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U.S.-China Agricultural Trade: Constraints and Potential

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ABSTRACT

China's agricultural trade expanded rapidly following economic reforms and the open-door policy adopted in the late 1970s. The composition of agricultural trade with China follows its labor-abundant and land-scarce resource endowment with imports of bulk and processed intermediates and exports of consumer-ready and processed goods. Constraints on U.S.-China agricultural trade include tariffs, state trading, food security policies, and other nontariff barriers. Growth potential is based on China's fundamental demand forces including the world's largest population, a high real-income growth rate, an emerging urban middle class, and further trade reforms to be implemented through accession to the World Trade Organization.

Key Words: agricultural trade, China, reform, trade barriers, United States, World Trade Organization.

Over the past several years, the People's Republic of China has been one of the fastest growing economies in the world. Its real per capita GDP has grown at 9.78% per annum from 1987 to 1996. Many people in China are becoming prosperous, especially in the regions along the coast where investment and employment growth are fueling the rise of a middle class with discretionary spending habits that favor consumption of value-enhanced food and agricultural products. The purpose of this paper is to provide an overview of the structure, constraints, and potential for U.S.-China agricultural trade. Particular attention will be given to the potential of value-enhanced food product trade.

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China's Total and Agricultural Trade

Since the initiation of the economic reforms and "open-door" policies in the late 1970s, China's total and agricultural trade have experienced rapid expansion. China has become one of the world's largest traders. Statistics showing China's total and agricultural trade for the 1980–95 period are presented in table 1. Total exports and imports in 1995 reached $148.7 and $132.1 billion, respectively. Since 1980, the value of exports has increased by 7.2 times and imports by 6.6 times. China's shares of total world exports increased from 0.9% in 1980 to 3% in 1995, while its import share increased from 0.9% in 1980 to 2.64% in 1995. The rise of China's status in international trade has accelerated over the last several years. Annual growth rates from 1991–95 for total exports and imports were 19% and 20%, respectively, compared to rates of only 13% and 10% from 1980–90.

Agricultural trade also has increased sig-

Table 1. China's Total and Agricultural Trade, 1980–95 ($ mil., U.S.)

	Total Exports		Total Imports		Agricultural Exports		Agricultural Imports	
Year	Total ($)	World Share (%)	Total ($)	World Share (%)	Total ($)	China's Share (%)	Total ($)	China's Share (%)
1980	18,120	0.9	20,020	0.9	4,554	25.1	7,984	39.9
1981	22,020	1.1	22,020	0.8	4,483	20.4	8,195	37.2
1982	22,320	1.2	19,290	0.8	4,559	20.4	7,865	40.8
1983	22,320	1.2	21,390	0.9	4,923	22.1	6,561	30.7
1984	26,140	1.4	27,410	1.2	5,735	22.0	5,822	21.2
1985	27,350	1.4	42,250	1.9	6,345	23.2	4,888	11.6
1986	30,940	1.5	42,900	1.6	7,864	25.4	5,467	12.7
1987	39,440	1.6	43,220	1.5	9,082	23.0	7,561	17.5
1988	47,520	1.7	55,280	1.7	10,326	21.7	9,763	17.7
1989	52,540	1.7	59,140	1.6	10,476	19.9	11,068	18.7
1990	62,090	1.8	53,350	1.3	10,208	16.4	9,791	18.4
1991	71,840	2.0	80,590	2.0	12,045	14.2	9,800	12.2
1992	84,940	2.3	80,590	2.0	12,045	14.2	9,800	12.2
1993	91,740	2.6	103,960	2.8	12,197	13.3	8,569	8.2
1994	121,010	2.9	115,610	2.7	14,579	12.0	12,419	10.7
1995	148,770	3.0	132,080	2.6	14,363	9.7	18,272	13.8

Sources: Total exports and total imports are from the State Statistical Bureau (SSB) of China; agricultural exports and imports are from United Nations/Food and Agriculture Organization (UN/FAO) database.

nificantly. Agricultural export value reached $14.4 billion in 1995, and imports were $18.3 billion (table 1). These levels are 3.2 times and 2.3 times higher, respectively, than the values for 1980. However, the growth rates for agricultural trade, 8% for exports and 5.7% for imports, are much slower than for total trade. As a result, the share of agricultural trade in total China trade has declined from 25.1% in 1980 to 9.7% in 1995 for agricultural exports, and from 39.9% to 13.8% for agricultural imports.

Composition of China's Agricultural Trade by Degree of Processing

The structure of China's agricultural trade in 1995 and 1996 is presented in table 2 in terms of the degree of processing, readiness to eat, and implicitly by factor intensity. Based on work by Wang (1997a), China's agricultural trade is separated into four major categories: (*a*) bulk commodities, (*b*) processed intermediate goods, (*c*) horticultural products, and (*d*) consumer-ready goods.

Overall, China was a net agricultural importer in 1995 by $1.3 billion, but a net exporter in 1996 by nearly $0.9 billion (table 2). However, the export and import positions for the four subcategories are more consistently and distinctly export or import oriented. Specifically, most (95%) of China's agricultural imports are either bulk or processed intermediates. Exports are more diversified, but are dominated by consumer-ready products and processed intermediates. Wang (1997a) argues that this composition is consistent with the factor endowment trade theory that asserts the relatively labor-abundant and land-scarce economy of China will export labor-intensive processed food products and will import bulk land-intensive grains and fibers.

Direction of China's Agricultural Trade

Table 3 shows China's agricultural imports and exports by market shares of origin and destination. The United States was the leading supplier of China's agricultural imports in 1995 and 1996, followed by Indonesia, Malaysia, Thailand, the Philippines, Singapore, Myanmar, and Vietnam (ASEAN7); Australia/

Table 2. Structure of China's Agricultural Trade, 1995 and 1996 ($ mil., U.S.)

