Assessing the Implications of Merchandise Trade Liberalization in China's Accession to WTO

by

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Abstract

China's forthcoming accession to the WTO will be a turning point for China, and for the rest of the world. It involves reforms across a wide range of sectors in China, both in directly trade-related sectors and behind the border. The implications of these reforms are greatly influenced by the starting point—a partially reformed economy with relatively high import duties, but in which export sectors benefit from liberal duty exemptions on the inputs used in the production of exports. China and its major trading partners are estimated to gain from accession, and some competing countries to suffer small losses. The adjustments required are greatly reduced by the liberalization that China has undertaken in the 1990s. A full evaluation of accession, and design of appropriate policy responses will require detailed analysis in a number of areas, including agricultural policies, the proposed liberalization of clothing and textiles, safeguards mechanisms, and the automobile sector.

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Accession to the WTO will be a major turning point in China's economic development, modernization and integration into the world economy. Completion of the accession formalities will not, however, be the end, but rather the beginning of a process of reform and adaptation that seems likely to match in intensity the process of reform that began in 1978.

The reform era in China has been a period of extraordinary growth in the volume and importance of trade for the Chinese economy. Part of this growth has been a consequence of economic reforms that have stimulated opening to the outside world, and part has been a consequence of the economic growth that opening to the world has done so much to stimulate. Recognition of the benefits of openness for growth and poverty reduction has been an important element in China's willingness to make the difficult reforms that will be involved in WTO accession.

Like the process of economic reform in China more generally, the process of trade policy reform has been quite complex—a process of crossing the river by feeling the stones. A consequence of this has been that the reforms required by accession will begin from quite a complex set of policies that contains many complex features inherited from earlier eras—such as areas of state trading that date to the command economy, and of duty exemptions and rebates that date from the need to stimulate exports from processing sectors. To understand the implications of accession requires an understanding of these initial conditions.

China's accession agreement is likewise complex, reflecting as it does the intersection of the interests and concerns of policy makers in China and those in current WTO members. While it involves widespread reductions in protection, and opening up of a wide range of sectors, it cannot be represented simply as a move to free trade. While WTO accession and the process of liberalization that preceded it represent one of the

most profound liberalizations in recent economic history, China will still be far from fully open after the reforms. In many areas, significant policy interventions remain, and their effects need to be taken into account in any evaluation of the WTO accession package, or in consideration of future policy reforms. Looking forward, one area of particular interest will be the role of policies inherited from earlier trade regimes, such as state trading in agriculture, and the system of duty exemptions for exports and for foreign-invested enterprises.

In this paper, we form an initial assessment of some of the likely major implications of the trade reforms involved in China's accession to the WTO. We build on excellent earlier recent work by Fan and Zheng (2000) and by Fan and Li (2000), and draw on new data becoming available as the accession process nears completion. Our objectives are two fold—to assess the implications of the reforms for which China's policy makers have fought so long and hard; and to identify areas in which further analysis will be needed to help guide the process of deepening policy reform.

Because of the importance of understanding China's current regime and its origins, we begin with a discussion of policy reforms and China's current trade regime. We then examine the nature of the reforms associated with accession. Then, we outline the modeling approach that we have used to analyze this liberalization, taking into account the special features of the initial trade regime and the trade reforms associated with accession. Finally, we consider some results from the analysis.

China's Trade Policies

China's trade regime still retains a number of features that date from the pre-reform era, and it is important to be aware of the evolution of the system from this base if contemporary trade policies, and some of the points of resistance to reform are to be understood. We begin with a short description of the pre-reform system, and trace the evolution of the current system through the reform era.

The Pre-Reform Chinese Trade Regime

The pre-reform Chinese trade regime was dominated by between 10 and 16 Foreign Trade Corporations (FTCs) with effective monopolies in the import and export of their specified ranges of products (Lardy 1991). Planned import volumes were determined by the projected difference between domestic demand and supply for particular goods, with export levels being determined by the planners at levels necessary to finance the planned level of imports.

Under the pre-reform Chinese system, commodity prices were set without regard to scarcity or cost, and were intended to serve only an accounting function. Further, the exchange rate was very substantially overvalued, creating a general disincentive to export and an artificial incentive to import. Thus, it was not possible to use estimates of commodity markups to determine whether FTCs were creating trade barriers. Many producer goods had low prices that would have made exports artificially profitable and made necessary imports of some needed goods unprofitable. An explicit objective of the Foreign Trade Corporations was to create an air-lock between producers and foreign markets that would vitiate the artificial incentives created by the pricing system [1].

An interesting feature of the pre-reform Chinese trade regime was the limited importance of conventional trade policy instruments such as tariffs, quotas and licenses. Price-based measures such as tariffs were obviously unimportant since the planning system was based on quantity decisions rather than behavioral responses to prices. There was little need for quotas or licenses since the quantities to be imported could be controlled by the monopoly trading corporations.

[1] Or, in the original conception, to insulate the economy from the harmful irrationalities of world market prices (World Bank 1988).

Reform of China's Trade Regime

Reform of China's trade regime had four major dimensions: increasing the number and type of enterprises eligible to trade in particular commodities; developing the indirect trade policy instruments that were absent or unimportant under the planning system; reducing and ultimately removing the exchange rate distortion; and reforming prices so that they could play a role in guiding resource allocation. These reforms of the trading system were inextricably linked with reform of the enterprise sector to allow indirect regulation through market-determined prices to replace direct regulation of enterprise output through the planning system.

A central feature of the reforms was the decentralization of foreign trade rights beyond the handful of centrally controlled foreign trade corporations. This was not done according to the usual negative list approach where any enterprise can trade in any good except those subject to restricted trading rights. Rather, a combination of a negative list for commodities and a positive list for trading firms was introduced. A negative list approach is used to reserve a list of commodities for trading by specified enterprises. Firms wishing to trade in other products are required to be on a positive list of firms with trading rights for those particular goods. The reform process gradually increased both the number of firms allowed to trade, and the number of different types of firms eligible for trading rights.

The number of FTCs with trading rights was progressively expanded, with trading rights provided to branches of the FTCs controlled by the central government, and to those controlled by regions and localities. Since 1984, these trading enterprises have been legally independent economic entities (Kueh 1987) and state owned trading enterprises of this type now appear to operate very strongly along commercial lines (Rozelle *et al* 1996). Joint ventures between domestic and foreign firms, and firms located in the special economic zones were also allowed the right to trade their own products relatively

early during the reform process. At a later stage, large producing firms began to gain direct foreign trade rights.

An important feature of the reforms was the introduction of special arrangements for processing trade. Imports of intermediate inputs for use in the production of exports were almost completely liberalized, as were capital goods inputs for use in joint ventures with foreign enterprises. These categories of imports came to represent a very large share of total imports, with intermediate inputs into exports accounting for almost half of total imports in 1996.

Import and export licensing measures were introduced in 1980 to replace the controls imposed under the previous trade monopoly-- a process that, surprisingly, was a step towards liberalization (Lardy 1991). The coverage of licensing was initially small, but increased sharply as more and more trade was removed from the planning process. Lardy (1991, p 44) notes that licensing covered two thirds of China's imports in 1988. The coverage of licensing has since fallen dramatically.

The primary transitional device used to reduce and ultimately remove the distortions in both commodity prices and exchange rates was the two (or more) tier pricing system. Under the two tier pricing system for commodities, the plan price continued to operate for the quantity of the commodity that producers were contracted to supply. However, to stimulate output, producers were allowed to supply additional output at a secondary market price. Where plan prices are below market prices, this system can, in the short-run, allow revenue to be generated and transferred in a non-distorting manner (see Sicular 1988). The two tier system for foreign exchange involved an overvalued official exchange rate and a higher secondary-market rate, and did distort trade by discouraging both exports and imports (see Martin 1993, World Bank 1994). Over time, the retention rates were raised, lowering the gap between the rates received by exporters and paid by importers, reducing the extent of the distortion. The exchange rate was unified in 1994, removing this distortion.

