

2. Regional Impact of China's WTO Accession

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China's WTO accession and deeper integration into the world economy presents important opportunities and challenges for the East Asia region. China's role in the region is unrivaled. First, its economy is large in absolute terms—constituting half the economy of Asia, according to measures of purchasing power. Second, China has rapidly expanded its trade, almost tripling its share of global exports and more than doubling its share of global imports over the period 1990-2002 and absorbing a fast-growing share of exports from East Asia over the last decade. Third, though its capital account is not fully convertible, China is important both as an investment destination and as a lender in global capital markets. It is the world's largest host country for foreign direct investment (FDI)¹ and the largest capital supplier among developing countries.² Looking ahead, China will continue to be an important driver of change in East Asia. With WTO accession, it will continue opening its markets to other countries' exports and improving its business climate.

The task of assessing the impact of China and its WTO accession on East Asia presents an enormous challenge given the complexity of the changes resulting from accession and the difficulty of specifying clearly what would have happened had China not acceded to the WTO. Thus the goal of this chapter is less to predict detailed changes than to provide a framework for understanding the impact on the region's economies and offer a broad assessment of this impact for different countries and country groupings. The findings are drawn from quantitative and qualitative analysis, including improved computable general equilibrium modeling and partial equilibrium studies, which are detailed in the Website associated with this volume.³ Because the analysis is at an aggregated level, readers should supplement the findings here with information from subsectoral case studies before making policy decisions.

The chapter is organized as follows. The next section briefly describes the major channels of impact, followed by a section assessing the impact on the newly industrializing economies in East Asia—in particular, their growing opportunities in China's markets and the impact of the evolution of global production networks. The next section assesses the scope for East

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¹ It is difficult to judge the accuracy of the FDI data as they reflect "round-tripping" investments undertaken from China to take advantage of concessions enjoyed only by foreign investors.

² These outflows do not include flows through Hong Kong..

³ Descriptions of the CGE methodology and detailed results are given in the background paper by Ianchovichina and Walmsley (2002) at <http://www.worldbank.org/eaptrade>.

Asian middle-income developing countries to expand exports to China, as well as the challenges they face from competition with China in third markets. It also outlines how domestic markets are likely to be affected by increases in the supply of exports from China and by patterns of foreign direct investment. The following section looks at the impact on lower-income countries of East Asia. A final section concludes.

Channels of impact

Over the next decade, China's growth and increasing integration into the world economy will have major effects on the region. Other countries in East Asia will feel the impact of China's WTO accession through four main channels:

- Expansion of markets in China for their exports
- Increased imports from China into their domestic markets
- Competition with China in third markets
- Expansion of foreign direct investment in China and, potentially, outward foreign investment from China.

Increased access to China's domestic markets

In the 1990s, exports to China spurred growth not only in the newly industrializing economies but also in the developing countries of East Asia (Figure 2.1). The ASEAN countries have increased their exports to China by 390 percent and expanded their share in China's total imports from 6 percent to 9 percent.

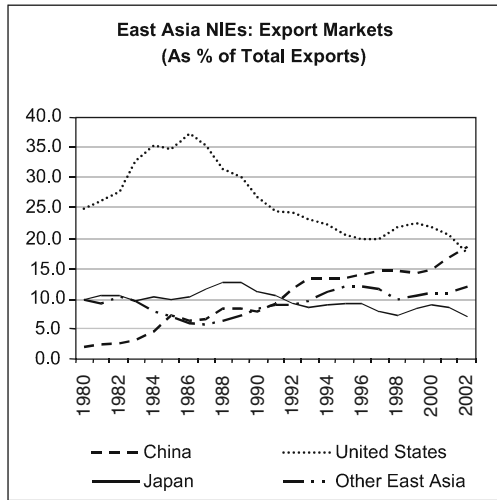
Looking ahead, continued growth in China's huge domestic markets will fuel further export growth for the world and the economies of the region. In many sectors, China's WTO accession only adds a little to the already vigorous projected growth of these markets. Nonetheless, the accession will cause several significant shifts. China's substantial commitments to liberalize trade in *services* represent the most significant part of the accession package,⁴ providing national treatment to foreign-funded firms and greater opportunities for exporters of services. In *manufacturing industries*, China's commitments to abolish nontariff barriers and reduce its import tariffs from 13.3 percent in 2001 to 6.8 percent by the end of the implementation period⁵ will fuel further industrial restructuring. Some sectors such as motor vehicles and high-end manufacturing industries will be affected significantly by rationalization and industrial restructuring. In *agriculture*, too, China's imports are projected to grow substantially, though the effect on agricultural output and imports from WTO-related reforms is much smaller than projected by earlier studies. The reason is that protection on many farm products is expected to remain virtually unchanged by the end of the implementation period.⁶

⁴ Mattoo (2001).

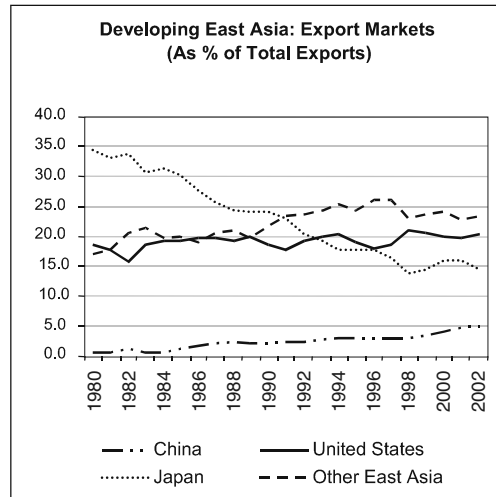
⁵ These are weighted average tariffs computed using trade weights for 2001; see Ianchovichina and Martin (2002). See <http://www.worldbank.org/eaptrade> for the estimated evolution of tariff rates by product group, 1997-2010.

⁶ Huang and Rozelle (2002).

Figure 2.1: Exports to China have been particularly dynamic

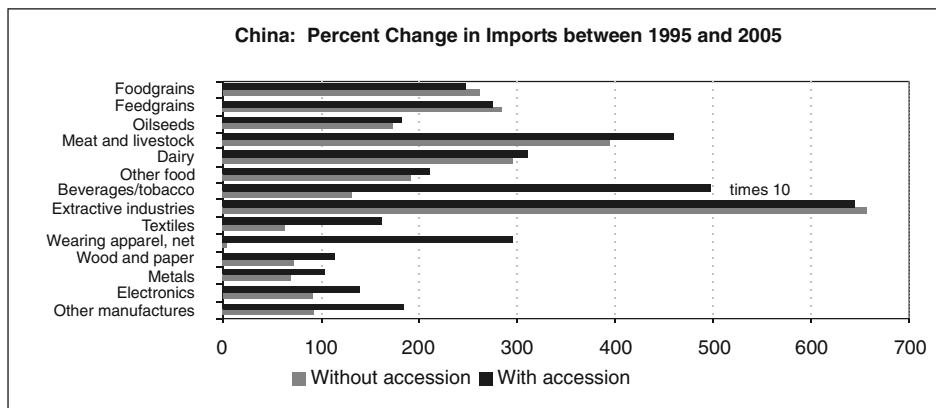


Note: East Asia NIEs = Hong Kong/China, Korea, Singapore, Taiwan/China.
Source: IMF, Direction of Trade; data reported from exporter country accounts.



Note: Developing East Asia = Indonesia, Malaysia, Philippines, Thailand, Cambodia, Lao, Mongolia, Myanmar, Vietnam.
Source: IMF, Direction of Trade; data reported from exporter country accounts.

Figure 2.2: Projected growth in China's imports, by product group, 1995-2005



Source: Ianchovichina and Martin (2001). This captures the effects of WTO accession encompassing all reforms since 1995. Ianchovichina and Walmsley (2002) drawn on for the remainder of this paper estimate effects of WTO accession for 2001-2010.

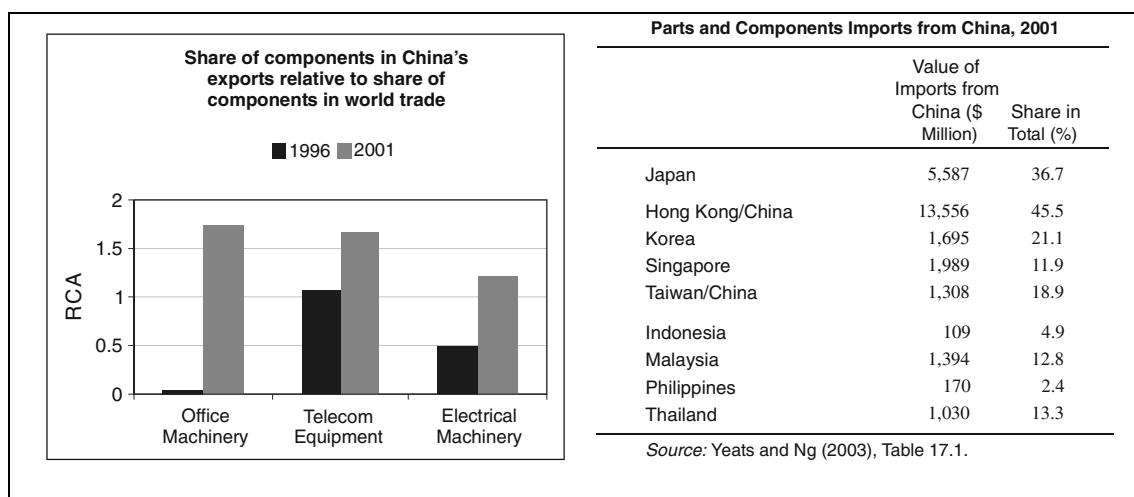
Growth in the region's exports will also be fueled by the increased demand from those major trading partners that benefit directly from China's accession. The developing countries of East Asia will export more not only to China, but also to the newly industrializing economies in East Asia, whose own demand for imports has grown as a result of the accession. Both the direct and indirect effects of increased access to China's markets will be important for regional trade.

Increased imports from China

China's accession to the WTO will be accompanied by cuts in its export prices, increasing China's appeal as an efficient supplier of intermediate inputs. China's pre-accession reforms have already improved the competitiveness of Chinese exports and have benefited its closest trading partners. Trade intensity indexes for 1985 and 2001⁷ suggest that trade between individual East Asian countries and China has intensified sharply since 1985. Consequently, most East Asian economies are expected to benefit from further cuts in export prices as China continues to implement WYO-related reforms over the next few years. The benefits to these countries will be seen in terms of both increased output and welfare.