	Agricultural Exports				Agricultural Imports			
	1995		1996		1995		1996	
Commodity Group[a]	Total ($)	Share (%)	Total ($)	Share (%)	Total ($)	Share (%)	Total ($)	Share (%)
Bulk commodities	1,045	9.9	1,081	10.2	6,469	54.5	4,608	47.7
Processed intermed. goods	3,647	34.5	3,732	35.2	4,891	41.2	4,592	47.5
Horticultural products	1,538	14.5	1,495	14.1	167	1.4	145	1.5
Consumer-ready goods	4,347	41.1	4,280	40.4	344	2.9	323	3.3
Total[b]	10,577	100.0	10,588	100.0	11,870	100.0	9,669	100.0

Source: Wang (1997a).

[a] Commodity group definitions are consistent with the USDA's Foreign Agricultural Trade of the United States (FATUS) classifications (USDA 1997a), which are obviously different from the UN/FAO data presented in table 1. Commodity groups are defined here as follows: bulk commodities = grains, oilseeds, and plant-based fibers such as cotton, raw rubber, and unprocessed tobacco; processed intermediate goods = flour, feed, live animals and animal fats/oils, and animal fibers (e.g., wool); horticultural products = fresh fruits, vegetables, and flowers; consumer-ready goods = preserved vegetables, fruits and nuts, fresh and frozen meats, eggs, dairy products, processed meats, and beverages.

[b] Columns may not sum to totals due to rounding.

New Zealand (AUS/NZL); the Latin-American newly industrialized countries of Argentina, Chile, Brazil, and Mexico (LNIC); and Canada. The strength of the U.S. export position is in bulk and consumer-ready products, with a significant share increase in horticultural products in 1996. Australia/New Zealand, LNIC, and ASEAN7 were important sources for the supply of processed intermediate products. ASEAN7 had a dominant supply position for horticultural products in 1995, but this was eroded by large share increases for the U.S., Canada, and Australia/New Zealand. The primary competitors with the U.S. in supplying consumer-ready products were Japan, Hong Kong/Taiwan (identified in table 3 as two of the three CHN3 members), EU15 (the 15 European Union countries), and ASEAN7.

From table 3, the leading markets for China's agricultural exports are Japan, CHN3 (Hong Kong, Macau, and Taiwan), EU15, and ASEAN7. The U.S. imports less than 5% of China's agricultural exports, without any particular bias in flows by degree of processing. Japan is the primary destination for bulk exports, processed intermediates, and consumer-ready products. Only for horticultural products are CHN3 and EU15 more important markets than Japan for China's exports.

Commodity Composition of China's Net Agricultural Trade

The volumes of net imports by China from 1985–97 for major agricultural commodities are presented in table 4. With the exception of 1992, cotton imports have exceeded exports since the late 1980s. Wheat consistently has been a major net import into China. While rice and coarse grains traditionally have been net exports, both shifted dramatically to a large net import situation in 1994 and 1995.

Livestock trade is significantly affected by Hong Kong's markets. Many products are re-exported to China through Hong Kong, which is not reflected in China's import data reported by China's customs statistics (Wang 1997a). One of the problems in understanding the potential of China's market has been the re-exportation and smuggling that has been significantly hidden in Hong Kong trade data. In table 4, net trade for both Mainland China and Hong Kong are reported. High levels of net imports by Hong Kong in livestock products are believed to be explained by re-exports into Mainland China. Without Hong Kong's market, China is a consistent net exporter for pork, beef, and eggs; conversely, in combination with Hong Kong, greater China's net imports for pork and beef fluctuate closely above and

Table 3. Market Shares of Origin and Destination for China's Agricultural Imports and Exports, 1995 and 1996 (percent)

Country/ Region	Total		Bulk		Processed Intermed. Goods		Horticultural Products		Consumer-Ready Goods	
	1995	1996	1995	1996	1995	1996	1995	1996	1995	1996
Import Shares from										
U.S.	27.9	21.3	38.4	35.2	14.5	7.8	6.8	17.8	31.1	17.0
Canada	9.3	10.5	15.3	19.5	2.3	2.0	0.8	12.3	1.1	1.8
AUS/NZL	9.9	18.8	4.1	19.6	17.9	18.7	2.0	14.5	7.9	9.6
LNIC	7.9	14.2	3.8	2.8	14.0	26.9	0.5	0.2	0.7	2.1
ASEAN7	20.0	13.6	17.7	9.4	21.9	16.8	70.2	43.2	12.1	14.5
EU15	9.2	3.6	8.6	1.3	10.1	5.0	1.3	1.7	13.8	17.2
Japan	1.1	1.5	0.0	0.0	1.6	1.7	2.1	1.6	13.7	18.5
NSKorea	0.8	0.8	0.2	0.1	1.3	1.3	3.0	3.5	4.3	3.6
CHN3	2.0	1.8	0.5	0.1	3.1	2.7	2.9	2.0	12.5	13.2
ROW	12.0	14.1	11.4	11.9	13.4	16.1	10.4	3.4	2.7	2.5
Export Shares to										
U.S.	4.0	4.8	4.9	4.7	2.1	2.4	4.7	5.4	2.3	2.8
Canada	0.6	0.7	0.6	0.6	0.6	0.8	0.1	0.4	1.0	1.3
AUS/NZL	0.6	0.6	0.5	0.6	1.2	1.1	0.2	0.2	0.4	0.5
LNIC	0.3	0.5	0.3	0.4	0.1	0.2	0.3	0.3	1.2	1.8
ASEAN7	10.0	8.1	11.3	8.9	18.8	11.4	9.8	7.1	14.4	14.1
EU15	12.8	14.0	10.6	9.8	18.1	20.2	16.0	18.1	9.0	8.8
Japan	27.0	29.3	31.1	29.7	23.2	24.2	13.8	15.0	29.6	34.4
NSKorea	5.3	7.4	5.8	7.7	9.0	14.6	6.9	10.4	3.5	4.2
CHN3	27.5	22.5	25.8	27.7	8.6	5.1	41.2	32.9	20.3	17.2
ROW	11.8	12.0	9.3	9.9	18.1	20.3	6.9	10.3	18.4	14.8

Source: Adapted from Wang (1997a), who reported China's customs statistics.