The importance of market prices relative to plan prices increased very rapidly as the reforms progressed, as is evident from Table 1. The share of retail commodities sold at state-fixed prices declined from 97 percent in 1978 to only 5 percent in 1993. Even for agricultural goods, where state pricing of some basic commodities such as grains remains important, only 10 percent of total sales were at state fixed prices. These figures to some degree overstate the importance of sales at state fixed prices, since sales at fixed prices under a two-tier price regime may have no economic impact-- such sales are inframarginal and it is the price prevailing at the margin that is most influential in determining economic behavior (Sicular 1988, Byrd 1989). Only a very small set of products was subject to state pricing in 1993. In a significant reversal of the trend towards liberalization, the share of goods subject to state pricing increased substantially between 1993 and 1995, although this share remained much lower than it had been prior to the early 1990s. [2]

Table 1. Share of goods sold at state fixed prices. 1978-93

Year	*Retail commodities*	*Agricultural goods*	*Capital and industrial goods*[*]
1978	97	94	100
1992	10	15	20
1993	5	10	15
1994	7	17	16
1995	9	17	16

[*]*Capital goods up to 1993 and all industrial goods thereafter. The two were essentially the same in the only overlap year, 1993.*
Source:Lardy (1995) up to 1993; Garbaccio (pers comm.) from 1994.

Types and Numbers of Trading Firms

The positive-list system for allocating trading rights in China would potentially allow direct control of imports if the number of trading enterprises were small, and if these enterprises were subject to a single supervisory body. However, MOFTEC reports

[2] The following goods were subject to state pricing in 1997: grain; edible oil; cotton; tobacco; compressed tea; timber; crude oil; natural gas; gasoline; kerosene; diesel oil; heavy oil; urea; polyethylene sheeting; steel for locomotives and rolling stock; aircraft and aircraft engines; edible salt; pharmaceuticals and silk cocoons.

that roughly 9000 Foreign Trade Corporations are active with very broad trading rights (MOFTEC personal communication, June 1999). Of these around 100 are owned by the central government, and the remainder are owned by provincial and local governments. In addition to these Foreign Trade Corporations, there is a number of other types of firms with trading rights, as is highlighted in the results in Table 2 reported by (ITC 1996). on the number and type of importing and exporting firms active in 1994.

Table 2: Contribution of different firms to China's trade, 1994

	Exporting		*Importing*	
	No of firms	*Share of exports*	*No of firms*	*Share of imports*
		%		%
Foreign Trade Corporations	9400	53	8700	44
State Owned Enterprises	7800	17	3600	8
Joint ventures	30000	19	64800	34
Foreign-owned firms	9730	9	23239	12
Collective and private	1060	1	1828	1
Other	520	0.2	5378	1
	58500	100	107,545	100

Note: Some numbers may not add because of rounding. Source: ITC 1996:22.

The firms in the first row of Table 2 are the state-owned Foreign Trade Corporations with trading rights for a range of commodities. The other enterprise types in the table typically have trading rights only for their own inputs and outputs. The enumeration of firms in Table 2 is based on the enterprise identification codes on individual customs declarations. These numbers may differ substantially from the official numbers of firms officially granted trading rights. MOFTEC (personal communication) reported that only 8000 Foreign Trade Corporations had trading rights in 1994 even though the ITC reported 9400 firms active in importing alone. It appears that the larger number of firms reported on the Customs declarations results from the use by subsidiary firms of the trading rights granted to a parent firm.

In mid 1999, MOFTEC reported that there were around 9000 Foreign Trade Corporations. However, the number of SOEs and private firms with trading rights for their own products had risen to 12,000, and around 330,000 foreign invested firms had trading rights for their own products. Since 1997, it has become easier for SOE's to

engage in foreign trade in their own products, with these firms needing only to register, rather than to obtain approval. Private firms still need to obtain approval to trade their own products, and 124 were reported to have done so.

While trading enterprises are typically subject to restrictions on the range of products that they may trade, the constraints imposed on the business scope of most Foreign Trade Corporations appear to be quite liberal. While joint ventures and foreign owned enterprises are subject to tighter restrictions on the scope of the products they trade, the sheer number of these enterprises means that a large number is likely to be active for most important product groups. As a consequence, consumers and producers wishing to purchase imports or sell exports will typically have a range of enterprises through which they can undertake these transactions.

Despite the large number of trading firms overall, there are two broad groups of commodities for which the number of firms entitled to engage in trade is tightly restricted. One of these groups is subject to state trading, while the other is subject to designated trading. The system of designated trading applies to a range of other important commodities. The 70 tariff lines subject to state trading on the import side are drawn from the commodity groups set out in Table 3, as are the 115 tariff lines covered by state trading on the export side. The 229 tariff lines subject to designated trading are primarily importables.

Table 3. Products covered by state trading and designated trading.

	Imports	*Exports*
State trading	Grain, vegetable oils, sugar, tobacco, crude oil, refined oil, chemical fertilizer, cotton	Tea, maize, soybeans, tungsten, coal, crude oil, refined oil, silk, unbleached silk, cotton, antimony
Designated trading	Rubber, timber, plywood, wool, acrylics, steel and products	Rubber, timber, plywood, wool, acrylics, steel and products

Source: Government of China, 1997.

The products subject to state trading are typically handled by one or a few foreign trade corporations, making direct control of the quantities imported and exported relatively practical. The system of coordination and control used for major state-traded

commodities such as grains and fertilizer appears to follow the basic lines used under the traditional planning system. Estimates of the gap between supply and demand are made up to 18 months in advance of the actual trade taking place, and there appears to be considerable reluctance to adjust the quantity targets in responses to developments such as unanticipated shocks to domestic supply or demand. Recent empirical research concludes that, rather than helping to stabilize domestic grain prices, this inflexible system contributes substantially to the volatility of domestic grain prices (World Bank 1997a). Carter, Chen and Rozelle (1998) identified many of the classic features of the traditional monopoly trading system in the grain trade—an "airlock" between buyers and suppliers; poor quality matching; unpredictable timing of deliveries. In addition, they found many of the features of poorly operating markets, particularly concerns that traders are using their superior information to take advantage of buyers in China.

While state trading is clearly GATT legal, there appears to be a strong case for the reform of these state trading monopolies, given the serious concerns about the performance of this approach to trade administration.

Nontariff barriers

An estimate of the coverage of state trading and designated trading is shown, together with other nontariff barriers affecting China's import trade, in Table 4. From the table, it appears that state trading and designated trading accounted for 11 and 7 percent respectively of total imports, and made up over half of the total trade coverage of nontariff barriers in China. Clearly, the regime used for state trading and designated trading is an important special feature of the Chinese trade regime, but very much a minority part of the overall system, rather than the dominant part. The heavy reliance on state trading for major agricultural trade has, however, raised concerns about the transparency of China's agricultural trade regime (see Dixit and Josling 1997).

Table 4.
Share of imports covered by NTBs in 1996, using 1992 trade weights.

	State	*Desig.*	*Lond.*	*Licenses*	*Quota*	*Tend.*	*All*
Rice	100.0	0.0	0.0	100.0	0.0	0.0	100.0
Wheat	100.0	0.0	0.0	100.0	0.0	0.0	100.0
Coarse grains	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nongrain crops	50.0	22.9	0.0	72.9	72.9	0.0	72.9
Livestock	0.0	72.7	0.0	72.7	72.7	0.0	72.7
Meat and milk	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other food products	37.2	0.0	0.0	32.9	31.7	0.0	38.4
Natural resources	46.6	12.8	0.0	0.0	0.0	0.0	59.5
Textiles	0.3	5.7	0.0	12.7	12.7	0.0	12.7
Wearing apparel	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Light manufactures	0.0	9.3	0.0	0.0	0.0	0.0	9.3
Transport equipment	0.0	0.0	0.0	35.8	35.8	6.6	42.4
Machinery and equipment	0.0	0.0	0.0	9.2	9.2	20.4	26.8
Basic heavy manufactures	18.7	16.2	0.3	23.5	22.7	0.0	37.7
Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	11.0	7.3	0.1	18.5	16.3	7.4	32.5

The measures listed include state trading, designated trading, the London Convention, import licenses, import quotas, and price tendering. Source: World Bank 1997c

The average protective impact of the complete set of nontariff barriers presented in Table 4 was estimated to be 9.3 percent (World Bank 1997c). This evaluation was undertaken using information on the tariff equivalents of these nontariff barriers obtained from the Unirule Institute study prepared for the Institute of International Economics (Zhang, Zhang and Wan 1998) and from price comparisons drawn from the International Comparisons Project. Products imported under the State Trading categories accounted for only 0.7 percentage points of this total protection. On this basis, it appears that state trading of imports has been a very minor restriction on trade in the past, although it could become a more serious distortion in the future, depending upon the manner in which state trading is undertaken. The protective effect of these nontariff barriers has declined since this estimate was made, because of the progressive phase out of NTBs.

