



**INSTITUTO DE ESTUDOS DO COMÉRCIO E NEGOCIAÇÕES INTERNACIONAIS
INSTITUTE FOR INTERNATIONAL TRADE NEGOTIATIONS**

**AGRICULTURE IN BRAZIL AND CHINA:
CHALLENGES AND OPPORTUNITIES**

WORKING PAPER (DRAFT)

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1. INTRODUCTION

Brazil and China are key players in world agriculture. Both countries are among the world's top five producers and exporters of agricultural products and have a significant portion of their population working in agriculture. However, four significant facts profoundly differentiate Brazilian and Chinese agriculture. First, while Brazil has one of the world's most liberal agricultural sectors, Chinese agriculture – despite recent liberalizing reforms – remains under strong state intervention, particularly in its foreign trade. Second, while the agricultural sector accounts for a very significant portion of Brazil's total exports, in China its share in total foreign sales is almost negligible. Third, while Brazil is a net exporter of agricultural products, China is now a net importer. Finally, while Brazil is the country with the greatest potential to expand its planted area in the world, China's agriculture has little land available for expansion and is in fact under severe pressure from urbanization and the development of other productive sectors. Given that Brazil's and China's agricultural profiles are quite complimentary, the two countries have the opportunity to build an important partnership through strengthened bilateral trade and investment. China is already the second most important destination for Brazilian agricultural exports, and Brazil is China's third most important supplier of agricultural products. The two countries are currently considering potential Chinese investments in Brazil's infrastructure network. Furthermore, as developing countries, Brazil and China share common interests in the dismantling of trade protectionist measures in the developed world. Although collaboration in the context of the G-20 at the WTO Doha Round reflects convergence between Brasilia and Beijing at the multilateral level, some pending issues must yet be tackled in order for the two regional powers to fully realize the potential for bilateral trade in agriculture.

This paper analyzes the asymmetries and complementarities between Brazil's and China's agricultural sectors. It is structured in four sections in addition to this introduction. Section II provides an overview of the transformations that have occurred in Brazilian and Chinese agriculture in the last three decades. It explores the role of state intervention, market deregulation, and trade liberalization in the evolution of agricultural activities. Section III evaluates the social and economic weight of agriculture in Brazil and China, and examines production and consumption patterns in each country. Section IV investigates Brazilian and Chinese agricultural exports and imports, focusing on main trading partners and key traded products. It also examines bilateral trade flows between Brazil and China, and the potential for increased trade between the two nations. Finally, Section V analyzes Brazil's and China's involvement in

international trade negotiations on agriculture and suggests an agenda for an improved agricultural trade relationship between Brasilia and Beijing.

2. RECENT TRANSFORMATIONS

Agriculture has gone through significant transformations in both Brazil and China in the last three decades. Both countries have moved away from state intervention and towards increased liberalization. However, the starting point for China was one of much greater state control of production, consumption and trade than was the case in Brazil. Thus, while Brazil's agricultural sector is currently one of the most liberalized in the world, Chinese agriculture is still marked by the existence of state trading enterprises, price controls, and grain self-sufficiency requirements, among other forms of direct government intervention. Nonetheless, consecutive reforms have made China's agricultural sector much more market-oriented.¹ Even Chinese grain markets have become increasingly competitive, integrated and efficient overtime.²

2.1. Evolution of Brazilian Agriculture

The impressive performance of Brazil's agricultural sector – which has placed the country among the world's most competitive exporters of agro-industrial products – results from a series of transformations that have occurred in the last three decades. Reduction of state intervention, market deregulation and trade liberalization, combined with investment in research and technology and macroeconomic stabilization, have all contributed to productivity growth and efficiency gains in Brazil's agribusiness. The modernization of Brazilian agribusiness began in the 1970s. In a span of twenty years, Brazil significantly diversified its agro-industrial exports, moving from a small group of tropical commodities (mainly coffee, sugar and cocoa) to incorporate new products such as soybeans, meats, ethanol and fruits. Intensive research, particularly by the Brazilian Agricultural Research Corporation (EMBRAPA), led to the development of new plant varieties adapted to tropical climates, which facilitated the expansion of modern agribusiness into new regions in the country's interior. The first major expansion of Brazilian agricultural frontiers occurred in the 1970s and 1980s, with producers migrating from the temperate South towards the tropical Center-West and the western part of the

¹. Alan de Brauw, Jikun Huang, and Scott Rozelle, "Sequencing and the Success of Gradualism: Empirical Evidence from China's Agricultural Reform," *The Economics of Transition*, vol. 12, issue 3 (2004): 427-465.

². Albert Park, Hehui Jin, Scott Rozelle, and Jikun Huang, "Market Emergence and Transition: Transition Costs, Arbitrage, and Autarky in China's Grain Market," *American Journal of Agricultural Economics*, vol. 84, issue 1 (February 2002): 67-82.

Northeast. Technological advancement was combined with strong governmental intervention. Official rural credit was offered at subsidized rates, reaching a record of US\$20 billion in 1979. Additionally, the government implemented a policy of guaranteed prices coupled with stock control. As a result, Brazil's agribusiness experienced considerable growth and diversification.

The expansion of the agricultural frontier continued throughout the 1990s, accompanied by growing integration with international agricultural markets. The pattern of state intervention that had characterized the previous decades was drastically modified. Subsidized rural credit was substantially reduced, forcing the agricultural sector to find new sources of investment. Brazilian producers used both their own resources and resources captured in the market to finance their activities. Starting with soybeans, transactions of commodities in the derivatives market became widespread. Private financing efficiently substituted governmental interventionist measures such as subsidized credit and price and stock control. The 1990s can be described as the decade of the efficiency and competitiveness shocks in Brazilian agriculture.

Investment in technological improvement helped to position Brazil among the world's leaders in new technologies for tropical agriculture. The impact of research and development (R&D) on total factor productivity gains was substantially larger than the impact of rural credit.³ Capital expenditures also played an important role in the modernization of Brazil's agribusiness. Tractor sales expanded significantly in the first half of the 1990s, reaching approximately 40 thousand units per year in 1994. The positive performance was bolstered by government initiatives, such as the Program for the Modernization of the Agricultural Tractor Fleet (MODERFROTA). Mechanization and the rising utilization of fertilizers and agrochemicals provided new stimuli for production growth.

From a macroeconomic perspective, Brazil experienced a profound transformation in the 1990s. In order to combat a persistent process of high inflation, unilateral trade liberalization, elimination of subsidies, and market deregulation were introduced in the beginning of the decade. Despite the lack of government support, agricultural production, continued to grow. Although exports increased, export activities were still seen as a channel for commercialization of surplus production and not as a growth strategy in itself. The implementation of the "Real Plan" in 1994 finally brought macroeconomic stabilization to the country. However, the new stability was in a great measure

³. José Garcia Gasques, Eliana Teles Bastos, Mirian P.R. Bachi, and Júnia C.P.R. da Conceição, "Condicionantes da Produtividade Agropecuária Brasileira," *Textos para Discussão IPEA*, n. 1017 (2004).

sustained by food prices that did not adequately remunerate producers. This fact, combined with the high level of indebtedness many producers carried from previous years - when inflation was extremely high - created a heavy burden on the rural sector.

In 1998, the government started a process of securitization of the rural debt. In 1999, the currency devaluation favored the competitiveness of Brazilian agricultural exports in the international market, at the same time that international demand for agricultural products, particularly soybeans and its byproducts, started to increase. The currency devaluation inaugurated the period of most impressive growth for Brazil's agribusiness in recent decades. The rise in domestic consumption was accompanied by rising demand coming from China - which became the largest buyer of Brazilian soybeans -, Russia, and the Middle-East.

With the accumulation of investment in R&D and the removal of interventionist mechanisms such as subsidies and price control, the expansion of the agribusiness sector observed in recent years was made possible through efficiency gains (productivity and scale), high competitiveness and expanding demand in the international market.

2.2. Evolution of Chinese Agriculture

After the founding of the People's Republic of China in 1949, the government adopted an industrialization policy that was typical among most developing countries in the post-World War II era: taxing agriculture to subsidize industries. What made Chinese policies different was that they went too far. During 1958-1961, at the peak of the industrialization frenzy, the agricultural sector was so depressed that China experienced a nation-wide famine and estimated 30 million people perished, mostly in rural areas. Together with the US-led embargo in the early years of the People's Republic, the famine has left a bitter memory for the Chinese leadership. As a result, achieving grain self-sufficiency and food security has become a fundamental national policy for the world's most populated country.

However, the importance attached to food security by no means represented a change in the industrialization policy or a boost to the social and political status of farmers. Proletarian workers - and not farmers - have long had their leading political and economic roles enshrined into the Constitution. To develop manufacturing industries has always been a higher priority. Agriculture is important only in the sense that it provides cheap food for urban residents and cheap raw materials for industries, and rural vitality is

emphasized only when the situation in the countryside is so deprived that it threatens social stability.

The Chinese government subsidizes industries by setting low procurement prices for agricultural products. Prior to 1979, farmers had to sell most of their grain output to the government. Starting in 1979, the household responsibility system was initiated. Under the new system, farmers were given long term leases of farmland and in return were required to submit certain amounts of crops (up to a quota limit) to the government. This arrangement remains largely unchanged ever since.

Since 1979, China has embarked on a gradual process of reforms in rural areas. Agriculture market deregulation has been part of the country's overall move toward a more market-oriented economy. Price liberalization was first applied to non-strategic products, such as fruits and vegetables in 1985, and liquor and tobacco in 1988. In 1985, mandatory procurement was replaced with a contracted procurement system through which farmers submit a certain amount of their harvest to the government at contracted prices and sell the rest at higher market prices. Procurement is handled by government-designated bureaus, which are also responsible for distribution based on both policy directives and market forces. This dual-track system was designed so that the government could at the same time maintain control of sufficient amounts of food supply and allow the bureaus to engage in commercial trading, thus giving room to farmers to earn additional income. Although this formula has been applied to all major crops, cereals are subject to stricter controls than it is the case for soybeans, cotton and other crops. Starting in the early 1990s, bold liberalization was attempted in the grain sector, which allowed grain bureaus to engage in more commercial trading.⁴ However, a subsequent surge in grain prices led to a series of erratic policy swings in the 1990s – an indication of the difficulties of maintaining a balance between efficiency and food price stability. This had an important impact on China's grain trade. Wheat imports fell from 12.6 million tons in 1995 to 1.4 million tons in 1999. In the case of corn, the situation was even more irregular: net exports reached 5.6 million tons in 1993 (exports: 11.1 million tons; imports: 5.5 million tons), -11.6 million tons in 1995 (exports: 0.1 million tons; imports: 11.7 million tons), and 5.5 million tons in 2000 (exports: 10.5 million tons; imports: 5.0 million tons). In recent years, domestic grain trading has become more market oriented.