A growing segment of imports from China will be inputs in production processes, not only finished consumer goods. China is increasingly a central player in production networks. While Japan remains an important center of production-sharing operations in East Asia, originating about one-third of all regional exports of components for assembly, China is finding niches; its exports of parts and components increased by almost US\$20 billion from 1996 to 2001. By 2001, China was exporting more than US\$20 billion in parts and components to others parts of emerging East Asia, representing up to 20 percent of those countries' parts and components trade. Hence, imports from China represent an opportunity for the rest of emerging East Asia to benefit from China's growing role in global production networks.⁸

Figure 2.3: China increasingly a central player in production networks



RCA = Revealed Comparative Advantage.

Source: Ng and Yeats (2003).

To realize the full benefits of China's lower export prices, it will be important for countries to resist pressures to protect their domestic producers and to avoid imposing excessive safeguard measures for this purpose. Pressures to do so are growing in several countries. However, succumbing to them will only prolong the adjustments that are needed to realize

⁷ Ng and Yeats (2003).

⁸ Ng and Yeats (2003).

regional comparative advantages, and will distract policymakers from facilitating the transition of workers through appropriate labor market and safety net policies and programs.

Increased competition in third markets

Competition with China in third markets will intensify as a result of China's accession. This will present a challenge for many countries, especially those with a similar comparative advantage in labor-intensive goods.

Southeast Asia competes with China in world markets for manufactures, especially labor-intensive products, and increasingly in higher value-added manufactures such as semiconductors and other high-technology products. Competition with China has brought unit prices down, but thus far other East Asian exporters have maintained their market shares in the United States and Japan. In Japan, developing East Asian countries have even managed to enlarge their market share slightly, while China has captured market share at the expense of the United States.

Looking ahead, competition is set to intensify for two reasons. First, the United States, Canada, and the European Union will abolish their import quotas on Chinese textiles and apparel by 2005.⁹ China will become a formidable competitor, especially in the apparel sector,¹⁰ pushing prices down in these important third markets. Second, China will lower its own import tariffs on inputs for manufacturing. The effect of these tariff reductions on the real exchange rate will lower the costs of both traded and nontraded inputs for China's manufacturers. This will make China's products more competitive as imports, putting pressure on domestic producers in the countries that import them.

Shifts in investment patterns

WTO accession is likely to increase foreign direct investment in China, as trade liberalization lowers production costs and the price of capital goods and increases the rental rates, resulting in rising returns to capital in China.¹¹ Meanwhile, the liberalization of rules on investment should ease flows of foreign direct investment (FDI) into previously restricted sectors such as services and automobile production. Given the substantial productivity gap that exists between local and foreign firms, the new FDI flows are likely to raise China's productivity. In apparel and footwear, for example, the adoption of foreign technology raises productivity by 30-62 percent in collective enterprises and 20-59 percent in state enterprises.¹²

China's accession is also likely to set off changes in regional trade and production patterns the effects of which will be felt over the medium to long term. The issue for other East Asian economies is whether their own FDI inflows will increase or decrease as a result. It is

⁹ China will be subject to additional textile safeguard quotas until 2007, but these will be applicable for only one year at a time, unlike the existing quotas, which were put in place for an indefinite period.

¹⁰ This is a consensus finding supported by Ianchovichina and Martin (2001), Deutsche Bank (2001), Ianchovichina and Walmsley (2002), and Wang (2002).

¹¹ McKibbin and Tang (2000) and Ianchovichina and Walmsley (2002) discuss in detail the effect of trade liberalization on rates of return to capital and foreign investment.

¹² Claro (2001).

difficult to answer this question since much will depend on the policy responses of individual countries. In addition, a number of factors will work simultaneously to determine the net regional impact of China's WTO accession on FDI flows. Though countries that lose competitiveness may see declining returns to capital and FDI diverted to China, several effects are likely to counteract this negative impact on FDI

First, increased productivity and trade liberalization in China both increase the country's demand for imports and raise investment and welfare in China's trading partners. Martin (1993) shows that a productivity shock in manufactures and services, for which there is a lot of two-way trade, is more likely to raise welfare in a country's trading partners than is trade liberalization. The technological advance accompanying China's liberalization will improve the country's competitiveness, but also increase the country's demand for imports.

Second, investment liberalization in China will make it possible for multinational firms to further rationalize their production processes within East Asia. The relief of local content requirements under Trade-Related Investment Measures (TRIMs) will encourage these firms to relocate some segments of their production from China to other countries in the region.

Third, in some sectors, China's neighbors may receive FDI flows that complement those going to China. The scope for export specialization varies with the degree of complementarity between China and other countries of East Asia.

Fourth, as FDI creates more backward and forward linkages among countries in the region, the competitiveness of Asian products will depend not only on the competitiveness of the country that exports the final product, but also on those neighboring countries that contribute various components at different stages of the production process. This will create an incentive to direct investment to different countries that are part of the regional production network where China is playing an increasingly central role.

Fifth, whereas in the past China drew heavily on the overseas Chinese community as a source of FDI, with accession China will be able to draw on global capital markets both for FDI and portfolio investment. Therefore, competition between China and other countries in the region for FDI may actually weaken.

Last, but not least, the determinants of FDI are evolving over time. Agglomeration effects are becoming more important relative to traditional determinants of FDI such as market size and labor costs.¹³ China's comparative advantage may also change appreciably after WTO accession. Its current comparative advantage in labor-intensive products suggests that there is more scope for export specialization vis-à-vis the newly industrializing economies than vis-à-vis the developing East Asian countries. However, this is likely to change as East Asia's export structure evolves.¹⁴ Over time, China is also likely to shift and extend its comparative

¹³ UNCTAD (2002).

¹⁴ All East Asian economies saw increases in the share of manufactured exports during the first half of the 1990s and all saw changes in the structure of manufactured exports. In the 1990s, the NIEs increased their share of electronics and information technology products and China increased its share of electronics and telecommunications exports.

advantage into higher-end products as the result of trade-induced productivity gains and savings in transaction costs from the reforms spurred by WTO accession. This implies that the impact of China's WTO accession on industrializing East Asia may change to include heightened competition in global markets.

Analysis shows that the impact of accession is significantly larger than the estimated static gain if productivity increases in services and high-end manufacturing are taken into account. Every percentage point increase in productivity from expanded competition and foreign entry in China's services sector implies a welfare gain for China of US\$10 billion and a GDP increase of 2.2 percent—equivalent to the total estimated static gain from China's WTO accession.¹⁵

The spillover effect of the productivity gain in services is substantial, and China is likely to expand not only its services sectors, but also its high-end manufacturing industries, which use services as intermediate inputs. China's industrial structure will increasingly shift away from land- and labor-intensive products and low-end manufacturing, benefiting developing countries such as Indonesia and Vietnam at the expense of the newly industrializing economies.

Impact on newly industrializing East Asia and Japan

On balance, the industrialized and newly industrialized economies (NIEs) in East Asia will benefit from China's accession to the WTO.¹⁶ As important suppliers of materials to China, these countries will see an improvement in their terms of trade. In both Japan and the NIEs, most of the projected increase in production will be driven by expansion in exports to China. While these countries are well positioned to gain from accession, many of the trends from China's growing role are already underway.

Japan, Taiwan (China), Korea, and Hong Kong (China) are expected to raise their output of textiles in response to increased demand from China's expanding garment industry (Figure 2.3). Their own garment industries will be squeezed, however, particularly in the markets where the quotas on Chinese textile and apparel exports are removed—North America and the European Union. The growth of their textile exports to the Philippines, Vietnam, India, and other South and Southeast Asian economies is also expected to drop, as these countries' garment industries contract in the face of competition with China in third markets.

China's demand for intermediate inputs and final products is expected to drive the export growth of these products from its neighbors. Examples include metals and petrochemicals from Korea; electronics and other manufactures from Singapore; light manufactures, petrochemicals, machinery, equipment, and electronics from Taiwan (China); and metals, petrochemicals, oil, and other extractive industry products from Japan. In electronics, China is expected to source its additional inputs from the countries that get the largest tariff

¹⁵ Ianchovichina and Walmsley (2002).

¹⁶ These results from CGE modeling are consistent with findings of other CGE modeling work. See Wang (2002), Ianchovichina and Martin (2002), Li and others (2000), Deutsche Bank (2001).

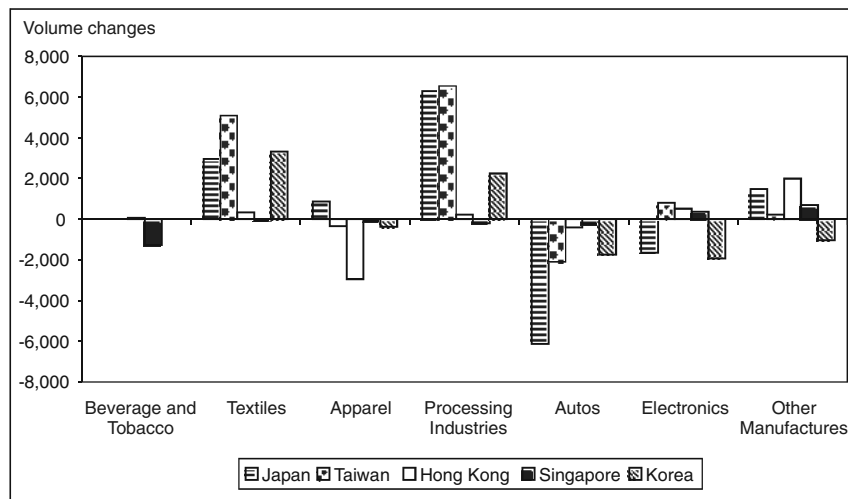
reductions—the United States, India, and other South Asian countries, and to a lesser extent Hong Kong (China) and Singapore—rather than from Korea, where tariffs on electronic products are already low.¹⁷ The potential for specialization and complementary intra-industry trade could be significant. As shown in Figure 2.4, already China represents an important source of parts and components for the NIEs.

In automobile production, China's current plans for restructuring its industry will make it a more efficient assembler of motor vehicles and eventually an exporter.¹⁸ This prospect could provoke a major reorganization of the industry across the region. Our analysis projects a contraction of automobile production in Japan and the NIEs.

The NIEs will benefit from China's increased demand for services. Accession is likely to increase demand for all types of services, including transport and communications, which these economies are well positioned to provide. And it will enhance the role of Hong Kong as a financial center serving the mainland's investment needs and providing investment services.¹⁹

Figure 2.4: Impact of China's WTO accession on Japan and the East Asia's NIEs for 2001-2010

Cumulative changes in output of selected sectors, relative to baseline (US\$ millions)



Source: Ianchovichina and Walmsley (2002).

