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CHINA'S TEXTILE AND CLOTHING EXPORTS IN A CHANGING WORLD ECONOMY

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I. INTRODUCTION

TEXTILES and clothing are among the first manufactured products an industrializing economy produces. They played a critical role in the early stage of industrialization in Britain, parts of North America, and Japan, and more recently in the export-oriented growth of the East Asian economies. Hong Kong, the Republic of Korea, and Taiwan relied heavily on textiles and clothing for their exports from the 1950s to the mid-1980s. In the last two decades, several ASEAN economies and China have become large producers and exporters of textiles and clothing. Major South Asian economies, namely, India, Pakistan, Bangladesh, and Sri Lanka, have also emerged as significant textile and clothing exporters in the last few years.

As more economies enter the world textile and clothing market, competition has become intense. At the same time the market remains the most protected among manufactured commodities in industrial economies. Although the Multi-fibre Arrangement (MFA),[1] which has regulated the world textile and clothing market through voluntary export restraints (VERs) for over two decades, is to be phased out by the year 2005, tariffs on textiles and clothing remain high in industrial markets. Textile and clothing exports from developing economies are often subject to anti-dumping actions in industrial markets. Thus it is not clear to what extent the world market can accommodate further expansion of textile and clothing exports from developing economies. Despite the protection, import penetration for these commodities is among the highest in industrial markets. Thus in the long run, even

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[1] See Keesing and Wolf (1980), Cline (1987), and Blokker (1989) for extensive analyses of the MFA.

after the MFA is removed, large export expansion by developing countries may depress world prices, reducing the benefits of export expansion to exporting economies. Such an adverse terms of trade effect would be mitigated if textile and clothing trade among developing economies further increases.

As the world's largest clothing exporter and second largest textile exporter, China has a particularly important role to play in this global issue. In the 1980s, it was feared that industrial economies may not be able to accommodate China's continued expansion of textile and clothing exports (Whalley 1992). MFA restrictions have indeed become increasingly severe, but China has managed to increase its exports rapidly. In the fourteen years from 1980 to 1994, China's exports of textiles and clothing increased eightfold. With rapid increases in domestic costs, however, China's exports of textiles and clothing are approaching their peak and have begun to shift from textiles, clothing, and other labor-intensive manufactures to more capital- and technology-intensive products (Garnaut 1996).

While the shift is inevitable as trade theory suggests, the timing of the shift has important policy implications. For China, the question is how much longer China can expand its exports before it loses competitiveness, and what consequences this may bring to its textile and clothing sector. Apart from the long-term supply potential, there are several demand factors affecting China's prospects for textile and clothing exports. The phasing out of the MFA would encourage China's textile and clothing exports, while uncertainty surrounding the outcome of China's WTO (World Trade Organization) membership negotiations tends to discourage its exports. For China's competitors, especially the latecomers in the world textile and clothing markets (such as the South Asian and some ASEAN economies), the timing of China's shift has major implications for the long-term growth of their exports.

This paper examines the prospects for China's textile and clothing exports and its implications for other textile and clothing exporters. Both supply- and demand-side factors will be taken into account in this study. In the following section, China's textile and clothing exports will be placed in global perspective and changing international comparative advantage will be analyzed. Section III examines the demand factors associated with the Uruguay Round reform and China's WTO membership negotiations, and Section IV analyzes the economic and demographic factors which determine China's supply potential in textiles and clothing. In Section V, simulations will be carried out to project the future path of the textile and clothing sector for China and major textile and clothing exporting economies. The major findings and their implications of the paper are summarized in the final section.

II. CHANGING INTERNATIONAL COMPARATIVE ADVANTAGE

The rapid growth of China's textile and clothing exports has led to major changes in the world textile and clothing markets (Table I).[2] In 1970 China accounted for less than 14 per cent of total textile exports originating in developing economies, and less than 5 per cent of total clothing exports from developing economies. Since then, especially since the mid-1970s, China has gained substantial market share. By 1988 (not shown in Table I), China's market share had peaked, accounting for more than 22 per cent of total textile exports originating in developing countries, or 7 per cent of world textile exports. As for clothing exports, China's market share

TABLE I

TEXTILE AND CLOTHING EXPORTS BY DEVELOPING ECONOMIES, 1970–94

(Percentage of developing economy total)

	1970	1980	1985	1990	1994
Textiles:					
China	13.7	17.1	21.8	19.6	21.2
NIEs[a]	22.5	34.7	36.0	39.2	37.5
ASEAN[b]	3.4	7.0	7.3	9.6	11.9
South Asia[c]	35.8	17.5	14.4	13.7	14.3
Latin America	8.2	9.7	7.9	5.3	5.1
Developing economies (U.S.$ billion)	2.2	14.1	16.7	36.7	55.3
World (U.S.$ billion)	12.1	54.0	52.3	103.5	126.0
Clothing:					
China	4.8	10.1	15.0	15.5	25.6
NIEs[a]	75.8	60.9	54.9	34.1	20.0
ASEAN[b]	2.5	7.4	8.2	13.0	13.3
South Asia[c]	2.9	4.9	6.6	8.2	10.2
Latin America	4.8	6.5	4.0	4.5	6.8
Developing economies (U.S.$ billion)	1.5	16.4	24.9	55.1	93.1
World (U.S.$ billion)	5.7	38.6	46.6	102.7	150.3

Sources: United Nations COMTRADE and the Chinese Customs statistics, International Economic Databank, Australian National University.

Note: Data before 1988 are not strictly comparable with those from 1988 onward. This is because pre-1988 export data for China are calculated as the sum of imports from its trade partners, whereas from 1988 onward the data are based on official Chinese statistics. Because of China's large reexports via Hong Kong, the pre-1988 data presented in the table involve double counting of China's reexports and include value added to reexports in Hong Kong.

[a] Includes Hong Kong, Korea, and Taiwan.

[b] Includes Indonesia, Malaysia, Thailand, Singapore, and the Philippines.

[c] Includes Bangladesh, India, Nepal, Pakistan, and Sri Lanka.