⁴. Scott Rozelle, Albert Park, Jikun Huang and Hehui Jin, "Bureaucrat to Entrepreneur: The Changing Role of the State in China's Grain Economy," *Economic Development and Cultural Change*, vol. 48, no. 2 (January 2000): 227-252.

China's accession to the WTO has been a continuation of its economic liberalization process. In terms of import duties, the Chinese agricultural tariff schedule that emerged after 2001 is relatively similar to Brazil's (see Table 1). China's mean tariff rate is 15% (Brazil's is 10%), its maximum tariff rate is 65% (Brazil's is 55%), and the total number of tariff lines is 977 (Brazil's is 959). Prior to China's accession to the World Trade Organization (WTO), import licensing and import quotas were key elements in the government's strategy to control domestic prices and the distribution of grains and edible oils. Such instruments lacked transparency, as rules were not published and the manner of allocating quotas was not clear. Trading rights were restricted to a limited number of foreign trade corporations (FTCs). Whereas state companies like China National Cereals, Oils and Foodstuffs Import and Export Corporation (COFCO) and China National Textiles Import and Export Corporation (Chinatex) did not require a license, private companies were not authorized to import or export grains, cotton and vegetable oils.

TABLE 1
Brazil's and China's Applied Tariff Structures

	BRAZIL (2003)	CHINA (2002)	USA (2003)	EU (2003)	INDIA (2002)
Mean	10.2	15.3	12.3	29.3	36.9
Median	10.0	13.0	4.4	14.4	30.0
Standard deviation	6.0	11.5	29.6	40.2	25.8
Variation coefficient	0.58	0.75	2.40	1.37	0.70
Maximum tariff	55.0	71.0	350.0	277.2	182.0
# of tariff lines	959	1044	1829	2091	690
# of tariff lines = 0	79	80	388	403	17
# of tariff lines > 30%	4	130	167	633	108

Sources: MDIC-Brazil, USITC, TARIC-EU and WTO.

The former State Development and Planning Commission (SDPC) determined the amount of quotas to be allocated to each province, which could vary throughout the year and was based on an estimate of each province's supply and demand. Once the volume of quotas and their allocation were established, the former Ministry of Foreign Trade and Economic Cooperation (MOFTEC) supervised its implementation.⁵ State-trading enterprises, like COFCO, were

⁵. These two agencies have been renamed as the National Development and Reform Commission, or NDRC, and the Ministry of Commerce, or MOFCOM, since China's entry into the WTO.

the agents who conducted the commercial operation. The quota owner generally had no right to import directly from a foreign country, or to choose its trading partners or specify a commodity's characteristics.

Upon accession to the WTO, China agreed to replace its system of quotas and import licensing with a tariff-rate-quota (TRQ) regime for sensitive commodities, namely: wheat, rice, corn, cotton, edible oils (soybean, rapeseed and palm oils), sugar, and wool. As part of its commitment to relax the long-held monopoly of state-trading companies in the country's foreign trade, China was required (i) to set-aside a certain percentage of TRQs to non-state-trading enterprises and (ii) to reallocate to private enterprises any portion of TRQs destined to state-trading enterprises that are not filled out until September of a given year. The amount of in-quota imports allocated to private enterprises was scheduled to increase along the first years after accession. Additionally, in-quota and out-of-quota duties were scheduled to fall during the phase-out period for most commodities. Table 2 summarizes China's TRQ commitments for agricultural products.

The implementation of China's TRQ commitments has proved to be rather problematic. Those who export to China express concerns as to the lack of transparency in the quota allocation process, since no information on the quantities and destinies of the TRQs is provided. Another problem reported is that TRQs allocated to some commodities are too small to be commercially viable. A potential importer holding a quota for a few thousand metric tons of grains has to pool the quota with other shipments in order to fill a large grain cargo ship (which generally holds between 10 and 55 thousand tons).⁶ Such practice adds transaction costs and could be further complicated if the government imposes restrictions on pooling.

⁶. Bryan Lohmar & David Skully, "China's TRQ Administration After One Year: Crossing the River by Feeling for Stones," paper prepared for the 2003 Annual Meeting of the International Agricultural Trade Research Consortium, Capri, Italy, June 17-19.

TABLE 2
China's TRQ Commitments for Agricultural Products

Agricultural product	Initial quota quantity (million MT)	Final quota quantity (million MT)	Date reaching final quota quantity	In-quota tariff (percent)	Out-of-quota tariff (percent)	Schedule for increasing TRQ quantity (million MT)
Wheat (6 products)	7.884	9.636	2004	1-10 (depending on product)	74 (accession); 65 (final)	2002: 8.468 2003: 9.052 2004: 9.636
Corn (5 products)	5.175	7.2	2004	1-10 (depending on product)	64 (accession); 51 (final)	2002: 5.85 2003: 6.525 2004: 7.2
Rice-short & medium grain (7 products)	1.6625	2.66	2004	1-9 (depending on product)	57 (accession); 46 (final)	2002: 1.995 2003: 2.3275 2004: 2.66
Rice-long grain (7 products)	1.6625	2.66	2004	1-9 (depending on product)	57 (accession); 46 (final)	2002: 1.995 2003: 2.3275 2004: 2.66
Soybean oil (2 products)	2.118	3.5871	2005	9	63.3 (accession); 9 (final by 2006)	2002: 2.518 2003: 2.818 2004: 3.118 2005: 3.5871
Palm oil (2 products)	2.1	3.168	2005	9	63.3 (accession); 9 (final by 2006)	2002: 2.4 2003: 2.6 2004: 2.7 2005: 3.168
Rapeseed oil (2 products)	0.7392	1.243	2005	9	63.3 (accession); 9 (final by 2006)	2002: 0.8789 2003: 1.0186 2004: 1.1266 2005: 1.243
Sugar (6 products)	1.68	1.945	2004	20 (initial); 15 (final)	68.8 (accession); 50 (final)	2002: 1.764 2003: 1.852 2004: 1.945
Wool (6 products)	0.25325	0.287	2004	1	38 (accession); 38 (final)	2002: 0.2645 2003: 0.27575 2004: 0.287
Cotton (2 products)	0.78075	0.894	2004	1	61.6 (accession); 40 (final)	2002: 0.8185 2003: 0.85625 2004: 0.894

Source: United States General Accounting Office, "Report to Congressional Committees: Analysis of China's Commitments to Other Members," GAO-03-04 (October 2002).

Note: TRQs on soybean oil, palm oil, and rapeseed oil will be eliminated on 1 January 2006.

An additional problem resides in the fact that many quotas were set aside for reprocessing trade (the so-called "B" quotas). The distinction between "A" quotas and "B" quotas contradict national treatment and market access commitments. The "A" quota is a general trade quota, which can be used for imports for any end-use. Imports under the "A" quota can either be consumed in China's domestic market or be re-exported. On the other hand, "B" quotas

are processing trade quotas only. Imports under a "B" quota must be processed and re-exported.

The practices of licensing (requiring that a company must obtain government's approval and submit documentation before importing), tendering (when making major purchases, private citizens or enterprises shall require government's approval) and import quotas shall be eliminated by 2005 for most products. For those products still requiring import licensing and quota requirements the country shall notify the WTO of all the procedures and shall not treat foreign individuals and enterprises and foreign-funded enterprises less favorably than other companies.

Designated trading – a practice that provides the right to import certain products to certain entities designated by the government and affects certain types of wool – was scheduled to be removed by the year 2004. On the other hand, state trading, a practice that grants state-run entities the right to import products like grains (wheat, corn and rice), vegetable oils (soybean, palm, rape, colza, and mustard oils), sugar, tobacco and cotton, is still legal after China's entry in the WTO.

China also committed to expand marketing and distribution services rights to foreign companies. Prior to WTO accession, the State Grain Administration (SGA) was responsible for all government grain purchases from farmers, as well as for the marketing, distribution and storage of grains. After a three-year period (due in 2004), foreign enterprises will be allowed to own and operate domestic distribution services.

Certain domestically sensitive products are subject to price controls and government guidance pricing. The latter, which requires prices to fluctuate within a certain range, affects certain types of tobacco, grains, vegetable oils, cotton and silkworm cocoon. Tobacco prices are fixed by the government, under the system known as price controls. This is part of a policy established in the late 1970s by which the government used to purchase preset amounts of agricultural products from farmers at fixed prices (higher than those in the international market) while allowing farmers to sell extra production at free market prices. However, in the early 1990s, as the government gradually loosened its grip on the fixation of prices, these have become more subject to the influence of market forces and increasingly integrated to the international market economy.

One of the most important commitments made by China upon its accession to the international trade system was to eliminate, upon accession, all subsidy programs falling within the scope of Article 3 of the WTO Agreement on

Subsidies and Countervailing Measures. This includes export subsidies as well as import substitution subsidies. Nevertheless, subsidies were still given to corn exports in order to dispose the stock piled up during the late 1990s.⁷

In the area of domestic support, China committed to a cap for trade and production-distorting domestic subsidies that is lower than the level usually conceded to developing countries. Its de minimis exemption is equivalent to 8.5% of the value of production of a basic agricultural product or 8.5% of the value of total agricultural production in the case of non-product specific support. Although the de minimis level in China is considerably greater than that allowed for developed countries (5%), it is lower than that allowed for other developing countries (10%). Investment and input subsidies destined to low-income farmers which are not subject to reduction commitments must be included as the country's aggregate measure of support (AMS). As in many developing countries, due to budget constraint, domestic support for Chinese agriculture is well under the upper limits stipulated in the accession agreement. Furthermore, because of various fees and taxes imposed on farmers, Chinese agriculture in fact is receiving negative overall support.⁸

China's operation of its value-added tax (VAT) system has been subject to complaints among its trading partners. The full VAT is charged on imports (13% in the case of agricultural products) right at the point of entry and may be reimbursed if goods are re-exported. Chinese producers seem to avoid the payment of the VAT on many products due to procedural problems or even fraud. Though the VAT policy itself is not meant to discriminate, the actual outcomes of its application to agricultural products in China are inconsistent with the most-favored-nation (MFN) and national treatment provisions of Articles I and II of GATT 1994.

⁷ Fred Gale, "China Corn Exports: Business as Usual, Despite WTO Entry," *USDA/ERS Electronic Outlook Report*, December 2002.

