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Costs of Protection in China

Summary of Results

This chapter reports the static benefits of trade liberalization and the accompanying adjustment costs for 25 highly protected goods in China. We do not attempt to measure the dynamic benefits—higher domestic productivity, more variety of goods and services, and more competition. However, these additional dynamic benefits are at least as large as the static gains calculated here and possibly much larger. Appendix E gives illustrative calculations for just one dynamic benefit—more competitive markets.

We examine 25 highly protected goods that are imported in large quantities and highly protected to estimate the costs of protection in China. We then make rough estimates of the total of tariff and nontariff barriers for these 25 goods by calculating the difference between the CIF (cost, insurance, and freight) price of imported goods and the wholesale landed price of imported goods in the protected domestic market. We obtain an estimate of the tariff equivalent of the nontariff barrier by subtracting the estimated tariff rate from the total calculated barrier (see appendix B for the details of this calculation).

We estimate that, for 1994, China's consumer surplus loss from trade protection for these 25 goods totaled $35 billion, which suggests that liberalizing trade for these 25 products would create a significant consumer surplus gain. That gain would be about 6.2 percent of GNP using

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nominal exchange rates.[1] Put another way, trade protection saves jobs at an average annual cost of $3,132 per job for these 25 highly protected goods. By comparison, average annual per capita income in 1994 was about $774 (*China Statistical Yearbook* 1997). Assuming one worker per family of four, that suggests average wages of about $3,100, about the same as the cost of protection per job. Further estimates indicate that the potential consumer surplus gain from eliminating tariffs and nontariff barriers on all goods, not just on the 25 goods that are the focus of this study, would be about $78 billion, or roughly 14 percent of China's nominal GNP. We have not attempted to estimate the cost to the economy and to consumers of preserving jobs, but the figure is probably about the same as for the highly protected sectors.

The basic calculations for the highly protected sectors are summarized in table 3.1. This table indicates that in 1994 the sum of the weighted averages of tariff and nontariff barriers for the 25 selected products was 43.8 percent (the tariff rate averaged 21.7 percent, while the average tariff equivalent of nontariff barriers was 22.1 percent). Imports were 36.3 percent of the sum of imports (landed value) and similar domestically produced goods (this sum being about $179 billion).

It is worth comparing these figures with similar estimates derived in previous studies for Japan, the United States, and South Korea.

Japan. In 1989, tariff and nontariff barriers averaged 178 percent for highly protected industries—food and beverages, textiles, metal products, chemical products, and mechanical products. Of this amount, tariffs averaged only 5 percent, while nontariff barriers averaged a tariff equivalent of 173 percent. The standard deviation of protection within these industries was 4.9 for tariff and 81.7 for nontariff barriers. The Japanese import ratio for the highly protected products was 12 percent (the sum of imports and domestically produced products being $442 billion).

United States. In 1990, the estimated protection in the United States for 21 highly protected products was 35 percent, with tariffs accounting for 16 percentage points and nontariff barriers accounting for 19 percentage points of this protection. The standard deviation of protection within these industries was 23 percent. The US import ratio was about 21 percent (the sum of imports and domestic goods being $260 billion).

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1. To measure Chinese GNP in dollars, we use a nominal exchange rate of 8.6 yuan/dollar throughout this book. In China, the difference between market exchange rates and purchasing-power exchange rates is significant. According to World Bank estimates (World Bank 1996), at purchasing-power exchange rates, China's 1994 GNP was about $3,012 billion. At market exchange rates, China's 1994 GNP was $552 billion. Using a purchasing-power calculation, the consumer surplus gain from liberalizing these 25 sectors is about 1.2 percent of GNP.

South Korea. In 1994, the estimated height of trade barriers was 38.6 percent for all tradable goods, with tariffs accounting for 7.9 percentage points. For agricultural products, the average estimated trade barrier was 160 percent, with tariffs accounting for 17 percentage points. The standard deviation of protection for all industries was 15 percent. The South Korean import rate was 3.8 percent (the sum of imports and domestic goods being $384 billion).

These comparisons suggest that the overall height of barriers for highly protected industries in China is lower than in Japan, about the same in South Korea, and higher than in the United States. Unlike Japan and South Korea, in China tariff and nontariff barriers are about the same height. This indicates that changes in the trading system and regulations alone, without tariff reductions, could lower the level of protection in China. In addition, China's import ratio for the selected goods is the highest among these four countries, which indicates that China depends more heavily on the world market for the goods that it protects the most. Our calculation shows lower Chinese trade protection than popular wisdom suggests. Chapter 4 discusses the possible reasons for this result.

Trade liberalization would have a significant impact on the Chinese economy. Liberalizing the 25 highly protected sectors would lower the Chinese index of landed prices for imported goods to an average of 0.68, compared with 1.00 before liberalization. Furthermore, the CIF value of imports would increase by 37.6 percent. The price index for comparable domestic goods would fall to an average of 0.90 compared to 1.00 before liberalization, and the value of domestic production would decrease by 34 percent. These changes would raise the import ratio (measured in current values) from 36 to 56 percent.