[2] See Anderson (1992) for a broader review of changing comparative advantage in world fiber, textile, and clothing markets.

has continued to increase. By 1994 China accounted for 26 per cent of clothing exports originating in developing countries, or 16 per cent of world clothing exports. In 1994 China overtook Asia's newly industrializing economies (NIEs)—Hong Kong, Korea, and Taiwan—as the world's largest clothing exporter.

Just as China's textile and clothing exports have surged, export growth in the NIEs has slowed. For textiles, the NIEs' share in the world market peaked in the late 1980s and has declined steadily ever since. The NIEs accounted for more than 70 per cent of clothing exports originating in developing economies up to the mid-1970s. By 1994, however, this market share had fallen to less than 20 per cent. The contrast between textile and clothing exports underlines deep structural change in the NIEs. Because clothing is more labor-intensive than textiles, the NIEs have lost comparative advantage in clothing more rapidly than in textiles and hence a large part of their clothing production activities has moved overseas, especially to China and ASEAN. Rapid expansion of the clothing sector in China and ASEAN has generated increased demand for textiles from the NIEs. This has helped maintain the growth of NIEs' textile exports.

The dramatic declines in the NIEs' market share have also been concomitant with the export surges in ASEAN and South Asia. Both textile and clothing exports have grown strongly in ASEAN. Between 1970 and 1994, ASEAN's share in textile exports from developing economies nearly doubled, while its share in clothing more than doubled. South Asia was a significant exporter of textiles in the 1950s. Similar to China it lost much of its market under the inward-looking policy regimes between the 1950s and the 1980s. With economic reform in recent years, however, South Asia has recaptured part of its lost market. In 1994 South Asia was the third largest textile exporter with its clothing exports catching up to those from the ASEAN economies. With the current rate of growth, South Asian exports are poised to overtake ASEAN exports in a near future.

It is interesting to note that the lost market share by the NIEs has been entirely captured by China, ASEAN, and South Asia. This occurred in a period of about two decades, but most of the shift occurred after the mid-1980s when China's exports began to surge. This transition has occurred rather smoothly, with the NIEs successfully shifting away from clothing to more capital-intensive commodities. China is clearly ahead of South Asia in textile and clothing exports and is at a similar stage of development to some of the less developed ASEAN economies—Indonesia and the Philippines—, but slightly behind the more developed members of ASEAN—Malaysia and Thailand. Vietnam, the newest member of ASEAN, is in a similar stage to South Asia.

The income gaps between China and the NIEs were much larger when China began to replace the NIEs in world clothing markets than the current gaps between China and the South Asian economies. This means that South Asia may face stronger competition from China than China did from the NIEs. It also means that, depending on how rapidly China can move away from clothing exports, the world

economy is likely to feel the combined impact of China, South Asia, and ASEAN on global production and trade for a considerable time to come. The concentration in labor-intensive exports by these populous economies will exert great pressure on structural adjustment in the world economy.

III. THE DEMAND SIDE

One of the most important factors determining China's competitiveness in world textile and clothing markets will be the phasing out of the MFA.[3] The Uruguay Round Agreement on Textiles and Clothing (ATC) represents a major step forward in the liberalization of world trade in textiles and clothing. It is a transitional agreement and provides a legal framework for the elimination of MFA restrictions over a ten-year period (January 1, 1995–January 1, 2005). After the transition, the same rules will apply to trade in textiles and clothing as to trade in other manufactured goods. In addition, the ATC also requires that restrictions inconsistent with GATT other than those maintained under the MFA be either brought into conformity with GATT or eliminated. The ATC also provides for increases in quota growth rates for products remaining under restrictions during the transition period.

The phasing out of the MFA is heavily end-loaded, with nearly half of textile and clothing products remaining under quota restrictions until 2004. If importing economies choose to liberalize products which are not restricted by the MFA, there will be little substantive liberalization before 2005 (Bagchi 1994; Blokker and Deelstra 1994). In the transition process, a special safeguard mechanism similar to the MFA is available for importing economies to impose quantitative restrictions on products yet to be integrated. In the first few months after the entry into effect of the WTO agreements, the United States made twenty "calls" for consultation by invoking the special safeguard provision (UNCTAD 1995b). There is also a fear that even after the special safeguard becomes unavailable after the transition period, importing economies will use other protectionist measures as a substitute for the MFA. Anti-dumping and countervailing are likely to be favored instruments.

As quota acceleration is based on the quota growth rates effective on December 31, 1994, the initial rates of quota growth are critical in determining the extent of quota enlargement. Existing differences in quota growth rates will lead to greater disparities among exporting economies as well as to increases in the variations in quota volumes for different products. As sensitive products have lower quota growth rates under bilateral agreements, their relative quota volumes in the transitional period will slip further, creating greater distortions in resource allocation. Yang (forthcoming) reported that the standard deviation of quota volumes across exporters would increase by 50 per cent in North America and 57 per cent in the European Union (EU) as a result of quota acceleration.

[3] For more extensive discussions of the demand-side issues, see Zhong and Yang (forthcoming).

Tariffs on textiles and clothing have been much higher than those on other manufactured commodities and have been characterized by tariff peaks (above 15 per cent) in industrial markets. Tariffs in developing markets are even higher. Tariffs on textiles and clothing will be reduced as a result of the Uruguay Round, but the extent of reduction in major industrial markets (except Japan) is much lower than in other manufactured commodities. For example, the average tariff reduction by the Quad countries (the United States, the EU, Japan, and Canada) is only 22 per cent, making textiles and clothing the only sector that did not fulfill the target of one-third reduction (UNCTAD 1995b).

China has been one of the most severely restricted exporters and its competitiveness in textiles and clothing should improve once the MFA is phased out.[4] There is, however, uncertainty about improved market access as the removal of MFA quotas on China depends on China's status in the WTO. According to the U.S. and EU legislation implementing the Uruguay Round, non-WTO members may not be able to benefit from the ATC even if they were members of the former MFA (UNCTAD 1995b). After ten years of negotiations on China's WTO membership, it is still not clear when China is to be admitted to the WTO. Not being a member of the WTO, China may face increasingly discriminatory measures against its exports. Mexico, for example, has recently imposed anti-dumping duties of 54–500 per cent on Chinese textiles and clothing (Moore 1995). China has to rely entirely on bilateral efforts to deal with such trade restrictions so long as it is not a WTO member.

