but result from fluctuations of each commodity in world markets.

In order to eliminate such distortions, the CEPII has developed an analytical indicator of comparative advantage based on the trade balance⁵ instead of relative export structures. For product i and country j, the balance is first expressed in thousandths of Purchasing Power Parity (PPP) GDP in current dollars of country j (GDP_j).

$$y_{ij} = 1000 * \frac{X_{ij} - M_{ij}}{GDP_j} \quad \text{Where } M_{ij} \text{ denotes imports by country j of product i}$$

The contribution of product i to the total trade balance, in relation to GDP, is defined by:

$$CTB_{ij} = y_{ij} - \left(\frac{W_i}{W} \right) * y_j$$

Where: world trade of product i is $W_i = \sum_j (X_{ij} + M_{ij})$

world trade of all products is $W = \sum_i \sum_j (X_{ij} + M_{ij})$

total trade balance of country j in relation to GDP is $y_j = 1000 * \frac{X_j - M_j}{GDP_j}$

The indicator depends on the spread between the trade balance on product i (relative to GDP) and the global trade balance, weighted by the share of product i in world trade. Defined in this way, the indicator reveals comparative advantage pattern as any deviation of the specific

product to the overall balance corresponds to an advantage (disadvantage) if the contribution to the overall balance is positive (negative). Indeed, this leads to:

$$CTB_{ij} = 1000 * \frac{W_i}{GDP_j} * \left[\frac{(X_{ij} - M_{ij})}{W_i} - \frac{X_j - M_j}{W} \right]$$

Thus, the contribution of product i to the total trade balance of country j corresponds to the spread between the country's position on the international market for product i (represented by its relative balance) and its global position.

In order to confront product-based and process-based analysis of comparative advantages, both RCA and CTB indices are here computed for China and Vietnam using the COMTRADE database at a three-digit SITC level for the period 1997-2004⁶. The results of calculation for all 260 three-digit SITC indicate that China has unsurprisingly a wide spectrum of comparative advantages, whatever the indices (*Figure 2*). This is explained by its huge size and earlier industrialization process, but also the strong export promotion strategy implemented by the government. As noted Ngo (2005), if one country is large in terms of size, then it might have comparative advantage in all commodities in one manufacture aggregation. That was the case of China's export in the textile and garment in the 1980s, and the same export strategy has shifted toward the electronics industry since the last decade (as drawn by the rapid expansion of items in SITC 7 category with comparative advantage). In consequence, China's specialization is much more diversified than the Vietnamese one. As illustrated by *Tables 6 and 7*, manufactures accounted already for the majority of the top 10 in 2004 and more than 60% of number of comparative advantages (either $RCA > 1$ or $CTB > 0$) are manufactured products.

However, the evolution of comparative advantage over the period is more striking in Vietnam. Although its trade specialization is more concentrated, the number of commodities, which have positive CTB indices or $RCA > 1$, has expanded more substantially in Vietnam than in China. The higher number of commodities with positive CTB values suggests that the country is not fully part of the regional production network yet, although the role of export processing becomes similar to the case of China (Chaponnière and Cling, 2007). So, the process-based analysis diverges from the traditional product-based analysis of RCA.

In spite of its impressive performance, both RCA and CTB indices reveal that Vietnam's actual comparative advantage is still explained by its factor endowments and early stage of development. Its specialization pattern mainly relies on labour-intensive manufactured goods such as footwear, garments, textiles, in addition to traditional exports like agricultural products (rice, fish and crustaceans), crude oil and rubber. Furthermore, all manufactured products among the top ranked values belong to the SITC 8 category.

A deeper look of the CTB indices shows that both countries have the same comparative in 5 items out of the top 10, almost garment products. This specialization pattern may explain the negative contribution of the commodity composition effect to Vietnam's export growth as stressed by the CMS analysis.

5. Conclusion

Vietnam has made impressive progress towards opening its trade system since the early 1990s. Its trade flows have increased rapidly over the last decade, with the help of its

participation in bilateral and regional trade agreements. However, has China's trade expansion since it joined the WTO been achieved at the expense of Vietnam? In order to assess such argument, the paper first uses CMS analysis to investigate the influence of separate crucial factors on Vietnam's export performance. The quantitative analysis is also conducted for China to compare the findings and get lessons from its post-WTO accession. With the use of COMTRADE, import data of reporting countries during the period 1997-2004 are compiled and grouped for 8 major trading partners. The period under consideration is split into two sub-periods 1997-2001 and 2001-2004 in order to capture the impact of China's WTO accession. External trade indicators are then calculated in order to deepen the analysis of Vietnam's specialization pattern in face of China's competition. The classic Balassa's RCA index is computed and complemented by a CTB index which takes into account the process-based analysis.

