# China's Expanding Role In Global Horticultural Markets[1]

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**Summary**
China's horticultural exports have almost doubled in value over the past decade, her imports have increased by even more, and China is increasingly a net exporter of horticultural products. After adjusting trade data for irregularities in the reported trade between Hong Kong and mainland China, growth in China's exports and imports is discussed. Major traded products and markets will be identified. Case`studies are China's trade in fresh apples, which have become the major fruit export, and in cut flowers which are a relatively new export product for China. China's competitive position and market shares relative to other suppliers of apples and cut flowers to foreign markets are examined.

Keywords : China, trade patterns, apples, cut flowers, competitiveness

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# Introduction

China's economic reforms that began in 1979, including the household responsibility system that strengthened incentives to diversify production, land tenure reform, reduced policy emphasis on grain production and the gradual emergence of local markets, have transformed her agricultural sector in many ways. One of these has been the expansion of the labour-intensive horticultural sector, especially during the 1990s, taking advantage of China's plentiful supply of rural labour. Policies that have been of assistance to horticultural development include the Government's Vegetable Basket Programme, introduced in 1988. This encouraged infrastructural improvements in rural areas and development of a network of wholesale markets. Government has assisted investment for example in greenhouse construction, has transferred new technologies and developed demonstration farms and extension services, and private investment - both domestic and foreign – is creating world-standard production facilities capable of high-quality outputs (ERS 2001).

The area sown to fruit crops increased from 1.9 million hectares in 1980 to 10.7 million hectares in 2005, while that for vegetables increased from 3.8 to 22.5 million hectares over the same period[2]. Given the scarcity of arable land in China, these increases were met mainly by diverting land from grain production, made easier by earlier policy changes that gave farmers more freedom in their planting decisions. These descisions are guided by relative profit expectations – ERS (2006) report China's National Development and Reform Commision's estimates of profits per acre in 2004 of US$1,172, $690 and $148 from vegetables, apples and grains respectively. Fruit and vegetable production increased even more rapidly than did land use, implying increases in land productivity, especially for fruit production where the average yield per hectare doubled between 1980 and 2005. China is currently the world's largest horticultural producer, contributing over one-third of global output in 2003 (Carter and Li 2005).

Global imports of horticultural products tend to be dominated by developed countries such as the EU15, the USA, Japan and the rest of Europe as a group. Developing counties (such as Central and South America and the Middle East and Africa) play a more dominant role in global exports, along with the USA and Europe. While both are major exporters and importers, the EU15 and the USA have been net importers of horticultural products in recent years. China, however, has a relatively low share of global trade. For exports, China's share of global trade has remained around 4% over the past decade, although for imports her share has risen substantially from 0.5% in 1995 to 1.4% in 2004.

[2] FAOSTAT, which includes Taiwan.

# China's Horticultural Trade[3]

China's exports and imports of horticultural products[4] have both increased in nominal terms over the past decade, with annual growth rates of 5.0% for exports and 13.2% for imports (Table 1). The rapid growth rate for imports would be driven partly by increasing demand for high-quality produce and relaxation of China's trade barriers during this period (Carter and Li 2005). Exports have exceeded imports in every year, and the trade balance has increased somewhat, particularly since 2000. Given the growth in horticultural imports, it is not surprising to find that these products have accounted for an increasing share of China's total imports of agricultural and food commodities, from 1.8% in 1995 to 4.1% in 2005. Given China's abundance of rural labour relative to land, the steady decline in the total area of arable land and the labour intensity of horticultural production, one might expect to see China's comparative advantage in horticultural production reflected in the trade statistics. However, exports of horticultural products have occupied a reasonably stable share of the country's total agricultural exports: in fact, this share was 11.3% in 2005 compared to 11.9% in 1995. This could be due to the policy incentives that still encourage grain production and therefore restrict the transfer of land and other resources to the horticulture sector, to high trade barriers in importing countries – especially SPS and TBT regulations and China's ability to meet these requirements - and (as Carter and Li, 2005 suggest) to rapid domestic demand growth.

China's horticultural exports are dominated by vegetables (over 70% share for the past decade), while fruits are the major import category (around a 60% share in recent years (Tables 2 and 3). Over the past decade, China has also been a net exporter for each of the categories fruits, vegetables and live plants and flowers. For live plants and flowers (HS06) China's imports are primarily live plants and bulbs, inputs to China's domestic horticultural sector. But exports of HS06 products are dominated by finished products (cut flowers and foliage) but increasingly also by live plants. Major vegetable exports are several dried and frozen products, as well as garlic whose share of vegetable exports has doubled since 2000. Vegetable imports are dominated in several years by the HS0714 group that includes sweet potatoes, manioc, arrowroot and sago although this has

[3] Analyses of China's horticultural trade data ought ideally to take account of smuggling from Hong Kong to the mainland (Wong 1998; Carter and Li 2005). We noted a wide discrepancy between China's reported horticultural imports from Hong Kong and the latter's reported exports to the Chinese mainland (using Comtrade data). Between 1995 and 2004, Hong Kong's reported exports exceeded China's reported imports by between US$134 million and $331 million. In the latest year, for example, Hong Kong's horticultural exports to the mainland were $227.9 million, while China's imports from Hong Kong were reported as only $0.9 million. Our adjustment to China's total horticultural imports involved deducting her reported imports from Hong Kong and adding Hong Kong's reported exports to China. While this adjusts for an apparent anomaly, it probably makes no adjustment for smuggling, since we use only data recorded by the Hong Kong customs authorities.

[4] We define horticulture as the total of HS06 (live trees, plants, cut flowers etc), HS07 (edible vegetables etc) and HS08 (edible fruits and nuts etc). These include fresh, chilled, frozen, dried and provisionally preserved fruits and vegetables. Our study therefore excludes the processed vegetables, fruits and nuts of HS20 which are also a major component of China's wider horticultural trade – for example in 2005 HS20 exports and imports were $3.1 billion and $0.2 billion respectively. The HS20 category includes preserved fruits and vegetables, fruit and vegetable juices, and jams, jellies and pastes made from fruit and nuts.

been a fluctuating trade. Pip fruit (primarily fresh apples in recent years) has become the most important fruit export by value, and this share has more than doubled over the past decade. In contrast, nuts were the major export in the HS08 group in earlier years, but this share has declined substantially although exports in nominal value have remained rather static. Bananas made up 50% of China's fruit imports in 1995, but only 15% by 2005. Nuts are also a significant item in this group of imports, and the share of grapes has increased from 3% in 1995 to 15% in 2005.