By comparison, similar trade liberalization in Japan would raise the import ratio (again measured in current values) from 11 to 14 percent; in the United States, the import ratio would rise from 21 to 25 percent. This comparison suggests that total liberalization would exert a greater impact on China's economy than on the other two countries.

It is worth comparing the consumer-surplus ratio for China with that of Japan and the United States to measure the benefit of liberalization in different countries. According to our calculations of this ratio, which is the increase in consumer surplus resulting from liberalization divided by total domestic production and the landed value of imports before liberalization, China has a ratio of 19.5 percent, Japan a ratio of 25 percent, and the United States a ratio of 13 percent. Thus, in terms of the consumer surplus ratio, China would gain more from liberalization than would the United States, but less than would Japan.

Selection of Goods

We used three criteria to select goods for this study: import volume (greater than $10 million in 1994), tariff rates (greater than 7 percent in

Table 3.1 Domestic production, landed value of imports, tariff and nontariff barriers, import ratio, 1994

Product category[a]	Domestic production[b] (millions of dollars)	Imported value (millions of dollars)			Trade barriers (percentages)			Import ratio[h] (percentage)
		CIF value	CIF value plus taxes[c]	Landed value[d]	Total[e]	Tariff[f]	Nontariff[g]	
Food								
Sugar	2,492	404	473	1,141	141.4	30.0	111.4	31.4
Wheat	16,165	949	1,072	1,849	72.4	0.0	72.4	10.3
Rapeseed oil	2,107	363	410	876	113.6	25.0	88.6	29.4
Beverages								
Soft drinks	1,445	35	41	84	105.6	65.0	40.6	5.5
Inedible raw materials								
Plywood	1,065	970	1,135	1,658	46.1	20.0	26.1	60.9
Wool and wool tops	375	1,040	1,217	1,450	19.2	15.0	4.2	79.5
Synthetic fiber (artificially produced)	3,538	1,137	1,330	1,623	22.0	15.0	7.0	31.4
Crude oil	12,639	1,849	2,163	2,557	18.2	1.5	16.7	16.8
Natural rubber	411	396	463	662	42.9	30.0	12.9	61.7
Synthetic rubber (artificially produced)	198	263	308	440	42.9	30.0	12.9	69.0
Fossil-fuel products								
Gasoline	6,408	1,305	1,728	2,155	24.7	6.0	18.7	25.2
Diesel fuel	6,379	235	289	391	35.2	9.0	26.2	5.8
Chemicals								
Ammonium phosphate	33	763	862	1,486	72.4	0.0	72.4	97.8
Plastics (chemically produced)	3,179	5,536	6,477	8,867	36.9	25.0	11.9	73.6

Manufactured goods								
Rolled-steel final products	32,577	14,459	16,917	23,481	38.8	15.0	23.8	41.9
Copper and copper products	3,220	713	834	978	17.2	10.0	7.2	23.3
Aluminum and aluminum products	3,462	369	432	550	27.5	18.0	9.5	13.7
Transportation equipment								
Motorcycles	3,761	571	742	1,716	131.2	120.0	11.2	31.3
Autos (sedans)	4,861	674	1,577	3,694	134.2	110.0	24.2	43.2
Miscellaneous manufactured goods								
Color televisions	4332	383	448	531	18.6	0.0	18.6	10.9
Videocassette recorders	741	533	624	962	54.3	8.0	46.3	56.5
Air conditioners	1,939	948	1,109	2,270	104.7	90.0	14.7	53.9
Microcomputers	207	371	434	490	13.0	7.0	6.0	70.3
Color tubes	1,474	689	806	1,077	33.6	15.0	18.6	42.2
Program-controlled switchboards	1,215	2,867	3,354	4,058	21.0	12.0	9.0	77.0
Total/average	**114,224**	**37,822**	**45,247**	**65,049**	**43.8**	**21.7**	**22.1**	**36.3**

Note: Columns may not sum because of rounding.

a. Because the National Bureau of Statistics and China Customs define goods in different ways, we made ad hoc adjustment to compare imports with domestic goods. For example, autos (sedans) are defined as cars with an engine size under 5,000cc, and copper and copper products and aluminum and aluminum products each combine two goods categories.
b. Domestic production values are converted to the dollars using the average foreign exchange in 1994, 8.6 yuan/dollar.
c. Taxes refers to the domestic taxes, including value-added and consumption taxes.
d. Landed values reflect trade barriers and taxes, including tariffs, tariff equivalents, value-added taxes, consumption taxes. The values are calculated by multiplying the quantity of imports by the estimated wholesale price in the domestic markets. Wholesale prices of imported goods were obtained from a survey of trading companies and government authorities.
e. The total trade barrier is defined as the percentage markup that must be added to the CIF price plus value-added and consumption taxes to be equal to the wholesale price of imported goods in the domestic market.
f. As of 1994, the Chinese tariff system was highly complex, and few collected statistics about tariff revenue by product were available. Hence, the tariff rates (t) are calculated starting with statutory tariff rates and making adjustment for provisional tariff rates, reductions, exemptions, preferential foreign exchange rates, etc.
g. The nontariff barrier (n) is defined as the difference between the total trade barrier and the tariff rates.
h. The import ratio is defined as the ratio of the landed value of imports to the sum of the landed value of imports and domestic production.