The recent change in the rules of origin concerning textile and clothing imports in the United States is likely to have an adverse effect on China's exports. In accordance with Section 334 of the U.S. Uruguay Round Agreement Act (implementation legislation), changes in the rules of origin (effective on July 1, 1996) will affect a broad range of products (T-shirts, pants, and dresses). The new rules will, in most cases, make the country of assembly as the country of origin and quotas will be charged against this country. Since China relies heavily on processing trade it will be most affected by this change. While WTO members may have access to compensations in accordance with the WTO agreements (including the ATC), it is unlikely that China will be compensated.

Even if China gained WTO membership in the near future, there exists the possibility that China's exports be subject to discriminatory restrictions under a special safeguard provision which is likely to be included in the Protocol of Accession of China. As China is considered to be a planned economy with broad government interventions in production and trade, the United States and the EU have been insisting on the inclusion in China's Protocol of Accession of a special safeguard provision that would allow other WTO members to impose quantitative restrictions

[4] See Trela and Whalley (1990) and Yang (1994) for assessments of the effect of MFA abolition on China and other economies.

specifically against China upon the determination of a surge of Chinese exports and serious damage, or threat thereof, to industries in destination markets. Such a mechanism is similar to the safeguard mechanism based on the concept of market disruption contained in the MFA. The proposals by the United States and the EU on the special safeguard provision also contains a mechanism for third countries to have recourse to such measures on the basis that the imposition of restrictions by other countries has resulted in a diversion and surge of China's exports to their markets.

There is little doubt that such a mechanism would be applied mostly against China's most dynamic exports of labor-intensive products, such as textiles and clothing. Furthermore, such a mechanism would be open to use by any member of the WTO, whether developed or developing. Therefore, there is a real possibility that even if China gains early accession to the WTO, it may continue to face discriminatory restrictions.

Anti-dumping is another source of concern for China. By using a third country or reference price in the determination of dumping margins, the actual costs of China's exports are virtually disregarded. Between the late 1980s and 1994, the EU alone has brought at least 179 anti-dumping measures or proceedings against China (*Agence Europe*, November 7, 1994).

Regionalism and the spread of preferential trade agreements is another concern for China. In the textile sector, several recent developments will further affect China: the formation of the North American Free Trade Agreement (NAFTA); the enlargement of the EU to include Austria, Sweden, and Norway; the EU's preferential agreement with Turkey (a rapidly expanding exporter of textiles and clothing) eliminating all the quota restrictions on Turkey effective on January 1, 1996; and the EU's preferential agreements with Central and Eastern European economies eliminating all quota restrictions on them by January 1, 1998 (WTO 1996). Sweden abolished MFA quotas in 1991, but its accession to the EU means that this market is under quota restriction again.

Another important recent development is Japan's intention to impose quantitative restrictions on China's textile and clothing exports. Japan has never before imposed MFA restrictions on developing exporters. Japan was a large exporter of both textiles and clothing before the 1970s, but has since turned into a large net importer of clothing and a relatively small net exporter of textiles. Rising import competition in the domestic market has led to intensive structural adjustment in Japan's textile industry in the past decades (Yamawaki 1989).

Increasing restrictions in the U.S. and EU markets have led to rapid diversification and diversion of Chinese exports to the Japanese market. China's shares in Japan's total imports of textiles and clothing have risen dramatically in recent years, increasing for textiles from 25 per cent in 1992 to 32 per cent in 1994, and for clothing, from 43 per cent in 1992 to 54 per cent in 1994 (WTO 1995). As a

result, Japan became China's largest industrial market for textile and clothing exports in 1994.

Rising import competition has aroused increasing calls from Japan's textile industry for import restrictions. Starting October 1994, at the request of the Japanese government, several rounds of consultations were held between China and Japan on possible "voluntary export restraints" on a range of textile products by China. On November 9, 1995, the Japanese government decided that restrictions would not be imposed "for the time being" due to a decline in China's exports of these products to Japan during the period under investigation.

This development could have far-reaching implications for China. It means that new gray area agreements against China could spread. South Africa has been negotiating a VER agreement with China, and both Korea and Taiwan have attempted to enter into negotiations with China on voluntary restraints on Chinese exports ("Reuters Electronic News," January 29, 1996). The WTO is yet to deal with such arrangements involving non-WTO members.

IV. THE SUPPLY SIDE

Whether China will continue its rapid growth of textile and clothing exports depends not only on the demand conditions, but also on its supply potential. There are two major factors which will determine the long-term growth of China's textile and clothing exports. The first is the continued economic reforms. In standard neoclassic analysis, reforms will only have one-off effects, and will not accelerate the long-term growth rate of the economy. A growing body of literature has suggested, however, that openness may boost long-term growth rates (Edwards 1993).

The second major factor is the shift in comparative advantage in the world textile and clothing sector. Because textiles and clothing are labor-intensive,[5] especially clothing, China's comparative advantage in textiles and clothing largely lies in its abundant supply of unskilled labor. China was, however, unable to exploit this comparative advantage in the pre-reform era. It is only since the reform that China's trade pattern has increasingly conformed with its comparative advantage, leading to rapid growth of labor-intensive exports, including textiles and clothing (Zhang 1993).

In the early years of reform, the state textile and clothing sector played a dominant role in exports. Since the mid-1980s non-state enterprises, especially township and village enterprises, have become increasingly dynamic. During the period 1986–94, rural textile output grew at 19 per cent per annum and rural clothing

[5] According to the database maintained at the Centre for Global Trade Analysis of Purdue University, labor accounts for 42 per cent of value added in China's textile industry and 52 per cent of value added in the clothing industry. In contrast, the value-added share of labor in other manufacturing industries averages 37 per cent. Similar patterns are observed for other Asian economies.

output at 27 per cent, while the output of the urban sector (to which the state sector belongs and dominates) grew at an annual rate of 3 per cent for textiles and 11 per cent for clothing (Yang 1995).