One additional feature of China's trade regime is a system of Automatic Import Registration that has covered wool, tobacco and cotton, as well as important nonagricultural commodities such as oil, steel, copper, nonferrous metals, and polyester. There is considerable overlap between this system and other trade measures, with some

of these commodities also covered by state trading, some by designated trading, and some by quotas and licenses. This system has not been listed as a nontariff barrier, and has typically been justified as purely for statistical monitoring. However, some officials also appear to see it as a way to ensure that imports are not brought in when there is "insufficient" market demand, or to induce purchasers to buy local products that SETC judges to be adequate substitutes for the imported good. Clearly, any such use of market-demand criteria for approving requests for "Automatic" Import Registration would make it a seriously nontransparent nontariff barrier.

Over the course of the 1990's China has made substantial progress in reducing the number of nontariff barriers in its trade regime. Nicholas Lardy (personal communication) estimates that the number of products subject to quotas and licenses fell from 1247 tariff lines in 1992 to 261 in 1999. While comparable estimates of the trade coverage of NTBs over time are not available, the number of tariff lines subject to quotas and licenses fell from 384 in 1997 to 261 in 1999 (Lardy, personal communication). China has committed to refrain from introducing new NTBs, or increasing the coverage of existing NTBs, during the negotiations. Organizational changes in the Chinese government during 1998 resulted in some changes in the administration of particular measures. One important change was the removal of some of the major central State Trading Firms from the control of MOFTEC and the ministries responsible for particular industries. Administration of quotas was to have been transferred from SETC to MOFTEC, but this transfer has been proceeding slowly.

Tariff barriers

The pace of tariff reform has been rapid in China. A significant tariff reform was implemented in October 1997, reducing average tariffs significantly below 20 percent, while a more limited reform in January 1999 focussed on timber products. Some basic data on trends in average tariff rates are given in Table 5.

Table 5. Changes in average tariff rates in China						
	All products		*Primary products*		*Manufactures*	
	Simple	*Weighted*	*Simple*	*Weighted*	*Simple*	*Weighted*
	%	%	%	%	%	%
1992	42.9	40.6	36.2	22.3	44.9	46.5
1993	39.9	38.4	33.3	20.9	41.8	44.0
1994	36.3	35.5	32.1	19.6	37.6	40.6
1996	23.6	22.6	25.4	20.0	23.1	23.2
1997	17.6	18.2	17.9	20.0	17.5	17.8
1998	17.5	18.7	17.9	20.0	17.4	18.5
Source: World Bank (1999, p340)						

The progressive reductions in tariffs since 1992 have reduced average tariffs by more than half over the period. For the important manufactures sector, the reductions have been greater than average. The fact that these reductions have been phased in means that the reductions proposed in the ongoing WTO negotiations will be much less abrupt than would otherwise have been the case. Another important feature of the reforms has been a substantial reduction in the dispersion of tariff rates—with the standard deviation of tariffs falling from 32.1 percent in 1992 to 13.1 in 1998. This reduction in the dispersion of tariffs can be expected to greatly reduce the costs of protection. Bach, Martin and Stevens (1996) found that reductions in the variance of tariffs associated with China implementing its (then) proposed WTO accession package accounted for a large share of the benefits.

An important feature of China's tariff reforms has been the inclusion of very important exemptions for processing trade and for foreign investment. According to China's Customs authorities, seventy-five percent of imports entered either duty-free or subject to reduced duties. The exempt and reduced categories, with their 1998 import shares in parentheses, were:

1. Processing trade (50 percent, exempted)
2. Initial investment of joint ventures (10 percent, exempted)
3. Bonded warehouse imports (5 percent, exempted)

4. Other exempted/reduced (10 percent, exempted or reduced)

These figures suggest that only around 25 percent of imports in 1998 entered as ordinary trade, subject to normal customs duties. The presence of these exemptions contributes substantially to the oft-remarked divergence between the weighted average tariff rate and the average tariff collection rate in China. In 1998, the collection rate for customs duties was only 2.7 percent. If the average tariff rates on exempted and non-exempted goods were the same, the average collection rate should have been in the order of 4.7 percent. Since ordinary trade items are likely to be subject to, on average, higher tariff rates, the unexplained shortfall in customs tariffs is probably larger than these numbers would suggest.

China's heavy reliance on exemptions for goods used in the production of exports as a way to stimulate its export production has clearly stimulated the development of export processing industries that rely heavily on imported intermediate goods. In many respects, this is a good thing, since global manufacturing production is increasingly moving towards production sharing, where the production chain is broken up into many small links, and each of these links is located wherever comparative advantage is greatest (see Ng and Yeats 1999). However, the reliance on high protective barriers and deep exemptions, rather than more comprehensive liberalization, has the disadvantage of discriminating against industries that rely more heavily on domestic value added, rather than imported intermediate inputs. The continued presence of high tariffs on goods used indirectly in production of exports raises the price of locally produced goods that embody traded goods[3]. Further, protection raises the price of nontraded goods (the so-called real exchange rate effect), and hence discriminates against exports that embody significant amounts of domestic value added. The end result is an export mix like China's that depends heavily on processing-sector exports with little domestic value added.

[3] This problem could be solved by a tariff exemption scheme that traces indirect use, as well as direct use, of imported inputs in production of exports. While China has such a system, these systems are difficult to operate effectively.

This problem can be reduced by more comprehensive liberalization. With lower tariffs, the costs of domestic inputs to exporters will fall. This, in turn, can be expected to result in a shift towards reliance on exports that embody a greater amount of domestic value added. Clearly, this is a favorable development, building well on the export base developed under the period of partial liberalization. However, it is likely to require substantial adjustments in the pattern of China's exports, and hence could be threatened by protection measures such as anti-dumping that tend to resist changes in trade patterns.

China's WTO accession package

The final details of China's WTO accession package will not be known until agreement has been reached with all members of the Working Party, and approved by the members of the WTO. However, it seems likely that the November 1999 bilateral agreement between China and the United States, and the May 2000 agreement with the European Union, will form the basis for the final agreement, and a substantial amount of information on these agreements is available. Detailed information on the outcome of the US offer is available in electronic form that allowed quantification, while only a summary of the outcome of the EU bilateral was available to us.

WTO entry will require China to bring its rules into line with WTO norms in a wide range of areas. Perhaps the most fundamental of these stipulations are those on nondiscrimination between suppliers in accordance with the Most Favoured Nation principle; and the abolition of most nontariff barriers. However, WTO rules require much more, including the implementation of Intellectual Property regimes consistent with the TRIPS agreement, Customs Valuation procedures consistent with the agreement on Customs Valuation, that any safeguards procedures and standards and phyto-sanitary restrictions must be consistent with GATT rules.

The Protocol of Accession will also include important stipulations designed to increase the transparency of China's trade regime and provide for judicial review of administrative decisions. It will also specify procedures for judicial review of

administrative actions, require the phasing out of the general restrictions on trading rights, require elimination of multi-tier pricing systems, and require state owned enterprises to make their purchasing and sales decisions based solely on commercial considerations. Unfortunately, the agreement is also likely to include transitional procedures that will make it easier for China's trading partners to impose product-specific protective barriers during the transition period, when China's trade mix is likely to need to adjust sharply in response to liberalization. The criterion for imposing product-specific safeguards is market disruption, which the United States House of Representatives, at least, has defined to occur when increased imports are a significant cause of material injury[4] (House of Representatives 2000, Sec. 421).

As a result of WTO accession, China will move very strongly towards a trade regime based on tariffs. Quotas, licenses and designated trading are all to be phased out. State trading is to remain on most of the commodities listed in Table 3, although it will be subject to WTO rules after accession. State trading monopolies on imports of soybean oil, crude oil, oil products and fertilizer, and on exports of raw silk, are, however, to be abolished.

In addition, China will make specific commitments to reduce protection in merchandise and services. USTR (1999) reported that China committed to bind all agricultural and industrial tariffs. The simple average tariff on manufactures is to be reduced to 9.44 percent—a substantial reduction from the 17.4 percent reported in Table 5 for 1998. The simple average tariff for agriculture is reported to be 17 percent—broadly in line with the 1998 estimate in Table 5 for all primary products. China will also commit not to use agricultural export subsidies. In subsequent bilateral negotiations with the EU, China committed to a number of additional tariff reductions on a number of additional products, including butter, olives, textiles, leather, spirits, and a range of machinery products.