⁸ Sun Dongsheng, presentation at the conference on "Globalization, Market Integration, Agricultural Support Policy and Smallholders," Nanjing, China, November 8-9, 2004.

3. PRODUCTION AND CONSUMPTION

3.1. Social-Economic Importance of Agriculture

Agriculture plays an important role in both Brazil's and China's economies. It accounted for approximately 9.6% of Brazilian gross domestic product (GDP) in 2003 and 14.5% of Chinese GDP in 2002 (see Table 3). Although not as dominant a sector as it is the case in most developing countries, agriculture in Brazil and China accounts for a significantly greater share of total GDP than it is the case in other emerging markets such as Mexico (4.0%), South Africa (3.8%) and South Korea (3.2%) or in developed economies such as France (2.7%), Japan (1.4%) and the United Kingdom (1.0%).⁹

The relative weight of agriculture in Brazil's total GDP oscillated only marginally in the 1994-2002 period and registered a substantial improvement in 2003. The fact that the share of agriculture in Brazilian total output has increased for three consecutive years since 2000 demonstrates the rising importance of the sector. In China, the share of agriculture in total GDP has declined year after year since 1994. In 2002, the agricultural sector's stake in China's economy was only two-thirds of its level in 1994. This reflects the rapid expansion of the Chinese manufacturing sector.

TABLE 3
Agricultural GDP in Brazil and China (1994-2003)

Year	BRAZIL			CHINA		
	Ag GDP (R\$ billion) ¹	Ag GDP (US\$ billion)	% of total GDP	Ag GDP (Y\$ billion) ²	Ag GDP (US\$ billion)	% of total GDP
1994	118.2	47.0	8.6%	1,620.8	117.2	21.6%
1995	120.3	59.1	8.4%	1,572.8	145.6	20.8%
1996	116.5	61.4	7.9%	1,529.2	166.5	20.4%
1997	114.8	61.0	7.6%	1,389.4	164.4	18.3%
1998	122.0	63.0	8.0%	1,398.7	170.3	18.0%
1999	121.9	41.6	7.9%	1,444.2	174.5	17.6%
2000	120.8	45.3	7.5%	1,487.4	177.2	16.4%
2001	126.3	39.7	7.8%	1,530.9	185.8	15.8%
2002	141.4	38.7	8.6%	1,484.8	183.6	14.5%
2003	158.2	47.7	9.6%	n/a	n/a	n/a

Sources: Center for Advanced Studies in Applied Economics-University of São Paulo (CEPEA-USP), Brazilian Agriculture Confederation (CNA), Central Bank of Brazil, China Agricultural Development Report, China National Bureau of Statistics, and International Monetary Fund (IMF).

¹ Constant 2003 Brazilian Real (R\$).

² Constant 2002 Chinese Yuan (Y\$).

⁹. World Bank, *World Development Indicators Online*.

Despite the fall in the importance of agriculture in the Chinese economy, China's agricultural GDP measured in current United States Dollars (US\$) grew at an average annual rate of 4.6% between 1994 and 2002. Growth was significantly stronger in 1994-1996, and negative in 2001-2002. However, given the overvaluation of the Chinese Yuan (Y\$), China's agricultural GDP measured in constant local currency terms declined at an annual average rate of -0.7% in 1994-2002. In Brazil, the situation was the exact opposite. Agricultural GDP grew at an average annual rate of 2.6% in 1994-2003 if measured in terms of constant 2003 Brazilian Reals (R\$), and fell at an average annual rate of -3.8% if measured in current US\$. The devaluation of the Brazilian currency (first in 1999 and again in 2002) significantly reduced Brazil's total GDP in foreign currency terms. Growth in Brazilian agriculture coincided with the currency devaluation and was concentrated in the period after 2000.

In absolute terms, Brazil's agricultural GDP corresponds to less than one-third of China's. However, per capita agricultural GDP in Brazil (US\$294 in 2003) is over two times larger than in China (US\$140 in 2002). Modern agriculture goes well beyond farming and ranching. The term "agribusiness" best describes the true impact of agriculture in the economy as a whole. In 2003, the value added by agribusiness in Brazil amounted to R\$508.3 billion (US\$165.3 billion), or 30.8% of GDP. This figure included four distinct stages in the agribusiness chain: (i) inputs, (ii) agriculture per se, (iii) agro-industry, and (iv) the distribution of agricultural and agro-industrial products. Per capita agribusiness GDP in Brazil was US\$945 in 2003. Table 4 summarizes the evolution of the value added by each one of these sub-sectors in Brazil between 1994 and 2003, and the share of agribusiness activities in total GDP in the same period. Comparable figures for China are not available.

The first stage in the agribusiness chain comprises all "inputs" used in the production of agricultural goods, and includes industries such as fertilizers, agrochemicals, farm machinery and equipment, fuel, farm buildings, and credit and finance. The second stage comprises "agriculture" per se: farming and ranching activities up to the farm gate level. The third stage involves "agro-industry," i.e. the industries that process agricultural products beyond the farm gate level: (i) coffee, (ii) products of vegetable origin (including tobacco), (iii) meats, (iv) dairy products, (v) sugar, (vi) vegetable oils and fat, (vii) other food and beverage, (viii) wood and furniture, (ix) rubber, (x) textiles, (xi) apparel and shoes, and (xii) leather and skins. The fourth and final stage involves the "distribution" of agricultural and agro-industrial goods, and includes services such as transportation, wholesaling, and retailing, among others.

Measured in constant R\$ terms, Brazil's agribusiness GDP remained relatively stable throughout the second half of the 1990s. After moderate growth in 1994, Brazil's agribusiness contracted at an average annual rate of -0.1% between 1995 and 2000. Beginning in 2000, economic activities linked to agriculture experienced a significant boost and grew at an average annual rate of 6.0% through 2003.

TABLE 4
Brazil: Agribusiness GDP (1994-2003)

Year	Inputs	Agriculture	Agro-industry	Distribution	Total Agribusiness	
	R\$ billion	R\$ billion	R\$ billion	R\$ billion	R\$ billion	% of Total GDP
1994	19.4	118.2	140.6	140.5	418.8	30.4%
1995	18.6	120.3	150.9	141.2	431.0	30.1%
1996	18.9	116.5	144.3	144.3	424.0	28.8%
1997	18.7	114.8	145.1	141.7	420.3	27.7%
1998	19.7	122.0	137.4	143.5	422.7	27.8%
1999	23.1	121.9	141.2	144.4	430.5	28.1%
2000	24.5	120.8	142.6	143.0	430.9	26.9%
2001	25.4	126.3	141.5	145.2	438.5	27.0%
2002	29.6	141.4	149.8	156.3	477.1	28.9%
2003	33.4	158.2	154.1	162.6	508.3	30.8%

sources: Center for Advanced Studies in Applied Economics-University of São Paulo (CEPEA-USP) and Brazilian Agriculture Confederation (CNA).

Agriculture is a very important source of employment in Brazil and China. Table 5 indicates the evolution of Brazil's and China's total population employed in agriculture in the 1990-2002 period. Approximately 18 million Brazilians (or 27% of the country's employed population) had agriculture or agro-industry as their main professional activity in 2002. Of this total figure, 12.5 million people worked directly with farming or ranching, and 5.3 million worked in agro-industrial activities. In 1990, 20.3 million Brazilians (or 35% of the country's employed population) worked with agriculture or agro-industry. The reduction in the importance of agriculture as a source of employment in Brazil can be explained by three parallel phenomena: (i) development and diversification of secondary and tertiary sectors, (ii) urbanization, and (iii) increased use of technology in agricultural activities.

Agriculture is the single most important source of employment in China. In 2002, almost 320 million Chinese (or 43% of the country's employed population) worked directly with agriculture. China has by far the largest agricultural labor force in the world: it has 20 times more people employed in

agriculture than all industrialized countries combined (and 7 times more than all of Latin America and the Caribbean). In addition, China has over 165 million people who live in rural areas and work in non-agricultural activities. In 2002, 27.2% of this total worked in manufacturing, 17.9% in construction, 12.1% in wholesale, retail and catering, 7.6% in transport, storage, post and telecommunications, and 35.2% in other non-agricultural activities. A growing number of rural people are moving out of the traditional agricultural production sector into industry, services and other sectors in rural areas. The occupational changes in rural employment mirrors the success story of the booming township and village enterprises (TVE), which have enabled farmers to engage in non-agricultural economic activities without leaving the rural areas. Rural surplus labor poses a serious unemployment problem. The development of labor-intensive agricultural and non-agricultural production is believed to be the best solution to this pressing predicament. But this has been made difficult by the existing Hukou system that restricts migration from rural to urban areas,¹⁰ and the agricultural trade policy that over-emphasizes "food security" and grain self-sufficiency. As it is the case in Brazil, agricultural employment as a percentage of total employment declined approximately by 8 percentage points between 1990 and 2002.

¹⁰ Wang F L, "Reform Migration Control and New Targeted People: China's Hukou System in the 2000s," *China Quarterly*, vol 177: 115-32, March 2004.

TABLE 5
Agricultural Employment in Brazil and China (1990-2002)

Year	BRAZIL		CHINA	
	millions	% of total employment	millions	% of total employment
1990	20.3	34.7%	333.4	51.5%
1991	20.5	34.7%	341.9	52.2%
1992	20.7	34.9%	340.4	51.5%
1993	20.7	34.7%	332.6	49.8%
1994	20.5	34.0%	326.9	48.5%
1995	20.4	33.2%	323.3	47.5%
1996	18.9	31.6%	322.6	46.8%
1997	18.5	30.7%	324.3	46.5%
1998	18.0	29.6%	326.3	46.2%
1999	19.2	30.6%	329.1	46.1%
2000	18.7	28.7%	328.0	45.5%
2001	17.4	27.0%	324.5	44.4%
2002	17.8	26.9%	319.9	43.4%

Sources: Central Bank of Brazil, Brazilian Institute of Geography and Statistics (IBGE) and China Statistical Yearbook.

3.2. Production Patterns

Brazil and China are among the world's five main agricultural producers. In 2003, the two countries accounted for significant shares of total world production of cereals (21%), oil-bearing crops (21%), sugar (25%), fiber crops (30%), meats (35%), and fruits and vegetables (40%). While Brazil stands out for its production of soybeans, sugar, coffee, orange juice, poultry and bovine meats, China is prominent in cereals, fruits and vegetables, cotton, and swine and poultry meat production.

Planted Area

In the 1990s, planted area in China was almost three times larger than in Brazil. Following 2000, Brazil experienced significant expansion and China a slight retraction in planted area. The latest numbers indicate that Brazil devoted 60.4 million hectares to farming in 2004, while China allocated 154.6 million hectares in 2002. Total planted area in Brazil has gone through seven

consecutive years of expansion. Most of the growth is explained by the expansion of soybeans in the Cerrados region. Table 6 summarizes the evolution of planted area in Brazil and China in the 1990-2004 period.