Notes: AUS/NZL = Australia/New Zealand; LNIC = Latin-American newly industrialized countries of Argentina, Chile, Brazil, and Mexico; ASEAN7 = 7 member countries of the Association of South East Asian Nations: Indonesia, Malaysia, Thailand, the Philippines, Singapore, Myanmar, and Vietnam; EU15 = 15 member countries of the European Union; NSKorea = North and South Korea; CHN3 = Hong Kong, Macau, and Taiwan; and ROW = rest of the world.

below zero, and greater China also is shown to be a large net importer of eggs. Hides and skins are increasingly a net import in China. Broiler imports have exceeded exports in Mainland China since 1990, and for greater China, net imports have increased six-fold since 1990. Based on aggregated data for bulk U.S. exports to China, the share for the U.S. of China's imports for 1994–96 averaged 28% for wheat, 35% for cotton, 49% for coarse grains, and 54% for soybeans.

Agricultural inputs are another important set of products for U.S.-China trade. Table 5 provides estimates of the value of China's imports of agricultural machinery, fertilizers, and pesticides during 1980–95. By 1995, the total import value for these three inputs was $4.4 billion. The value of U.S. exports of fertilizers to China for 1995 was $1.2 billion, implying a 31% market share.

China's Share of U.S. Agricultural Exports

Table 6 details China's share of U.S. agricultural exports. Although the shares are comparatively small, the total trade share is trending strongly upward. Cotton, oilseed and vegetable oils, and poultry best reflect the rising importance of China trade for the U.S. Once again, it is worth noting that Hong Kong is a large importer of U.S. livestock products. Recent estimates by the Agricultural Trade Of-

Table 4. China's Net Imports for Major Agricultural Commodities, 1985–97

Year	Cotton[a]	Wheat[a]	Rice[a]	Coarse Grain[a]	Pork[a]	Beef[a]	Eggs[b]	Hides and Skins[c]	Broilers[a]
Mainland China									
1985	−609	6,600	−605	−6,416	−263	−15	0	0	0
1986	−686	8,817	−878	−2,108	−193	−26	−3,219	0	0
1987	−486	15,327	−277	−3,979	−200	−34	−3,422	0	−54
1988	−41	15,384	727	−4,902	−170	−54	−1,141	0	−52
1989	219	12,800	−269	−2,412	−203	−57	−791	0	−34
1990	278	9,406	−622	−6,220	−235	−155	−733	0	−21
1991	224	15,863	−840	−9,273	−268	−222	−738	0	30
1992	−96	6,627	−1,262	−12,367	−117	−74	−877	55	33
1993	13	4,133	−819	−10,723	−150	−153	−602	42	79
1994	844	10,239	1,932	4,765	−181	−71	−640	78	83
1995	658	12,337	585	2,707	−227	−92	−476	213	240
1996	784	2,600	−400	−1,922	−190	−76	−748	220	430
1997	475	1,800	−750	−1,775	−145	−55	−897	220	400
Greater China (Mainland China and Hong Kong)[d]									
1985	−439	6,838	−300	−6,066	−46	63	1,391	15	87
1986	−434	8,945	−469	−1,860	28	52	−1,835	28	89
1987	−299	15,685	95	−3,647	2	44	−1,940	60	54
1988	213	15,758	1,111	−4,589	53	35	456	57	48
1989	430	13,017	94	−2,229	14	22	860	50	91
1990	469	9,829	−204	−5,994	−6	−75	853	55	115
1991	420	16,335	−422	−9,087	−43	−143	917	65	182
1992	59	7,042	−784	−12,280	80	−9	720	85	229
1993	170	4,523	−459	−10,646	57	−83	971	86	274
1994	990	10,585	2,284	4,774	37	1	1,021	97	296
1995	783	12,638	899	2,710	−76	−33	1,162	101	450
1996	889	2,980	−50	−1,872	−55	−23	953	109	632
1997	586	2,180	−400	−1,760	−3	−6	838	115	615

Source: USDA (1997b), Production, Supply, and Distribution (PS&D) database.

[a] Metric tons, 000s.

[b] Million count.

[c] Pieces, 000s.

[d] Net imports in Mainland China plus net imports in Hong Kong.

fice, U.S. Department of Agriculture/Foreign Agricultural Service (USDA/FAS) in Shanghai suggest that a large proportion of the livestock products (largely chicken feet and wings) are re-exported to Mainland China (Ho and Reynolds). Hong Kong dominated the supply into China's imported meat markets from 1980–95. On average during this period, Hong Kong supplied 56% of imported beef to China, 32% of imported pork, 85% of imported poultry, 72% of offal, and 56% of processed meats (Le and Chen).

During the 1986–96 period, greater China's share for total U.S. grain exports fluctuated from 0.31% in 1986 to 6.88% in 1989 (table 6). This volatility, in part caused by China's state trading system, reflects the instability that China has transmitted to U.S. and world grain markets. The major U.S. grain export to China is wheat. One of the most successful market developments for U.S. trade into China has been poultry meat. China and Hong Kong's share of U.S. poultry exports averaged 19.9% for the 1994–96 period. Similarly, the share of

Table 5. China's Imports of Agricultural Machinery, Fertilizers, and Pesticides, 1980–95 ($000s, U.S.)