China's international trade in horticultural products is concentrated on countries in close geographical proximity, partly due to the perishable nature of much of this produce. In 2005, 59% of exports were destined to Japan, Korea, ASEAN-10 and Hong Kong, with Japan taking the largest share of around 30% of total horticultural exports from China. This is down from a 50% share in 1998-2000 as ASEAN countries have increased their importance as horticultural export destinations. Exports to the ASEAN region received a boost from the 'early harvest' provisions of the 2002 China-ASEAN Free Trade Agreement, which eliminated or heavily reduced several horticultural tariffs (ERS 2006). Asian countries often have a sizeable ethnic Chinese population who may prefer Chinese products, and the dominance of Japan as an export destination is partly explained by Japanese investment in China's horticultural sector, which has helped improve the quality of produce and China's ability to satisfy Japan's strict SPS regulations. The SPS and TBT rules in markets such as the EU and USA, in addition to transport costs tend to discourage exports to such more distant countries. Japan is also the major destination for China's fruit and vegetable exports, and along with the EU is also a major destination for exports of live plants and flowers. Of imports, 68% were purchased from ASEAN-10 and Hong Kong[5] in 2005, with the share from the USA just under 10%. ASEAN countries dominate China's imports of fruits and vegetables, while the EU is the major supplier of China's imports of live plants and cut flowers.

While Japan is a major market for China's horticultural exports, and the ASEAN region is a major supplier of those products to China, is China also a major horticultural trading partner from a Japanese or ASEAN point of view? Figures 1 and 2 suggest the answer is yes, and increasingly so. Of Japan's total horticultural imports in 1995, 21% originated in China – this share had increased to 28% by 2005. Over the same time, the share sourced from the USA declined from 31% to 22%. Turning to the major destinations for ASEAN horticultural exports (Figure 2), the share sold to China increased from 4% in 1995 to 16% in 2004. The EU became a less dominant destination for ASEAN exports over this period, declining from 33% (1995) to 15% in 2004.

## Case Study #1: Fresh Apples

Since 1992, when China surpassed the USA's production of apples, China has been the world's leading producer. By 2005, the country produced 25 million tonnes of apples from 2.2 million hectares (FAOSTAT). These represent 39% of global production and 42% of the world's area planted in apples. While yield per

[5] Recall that we substituted China's reported imports from Hong Kong with the (much larger) flow reported by Hong Kong as destined to China.

hectare was only 33% of the world average in 1990, yields increased at the rate of 13% per year to reach 83% of the world average by 2000. The apple industry now accounts for over 45% of the country's total fruit production value. The major production areas are in the provinces of Shandong, Shanxi and Hebei where ecosystem conditions are similar to those of the apple growing regions of Europe and North America. Given that labour costs were around 40% - 55% of the total farm production cost per tonne in 2003 (National Agricultural Production Cost Survey), total costs per tonne are very low compared with those in many other major producing countries, varying across the three major producing provinces in the range of 380 – 580 yuan per tonne in 2003. The industry experienced two major growth periods in 1986-88 and 1991-96, but recent attention has been on improving quality rather than quantity, and in selection of improved varieties, tree types, and industry organization.

China's exports of fresh apples[6] have been growing at the rate of 18.9% per year, from 109,000 tonnes in 1995 to 774,000 tonnes in 2004. This is much more rapid than the growth of the global apple trade, so China's share of total fresh apple exports rose from 2.4% in 1995 to 12% in 2004. Since 2003, China's apple export volumes have in total surpassed those of the USA (ERS 2006). During the early 1990s the Russian Federation was by far the major destination with about a 75% share (by value) of total exports. This has since declined rapidly as new markets were found, to a share of just 13% in 2005. Growth markets were initially ASEAN-10 whose share increased from 20% in 1995 to peak at 75% in 1999, but then declined somewhat to 51% in 2005 although total exports to this region continued to grow (Figure 3). Since the late 1990s steady growth has occurred in exports to South Asia and Russia, but also to the EU, whose value-share of China's total apple exports reached 15% by 2004 before falling to 7% in the following year. China's fob returns per tonne are higher from sales to the EU than to other major markets – in 1998 this return was 86% above the fob return from ASEAN markets, but this margin declined steadily to just over 50% by 2003. In 1997, the USA was supplying over half of the ASEAN region's apple imports, with New Zealand, the EU, Australia and China sharing the balance. Imports from China then increased rapidly, giving that source a 70% market share by 2005, reducing the share of the other major northern hemisphere supplier, the USA, to 22% by 2005. China and the USA compete directly in fresh apple exports, as in evident in the ASEAN market (Figure 4).

The EU is a market that sets high quality standards for fresh apple imports. It may be of interest, therefore, to look more closely at China's role in that regional market. EU15 imports (net of the considerable intra-EU trade) are dominated by southern hemisphere suppliers in the northern off-season - New Zealand, South America and the South African Customs Union (SACU) as shown in Table 5. Of the northern hemisphere suppliers, the USA and Canada together have the largest share, although this share dipped from the late 1990s before recovering to reach almost 8% by 2005. The share of the ten new EU members more than doubled between 2001 and 2005, partly encouraged by the transition arrangements then in place with the EU15 (and their share of import volume is much higher than the

[6] China is also a major producer and exporter of single-strength apple juice. In 2004, exports totalled 487,000 tonnes, up from 142,000 tonnes in 2000. This accounted for 43% of global exports in 2004. It has been the world's leading exporter of this product since 2001.

value share). But growth in import market share has been by far the most rapid for China, increasing by over 500% from 1997 to 2004. Figure 2 shows each northern hemisphere exporter's average *cif* price per unit in the EU15, relative to the average *cif* value for all EU15 apple imports. Clearly, the landed prices of the new EU member states are far lower than those of other suppliers. China and North American prices were very similar until 2002, since when apple prices from the latter region have trended upwards while those of China fell. This is consistent with China's strengthening position in the EU, relative to that of North America, from 2002 to 2004.

## Case Study #2: Cut Flowers

Even though China has very rich natural resources in wild flowers and plants, it is only recently that the commercial cut flower industry has shown rapid expansion. From 6,300 hectares planted in 1998, the total planting reached almost 24,000 hectares in 2003. Although export sales have increased rapidly in the last few years, most of the production is sold domestically, as rising incomes and westernisation of purchasing patterns drives increases in consumption especially in the larger cities. Table 7 shows that per capita flower consumption has more than doubled in value terms from 1998 to 2003, but the absolute number is still small, about US$0.40 per capita in 2003 indicating considerable potential for further growth.