TABLE 6
Planted Area in Brazil and China (million hectares)

Year	Brazil	China
1990	53.2	148.4
1991	51.8	149.6
1992	52.3	149.0
1993	49.2	147.7
1994	52.8	148.2
1995	51.9	149.9
1996	46.8	152.4
1997	48.3	154.0
1998	48.5	155.7
1999	50.7	156.4
2000	51.8	156.3
2001	51.6	155.7
2002	54.5	154.6
2003 (p)	56.6	n/a
2004 (p)	60.4	n/a

Sources: Brazilian Institute of Geography and Statistics (IBGE) and China Statistical Yearbook.

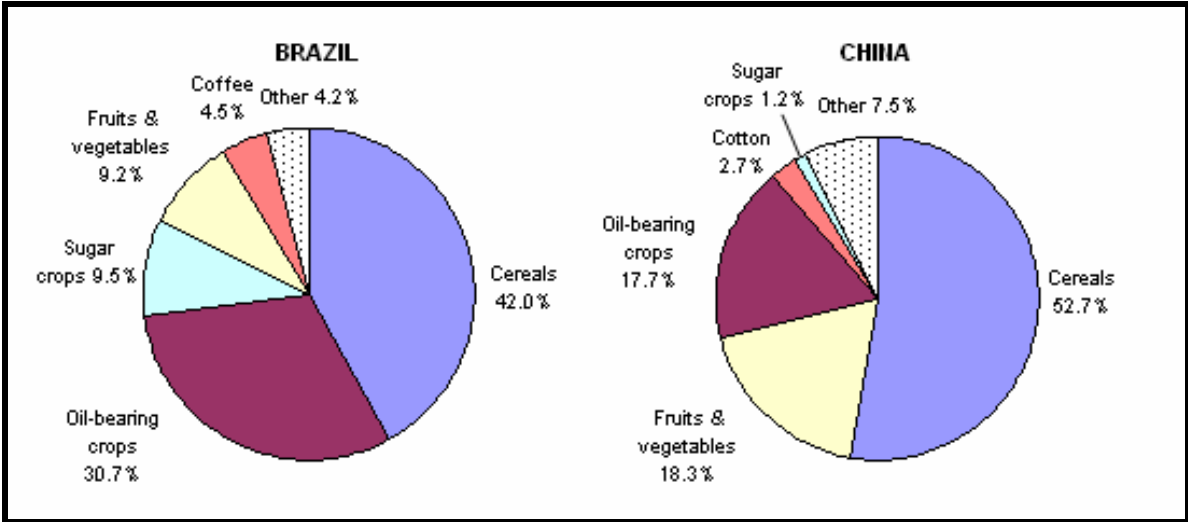
(p) Preliminary data.

n/a Data not available.

Figure 1 depicts the composition of Brazil's and China's total planted area in 2002. In both countries, cereals constituted the single most important type of crop in terms of planted area. While in Brazil cereals were followed by oil-bearing crops (mostly soybeans), in China they were followed by fruits and vegetables. In each country, the two most important crop categories accounted for almost three-fourths of the total area devoted to farming. Sugarcane (9.5%), fruits and vegetables (9.2%), and coffee (4.5%) were Brazil's third, fourth, and fifth most important cultures from the point of view of planted area. In China, such positions were occupied by oil-bearing crops (17.7%), cotton (2.7%) and sugar crops (1.2%). These figures reflect Brazil's world leadership in soybean, sugarcane and coffee production, and China's competitive advantage in labor-intensive products, such as fruits and vegetables. They also illustrate the striking similarities in farmland composition for land-intensive versus labor-intensive crops (7:3 for cereal and oil-bearing crops versus horticulture etc.) in the two countries which have quite different land/labor endowments. This simple comparison suggests that distortion in

Chinese agriculture is so high that it even resembles the land-use structure of a free agricultural economy with the opposite land/labor endowment ratio.

FIGURE 1
Composition of Planted Area in Brazil and China (2002)



Sources: Brazilian Institute of Geography and Statistics (IBGE), China Statistics Yearbook, and Food and Agriculture Organization (FAO). "Fruits & Vegetables" contain tubers. In the case of Brazil, "Cereals" contain beans.

From the point of view of planted area, four different phenomena took place in Brazil in the 1990-2002 period. First, the areas devoted to soybeans and sugarcane experienced significant expansion, expanding at average annual rates of 3.5% and 2.0% respectively. Second, the areas devoted to tobacco and fruit experienced modest growth rates of 0.7% and 0.4% respectively. Third, the areas devoted to cocoa, coffee, cereals, and vegetables declined at annual average rates that varied from -0.2% to -1.8%. In the case of cereals (annual average growth rate of -1.5%), the decline was less pronounced for maize (-0.7%) and more prominent in the cases of rice (-3.1%), beans (-2.7%), and wheat (-2.6%). Finally, the area devoted to cotton retracted at an annual average rate of -8.3%.

Preliminary data for 2003 and 2004 indicate that areas devoted to all major crops – except beans, cocoa, coffee, and oranges – have expanded during these years. Growth has been especially impressive in the cases of soybeans and cotton (30% expansion in 2002-2004), tobacco (25% expansion), and wheat (22% expansion). Total planted area in Brazil expanded by almost 11% (or 5.8 million hectares) between 2002 and 2004. Not less than 61.7% of this expansion occurred in the Center-West region, 23.6% in the South, 9.1% in the Southeast, 3.9% in the North, and only 1.8% in the Northeast.

In China, cereal production is competing with other crops for farmland and is losing the battle as more arable lands are being devoted to crops that are more lucrative to farmers (such as fruits and vegetables). Farmland devoted to cereals declined from 94 million hectares in 1990 to 81 million hectares in 2002. Rice and wheat farmland declined the most (from 33 to 28 million hectares in the case of rice; from 31 to 24 million hectares in the case of wheat). While farmland planted with wheat and rice declined at average annual rates of -1.9% and -0.9% in 1990-2002, the area devoted to corn increased at a positive rate of 1.6% in the same period (from 21 to 25 million hectares).

Areas devoted to cotton, tobacco, and sugar crops also declined in 1990-2002 at average annual rates of growth of respectively -3.7%, -2.7% and -0.6%. In the case of sugar crops, farmland devoted to sugar beets fell at an average annual rate of -5.9% and areas devoted to sugarcane increased at a rate of 1.9%. The most impressive average annual growth rates in planted area in China in the 1990-2002 period were observed for vegetables (9.2%), fruits (5.1%), peanuts (4.9%), and soybeans (2.4%).

Production Volumes: Farming

Production volumes for most Brazilian agricultural commodities have increased significantly since 1990. Cereal production grew at an average annual rate of 2.7% between 1990 and 2002. The four key components of Brazil's cereal basket (maize, rice, wheat, and beans) performed quite differently in this period. Maize – the single most important cereal in Brazil in terms of production volume – experienced a significant surge, especially after 2000. Production grew at an average annual rate of 3.4% in 1990-2002, thanks among other reasons to increased demand from the livestock sub-sector and to double-cropping with soybeans in the Cerrados region. In 2001, Brazil became a net exporter of maize, especially to the European Union, South Korea, and Iran. Oscillation in production levels in recent years can be explained by fluctuations in stock levels and in the price of maize relative to soybeans. Preliminary data indicate that total maize output was 48.0 million tons in 2003 and 42.3 million tons in 2004.

In the case of rice and beans, growth has been more modest: output expanded by respectively 1.3% and 0.7% in 1990-2002. However, preliminary data for 2003 and 2004 indicate that these two cereals experienced significant growth in recent years. Rice output reached 13.0 million tons in 2004, and the production of beans reached 3.3 million tons in 2003.

Wheat production contracted at an annual average rate of -0.1% in the 1990-2002 period. However, this trend was reversed in 2003. According to preliminary data, Brazilian wheat production reached 6.0 million tons in 2003 and 6.2 million tons in 2004. These figures are pretty impressive if one considers that Brazil produced only 1.7 million tons of wheat in 2000.

Soybeans registered the best performance of any of the key agricultural products of vegetable origin. Between 1990 and 2002, production expanded at an average annual rate of 7.2% . If the preliminary data for 2003 and 2004 are taken into account, the average annual growth rate for the 1990-2004 period reaches 7.9% .

Sugarcane, cotton, coffee, and tobacco have experienced moderate growth in production levels of between 2% and 3% per year in 1990-2002. While sugarcane, cotton, and tobacco production volumes have increased significantly in 2003-2004, coffee production has declined.

Cocoa has had the worst performance among Brazil's main agricultural products in 1990-2002. Production declined at an annual average rate of -6.1% in this period. Output in 2002 (174,796 tons) was only half of that in 1990 (356,246 tons). Production levels reached a 15-year low of 169,602 tons in 2003, and slightly recovered in 2004 (178,191 tons). Figure 3 illustrates how production volumes for cocoa and other selected products have performed in the 1990-2002 period.

Production patterns show that Chinese agriculture is growing both in line with its comparative advantage in labor-intensive products (such as fruits and vegetables) and in staple crops that are considered strategic commodities (such as cereals). Total cereal output in China grew at an average annual rate of 0.3% and stayed at around 400 million tons in the 1990-2002 period. Bumper harvests occurred in 1996-1999, when the average annual cereal output surpassed 450 million tons. The reason behind the 1996-1999 harvests was the government's renewed effort to boost grain production, in response in part to alarms about China's inability to feed its population in the future.¹¹ Actions included the institution of the government responsibility system to ensure self-sufficiency at the provincial level. Following 1999, rice and wheat outputs fell significantly and reached their lowest levels in 13 years (respectively 175 and 90 million tons in 2002). On the other hand, corn production grew at an average annual rate of 2.0% in 1990-2002, and reached 121 million tons in 2002.

¹¹. Lester R. Brown, *Who Will Feed China? Wake-up Call for a Small Planet* (New York: W.W. Norton & Company, 1995).

Oil-bearing crops experienced steady growth in production volumes in 1990-2002. Unlike cereals, they are not subject to self-sufficiency requirements. While soybean production increased from 12 to 22 million tons in 1990-2002 (average annual growth rate of 3.9%), peanuts output rose from 6 to 15 million tons (8.2%) and rapeseed from 7 to 10 million tons (4.2%). These crops were not covered by governmental production-boost measures and therefore did not experience special output surges in 1996-1999. The steady increase in soybean output was largely driven by consumers' increasing demand for edible oil and meat, which in turn drove the demand for soybean meal.