[4] By contrast, WTO safeguards under Article XIX require that serious injury to domestic firms be demonstrated.

The agreement on textiles and clothing included in the Protocol of Accession will be particularly import for China. Unlike other developing country exporters, China was excluded from the Uruguay Round Agreement on Textiles and Clothing[5]. This means that China has not benefited from acceleration in quota growth, and the progressive movement of textile and clothing products under GATT rules provided for under this agreement. Under the latest available version of the agreement (see www.uschina.org), China's textile and clothing quotas on the day before China joins WTO will become the base to which ATC rules. China will benefit from the integration of textile and clothing products that has occurred since 1994 (WTO 1994a), and from acceleration in the (generally quite low) growth rates applying to China's quotas . This process paves the way for expansion of China's exports of textiles and clothing, with all existing quotas to be phased out by 2005, and any special textile safeguards introduced under the agreement phased out by 2008. This aspect of the agreement is the only important case where China will benefit in terms of improved market access—all of the other benefits will arise from China's own reform commitments.

A consequence of China's exclusion from the ATC has been a sharp restriction on her exports of textiles and clothing. Not only has the presence of quotas inhibited the normal decline in competitiveness of senescent exporters such as the NICs, but China has faced increased competition from other MFA exporters benefiting from the ATC provisions, and from exporters, such as Mexico and Turkey, that have increasingly benefited from preferential market access under regional arrangements.

The upshot of these developments has been a dramatic contrast between the experience of China's exports of clothing to industrial country markets with that of its exports of other light industrial products such as toys and footwear. Figures 1(a) to 1(c) show the dramatic decline in the market share of the Asian NICs in these labor-intensive products since the late 1980s. In toys and footwear, the rate of decline was particularly sharp, and the corresponding increase in China's share equally striking. In clothing,

[5] Under this agreement, liberalization applied only to members of the GATT 1947 on the day prior to the WTO agreement coming into force.

changes in export structure are inhibited by MFA quotas that inhibit both the decline in exports from senescent exporters and the growth in exports from dynamic new exporters. Comparison of Figure 1(c) with 1(a) and (b) suggests that the MFA quotas were sufficient only to moderately slow the decline in exports from the NICs, but were very effective in inhibiting the expansion of China's exports.

Figure 1. Contrasting developments in US import market shares for Clothing, Footwear and Toys.

Figure 1(a)

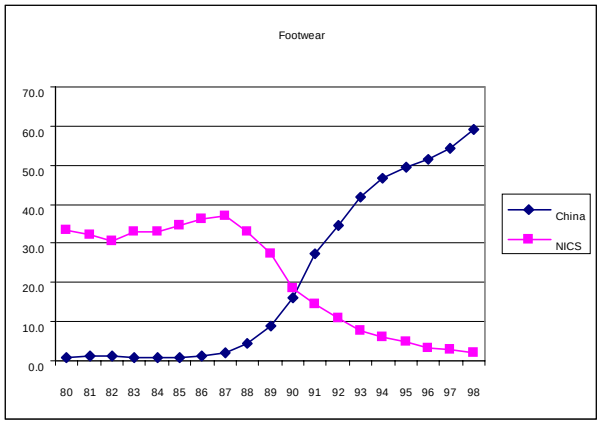


Figure 1(b)

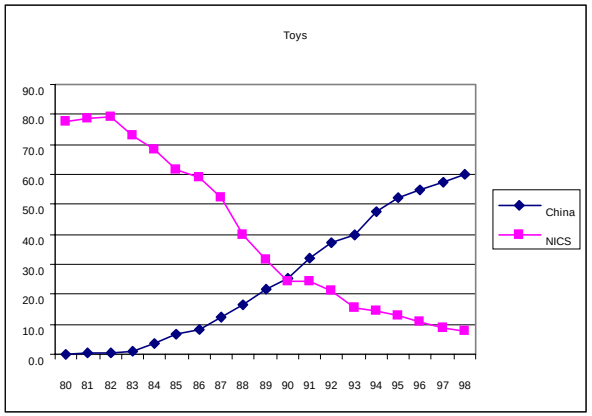
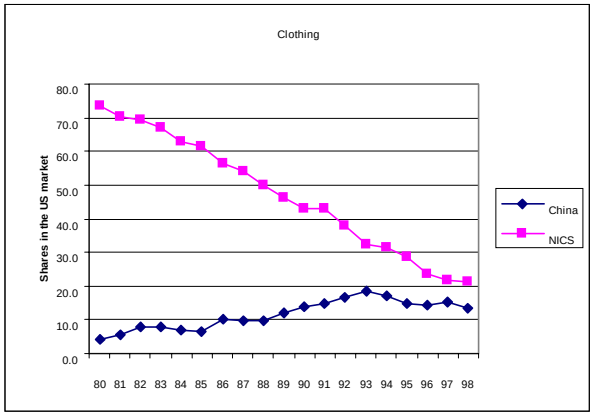


Figure 1(c)



Source: UN COMTRADE. Clothing SITC 84; Footwear SITC 85; Toys SITC 859.

In agriculture, the main impacts of the WTO commitments are likely to operate through induced reductions in uncertainty about agricultural trade policies. While state trading will be retained for some important commodities, the WTO's rules on state trading impose significant disciplines on the protection that state trading enterprises can provide (Davey 1998). In particular, they require importing state trading enterprises to meet market demand, and restrict their ability to restrict imports to the extent that the domestic price would consistently exceed the agreed tariff binding.

The disciplines on agricultural protection may become extremely important if comparative advantage continues to shift against agriculture in China. In the absence of WTO disciplines, China would almost certainly have followed the general East Asian pattern of sharply rising agricultural protection (Anderson and Hayami 1986). As is evident from Table 6, most of the tariff bindings negotiated with China are very low by East Asian standards, and may turn out to save China from developing an extremely inefficient and high cost agricultural sector. Another important feature of Table 6 is the comparison of the bindings in the current proposal with those that China had offered in the Uruguay Round—illustrating how far China has been willing to come.

Table 6. Final tariff bindings on selected agricultural products

Commodity	*Uruguay Round Final Binding*	*Likely Final Bindings*
	%	%
Almonds	30	10
Apples	40	10
Barley	91.2	9
Beef	40	12
Citrus	52	12
Grapes	40	13
Pork, frozen cuts	40	12
Poultry, frozen cuts	40	12
Soybeans	114	3
Wheat, Maize, Rice	114	65
Wine	135	14

Sources: WTO (1994b); Chen Xiwen (1999); USTR (1999); Carter and Huang (1998). EU (2000)

The agricultural trade regime includes a range of Tariff Rate Quotas (TRQs) that provide for lower tariffs on specified quantities of imports. These commitments provide for private participation in implementation of the tariff rate quotas. The main economic effect of this is to provide rent transfers, rather than to liberalize, although it does have an advantage in generating transparency about the differences between border prices and the internal prices of these goods.

China has also made important commitments on Services under GATS, including comprehensive commitments on distribution and tourism; and commitments on telecommunications, insurance, banking, construction, professional services and audiovisual services. The commitments on distribution are particularly important for merchandise trade because of the transparency they create, and because they preclude the emergence of *de facto* import barriers through controls on distribution.

It is clear that China's accession to the WTO will require a very large number of reforms both in legislation, and in the way that business is conducted. The need for reform will be particularly acute in areas such as the financial sector and telecommunications, where substantial reforms in the regulatory structure, as well as international trade policies, are likely to be required. Agricultural policy will not be able to take the inward looking approach that has characterized agricultural policy in other north-east Asian "miracle" economies. Some relief from adjustment pressures may be found by using WTO negotiations to reduce the disproportionately high barriers that face China's agricultural exports. Measures, such as increased educational opportunities and greater labor mobility, that assist rural people to adjust out of the sector will probably be the most powerful, and necessary, policy measure for dealing with these problem in the longer term. Within industry, sectors such as automobiles will require massive restructuring, to allow the development of a modern, efficient sector.

Liberalization Resulting from Accession

A comprehensive assessment of the implications of accession for trade barriers requires that we compare the protection prevailing after accession to what would have prevailed in the absence of accession. Given the rapid changes in China's protection rates since the early 1990s, it is obviously not clear what the counterfactual rate of protection would have been. In general, we assume that the rate of protection applying in 1997 would have continued to apply in the absence of accession . We then estimate the protection applying after accession as the lesser of the initial applied rate and the bound rates of protection agreed in the WTO. In agriculture, we need to take a more careful look at the situation for those products subject to Tariff Rate Quotas (TRQs).