The empirical results suggest that Vietnam's strong export performance is attributed to favourable factors. Among them is the rapid increase in world import demand: over the period 1997-2004, the growth rate of world trade influenced Vietnam's export performance at a large extent. However, a significant difference between the actual export growth and the world trade effect is clearly attributable to a 'competitiveness' residual effect. This result attests to the successful implementation of trade reforms with a convincing speed since 1998.

The negative sign of commodity composition effect, supported by RCA and CTB calculations, reveals that the majority of Vietnam's exports remain resource-based and labour-intensive products and, in fact, world demand for those commodities tends to be low. In this connection, it is notable that the level of diversification of Vietnam's export lags behind that of China's export to the world market as a whole. This may be one of the reasons explaining why the contribution of the commodity composition effect in China became positive after 2001. As a new member of the WTO, it has gained knowledge about the basic rules of market economies and become more adaptable to changes in the international economy (Pei and Peng, 2007). In addition to maintaining current leading export sectors, the negative commodity composition effect may suggest that a considerable potential for upgrading Vietnam's export performance through product diversification remains. In a longer term perspective, Vietnam should think of expanding capital intensive, as well as more sophisticated products. With regards to labour-intensive industries, Vietnam needs to raise labour productivity and to improve knowledge content in final products. Also, upgrading the quality of exports is crucial for Vietnam to face the challenge of China's competition.

Finally, the negative contribution of market distribution effect to overall export performance suggests that there is an ample scope for diversifying export markets beyond the East Asian area. Large markets like EU or US remain the main export markets for consumer goods while the intra-Asian trade evidences the vertical division of labour. However, structural change in the regional growth pattern with China emerging as an engine of inward-led growth may reverse the situation.

The strong emergence of China as a huge export 'machine' delivers an important message that the less developing countries may be marginalized and cannot compete with him unless they pay due attention to China-induced challenges. Thus, even though Vietnam recently achieved high rates of export-led economic growth, there is no guarantee that it will be able to sustain such high growth in the future, unless it adjusts to the Chinese threat and improves the competitiveness of its products as international integration proceeds. Opportunities of Vietnam's WTO accession heavily depend on how the government succeeds in changing its industrial structure and the related specialization pattern towards more value-added products.

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Appendix 1: Major Vietnam's trade reforms underlying export performance.

<i>Periods</i>	<i>Major notes</i>
1. Trading rights	
1989 backwards 1989-1997	State monopoly in foreign trade was dominant Entry conditions for participating in trading activities relaxed but still heavily restrictive.
1998	Abolishment of trade licenses was the most significant step toward trade liberalization.
1999	Free trading (both import and export) of commodities.
2002	Foreign invested enterprises (FIEs) were granted the right to export goods other than those they produce.
2. Import protection	
<u>* Non-Tariff Barriers (NTBs):</u> Quantitative restrictions and foreign exchange management.	
1998	Introduction of extremely strict control over foreign exchange. Allowance for having saving account of foreign currency. Partial (80%) foreign exchange surrender requirements imposed on enterprises having foreign exchange accounts.
1994 -2000	Introduction and increased use of quantitative control imposed on goods items during 1994-2000, up from 5 in 1996 to 12 items in 2000.
2000	Balancing requirement of foreign exchange for FIEs relaxed, allowing them to buy foreign currency from domestic banks to repay loans provided by offshore banks.
2001	A <i>turning point</i> in trade reform: a trade policy roadmap was publicly issued the first time, allowing for prediction of export-import environment in the next 5 years (2001-05). Quantitative restrictions were reduced to only two products (petroleum and sugar).
2003	Introduction of tariff-rate quotas, which was imposed on such agricultural products as cotton, tobacco materials, and salt.
<u>* Tariff barriers</u>	
1988	Introduction of tariff under a simple form: tariff rates of 0-60% imposed on 130 goods categories.
1989	Maximum tariff rates adjusted to increase to 120% imposed on some luxury goods. Tariff coverage reduced to 80 goods categories.
1991	Law on Import and Export Duties was approved, separating normal tariffs from the preferential ones.
1992	HS system of tariff nomenclature introduced with a detailed and consolidated tariff schedule.
2002	Tariff reduced significantly to an average of 16%. 60% of total number of tariff rates was below 10%.
2005	Tariff increased to approximately 18% due to tariffication of NTBs in place of quantitative restrictions.
3. Export promotion	
1991	Restrictions on imports were relaxed through granting duty free access to inputs imported for export production. This measure was implemented with the establishment of export processing zone and the introduction of import duty drawback scheme.
1998	Export duties were basically removed, leaving only two commodities (crude oil and scrap metal) were subjected to export duties.
2004	The VAT, which was initiated in 1999 for replacement of the turnover tax, was significantly improved with a reduction from four tax lines to three tax lines, allowing export firms to enjoy the same VAT tax band for imports as firms producing for domestic consumption. Unification of the corporate income system at 28% for both industries and services. Under the unified system, concessionary rate is applied to tax for profit from export production, subjected to degree of export-oriented production.