Investment flows into the NIEs are unlikely to fall as the result of China's WTO accession. The returns to capital in these countries will rise relative to the baseline (though not by as much as in China). This is because the NIEs are suppliers of raw materials to China, rather than competitors of China, and hence the prices received for their exports will tend to rise.

¹⁷ Differences in tariff cuts reflect differences in export composition by exporting country.

¹⁸ Francois and Spinanger (2002).

¹⁹ Deutsche Bank (2001).

For Japan, the major impact from China's WTO accession is that China will become a more attractive destination for Japanese investments. After five years of strong growth, Japanese FDI to China dropped substantially in 1996-99,²⁰ less because of Japanese firms' financial difficulties than because of a difficult market environment in China.²¹ Some of the concerns about China's weak legal and administrative environment for foreign investment are likely to be addressed in line with WTO accession, although competition in markets for goods and services is expected to intensify.

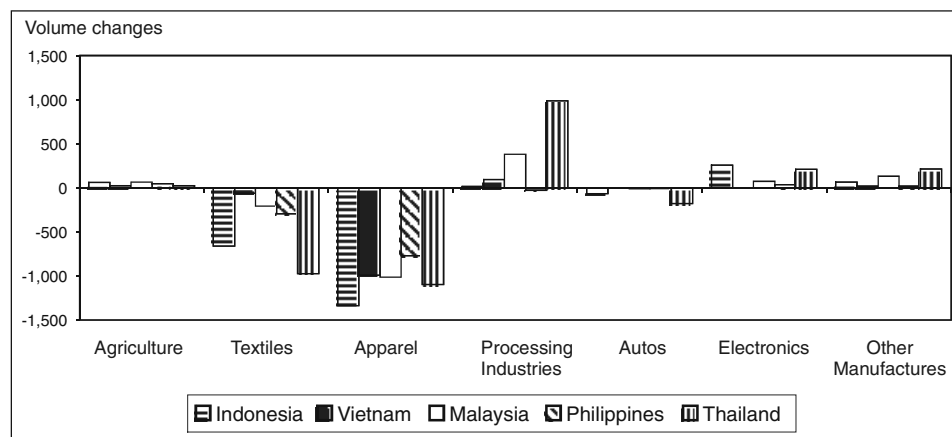
Impact on middle-income developing countries of East Asia

Overall, China's trade liberalization and growth will have a mixed impact on these countries—Indonesia, Malaysia, the Philippines, and Thailand. China's market presents sizable opportunities. At the same time, the impact of accession itself is concentrated in a few sectors—apparel and textiles, where adjustments are likely.

China's growing import demand gives these economies potential to expand their agroprocessing, electronics, and other manufacturing industries such as machinery and equipment. Demand from China will be compounded by increased import demand from China's closest trading partners—Japan, NIEs, the EU, and the United States—which themselves have benefited from China's growth and WTO accession. And, given China's agricultural reforms, there is scope for expansion of agricultural exports to China such as oilseeds and sugar as well as basic raw materials such as timber and energy products. These countries also have opportunities to export professional and tourism services to China.

Figure 2.5: Impact of China's WTO accession on developing economies of East Asia for period 2001-2010

Cumulative changes in output of selected sectors, relative to baseline (US\$ million).



Source: Ianchovichina and Walmsley (2002).

²⁰ Ministry of Finance, Japan.

²¹ Marukawa (2001).

The high intensity of trade between individual East Asian developing countries and China²² in 2001 suggests that the planned reductions in the protection of China's markets offer some good opportunities for exporters. For Indonesia and Thailand, much of the tariff reduction will occur by 2004 (Table 2.1). Thailand receives an average tariff reduction of more than 6 percentage points. These rates represent the statutory tariff bindings under China's WTO accession, but China is free to offer tariff rates below these bindings. Under the "Early Harvest" and China-ASEAN Free Trade Arrangement that was announced in November 2002 in Phnom Penh, for example, ASEAN countries' exports to China could face even lower tariffs than other countries' exports. Some of the top exports from Indonesia and Thailand to China will also benefit significantly from reductions in nontariff barriers (Table 2.2), as explored below.

Table 2.1: Weighted average tariffs facing exports to China: Indonesia and Thailand*
(%)

	2001	2002	2003	2004	2005	2006	2007	2008
Indonesia	8.20	8.66	5.82	4.91	4.73	4.65	4.58	4.51
Thailand	10.19	8.91	8.41	4.86	4.63	4.43	4.25	4.05

Notes: Uses in-quota tariff rate for tariff-rate quota products.

*Weighted average tariff calculated on top 100 export products to China, representing more than 85 percent of each country's exports to China.

Sources: UN Comtrade data; PRC WTO accession agreement; authors' calculations.

Table 2.2: Shares of exports to China affected by lifting of quantitative restrictions
(% of total exports, 1995-99)

Country	% of exports facing QRs	Key products (% of total exports)
Indonesia	16.5	Palm oil (7.3); rubber (2.9); processed oil (0.6)
Thailand	30.6	Rice (9.24); rubber (11.8); cane sugar (5.8)

Sources: UN Comtrade data; PRC WTO Accession Agreement; authors' calculations.

The middle-income countries also will have opportunities to strengthen their links with China as it plays an increasingly large role in global production networks. Intra-industry trade and specialization will be reflected in both exports and imports. As shown in Figure 2.3, developing East Asia imported roughly US\$3 billion in parts and components from China in 2001, representing 13 percent of Thailand and Malaysia's total.²³

At the same time, an issue that has received much attention is the threat of increased competition in third-country markets from increased exports from China. The increasing similarity in export structure between China and several of the countries under consideration gives some support for this concern. The correlation of exports, even at the five-digit (SITC) level between China and middle-income countries such as Indonesia and Thailand is significant and has been increasing.²⁴

²² Ng and Yeats (2003).

²³ Ng and Yeats (2003).

²⁴ During 1995-99, based on 2,700 products at the 5-digit SITC level, the correlation of export structure with China's rose from 0.174 to 0.302 for Indonesia and from 0.337 to 0.491 for Thailand.

The garment and textile sectors pose particular challenges. Once quotas on Chinese textile and apparel exports to North American and Western European markets are lifted in 2005,²⁵ apparel exports from Malaysia, the Philippines, Thailand, and Indonesia will be negatively affected. The textile industry in developing East Asian countries in general will also be hurt, though nearly not as much as the apparel industry, because some of these countries will start exporting textiles to China and other NIEs.²⁶ The risk to exports to third-country markets is confirmed by a market-by-market and product-by-product analysis for sample countries. For this analysis we identify “exports at risk” to the U.S. and Japan markets based on their importance to the exporting country and the extent to which they compete with similar products from China.²⁷ Exports in product categories that are characterized by both a high share of Chinese imports (at least 5 percent) and unit values close to those of competing imports from China are deemed to be most at risk. For Thailand and Indonesia, the results show that 15-25 percent of exports to the United States and Japan are at risk from growing competition from China (Figures 2.6 and 2.7).

Overall, and increasingly over time, trade-induced changes in China's productivity will make China a stronger partner and ensure that the benefits from market opportunities outweigh third-market competitive challenges.

Indonesia

In the decade ahead, China's liberalization and economic expansion open several opportunities for Indonesia as well as poses risks, both as an exporter and as a destination for investment. The challenge will be to manage the transition to realize those opportunities.

Indonesia's exports to China stand to benefit significantly from China's growth and liberalization. Nearly 20 percent of Indonesian exports to China are in products—especially processed oil, rubber, and palm—on which quantitative restrictions will be lifted (Table 2.2). Palm oil exports, in particular, should gain significantly from the relaxation of quantitative restrictions (QRs).²⁸ Palm oil, which was previously subject to an import license, is now subject to tariff-rate quotas (TRQs) with accession. Initial quota levels are set significantly above import levels prior to accession and are slated to increase significantly by 2005.²⁹ QRs

²⁵ Importing economies will be allowed to introduce special textile safeguards during the period 2005-07, but these will be effective for only one year at a time.

²⁶ See Appendix table 2 at <http://www.worldbank.org/eaptrade>.

²⁷ In each major import market we look at three variables: (1) Imports in a particular product category as a share of total imports from that country (for example, garment imports from Thailand as a share of total imports from Thailand). This variable indicates the importance of exports in that product category to the sending country. (2) Imports from China as a share of total imports in that product category (for example, garment imports from China as a share of total garment imports in the United States). In the country-by country analyses, we look at two (arbitrary) threshold levels for the share of Chinese imports—10 percent and 5 percent of total imports. (3) Unit values of imports in the product categories in question. Product categories mask a variety of differences; unit values provide an additional indication of how similar products are and hence how likely there is to be a terms-of-trade impact from competition. If the unit values of imports from both sending countries are on the same side of the average unit values for the product category in question, we deem them to be “close.”

²⁸ Between 1995 and 1999, Indonesia was the second largest exporter of palm oil to China after Malaysia. In 1999 it supplied 355,172 metric tons to China.

²⁹ The initial quota for palm oil is 2,100,000 metric tons; that will rise to 3,168,000 metric tons in 2005. In 1999, Total PRC imports of palm oil was 1,193,509 metric tons. The in-quota tariff rate is set at 9 percent throughout the period, and while the initial out-of-tariff rate is as high as 63.3 percent, it is slated to decline

on rubber will occur in 2004, when quotas are eliminated.³⁰ Urea will also be subject to a TRQ, with a final quota level in 2006 of more than 2.5 times the initial quota level and an in-quota tariff rate of 4 percent.³¹ Most categories of timber will also be liberalized within three years of accession. In the Chinese market, under the “Early Harvest” and China-ASEAN FTA, a range of Indonesian exports will face lower tariffs than other countries’ exports.³²

Indonesia’s overall export volume will continue growing, but competitive pressures are likely to shift the manufacturing structure. Exports from electronics and other manufacturing industries are projected to increase, as are exports of land-intensive products—food and feed grains and wood products—and other raw materials, including energy products.³³ Indonesia will also increase its exports of oilseeds, sugar, and cotton to China.

At the same time, Indonesia’s apparel sector will need to adjust. Indonesian apparel sells mainly in North America and Western Europe, where it will be particularly vulnerable to the abolition of quotas on Chinese apparel exports. With a possible decline in apparel output, Indonesia’s textile sector will also come under pressure, though there will be niches for its expansion.