The main producing regions are Yunnan and Guangdong, with the former by far the larger. An objective of the Yunnan government is to develop the floriculture industry to contribute to provincial economic growth and to develop it into the largest in Asia, and the flower industry is also part of the central government's Western Regional Development Strategy. While Yunnan has a long history in growing flowers, commercial production began only in the late 1980s when farmers in the village of Dounan decided to diversify out of vegetable growing. Currently, this province produces around 50% of China's commercial cut flowers. This successful commercialisation has attracted new growers chasing higher incomes, including private entrepreneurs, state-owned companies and foreign investors. There are at least 390 enterprises engaged in cut flower production including 38 joint ventures with partners in Hong Kong, Taiwan, Japan and the USA (Zhang 2005). For example, Morris and Bray (2006) describe a modern 20 hectare cymbidium nursey near Kunming, employing over 100 staff and owned by a Korean company. Plants are sourced from both Korea and Japan, and production is planned to increase soon to 300,000 plants and up to 750,000 plants in a few years. There are also over 21,000 largely smallholder growers of cut flowers (Yunnan Flower Association 2004). At least in Yunnan, strong support from government has helped develop a relatively advanced infrastructure for flower distribution including the Dounan flower auction centre, said to be the largest in Asia.

While favourable climate, plentiful labour supplies, low production costs by world standards and proximity to major Asian markets are strengths of the cutflower industry in Southwestern China, there are several major problems to be overcome. Intellectual property legislation requires strengthening so as to encourage modern flower varieties to be developed in China or introduced from overseas, given the prevalence of patents in the plant breeding world. Further R&D is necessary, for

example to improve quality and productivity, post harvest technologies and to address water problems (both quantity and quality). Continuing investment in infrastructure, including air transport and market information systems, and acquisition of greater knowledge in export marketing and risk management are also required. Through such activities, China's cut flower industry will not only better compete in export markets, but also in the domestic market that is increasingly importing high-quality flowers from foreign sources.

While they are only a minor component of China's horticultural exports, those of fresh cut flowers (HS060310) have increased by over 550% since 1995, rising from $1.9 million to reach $16.6 million in 2005 (Figure 6). China is still a minor player on the world market, accounting for just 0.25% of global exports in 2004. Hong Kong was the major market in the 1990s, although we do not know what quantities were re-exported. Japan's share of China's flower exports had risen to almost 50% by 1999, and since then Japan has become by far the major market, accounting for 72% of China's exports in 2004 and 64% in 2005. Over that period the shares of Macao and Korea also declined, along with that of Hong Kong. The other market of note is the ASEAN region – this took less than 1% of China's flower exports in 1995, but the share steadily increased to over 11% in 2005. Export returns (fob) have in recent years been substantially higher for sales to Japan (in excess of $2.50 per kg) compared with less than $1.00 in ASEAN.

Table 8 compares the shares of the major flower exporters to the Japanese market since 1997. At that time, the major suppliers were ASEAN, the EU15 and New Zealand. From the late 1990s, South America, Korea and Other Asia *nes* (primarily Taiwan) steadily increased their shares of the Japanese market, until stabilising those shares soon after the year 2000. Over the same period, the shares of ASEAN, EU and New Zealand all declined somewhat. China's share of total imports was less than 1% up till 2001. But with the rapid growth in imports from China since then – a nearly ten-fold increase from 2001 to 2005 – the shares of both the EU and New Zealand have further declined, although ASEAN exporters strengthened their market position in Japan somewhat.

## Rising Competitiveness In Chinese Horticulture

As described above, China's competitiveness in apple and cut flower trade has improved significantly during last decade. The trade competitive index (TCI, net exports divided by total trade), takes a value of zero if a country's exports of some product equal its imports, a value of +1 if the country exports but does not import, and a value of -1 for countries that only import the product in question. TCI values for China's fresh apple trade turned from -0.35 to +0.39 in 10 years, while the TCI for trade in apple juice trade showed some improvement as well, both indicating increased competitiveness (Tables 9 and 10). In Table 11, computed TCI values are shown for China and for a number of major cut flower exporting countries. While the index is quite stable for other major exporters between 1999 and 2004, it has increased significantly for China since 2000, suggesting China's increasing competitiveness in international cut flower markets.

The main factors promoting the international competitiveness of China's horticultural products include germplasm, climate, labour and economic reforms. We briefly discuss each in turn.

Firstly, China enjoys a reputation of "the home of the world's garden" and is rich in ornamental plant germplasm resources. Originally in China ornamental plants comprised 113 Sections, 523 genera, 10,000-20,000 species, and many flowering plants such as plum, peony, chrysanthemum, lily, camellia, azalea, and Chinese rose all originated in the country. There are 600 kinds of azaleas, more than 300 plum species, more than 160 Lotus species, and more than 3,000 species of chrysanthemum.

Secondly, China's climate ranges through tropical, subtropical, and temperate zones. It includes wide variations of topography, altitude, rainfall, and natural illumination. Such a variety of ecological and climate types makes the country suitable for a wide variety of flower cultivation, and with huge development potential. Kunming, in Yunnan Province experiences spring-like conditions in all seasons, and is known as the "natural greenhouse".

Thirdly, China has a large population, which means plentiful supplies of labor. As fresh flower production is labour-intensive, this means that China has relatively low labour costs compared with developed countries.

While all these factors were also present prior to China's economic reform, they could not fully contribute to Chinese agricultural production and trade due to the state planning system that viewed local grain production as the dominant goal. When the door was opened by the reforms that encouraged more efficient resource allocation and income growth under a market-oriented economy, the potential opportunity was rapidly turned into a reality. It is quite reasonable to assume that the horticulture sector in China will continue to grow rapidly in the years to come.

## Possible Impacts Of Global Trade Liberalisation

Many governments provide support to horticultural production, including measures that limit competition from imports or that encourage exports. Not until the Uruguay Round of trade negotiations did the GATT seriously attempt to establish rules related to barriers to trade in horticultural and agricultural products. Despite the implementation of the Uruguay Round agreed outcomes, agricultural and horticultural tariffs[7] globally average 62%, compared with around 5% for industrial goods (Gibson et al., 2001). On average, those levied on fresh fruits (58%) are somewhat less those on fresh vegetables (68%). For some countries and products, fruit or vegetable tariffs exceed 100% and constitute significant barriers to trade. Tariff-rate-quotas can also restrict horticultural trade, such as into the EU and Norway, and can involve very high tariffs on imports over the quota volume. As regards export subsidies on horticultural products, the EU and Switzerland together accounted for over half of fruit and vegetable export subsidies in 2000.