Source: CIEM (2007).

Appendix 2: The CMS model.

The value of country X's export in period 1 is defined as:

$$\sum_i \sum_j v_{ij} = \sum_i V_i = \sum_j V_j = V \quad (A1)$$

Analyzing exports of country X at the *first level*, we view exports in a theoretical context of a single good and a single market. It is argued that if country X maintained its export share in the global market then exports would increase by rV , where r refers to the percentage increase in total world exports during the period under consideration. Thus, actual change in export values of country X can be expressed as:

$$V' - V = rV + (V' - V - rV) \quad (A2)$$

According to identity (A2), the change in export growth between period 1 and period 2 ($V' - V$) is decomposed into a portion attributable to the overall growth in world exports (rV) and an unexplained '*competitiveness*' residual ($V' - V - rV$).

At the *two-level* analysis, identity (A2) is decomposed further to analyze a more diverse set of exports with i commodities. Thus identity (A2) is now equal to:

$$\begin{aligned} V' - V &= \sum_i r_i V_i + \sum_i (V'_i - V_i - r_i V_i) \\ &= \sum_i (r - r_i + r_i) V_i + \sum_i (V'_i - V_i - r_i V_i) \\ &= \sum_i (r V_i) + \sum_i (r_i - r) V_i + \sum_i (V'_i - V_i - r_i V_i) \end{aligned} \quad (A3)$$

$(1) \quad (2) \quad (3)$

As shown in identity (A3), the changes in country X's exports are divided into smaller parts, explaining the changes due to (1) the general rise in world exports, (2) the commodity composition of country X's export in period 1, and (3) an unexplained 'competitiveness' residual indicating the difference between actual export increase and the hypothetical increase if X had maintained its export share with regard to each commodity group.

The *commodity composition* $\sum_i (r_i - r) V_i$ implies that if world exports of commodity i grow by more than total world exports, then $(r_i - r)$ will have a positive sign. The positive sign would indicate that country X's exports were concentrated on commodities in which the market was growing relatively fast. Otherwise $(r_i - r)$ would be negative if X's exports were concentrated on the markets that were growing relatively slower than total world exports.

In the real world, country X will export i commodities to j different markets. We come to the *three-level* analysis, where the CMS method will allow us to differentiate country X's exports by i commodities and j destinations. At this level of analysis, changes in country X's exports will now be decomposed further as:

$$V' - V = \sum_i \sum_j V'_{ij} - \sum_i \sum_j V_{ij}$$

$$\begin{aligned}
&= \sum_i \sum_j r_{ij} V_{ij} + \sum_i \sum_j (V'_{ij} - V_{ij} - r_{ij} V_{ij}) \\
&= \sum_i \sum_j (r - r + r_i - r_i + r_{ij}) V_{ij} + \sum_i \sum_j (V'_{ij} - V_{ij} - r_{ij} V_{ij}) \\
&= \sum_i \sum_j (r V_{ij} - r V_{ij} + r_i V_{ij} - r_i V_{ij} + r_{ij} V_{ij}) + \sum_i \sum_j (V'_{ij} - V_{ij} - r_{ij} V_{ij}) \\
&= \sum_i \sum_j r V_{ij} + \sum_i \sum_j (r_i - r) V_{ij} + \sum_i \sum_j (r_{ij} - r_i) V_{ij} + \sum_i \sum_j (V'_{ij} - V_{ij} - r_{ij} V_{ij}) \\
\\
V' - V &= \underbrace{(rV)}_{(1)} + \underbrace{\sum_i (r_i - r) V_i}_{(2)} + \underbrace{\sum_i \sum_j (r_{ij} - r_i) V_{ij}}_{(3)} + \underbrace{\sum_i \sum_j (V'_{ij} - V_{ij} - r_{ij} V_{ij})}_{(4)} \tag{A4}
\end{aligned}$$

The CMS decomposition by commodity i and destination j as shown in identity (A4) represents the analysis at level three, where the growth of country X's aggregate export is attributed to four components: (1) changes in world demand for exports; (2) the commodity composition of X's export; (3) the market distribution of X's export; and (4) an unexplained 'competitiveness' residual indicating the difference between actual export increase and the hypothetical increase if X had maintained its export share of each commodity group to each country.