Year	Agricultural Machinery	Fertilizers	Pesticides
1980	67,971	884,820	115,049
1981	90,036	809,519	131,557
1982	91,893	1,274,814	145,674
1983	88,886	1,420,634	310,625
1984	95,808	1,714,368	343,038
1985	100,015	1,543,948	202,884
1986	103,149	728,111	139,004
1987	92,650	1,431,685	169,289
1988	155,801	2,374,277	273,268
1989	180,211	2,415,344	325,128
1990	201,819	2,669,959	292,571
1991	184,611	3,318,564	320,470
1992	291,844	2,995,390	328,651
1993	313,163	1,553,958	269,658
1994	292,069	2,013,795	282,006
1995	266,999	3,839,851	319,426

Source: UN/FAO database.

U.S. cotton exports averaged 27.8% for the same period.

Importance of China's Agricultural Trade for Southern States

Poultry, cotton, soybeans, and wheat trade have direct importance for the southern states of the U.S. Therefore the growth experienced in these markets should be, and is, reflected in the significance of export shipments from the southern states. The data presented in table 7 clearly indicate the growth in agricultural shipments to China from the U.S. southern region from 1993 through 1995. The data also show that the southern states' export share has increased for all exports to China during this period.

Trade Constraints for U.S.-China Food and Agricultural Trade

While the characterization of China as a growing market is reflected in the discussion and data presented above, there are a number of factors that constrain U.S. food and agricultural trade with China. Most importantly, significant import tariffs remain despite a series of tariff reductions. There are also considerable types of nontariff barriers (NTBs) that hamper U.S. trade as China remains outside of the World Trade Organization (WTO) discipline on NTBs. Food security policy in China is designed to limit dependence upon certain bulk grain imports. In addition to these trade policy constraints, China's factor endowment favors imports of bulk rather than value-added products, and investment and employment incentives in China support this development. Both resource endowment and policy incentives to develop labor-intensive, value-added manufacturing and processing are important constraints for substantial growth in U.S. value-added agricultural exports to China.

Tariffs and Market Access

Early in 1993, China reduced its tariffs on 3,371 import items and abolished import controls on more than 367 commodities (Wang 1997a). The trade-weighted average tariff rate was reduced by 7.3% by this action (Zhang and Warr). Again, in April 1996, China reduced tariffs on over 6,000 import items from an average of 35% to 23%, still high compared to an average of 13–15% for developing countries. For agriculture, tariff-rate quotas were introduced for most grains and bulk commodities. However, even with these reforms, for selected processed and horticultural products, the tariff rate plus the value-added tax (VAT) rate assessed on the import value plus the tariff results in effective taxes on these imports of over 50%, as indicated in table 8.

In addition to tariffs, a number of nontariff trade barriers also restrict the potential for exports to China. Some of the more important obstacles include the Chinese government's sanitary protocols and inspection arrangements which are not transparent and have been criticized by many as being scientifically unjustifiable (Le and Chen). Agricultural and value-added products imported into China are also managed by quotas and licensing. All foreign enterprises importing animal products must be registered with the Chinese Administration of Animal and Plant Quarantine. This

Table 6. Percentages of China's Share of U.S. Agricultural Exports, 1986–96 (based on value)

Year	Total	Grains			Fruits and Veg.	Oilseed and Veg. Oils	Cotton	Animals and Animal Products	
		Total	Wheat	Coarse Grains				Total	Poultry
Mainland China									
1986	0.22	0.00	0.00	0.10	0.00	0.45	0.06	0.53	0.00
1987	1.27	0.00	4.60	2.50	0.01	1.64	0.02	0.38	0.00
1988	2.05	5.00	14.20	0.00	0.01	0.01	1.27	0.37	0.01
1989	3.59	6.64	18.90	0.40	0.05	0.01	11.52	0.27	0.05
1990	2.07	3.56	13.00	0.20	0.02	0.03	9.95	0.26	0.28
1991	1.84	2.86	11.00	0.00	0.02	0.05	12.86	0.39	0.33
1992	1.27	1.93	6.10	0.00	0.03	0.67	9.30	0.40	0.61
1993	0.88	2.00	6.00	0.00	0.04	0.43	0.01	0.61	1.60
1994	2.36	1.28	4.10	0.10	0.06	2.29	24.31	1.06	1.50
1995	4.72	6.20	9.20	7.80	0.11	5.28	22.52	1.87	1.67
1996	3.46	5.50	7.00	0.20			20.41	1.84	2.48
Greater China (Mainland China and Hong Kong)									
1986	1.75	0.31	0.47	0.13	7.45	0.70	0.28	2.15	12.53
1987	2.88	0.35	5.10	2.51	6.12	1.85	1.14	2.53	14.30
1988	3.36	5.27	14.62	0.00	5.27	0.16	2.22	1.98	10.99
1989	5.13	6.88	19.27	0.43	5.67	0.23	13.79	2.74	18.23
1990	3.85	3.81	13.41	0.23	4.37	0.21	12.68	2.51	13.43
1991	3.81	3.25	11.60	0.00	4.00	0.40	16.73	3.35	13.96
1992	3.28	2.28	6.63	0.18	4.59	1.09	13.00	3.44	15.66
1993	2.94	2.30	6.33	0.01	4.95	0.76	1.23	4.27	17.00
1994	5.06	1.67	4.61	0.09	4.87	3.05	28.79	5.73	18.89
1995	7.38	6.46	9.42	7.83	5.21	6.23	26.16	7.50	21.54
1996	5.93	5.74					28.35	7.90	19.32

Source: Calculated from USDA FATUS statistics (USDA 1997a).

Table 7. Southern States' Share of U.S. Total and Agricultural Exports to China, 1993–95 ($ mil., U.S.)

Item	Calendar Year		
	1993	1994	1995
Total Exports			
14 Southern States	1,247	1,924	3,320
United States	8,619	9,287	10,435
Share (%)	14.5	20.7	31.8
Agricultural Exports			
14 Southern States	30	416	1,261
United States	376	1,080	2,633
Share (%)	8.0	38.5	48.0

Source: U.S. Department of Commerce.
Notes: The 14 southern states are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. State data based on exporter location (EL) data which track sales origin-point of sale exports.

regulation also applies to foreign enterprises that produce, process, or store animal products in China. Until 1997, meat imports were allowed to be marketed only in the hotel, restaurant, and institutional sectors. One recent change adopted on January 1, 1997, was the establishment of a pilot program allowing beef, pork, and poultry to be imported from selected meat plants in the United States, Canada, and Australia for retail markets.