For industrial products, we have detailed information on the tariff rates applying in 1997. These rates were aggregated up to the GTAP level of aggregation using data on bilateral trade flows from the UN COMTRADE system. For lack of time, we were unable to use the optimal aggregation procedures developed by Bach and Martin (1996). We use the trade-weighted average tariff rates as a conservative estimate of the initially-applied rate of protection. While the World Bank (1997c) estimated that nontariff barriers (NTBs) contributed an additional 9 percentage points of protection, it seems likely that this protection has subsequently declined, particularly as the coverage of NTBs has declined, but we have been unable to assess the extent of the decline. In the absence of better information, it seems preferable to adopt a known lower bound estimate of protection, rather add a highly speculative estimate of the rate of sectoral protection contributed by NTBs.

Assessing Agricultural Reform

Assessing the degree of agricultural reform brought about by WTO accession in China is difficult for two main reasons. The first involves the levels of protection that

would have prevailed in the absence of accession, and the second involves the complex nature of the WTO reform arrangements for some products.

(a) Assessing the Degree of Protection

Determining the degree of protection provided to China's agriculture is particularly complicated for those products subject to state trading arrangements, for which the current level of tariff protection does not provide a good guide to the gap between the cif and the internal price of imported commodities. Even for those commodities subject to tariff protection, there is uncertainty about the appropriate counterfactual, given the propensity of agricultural protection to increase in high growth East Asian economies (Anderson and Hayami 1986).

The most direct way to determine the rate of agricultural protection is the price comparison approach, in which domestic prices in China, with appropriate adjustments for factors such as quality and transport costs, are compared with prices on world markets. Using this approach, Findlay, Martin and Watson (1993, p108) concluded that agricultural protection was negative for most commodities in 1986, a result that is broadly confirmed in recent estimates for the mid 1980s by Huang, Chen and Rozelle (1999) and Tuan and Cheng (1999). This result would potentially be consistent with the broad pattern where agricultural protection is negative in the early stages of development, and increases as incomes grow.

Huang, Chen and Rozelle (1999) estimate that the rates of protection applying to rice, wheat, maize and soybeans in the mid 1990s were 4, 20, 25 and 13 percent respectively. Clearly, these results suggest that protection for these major commodities had turned positive, but only modestly so. By contrast, Tuan and Cheng (1999) report generally much higher and more variable nominal rates of protection for agricultural commodities. Their estimates for these four commodities in 1997 were –29, 62, 15 and 140 percent respectively. Clearly, the level of uncertainty about the *status quo* suggested

by the divergences between estimates from highly reputable analysts makes it difficult to confidently assess the implications of changes.

For the products to be subject to state trading under the WTO, a *de facto* system of Tariff Rate Quotas has been in place for several years. Under this system, the tariff rate levied on imports within an administratively-determined quota limit has been subject to a low tariff. In some years, this tariff has been waived for major commodities such as wheat. Clearly, under this system, the rate of protection is purely determined by administrative decisions on the quantity to import or export.

The GTAP model database provides a rough set of estimates of the protection currently provided to the agricultural sector in China. These estimates are presented below. Given the uncertainty about rates of protection evident in the literature, it does not seem unreasonable to use these as a rough initial estimate to the current rates of protection.

(b) The Reform Scenario

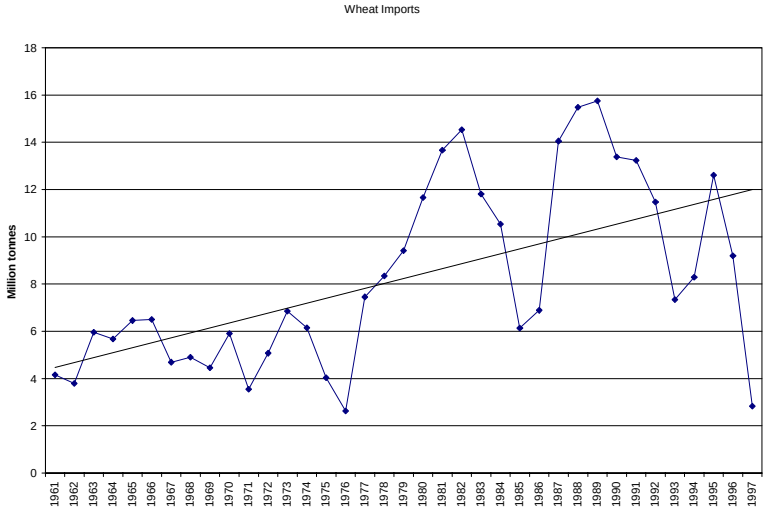
Following accession to WTO, China will retain the tariff rate quota system for a small set of agricultural commodities: wheat, corn, rice, oilseeds, sugar, wool, and cotton. Other products will be subject to a pure tariff system. China has agreed not to use export subsidies, although it could presumably levy export taxes on some commodities. Thus, the only protection that China will be able to provide to its agricultural sector will be that provided through tariffs, and protecting export-oriented commodities will be ruled out.

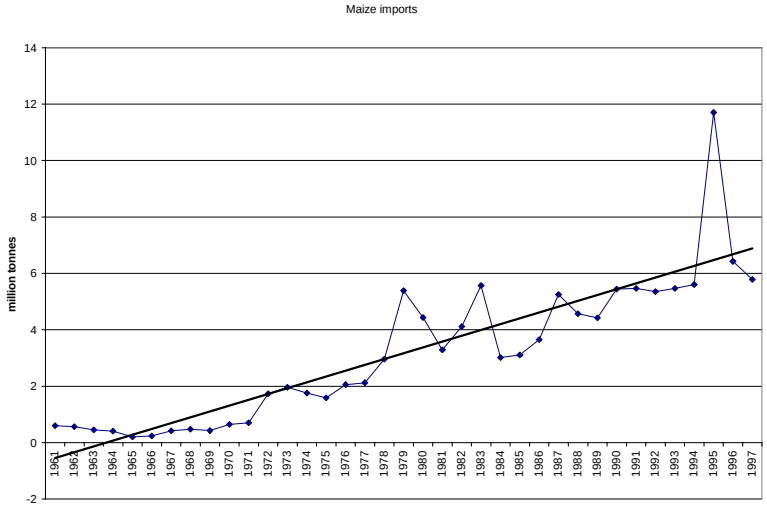
The protection to an importable commodity by a tariff rate quota system depends critically on whether import demand at the in-quota tariff rate is above or below the TRQ level. If import demand falls below the TRQ level, imports are subject to the in-quota tariff. If imports exceed the TRQ level, they are subject to the out-of-quota tariff. The difference between the in-quota tariff and the out-of-quota tariffs for the three major TRQ commodities of wheat, corn and rice are given in Table 7.

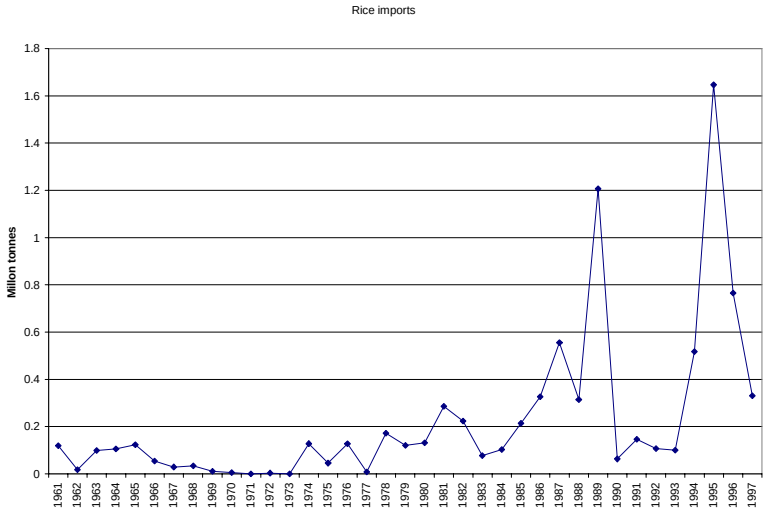
Table 7. Key parameters for tariff bindings on TRQ commodities			
	Wheat	*Corn*	*Rice*
In-quota tariff (%)	1	1	1
Out of quota tariff (%)	65	65	65
TRQ (million tonnes)	9.6	7.2	5.3
Average imports (million tonnes 61-97)	8.2	3.2	0.2
Historical probability of out-of-quota tariff	35	5	0
Implied average binding rate	23	4	1
Note: Historical probability of out of quota tariff calculated based on the assumption of a normal distribution with the mean and standard deviation observed in the historical sample.			