Sources: National Bureau of Statistics, *Yearbook of China Customs*, and *Statistics Bulletin of China Customs*.

1994), and data availability. The 25 selected products represent 30 percent of China's total merchandise imports in CIF value. Moreover, the production of corresponding domestic substitutes accounts for nearly 35 percent of Chinese industrial- and agricultural-sector GNP in exfactory price terms.

Each product selected had been subject to a tariff of at least 7 percent or to an equivalent nontariff barrier. This criterion was applied because, as part of its policy of gradual liberalization, China has stipulated a temporary tariff of 7 percent for selected sectors while maintaining the statutory tariff rate. As mentioned, the 25 products selected have a weighted average tariff rate of 21.7 percent and a weighted average tariff equivalent of nontariff barriers of 22.1 percent (with the sum of the two being 43.8 percent).

The available data for domestic production and imports should be comparable and the nature of domestic and imported products similar. China's statistical data collection system is still in its infancy; therefore, some data sets are not comparable with others. In this study, difficulty arose because classifications are not equivalent. For domestic goods, China's National Statistics adopts the Standard Industrial Trade Classification (SITC) system; for imported goods, the customs statistics uses the Harmonized Commodity Description and Coding System (HS).

Several imported goods were excluded from the study because they have no domestic substitutes (e.g., palm oil in bulk) or the data for the domestic counterpart were not available (e.g., potassium chloride). Furthermore, some imported capital goods differed greatly in quality from their domestic substitutes so that they are incomparable and are not included (e.g., injection molding machines). The selection of products was designed to ensure that selected products are not only imported but also produced domestically.

Estimating the Degree of Protection in China

Conceptually, protection is represented in this study as tariffs plus the tariff equivalent of nontariff barriers ($t + n$). We surveyed China's trading companies and searched through price and volume data on imported goods to obtain rough estimates of the difference between the wholesale landed price of each imported good in the protected domestic market and its CIF price before any markup for tariffs or nontariff barriers. We then used this difference to derive $t + n$.[2] Before examining our estimates

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2. By contrast, Sazanami, Urata, and Kawai (1995) estimate the degree of protection in Japan by comparing the exfactory price of domestic products and the CIF price of imported products.

Table 3.2 Summary of surveyed trading firms

Sector	Number of firms surveyed	Markup factor "K"[a]	Landed to CIF price ratio[b]
Food and live animals			
Sugar	3	14.0	1.63
Wheat	4	10.0	1.16
Rapeseed oil	4	14.0	1.63
Beverage and tobacco			
Soft drinks	15	20.7	2.41
Crude materials, inedible			
Plywood	8	14.7	1.71
Wool and wool tops	5	12.0	1.40
Synthetic fiber	20	12.3	1.43
Crude oil	5	11.9	1.38
Natural rubber	8	14.4	1.67
Synthetic rubber	10	14.4	1.67
Mineral fuels, lubricants and related materials			
Gasoline	4	14.3	1.66
Diesel oil	4	14.3	1.66
Chemicals			
Ammonium phosphate	5	10.0	1.16
Plastics	25	13.8	1.60
Manufactured goods			
Rolled-steel final products	5	14.0	1.63
Copper and copper products	5	11.8	1.37
Aluminum and aluminum products	5	12.8	1.49
Machinery and transport equipment			
Motorcycles	5	25.8	3.00
Autos (sedans)	8	25.6	2.98
Miscellaneous manufactured goods			
Color televisions	15	11.9	1.38
Videocassette recorders	10	15.5	1.80
Air conditioners	22	20.6	2.40
Microcomputers	25	11.4	1.33
Color tubes	4	13.4	1.56
Program-controlled switchboards	3	12.2	1.42
Simple average	**9.1**	**14.6**	**1.70**

Note: A total of 227 firms were surveyed, including 84 in Beijing, 32 in Guangdong, 25 in Hebei, 18 in Henan, 6 in Hubei, 30 in Jiangsu, 8 in Shaanxi, and 24 in Sichuan.

a. The markup factor "K" is the ratio of the landed price of imported goods in the product category (in yuan) and the CIF price of those goods (in dollars).
b. This price ratio is calculated based on the "K" values, with both prices in the same currency unit (8.6 yuan = 1 dollar). Note that some goods were imported at a preferential exchange rate of 5.4 yuan per dollar.