Food Self-Sufficiency and Competitive Advantage in Trade

Chinese policy makers continue to focus on the food security consequences of relying on world grain markets. From the mid-1950s to the early 1980s, China's grain production and allocation were strictly controlled by the cen-

Table 8. China's Import and Value-Added Taxes on Selected Food Products, 1966 (percent)

Product	Tariff Rate	Value-Added Tax (VAT) Rate	Effective Rate[a]
Poultry meat	45	13–17	63.8–69.6
Beef cuts	50	13–17	69.5–75.5
Beef offal	45	17	69.6
Crustaceans, live	45	13	63.9
Fish, frozen	25–30	17	46.3–52.1
Salmon, fresh	25	17	46.3
Squid, frozen	35	17	58.0
Fruit, fresh/dried	22–55	13–17	41.3–81.4
Apples	40	13	58.2
Raisins	55	17	81.4
Grapes, fresh	55	13	75.2
Citrus fruit	40–52	13–17	58.2–77.8
Fruit, preserved/canned	40–45	17	63.8–69.6
Cherries, fresh	48	13	67.2
Tree nuts	20–50	13–17	35.6–52.1
Ginseng	35–45	13	52.5–57.9
Vegetables, fresh/frozen	20–30	13–17	35.6–52.1
Vegetables, preserved	45–50	17	69.9–75.5
Sweet corn	22–50	17	42.7–75.5
Wine	70	17	98.9
Non-alcohol beverages	30–75	17	52.1–104.7
Baker's wares	40–50	17	63.8–75.5
Sauces	25–80	17	46.2–110.6
Soups and broths	65	17	93.1
Ice cream	65	17	93.1
Ice cream powder	40	17	63.8
Whey powder	7	17	25.2
Sugar confectionery	15	17	34.6
Chocolate confectionary	15	17	34.6

Source: Ho and Reynolds (derived from *1996 China Custom's Handbook,* published by the Ministry of Foreign Trade, People's Republic of China, Beijing).

[a] Effective rate is tariff + VAT + (tariff × VAT).

tral government. The government set the urban retail price below the purchase price from the farmer. Consumption subsidies on grain claimed as much as 20% of total national government revenues. To reduce the burden of the grain subsidies and to improve the economic efficiency of grain markets, in 1992, the government introduced market reforms and phased out the grain ration system. By the end of 1993, these market reforms accelerated; 28 out of 31 provinces had phased out the grain ration system (Crook 1997).

Inflationary pressures in late 1993 and early 1994, and a decrease in the area sown to grains forced the government to reemphasize the importance of grain production in late 1994. The government of China initiated a new grain self-sufficiency policy with specific responsibility decentralized through provincial governors, known as *mi dai zi shengzhang fuzezhi,* or the "grain-bag" responsibility system. Under the "grain-bag" policy, the provincial governors were assigned responsibility to increase grain production and buy domestic grain to balance gaps between demand and supply. If governors still have deficits in their grain balance, then the central government is to arrange for grain imports. The results of the "grain-bag" policy from 1995, 1996, and 1997 show a strong impact on the commodity

structure of China's agricultural trade. First, the grain imports decreased substantially. Second, imports of value-added processed products increased. Oilseed, oil meal, and edible vegetable oil imports rose substantially. In 1996, China imported nearly 3.5 million tons of edible vegetable oil, accounting for about one-third of domestic consumption. In addition, imports of chemical fertilizers increased dramatically, from 10.2 million tons in 1993, to 12.7 million tons in 1994, to 19.9 million tons in 1995, and 18.6 million tons in 1996 (Crook 1997). In 1996, China's chemical fertilizer imports accounted for about one-fourth of domestic consumption.

Based on the principle of comparative advantage, China should produce more labor-intensive, high-value crops such as fruits and vegetables, and more processed foods, condiments, and specialty meat products; and should import more land-intensive crops, such as grains and oilseeds. The pursuit of a provincial-oriented grain self-sufficiency policy in China arrests this fundamental adjustment.

State Trading

Under the planning system prior to 1978, China's trade was conducted under a strict system of state trading, with only 10–16 foreign trade corporations completely responsible for all specified groups of products. Under the state trading system, indirect trade policy instruments were absent or unimportant, and there was a complete lack of transparency. Import volumes were determined by the projected difference between domestic demand and supply for particular goods. Commodity prices were set without regard to scarcity or cost, and were intended to serve only an accounting function (Martin and Bach).

Although reform of China's trade regime since 1978 has greatly reduced the operation of the state trading agencies and significantly increased the market mechanism, major agricultural trade nevertheless remains under the system of state trading (the Cereal, Oil, and Foodstuffs Importing and Exporting Corporation) or designated trading (table 9). State trading allows the government to directly control imports, while designated trading arrangements do not allow such control, but probably create some local monopoly power—to the disadvantage of importers and exporters of these products (Martin and Bach). Rice, corn, wheat, cotton, and tobacco are completely under the state trading system. Most of the nongrain crops (vegetable oils, sugar, tobacco, etc.) are in the state trading system, and are managed through designated trading, licenses, or quotas. According to Martin and Bach, coarse grains (except corn), meat, and milk in 1996 were not subject to restrictions by either state trading or designated trading. The strong reliance on state trading for major agricultural trade has raised concern about the transparency of China's agricultural trade regime (Dixit and Josling). The economic efficiency of China's grain trade system is viewed as low by some observers because there are numerous nontransparent market signals, resulting in distorted price levels and volatility (Carter, Chen, and Rozelle).