The non-state sector has outperformed the state sector in virtually all industries, but the contrast between the two sectors in the textile and clothing industries is probably greater than in most other industries. Non-state enterprises normally produce textiles and clothing at a lower price than state enterprises because labor costs are lower. Labor redundancy in state enterprises is a major contributor to high labor costs. In addition, non-state enterprises are more flexible in production and marketing, and are therefore more competitive than state enterprises.

As the result of the strong growth of the non-state sectors, the rural sector's share in national textile and clothing output has increased dramatically. In 1986 rural township and village enterprises accounted for less than 20 per cent of total textile output and 30 per cent of clothing output. By 1992 the respective shares had climbed to 35 and 50 per cent. It should be noted that these percentages do not fully take into account output by other private rural enterprises. In terms of incremental output, the contribution of the rural sector is even greater. Between 1986 and 1992, township and village enterprises accounted for 61–75 per cent of the total incremental output (Yang, forthcoming).

The non-state sector has also outperformed the state sector in production for export. In 1988, the township and village enterprises alone accounted for about half of China's total clothing exports, and 16 per cent of textile exports. By 1991, clothing exports had climbed to 78 per cent and textile exports to 25 per cent. Clothing exports further increased to 90 per cent in 1992. Non-state sectors have become the most important exporters for most light manufactured products in recent years (PRC, ZXQN, 1993).

Most of China's textile and clothing exports are produced in the coastal region, with Guangdong, Jiangsu, Shanghai, Fujian, and Shandong in the lead. After rapid economic growth over the past one and half decades shortages in unskilled labor have begun to emerge in some of these areas, drawing large migration from inland areas despite government restrictions on migration. At the same time, rental costs for land are also increasing and exerting pressure for production facilities to move west. The soaring costs have led to diversification of production activities. In the last three years, the shares of textiles and clothing in total rural industrial output have shown a declining trend (PRC, SSB, various years).

Given great variations in labor costs in different parts of China, it will take a considerable time for an overall labor shortage in China to emerge. Large pools of the unemployed and underemployed in most rural areas will provide virtually unlimited labor resources on which the coastal areas can draw. Policies aimed at reducing the costs of migration from the west to the east will enable China to use these vast human resources. Household registration has been a major constraint on

migration, although the system now has less sway over the rural population. A number of other policies have also hindered effective use of migrant resources in urban areas: migrants are seldom eligible for public housing, medicare, and education; there are still restrictions on employment of rural migrants in state enterprises; regulations are also imposed on where migrants may live in urban areas; and some cities collect tolls on migrants.

An alternative policy for tapping China's human resources is to further improve infrastructure in inland areas. This will not only reduce migration costs if farmers choose to migrate east, but also provide the necessary conditions for indigenous industries to thrive should would-be migrants decide to remain in the west. This may also attract entrepreneurs to inland. This policy is likely to reduce east-west income inequality which has been growing since the beginning of reform in the late 1970s.

With rapid growth, capital accumulation will continue. It is likely that capital accumulation is more rapid than income growth. This will be achieved through attracting more foreign investment and/or increased savings, a continuation of the past experience. In the past eighteen years since reform, China's saving rate has exceeded 35 per cent in most years. The inflow of foreign investment, especially foreign direct investment, has accelerated in recent years, reaching U.S.$33 billion in 1994 (PRC, MFTEC, 1995).

Table II summarizes growth projections of factors of production, GDP, and population for China and other economies over the period 1992–2005. These projections are prepared for the simulation exercises in the following section and are mostly adopted from Hertel et al. (1996). A much higher labor force growth is assumed for China in this study. While population growth is slowing down because of the effect of the one-child family policy, China can draw on its vast surplus labor which includes large unemployment and underemployment in both urban and rural areas. Taking this into account, China's effective labor force is projected to grow by 36 per cent[6] between 1992 and 2005 (or 2.4 per cent per annum). This makes China's effective labor force grow as fast as that in South Asia, although its population growth is substantially slower (Table II).

China is projected to have the most rapid capital accumulation and GDP growth over the period 1992–2005. This reflects the strong growth performance in the past decade and an optimistic assumption about the stability of the economy in the fu-

[6] According to the Economist Intelligence Unit (EIU) (Electronic Publishing, December 6, 1995), 20 per cent of China's labor force is surplus. If the labor force grows by another 18 per cent by the year 2005, the incremental labor force available to China by the year 2005 will be 38 per cent higher than the current level. Assuming three quarters of this extra labor will be absorbed by the year 2005, the increase in the current productive labor force will be 36 per cent [$0.75 \times 0.38/(1–0.20)$]. This is equivalent to reducing China's unemployment rate to 8 per cent ($0.25 \times 0.38 / 1.18$) by the year 2005.

TABLE II

PROJECTED ANNUAL CHANGES IN FACTOR ENDOWMENTS AND REAL GDP, 1992–2005

(%)

	Population	Labor	Capital	Real GDP
Australasia	0.7	0.6	2.1	2.5
North America	0.7	0.9	2.8	2.7
EU	0.2	0.2	1.3	2.2
Japan	0.3	–0.2	3.3	2.6
NIEs	0.9	0.9	6.3	6.3
ASEAN	1.6	2.2	6.8	6.8
China	1.3	2.4	9.3	8.9
South Asia	1.8	2.4	7.1	5.2
Latin America	1.7	2.2	1.2	3.6
Rest of the world	1.3	2.4	2.5	2.5

Sources: Based on Hertel et al. (1996). Also see the text.

ture. The implied 9 per cent annual growth is not unrealistic if China continues with its reform programs. Nevertheless, we will explore the implications of a slower China growth scenario. Rapid capital accumulation means that China will become increasingly capital-abundant and labor-scarce. Land resources are assumed to be constant over the period of projection.