China's tariffs on horticultural products have been substantially reduced in recent years, either prior to WTO accession at the end of 2001, or as a result of that accession, providing improved market access for exporters to China. Prior to accession, average tariffs on fruits were in the range of 30-40%, and between 30-

[7] Tariffs quoted are bound, MFN rates

50% for vegetables. On accession fruit tariffs were bound at between 22-28%, to be reduced to a 10-13% range by 2004. For vegetables, the bound tariff range in 2001 was 8-14%, considerably below the rates applied prior to that time. These were further reduced to 5-10% by 2004. Chinese horticultural exporters face much higher tariffs, as well as substantial non-tariff barriers, in many other countries however which currently constrain the rate at which these exports can expand.

The current WTO Doha Round of trade negotiations is attempting to further reduce tariffs and subsidies which if successful would further allow China to respond to its comparative advantage in horticulture. While there are a large number of studies that have quantified economic impacts of possible Doha Round impacts, very few have focussed on horticulture. One study that did was that of Rae (2004), who concluded that the dominant roles of Central and South America and the Middle East-Africa as horticultural exporters, and the EU15 and the rest of Europe, USA and Japan as major importers would be enhanced under more liberal trade. That study also indicated that China could emerge as an increasingly important horticultural exporter should trade be liberalised. Relatively large increases in China's exports might be expected to Japan and other Asian markets, along with gains in market share from other major suppliers, suggesting an even greater regional concentration in China's horticultural exports. Therefore while China is not generally a dominant horticultural exporter as yet, lowering of agricultural trade barriers globally may open new opportunities for this country to increase exports, especially to other countries in Asia. Such studies, however, abstract from the numerous domestic changes within China that will also be required for these predictions to become reality. These include the various legal, marketing and infrastructural issues, and photosanitary concerns, some of which have been mentioned in the above two case studies. Another is the need to address the current relatively low mobility of factors of production, especially the speed at which land can be transferred between farmers and farm enterprises (ERS 2002).

# Conclusions

Horticulture has been one of the fastest growing sectors in China's agriculture over the last decade. In addition to meeting increasing domestic demand, the volumes and values of net international trade in horticultural products have grown significantly, indicating improved competitiveness of China's horticultural industry. In order to develop that industry, producers and R&D institutions have been encouraged by government to adopt and master modern technology, including through the use of joint ventures. The improvement of technology, including seed cultivation and production technology, has greatly improved the productivity and quality of major horticultural products, stimulating further expansion of production with higher yields and prices.

As demonstrated by the above case studies, China is capable of expanding its international export market share in some horticultural products such as apples and cut flowers, in which China has comparative advantage due to its favourable climate, germplasm, scale, and low-cost labor. Once China overcomes the current problems in marketing and distribution infrastructure, industrial organization and institutions, as well as in the quality and safety of horticultural products so as to penetrate SPS and technical barriers in import markets, net exports of horticultural products from China are likely to increase further. Factors that may temper such

trade expansion include continuing rapid growth in domestic demand, and the possibility of appreciation of the undervalued Chinese yuan.

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**Table 1: China's Horticultural Trade**

| | China's exports (US$billion) | | China's imports (US$billion) | | Horticulture's share (%) in China's agricultural trade | | China's share (%) in world horticulture trade | |
|---|---|---|---|---|---|---|---|---|
| | Horticulture | Agr/food | Horticulture | Agr/food | Exports | Imports | Exports | Imports |
| 1995 | 2.22 | 18.71 | 0.30 | 16.80 | 11.9 | 1.8 | 4.0 | 0.5 |
| 1996 | 2.03 | 17.99 | 0.50 | 15.90 | 11.3 | 3.1 | 3.6 | 0.8 |
| 1997 | 2.01 | 18.91 | 0.59 | 15.29 | 10.6 | 3.9 | 3.5 | 0.9 |
| 1998 | 1.95 | 17.32 | 0.59 | 13.04 | 11.2 | 4.5 | 3.4 | 0.9 |
| 1999 | 1.97 | 17.46 | 0.59 | 13.10 | 11.3 | 4.5 | 3.4 | 0.9 |
| 2000 | 1.99 | 20.33 | 0.75 | 17.18 | 9.8 | 4.4 | 3.6 | 1.2 |
| 2001 | 2.22 | 21.09 | 0.89 | 17.93 | 10.5 | 5.0 | 3.8 | 1.4 |
| 2002 | 2.48 | 24.33 | 0.94 | 18.92 | 10.2 | 4.9 | 4.0 | 1.4 |
| 2003 | 2.98 | 29.33 | 1.00 | 25.84 | 10.2 | 3.9 | 4.0 | 1.2 |
| 2004 | 3.52 | 32.19 | 1.30 | 35.64 | 10.9 | 3.7 | 4.3 | 1.4 |
| 2005 | 4.20 | 37.11 | 1.49 | 36.24 | 11.3 | 4.1 | .. | .. |

Source Comtrade as reported by China.

**Table 2: China's Horticultural Exports by Major Product Groups (% by value)**

| Year | Live trees, plants, cut flowers (HS06) | | | Edible vegetables (HS07) | | | Edible fruits and nuts (HS08) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Share total exports | Of which: | | Share total exports | Of which: | | Share total exports | Of which: | |
| | | Live plants | Flowers /foliage | | Onions/ garlic | Dried/ frozen | | Apples/pears/quince | Nuts |
| 1995 | **1.2** | 33.2 | 62.5 | **77.2** | 6.0 | 60.9 | **21.6** | 19.0 | 37.7 |
| 1996 | **1.5** | 35.6 | 60.5 | **75.9** | 7.7 | 52.5 | **22.7** | 25.4 | 37.2 |
| 1997 | **1.6** | 36.3 | 56.6 | **75.3** | 7.5 | 56.0 | **23.1** | 28.0 | 32.1 |
| 1998 | **1.5** | 33.2 | 62.7 | **76.1** | 8.0 | 55.6 | **22.3** | 22.9 | 38.3 |
| 1999 | **1.6** | 32.3 | 64.4 | **76.9** | 10.2 | 59.2 | **21.5** | 25.0 | 32.4 |
| 2000 | **1.6** | 34.7 | 61.3 | **77.5** | 11.7 | 56.9 | **20.9** | 31.7 | 29.1 |
| 2001 | **1.6** | 34.9 | 62.7 | **78.8** | 15.4 | 55.8 | **19.6** | 32.5 | 28.7 |
| 2002 | **1.7** | 41.1 | 55.8 | **75.9** | 21.4 | 52.7 | **22.4** | 37.7 | 24.4 |
| 2003 | **1.7** | 45.4 | 51.7 | **73.1** | 21.2 | 50.6 | **25.2** | 38.5 | 19.5 |
| 2004 | **1.8** | 49.0 | 49.7 | **72.1** | 21.3 | 50.6 | **26.0** | 39.8 | 19.8 |
| 2005 | **1.8** | 50.4 | 47.3 | **72.7** | 23.4 | 50.3 | **25.4** | 40.1 | 18.6 |

Source: Comtrade as reported by China.