Identity (A4) defines the *market composition* effect as $\sum_i \sum_j (r_{ij} - r_i) V_{ij}$. This effect will be positive if country X concentrates its export in the markets that were growing relatively fast and will be negative otherwise. Overall, the commodity composition and market distribution effects capture the fact that a country may exceed world growth rates without actually gaining market share for any particular commodity or market destination by concentrating in commodities or market destinations that are growing faster than world averages.

Tables

Table 1: Annual growth rate of Vietnam's exports by importing regions

Period	CHINA	ASEAN4	NICs	JAPAN	OCEANIA	EU15	US	ROW
1997-2001	30%	11%	9%	4%	25%	15%	29%	3%
2001-2004	35%	18%	19%	14%	19%	18%	71%	18%
1997-2004	32%	14%	13%	8%	22%	16%	46%	9%

Source: Authors' calculations in CIEM (2007).

Table 2: Vietnam's export structure with the world by commodity

Commodity (one-digit SITC)	1997	2000	2001	2002	2003	2004
Total	100.00	100.00	100.00	100.00	100.00	100.00
Primary products (0-4)	47.60	50.20	47.60	49.62	46.64	40.56
SITC-0: Food and live animals	25.62	20.13	20.26	24.65	22.00	15.93
SITC-1: Beverages and tobacco	0.14	0.14	0.14	0.45	0.79	0.13
SITC-2: Crude materials, inedible, except fuels	2.57	2.44	2.39	3.09	3.13	2.42
SITC-3: Mineral fuels, lubricants and related materials	18.98	27.30	24.72	21.36	20.60	22.04
SITC-4: Animal and vegetable oils, fats and waxes	0.29	0.18	0.08	0.07	0.11	0.04
Manufactured products (5-8)	52.40	49.80	52.40	50.38	53.36	59.44
SITC-5: Chemicals and related products, n.e.s.	1.00	0.92	1.24	1.57	1.69	1.14
SITC-6: Manufactured goods classified chiefly by material	5.24	5.56	5.59	6.73	6.72	6.13
SITC-7: Machinery and transport equipment	6.80	6.68	8.31	8.00	8.90	9.34
SITC-8: Miscellaneous manufactured articles	39.18	36.44	36.98	34.06	36.03	42.52
SITC-9: Commodities and transactions not classified elsewhere in the SITC	0.19	0.20	0.28	0.01	0.02	0.31

Source: Authors' calculations in CIEM (2007).

Table 3: CMS decomposition of Vietnam's export performance during 1997-2004

Category	1997-2001		2001-2004		1997-2004	
	USD Value	Share	USD Value	Share	USD Value	Share
Total change in export value	5,260,619,750	100%	13,365,044,283	100%	18,625,664,033	100%
World trade effect	1,256,836,258	24%	6,262,342,354	47%	5,732,922,336	30.8%
Commodity composition effect	-422,051,335	-8%	-461,205,131	-3%	-1,007,568,445	-5.4%
Market distribution effect	-579,982,065	-11%	-1,311,451,241	-10%	-1,458,758,528	-7.8%
Competitiveness effect	5,005,816,892	95%	8,875,358,300	66%	15,359,068,670	82.5%

Source: Authors' calculations in CIEM (2007).

Table 4: CMS decomposition of China's export performance during 1997-2004

Category	1997-2001		2001-2004		1997-2004	
	USD Value	Share	USD Value	Share	USD Value	Share
Total change in export value	133,967,049,014	100%	358,843,450,617	100%	492,810,499,631	100%
World trade effect	60,889,322,458	45%	145,478,848,897	41%	180,451,164,127	37%
Commodity composition effect	-22,828,346,829	-17%	6,836,214,078	2%	-25,977,701,172	-5%
Market distribution effect	-16,992,817,016	-13%	-56,351,535,734	-16%	-37,871,181,297	-8%
Competitiveness effect	112,898,890,401	84%	262,879,923,377	73%	376,208,217,974	76%

Source: Authors' calculations in CIEM (2007).