To give some idea of the variability associated with imports of these three commodities, we present plots of these import levels in Figure 2. From the figures, it is clear that there has been a consistent upward trend in import levels of each of these commodities, with considerable volatility around this trend. Whether the in or out of quota tariff applies depends on whether the volume of imports exceeds the quota. Under the old regime, which generated the series plotted in Figure 2, it is clear that import levels exceeded the TRQ level in a number of years, during which the out-of-quota tariff would have applied. If we accept the trend as having continued, then it would seem likely that the TRQs will be reached in a high percentage of years. If we take the most recent period of low imports as reflecting a structural change to a new, lower, average level of imports, then the TRQs will be reached less frequently. If we use the average historical import levels as a guide, it seems likely that the wheat imports would be subject to the high import quotas relatively frequently, maize imports less frequently, and rice imports very infrequently.

Figure 2. Plots of Import Levels for Major TRQ commodities







(Source: SIMA/FAO;WITS/COMTRADE)

Since most estimates of the the historical rates of protection on the commodities subject to TRQs have historically been very low, it seems likely that the agreed restraints will not require reductions in border protection. There are likely, however, to be significant management problems with the TRQ system in those periods when import levels rise towards the quota, and applied rates of protection are able to move from one to 65 percent. Managing the resulting policy-induced instability will require careful design of agricultural policies.

Estimates of the Rates of Assistance to Various Sectors Before and After Accession

Table 8 shows China's average tariff rates in the baseline (column 2) and in the case of WTO accession (column 3). In agriculture, there is estimated to be no liberalization required directly by accession, because the bindings are estimated to be above the previously applied rates of protection. As Francois and Martin (1995) have emphasized, once the stochastic nature of protection is taken into account, even bindings above applied rates, such as these, may be important as a means to reduce both the mean and the variance of protection, and hence the cost of protection. Clearly, there is a great deal of uncertainty about this result, and more work is needed before we can have any confidence in this conclusion.

The numbers in this table highlight the substantial nature of the offer for industrial products. On average, tariffs on imported manufactures in China drop from 24.27 percent to about 7 percent. Protection of textiles and apparel products fall dramatically, as does protection to automobiles, electronics and petrochemicals. The sharp decline in protection to electronics is undoubtedly related to China's agreement to implement the Information Technology Agreement as part of its accession package. The actual reduction in protection to the automobile sector is even larger than is suggested by these tariff results, since quota protection to this sector is also to be phased out. Overall, China's offer lowers the weighted average tariff protection on imports to the country from 21.41 percent to a mere 7.85 percent.

Table 8. Weighted average tariffs in China with and without WTO accession		
	Baseline	*With Accession*
	%	%
Foodgrains	0.00	0.00
Feedgrains	6.03	6.03
Oilseeds	4.16	4.16
Meat & livestock	10.14	10.14
Dairy	26.74	26.74
Other agriculture	22.09	22.09
Other food	27.68	27.68
Beverages & tobacco	123.50	20.38
Extractive industries	3.59	1.26
Textiles	57.10	9.39
Wearing apparel	75.99	14.85
Wood & paper	21.57	4.80
Petrochemicals	20.17	6.94
Metals	17.52	6.22
Automobiles	129.07	13.76
Electronics	21.69	3.44
Other manufactures	23.53	6.74
Total – Agriculture	17.09	16.88
Total – Manufactures	24.27	6.95
Total	**21.41**	**7.85**

Simulation Design

China's economy seems likely to continue growing at a relatively high rate in the early years of the new century, and this process of growth will cause substantial changes in the composition of output. In addition, the liberalization associated with WTO accession are likely to have important implications for the structure of output, and the orientation of production between domestic and international markets. To evaluate the impact of the latest available offer (which is based on the November 1999 agreement with the United States), we assess the likely future growth in China's economy using a new version of the GTAP which models duty exemptions explicitly (Ianchovichina, Martin, and Fukase 2000).

We look at two scenarios – a baseline scenario in which China does not enter the WTO, and a companion scenario under which China enters the WTO. All experiments

broadly replicate World Bank projections for overall output growth in each region, and use projections of factor input growth, and a residually determined level of total factor productivity growth to ensure broad consistency between the two. For most countries and regions in the model, protection rates were based on tariffs in (or near) the model's base year of 1995, but for China, the 1997 tariff rates were used.

Because the available projections suggest that the growth of factor endowments in high-growth regions such as East Asia will be highly unbalanced, the structure of output can be expected to change quite sharply as a result of Rybczynski effects. These pressures for change are in addition to those resulting from Engel effects in consumption, which are incorporated in the model through non-homothetic preferences in the model's consumer demand systems. The simulations have been performed over the period from the model's benchmark year of 1995 to 2005. While this provides only a short "forecast", it does provide an indication of the pressures for change operating over longer or shorter periods of interest.

The details of the projection scenario are given Table 9 (Martin, Hertel and Dimaranan 2000; Anderson *et al* 2000). These projections were generated by combining historical and forecast data from the World Bank. Projections for population and unskilled labor were obtained by cumulating the average growth rates between 1995 and the projected 2005 data. The skilled labor projections were based on forecasts of the growth in the stock of tertiary educated labor in each developing country (Ahuja and Filmer, 1995) and projected growth rates of skilled labor in developed countries from the World Bank, provide an indication of changes in the stock of those qualified for employment as professional and technical workers. Growth rates of physical capital were

Table 9. Cumulative Percentage Growth Rates over the Period 1995-2005 (Annual rate of change in parentheses)					
Regions	*Population*	*Unskilled Labor*	*Skilled Labor*	*Capital*	*Manufacturing TFP**
North America	11 (1.05)	14 (1.29)	39 (3.33)	63 (4.98)	low
Western Europe	1 (0.10)	0 (0.03)	29 (2.60)	30 (2.70)	medium
Australia/New Zealand	10 (0.97)	11 (1.09)	66 (5.20)	38 (3.29)	low
Japan	2 (0.20)	-3 (-0.29)	32 (2.83)	29 (2.59)	low
China	9 (0.83)	12 (1.17)	43 (3.66)	174 (10.62)	medium
Taiwan	8 (0.73)	13 (1.21)	51 (4.18)	102 (7.28)	high
Other NICs	9 (0.84)	8 (0.73)	66 (5.18)	71 (5.54)	low
Indonesia	14 (1.31)	21 (1.96)	79 (6.00)	21 (1.96)	low
Other Southeast Asia	19 (1.73)	26 (2.36)	79 (6.00)	38 (3.30)	low
India	17 (1.59)	23 (2.11)	73 (5.65)	85 (6.36)	medium
Other South Asia	23 (2.10)	33 (2.92)	77 (5.87)	56 (4.52)	medium
Brazil	13 (1.26)	22 (2.04)	70 (5.46)	25 (2.22)	low
Other Latin America	18 (1.63)	23 (2.11)	89 (6.55)	25 (2.22)	low
Turkey	15 (1.44)	22 (2.02)	104 (7.41)	66 (5.19)	low
Other Middle East & North Africa	27 (2.43)	37 (3.17)	109 (7.64)	15 (1.37)	low
Economies in Transition	3 (0.27)	6 (0.60)	69 (5.37)	30 (2.70)	low
South African Customs Union	23 (2.06)	29 (2.59)	64 (5.06)	15 (1.43)	low
Other Sub-Saharan Africa	33 (2.87)	37 (3.19)	88 (6.50)	19 (1.78)	medium
Rest of World	18 (1.65)	21 (1.90)	83 (6.22)	88 (6.51)	low

Note: The low, medium, and high growth assumptions for total factor productivity (TFP) in manufacturing correspond to annual growth rates of 0.1%, 1.0%, and 2.0%, respectively.

obtained from 1995 and the projected 2005 stock of physical capital. Projections of the stock of physical capital were calculated using the Harberger-type perpetual inventory method, that is, by adding investment net of depreciation to update the capital stock in each year. Data for initial physical capital stock for 1995 as well as annual forecasts of gross domestic investment were obtained from the World Bank.