Potential for U.S.-China Agricultural and Food Trade

Several studies have suggested that future increases in the imports of agricultural products are inevitable if China's rapid economic growth and pursuit of economic reforms continue (Brown; Yang and Tyers; Anderson; Garnaut and Ma). This view on import growth is supported by a number of empirical studies, including those by the International Food Policy Research Institute (Rosegrant, Agcaoili-Sombilla, and Perez; Huang, Rozelle, and Rosegrant; Fan and Agcaoili-Sombilla 1997a), the Organization for Economic Cooperation and Development (Huang), the Overseas Economic Cooperation Fund (OECF) of Japan, and the Food and Agricultural Policy Research Institute (Fuller and Rude). While there is large variation among the projections (for a critical review, see Fan and Agcaoili-Sombilla 1997b), all of these studies project large increases in food trade volumes, but small changes in grain self-sufficiency ratios to 2010. Even recognition that agricultural land in China has been substantially underreported

Table 9. Share of Imports of Major Agricultural Commodities Covered by NTBs in 1996 (using 1992 trade weights)

Commodity	State Trading	Designated Trading	Licenses	Quota	All
Rice	100.0	0.0	100.0	0.0	100.0
Wheat	100.0	0.0	100.0	0.0	100.0
Coarse grains	0.0	0.0	0.0	0.0	0.0
Nongrain crops	50.0	22.9	72.9	72.9	72.9
Livestock	0.0	72.7	72.7	72.7	72.7
Meat and milk	0.0	0.0	0.0	0.0	0.0
Other food products	37.2	0.0	32.9	31.7	38.4

Source: Martin and Bach.

(Crook 1993; Ke), implying a greater potential for China's agricultural production in the future, will not change the projections of increases in food trade volumes.

While one of the most challenging constraints for trade with China is that it is in the midst of reforms, this factor is also what makes its potential so large. Trade reform, coupled with China's fundamental characteristics—the size and growth of its population, the high rate of income growth, and the rise of an urban middle class—makes China one of the biggest potential markets for U.S. value-enhanced agricultural trade in the future.

Income Growth, Rising Urban Middle Class, and Joint Ventures

Income growth rates above 10% over recent years have had profound effects on China's household expenditure patterns (Fan, Wailes, and Cramer; Gao, Wailes, and Cramer 1996a, b). However, income growth in China has not been uniform. China's national average income was approximately $663 per capita in 1996, while the average Shanghai per capita income was $1,118, nearly 70% higher. Some have estimated that over 100 million people in the provinces have purchasing power parity incomes greater than $10,000, and that by 2005, China's middle class will number approximately 500 million (Ho and Reynolds). A survey of consumers in Shanghai, sponsored by the USDA/FAS and reported by Ho and Reynolds, provides some useful observations about the trends in consumption for the rising urban middle class in the coastal provinces. The survey found that approximately 30% of Shanghai's households had annual incomes greater than $2,900. While food shopping has traditionally been conducted on the streets in "wet markets," the supermarket concept has taken hold. With only one supermarket store in 1990, by 1997, there were approximately 1,000, owned by 20 different companies. The expansion has been driven by both the joint ventures of international retailing chains as well as by Shanghai's municipal government. Eleven percent of Shanghai's shoppers buy regularly from the supermarkets.

The survey identified the following food expenditure shares for Shanghai's supermarket customers: meat (38%), vegetables (29%), fruit (14%), breakfast foods (10%), and snacks (9%). Survey participants were asked how much more they would pay for imported food. One-third of the sample indicated they would pay 10% more, and another one-third were willing to pay 50% more. However, only 36% of the sample had recently purchased imported food products. Table 10 gives the relative importance of attributes, as ranked by survey respondents, found to influence food purchases.

It is believed that rapidly rising consumer incomes and the increase in the number of hotels and joint-venture firms in China's more developed cities (such as Shanghai, Beijing, and Guangzhou) are the other main sources of higher import demand for meat and value-added food.

Perhaps the stiffest competition facing

Table 10. Consumer Survey Rankings of Importance of Attributes Influencing Food Purchases in Shanghai, China, 1997

Attributes Influencing Food Purchases	Importance Indicator[a]
Proof that food is safe	4.92
Food is high quality	4.91
Food has high nutrition	4.60
Food is tasty for the family	4.57
Good price	4.46
Good value	4.37
Easy to prepare	4.06
Low fat	4.02
Brand name	3.77
Low cholesterol	3.71
Suitable as a gift	3.56
Right package size	3.46
Attractive package design	3.26
Recommendation by others	3.16
Advertisement	3.08
Imported	2.57

Source: Shanghai Consumer Survey (sponsored by the USDA/FAS and reported by Ho and Reynolds).
[a] Based on a 1–5 scale, where 5 = very important, and 1 = not at all important.

high-value U.S. exports to China will come from domestic production. In part, this is due to the joint venture by foreign food processors including U.S. firms. Foreign direct investment (FDI) in China has been very impressive in recent years and has played a major role in China's push toward a market-oriented economy. From 1979–95, China received $128.1 billion in FDI. Recently, China has been the largest developing-country recipient of FDI, and the inflows to China account for 40% of such flows to all developing countries combined (Broadman and Sun).

FDI in agriculture also has enjoyed rapid growth in recent years, especially since 1992. Contracted funds to the agriculture sector over the five years from 1992–96 amount to $5.84 billion, 4.2 times the amount pledged during the previous 13 years (1979–91). Consistent with the overall geographic distribution of FDI in China, the agriculture sector FDI is concentrated along the coastal areas. Guangdong, Fujian, and Shandong accounted for more than 70% of pledged investments. The FDI in agriculture mainly went to the food processing sector (Wang 1997a), and most of it for small, short- or medium-term projects, generally less than $1 million investments.

Trade Reform and Accession to WTO

Chinese economic reform has reached a point where trade liberalization is a top priority. The magnitude of the economic reform achievements, impacting all sectors of the economy, implies that liberalization of China's trade relations with the rest of the world will have a profound impact not only on China, but also on the international economic and political system. The accession of China to the WTO will no doubt provide the potential for lower tariffs and increased market access for all agricultural products.