**Table 3: China's Horticultural Imports by Major Product Groups (% by value)**

| Year | Live trees, plants, cut flowers (HS06) | | Edible vegetables (HS07) | | Edible fruits and nuts (HS08) | | | |
|---|---|---|---|---|---|---|---|---|
| | Share total imports | Of which: Live plants/bulbs | Share total imports | Of which: Manioc/sweet potato/sago | Share total imports | Of which Banana | Nuts | Grapes |
| 1995 | **3.6** | 87.9 | **46.3** | 87.4 | **50.0** | 50.1 | 19.2 | 3.4 |
| 1996 | **1.9** | 89.3 | **27.5** | 17.3 | **70.6** | 71.5 | 8.9 | 2.3 |
| 1997 | **2.6** | 87.5 | **23.4** | 36.6 | **74.0** | 62.0 | 14.3 | 1.1 |
| 1998 | **3.4** | 89.4 | **22.0** | 45.0 | **74.6** | 67.5 | 17.1 | 1.5 |
| 1999 | **4.7** | 91.4 | **23.3** | 45.6 | **72.1** | 54.5 | 8.3 | 9.3 |
| 2000 | **4.4** | 91.5 | **17.4** | 27.1 | **78.2** | 45.9 | 6.3 | 9.6 |
| 2001 | **3.7** | 93.5 | **35.0** | 73.2 | **61.3** | 26.8 | 14.2 | 9.6 |
| 2002 | **5.4** | 94.6 | **32.1** | 73.7 | **62.5** | 19.9 | 16.2 | 9.9 |
| 2003 | **5.8** | 95.7 | **30.9** | 80.6 | **63.3** | 18.8 | 17.2 | 10.3 |
| 2004 | **4.8** | 95.2 | **37.7** | 85.0 | **57.6** | 15.1 | 18.3 | 13.3 |
| 2005 | **4.8** | 95.4 | **35.7** | 80.5 | **59.5** | 15.1 | 15.2 | 14.9 |

Source: Comtrade as reported by China.

**Table 4: Share of Major Markets in China's Horticultural Exports & Imports (%)**

| | Exports | | | | | | Imports | | |
|---|---|---|---|---|---|---|---|---|---|
| | Japan | ASEAN10 | EU15 | Korea | Hong Kong | USA | ASEAN10 | Hong Kong | USA |
| 1995 | 39.0 | 10.1 | 10.6 | 3.7 | 19.3 | 2.6 | 40.0 | 45.0 | 3.8 |
| 1996 | 46.7 | 10.4 | 9.3 | 4.6 | 10.9 | 3.0 | 24.6 | 44.6 | 5.9 |
| 1997 | 45.7 | 11.9 | 8.9 | 4.3 | 9.9 | 3.3 | 25.1 | 46.2 | 3.2 |
| 1998 | 50.6 | 9.0 | 11.6 | 3.1 | 7.5 | 4.8 | 28.1 | 45.0 | 4.5 |
| 1999 | 50.3 | 10.7 | 10.5 | 4.5 | 4.9 | 4.1 | 25.0 | 39.8 | 9.0 |
| 2000 | 50.0 | 11.3 | 11.0 | 4.9 | 5.2 | 3.5 | 25.3 | 37.2 | 9.0 |
| 2001 | 47.6 | 12.4 | 11.7 | 4.9 | 4.2 | 4.2 | 39.7 | 33.0 | 7.4 |
| 2002 | 37.2 | 16.4 | 11.3 | 5.0 | 4.6 | 5.3 | 38.8 | 35.4 | 6.5 |
| 2003 | 33.0 | 17.0 | 12.2 | 6.2 | 4.7 | 6.6 | 44.8 | 22.0 | 9.4 |
| 2004 | 33.0 | 18.0 | 11.7 | 6.5 | 5.4 | 6.9 | 50.6 | 17.5 | 9.0 |
| 2005 | 28.5 | 19.6 | 11.9 | 6.0 | 5.2 | 6.7 | 52.3 | 15.8 | 8.8 |

Source: Comtrade as reported by China.

**Table 5: Value Shares (%) of EU15 Fresh Apple Imports[a]**

| | New Zealand | USA-Canada | SACU | EU new members | South America | China |
|---|---|---|---|---|---|---|
| 1997 | 33.2 | 6.4 | 19.4 | 3.5 | 34.5 | 0.1 |
| 1998 | 33.0 | 7.9 | 20.5 | 1.1 | 36.2 | 0.1 |
| 1999 | 33.7 | 6.7 | 18.8 | 1.0 | 38.4 | 0.2 |
| 2000 | 38.3 | 6.0 | 18.3 | 1.9 | 33.8 | 0.5 |
| 2001 | 32.5 | 4.9 | 19.6 | 1.1 | 39.2 | 1.2 |
| 2002 | 34.0 | 4.8 | 18.3 | 1.3 | 38.5 | 1.9 |
| 2003 | 30.5 | 3.5 | 18.4 | 1.6 | 41.7 | 3.0 |
| 2004 | 28.8 | 4.5 | 18.1 | 2.2 | 40.4 | 5.4 |

a. Net of intra-EU15 trade.

Source: Comtrade as reported by EU15 countries 2005 data was not available for the Netherlands, which was a major EU destination for China's apples in 2004, so we do not display this year.

**Table 6: Value Shares (%) of ASEAN10 Fresh Apple Imports**

| | New Zealand | USA | SACU | EU15 | Australia | China |
|---|---|---|---|---|---|---|
| 1997 | 7.6 | 52.7 | 0.9 | 9.5 | 9.0 | 9.4 |
| 1998 | 10.6 | 37.6 | 2.9 | 7.6 | 8.3 | 23.1 |
| 1999 | 11.1 | 33.6 | 3.4 | 5.4 | 5.8 | 33.2 |
| 2000 | 9.5 | 27.8 | 3.3 | 7.8 | 5.0 | 42.4 |
| 2001 | 9.5 | 31.4 | 6.1 | 6.5 | 4.0 | 38.9 |
| 2002 | 8.9 | 29.6 | 5.9 | 6.1 | 3.4 | 42.9 |
| 2003 | 7.7 | 23.9 | 6.2 | 2.6 | 2.4 | 55.4 |
| 2004 | 5.0 | 19.6 | 8.1 | 2.2 | 1.2 | 61.2 |
| 2005[a] | 1.3 | 22.3 | 1.9 | 1.4 | 0.7 | 70.3 |

a. 2005 trade data has not been reported to Comtrade by Malaysia, Myanmar, Vietnam, Cambodia, Laos and Brunei-Darussalam.