V. PROSPECTS FOR EXPORT GROWTH

In this section, a 10×10 version[7] of the GTAP model[8] is used to project the growth path of the world economy, with particular attention to the textile and clothing sector. The projections essentially involve exogenously augmenting factor uses, GDP, and population using the magnitudes shown in Table II. As GDP forecasts are imposed, economy-wide technological change variables in the model are endogenized to make up the gaps between GDP growth and factor accumulation. Alternatively, GDP growth can be endogenously determined if economy-wide technological change, along with factor uses, is exogenous. It should be noted, however, that GDP does not grow at the same rate across sectors in either approaches, even though only the economy-wide GDP growth or technological change is projected. Because of variations in factor intensity among sectors, differ-

[7] See Table II for the ten regions in the model. The ten commodities are: (1) agriculture, (2) mining, (3) processed food, (4) textiles, (5) clothing, (6) iron and steel, (7) transport equipment, (8) machinery and equipment, (9) other manufactures, and (10) services.

[8] GTAP is a multi-sector and multi-region global general equilibrium model. It was developed under the Global Trade Analysis Project led by Thomas Hertel of Purdue University. A brief introduction to the model is provided in the Appendix to this paper. Interested readers are referred to Hertel (1997) for more details of the model.

ent rates of factor accumulation means that GDP growth differs among sectors. In addition, consumer preferences are non-homothetic, so the growth of demand for various products differs as income rises. Following Gehlhar (1997), the magnitudes of trade elasticities in the GTAP model are doubled in the projection simulations.

In projecting the world economy to 2005, two scenarios are first considered. In the first scenario, no policy changes take place. This means that all trade restrictions, including the restraints of MFA quotas, remain constant. The purpose of this experiment is not to provide realistic projections for the world economy, or for the textile and clothing sector in particular. Rather, it is intended to capture the structural change that would result purely from changing factor endowments. In the second scenario, changes in trade policies resulting from the Uruguay Round trade liberalization is taken into account. Thus, the growth of the world economy is driven both by factor accumulation and trade liberalization.

In the "no policy change" scenario, factor uses and GDP growth are exogenous, while economy-wide output-augmenting technological change is endogenously determined. In the trade liberalization scenario, the technological change estimates from the first scenario are exogenously imposed, while GDP is determined endogenously. This effectively assumes that trade liberalization does not affect technological change, but does contribute to GDP growth by improving the efficiency of resource allocation. The same approach has been adopted by Tyers and Yang (1997).

For the second scenario, the estimates of tariff cuts and agricultural liberalization resulting from the Uruguay Round are based on GATT (1993, 1994) and UNCTAD (1995a). Essentially, for industrial economies domestic support for agriculture is reduced by 20 per cent, and export subsidies and tariffs (including equivalent quantitative restrictions) by 36 per cent. Tariffs on textiles and clothing are reduced by 18 per cent in North America, 16 per cent in the EU (15 per cent for imports from developing economies), and 33 per cent in Japan. For developing economies, domestic support for agriculture is cut by 15 per cent, export subsidies by 24 per cent, and tariffs by 26 per cent. Tariff reductions in developing economies are two-thirds of industrial economy liberalization.

China has high trade barriers. However, it is not clear at this stage to what extent China will liberalize its trade in the next decade or so. This should become clearer as China gets closer to the conclusion of its WTO accession negotiations. For want of better information, we assume in the simulations that China undertakes the same extent of trade liberalization as other developing countries.

The model closure used in all projection simulations (including the third one to be discussed later) is quite standard.[9] In particular, all quantities (except the real

[9] For detailed discussions of possible model closures for the GTAP model, see Hertel (1997).

GDP variable in the first experiment as discussed above) are endogenously determined, and all prices are endogenous as well, except for the price of savings—the numeraire. All technological change variables are exogenous (except the economy-wide output-augmenting technological change variable in the first experiment). Thus, any price changes in the simulations are relative to the price of savings. As indicated earlier, land, labor, and capital are all exogenous. Labor and capital are perfectly mobile across sectors while land is only partially mobile. This means that expanding sectors can easily draw labor and capital away from contracting sectors. The balance of trade is endogenously determined.

Simulation results show that without trade liberalization, China's textile and clothing production tends to grow more slowly than the economy as a whole (Table III). This is primarily because textile and clothing production is generally more labor-intensive than other manufacturing activities. With increasing abundance of

TABLE III

PROJECTED ANNUAL CHANGES IN REAL OUTPUT AND TRADE IN SELECTED DEVELOPING ECONOMIES, 1992–2005

(%)

	China	NIEs	ASEAN	South Asia	Latin America
Output:					
Textiles	5.3 (5.9)	5.2 (6.6)	7.6 (10.8)	4.3 (5.6)	2.4 (2.1)
Clothing	6.4 (10.8)	6.6 (4.9)	9.1 (15.8)	4.7 (8.8)	3.4 (2.8)
GDP	8.9 (9.1)	6.3 (6.4)	6.8 (7.0)	5.2 (5.3)	3.6 (3.6)
Exports:					
Textiles	4.0 (5.8)	5.7 (8.2)	7.5 (9.3)	3.8 (7.6)	1.2 (2.4)
Clothing	5.6 (12.5)	6.4 (3.3)	10.4 (19.6)	4.2 (12.6)	–0.7 (–4.6)
All exports	6.0 (7.5)	4.3 (4.8)	6.6 (7.5)	4.7 (6.5)	0.6 (1.6)
Imports:					
Textiles	5.6 (8.7)	4.7 (4.5)	6.3 (10.9)	4.4 (7.0)	2.7 (3.5)
Clothing	7.9 (12.6)	5.6 (5.3)	7.0 (11.8)	5.5 (8.5)	4.5 (6.3)
All imports	7.9 (9.3)	5.3 (5.6)	6.1 (6.9)	3.2 (4.4)	2.9 (3.7)

Source: Simulations of the GTAP model.

Note: Numbers without parentheses are results from the scenario without trade liberalization and those in parentheses are results from the scenario with trade liberalization.

capital, capital-intensive sectors tend to grow more rapidly than labor-intensive sectors (the Rybczynski effect). In the NIEs, textile production grows less rapidly than GDP, but clothing production grows slightly more rapidly than GDP. It should be noted that this latter result may be biased because the model does not take into account foreign direct investment. In the last decade or so, many clothing production factories in the NIEs have moved to China. Had this investment movement been incorporated in the model, clothing production in the NIEs would not have grown so strongly in the projection, while China's clothing output would have expanded more rapidly.