Box 3.1 Data correction for prices of imported goods

Chinese Customs Statistics provides data on CIF import prices. However, data on domestic wholesale prices of imported goods sold in the Chinese market are not readily available. A comparison of the CIF price and the domestic wholesale price for the same imported good is essential for calculating the magnitude of combined tariff and nontariff barriers. The method used to estimate domestic wholesale prices, including the effect of tariff and nontariff barriers, is explained in detail in appendix B. Briefly, we obtained figures on the markups that trading companies apply to the CIF price of each product category and used those markups to generate estimates of wholesale prices in the domestic market. The markup factors are denoted by "K" in appendix B and are equivalent to the ratio of the landed price of goods in yuan to the CIF price of goods in dollars. These factors were obtained from surveys of more than 200 trading companies located in different regions of China. When a product category contained items for which the markup factors were fairly similar (e.g., different grades of gasoline or diesel oil, or different models of color television sets), we asked the surveyed firms for an overall value of "K" for the product category. When a product category contained items with quite different markup factors (e.g., rolled-steel final products or plastics), we asked for the factors for the items that account for the bulk of imports. The factors for individual items were then weighted by the corresponding import values to obtain a "K" value for the product category. The resulting "K" values appear in table 3.2.

According to our survey, the markup factor "K" is 14.6 on average, which can be expressed by the following equation:

$$K = 14.6 = \frac{\text{Average landed price in yuan}}{\text{Average CIF price in dollars}}.$$

The exchange rate for most transactions was 8.6 yuan per $1.00. Therefore, as an intermediate step, we can calculate the ratio between the landed and CIF price in the same currency:

$$\frac{\text{Landed price in dollars}}{\text{CIF price in dollars}} = 14.3 \div 8.6 = 1.66.$$

This translates into an average markup of 66 percent:

$$\text{markup} = 1.66 - 1.00 = 66 \text{ percent.}$$

The markup factor is highest for motorcycles, with a K value of 25.8, reflecting a markup of 200 percent. The markup factors are lowest for wheat and ammonium phosphate, with K values of 10, and markups of 16 percent.

The underlying data do not allow us to estimate the price differentials between different regions of China. These differentials can be large, on account of internal barriers. The extent of internal barriers within China is beyond the scope of this study and is left for future research.

for $t + n$ (table 3.1) we should note several problems in pursuing this approach (see table 3.2 and box 3.1).

First, the wholesale landed price of imported goods in the protected domestic market often fluctuates greatly in response to market forces. In addition, it was impossible to obtain complete price data for the base year (1994). Hence, we focus on the price differentials of the most important variants of each of the 25 goods.

Second, it is difficult to distinguish between tariff and nontariff barriers. The Chinese customs authorities have not yet established a comprehensive database of tariff revenue on a good-by-good basis. Tariff and nontariff rates had to be estimated because only nominal tariff rates, but not actual

rates, were available. To estimate these tariff and nontariff rates, we mainly relied on statutory tariff rates and adjusted them for known changes, such as temporary tariff rates and tariff reductions or exemptions. For products with very few tariff reductions or exemptions (e.g., sedans and motorcycles), we applied the statutory tariff rate. For products with extensive tariff reductions or exemptions (e.g., color televisions), we assigned a zero tariff. After the tariff rate was determined, the remainder of $t + n$ was assumed to be the tariff equivalent of nontariff barriers.

Third, foreign exchange controls and exchange rate premiums are among China's major means of trade protection, and they must be taken into consideration. Adjustments were made for import goods that enjoyed "exchange rate protection" in 1994 (e.g., wheat, fertilizer, edible oils, and sugar). In 1994, the average unified exchange rate was 8.6 yuan/dollar, but the central government imported the listed products at an overvalued exchange rate of 5.8 yuan/dollar. The exchange rate premium on the four products has been interpreted as a tariff equivalent (see appendix B).[3]

Before the various yuan exchange rates were merged in January 1994, domestic enterprises were permitted to retain part of their foreign exchange earnings.[4] This system was abolished in January 1994, but unused foreign exchange quotas were still valid. The unused quotas could be used to purchase foreign currency and import products at an exchange rate of 5.8 yuan/dollar, the official rate when the system was abolished. Hence, in calculating $t + n$, we made corresponding adjustments for the use of foreign exchange quotas. We divided foreign exchange quotas, which were actually used to buy foreign currency to import goods, by the adjusted[5] value of the imported good to obtain the weight applied to the exchange rate of 5.8 yuan/dollar. The post-January 1994 unified exchange rate of 8.6 yuan/dollar was assigned a weight corresponding to the remaining adjusted imports. The weighted sum of the two exchange rates reveals the required conversion factor (i.e., the weighted average of the two exchange rates). This conversion factor reduces the unified exchange rate of 8.6 yuan/dollar in 1994 by 3.4 percent, to 8.3 yuan/dollar, which we use to calculate $t + n$.

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3. The premium is part of $t + n$, because the CIF price is calculated on the basis of 5.8 yuan/dollar to compare landed and CIF prices.

4. Before 1994, 80 percent of the foreign exchange earnings of domestic firms was retained in the form of exchange quotas and divided among the trading company, the producer, and the local government. These retained exchange quotas could be used to import goods in accordance with China's foreign exchange regulations, or they could be sold in the supplementary exchange market at a market exchange rate.

5. The adjustment excludes processing trade when calculating "adjusted total imports," because materials imported, processed, and then reexported do not involve an expenditure of foreign currency.