Source: Comtrade as reported by ASEAN member countries.

**Table 7: Cut Flower Consumption of in China**

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|
| Total volume (billion stems) | 2.031 | 2.984 | 3.805 | 4.616 | 9.52 | 6.707 |
| Total expenditure (billion RMB) | .1.656 | 2.170 | 2.415 | 3.088 | 4.803 | 4.091 |
| Consumption per person(stems) | 1.63 | 2.37 | 3 | 3.61 | 7.41 | 5.19 |
| Expenditure per person(RMB) | 1.33 | 1.73 | 1.91 | 2.42 | 3.74 | 3.17 |

Source: Statistics for Chinese Agriculture, 1998-2003.

**Table 8: Value Shares (%) of Japan's Fresh Cut Flower Imports**

| | ASEAN10 | Sth America | EU15 | New Zealand | Korea | Other Asia nes[a] | China |
|---|---|---|---|---|---|---|---|
| 1997 | 29.9 | 4.9 | 25.7 | 15.2 | 1.8 | 1.8 | 0.1 |
| 1998 | 28.4 | 5.6 | 25.2 | 12.3 | 6.4 | 6.4 | 0.4 |
| 1999 | 26.8 | 6.4 | 21.2 | 12.8 | 8.4 | 8.4 | 0.8 |
| 2000 | 26.2 | 8.3 | 21.6 | 11.8 | 11.6 | 11.6 | 0.5 |
| 2001 | 27.4 | 10.8 | 17.2 | 11.7 | 12.9 | 12.9 | 0.7 |
| 2002 | 29.4 | 13.1 | 12.7 | 10.3 | 11.4 | 11.4 | 1.7 |
| 2003 | 30.6 | 14.6 | 9.2 | 9.6 | 11.0 | 11.0 | 3.3 |
| 2004 | 33.6 | 14.3 | 7.3 | 6.9 | 11.3 | 11.3 | 5.5 |
| 2005 | 36.6 | 15.3 | 5.7 | 6.8 | 9.6 | 8.5 | 6.8 |

a. As defined in Comtrade, this includes Taiwan.

Source: Comtrade as reported by Japan.

**Table 9: China's Fresh Apple Trade and Trade Competitive Index**

| | Export value ($'000) | Import value ($'000) | Export quantity (Mt) | Import quantity (Mt) | Trade Competitive Index |
|---|---|---|---|---|---|
| 1995 | 45,300 | 93,914 | 108,946 | 132,371 | -0.35 |
| 1996 | 69,146 | 95,805 | 164,976 | 132,483 | -0.16 |
| 1997 | 77,521 | 102,037 | 188,464 | 141,508 | -0.14 |
| 1998 | 64,549 | 101,118 | 170,273 | 158,812 | -0.22 |
| 1999 | 75,958 | 95,238 | 219,235 | 164,060 | -0.11 |
| 2000 | 96,560 | 94,651 | 297,651 | 155,694 | 0.01 |
| 2001 | 100,676 | 96,216 | 303,597 | 163,977 | 0.02 |
| 2002 | 149,492 | 92,445 | 438,857 | 173,676 | 0.24 |
| 2003 | 209,773 | 99,632 | 609,052 | 150,269 | 0.36 |
| 2004 | 274,407 | 119,536 | 774,131 | 154,109 | 0.39 |

Source: FAOSTAT (http://faostat.fao.org/faostat/)

Trade Competitive Index: $\mathbf{TC_{ij}=(X_{ij}-M_{ij})/(X_{ij}+M_{ij}).TC_{ij}}$ expressed for product **i** in country **j**; $\mathbf{X_{ij}}$ and $\mathbf{M_{ij}}$ are the export value and import value for product **i** in country **j**. $\mathbf{TC_{ij}}$ varies between -1 and +1, $\mathbf{TC_{ij}}$ >0 if country **j** is a net exporter of product **i**, or a net importer if $\mathbf{TC_{ij}}$ <0. The country is more competitive, the greater is TC above zero.

**Table 10: China's Applejuice Single Strength Trade and Trade Competitive Index**

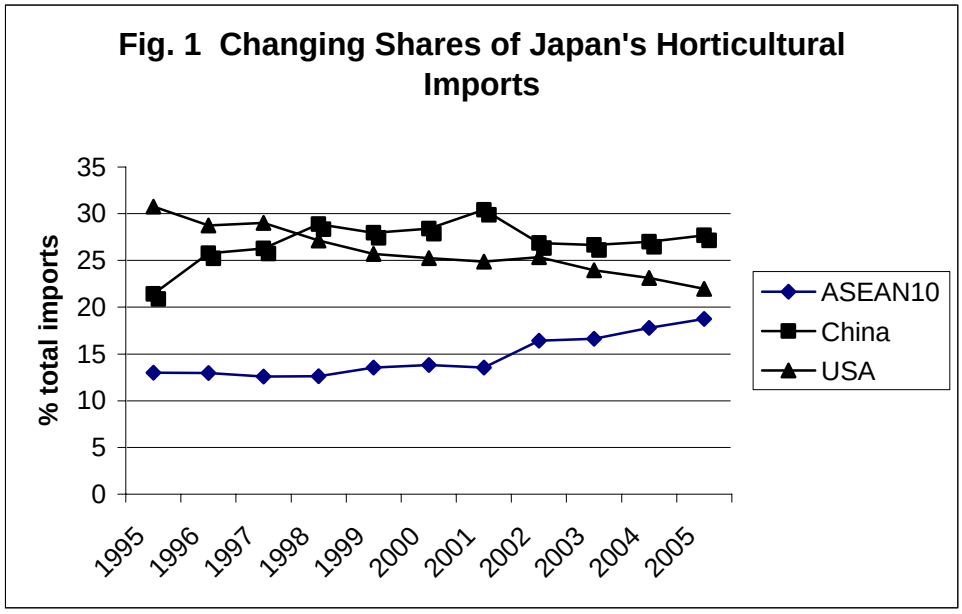
| | Export value($'000) | Import value($'000) | Export quantity(Mt) | Import quantity(Mt) | Trade Competitive Index |
|---|---|---|---|---|---|
| 1995 | 25,892 | 2,248 | 17,766 | 2,659 | 0.84 |
| 1996 | 30,126 | 1,384 | 20,682 | 1,885 | 0.91 |
| 1997 | 36,047 | 1,878 | 33,692 | 2,911 | 0.90 |
| 1998 | 56,014 | 1,511 | 80,624 | 2,189 | 0.95 |
| 1999 | 75,597 | 933 | 98,734 | 1,443 | 0.98 |
| 2000 | 116,415 | 1,011 | 142,374 | 1,705 | 0.98 |
| 2001 | 147,830 | 1,422 | 228,627 | 2,250 | 0.98 |
| 2002 | 173,201 | 545 | 296,797 | 744 | 0.99 |
| 2003 | 254,349 | 542 | 418,578 | 654 | 1.00 |
| 2004 | 325,429 | 1,328 | 487,229 | 1,781 | 0.99 |