In the ASEAN economies, output growth in textiles and clothing outstrips overall production growth, and in the case of clothing by a significant margin. Similar to China, the growth of the textile and clothing sector in South Asia lags behind overall economic growth. In the projection, South Asia's labor force increases rapidly, reflecting population growth in the region. However, capital accumulation is projected to grow even more rapidly, leading to stronger growth of sectors more intensive in capital. Compared with China, however, South Asia's structural change towards more capital-intensive sectors is less pronounced.

Trade liberalization accelerates output growth in China's textiles and clothing (the second scenario). However, even with trade liberalization, textile output still grows much less rapidly than GDP, while the growth of clothing production exceeds overall economic growth. In contrast, trade liberalization boosts textile production in the NIEs while leading to less rapid growth of clothing production. Increased competition from China and other more efficient producers reduces the expansion of clothing exports while increased demand for textiles in China and other more efficient producers helps boost textile production in the NIEs. Regardless of trade liberalization, ASEAN's textile and clothing production grows more rapidly than its GDP, but with trade liberalization, the growth of textile and clothing production exceeds GDP growth by a substantial margin. While textile and clothing output in South Asia grows more slowly than GDP without trade liberalization, it increases more rapidly than GDP with trade liberalization.

Export growth shows similar trends (Table III). Without trade liberalization, China's textile and clothing exports tend to grow less rapidly than overall exports, but even with trade liberalization, textile exports grow considerably less rapidly than overall exports. Without trade liberalization, textile and clothing exports in the NIEs tend to grow more rapidly than overall exports, but with trade liberalization, clothing exports grow less rapidly than overall exports, while textile exports grow even more rapidly. For ASEAN and South Asia, trade liberalization boosts the exports of both textiles and clothing, leading to more rapid growth of these exports than overall exports.

It is interesting to note the substantial increases in textile imports in China, ASEAN, and South Asia over the period 1992–2005 (Table III). Trade liberaliza-

tion accelerates their import growth substantially. This is not only because their tariff cuts are considerable, but also because of induced demand for textiles when their clothing exports expand.

The projections discussed so far are based on the relatively rapid growth of the Chinese economy. There is always uncertainty with such growth forecasts, especially with China where the continuation of economic reform bears great risks. What would happen if growth slows down in China over the period 1992–2005? In the next simulation, China's annual growth rate is assumed to be one-third lower than the baseline projection in the first scenario. It is also assumed that capital accumulation is also one-third lower than the baseline projection, while labor employment growth remains the same. These assumptions imply that technological progress in this scenario is slower than under the high growth scenarios. As in the second scenario, the Uruguay Round trade liberalization is incorporated in the simulation.

With slower growth, both China's production and export growth slow down (to see this, compare the numbers without parentheses in Table IV with those in parentheses in Table III). However, the shift from labor-intensive to capital-intensive production will not proceed as fast as with more rapid economic growth. While China's annual real GDP growth rate is reduced by one-third over the period 1992–2005, annual output growth is only reduced by 25 per cent for textiles and 19 per cent for clothing. The growth rate of total exports also falls by 19 per cent. Because textiles and clothing are more labor-intensive than other manufactures on average, their growth rates slow down to a lesser extent, 12 per cent and 14 per cent, respectively. This is clearly a Rybczynski result in an open economy where capital is not perfectly mobile internationally. As labor becomes relatively abundant with slower capital accumulation, labor-intensive activities do not slow down as much as the economy as a whole.

China's slower growth does not, in general, give a great boost to the export growth of textile and clothing exports from other developing economies. The largest impact of China's slower growth is felt by the NIEs, which have more intensive trade ties with China than other economies. China's slower growth increases the growth rate of the NIEs' textile output only marginally and that of clothing output by half of a percentage point. ASEAN's output growth increases by about half of a percentage point for both textiles and clothing, while the increases in South Asian textile and clothing output rise by only one-tenth and three-tenths of a percentage point, respectively. The impact on other economies' export growth of China's slower growth is similar to the impact on output growth, except that it has no impact on the NIEs' textile exports. This is because the NIEs export a large proportion of their textiles to China; any export expansion in other markets is offset by the decline in import demand from China.

Table IV also presents the impact of China's slower growth in a comparative

TABLE IV

PROJECTED ANNUAL CHANGES IN THE TEXTILE AND CLOTHING INDUSTRIES IN SELECTED DEVELOPING ECONOMIES, 1992–2005: SLOWER CHINA GROWTH

(%)

	Output		Exports	
	Textiles	Clothing	Textiles	Clothing
China	4.4 (–17.3)	8.8 (–21.2)	5.1 (–8.8)	10.7 (–19.2)
NIEs	6.7 (1.6)	5.4 (7.3)	8.2 (0.1)	3.9 (8.2)
ASEAN	11.3 (5.5)	16.4 (8.1)	9.6 (3.3)	20.4 (9.4)
South Asia	5.7 (0.7)	9.1 (3.7)	7.6 (–0.2)	13.1 (5.8)
Latin America	2.2 (0.2)	2.8 (0.6)	2.4 (0.2)	–4.1 (7.6)

Source: Simulations of the GTAP model.

Note: Figures in parentheses are the comparative static effects of slower China growth for 2005. They are calculated as the differences in the projected 2005 output (export) levels between the third and second scenarios divided by the output (export) levels for 2005 in the second scenario. For example, China's textile output is projected to grow at 5.9 per cent per year in the second experiment (see Table III). Assuming that the 1992 level of output is 1, output in 2005 is 2.11. Similarly, China's textile output in 2005 is 1.75 in the third experiment. The static comparative effect of China's slower growth on its textile output in 2005 is –17.3 per cent [(1.75 – 2.11)/2.11].

static manner (see the numbers in parentheses and the note to the table for calculations of these numbers). These numbers indicate the percentage changes in the 2005 level of output and exports that result from China's slower growth as compared with higher growth. In general, the comparative static impact on clothing of China's slower growth is larger than on textiles. For example, slower GDP growth would lower China's clothing output in 2005 by 21 per cent, and exports by 19 per cent, while the reductions in textile output and exports would be only 17 per cent and 9 per cent, respectively.