Indonesian exports are more at risk in the United States than in Japan. Among Indonesia’s exports to the United States in 1995-99, the top 5 products³⁴ accounted for more than 30 percent, and the top 100 products for 84 percent. Of Indonesian exports to the United States, nearly half (47 percent) appear to have unit values close to those of competitor products from China, and 16 percent are in the risky categories—those where unit values are close to those of China and where China supplies more than 10 percent of imports (Figure 2.6). Using the 5 percent threshold, nearly a quarter of Indonesian exports to the United States are at risk, including Indonesia’s second and third most important export products to the United States.³⁵

constantly to 9 percent in 2006. While TRQs will be allocated to both state and nonstate trading enterprises, the reduction in the proportion of state trading enterprises from 42 percent to 10 percent during the implementation period and the elimination of the tariff quota on 1 January 2006 should facilitate the development of the market.

³⁰ For natural rubber imports, the total initial quota level is set at 429,000 mt, with an annual quota growth rate of 15 percent until 2004, when the quota will be eliminated. Phasing-out dates are as of January 1 of the calendar year specified. Natural rubber is a product subject to designated trading (Annex 2B of China’s accession agreement) which is slated to be liberalized within three years after accession. Under designated trading, the Chinese government authorizes only certain firms to engage in international trade. Initial and final tariff rates are bound at 20 percent.

³¹ Urea (56216; 3102.10) accounted for 1.3 percent of Chinese imports from Indonesia. Previously, urea was subject to both an import license and quota. These restrictions will be replaced by tariff rate quotas upon accession. The initial quota for urea is around 1,300,000 metric tons in the beginning, increasing to 3,300,000 metric tons in 2006. The out-of-quota tariff rate is 50 percent.

³² This group of products include roasted decaffeinated coffee, palm kernel or babassu oil, cocoa powder, soap, cathode ray tubes, and cane and bamboo furniture.

³³ Indonesia could increase its oil sales; however, as a member of OPEC its production is constrained by OPEC quotas.

³⁴ Technically specified natural rubber (23125) (9 percent); footwear with outer sole of leather (85148) (8.2 percent); video-recording or -reproducing apparatus (76381) (5.4 percent); plywood with outer ply of tropical wood (63431) (5 percent); and other rubber footwear (85132) (3.1 percent).

³⁵ Footwear with leather soles and video-recording or -reproducing apparatus—which accounted for 8 percent and 5 percent of Indonesian exports to the United States, respectively.

Figure 2.6: Indonesian Exports Potentially at Risk

Market-by-market and product-by-product analysis: China market share and close unit value

	PRC import share		PRC import share	
	< 10%	> 10%	< 5%	> 5%
Share in U.S. market (%)				
(n=165 products)				
UV Close	30.5	16.2	22.8%	24.0
UV Not close	16.1	21.1	14.1%	23.1
Share of market in analysis			83.9	83.9
Share in Japan market (%)				
(n=188 products)				
UV Close	23.8	11.0	18.5	23.0
UV Not close	24.6	11.7	23.3	13.1
Share of market in analysis			71.2	77.9

Notes: The figure shows calculations using two (arbitrary) threshold levels for Chinese imports: 5 percent and 10 percent of the total import market. UV = unit value.

Sources: UN Comtrade data; China WTO Accession Agreement; authors' calculations.

In the Japanese market, Indonesia's export structure has been even more concentrated than in the United States, with the top five products³⁶ accounting for more than 44 percent and the top 100 for more than 85 percent of total exports in 1995-99. About 11 percent of Indonesia's exports are in risky categories, with unit values close to those of competing Chinese products and with China supplying more than 10 percent of imports. Using the 5 percent threshold, 23 percent of Indonesia's exports are potentially at risk; they include some of the most important exports to Japan.³⁷

Indonesia is likely to adjust to the increased competition in apparel by increasing its specialization in wood and paper products and in light, high-end, and other manufactures. Exports of these products could increase, primarily in response to rising demand in China.

China's increased attractiveness for investors again provides both opportunities to Indonesia to expand its intra-industry trade and potential threats. One approach to assessing Indonesia's ability to prevent a decline in direct foreign investment is to look at the sectoral changes that are likely to occur. If the sectors that are expanding (contracting) are the ones that already account for a large share of FDI, then FDI is likely to increase (decrease) as well. Sectors that are growing less rapidly in Indonesia—apparel and textiles as well as assembly operations—have received foreign investment in the past, whereas any expansion in agriculture likely involves little FDI. Opportunities exist for Indonesia to participate in global production networks—cosmetics, machinery, and audiovisual equipment, for example—in which FDI may expand in China and Indonesia simultaneously. And, like other ASEAN middle-income countries, Indonesia has the potential to develop its role as a supplier of specific parts to an

³⁶ Plywood with an outer ply of tropical wood (63431) (19.4 percent); frozen shrimps and prawns (03611) (11.5 percent); bituminous coal (32121) (7.1 percent); nickel mattes (28421) (3.5 percent); and nonalloyed aluminum (68411) (2.9 percent).

³⁷ Bituminous coal and cotton yarn other than sewing thread.

automobile production network, given the restructuring of the industry now taking place in the region.³⁸

Indonesia will need to tailor its strategy to grasp the opportunities for increases in trade and investment flows if it is to offset the declines that are projected in its exports to the United States, Japan, and the EU. Key elements will be measures to restore investor confidence and increase competitiveness. Indonesia will need to avoid protecting its domestic producers with excessive safeguard measures so as to facilitate an adjustment in the manufacturing sector that responds to the opportunities in China's markets. Measures like the recently introduced temporary safeguards against garment imports, for example, will only prolong the adjustments that Indonesia needs to make to realize its regional comparative advantages.

Malaysia

Among the developing middle-income countries in East Asia, Malaysia is likely to be the most positively affected by China's WTO accession. Overall, the effect on trade will be positive, as Malaysia becomes a more important trading partner to China. Flows of foreign investment will not be much affected, as the returns to investment in Malaysia are expected to rise only slightly over the accession period.

Malaysia's exports of wood products and other manufactures are expected to increase as a result of WTO accession, relative to the baseline, in response to increased demand for these products in China and Taiwan (China).³⁹ Malaysia's overall volume of agricultural exports is not projected to change much, but exports of oil seeds, sugar, livestock, and cotton to China and Taiwan are likely to increase as a result of China's WTO accession.

Just like the other developing economies of East Asia, Malaysia is expected to lose share in the world apparel market as a result of China's accession.⁴⁰ In textiles, however, output will be little affected; and while the textile exports of all the other developing countries in the region contract as a result of China's accession, Malaysia's will hold their ground, buttressed by increased demand from China's apparel industry. In this way, Malaysia is more similar to the NIEs in the region.

Malaysia's involvement in intraregional production networks and its increasingly high quality labor and infrastructure position it well as a destination for foreign direct investment that complements investment to China. Already, by 2001, Malaysia was exporting US\$1.3 billion to China and importing US\$1.4 billion from China in parts and components.⁴¹ During China's recent expansion, Malaysia received significant FDI in the IT-related and electronics industries; FDI in electronics grew 40 percent from 1997 to 2001. In the automobile sector, Malaysia may position itself to benefit from participating in international production

³⁸ Indonesia exported US\$313 million to China and imported US\$110 million from China in parts and components in 2001. Ng and Yeats (2003).

³⁹ See Appendix table 2 at <http://www.worldbank.org/eaptrade>.

⁴⁰ See Appendix table 2 at <http://www.worldbank.org/eaptrade>.

⁴¹ See Ng and Yeats (2003.)

networks—for example, it produces steering gears at present. Alternatively, it may maintain its more protectionist stand, which may harm its prospects to attract additional FDI.

The Philippines

After WTO entry, China will demand more raw materials and land-intensive products, and the Philippines is well positioned to increase production of food and feed grains, cottons, sugar, vegetables, and fruits in response.⁴² Food grain exports, in particular, are expected to rise substantially as a result of China's accession. Output of light manufactures is expected to grow faster with than without China's accession.

At the same time, because the Philippines has comparative advantages in many areas in which China is strong, China's WTO accession will intensify competition between the two countries. Competition with China will be particularly acute in apparel produced for North America and Western Europe, given the removal of quotas on China's textiles and apparel in these markets. Overall, the impact of accession on the Philippines' output of apparel and textiles will be negative. Even so, the Philippines occupies certain niches within the export market that may be less exposed to Chinese competition.

The impact on the Philippines will also depend on investment flows. As in Indonesia and Thailand, the sectors that are growing less rapidly—apparel, textiles, and assembly operations—have been targets of FDI in the past. However, looking ahead, the Philippines is poised to take part in global production networks in electronics, machinery and equipment, processing, and light manufacturing, where FDI may well expand in China and the Philippines simultaneously. In 2001, imports from China and exports to China in parts and components totaled US\$170 million and US\$342 million, respectively. This represents only a small 2 percent share of total for the Philippines, suggesting considerable opportunity for expansion.⁴³

The Philippines' ability to move up the value chain and capture more benefits from China's accession will depend on what strategy the country adopts. Many of the sectors that will suffer from China's WTO accession are intensive in the use of unskilled labor, while those that will expand are more intensive in land or skilled labor. Wages of unskilled workers may well come under pressure. The potential impact on urban inequality and vulnerability in the short term will need to be carefully monitored and addressed, with increasing pressure to facilitate the adjustment process in the labor market.

Thailand

Thailand is well positioned to expand its manufacturing base, despite the fact that China's WTO accession may present a challenge to the Thai economy as competition in the textile and apparel sector intensifies.

⁴² See Appendix table 2 at <http://www.worldbank.org/eaptrade>.

⁴³ Ng and Yeats (2003).

Thailand's agricultural exports to China stand to benefit significantly from the liberalization of nontariff barriers.⁴⁴ More than 30 percent of Thai exports to China are in products—especially rice, rubber, and cane sugar—on which quantitative restrictions will be lifted (Table 2.2).⁴⁵ And, under the WTO accession agreement, China confirms that tariff-rate quotas will be allocated with regard to historical trade flows to end users, and imports will be allocated to the full limit of the quota established for each calendar year based on demand in the Chinese market. Since Thailand's import share in many of the products subject to tariff-rate quotas has been high historically, Thailand can expect to be allocated high quotas.⁴⁶ Thailand's food-processing industries also are well placed to expand in China's markets.