Source: FAO Stat(http://faostat.fao.org/faostat/)

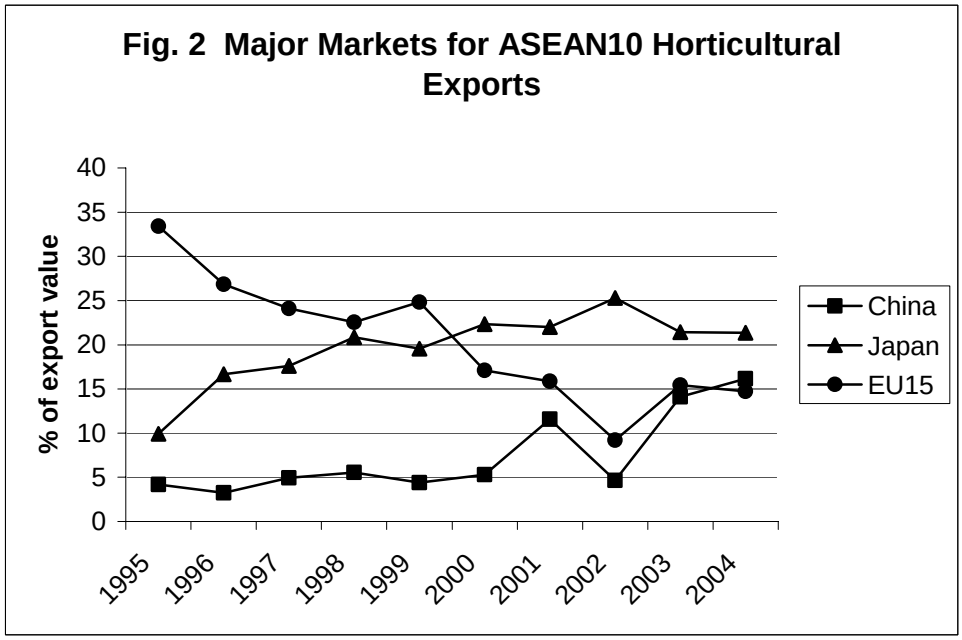
**Table 11: Cut Flowers Trade Competitive Index for Major Exporters**

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|
| China | 0.7 | 0.51 | 0.67 | 0.66 | 0.73 | 0.78 | 0.78 |
| Netherlands | 0.7 | 0.66 | 0.65 | 0.66 | 0.71 | 0.72 | Na |
| Colombia | 0.997 | 0.997 | 0.995 | 0.992 | 0.993 | 0.991 | Na |
| Kenya | 0.995 | 0.998 | 0.999 | 0.999 | 1 | 0.999 | Na |
| EU | -0.31 | -0.26 | -0.27 | -0.23 | -0.25 | Na | Na |
| Ecuador | 1 | 1 | 1 | 1 | 1 | 1 | Na |
| Israel | 0.99 | 0.99 | 0.98 | 0.99 | 0.99 | 0.99 | na |

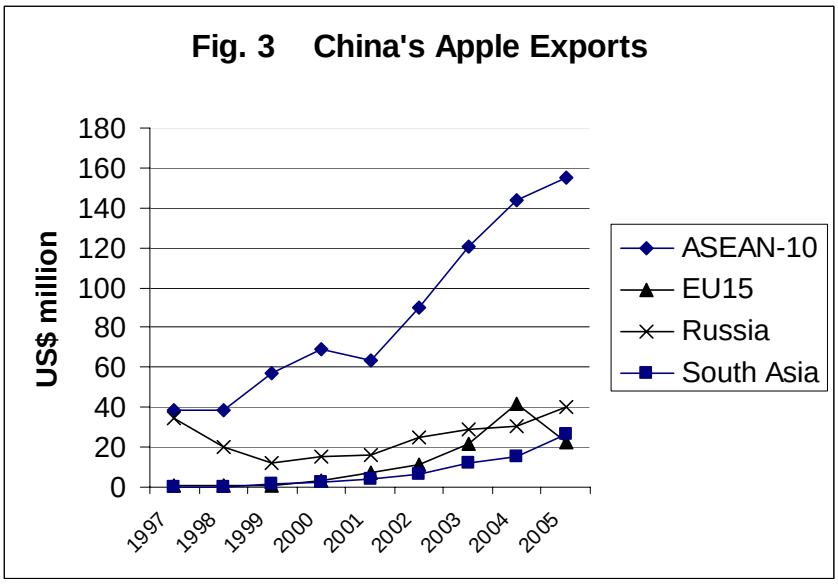
Source: Comtrade: calculation based on HS0603.



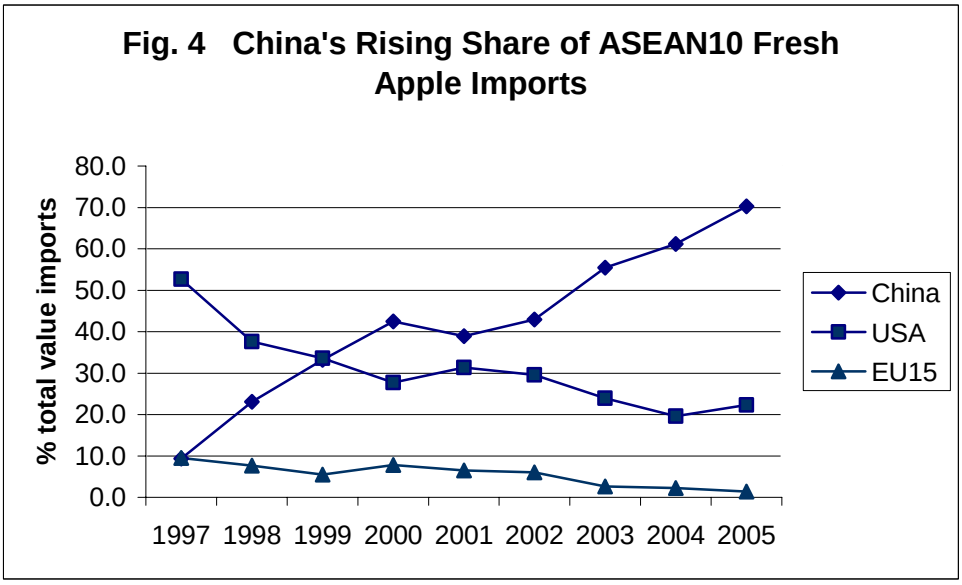

Source: Comtrade, reported by Japan.