As is evident from Table 9, the rate of growth in the workforce in China is projected to slightly outpace the growth of the population over the projection period, although not greatly because much of the demographic dividend (Bloom and Williamson 1998) resulting from the sharp decline in the Chinese birthrate has now passed. Most important for the growth and structure of the economy are the very high projected growth rates for skilled labor and for physical capital. This augmentation of physical and human capital can be expected to have profound implications for growth and structural change. There is some uncertainty regarding the estimated growth rate for skilled workers, and this element of the projection may require revisiting.

Under the baseline scenario, tariff rates on all industrial products are held constant, and the MFA quotas are projected to grow at the rates determined in each country's agreements. Tariff rates on agricultural products are also held constant, in line with the move to tariffication in the Uruguay Round. Since the MFA quota growth rates for WTO members are subject to quota growth rate acceleration (WTO 1994a), but those for nonmembers such as China are not, the MFA quota growth rates become an increasing burden for China in the absence of WTO accession.

The implications of China's liberalization due to accession and its growth till 2005 are show in Tables 10 through 14. These results provide the basis for a number of interesting conclusions. The first one is the rapid growth in China's shares of world output and exports even in the absence of WTO accession. Without accession, China's share of world output is projected to increase between 1995 and 2005 from 3.38 to 5.26 percent, and its share of exports from 3.71 to 4.78 percent. While the accession offer has almost no impact on the share of output, it has an enormous impact on the share of trade.

With the implementation of the accession offer, China's share of world export markets rises to 6.76 percent, and of world import markets, to 6.61 percent.

At the sectoral level, the most important impact of accession is on China's output of apparel. Production of apparel rises by 263.5 percent over the ten year period, compared to 57 percent in the baseline (columns 2 and 3, Table 11), and results in an increase in China's share of world output of apparel from 8.84 percent in the baseline to 20.10 percent in the case of accession (columns 3 and 4, Table 10). This share rises dramatically because of the lifting of the burdens imposed by the MFA on China's exports, and by China's protection on the cost structure of the industry. China's apparel exports also increase dramatically rising by 375 percent over the decade, compared to 45 percent in the case of no accession, for the same reason (columns 4 and 5, Table 12). As a result China's share of world export markets for apparel also increases substantially, to over 47 percent. The expansion of the apparel sector stimulates input demand for imported textiles, which increase by 272 percent by 2005.

The automobiles sector, and a number of high-tech sectors, experience very substantial increases in their exports under the accession scenario, as their costs are reduced following liberalization. Despite this increase in exports, the output of the automobiles sector contracts in the case of access, as protection to this sector falls dramatically as well. Table 8 shows that the average tariff on automobiles falls from 129 percent in the baseline to only 13.76 percent under accession.

The projection results suggest that between 1995 and 2005 the wages of unskilled workers in China are going to grow twice as fast as the wages of skilled workers. This is expected given China's growth of unskilled labor over the same period is 12 percent compared to 43 percent for skilled labor (Ahuja and Filmer, 1995). The expansion of the wearing apparel sector under accession is projected to increase demand for labor in China over the decade. Other big employers of both skilled and unskilled labor under accession include agriculture, extractive industries, electronics, and construction. The high-tech sectors among which petrochemicals and other manufactures, are projected to increase

demand for skilled labor only. The increase in demand for labor under accession translates into a slightly higher growth in wages under accession compared to the baseline (Table 11). It is likely that this slight strengthening of the market for labor would have favorable impacts on inequality and poverty, a result consistent with that of Wang and Fan (1998).

On the import side, China becomes a much bigger market for its trading partners following accession to the WTO. Despite the fact that China's protection of the agricultural sectors is assumed to remain largely unchanged, China increases its agricultural imports of oilseeds, meat, and various food products. This increase in the importance of agricultural imports reflects the strong shift in comparative advantage away from agriculture implied by the baseline growth scenario as shown in the last two columns of Table 12. This structural change is an outcome of successful economic development, and is a sign of improved food security of the population in the sense of people's ability to acquire the food they need. It is associated with growth in agricultural production (Tables 11) in addition to positive growth in agricultural imports and a decline in agricultural exports (Table 11).

Table 14 compares the regional welfare change due to China's accession to the WTO computed with GTAP and with the new version of GTAP, which takes into account duty exemptions. Regional welfare changes due to the old offer computed with standard GTAP are displayed in the second column of Table 14. Welfare changes due to the new offer computed with the new version of GTAP are presented in the last column of Table 14. A comparison of columns 2 and 3 suggests that China's gains from joining the WTO will be magnified with the new offer. The additional gains are due to the further lowering of the trade distortions in China under the new offer which lead to improved efficiency of the Chinese economy and increased investment flow into the region under the new offer. The welfare results also suggest that the industrialized economies will benefit, while most developing countries competing with China in third markets will lose from China's accession to the WTO. These results will deepen under the new offer. Overall, total world welfare increases due to the increased openness of China's economy.

Conclusions

The trade reforms associated with China's accession to WTO are part of a long term movement to greater openness and integration into the world economy. Their full effects can only be understood if they are considered in the context of China's existing trade policies, and particularly the important duty exemptions provided for processing trade.

China has committed to make substantial reductions in the tariffs applying on manufactures trade—a set of reductions that we estimate will reduce the weighted average tariffs applied on these products from 24 percent in 1997 to 7 percent after the accession commitments are fully phased in. In agriculture, it is much more difficult to ascertain the extent of any liberalization because of our limited knowledge about current protection rates, and the complex nature of protection under the Tariff Rate Quota system for some major commodities. In contrast with other studies, such as Fan and Li (2000), we conclude that there little short-run liberalization of agriculture will be required, but we feel that much more work is needed before any confidence could be placed in this conclusion. In the longer run, however, we think it likely that accession will help China retain an efficient agricultural sector. Another important aspect of liberalization will be the phase-out of the MFA quotas that have hampered China's textile and clothing sector.

Our simulation analysis is conducted in the context of the rapid growth and structural change in the Chinese economy. We find that accession has a very strong impact on China's trade growth but, because we have not included an endogenous growth linkage between openness and growth, a much smaller impact on its shares of output. With accession, China's share of world exports rises from 3.7 percent in 1995 to over 6.8 percent. While accession has a large impact on China's export shares, its effect is smaller than it was in earlier analyses where we had omitted the effects of duty exemption schemes in the base. The duty exemptions represent partial liberalization, and the fact that this is in the base needs to be taken into account.

At the sectoral level, the most important impact of accession is on the apparel market, where China increases its share of world export markets to 47 percent. While enormous, this is much smaller than estimates obtained previously without taking the implications of tariff exemptions into account. The automobile sector becomes much more efficient and export oriented following a dramatic fall in its protection.

In our analysis, accession appears to have favorable impacts on the demand for both skilled and unskilled labor. This follows from the expansion of labor intensive sectors such as clothing, modest expansions in some labor-intensive agricultural sectors such as meat production. While our model includes only a single, representative household, the increase in the relative demand for unskilled labor seems likely to have favorable poverty impacts. Due to further lowering of the trade distortions under the new offer, China's gains from joining the WTO will be magnified as a results of the improved efficiency of the Chinese economy and increased investment flow into the region.

Our results provide some important findings about the likely response of the Chinese economy to accession but, at the same time, highlight a number of areas in which our ignorance is profound, and more research is needed if appropriate policy responses are to be adopted. One of these areas is clearly agricultural trade, where our lack of knowledge about the base level of agricultural protection creates uncertainty about whether accession will have a substantial liberalizing effect. Another is clearly the abolition of the textile quotas, whose impacts are likely to be enormous, but for which we rely on very dated estimates of protection. A third is the automobile sector, which will clearly undergo wrenching changes during its transition to becoming a much more efficient and export-oriented sector. It is also clear that the contingent protection measures included in the agreement will require careful analysis and policy responses if they are not to greatly hinder China's integration into the world economy.