Thailand's overall export volume will continue growing, but competitive pressures are likely to shift Thai manufacturing increasingly into electronics and other manufactures, especially metals and petrochemical products. Exports from processing and electronics industries are projected to increase, as are exports to China of land-intensive products—oilseeds, sugar, and wood products. Cotton production may expand as demand for cotton increases in response to the expansion of Taiwan (China)'s textile sector. China's accession will have a negative impact on growth in the apparel and textile sectors.⁴⁷

Market and product analysis suggests that Thai exports are less at risk in the United States than in Japan. In the U.S. market, the specific products that appear most at risk from Chinese competition do not include Thailand's most important export products to the United States.⁴⁸ Thailand's exports to the United States are heavily concentrated; based on data for 1995-99, the top five products account for more than 25 percent of total Thai exports, and the top 100 products account for 81 percent. Less than 9 percent of Thailand's U.S. exports fall into the risky categories—where unit values are close to those of Chinese products and where China's import market share exceeds 10 percent (Figure 2.7).⁴⁹ For products in which China supplies 5-10 percent of U.S. imports, roughly 15 percent of Thai exports are at risk.

⁴⁴ The annual average value of Thailand's exports to China is US\$2,142 million. Thailand's top exports to China include parts for automated data processing machines, rice, rubber, cane sugar, and plastics.

⁴⁵ According to China's WTO Protocol of Accession, tariff-rate quotas will apply to grains, sugar, and cotton for which out-of-quota tariffs are quite high, but otherwise, after the phase-in period, the tariffs range between just 1 and 15 percent—representing substantial liberalizations over 2001 levels (Anderson, Huang, and Ianchovichina, 2002).

⁴⁶ In 1995-99, Thailand supplied more than 84 percent of PRC imports of rice and nearly 60 percent of imports of natural rubber. Thailand supplied nearly 33 percent of China's imports of raw cane sugar, but it is only one of 12 countries that have initial negotiating rights.

⁴⁷ See Appendix tables 2 at <http://www.worldbank.org/eaptrade>.

⁴⁸ The top export products include digital monolithic units (77641) (7.7 percent); frozen shrimps and prawns (03611) (7.5 percent); precious metal jewelry (89731) (4.1 percent); prepared and preserved crustacea (03721) (3.6 percent); and leather sole footwear (85148) (2.4 percent).

⁴⁹ These shares denote minimum levels of exposure, since the analysis covers only the top 150 and 165 products.

Figure 2.7: Thai exports potentially at risk

Market-by-market and product-by-product analysis: China market share and close unit value

	<i>PRC import share</i>		<i>PRC import share</i>	
	<i>< 10%</i>	<i>> 10%</i>	<i>< 5%</i>	<i>> 5%</i>
Share in U.S. market (%)				
(n=150 products)				
UV Close	23.9	8.7	18.1	14.5
UV Not close	22.1	16.4	19.2	19.4
Share of market in analysis			71.1	71.1
Share in Japanese market (%)				
(n=189 products)				
UV Close	28.0	20.8	23.9	24.9
UV Not close	17.2	16.8	11.9	22.1
Share of market in analysis			82.8	82.8

Notes: The figure shows calculations using two (arbitrary) threshold levels for Chinese imports: 5 percent and 10 percent of the total import market. UV = unit value.

Sources: UN Comtrade data; PRC WTO Accession Agreement; authors' calculations.

Thailand's exports to Japan are more vulnerable than those to the United States. They are less concentrated than those to the United States, with the top five export products⁵⁰ accounting for only 21 percent of total Thai exports, and the top 100 for 76 percent. But nearly 21 percent of Thailand's exports are in the risky category—where the unit values of Thai products are close to those of their Chinese competitors, and where China's share of imports is greater than 10 percent.⁵¹ Four of Thailand's top ten exports to Japan appear to be at risk, on this basis.⁵² Using the 5 percent threshold, nearly 25 percent of Thailand's exports to Japan are at risk.

As regards investment flows, the opportunities may outweigh the risks. Sectors that are now contracting in Thailand—apparel and textiles as well as assembly operations—have historically accounted for important shares of inward FDI. One-fourth of FDI has gone to the hotel and restaurant sectors, which have scope for expansion. At the same, Thailand is poised to expand its role in global networks producing electronics, metals, petrochemicals, and other manufactures. In the electronics industry, when FDI into China gained momentum in the late 1990s, FDI flows to Thailand continued growing, reaching 27 percent of the FDI in Thai manufacturing in 1997-2001. In 2001, imports from China of parts and components already represented 13 percent of Thailand's total parts and components imports, more than US\$1 billion, with additional exports to China of parts and components of nearly US\$1 billion.⁵³

In Thailand as in the Philippines, many of the sectors with exports at risk are intensive in the use of unskilled labor, while the expanding sectors are more intensive in land or skilled labor.

⁵⁰ Smoked sheets of natural rubber (23121) (6.4 percent); frozen shrimps and prawns (03611) (5.7 percent); frozen poultry parts (01235) (3.7 percent); preserved and prepared crustacea (03721) (2.8 percent); and parts for automated data-processing machines (75997) (2.5 percent).

⁵¹ Among the top 200 export products, unit value data are missing for 11. We focus on the remaining 189 products, which collectively accounted for 82.8 percent of Thailand's exports to Japan.

⁵² Frozen poultry parts (01235); prepared and preserved crustacea (03721); other frozen, dry, salted mollusks (03639); and seats with wooden frames (82116).

⁵³ Ng and Yeats (2003).

This suggests that one of the effects of growth and change in China will be to lower the wages of unskilled Thai workers relative to skilled workers. The potential impact on urban inequality and vulnerability in the short term will need to be carefully monitored and addressed. As unemployment in the labor-intensive sectors rises, there will be increasing pressure to facilitate the adjustment process in the labor market.

The extent to which Thailand will exit from assembly-type production or upgrade its capabilities will depend largely on the policies it pursues—either embracing trade-induced competitiveness and productivity gains, or submitting to short-term protectionist pressures; manufacturers already are complaining about low-cost imports of electrical appliances and motorbikes from China. Also important are supply factors, including local availability of engineering and sourcing capabilities, as are government incentives for upgrading technology. Thailand’s private business community is already exploring niche opportunities within labor-intensive sectors.

Impact on low-income countries of East Asia

The impacts of China’s WTO accession will vary widely among Cambodia, Lao People’s Democratic Republic (Lao PDR), and Vietnam. Cambodia is particularly vulnerable because of its concentration in apparel exports. Lao PDR, by contrast, is likely to be little affected in either China or third markets. Vietnam falls somewhere in between, with competitive pressures on its exports matched by growing market opportunities.

Regional arrangements are playing an important role in ensuring that the low-income countries of East Asia benefit from regional trade. For example, under the “Early Harvest” and China-ASEAN FTA announced in November 2002, China granted these countries Most-Favored-Nation status, even though they have not yet acceded to the WTO.

Cambodia

For Cambodia, it will be important to capitalize on any opportunities from China’s growth. Cambodia will have some benefits from China’s import tariff reductions.⁵⁴ Most important, some of Cambodia’s top exports—especially rubber and wood—will benefit from the reduction of quantitative restrictions (Figure 2.8). The “Early Harvest” under the ASEAN-China agreement also gives Cambodia an MFN treatment, as noted above. Growth in China overall is expected to be a powerful source of external demand for Cambodia, including for cross-border activity that may not be well captured in official statistics.

To Cambodia, China’s WTO accession poses a potential threat both to the balance of payments, from lost exports, and to many households, from lost jobs and lower wage incomes. Cambodia’s exports are already highly correlated with China’s, and many of Cambodia’s leading exports are precisely in the apparel and textile categories where China is currently quota-constrained.

⁵⁴ The decline in the weighted average tariff for the top 100 exports to China is from a relatively low level of 4.3 percent in 2001 to 2.6 percent in 2005.

Figure 2.8: Share of exports to PRC affected by lifting of quantitative restrictions: Cambodia and Lao PDR
(% of total exports, 1995-99)

Country	% of exports facing QRs	Key products (% of total exports)
Cambodia	11	Rubber (11); timber (2.9); plywood (4.64)
Lao PDR	0.6	Rice (0.6); timber (62.4)

Sources: UN Comtrade data; PRC WTO accession agreement; authors' calculations.

The United States makes up 40 percent of Cambodia's export market. Cambodia's exports to the United States have been very concentrated, with 94 percent of them in textiles and apparel. Five products—all apparel—accounted for nearly half of total exports in 1995-99. It is true that a high proportion (68 percent) of Cambodian exports to the United States have unit values that are not close to those of their Chinese competitor products, and hence the share of exports that are at risk at the 10 percent share threshold appears low (9 percent) (Figure 2.9). But this significantly understates Cambodia's likely true exposure. Once the quota restrictions on China are lifted, its exports to the EU and North America are likely to capture more than 10 percent of these markets. If Cambodia's exports in these categories are viewed as being in a category with a high Chinese import share, the picture changes dramatically: Roughly 30 percent of Cambodia's exports show themselves to be at risk.

Figure 2.9: Cambodian exports potentially at risk
Market-by-market and product-by-product analysis: China market share and close unit value

	PRC import share		PRC import share > 10% + all apparel, textiles	
	< 10%	> 10%	< 10%	> 10%
Share in U.S. market (%) (n=64 products)				
UV Close	22.0	9.5	2.4	29.0
UV Not close	39.3	28.7	1.0	67.0
Share of market in analysis		99.4		99.4

Notes: UV = unit value.

Sources: UN Comtrade data; PRC WTO Accession Agreement; authors' calculations.

Cambodian manufacturers continue to hope they can compete in a number of niche markets. But they face some significant administrative hurdles and government interventions that tend to negate Cambodia's comparative advantage against its regional competitors, particularly in the context of low labor input costs.

Singapore is another important market. Cambodia's exports to Singapore are extremely concentrated, with natural rubber accounting for nearly 60 percent, and their exposure to Chinese exports is quite limited. Even at the 10 percent import share threshold, less than 3 percent of Cambodian exports appears to be at risk.

All this said, Cambodia faces major challenges in adjusting its economy. Reforms in governance and other areas need to be speeded up to ensure that alternative production networks develop.

Lao People's Democratic Republic

Lao PDR is less exposed than Cambodia to the impact of China's accession. Although the effects of tariff reduction will be quite small,⁵⁵ the phase-out of QR associated with WTO accession will create market opportunities for Lao PDR. The main benefit of the QR liberalization will be felt in timber exports,⁵⁶ which comprise 62 percent of total exports to China, but will also affect other key exports such as dried fruits, "other pharmaceutical plants," and coffee.

No appreciable losses are expected in Lao PDR's most important export market, Thailand, which absorbs one-fourth of its total exports.⁵⁷ Ten percent of Laotian exports go to Japan, and 45 percent of these are in a single product category—builders and joinery.⁵⁸ Only 4 percent of Lao exports to Japan are in risky categories, where unit values are close to those of competitor products from China and where China's import share is more than 10 percent. (Using the 5 percent import share threshold, the exposure increases to 19 percent, but sensitivity analysis shows only an insignificant impact on the terms of trade.)