The impact of China's slower growth on output and export levels in other economies is much smaller. The largest percentage increase in output and exports in 2005 is observed in ASEAN, followed by the NIEs. The impact on South Asia is significant for clothing only.

VI. POLICY IMPLICATIONS

Historically, most developing economies have established some capacity in modern textile and clothing industries. Because textile and clothing production is labor-intensive and requires relatively simple technology, many developing economies

have chosen these industries as a spearhead for export expansion. China has been able to tap into its huge production capacity and abundant labor resources since its economic reform.

The MFA has not stopped China from utilizing its comparative advantage, nor does it seem to have prevented the relocation of world textile and clothing production from high-cost to low-cost economies. If MFA quotas on China are phased out, as they will be for other developing economies, China's textile and clothing exports will receive a temporary boost in the next decade or so. On the other hand, the likely inclusion of a special safeguard provision in China's protocol of accession to the WTO will encourage export diversification. The special safeguard may prove to be more discouraging for Chinese textile and clothing exports than the MFA in the past. Under the MFA all major exporters are restricted, while the special safeguard provision targets China alone.

China is large and labor costs vary greatly from region to region. This means that textile and clothing exports will remain competitive and important for some time to come in the future, as long as production is able to move to lower-cost areas or labor can freely move to the coastal areas. As China continues on a high growth path it will experience structural change and move up to the technological ladder to more capital-intensive industries. Even with the rapid growth of labor force resulting from greater labor mobility and utilization of surplus labor, China's reliance on textiles and clothing will diminish over time.

Over time, the quality of China's textile and clothing exports will improve. This will result not only from improvements in production technology and increases in labor costs, but also from domestic and overseas demand for high-quality products. This has occurred in Japan and the NIEs and will become inevitable in China as it grows (Yamazawa 1993).

China's diversification and upgrading will give South Asia and low-cost ASEAN economies greater opportunities for export expansion. In the past, the export growth of these economies accelerated at the same time as China's exports were expanding rapidly and replaced the NIEs as the prime supplier to the world market. Similar to China, export expansion in South Asia and ASEAN has largely resulted from improved supply conditions. With the slowing down of China's textile and clothing export growth, these economies should be able to continue to increase their exports. The removal of the MFA will further encourage their textile and clothing exports.

The fear that China's high growth will prevent other low-cost textile and clothing economies from export expansion is therefore unfounded. A slower growth of the Chinese economy over the next decade or so would give other economies only slightly greater opportunities for textile and clothing exports. However, slower China growth also means that structural adjustment there will occur less rapidly, and hence China will compete with other economies in labor-intensive commodi-

ties for a longer-time period in the future. Prolonged concentration in labor-intensive exports by China will also increase the pressure for adjustment in industrial economies.

Past experience suggests that the world market has adjusted reasonably well to China's expansion of textile and clothing exports. If textiles and clothing from China can be absorbed by the world market, there is a greater chance that other commodities will be accommodated in the future. As China diversifies its exports, few commodities will likely cause the extent of structural adjustment that has been entailed by textiles and clothing. But the world market must accommodate other low-cost exporters, such as South Asia, which in terms of population is of similar size to China. The conclusion of the Agreement on Textiles and Clothing shows that industrial economies are accepting, albeit reluctantly, the potential challenge from South Asia and other low-cost exporters. It is important, however, that industrial economies continue to liberalize their textile and clothing imports after the MFA is phased out. If the history of the MFA is any guide, continued protection will only slow structural adjustment in the world economy, to the detriment of both importing and exporting economies.

REFERENCES

Anderson, Kim. 1992. "The Changing Role of Fibres, Textiles and Clothing as Economies Grow." In *New Silk Roads: East Asia and World Textile Markets*, ed. Kim Anderson. Cambridge: Cambridge University Press.

Bagchi, Sanjoy. 1994. "The Integration of the Textile Trade into GATT." *Journal of World Trade* 28, no. 6: 31–42.

Blokker, Niels. 1989. *International Regulation of World Trade in Textiles: Lessons for Practice and a Contribution to Theory*. Dordrecht: Martinus Nihoff Publishers.

Blokker, Niels, and Jan Deelstra. 1994. "Towards a Termination of the Multi-fibre Arrangement?" *Journal of World Trade* 28, no. 5: 97–118.

China, People's Republic of (PRC), Ministry of Agriculture, Zhongguo Xiangzhen Qiye Nianjian (ZXQN), ed. 1993. *Zhongguo xiangzhen qiye nianjian, 1993* [Almanac of China's township enterprises, 1993]. Beijing: Zhongguo Nongyo Chubanshe.

China, People's Republic of (PRC), Ministry of Foreign Trade and Economic Cooperation (MFTEC). 1995. *Zhongguo duiwai jingji maoyi nianjian, 1995* [Almanac of China's foreign economic relations and trade, 1995]. Beijing: Zhongguo Shehui Chubanshe.

China, People's Republic of (PRC), State Statistical Bureau (SSB), comp. Various years. *China Statistical Yearbook*. Beijing: China Statistical Publishing House.

Cline, William R. 1987. *The Future of World Trade in Textiles and Apparel*. Washington, D.C.: Institute for International Economics.

Edwards, Sebastian. 1993. "Openness, Trade Liberalization, and Growth in Developing Countries." *Journal of Economic Literature* 31, no. 3: 1358–93.

Garnaut, R. 1996. "Export-Oriented Growth in India and China: Is the World Big Enough?" Paper presented at the International Conference on India's New Economic Policy, New Delhi, March 11–14.

Gehlhar, Mark. 1997. "Historical Analysis of Growth and Trade Patterns in the Pacific Rim: A Validation Exercise." In *Global Trade Analysis: Modeling and Applications*, ed. Thomas Hertel. New York: Cambridge University Press.

General Agreement on Tariffs and Trade (GATT). 1993. *An Analysis of the Proposed Uruguay Round Agreement, with Particular Emphasis on Aspects of Interest to Developing Economies*. Geneva: General Agreement on Tariffs and Trade.