Cotton and tobacco did not experience a pattern of growth similar to oil-bearing crops. While cotton output grew from 4.5 to 4.9 million tons between 1990 and 2002 (average annual growth rate of only 0.1%), tobacco output fell from 2.6 to 2.4 million tons (average annual growth rate of -1.8%).

The least strategic – and therefore most liberalized product category – is high value-added and labor-intensive horticulture. Fruit output jumped from 19 to 70 million tons in the 1990–2002 period and experienced an average annual growth rate of 11.9%. China is the world's largest producer and consumer of apples, pears, and grapes, accounts for 50% of world apple production, 65% of world pear production, and 40% of world table grape production.¹² Apple production alone jumped from 4 to 19 million tons in the 1990-2002 period (average annual growth rate of 14.6%). Citrus production grew from 5 to 12 million tons (7.3%) and pear production from 2 to 9 million tons (13.4%). Horticulture is a part of the Chinese agriculture that is moving in line with its comparative advantages.

Production Volumes: Ranching

Brazil and China are among the world's main producers of meat. Table 7 summarizes these two countries' production volumes, world rankings and shares of world production for key meats in 2003.

Brazil has recently gone through a revolution in the livestock sector. Bovine, swine, and – most especially – chicken meat production grew at impressive rates in the 1994-2003 period. Chicken meat production grew at an average annual rate of 9.5% and surpassed bovine meat production in 2002. Bovine meat and swine meat production levels grew at average annual rates of respectively 4% and 9% in the same period. In 2003, Brazil was the world's

¹². Adam Branson, Wu Bugang, and Casey E. Bean, "People's Republic of China – Fresh Deciduous Fruit – Annual Report 2004," GAIN Report CH4033, 15 September 2004.

second largest producer of bovine meat (accounting for 13% of world production), third largest producer of chicken meat (12% of world production), and fourth largest producer of swine meat (3% of world production).

TABLE 7
Meat Production in Brazil and China:
World Rankings, Production Volumes and Shares of World Production

		BRAZIL	CHINA
Bovine Meat	World ranking	2	4
	Production vol.	7.5 million tons	6.2 million tons
	% of world prod.	13%	11%
Chicken Meat	World ranking	3	2
	Production vol.	7.8 million tons	9.5 million tons
	% of world prod.	12%	15%
Swine Meat	World ranking	4	1
	Production vol.	3.1 million tons	46.0 million tons
	% of world prod.	3%	47%

Source: Institute for International Trade Negotiations (ICONE).
Based on data from the Food and Agriculture Organization (FAO).

The livestock sector is also quite competitive in China. The country is the single most important meat producer in the world. It accounts for 47% of world swine meat production, 15% of world chicken meat production, and 11% of world bovine meat production. In 2003, China was also the world's number one producer of sheep and goat meat (3.6 million tons, or 30% of world production), duck meat (2.2 million tons, or 60% of world production), and goose meat (2.0 million tons, or 92% of world production).

3.3. Consumption Patterns

Whereas Brazil's production volumes for key agricultural products generally overpass domestic demand, China's 1.2 billion inhabitants and its domestic industries tend to consume more agricultural products than the country is capable of producing. Table 8 indicates Brazil's and China's average consumption levels, the ratio between domestic production and consumption, and per capita consumption for a series of agricultural products in the 2001-2003 period. Figures in bold denote that domestic production was insufficient to meet domestic consumption (differences in quality and variety are not considered). Underlined figures indicate products for which domestic consumption grew at average annual rates of 5% or above during the 2000-2003 period.

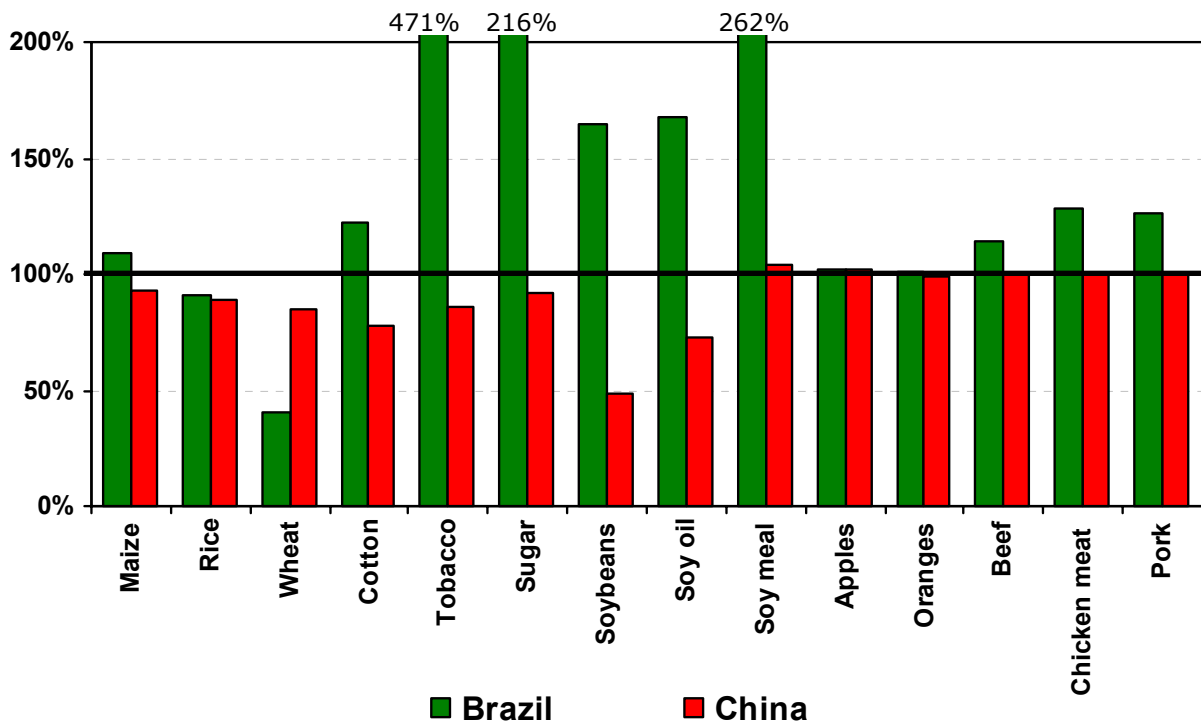
TABLE 8
Consumption of Key Agricultural Products in Brazil and China
(2001-2003 annual averages)

PRODUCT	BRAZIL				CHINA			
	Consumption (1000 MT)	Avg Annual Growth Rate (2000-03)	Production / Consumption	Per Capita Consumption (Kg/Person)	Consumption (1000 MT)	Avg Annual Growth Rate (2000-03)	Production / Consumption	Per Capita Consumption (Kg/Person)
Corn	37,033	4.4%	1.09	211.6	125,867	2.3%	0.93	98.3
Rice (milled)	8,267	1.0%	0.91	47.2	134,927	0.2%	0.89	105.4
Wheat	9,931	1.1%	0.40	56.7	106,147	-1.9%	0.85	82.9
Cotton	784	-3.3%	1.22	4.5	6,427	<u>11.6%</u>	0.78	5.0
Tobacco (dry weight)	107	0.0%	4.71	0.6	2,335	<u>17.3%</u>	0.86	1.8
Sugar (centrifugal)	9,483	2.3%	2.16	54.2	9,652	<u>8.8%</u>	0.92	7.5
Soybeans	29,840	<u>10.0%</u>	1.65	170.5	32,656	<u>10.3%</u>	0.48	25.5
Soybean oil	3,100	0.4%	1.68	17.7	5,890	<u>28.9%</u>	0.73	4.6
Soybean meal	8,225	<u>5.0%</u>	2.62	47.0	18,361	<u>11.4%</u>	1.04	14.3
Apples	827	3.8%	1.02	4.7	18,817	-3.9%	1.02	14.7
Oranges	17,358	<u>5.3%</u>	1.01	99.2	3,664	<u>10.2%</u>	0.99	2.9
Bovine Meat	6,300	1.2%	1.14	36.0	5,800	<u>5.2%</u>	1.00	4.5
Chicken Meat	5,651	4.5%	1.28	32.3	9,624	2.4%	1.00	7.5
Swine Meat	1,950	2.4%	1.26	11.1	43,154	3.3%	1.00	33.7

Source: Institute for International Trade Negotiations (ICONE).
Based on data from the USDA Foreign Agricultural Service.

For 12 of the 14 agricultural products listed in Table 8, average production volumes in Brazil were greater than the respective domestic consumption volumes in 2001-2003. Wheat and rice were the only exceptions. Figure 2 indicates self-supply rates for Brazil and China in the same period. While wheat production was only 40% of domestic consumption, rice production corresponded to 91% of domestic consumption. Consumption volumes for soybeans, soybean meal and oranges grew at average annual rates of 5% or above. Chicken meat and corn consumption also registered noteworthy average annual rates of growth (4.5% and 4.4% respectively).

FIGURE 2
Self-Supply Rates in Brazil and China
 (2001-2003 annual averages)



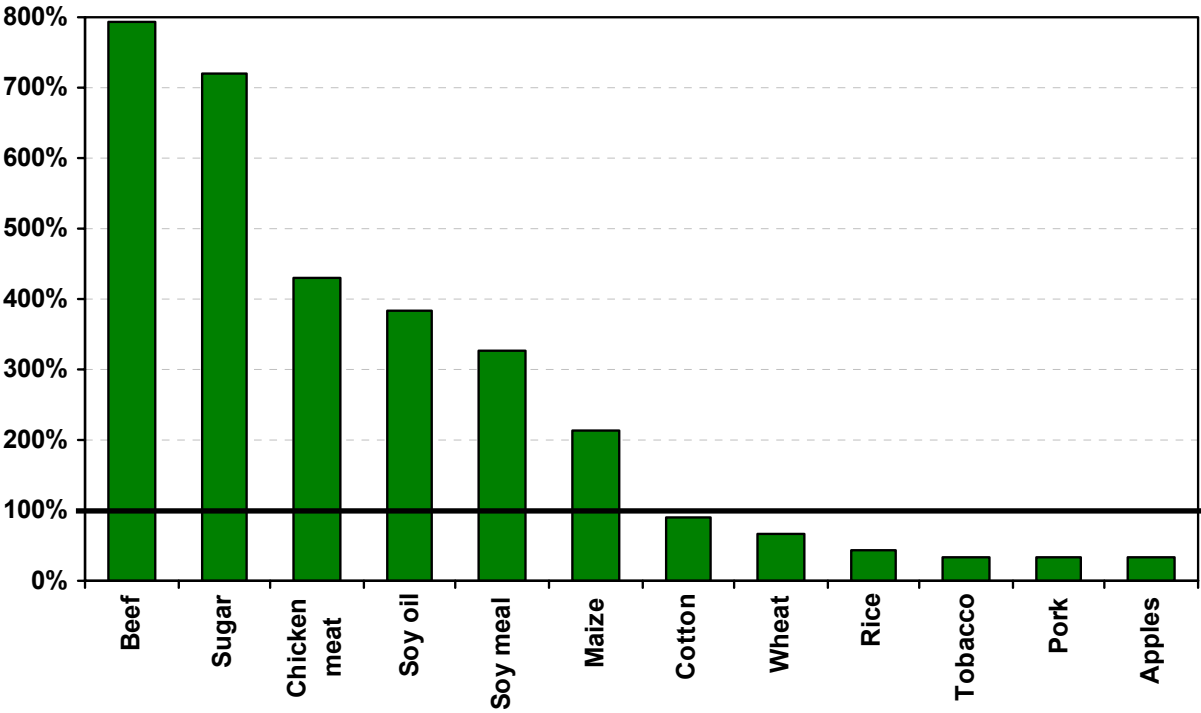
Source: Institute for International Trade Negotiations (ICONE).
 Based on USDA Foreign Agricultural Service data.