Figure 2.10: Exports potentially at risk: Lao PDR
Market-by-market and product-by-product analysis: China market share and close unit value

	<i>PRC import share</i>		<i>PRC import share</i>	
	<i>< 10%</i>	<i>> 10%</i>	<i>< 5%</i>	<i>> 5%</i>
Share in Japan market				
<i>(%)</i>				
<i>(n=11 products)</i>				
UV Close	67.3	4.0	52.2	19.1
UV Not close	24.3	4.3	24.3	4.3
Share of market in analysis	100.0		100.0	

Notes: The figure shows calculations using two (arbitrary) threshold levels for Chinese imports: 5 percent and 10 percent of the total import market. UV = unit value.

Sources: UN Comtrade data; PRC WTO Accession Agreement; authors' calculations.

While trade with China clearly represents opportunities for Lao PDR, the likely impact of China's WTO accession on the country may be limited; this allows its policymakers some breathing space to implement their broader development agenda.

Vietnam

China's WTO accession will present Vietnam with a combination of expanding market opportunities in China's growing market and serious competitive threats. The ability of the economy and particularly the private sector to react flexibly will be critical. Vietnam itself is

⁵⁵ The weighted average tariff for the top 100 exports to China will decline from 7.3 percent in 2001 to 6.0 percent in 2005.

⁵⁶ Timber trading will be liberalized within three years of accession.

⁵⁷ Nearly 62 percent of exports to Thailand are of wood and related products—categories in which a large Chinese export supply response is not expected.

⁵⁸ Lao PDR exports 11 products to Japan, largely wood and wood products (74 percent); coffee (24 percent); and some cotton shirts and footwear (2 percent).

preparing for integration with the rest of the world. The country has made a bold step toward trade reform by signing the Vietnam-U.S. Bilateral Trade Agreement (USBTA). It is also in the process of implementing AFTA and getting ready for accession to the WTO. Despite these reforms, however, its economy is still relatively closed⁵⁹ and it is still in the process of establishing its export base.

On the positive side, increased access to China's domestic market will stimulate Vietnamese exports across most product categories and further intensify trade between the two economies.⁶⁰ China's accession will create opportunities for expanding rice production and increased exports to China of oilseeds, sugar and cotton, for example. Other sectors that are likely to expand include food processing, light manufacturing, metals and petrochemicals, electronics, and other manufactures, as shown in Figure 2.4.

To date, Vietnam has been particularly successful at expanding its apparel and other labor-intensive exports. Apparel is an important growth sector for Vietnam. By global standards, Vietnam's exports of garments are small,⁶¹ but at the national level they are important. They account for more than 14 percent of Vietnamese exports and provide a livelihood for thousands of unskilled workers, many of whom are female. The country has exported apparel mainly to the European Union and Japan. More recently, the USBTA has opened up the U.S. market to apparel from Vietnam,⁶² but China's WTO accession calls into question how much share Vietnamese exporters will be able to capture in this market. Vietnam has two years to establish itself before the 2005 removal of the quota on Chinese imports. Estimates suggest that China's entry to the WTO will depress Vietnam's apparel output and exports relative to the baseline by 2010 (Figure 2.4). Therefore, it is important for Vietnam to use the period 2002-05 to advance the reform process and smooth the structural adjustment that will need to take place.

For Vietnam, trade liberalization by China implies lower costs of Chinese imports, which represents an important opportunity to reduce costs of Vietnamese manufacturing overall. At the same time, it may represent tougher competition for its own manufacturers. Already, Vietnam has imposed temporary safeguard measures on imports of motorbikes. Such measures can only prolong the adjustments that Vietnam needs to make to realize its regional comparative advantages.

Vietnam will need to greatly improve its business environment if it is to compete successfully for foreign investment with China and reap net gains from China's growing role in the region. Without such action, the net impact of China's WTO accession could be negative for Vietnam. It will be important to resist protectionist pressures from domestic producers and to act aggressively to establish its garment exports in the United States.

⁵⁹ Ianchovichina (2001a).

⁶⁰ Trade intensity indexes in Ng and Yeats (2002) show that the intensity of trade between China and Vietnam grew markedly between 1985 and 2001.

⁶¹ In 1997 Vietnam had less than 1 percent share in the global apparel market.

⁶² Vietnamese apparel exports to the United States have grown rapidly over the past couple of years. In 2001, articles of apparel and clothing accessories exported to the United States amounted to US\$57 million. In 2002, exports of these items exploded to nearly US\$900 million, and to more than US\$200 million in January 2003 alone (<http://dataweb.usitc.gov/>).

Conclusion

The biggest beneficiary of China's accession to the WTO is China itself, and most of the benefits are associated with China's own trade liberalization. China's accession and growing role also have important implications for the rest of East Asia.

Emerging East Asia is in a good position to benefit from China's agricultural liberalization. China already is a major agricultural market for these countries, and the markets of most interest to developing East Asia—oilseeds, sugar, processed foods—are poised to open further. While initial protection in China's food grain sector might be less than other studies have suggested, for example, for rice, import demand is still expected to increase considerably

The potential for specialization and complementary intra-industry trade in the manufacturing sector could be significant. China is increasingly a central player in production networks, including electronics and machinery. Its trade with the rest of East Asia in parts and components—both imports and exports—represents an opportunity for the rest of emerging East Asia to benefit from China's growing role in global production networks. In select sectors, however, such as automobiles, China's current plans for restructuring its industry will make it a more efficient assembler of motor vehicles, leading to a contraction of production in Japan and the NIEs. Likewise, the abolition of import quotas on Chinese textiles and apparel in key markets by 2005 will make China a formidable competitor, especially in the apparel sector, and lead to restructuring with a particularly significant impact on quota-dependent low- and middle-income countries.

Dynamic gains will swamp the static impact from China's WTO accession. Not only will China's services sector liberalization lead to expanded exports of services such as transport logistics, communication, business, and tourism services, but also the productivity from expanded competition and foreign entry in China's service sector will fuel China's economy and demand. Because trade intensity with China is high for all emerging East Asian economies, they stand to benefit from this dynamic growth. Growth in the region's exports will also be fueled by the increased demand from China's major trading partners that benefit directly from China's accession.

China's WTO accession and deeper integration into the world economy present a range of opportunities and challenges for the East Asia region. Given the complexity of the changes, this assessment of the impact on the region's economies is merely suggestive. However, it provides a framework for further understanding the likely changes so that East Asian economies can position themselves to grasp the opportunities and manage the challenges.

Appendix to Chapter 2: Regional Impact of China's WTO Accession Methodology

Computable general equilibrium analysis

One of the methodologies useful for discerning the impact on a country's output, prices, trade and investment flows, and welfare is computable general equilibrium (CGE) analysis. The impact of China's WTO accession has been quantified in a number of studies employing general equilibrium techniques.¹ Detailed studies focusing on specific sectors and issues have also been conducted,² and a number of papers have given special attention to the impact of China's WTO accession on the countries in East Asia.³

This chapter improves upon the earlier work by taking into account duty drawbacks in China and Vietnam,⁴ constructing a baseline that reflects the most recent growth projections⁵ and major trade commitments in the region,⁶ using China's final WTO offer and recent estimates of nominal rates of protection and subsidies in agriculture,⁷ and representing the efficiency gains in the automobile sector induced by the WTO reform process,⁸ and liberalization in cross-border trade in services.⁹

¹ See Lejour (2000), Fan and Li (2000), Li et al (2000), McKibbin and Tang (2000), Ianchovichina and Martin (2001, 2003), Wang (2001), Walmsley and Hertel (2001), Walmsley et al. (2001), Deutsche Bank (2001) (see also Gilbert and Wahl (2000) for a survey).

² Huang and Rozelle (2002) and Anderson, Huang and Ianchovichina (2003) analyzed agricultural policy reforms as part of China's WTO accession and their impact in light of existing distortions to agricultural incentives in China. Francois and Spinanger (2002) studied the impact of WTO reforms on the automobile sector, while Pangestu and Mrongowius (2002), Bhattasali (2002), Wenping and Findlay (2002) analyzed the impact of WTO reforms on China's telecoms, financial and logistics sectors, respectively. Sicular and Zhao (2002) and Hussain (2002) focused on labor market issues and the design of safety nets, respectively. Hertel, Fan and Wang (2002), and Chen and Ravallion (2002) conducted analysis of the impact of WTO accession on different households and poverty in China. Mattoo (2001) discussed China's WTO commitments in the service sectors, Maskus (2001) – the intellectual property rights, and Messerlin (2002) – the antidumping and safeguard provisions in China's accession package.

³ See, for example, Lejour (2000), Li et al. (2000), Wang (2001), Ianchovichina and Martin (2001), and Deutsche Bank (2001).

⁴ Lejour (2000) acknowledges the importance of duty exemptions but implements them as simple proportionate cuts in tariffs across all sectors and as duty exemptions on imports used in production, instead of exemptions on imports used in the production of exports. This introduces bias in his results.

⁵ Source: World Bank.

⁶ These include the Uruguay Round, the Agreement on Textiles and Clothing, AFTA, and the reform in China prior to 2001. Ianchovichina and Martin (2001) incorporate duty exemptions on imports used in the production of exports but ignore the impact of AFTA in the baseline.

⁷ Lejour (2000) assumed a simple 50% cut in all tariffs that introduced distortions into the sectoral liberalization story. It is also misleading to compare statutory tariffs and post-accession rates in order to assess the extent of liberalization in agriculture as part of China's WTO accession. Recent research (Huang and Rozelle, 2002) reveals that nominal protection rates on important agricultural commodities (rice, vegetables and fruits, livestock and meat) were negative in 2001 and are likely to remain unchanged in the post-accession period. Consequently, the reduction in agricultural protection is likely to be far less than presented in earlier studies. Nonetheless, greater scope for imports are likely for a range of agricultural products (wheat, oilseeds, sugar and dairy products) that are protected mainly by tariffs, scheduled to be reduced substantially, and cotton and feed grains, where export subsidies are ruled out. These important findings are not incorporated in earlier studies.

⁸ Francois and Spinanger (2002) estimate that tariff reform as part of WTO accession could generate as much as a 20 percent increase in total factor productivity in the automobile sector affecting particularly assembly operations.

Our analysis provides a comprehensive assessment of the reform process in China in a global context. It relies on the dynamic version of GTAP—a dynamic global general equilibrium model¹⁰—modified to capture duty exemptions for imports used in the production of exports in China and Vietnam.¹¹ These export processing arrangements are important for the analysis since they imply that the economies of China and Vietnam are much more open than suggested by statutory tariff rates, and this in turn implies a much smaller impact of WTO accession on the Chinese and other economies than found by studies that ignore duty drawbacks.