China withdrew from the GATT in 1950, and has reapplied (in 1986) to join the organization and its successor, the WTO (Theiler and Tuan). In order to accelerate its market-oriented reform and enter the WTO, China has already adopted a series of liberalization measures, reduced its tariffs, and increased its market access (as discussed above).

Analysis of China's accession has been conducted with the presumption that Taiwan would enter simultaneously. The impacts of China and Taiwan's integration into WTO on world trade have been studied by several researchers (Wang 1997b; Anderson et al.). Wang evaluated the potential impact of WTO accession by China and Taiwan on world trade, with particular emphasis on its impact on U.S. agriculture, by using a multi-region, multi-sector computable general equilibrium (CGE) model for world trade and production. His study focused on differences arising from the Uruguay Round trade liberalization on agricultural and manufactured goods with and without China and Taiwan. The main findings from Wang's study include: (*a*) China's labor-intensive sectors (such as textiles and apparels) would expand, its agricultural exports would contract, and net agricultural imports could rise by $8 billion per year; (*b*) for world grain markets, China and Taiwan would increase their net grain imports by $574 million

and $95 million, respectively (about 1.8% of base-year world grain exports); (*c*) U.S. imports of textiles and apparels would increase by about $12 billion, while exports of technology and capital-intensive manufactured goods would increase by $2.4 billion; (*d*) U.S. food and agricultural production would expand by 0.4%, with output increases in all sectors except rice; (*e*) the largest gain in U.S. exports would come from the processed food sectors ($1.15 billion), followed by exports of nongrain crops ($662 million), feed grains ($274 million), and livestock products ($102 million); and (*f*) higher prices for U.S. food and agricultural exports and more efficient use of production resources would translate into higher value-added farm products, thus raising U.S. farm income.

In another recent study using a CGE framework, Anderson et al. projected results very similar to those of Wang. In their model results, China's exports of textiles and apparels would expand dramatically, and imports of agricultural and food products (especially processed foods and meats) would grow substantially.

Negotiations between China and the WTO members regarding China's accession are still ongoing. The WTO represents an important tool for the rest of the world to reinforce to the Chinese government the desired steps needed to liberalize its economy and support further economic reform. The United States has intensified discussions over China's accession to the WTO with respect to agriculture. Key agricultural issues being discussed include: (*a*) transparency for state trading enterprises so that market forces, rather than government decisions, play a role in determining import levels; (*b*) reducing tariffs; (*c*) removing unjustified sanitary and phytosanitary measures; (*d*) commitments on domestic and export subsidies; and (*e*) subscribing to the rest of the WTO trade rules, such as removal of licensing requirements, instituting proper customs valuation, and generally increasing the transparency and predictability of the Chinese import system. The future growth in import demand by China will depend largely on the terms of China's accession to the WTO and prospects for institutionalizing market access commitment and lower tariffs.

Conclusions

Since the economic reforms and "open-door" policies in the late 1970s, China has been one of the fastest growing economies in the world, and China's agricultural trade has experienced rapid expansion. This paper provides an overview of China's trade, and discusses the constraints and potential for U.S. food and agricultural trade with China.

China's total and agricultural trade has experienced rapid growth, especially in the last few years. However, the growth rates for agricultural trade have been much slower than those for total trade. China's agricultural trade structure has changed from raw agricultural products to valued-added processed and manufactured products. China's agricultural imports are either bulk or processed intermediates, while exports are more diversified but are dominated by consumer-ready products and processed intermediates. This structure is consistent with the factor endowment trade theory. China's share of U.S. farm exports, in general, is small, but the upward trend is strong. The southern region of the U.S. has become an important supplier of U.S. food and agricultural exports to China, especially poultry, soybeans, wheat, and cotton.

U.S. agricultural exports have been dominated by bulk grains, oilseeds, and cotton. The volume of value-added products from the U.S. to China has been relatively modest, but is growing. The potential for substantially more growth will depend upon further trade policy reforms as expected with accession of China to the WTO. The state trading apparatus, tariffs, licenses, quotas, and other nontariff barriers provide important protection for the development of China's own value-added food and agricultural production and exports. These policies and the food security "grain-bag" policy represent major constraints for expanding agricultural trade. The resource endowment and policy incentives to develop labor-intensive value-added manufacturing and processing are key constraints for substantial

growth in U.S. value-added agricultural exports to China.

The rise of a middle class, supported by rising real incomes, investment, and employment growth in China's coastal provinces, will provide the greatest potential market for U.S. exports of high-value and high-quality food and agricultural exports. A strengthening of the commitment by China's policy makers to an open market through accession to WTO, without threatening China's sense of food security, will be critical to achieve the potential of China as a major market for U.S. food and agricultural trade.

References

Anderson, K. "China's Projected Cereals Deficits in a World Context." *Agr. Econ.* 15(1990):1–17.

Anderson, K., B. Dinaranan, T. Hertel, and W. Martin. "Asia-Pacific Food Markets and Trade in 2005: A Global, Economywide Perspective." *Austral. J. Agr. and Resour. Econ.* 41,1(1997): 19–44.

Broadman, H.G., and X. Sun. "The Distribution of Foreign Direct Investment in China." *World Economy* 20,3(May 1997):339–62.

Brown, L. *Who Will Feed China? Wake-up Call for a Small Planet.* Washington DC: Worldwatch Institute, September 1995.

Carter, C.A., J. Chen, and S.D. Rozelle. "China's State Trading in Grains: An Institutional Overview." Paper presented at WCC-101 annual meeting, East-West Center, Honolulu HI, 12–13 January 1998.

Crook, F.W. "Current Agricultural Policies Highlight Concerns About Food Security." In International Agriculture and Trade Rep. No. WRS-97-3, *China: Situation and Outlook Series,* pp. 19–25. USDA/Economic Research Service, Washington DC, June 1997.