Table 5: Import growth rates of selected regions

CHINA	ASEAN4	NICs	JAPAN	OCEANIA	EU15	US	ROW	World
<i>Period 1997-2001</i>								
14%	-3%	-2%	1%	-1%	5%	7%	1%	3%
<i>Period 2001 – 2004</i>								
32%	13%	13%	9%	20%	15%	9%	10%	13%

Source: Authors' calculations in CIEM (2007).

Table 6: Top ten of RCA values in 2004

Rank	Commodities	China		Commodities	Vietnam	
		1997	2004		1997	2003
1	SITC 261 Silk	16,64	11,58	SITC 042 Rice	69,84	35,73
2	SITC 323 Briquettes; coke and semi-coke; lignite or peat; retort carbon	6,70	6,81	SITC 036 Crustaceans and molluscs	21,72	33,54
3	SITC 848 Articles of apparel, clothing accessories, non-textile, headgear	7,12	5,43	SITC 232 Natural rubber latex; rubber and gums	20,88	20,43
4	SITC 666 Pottery	10,11	4,81	SITC 071 Coffee and coffee substitutes	18,34	18,52
5	SITC 871 Optical instruments and apparatus	5,40	4,37	SITC 851 Footwear	13,61	16,53
6	SITC 658 Made-up articles, wholly or chiefly of textile materials	1,99	4,26	SITC 075 Spices	22,24	14,81
7	SITC 851 Footwear	5,36	4,15	SITC 844 Under garments of textile fabrics	Evide	10,10
8	SITC 763 Gramophones, dictating machines and other sound recorders	5,63	4,08	SITC 842 Mens and boys outerwear, textile fabrics	12,81	7,74
9	SITC 845 Outerwear knitted or crocheted	1,84	3,96	SITC 074 Tea and mate	12,82	7,06
10	SITC 844 Under garments of textile fabrics	4,24	3,66	SITC 035 Fish, dried, salted or in brine; smoked fish	4,32	6,27

Source: Author's calculations.