The dynamic GTAP model has a sophisticated representation of consumer demands via a constant difference of elasticities (CDE) functional form and a supply side that emphasizes the role of intersectoral factor mobility in the determination of industry output. Product differentiation between imports and domestic goods and among imports by region of origin allows for two-way trade in each product category, depending on the ease of substitution between products from different regions. In each region, a single regional household allocates income from land, skilled and unskilled labor, financial assets, and a natural resource endowment across private and government consumption, and saves according to a Cobb-Douglas utility function. Firms supply commodities to both the domestic and export markets, while minimizing production costs.

The investment theory in the model allows us to link economic activity over time while keeping track of endogenous regional capital stocks and financial wealth,¹² international investment, and income flows. The theory respects the empirical regularity that regions tend to invest primarily in assets located in their domestic economy. A smaller portion of investment comes from abroad and the theory offers a disequilibrium approach for allocating this investment across regions. Investors respond to expected rates of return and act so as to eliminate errors in their expectations gradually over time. In the process of adjustment, investors gradually eliminate any differences in the rates of return across regions that might exist in the short run by reallocating capital from regions with lower rates of return to regions with higher rates of return.¹³ This leads to equalization of rates of return across regions only in the long run.¹⁴

None of the studies looking at the regional impact of China's WTO accession consider the reform-induced restructuring of the automobile sector.

⁹ The method adopted here follows Francois and Spinanger (2002). Most studies have abstracted from the impact of China's WTO accession on cross-border trade in services.

¹⁰ The dynamic GTAP model is documented in Ianchovichina and McDougall (2001). Hertel (1997) provides a comprehensive description of the GTAP framework.

¹¹ The GTAP-D: A model for Analyzing Trade Reform in the Presence of Duty Drawbacks. "GTAP Technical Paper No. 21, Perdue University, USA. Elena Ianchovichina (2003).

¹² Unlike capital, land, labor and the natural resource endowment are exogenous. All factor inputs are fully employed, immobile across regions, and with the exception of land and the natural resource input, are perfectly mobile across sectors. The model captures how differences in relative rates of factor accumulation interact with differential sector intensities giving rise to the so-called 'Rybczynski' effect.

¹³ This way of determining changes in FDI flows captures only the substitution effect of allocating FDI, i.e. the relocation of incremental FDI from regions with falling rates of return to regions with rising rates of return.

¹⁴ The disequilibrium approach is also necessary to reconcile the theory of investment with observed reality. In many cases actual investment, as reported in the national statistics, does not correspond to that predicted by theory. For example, observed rates of return may be very low while observed investment is high. Such discrepancies can be rectified in one of two ways: the data can be altered so that theory and data are consistent; or alternatively, the theory can be modified to more accurately reflect the world. In dynamic GTAP the latter method is used.

Financial assets represent claims on earnings from regional physical capital, which is owned by both domestic and foreign households via a global trust.¹⁵ In the model, the allocation of investment assumes that the shares of domestic and foreign investments are held constant, subject to the adding-up constraints required to ensure regional saving and investment constraints. Explicit modeling of the ownership of regional investment allows us to track the accumulation of wealth by foreigners, thereby ascertaining how China's accession to the WTO might affect foreign investment and ownership in each region. Moreover, the income accruing from the foreign and domestic ownership of assets can then be appropriately incorporated into regional income, and hence into the calculation of welfare, both for China and for all other regions.

The dynamic general equilibrium analysis in Ianchovichina and Walmsley (2003) assesses the regional impact of WTO accession against a baseline that depicts the growth of the world economy over the period 1997-2010, the implementation of the Uruguay Round (UR), the Agreement on Textiles and Clothing, AFTA and the reform in China prior to 2001.¹⁶ The accession scenario represents reform of China's agriculture, manufacturing, and services. Reform in agriculture includes tariff reform (Appendix Table 2.1) and the removal of export subsidies on feed grains and cotton.¹⁷ Reform of China's manufacturing encompasses the removal of quotas on China's textiles and apparel exports to the European Union and North America,¹⁸ tariff reform as reported in Ianchovichina and Walmsley (2003), and the restructuring of China's automobile sector.¹⁹ Services liberalization represents the removal of non-tariff barriers on cross-border trade.²⁰

¹⁵ The global trust collects all the regional saving allocated to foreign investment, then allocates it across regions to investment. It is a fictitious agent invented to simplify the need for data in the global model. Without the global trust a region's saving would need to be allocated directly to foreign investment by region. As a result bilateral data on foreign investment would be required ($n \times n$ data values, where n equals the number of regions). The use of the global trust minimizes the data required to regional saving invested abroad and total foreign investment in each region ($2n$ data values).

¹⁶ See background paper by Ianchovichina and Walmsley (2003) for details on the baseline.

¹⁷ Huang and Rozelle (2002) estimate that subsidies on feed grains and cotton are 32 percent and 10 percent, respectively.

¹⁸ Unlike most other developing countries – members of the GATT 1947, China was excluded from the Uruguay Round Agreement on Textiles and Clothing (ATC). This means that China has not benefited from the increase in quotas provided for under this agreement. This has put pressure on the transaction prices of these quotas, which are equivalent to an export tax of the same magnitude. With accession China will benefit from the abolition of these quotas in North America and the European Union markets by 2005. Based on the experience with ATC under the Uruguay Round of the WTO. (Spinanger, D. 1999; "Textiles Beyond the MFA Phase-Out." *World Economy* 22 (4): 455–76)., quota removal will be back loaded, with the bulk of the impact not felt until the last two years.

¹⁹ The method adopted here follows Francois and Spinanger (2002).

²⁰ Francois and Spinanger (2002) provide estimates of the tariff equivalents of the non-tariff barriers to cross-border trade in services in China and Taiwan, China before and after accession. From these estimates cuts in tariff equivalents on direct trade in services are computed as documented in Hertel, T. W., T. L. Walmsley, and K. Itakura. 2001. "Dynamic Effects of the 'New Age' Free Trade Agreement between Japan and Singapore." *Journal of Economic Integration* 16 (4): 446–448. For China, the resulting annual cuts are 0.2 for trade and transport, 0.8 for communications, 2.2 for commercial services, 1.7 for other services. For Taiwan (China), the resulting cuts are 0.3 for trade and transport, 0.4 for communications, 0.7 for commercial services, and 1.2 for other services. For further details see Ianchovichina and Walmsley (2002).

Appendix Table 2.1: China's average tariff rates, 1997-2010*(%)*

Sectors	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007-2010
Food grains	10.6	9.8	9.1	8.3	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Feed grains	28.0	29.0	30.0	31.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Vegetables-fruits-nuts	-8.0	-7.0	-6.0	-5.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0	-4.0
Oil seeds	28.0	26.0	24.0	22.0	20.0	17.2	14.3	11.5	8.7	5.8	3.0
Sugar	42.0	41.5	41.0	40.5	40.0	36.7	33.3	30.0	26.7	23.3	20.0
Plant fibers	17.0	17.0	17.0	17.0	17.0	17.5	18.0	18.5	19.0	19.5	20.0
Livestock-meat-dairy	-8.9	-8.2	-7.4	-6.7	-5.9	-6.3	-6.6	-6.9	-7.2	-7.5	-7.8
Beverages-tobacco	63.2	58.9	54.5	50.2	44.6	39.9	35.1	30.3	25.5	20.8	16.0
Other food	34.8	35.2	35.5	35.9	35.3	31.0	26.7	22.4	18.1	13.8	9.5
Wood products	10.8	10.5	10.2	9.8	9.5	8.5	7.5	6.5	5.5	4.6	3.6
Extract	0.2	0.3	0.3	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.3
Textiles	25.1	24.2	23.3	22.4	20.7	18.8	16.8	14.8	12.8	10.8	8.8
Wearing apparel	31.8	30.0	28.2	26.4	23.4	22.0	20.7	19.3	18.0	16.6	15.3
Leather	12.1	12.1	12.1	12.2	11.7	11.1	10.5	9.8	9.2	8.6	8.0
Processing industries	12.0	12.0	12.0	12.0	11.7	10.9	10.1	9.2	8.4	7.6	6.8
Autos	34.4	34.9	35.4	35.8	32.0	29.0	26.0	23.0	20.0	17.0	14.0
Electronics	11.9	11.5	11.0	10.6	10.3	9.0	7.6	6.2	4.8	3.4	2.0
Other manufactures	13.2	13.2	13.2	13.2	12.9	11.9	10.8	9.8	8.7	7.7	6.7

Source: Ianchovichina and Walmsley (2003).

Market-by-market and product-by-product analysis²¹

We complement the CGE analysis by looking in more detail at Cambodia, Indonesia, Lao PDR, and Thailand. Here we focus only on trade flows and look at the impact of China (PRC)'s accession to WTO in terms of (1) the impact on exports of the country to third country markets and (2) the impact on the country's exports to China (PRC). The analysis is conducted based on UN Comtrade data at the 5-digit SITC level.²² The analysis is not meant to be comprehensive but simply to provide insights into some of the specifics underlying each country situation.

Impact on exports to third country markets

Simple export correlations may mask differences among markets and differences in quality within each disaggregated product category. Hence we disaggregate the impact of China's accession on exports to third country markets by taking a market or country cut followed by a product cut.

In terms of major export markets, based on aggregated five year export values between 1995-99, the top five export markets of China were Hong Kong, (China) (22%); US (19%); Japan (18%); the EU (14%); and the Republic of Korea (4%). As has been noted by many analysts, however, the re-export figure to Hong Kong, China includes re-exports to third markets. After adjusting for re-exports, the top three export markets for China are the US, the EU, and Japan.²³ These were also the top three markets for Indonesia and Thailand, with Singapore replacing Japan among the top three-export market for Cambodia, and Thailand replacing the US for Lao PDR.

²¹ The discussion in this section is based on ongoing work by Arvind Panagariya and Sethaput Suthiwart-Narueput.

²² UN Comtrade data includes all product categories with more than US\$ 30,000 in trade value. Since the figures are based on official trade data, the usual caveats regarding data reliability hold. In several of the countries under analysis, for example, much border trade goes unrecorded in the official trade statistics.

²³ Version 5 GTAP data base (www.gtap.org).