While attempting to establish own- and cross-price elasticities of demand and supply for imported and domestic goods, which are the fundamental parameters of our methodology, it quickly became clear that empirical work on Chinese elasticity parameters is in its infancy. Our survey of the existing literature turned up little useful information; therefore, we calculated the elasticity parameters required for this study by adopting the Almost Ideal Demand System (AIDS) (Deaton and Muellbauer 1980). This methodology required that we estimate five elasticity parameters: the own-price elasticity of demand for imported goods (Emm), the own-price elasticity of demand for domestic goods (Edd), the cross-price elasticity of demand for domestic goods with respect to the price of imported goods (Edm), the cross-price elasticity of demand for imported goods with respect to the price of domestic goods (Emd), and the own-price elasticity of supply of domestic goods (Es). The estimated elasticity parameters are presented in table 3.3 (appendix C shows how we made the calculation).

Change in Domestic and Import Prices and Quantities Following Liberalization

The data described in the preceding sections were used in the partial equilibrium model (described in appendix A) to solve the basic equations (equations A.6 to A.9). The solutions to the basic equations were used to estimate the equilibrium prices and quantities that would characterize the domestic and imported goods markets after liberalization. The results of this exercise are summarized in table 3.4.

Table 3.4 shows that, if these 25 goods were liberalized, the average domestic price index would fall to 0.90 (from 1.00). The value of domestic production of these goods would decline from a preliberalization level of $114.2 billion to $78.2 billion, a 31.5 percent fall (this figure differs from the figure in table 3.4 due to rounding). The decline in value comprises a decline in quantity of about two-thirds and an average price decline of about one-third. The drop in output would occur because cheaper imported goods would replace more expensive domestic goods. Obviously, there is no unanimity of opinion within China that such changes are desirable. However, trade liberalization promotes efficient resource utilization by compelling workers and capital to move to sectors where China has a comparative advantage.

As for imported goods after liberalization, the landed price index for imports would drop to 0.68 from 1.00, and the CIF value of imports would increase by approximately $30 billion. The landed value of imports would increase to a lesser extent because higher import volumes would be offset

Table 3.3 Elasticity parameters for partial equilibrium model

	Emm	Edd	Edm	Emd	Es
Food					
Sugar	−1.91	−3.59	2.75	2.75	2.66
Wheat	−0.26	−1.47	0.86	0.86	3.33
Rapeseed oil	−0.16	−0.96	0.56	0.56	1.59
Beverages					
Soft drinks	−1.43	−0.19	0.81	0.81	2.92
Inedible raw materials					
Plywood	−0.88	−1.40	1.14	1.14	2.28
Wool and wool tops	−1.51	−2.25	1.88	1.88	1.67
Synthetic fiber (artificially produced)	−1.01	−0.66	0.83	0.83	1.15
Crude oil	−2.24	−2.32	2.28	2.28	3.10
Natural rubber	−1.24	−0.47	0.85	0.85	1.43
Synthetic rubber (artificially produced)	−1.16	−0.81	0.98	0.98	1.38
Fossil-fuel products					
Gasoline	−2.67	−1.37	2.02	2.02	2.59
Diesel fuel	−0.64	−0.66	0.65	0.65	0.64
Chemicals					
Ammonium phosphate	−2.37	−0.60	1.48	1.48	2.26
Plastics (chemically produced)	−1.83	−2.96	2.39	2.39	2.74
Manufactured goods					
Rolled-steel final products	−2.36	−0.90	1.63	1.63	4.53
Copper and copper products	−1.83	−0.14	0.99	0.99	2.76
Aluminum and aluminum products	−2.39	−4.07	3.23	3.23	6.01
Machinery and transport equipment					
Motorcycles	−0.39	−0.37	0.38	0.38	1.15
Autos (sedans)	−0.10	−1.43	0.77	0.77	4.95
Miscellaneous manufactured goods					
Color televisions	−0.70	−0.49	0.59	0.59	2.49
Videocassette recorders	−0.81	−0.72	0.77	0.77	2.23
Air conditioners	−1.55	−1.64	1.60	1.60	2.16
Microcomputers	−1.04	−1.19	1.11	1.11	1.28
Color tubes	−1.32	−0.48	0.90	0.90	1.19
Program-controlled switchboards	−0.78	−2.06	1.42	1.42	3.40

Emm: own-price elasticity of demand for imported goods.
Edd: own-price elasticity of demand for domestic goods.
Edm: cross-price elasticity of demand for domestic goods with respect to price of imported goods.
Emd: cross-price elasticity of demand for imported goods with respect to price of domestic goods.
Es: own-price elasticity of supply for domestic goods.

Source: Authors' calculations based on the model devised by Deaton and Muellbauer (1980).