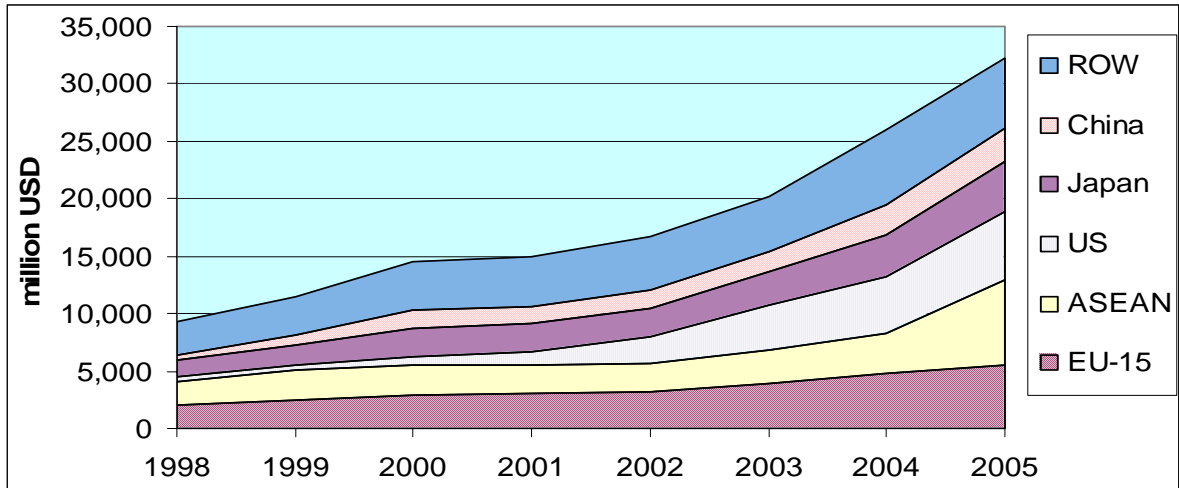
Table 7: Top ten of CTB values in 2004

Rank	Commodities	China		Commodities	Vietnam	
		1997	2004		1997	2003
1	SITC 752 Automatic data processing machines and units thereof	0,79	5,83	SITC 333 Crude petroleum and oils	11,86	19,78
2	SITC 764 Telecommunication equipment, parts and accessories	-0,31	2,60	SITC 851 Footwear	5,59	11,12
3	SITC 894 Baby carriages, toys, games and sporting goods	1,58	2,19	SITC 036 Crustaceans and molluscs	4,34	7,64
4	SITC 845 Outerwear knitted or crocheted	1,95	2,03	SITC 845 Outerwear knitted or crocheted	0,18	5,06
5	SITC 763 Gramophones, dictating machines and other sound recorders	0,29	1,89	SITC 842 Mens and boys outerwear, textile fabrics	5,61	4,12
6	SITC 851 Footwear	2,07	1,87	SITC 843 Womens, girls, infants outerwear, textile	n.a.	3,70
7	SITC 843 Womens, girls, infants outerwear, textile	1,70	1,78	SITC 042 Rice	6,80	3,45
8	SITC 821 Furniture and parts thereof	0,54	1,52	SITC 821 Furniture and parts thereof	0,73	3,27
9	SITC 775 Household type equipment	0,61	1,40	SITC 071 Coffee and coffee substitutes	3,92	2,48
10	SITC 842 Mens and boys outerwear, textile	1,61	1,20	SITC 846 Under-garments, knitted or crocheted	n.a.	2,10

Source: Author's calculations.

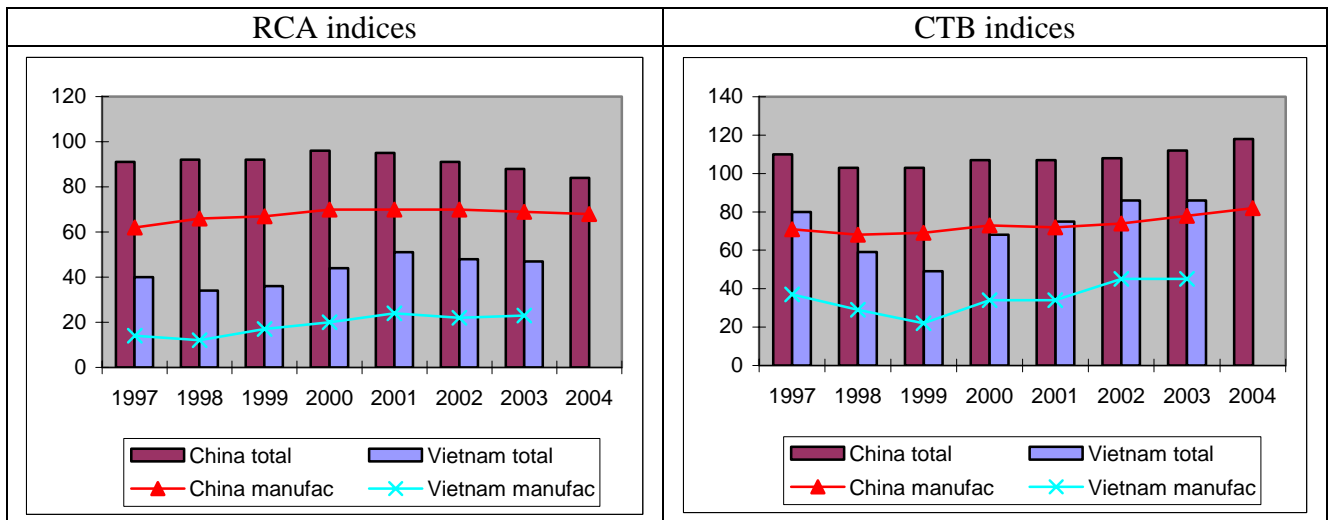
Figures

Figure 1: Vietnam's export performance by major trading partners



Source: GSO.

Figure 2: Number of comparative advantages by indicator



Source: Author's calculations.

NOTES

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¹ Until its WTO accession, Vietnam’s tariff schedule was composed of three tariff rate categories: MFN, preferential and normal tariff rates (the latter were usually 50% higher than the MFN ones). Vietnam’s simple MFN average was higher than the preferential one, but lower than that of neighbouring countries such as Thailand, Philippines and Indonesia (Nguyen, 2002).

² Crude oil will go down in the next few years as Vietnam has built oil refineries in the country.

³ During the period under consideration (1997-2004), the share of Vietnam’s exports to the 10 new members of the EU was not significant compared to the EU-15, not to mention the accessibility of data. Thus, the EU-15 can be used as a good proxy for the EU as a whole.

⁴ Taiwan is not included due to data unavailability and thus is grouped in ROW.

⁵ The Center for Prospective Studies and International Informations is a French public institution. For further details, see on their website : <http://www.cepii.fr/anglaisgraph/bdd/chelem.htm>

⁶ Data are only available until the year 2003 for Vietnam.