Appendix Table 2.1a: Cambodia, Lao PDR, Indonesia, and Thailand: top three markets as shares of total exports

(%)

Country	Share of total exports ²⁴			
	US	Japan	EU	Other
PRC	19.1	17.8	14.1	
Cambodia	36.9		25.9	10.6*
Lao PDR		9.0	41.3	23.6**
Indonesia	13.9	23.2	15.2	
Thailand	20.0	15.4	16.4	

*Singapore, **Thailand

For the market-by-market approach, we focus on the US and Japan and analyze the impact of China's accession by looking at key exports at the five-digit level in each market.²⁵ In each market we focus on three key variables:

- *Imports from the country in that product category as a share of total imports from that country.*²⁶ A significant share is a necessary condition for there to be an impact on the country. (If there is a large terms of trade effect in a particular country from increased Chinese exports but it occurs in a product category in which the country exports very little, then the impact will be limited.)
- *Imports from China as a share of total imports in that product category.* The justification for focusing on this figure is that the impact on terms of trade in any given market is likely to be larger in those segments where China's existing import shares are high. However, this may not necessarily be the case for at least two reasons. First, marginal changes obviously do not have to reflect averages. A segment may have a high (low) China import share, but may be a segment where there are small (large) marginal increases in Chinese imports. Furthermore, to the extent that the law of one price largely holds, changes in the terms of trade effect in any particular market will only reflect changes in world prices, and not characteristics like the share of Chinese imports in any particular market. To the extent that China's import shares suggest the likely magnitude of terms of trade effects, large Chinese import shares are also a necessary condition for they're to be an impact on the country being analyzed. An ASEAN country may export a lot in a particular product category, but if the terms of trade effect is small, the impact on that country is clearly limited.

²⁴ The average annual value of exports of China is US\$ 172,272 million while the values of Cambodia and Lao PDR are only US\$ 619 million and US\$ 240 million. For Indonesia and Thailand, the average annual values of exports are US\$ 49,238 million and US\$ 56,423 million, respectively.

²⁵ For data and analytical reasons, we do not focus on the EU.

²⁶ Conceptually, we can think of either an ASEAN country's exports of product x to country A, or imports from an ASEAN country of product x in country A. In practice, due to statistical discrepancies, the figures are different. Since we are taking a market-by-market approach, we will use the import figures of the key export markets in conducting the analysis. These are likely to be more reliable, and are likely to be more consistent since we are comparing across exporters (PRC v. one of the ASEAN countries being analyzed within a given market (e.g., US and Japan).

- *Unit values of imports from individual ASEAN countries and China.* Even at the 5-digit SITC level, product categories mask a variety of differences. Unit values may provide an additional indication for how similar products are. Within any given product category, the “closer” unit values of imports from the ASEAN country and China, the likelier there is to be a terms of trade impact. Because there is no general metric for evaluating the closeness of unit values, for simplicity of analysis we compare the unit value of the country’s imports and Chinese imports with the average unit value of all imports in that product category. If the country’s and Chinese unit values are on the same side of average unit values, then they are deemed to be “close.”

As to the prospects for individual products, we look first at the US market. First we classify the ASEAN country’s top export products to the US into categories that reflect their likely exposure to an expansion of Chinese exports to the US. We then identify which major exports are “at risk” based on the market share of Chinese imports and their unit values and classify them into a 2x2 matrix: exports to the US in product categories, which are characterized by both a high share of Chinese imports, and “close” unit values are deemed to be most “at risk.” We look at two (arbitrary) threshold levels for the share of Chinese imports, 5% and 10%.

Impact on exports to China

We look at the top exports to China. Based on those exports, we estimate the weighted average tariff facing exports from Cambodia, Lao PDR, Indonesia and Thailand based upon China’s WTO accession agreement.

We also estimate the share of exports that will benefit from a reduction in non-tariff barriers under the accession agreement. Rice imports were previously subject to an import license, which was phased out on accession and replaced by a tariff-rate quota (TRQ). The TRQ represents a significant liberalization. In-quota tariff rates are set at reasonable levels, and quotas are significantly higher than existing import levels.²⁷ Quantitative restrictions (QRs) on rubber will also be liberalized. However, the extent of initial liberalization is less than that for rice and major liberalization will only occur in 2004 when quotas are eliminated.²⁸ For sugar, while initial quota levels are set significantly higher than current import levels, the annual quota growth rate is set at only 5% and the in-quota tariff rate remains high.²⁹ Palm oil, which was previously subject to an import license, are now subject to TRQs with accession. Initial quota levels are set significantly above import levels prior to accession and are slated to increase significantly by 2005.³⁰ Urea

²⁷ The initial quota for rice is set at 1.66 million metric tons (mt) in 2001 each for short-medium grain and long grain rice, rising to 2.66 million mt in 2004. The in-quota tariff rate is between 1-9%, depending upon the specific tariff line item, and remains unchanged during the implementation period to 2004. The binding tariff rate (out-of-quota) on rice is slated to decline from 74% to 65% by 2004. Quotas are significantly higher than existing import levels. China’s imports of rice in 1999 stood at only 193,111 metric tons, compared to a combined, total (both short-medium and long grain rice) final quota of 5.32 million mt.

²⁸ The initial degree of liberalization in rubber is less than in rice as initial quotas are set closer to the existing level of imports. The level of imports in 1999 was approximately 429,050 mt.

²⁹ Sugar imports were subject to import license and quota, which will be phased out upon accession and replaced with TRQs. The initial quota level for sugar is set at 1.68 million mt., compared to imports of 416,737 mt. in 1999. The annual quota growth rate is 5%, with the quota increasing to 1.945 million mt in 2004. In-quota tariffs are set at 20%, declining to 15% in 2004. Out-of-quota tariff bindings are slated to decline from 71.6% to 50% in 2004.

³⁰ See Footnote 17 in Chapter 2.

will also be subject to a TRQ, with a final quota level in 2006 over 2.5 times the initial quota level and a moderate in-quota tariff rate of 4%.³¹ According to Annex 2B of the accession agreement, most categories of timber will also be liberalized within three years of accession.

Analysis of FDI

Accession is likely to increase FDI to China, and this in turn will increase China's productivity. Whether the increased investment into China will augment investment in other East Asian economies or divert it away is a difficult question to answer.

One approach to projecting the investment changes is to begin with the sectoral changes that will occur in the region as a result of accession. If the sectors that are expanding (contracting) are the ones that already account for a large share of FDI in the region, then FDI to the region is likely to increase (decrease) as well. Based on this approach, it appears that FDI to several newly industrializing countries should increase. In Taiwan (China), for example, while agriculture is slated to contract as a result of accession, other sectors expand. Since the ratio of FDI to output in these sectors is much higher than in agriculture, FDI to Taiwan (China) may increase as a result of accession. A similar story applies in Korea. By contrast, the situation in several ASEAN countries appears less promising.

Another approach is to look at the issue from the perspective of regional production sharing within international production networks. First, FDI is often a reflection of a company's rationalization of its division of labor.³² Second, the determinants of FDI are also evolving, with agglomeration effects becoming more important relative to traditional determinants of FDI such as market size and labor cost. Third, as FDI creates more backward and forward linkages among countries in the region, the competitiveness of Asian products will depend not only on the competitiveness of the country that exports the final product, but also on those neighboring countries that contributed the various components at different stages of the production process.

While the analysis in Chapter 2 builds upon and improves on earlier work, there are still areas that have been ignored. The analysis ignores non-tariff barriers in China's manufacturing sector other than the MFA quotas.³³ The aggregation hides much of the variation in tariffs and the welfare gains from reducing this variation within product aggregates. The level of aggregation also hides important information on intra-industry trade in components as part of the production sharing arrangements that are very important in East Asia. This is a serious limitation, especially when analyzing the impact on high-end manufacturing sectors such as electronics, autos, machinery and equipment. For policy making purposes, the analysis presented in this study should therefore be complemented with sub-sectoral case study analysis.

³¹ See Footnote 19 in Chapter 2.

³² Assembly operations are migrating to the relatively low wage Asian countries, while countries like Japan, South Korea, Singapore, and Taiwan (China) have increased their specialization in the manufacture of components. In the early 1990s, when the NIEs lost comparative advantage to ASEAN in terms of labor costs, many multinational enterprises (MNEs) upgraded their facilities in the NIEs to become a technology platform while others relocated to ASEAN countries. Nevertheless, the net effect on NIEs was positive, as the NIEs benefited not only from increased FDI, but also from industrial restructuring and technological upgrading.

³³ Recent research suggests that NTBs in manufacturing have declined in importance. See Ianchovichina and Martin (2002) for further details.

CGE results

Appendix Table 2.2: Impact of China's WTO accession estimated with dynamic GTAP
(cumulative volume changes for the period 2001-2010, 1997 US\$ millions)

	Indonesia		Vietnam		Malaysia		Philippines		Thailand	
	Output	Exports	Output	Exports	Output	Exports	Output	Exports	Output	Exports
Foodgrains	-14	5	21	11	19	0	31	14	-11	-6
Feedgrains	147	2	0	-1	4	1	22	5	1	2
Vegetables and fruits	-19	-1	0	1	-11	5	-9	10	-9	0
Oilseeds	-3	0	0	0	0	0	0	0	-1	0
Sugar	-9	1	2	1	-7	-4	10	8	-9	-5
Plant fibers	-18	0	0	0	-3	0	-4	2	53	0
Livestock	-23	0	1	1	64	47	-4	1	0	0
Beverages and tobacco	-1	1	-6	-7	0	-2	2	5	-5	-4
Other food	-116	-78	32	28	-74	-51	-2	10	-55	-45
Wood products	478	373	5	4	418	315	16	17	36	59
Extractive	68	123	5	14	47	-1	4	11	7	-4
Textiles	-660	-470	-61	-13	-204	198	-297	-85	-972	-301
Apparel	-1337	-1164	-990	-1002	-1015	-1017	-768	-779	-1094	-1090
Light mnfcs	234	236	91	101	-3	-3	26	25	12	16
Processing industry	15	123	94	89	381	394	-26	17	987	1126
Autos	-68	-68	-2	-1	-11	11	-9	-3	-178	-83
Electronics	257	247	2	6	75	75	33	37	211	228
Other mnfcs	67	65	21	20	133	138	19	25	213	280

Source: Ianchovichina and Walmsley (2003).

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Appendix Table 2.3: Impact of China's WTO accession on terms of trade estimated with dynamic GTAP

(cumulative percentage changes for the period 2001-2010)

Japan	0.01	Indonesia	0.01
Taiwan	0.37	Vietnam	-0.09
Hong Kong	0.16	Malaysia	0.01
Singapore	-0.04	Philippines	-0.14
Korea	0.22	Thailand	-0.04

Source: Ianchovichina and Walmsley (2002).