———. 1994. *News of the Uruguay Round of Multilateral Trade Negotiations*. Geneva: General Agreement on Tariffs and Trade.

Hertel, Thomas, ed. 1997. *Global Trade Analysis: Modeling and Applications*. New York: Cambridge University Press.

Hertel, Thomas; Will Martin; Koji Yanagishima; and Betina Dimaranan. 1996. "Liberalizing Manufactures Trade in a Changing World Economy." In *The Uruguay Round and the Developing Countries*, ed. Will Martin and L. Alan Winters. Cambridge: Cambridge University Press.

Keesing, Donald, and M. Wolf. 1980. *Textile Quotas against Developing Countries*. London: Trade Policy Research Centre.

Moore, Lynden. 1995. "The Competitive Position of Asian Producers of Textiles and Clothing in the US Market." *World Economy* 18, no. 4: 583–602.

Trela, Irene, and John Whalley. 1990. "Global Effects of Developed Country Trade Restrictions on Textiles and Apparel." *Economic Journal* 100, no. 403: 1190–205.

Tyers, Rod, and Yongzheng Yang. 1997. "Trade with Asia and Skill Upgrading: Effects on Factor Markets in the Older Industrial Countries." *Weltwirtschaftliches Archiv* 133, no. 3: 383–418.

United Nations Conference on Trade and Development (UNCTAD). 1995a. *An Analysis of Trading Opportunities Resulting from the Uruguay Round in Selected Sectors: Agriculture, Textiles and Clothing, and Other Industrial Products*. Geneva: United Nations Conference on Trade and Development.

———. 1995b. *Preliminary Analysis of Opportunities and Challenges Resulting from the Uruguay Round Agreement on Textiles and Clothing*. Geneva: United Nations Conference on Trade and Development.

Whalley, John. 1992. "The Multi-fibre Arrangement and China's Growth Prospects." In *New Silk Roads: East Asia and World Textile Markets*, ed. Kim Anderson. Cambridge: Cambridge University Press.

World Trade Organization (WTO). 1995. *International Trade: Trends and Statistics*. Geneva: World Trade Organization.

———. 1996. *Report of the Textiles Monitoring Body*. WTO Document G/L 113. Geneva: World Trade Organization.

Yamawaki, Hideki. 1989. *International Competition and Domestic Adjustments: The Case of the Japanese Textile Industry*. Pacific Economic Papers, no. 177. Canberra: Australian National University, Australia-Japan Research Centre.

Yamazawa, Ippei. 1993. "Trade Policy Issues in the Asian-Pacific Region: The Case of the Textile and Clothing Industry." *Asian-Pacific Economic Literature* 7, no. 1: 1–8.

Yang, Yongzheng. 1994. "The Impact of MFA Phasing out on World Clothing and Textile Markets." *Journal of Development Studies* 30, no. 4: 892–915.

———. 1995. "China's Textile and Clothing Exports: Challenges in the Post-MFA Period." In *China and East Asian Trade Policy*. Vol. 3, *China and the World Trade System*. Pacific Economic Papers, no. 250. Canberra: Australian National University, Australia-Japan Research Centre.

———. Forthcoming. "Safeguarding the Future of World Trade in Textiles and Clothing." *Asia-Pacific Economic Review*.

Zhang, Xiaoguang. 1993. "China's Trade Patterns and International Comparative Advantage." Ph.D. diss., Australian National University.

Zhong, Chuanshui, and Yongzheng Yang. Forthcoming. "China's Textile and Clothing Exports in the Post-Uruguay Round." In *China's Entry into the WTO: Issues and Quantitative Assessments*, ed. Peter Drysdale and Liang G. Song. London: Routledge.

APPENDIX

THE GTAP MODEL

GTAP is a comparative-static, general equilibrium model of the global economy. The model includes full general equilibrium features of individual economies and link these economies through international trade.

In the GTAP model, the activities of economic agents (consumers, producers, and governments) are modeled according to neoclassical economic theory. Consumers are assumed to maximize utility, and producers to maximize profits. The market is perfectly competitive and there are constant returns to scale.

On the demand side, each individual economy is represented by a single "super-household." This household disposes of total national income according to a Cobb-Douglas per capita utility function specified over three forms of demand: private household expenditure, government expenditure, and savings. This means that national income is spent in fixed proportions in these three components. Government expenditure is also distributed on the basis of constant budget shares among composite goods and services, which are composed of domestically produced and imported goods and services. Domestic and imported goods and services are treated as differentiated products. The demands for domestically produced and imported goods and services are determined by their relative prices and the level of the demand for the composite goods and services according to constant elasticity of substitution (CES) functions. Similarly, demand for imports from a particular foreign supplier is also determined in the CES fashion by the level of imports from all sources and the relative prices of the goods and services from this particular source.

On the other hand, private households allocate expenditure on various composite commodities according to the so-called constant difference of elasticity (CDE) function. This functional form is used to capture the nonhomothetic nature of private household demand because income elasticities for different commodities vary. Once the demand for composite goods and services is determined, CES functions are again used to determine import levels and their sourcing from individual foreign suppliers.

On the supply side, gross output is composed of value added and composite

intermediate inputs, and demand for both of them is proportional to output levels (Leontief technology). Value added is in turn composed of labor, capital, and land (for agricultural use only), and demand for them is governed by CES functions. Similarly, the composite intermediate input consists of those produced domestically and imported, and their substitution is determined by CES functions. Demand for imports is sourced again according to CES functions. It should be noted that labor and capital are perfectly mobile across industries, while land is only partially mobile. This implies that wages and rental prices are equalized across industries while land prices can vary from industry to industry.

Apart from goods and services sectors within national boundaries, there are two global sectors in the model. One is the global transport sector which provides services to individual countries. Transport costs make up the differences between the CIF and FOB prices of traded commodities. The other global sector is the banking sector. This sector intermediates between global savings and investment. The level of investment is determined by the expected rate of return to investment. The change in the expected rate can be assumed to be either equal or variable across countries according to the economic circumstances being modeled.