In China, the situation was considerably different from Brazil's recent experience. For only 5 of the 14 products listed in Table 8 did domestic production volumes exceed domestic consumption volumes in 2001-2003. This included meats (beef, chicken and pork), soybean meal, and apples. Even for these products, domestic consumption volumes were very close to production volumes. China registered remarkable deficits for soybeans, soybean oil, cotton, tobacco, and cereals. Consumption volumes for most products expanded considerably in the same period. This was the case especially for soybean oil (average annual growth rate of 28.9% between 2000 and 2003), tobacco (17.3%), cotton (11.6%), soybean meal (11.4%), soybeans (10.3%), and oranges (10.2%). Sugar and bovine meat consumption also registered high average annual rates of growth (8.8% and 5.2% respectively).

Distinct consumption patterns can be observed between Brazil and China. Figure 3 indicates Brazilian per capita consumption as a percentage of Chinese per capita consumption in the 2001-2003 period. The average Brazilian citizen consumed four times more chicken meat, seven times more sugar, and eight

times more bovine meat than the average Chinese citizen. Thus, there is significant space for additional growth in the Chinese market for these products. On the other hand, the average Chinese citizen consumed two times more rice and three times more pork, tobacco and apples than the average Brazilian citizen. In the case of cotton, per capita consumption in China was 10% greater than in Brazil.

FIGURE 3
Brazilian Per Capita Consumption as a Percentage
of Chinese Per Capita Consumption
(2001-2003 annual averages)



Source: Institute for International Trade Negotiations (ICONE).
Based on USDA Foreign Agricultural Service data.

4. TRADE

While Brazil is a net exporter of agricultural products, China became a net importer of such products in 2003. Brazil's agricultural sector registered an average annual trade surplus of US\$13.3 billion in the 2000-2003 period. The balance between Brazilian agricultural exports and imports grew uninterruptedly since 2000 and reached US\$17.6 billion in 2003. In the case of China, the agricultural sector registered an average annual trade surplus of US\$3.6 billion in 2000-2003. The balance between exports and imports fell from a record surplus of US\$9.6 billion in 2000 to a deficit of US\$500 million in 2003.

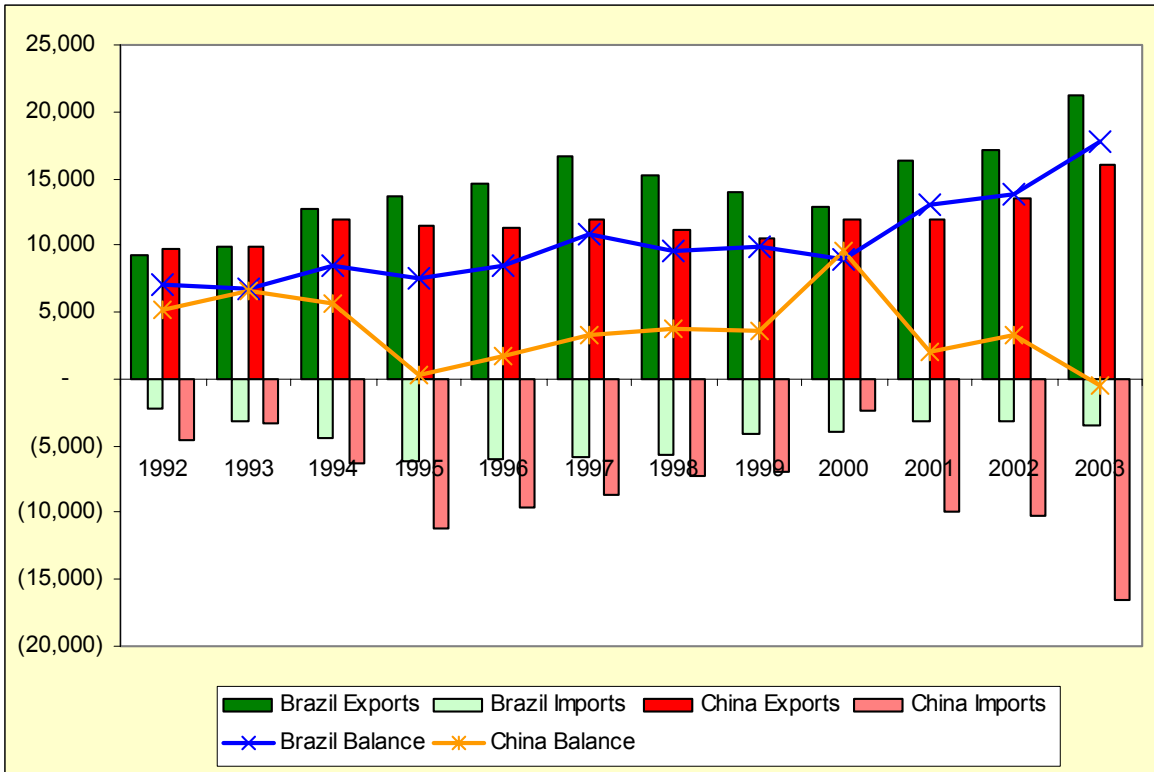
In Brazil, agricultural trade surplus expansion was due both to an extraordinary upsurge in exports and a slight decline in imports. While agricultural exports grew at an average annual rate of 16.3% in 2000-2003, imports fell on average 3.7% a year in the same period. As a result, the agricultural trade surplus grew at an average annual rate of 23.0%. Growth was especially remarkable in 2001, when net agricultural exports nearly doubled. In China, the retraction in agricultural trade balance was due to a remarkable growth in imports, particularly of soybean and soybean products. While Chinese agricultural exports grew at an average annual rate of 10.5% in 2000-2003, agricultural imports expanded at an average annual rate of 80.1% in the same period. Figure 4 summarizes Brazil's and China's agricultural exports, imports, and trade balance in the 2000-2003 period.

4.1. Brazilian Agricultural Exports and Imports

Brazilian agricultural exports increased from US\$8.9 billion in 1990 to US\$21.1 billion in 2003. The growth in the value of exports was especially strong after 2000 and was mostly driven by an expansion in volume of exports. All major agricultural export items – with the exception of orange juice and fresh oranges – experienced a substantial escalation in exported volumes in the 2000-2003 period. Brazil exported nearly twice as much soybeans and sugar in 2003 as it did in 2001. The country also exported three times as much frozen boneless beef, frozen swine meat, and ethyl alcohol. Export volume growth was even more impressive in the cases of corn and cotton.

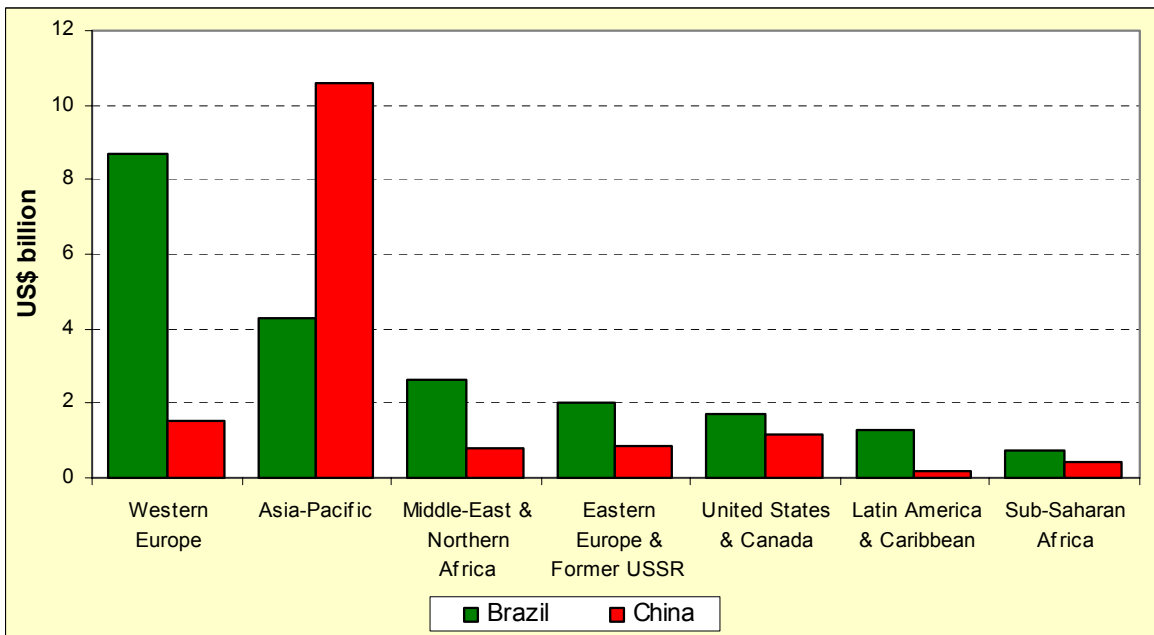
Brazil's agricultural export boom has been pushed by increased sales to its most traditional export market (Western Europe) and, more importantly, to boosted exports to non-traditional markets. Figure 5 summarizes Brazilian and Chinese agricultural exports by region of destination in 2003.

FIGURE 4
Brazilian and Chinese Agricultural Exports, Imports and Trade Balance



Sources: Brazilian Ministry of Development, Industry and External Trade (MDIC) and China Customs Statistics.