———. "Underreporting of China's Cultivated Land Area: Implications for World Agricultural Trade." In International Agriculture and Trade Rep. No. RS-93-4, *China: Situation and Outlook Series,* pp. 33–39. USDA/Economic Research Service, Washington DC, July 1993.

Dixit, P., and T. Josling. "State Trading in Agriculture: An Analytical Framework." Work. Pap. No. 92-4, International Agricultural Trade Research Consortium, University of Minnesota, July 1997.

Fan, S., and M.C. Agcaoili-Sombilla. "China's Food Supply and Demand in the 21st Century: Baseline Projections and Policy Simulations." International Food Policy Research Institute, Washington DC. Paper presented at the AAEA post-conference workshop on China's Food Economy in the 21st Century, Toronto, Canada, 31 July 1997a.

———. "Why Do Projections on China's Future Food Supply and Demand Differ?" Discus. Pap. No. 22, Environment and Production Technology Div., International Food Policy Research Institute, Washington DC, March 1997b.

Fan, S., E.J. Wailes, and G.L. Cramer. "Household Demand in Rural China: A Two-Stage LES-AIDS Model." *Amer. J. Agr. Econ.* 77(February 1995):54–62.

Fuller, F., and J. Rude. "An Approach to Policy Analysis and Projection for the Agricultural Sector of the People's Republic of China." Food and Agricultural Policy Research Institute. Paper presented at the AAEA post-conference workshop on China's Food Economy in the 21st Century, Toronto, Canada, 31 July 1997.

Gao, X.M., E.J. Wailes, and G.L. Cramer. "Partial Rationing and Chinese Urban Household Food Demand Analysis." *J. Comparative Econ.* 22(1996a):43–62.

———. "A Two-Stage Rural Household Demand Analysis: Microdata Evidence from Jiangsu Province, China." *Amer. J. Agr. Econ.* 78(August 1996b):604–13.

Garnaut, R., and G. Ma. *China's Grain Economy.* Canberra, Australia: Australian Government Publishing Services, 1992.

Ho, E., and S. Reynolds. "Annual Marketing Plan [U.S. and China]." Annual Market Information Report, Agricultural Trade Office, Shanghai, China, and USDA/Foreign Agricultural Service, Washington DC, July 1997.

Huang, J., S. Rozelle, and M.W. Rosegrant. "China's Food Economy to the Twenty-First Century: Supply, Demand, and Trade." Food, Agriculture, and the Environment Discus. Pap. No. 19, International Food Policy Research Institute, Washington DC, 1997.

Huang, Y. "China's Grains and Oilseeds Sectors: Major Changes Underway." OECD Staff Pap., Organization for Economic Cooperation and Development, Paris, 1995.

Ke, B. "Food Problems and Outlook in China." Paper presented at the International Symposium on Sustainable Agricultural Development Compatible with Environmental Conservation in Asia, Tsukuba, Japan, August 1997.

Le, T., and K. Chen. "Determinants of Meat Import Demand in Mainland China." Paper presented at WCC-101 annual meeting, East-West Center, Honolulu HI, 12–13 January 1998.

Martin, W., and C. Bach. "State Trading in China." Paper prepared for presentation to the University of Neuchatel conference on "State Trading and the WTO," Geneva, Switzerland, 12–13 September 1997.

Overseas Economic Cooperation Fund (OECF). "Prospects for Grain Supply-Demand Balance and Agricultural Development Policy in China." OECF Discus. Pap. No. 6, Tokyo, 1995.

Rosegrant, M.W., M.C. Agcaoili-Sombilla, and N.D. Perez. "Global Food Projections to 2020: Implications for Investment." Food, Agriculture, and the Environment Discus. Pap. No. 5, International Food Policy Research Institute, Washington DC, 1995.

State Statistical Bureau of China. *China Statistical Yearbook.* Beijing: China Statistical Publishing House. Various years, 1980–95.

Theiler, S.S., and F.C. Tuan. "China's Application for GATT Accession: Issues and Potential Implications." In International Agriculture and Trade Rep. No. WRS-94-4, *China: Situation and Outlook Series,* pp. 27–33. USDA/Economic Research Service, Washington DC, August 1994.

United Nations, Food and Agriculture Organization (UN/FAO). FAOSTAT [electronic database]. UN/FAO, Rome, Italy, 1998.

U.S. Department of Agriculture (USDA). "Foreign Agricultural Trade of the United States (FATUS)." USDA, Washington DC, 1997a.

———. The Production, Supply, and Distribution (PS&D) Database [electronic database]. USDA, Washington DC, November 1997b.

U.S. Department of Commerce (USDC). "State Export Facts, 1987–1996." USDC, Office of Trade and Economic Analysis, International Trade Administration, Washington DC. Online. Available http://www.redfish.com/USEmbassy-China/frames.htm. January 1998.

Wang, Z. "China's Agricultural Trade in 1996: Commodity Structure, Geographical Distribution, and Its Role in U.S. and World Agricultural Trade." In International Agriculture and Trade Rep. No. WRS-97-3, *China: Situation and Outlook Series,* pp. 6–15. USDA/Economic Research Service, Washington DC, June 1997a.

———. "The Impact of China and Taiwan Joining the World Trade Organization on U.S. and World Agricultural Trade: A Computable General Equilibrium Analysis." Tech. Bull. No. 1858, USDA/Economic Research Service, Washington DC, 1997b.

Yang, Y., and R. Tyers. "The Economic Costs of Food Self-Sufficiency in China." *World Development* 17(1989):237–53.

Zhang, X., and P.G. Warr. "China's Re-entry to GATT: A General Equilibrium Analysis of Tariff Reduction." China and East Asia Trade Policy, Pacific Econ. Pap. No. 250, Australia-Japan Research Center, Canberra, Australia, 1995.