Table 3.4 Estimated domestic and landed import prices and values following liberalization

	Domestic goods				Imported goods									
			Percentage change in production		Price index		Imported value after liberalization[d] (millions of dollars)		Percentage change in value				Import ratio (percentage)	
									Without VAT and CT		With VAT and CT			
	Price index after liberalization[a]	Production value after liberalization (millions of dollars)	Value	Quantity	CIF price[b]	Landed price[c]	Without VAT and CT	With VAT and CT	CIF value	Landed value	CIF value	Landed value	Without VAT and CT	With VAT and CT
Food														
Sugar	0.68	603	−75.8	−64.3	1.00	0.41	876	2,115	85.4	−23.2	347.5	85.4	59.2	77.8
Wheat	0.91	10,575	−34.6	−27.8	1.00	0.58	1,135	1,957	5.9	−38.6	82.5	5.9	9.7	15.6
Rapeseed oil	0.85	1,369	−35.1	−23.3	1.00	0.47	422	901	2.8	−51.9	119.7	2.8	23.6	39.7
Beverages														
Soft drinks	0.83	694	−52.0	−42.1	1.00	0.49	98	202	140.0	16.8	393.3	140.0	12.4	22.5
Inedible raw materials														
Plywood	0.89	725	−32.0	−23.5	1.00	0.68	1,386	2,024	22.1	−16.4	78.3	22.1	65.7	73.6
Wool and wool tops	0.92	299	−20.1	−13.1	1.00	0.84	1,354	1,614	11.3	−6.7	32.6	11.3	81.9	84.4
Synthetic fiber	0.91	2,906	−17.9	−10.0	1.00	0.82	1,506	1,837	13.2	−7.2	38.1	13.2	34.1	38.7
Crude oil	0.93	9,474	−25.0	−19.6	1.00	0.85	2,679	3,167	23.8	4.8	46.4	23.8	22.0	25.1
Natural rubber	0.85	278	−32.3	−20.5	1.00	0.70	629	899	35.8	−4.9	94.0	35.8	69.3	76.4
Synthetic rubber	0.85	135	−31.6	−19.8	1.00	0.70	397	568	29.1	−9.7	84.6	29.1	74.6	80.8
Fossil-fuel products														
Gasoline	0.89	4,280	−33.2	−25.3	1.00	0.80	2481	3,094	43.5	15.1	79.0	43.5	36.7	42.0
Diesel fuel	0.86	4,981	−21.9	−9.2	1.00	0.74	318	430	10.0	−18.6	48.6	10.0	6.0	7.9
Chemicals														
Ammonium phosphate	0.75	13	−60.2	−47.2	1.00	0.58	2,059	3,549	138.8	38.5	311.6	138.8	99.4	99.6
Plastics	0.88	1,941	−38.9	−30.3	1.00	0.73	8,389	11,485	29.5	−5.4	77.3	29.5	81.2	85.5

Manufactured goods

Rolled-steel final products	0.91	18,910	−42.0	−36.0	1.00	0.72	31,238	43,358	84.7	33.0	156.3	84.7	62.3	69.6
Copper and copper products	0.95	2,629	−18.4	−13.9	1.00	0.85	1,058	1,240	26.8	8.2	48.6	26.8	28.7	32.0
Aluminum and aluminum products	0.93	2,007	−42.0	−37.3	1.00	0.78	600	765	38.9	9.0	77.2	38.9	23.0	27.6

Transportation equipment

Motorcycles	0.81	2,398	−36.2	−21.4	1.00	0.43	952	2,200	28.2	−44.6	196.4	28.2	28.4	47.8
Autos (sedans)	0.90	2,646	−45.6	−39.7	1.00	0.43	1,588	3,719	0.7	−57.0	135.8	0.7	37.5	58.4

Miscellaneous manufactured goods

Color televisions	0.97	3,846	−11.2	−8.1	1.00	0.84	495	587	10.5	−6.8	31.0	10.5	11.4	13.2
Videocassette recorders	0.89	515	−30.5	−22.2	1.00	0.65	814	1,255	30.5	−15.5	101.3	30.5	61.2	70.9
Air conditioners	0.74	749	−61.4	−47.8	1.00	0.49	2,088	4,274	88.2	−8.0	285.3	88.2	73.6	85.1
Microcomputers	0.95	182	−11.8	−6.8	1.00	0.88	463	524	6.8	−5.5	20.7	6.8	71.8	74.2
Color tubes	0.86	1,046	−29.0	−17.0	1.00	0.75	1,027	1,372	27.4	−4.6	70.2	27.4	49.5	56.7
Program-controlled switchboards	0.95	977	−19.6	−15.5	1.00	0.83	3,626	4,387	8.1	−10.7	30.8	8.1	78.8	81.8
Total /average	**0.90**	**78,178**	**−34.3**	**−26.9**	**1.00**	**0.68**	**67,677**	**97,523**	**37.7**	**−8.4**	**119.5**	**37.7**	**48.1**	**55.5**

VAT = Value-added tax.

CT = Consumption tax.

CIF = Cost, insurance, and freight.

a. The domestic price before liberalization is indexed to 1.00.

b. The CIF price index remains unchanged because of the small-country assumption.

c. The landed value before liberalization is indexed to 1.00.

d. After liberalization, import values are calculated with and without VAT and CT.

Source: Authors' calculations using the partial equilibrium model explained in appendix A.

by lower landed prices.[6] Increased demand for imports and decreased demand for domestic goods would raise the import ratio from 36 to 56 percent for the highly protected industries studied here.