FIGURE 5
Brazilian and Chinese Agricultural Exports by Destination (2003)



Sources: Brazilian Ministry of Development, Industry and External Trade (MDIC) and China Customs Statistics.

Although Western Europe continues to be the most important destination for Brazil's agricultural exports, the region's share on total Brazilian agricultural exports declined from 52.4% in 1990 to 40.3% in 2003. Sales to Western Europe grew at an average annual rate of 4.2% in 1990-2003 (11.3% in 2000-2003) and reached US\$8.5 billion in 2003.

Asia-Pacific, the Middle-East & Northern Africa, and Eastern Europe & the former USSR are currently the most dynamic export markets for Brazilian agricultural products. They were respectively the second, third, and fourth most important destinations for Brazilian exports in 2003. Together the 3 regions accounted for 22.1% of Brazil's total agricultural exports in 1990 and 41.7% in 2003. Exports to these regions grew at an average annual rate of 11.8% in 1990-2003 (27.8% in 2000-2003) and reached US\$8.9 billion in 2003.

Brazilian agricultural exports to the United States & Canada declined at an average annual rate of -0.9% in 1990-2003. However, if one considers only 2000-2003, Brazilian exports to these two countries grew approximately 10.9% per year – a rate similar to the one experienced by exports destined to Western Europe in the same period.

Conversely, exports to Latin America & the Caribbean grew on average 9.1% per year in 1990-2003, but fell at an average annual rate of -1.4% in 2000-2003. The poor performance of exports to Latin America and the Caribbean was due mainly to the Argentinean crisis and its spill over effects on Paraguay and Uruguay. Unlike exports to Mercosur countries, sales to Mexico, Central America, the Caribbean, and most Andean countries have grown significantly. The Western Hemisphere (United States, Canada, Latin America, and the Caribbean) accounted for 23.9% of total Brazilian agricultural exports in 1990 and 14.0% in 2003. Exports to the Americas grew at an average annual rate of 2.4% in 1990-2003 (5.4% in 2000-2003) and reached US\$3.0 billion in 2003.

Brazilian agricultural exports to Sub-Saharan Africa grew on average 11.9% per year in the 1990-2003 period. Between 2000 and 2003, the average annual growth rate was 37.5% – the second most expressive growth rate for exports to any region of the world (only behind exports to Eastern Europe and the former USSR, which grew at an average annual rate of 38.8% in the same period). Nonetheless, Sub-Saharan Africa accounted for only 3.5% of Brazil's total agricultural exports in 2003 (US\$745 million).

Table 9 summarizes Brazil's agricultural exports by country of destination. The European Union, China, the United States, Russia, and Japan accounted for

77.0% of Brazil's total agricultural exports in 1990 and 66.4% in 2003. While Europe, the United States, and Japan lost relative weight in this period, China and Russia became increasingly important players. Middle-Eastern and Northern African countries – such as Iran, Saudi Arabia, Egypt, and the United Arab Emirates – also became major importers of Brazilian agricultural products.

TABLE 9
Brazilian Agricultural Exports by Country of Destination

#	Country	1990		2000		2001		2002		2003	
		US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total
1	European Union	4,257.3	48.1%	5,832.9	45.2%	6,793.7	41.7%	6,875.0	40.3%	8,402.7	39.5%
2	China*	227.0	2.6%	644.9	5.0%	888.7	5.5%	1,272.8	7.5%	2,036.6	9.6%
3	United States	1,669.4	18.9%	1,111.7	8.6%	934.8	5.7%	1,123.9	6.6%	1,462.2	6.9%
4	Russia	188.9	2.1%	411.3	3.2%	1,083.3	6.7%	1,207.9	7.1%	1,421.3	6.7%
5	Japan	478.0	5.4%	643.6	5.0%	710.5	4.4%	763.8	4.5%	803.9	3.8%
6	Iran	125.4	1.4%	246.9	1.9%	390.7	2.4%	435.9	2.6%	745.2	3.5%
7	Saudi Arabia	103.6	1.2%	265.4	2.1%	398.2	2.4%	385.1	2.3%	500.2	2.4%
8	South Korea	73.5	0.8%	118.3	0.9%	293.8	1.8%	298.5	1.7%	348.9	1.6%
9	Argentina	47.4	0.5%	448.4	3.5%	432.9	2.7%	204.1	1.2%	318.5	1.5%
10	United Arab Emirates	17.8	0.2%	145.2	1.1%	225.7	1.4%	232.8	1.4%	267.8	1.3%
	Other	1,667.5	18.8%	3,046.4	23.6%	4,135.9	25.4%	4,273.0	25.0%	4,973.8	23.4%
	Total	8,855.9	100.0%	12,914.9	100.0%	16,288.3	100.0%	17,072.8	100.0%	21,281.2	100.0%

Source: Brazilian Ministry of Development, Industry, and Foreign Trade (MDIC).

* Includes Mainland China, Hong Kong, and Macau.

Of particular interest is the decline in Argentina's importance as an outlet for Brazilian agricultural exports. In 2000, before the eruption of Argentina's financial crisis, the country was the fifth most important destination for Brazilian agricultural products (after the European Union, the United States, China, and Japan) and accounted for 3.5% of Brazil's total agricultural exports. In 2002, Argentina fell to the twelfth position, with a share of only 1.2% of Brazil's foreign sales in the agricultural sector. The value of Brazilian agricultural exports to its main Mercosur partner was reduced to US\$204 million – less than half of the 2001 level. In 2003, agricultural exports to Argentina started to recover. The country imported US\$319 million from Brazil, which made it Brazil's ninth most important foreign buyer in the agricultural sector (1.5% of total Brazilian agricultural exports).

Brazilian agricultural exports are concentrated on a small number of agro-industrial chains. Table 10 lists Brazil's 12 most important agro-industrial chains measured in terms of export value. In 2003, these 12 chains accounted for 93.9% of Brazil's total agricultural exports. The top 6 chains (soy, sugar/alcohol, coffee, poultry meat, bovine meat, and fruit juice) represented approximately 80% of total exports in 2003. The soy chain alone accounted for nearly 40%. The relative importance of soy, meats (poultry, bovine, and swine), and corn increased considerably between 1990 and 2003. In contrast,

the coffee, cocoa, and tobacco chains experienced a significant decline in their shares of Brazil's total agricultural exports.

TABLE 10
Brazilian Agricultural Exports by Agro-Industrial Chain

#	Agro-Industrial Chain	1990		2000		2001		2002		2003	
		US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total
1	Soy	2,854.4	32.2%	4,197.5	32.5%	5,296.7	32.5%	6,009.1	35.2%	8,125.7	36.2%
2	Sugar & Alcohol	590.5	6.7%	1,337.5	10.4%	2,501.8	15.4%	2,389.6	14.0%	2,458.5	11.6%
3	Poultry Meat	339.3	3.8%	904.2	7.0%	1,439.5	8.8%	1,497.8	8.8%	1,953.3	9.2%
4	Bovine Meat	156.2	1.8%	858.8	6.6%	1,110.0	6.8%	1,211.8	7.1%	1,662.2	7.8%
5	Coffee	1,282.9	14.5%	1,784.1	13.8%	1,417.1	8.7%	1,384.8	8.1%	1,546.4	7.3%
6	Fruit Juice	1,520.0	2.1%	1,101.4	8.5%	890.7	5.5%	1,044.0	6.1%	1,159.3	5.4%
7	Tobacco	623.2	7.0%	841.5	6.5%	944.3	5.8%	1,008.2	5.9%	1,090.2	5.1%
8	Swine Meat	23.4	0.3%	183.2	1.4%	375.3	2.3%	486.7	2.9%	552.7	2.6%
9	Fruit	188.5	2.1%	369.2	2.9%	346.5	2.1%	361.6	2.1%	485.0	2.3%
10	Corn	39.6	0.4%	18.3	0.1%	512.3	3.1%	282.1	1.7%	402.2	1.9%
11	Cocoa	365.0	4.1%	167.9	1.3%	180.5	1.1%	208.6	1.2%	322.9	1.5%
12	Cotton	177.8	2.0%	46.2	0.4%	181.7	1.1%	124.1	0.7%	215.9	1.0%
	Other	2,026.4	22.9%	1,105.1	8.6%	1,091.9	6.7%	1,064.6	6.2%	1,306.9	6.1%
	Total	8,855.9	100.0%	12,914.9	100.0%	16,288.3	100.0%	17,072.8	100.0%	21,281.2	100.0%

Source: Brazilian Ministry of Development, Industry, and Foreign Trade (MDIC).

TABLE 11
Brazilian Agricultural Exports by Tariff Line

#	NCM	Product	1990		2000		2001		2002		2003	
			US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total
1	1201.00.XX	Soya, Beans	910.0	10.3%	2,187.9	16.9%	2,725.5	16.7%	3,032.0	17.8%	4,290.4	20.2%
2	2304.00.XX	Soya, Oilcake	1,610.4	18.2%	1,650.5	12.8%	2,065.2	12.7%	2,198.9	12.9%	2,602.4	12.2%
3	1701.11.00	Sugar, Raw	325.7	3.7%	761.5	5.9%	1,400.8	8.6%	1,111.3	6.5%	1,350.0	6.3%
4	0901.11.10	Coffee, Not Roasted	1,105.8	12.5%	1,559.1	12.1%	1,207.6	7.4%	1,195.0	7.0%	1,302.3	6.1%
5	0207.14.00	Broiler Meat, Cuts, Frozen	132.5	1.5%	445.0	3.4%	789.6	4.8%	881.3	5.2%	1,092.4	5.1%
6	1507.10.00	Soya, Oil	321.4	3.6%	299.6	2.3%	414.9	2.5%	675.0	4.0%	1,041.9	4.9%
7	2009.11.00	Orange Juice, Frozen	1,468.5	16.6%	1,019.3	7.9%	812.6	5.0%	869.3	5.1%	910.2	4.3%
8	2401.20.30	Tobacco, Virginia	419.7	4.7%	581.1	4.5%	681.0	4.2%	737.4	4.3%	792.1	3.7%
9	1701.99.00	Sugar, Refined	200.1	2.3%	437.6	3.4%	878.2	5.4%	982.3	5.8%	790.0	3.7%
10	0202.30.00	Beef, Boneless, Frozen	76.5	0.9%	332.8	2.6%	500.9	3.1%	508.0	3.0%	726.0	3.4%
		Other	2,285.2	25.8%	3,640.5	28.2%	4,811.9	29.5%	4,882.3	28.6%	6,383.5	30.0%
		Total	8,856	100.0%	12,915	100.0%	16,288	100.0%	17,073	100.0%	21,281	100.0%

Source: Brazilian Ministry of Development, Industry, and Foreign Trade (MDIC).