Table 10. Output, Exports and Imports as a Share of the World Economy									
	Output			*Exports*			*Imports*		
	1995	*2005*		*1995*	*2005*		*1995*	*2005*	
		Without	*With*		*Without*	*With*		*Without*	*With*
		Accession	*Accession*		*Accession*	*Accession*		*Accession*	*Accession*
Foodgrains	14.29	19.59	19.39	0.30	0.06	0.06	6.45	16.35	16.02
Feedgrains	8.33	10.55	10.43	0.72	0.12	0.12	3.20	9.18	9.13
Oilseeds	5.13	6.22	6.34	4.05	0.76	0.70	1.15	3.94	4.04
Meat & livestock	6.70	11.62	12.12	3.51	0.51	0.46	2.02	8.88	9.63
Dairy	0.75	1.34	1.42	0.08	0.03	0.02	0.17	0.61	0.62
Other agriculture	10.58	15.65	15.42	2.32	0.36	0.35	2.74	9.62	9.80
Other food	2.27	3.15	3.15	2.61	1.21	1.27	3.10	6.39	6.15
Beverages/tobacco	4.89	7.02	4.37	2.42	1.03	0.99	0.89	1.29	16.24
Extractive industries	8.07	12.29	11.88	1.69	0.12	0.14	1.55	9.09	8.50
Textiles	10.79	13.88	14.16	8.43	8.84	10.60	13.35	17.96	25.47
Wearing apparel	7.02	8.84	20.10	19.58	18.54	47.14	1.04	1.09	3.69
Wood & paper	2.41	3.67	3.35	2.19	2.59	3.00	2.57	3.86	4.64
Petrochemicals	5.00	7.57	7.06	2.56	3.06	3.42	4.02	5.76	6.33
Metals	5.45	8.99	8.40	3.38	5.47	6.48	4.23	5.77	6.62
Automobiles	1.91	3.76	1.10	0.13	0.69	2.16	1.95	1.81	4.83
Electronics	2.63	4.53	4.81	4.97	7.79	9.79	3.57	5.25	5.72
Other manufactures	6.40	10.41	9.81	5.49	8.05	9.86	4.23	5.89	7.45
Utilities	2.69	3.90	3.79	5.82	6.70	7.51	1.20	1.73	1.46
Trade/transport	2.55	3.73	3.69	1.70	2.79	3.07	2.03	2.41	2.19
Construction	3.29	6.22	6.07	0.00	0.00	0.00	1.82	2.81	2.69
Business/finance	0.89	1.34	1.31	1.92	2.50	2.68	1.49	1.95	1.82
Govt services	1.58	2.37	2.34	1.01	0.62	0.65	0.72	1.31	1.22
Total	3.38	5.26	5.13	3.71	4.78	6.76	3.36	5.34	6.61

Table 11. China's Output, Employment and Wages (percentage change between 1995 and 2005)						
	Output		*Employment of Skilled Labor*		*Employment of Unskilled Labor*	
	Without Accession	*With Accession*	*Without Accession*	*With Accession*	*Without Accession*	*With Accession*
Foodgrains	46.3	44.5	30.1	28.5	19.4	17.9
Feedgrains	28.9	26.9	14.4	12.6	7.2	5.5
Oilseeds	32.4	32.3	17.7	17.7	10.3	10.2
Meat & livestock	75.0	81.3	63.0	69.8	41.5	47.3
Dairy	74.9	84.4	60.6	70.5	35.0	43.2
Other agriculture	53.2	50.0	37.2	34.3	28.6	25.8
Other food	50.5	51.8	-11.0	-10.7	-34.5	-34.3
Beverages/tobacco	80.7	13.8	2.2	-36.1	-24.8	-53.0
Extractive industries	61.9	60.2	63.7	60.8	54.9	52.2
Textiles	71.6	88.0	6.2	15.5	-24.8	-18.3
Wearing apparel	57.0	263.5	2.4	134.4	-27.5	65.9
Wood & paper	103.6	93.9	27.8	20.9	-9.5	-14.5
Petrochemicals	105.8	98.6	14.8	10.0	-18.7	-22.2
Metals	135.7	126.2	30.5	24.3	-7.6	-12.0
Automobiles	189.6	-3.8	53.1	-51.2	8.4	-65.5
Electronics	142.5	169.1	38.2	52.1	-2.2	7.6
Other manufactures	131.7	125.5	45.0	40.1	2.7	-0.8
Utilities	103.2	101.2	0.4	-1.5	-28.9	-30.3
Trade/transport	110.9	114.4	0.8	1.3	-36.4	-36.1
Construction	147.9	149.0	119.7	119.9	49.7	49.7
Business/finance	104.6	105.1	26.4	25.9	-10.5	-10.9
Govt services	85.0	85.9	56.3	56.6	10.7	10.8
Wages	N/A	N/A	39.2	42.2	83.0	87.1

Table 12. China's Trade by Commodity and Composition of Value Added (percentage changes between 1995 and 2005)						
	Imports (cif weights)		*Exports (fob weights)*		*Composition of Value Added*	
	Without Accession	*With Accession*	*Without Accession*	*With Accession*	*Without Accession*	*With Accession*
Foodgrains	240.4	233.9	-76.9	-77.9	-26.1	-29.5
Feedgrains	263.5	260.5	-81.7	-82.8	-34.9	-38.1
Oilseeds	321.2	331.7	-82.0	-83.6	-33.1	-35.4
Meat & livestock	451.7	507.3	-85.5	-86.8	-11.6	-11.5
Dairy	318.1	324.2	-70.0	-71.9	-11.6	-10.0
Other agriculture	352.1	363.6	-84.8	-85.4	-22.6	-26.8
Other food	154.1	144.7	-48.8	-46.2	-24.0	-25.9
Beverages/tobacco	148.4	6718.5	-25.4	-14.9	-8.7	-44.5
Extractive industries	719.9	681.6	-92.6	-90.9	-18.2	-21.8
Textiles	86.8	271.9	44.5	106.8	-13.3	-8.3
Wearing apparel	57.9	818.1	45.3	374.8	-20.6	77.4
Wood & paper	105.0	184.3	63.0	96.8	2.9	-5.4
Petrochemicals	96.3	140.7	64.8	90.6	4.0	-3.1
Metals	88.0	138.9	134.2	190.1	19.1	10.4
Automobiles	24.7	550.7	647.8	2522.6	46.3	-53.0
Electronics	101.4	146.6	125.9	194.9	22.5	31.3
Other manufactures	95.2	186.6	113.5	175.6	17.1	10.1
Utilities	95.0	64.5	57.2	79.7	2.7	-1.8
Trade/transport	63.4	46.7	113.0	133.5	6.6	4.6
Construction	101.2	92.7	5.6	20.2	25.3	21.5
Business/finance	75.2	63.3	82.4	98.5	3.4	0.1
Govt services	156.8	140.4	-20.5	-15.9	-6.5	-9.3

Table 13. Trade by Region (percentage changes between 1995 and 2005)				
	Imports		*Exports*	
	Without Accession	*With Accession*	*Without Accession*	*With Accession*
North America	44.6	46.6	39.7	40.9
Western Europe	26.5	27.1	28.0	28.3
Australia and New Zealand	35.7	36.2	43.4	43.5
Japan	30.9	34.4	30.5	32.1
China	123.5	211.8	79.5	170.7
Taiwan	71.7	92.6	69.7	86.3
Other NICs	49.9	53.8	45.8	48.9
Indonesia	23.8	23.8	41.5	41.0
Other Southeast Asia	36.8	36.9	45.4	45.1
India	132.1	118.2	147.7	131.8
Other South Asia	119.0	115.7	195.2	192.2
Brazil	29.1	29.2	52.5	51.9
Other Latin America	34.3	34.2	44.3	43.9
Turkey	52.9	51.3	57.7	55.8
Other Middle East & North Africa	31.2	30.9	41.2	40.9
Economies in Transition	28.3	27.8	31.2	30.7
South African Customs Union	26.7	27.0	34.8	34.9
Other Sub-Saharan Africa	44.7	44.4	59.5	59.1
Rest of World	60.9	60.2	64.1	62.9

Table 14. Welfare Change due to China's Accession to the WTO in 2005 ($US Millions)		
	Old Offer	*New Offer*
North America	7551	9455
Western Europe	6249	7114
Australia and New Zealand	199	216
Japan	2354	2920
China	24430	28622
Taiwan	3654	5191
Other NICs	3315	7819
Indonesia	-96	-171
Other Southeast Asia	-304	-378
India	-2872	-3190
Other South Asia	-728	-773
Brazil	27	-31
Other Latin America	33	88
Turkey	-181	-200
Other Middle East & North Africa	-80	-160
Economies in Transition	-145	-245
South African Customs Union	61	80
Other Sub-Saharan Africa	-25	-3
Rest of World	-259	-276
Total	43182	56078

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