Many Chinese observers question whether increased imports would benefit the average Chinese firm. Primary resources accounted for 14.2 percent of total imported goods in 1994, while manufactured products (mainly capital goods and intermediate goods) accounted for 85.8 percent of the total. The benefit of liberalization to the average Chinese firm derives from cheaper primary resources, capital goods, and intermediates, which could be imported through the international market. These goods would enable a firm to improve its technology and decrease its production costs. However, infant firms with promising potential that cannot yet produce goods to compete with imports may be crushed before they mature. This purported benefit of strategic protection has become an important issue within Chinese policy circles.

Welfare Effects of Liberalization

Table 3.5 shows that, following liberalization, the consumer-surplus gain would total $35 billion, with the consumer-surplus ratio being 19.5 percent (the total consumer-surplus gain divided by the sum of domestic production and the landed value of imports before liberalization). The loss of producer surplus accounts for $10.1 billion, about 29 percent, of the total consumer surplus gain; the loss of government tariff revenue and quota rents accounts for $19.8 billion, about 57 percent of the gain; and the national efficiency gain accounts for $5 billion, about 14 percent of the gain. Note that the efficiency gain figure includes only static benefits and does not reflect dynamic benefits, which are probably much larger.

One point that deserves mention is that the estimated loss of government tariff revenue, 84 billion yuan ($9.8 billion) on 25 import products, is much higher than the actual tariff revenue collected in 1994, 27.3 billion yuan ($3.2 billion) on all imports. Evidently, in estimating $t + n$ for each of the 25 imports, the effect of tariff reductions/exemptions is underestimated due to inadequate data on a good-by-good basis. As a result, the tariff revenue loss is overestimated, while the corresponding quota rent loss is underestimated. This does not affect the overall estimate of the degree and the cost of protection in China. It does mean, however, that more of the burden of liberalization would be absorbed by the privileged firms and individuals that control import rights.

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6. After liberalization, the CIF value and the landed value of imports are assumed to be the same.

Table 3.5   Estimated welfare effects of liberalizing 25 sectors in 1994[a] (millions of dollars, except where noted)

	Consumer surplus gain (a+b+c+d)	Producer surplus loss (a)	Tariff revenue loss (b)	Quota rent loss (c)	Total efficiency gain (d)	Consumer surplus ratio[b] (percentages)
Food						
Sugar	1,497	543	142	527	285	41.2
Wheat	2,099	1,299	0	776	23	11.7
Rapeseed oil	759	286	103	363	7	25.4
Beverages						
Soft drinks	268	195	27	17	30	17.5
Inedible raw materials						
Plywood	685	104	227	296	58	25.2
Wool and wool tops	275	28	183	51	13	15.1
Synthetic fiber	606	294	200	93	19	11.7
Crude oil	1,214	773	32	361	47	8.0
Natural rubber	289	55	139	60	36	26.9
Synthetic rubber	178	26	92	40	19	27.9
Fossil-fuel products						
Gasoline	1,116	596	104	323	93	13.0
Diesel fuel	959	852	26	76	5	14.2
Chemicals						
Ammonium phosphate	1,064	6	0	624	433	70.0
Plastics	3,076	333	1,619	771	353	25.5
Manufactured goods						
Rolled-steel final products	11,845	2,503	2,538	4,026	2,778	21.1
Copper and copper products	320	157	83	60	19	7.6
Aluminum and aluminum products	352	211	78	41	23	8.8
Transportation equipment						
Motorcycles	1,746	635	891	83	137	31.9
Autos (sedans)	2,502	378	1,735	382	7	29.2
Miscellaneous manufactured goods						
Color televisions	227	139	0	83	4	4.7
Videocassette recorders	460	70	50	289	52	27.0
Air conditioners	2,057	383	998	163	512	48.9
Microcomputers	69	11	30	26	2	9.9
Color tubes	503	195	121	150	37	19.7
Program-controlled switchboards	787	54	402	302	29	14.9
Total/average	**34,954**	**10,130**	**9,819**	**9,983**	**5,022**	**19.5**

a. The welfare effect in this table correspondsto the areas delineated in figure A.1.

b. The consumer surplus ratio is the consumer surplus gain divided by the total of domestic production and the landed value of imports before liberalization.

Source: Authors' calculations, based on the data in tables 2.1, 3.1, and 3.2. Methodology is summarized in appendix A.

The Effect of Liberalization on Employment

Reduced employment in the protected industries would be one of the major drawbacks of liberalization. The estimated impact of full liberalization on employment is reported in table 3.6. We assume that the number of jobs in the protected industries would drop by the same percentage as does the quantity of domestic output.[7] This translates into job losses of about 11.2 million, about 26.9 percent of employment in affected industries, from total liberalization. Meanwhile, without liberalization, each job retained in the protected industries costs consumers an average of $3,132 annually and creates an average efficiency dead weight loss of $450.