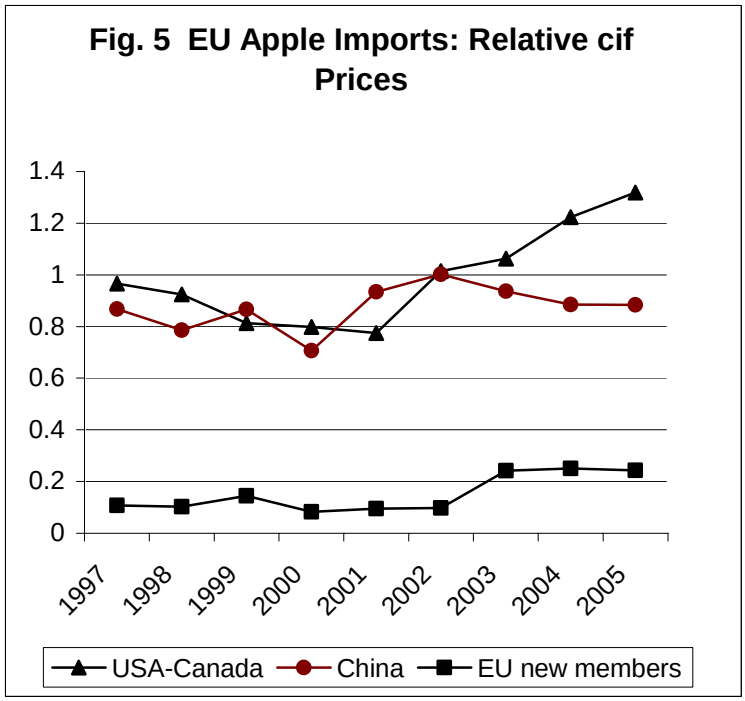

Source: Comtrade, reported by ASEAN countries.



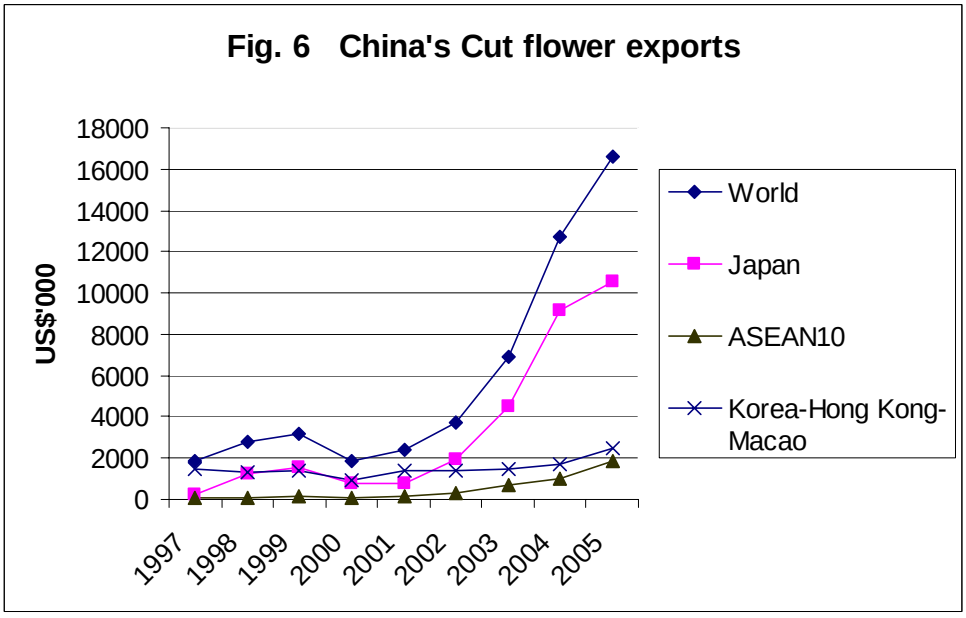

Source: Comtrade, reported by China.



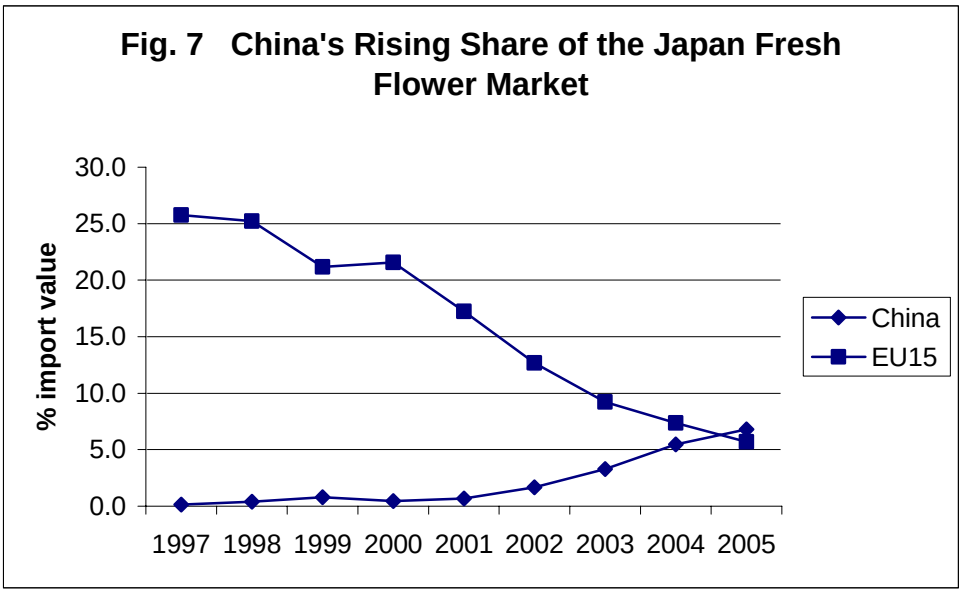

Source: Comtrade, reported by ASEAN countries.




Source: Comtrade, reported by EU15 countries.




Source: Comtrade, reported by China.




Source: Comtrade, reported by Japan.