A glance at table 3.6 reveals that potential job losses in wheat are a big part of the story, perhaps about 70 percent of total losses. In fact, about 85 percent of total losses appear to occur in the agricultural sector, which includes sugar, rapeseed oil, and wheat. China's agricultural sector harbors surplus labor that accounts for vast implicit unemployment. Wang Chen (1996) estimated that the rural labor force in China was 446 million in 1994 and total employment was about 308 million. This leaves implicit unemployment, or surplus labor, of 138 million, about 31 percent of the total rural labor force. Potential job losses in the agricultural sector, which would add to this huge implicit unemployment, help to explain why the government is reluctant to liberalize trade in cereals and other basic crops.

Our estimation shows that 1.7 million jobs are potentially eliminated in the industrial sector for the 22 goods studied (15 percent of total losses for all 25 goods). Furthermore, because the 22 industrial goods that we study are estimated to account for between one-third and one-half of all industrial production, we estimate that the total number of industrial workers dislocated from liberalization would be about 3.5 to 5.0 million. The total number of industrial labor losses is likely to be overstated, however, because the calculations do not reflect dynamic benefits. In fact, if dynamic benefits were included, the calculations would probably show that trade liberalization increases domestic production in several sectors. (See appendix E for more analysis of dynamic gains.) Domestic production of ammonium phosphate, wool and wool tops, and synthetic fiber would increase by about 40 percent because of liberalization. Using the same method, employment in these sectors might be expected to increase from about 1.0 million to about 1.4 million.

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7. Because the value of domestic production falls by much more than the quantity, we are implicitly assuming that the drop in the price of domestic output is absorbed by lower rents and returns to capital or by lower wages, but not by still greater cuts in the number of workers. If firms responded to falling prices by using labor more efficiently, the supply curve would shift downward and domestic output would fall by less. This kind of dynamic response is certainly possible, but it is not captured in the static methodology used in this book.

Table 3.6 Estimated effect of liberalization on employment in 1994

	Employment before liberalization (thousands)	Change in employment[a]		Cost per job[b]	
		Number (thousands)	Percentage	Consumer surplus loss (dollars)	Total efficiency loss (dollars)
Food					
Sugar	460	−296	−64.3	5,059	964
Wheat	28,000	−7,784	−27.8	269	3
Rapeseed oil	6,057	−1,411	−23.3	539	5
Beverages					
Soft drinks	137	−58	−42.1	4,654	525
Inedible raw materials					
Plywood	125	−29	−23.5	23,338	1,968
Wool and wool tops	598	−78	−13.1	3,509	168
Synthetic fiber	196	−20	−10.0	30,934	986
Crude oil	979	−192	−19.6	6,330	245
Natural rubber	1,000	−205	−20.5	1,407	173
Synthetic rubber	141	−28	−19.8	6,359	687
Fossil-fuel products					
Gasoline	598	−151	−25.3	7,389	615
Diesel fuel	266	−24	−9.2	39,180	208
Chemicals					
Ammonium phosphate	286	−135	−47.2	7,877	3,208
Plastics	787	−238	−30.3	12,890	1,478
Manufactured goods					
Rolled-steel final products	667	−240	−36.0	49,396	11,586
Copper and copper products	162	−23	−13.9	14,,268	858
Aluminum and copper products	207	−77	−37.3	4,559	299
Transportation equipment					
Motorcycles	144	−31	−21.4	56,721	4,460
Autos (sedans)	109	−43	−39.7	57,808	167
Miscellaneous manufactured goods					
Color televisions	176	−14	−8.1	15,859	305
Videocassette recorders	33	−7	−22.2	62,876	7,041
Air conditioners	56	−27	−47.8	76,802	19,131
Microcomputers	81	−6	-6.8	12,500	345
Color tubes	124	−21	−17.0	23,905	1,764
Program-controlled switchboards	133	−21	−15.5	38,156	1,383
Total/average	**41,522**	**−11,160**	**−26.9**	**3,132**	**450**

a. The percentage change in employment is assumed to correspond to the percentage change in domestic output.

b. The cost of protection per job is defined as the consumer surplus loss (or the total efficiency loss) divided by the change in employment following liberalization.

Sources: Cost Survey of Farm Products (1993); *National Statistics Yearbook* (1994); *China Auto Yearbook* (1994); and other government and industry information sources.

Thus, trade liberalization would do only negligible damage to the already distorted Chinese industrial labor market (surplus industrial labor in 1995 was estimated to be about 200 million, 40 times larger than the largest potential loss from trade liberalization). Nonetheless, the political consequences of liberalization might prove more significant, because the political voice of the unemployed factory workers has proven to be several times stronger than that of the peasants.

Whatever the true size of potential employment losses, to soften the adjustment shock, China has opted for gradual liberalization. On top of the huge surplus labor pool, trade liberalization could add 5 million more unemployed workers in the industrial sector. Many of these workers are employed in the state-owned enterprises, and it seems likely that workers in these enterprises will not be summarily laid off. Instead, they may be retained at the implicit cost of substantial on-the-job subsidies (residence, health care, pension, etc.). Or they may be gradually furloughed with severance benefits. Such measures to soften the blow of liberalization entail a significant implicit cost of liberalization. Moreover, because they involve public expenditures, government authorities are not inclined to hasten liberalization.