When analyzed at the tariff line level, Brazilian exports are equally concentrated. Table 11 indicates the ten agricultural tariff lines most exported by Brazil. They accounted for 74.2% of Brazil's agricultural exports in 2003. Approximately half of the country's agricultural exports consisted of only 5 tariff lines: soybeans (1201.00.XX), soy oilcake (2304.00.XX), raw sugar (1701.11.10), coffee beans (0901.11.10), and frozen chicken meat cuts (0207.14.00). The relative importance of soybeans and meats increased significantly between 1990 and 2003. In contrast, the share of coffee beans,

frozen unfermented orange juice, and unmanufactured tobacco in Brazil's total agricultural exports decreased in the same period.

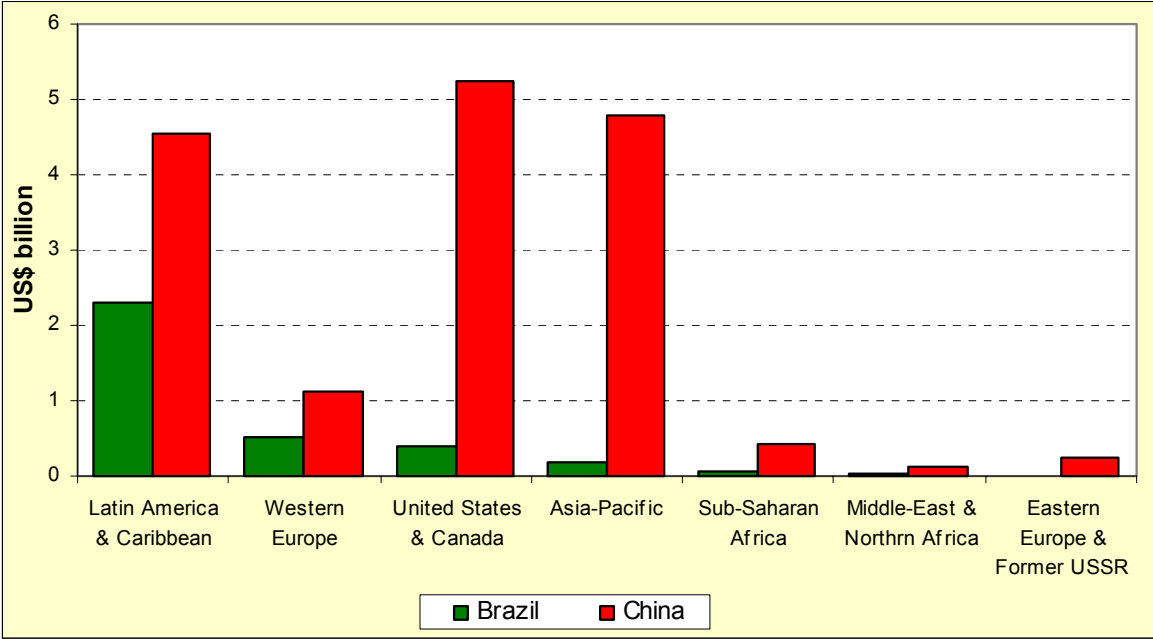
Currently, 90% of Brazilian agribusiness exports are composed of agro-industrial commodities. Given that Brazil is a key player in international agricultural markets, negotiations aimed at increasing market access and eliminating subsidies are extremely important for the country. A substantial part of Brazilian exports is still subject to protectionist measures. The sugar and ethanol sectors are affected by subsidies coupled with tariff protection in almost all developed and developing countries. In the United States, grains and cotton benefit from subsidies, tropical that substantially depress world prices and hurt Brazilian producers. With regard to the various types of meat, protectionist measures are very heterogeneous, including high tariffs, tariff-rate quotas, and special safeguards. Tariff peaks affect bovine meat in the European Union, pork meat in Japan, poultry meat in Canada and Mexico, and all meats in Switzerland, Norway and Iceland. Even in countries where tariffs on meats are low, such as the United States, market access is severely restricted by costly sanitary barriers. Finally, byproducts of soybean, coffee and cocoa are heavily affected by tariff escalation.

This brief list of protectionist measures indicates why international trade negotiations are so relevant for Brazil. The country is currently involved in multilateral negotiations at the World Trade Negotiations (WTO), regional negotiations within the framework of the Free Trade Area of the Americas (FTAA), and bi-regional negotiations between the European Union and Mercosur. Additionally, the country is pursuing growing integration with developing countries such as China, India, South Africa, Mexico, and the Andean Community. Of the many fora in which Brazil is currently active, the WTO Doha Round is strategically the most important due to the possibility of addressing systemic (agricultural domestic support and export competition) and non-systemic (market access) issues at a broader (multilateral) level.

Figure 6 summarizes Brazilian and Chinese agricultural imports by region of origin. Brazilian agricultural imports started to recover in 2003, after 2 consecutive years of decline. Foreign purchases reached US\$3.5 billion, or 88% of the 2000 level. Latin America was the most important exporter of agricultural products to Brazil. The region accounted for nearly 66% of all Brazilian agricultural imports in 2003. Western Europe (14.6%) and the United States & Canada (11.2%) were respectively the second and third most important exporters of agricultural products to Brazil. The rest of the world accounted for only 8.2% of Brazil's agricultural imports. Brazil has an agricultural trade surplus with every single region of the world, except for Latin America & the Caribbean. Between 2000 and 2003, Brazil imported on

average US\$2.3 billion a year worth of agricultural products from Latin America & the Caribbean. Given that the average annual exports for the same region and period were at US\$1.2 billion, Brazil registered an average annual agricultural trade deficit of US\$1.1 billion with Latin America & the Caribbean.

FIGURE 6
Brazilian and Chinese Agricultural Imports by Origin (2003)



Sources: Brazilian Ministry of Development, Industry and External Trade (MDIC) and China Customs Statistics.

Argentina alone accounted for 41.4% of Brazilian agricultural imports. Paraguay and Uruguay accounted for respectively 12.9% and 8.5%. Therefore, 62.8% of Brazil's agricultural imports came from Mercosur countries. The top 5 countries represented 85.5% of agricultural imports into Brazil. Argentina was first, followed by the European Union, Paraguay, Uruguay, and the United States. The top 20 countries accounted for 96.9% of agricultural imports. From the point of view of country of origin, Brazilian agricultural imports are considerably more concentrated than agricultural exports.

Table 12 indicates the 10 main agricultural tariff lines imported by Brazil. The top 5 tariff lines represented 47.3% of all agricultural imports: wheat (1001.90.90), soybeans (1201.00.90), malt (1107.10.10), cotton (5201.00.90), and not parboiled milled rice (1006.30.2X). Wheat alone accounted for 28.8% of all Brazilian agricultural imports. Approximately 86% of Brazilian wheat imports in the 2000-2003 period came from Argentina. The entirety of Brazilian soybean imports in the same period came from Paraguay. Malt imports came either from Mercosur countries (66%) or the European

Union (34%). Roughly 94% of whole milk powder imports came from Mercosur. Cotton imports had more diversified origins: 39% came from the United States, 31% came from Paraguay, 13% from Africa, and 11% from the European Union.

TABLE 12
Brazilian Agricultural Imports by Tariff Line

#	NCM	Product	1990		2000		2001		2002		2003	
			US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total
1	1001.XX.XX	Wheat	295.0	13.2%	864.8	22.1%	872.1	27.0%	878.1	27.2%	1,009.7	28.8%
2	1201.00.XX	Soya, beans	3.3	0.1%	132.7	3.4%	137.6	4.3%	174.7	5.4%	231.2	6.6%
3	1107.10.10	Malt, not roasted	112.0	5.0%	156.1	4.0%	183.4	5.7%	164.6	5.1%	157.1	4.5%
4	5201.00.XX	Cotton, not carded or combed	86.1	3.8%	323.1	8.3%	95.1	2.9%	64.2	2.0%	134.0	3.8%
5	1006.30.2X	Rice, milled, not parboiled	92.4	4.1%	57.4	1.5%	55.4	1.7%	49.0	1.5%	126.0	3.6%
6	1801.00.00	Cocoa, beans	-	0.0%	60.1	1.5%	31.1	1.0%	85.7	2.7%	116.3	3.3%
7	1006.10.XX	Rice, in the husk	12.4	0.6%	25.0	0.6%	27.1	0.8%	26.7	0.8%	102.8	2.9%
8	1005.XX.XX	Corn	83.4	3.7%	178.8	4.6%	62.0	1.9%	34.8	1.1%	70.6	2.0%
9	1006.20.20	Rice, husked, not parboiled	12.7	0.6%	49.7	1.3%	50.8	1.6%	34.1	1.1%	61.4	1.8%
10	0402.21.XX	Milk, whole	51.7	2.3%	196.5	5.0%	84.0	2.6%	145.1	4.5%	58.1	1.7%
		Other	1,493.7	66.6%	1,871.4	47.8%	1,627.8	50.5%	1,573.4	48.7%	1,437.5	41.0%
		Total	2,242.6	100.0%	3,915.4	100.0%	3,226.5	100.0%	3,230.3	100.0%	3,504.8	100.0%

Source: Brazilian Ministry of Development, Industry, and Foreign Trade (MDIC).

4.2. Chinese Agricultural Exports and Imports

Over the past decade, as China has gradually integrated into the world economy, its foreign trade in agricultural products has also expanded rapidly in absolute terms. Exports grew from US\$9.7 billion in 1990 to US\$16.0 billion in 2003, while imports grew from US\$4.6 billion to US\$16.5 billion in the same period. However, agriculture's share in total exports and imports has been declining.

After at least 10 years as a net exporter of agricultural products, became a net importer in 2003. Figure 6 displays China's top suppliers of agricultural products in 2000-2003. Asia-Pacific was the main source of agricultural imports (32.8%), followed by North America (United States & Canada) (32.4%), and Latin America & the Caribbean (21.5%). Western Europe fell significantly behind, accounting for only 8.8% of China's total agricultural imports. Latin America has made remarkable progress in expanding its sales to China in recent years. In the Asia-Pacific region, the ASEAN countries (15.2%) have also significantly increased their agricultural exports to China and have surpassed traditional agricultural exporters such as Australia & New Zealand (13.6%).

Table 13 summarizes China's agricultural imports by key supplying countries. The United States was the single most important source of agricultural imports (27.5% of China's total agricultural imports in 2000-2003), followed by Argentina (10.9%) and Brazil (10.4%). While the two South American countries accounted for only 2.9% of China's total agricultural imports in 1992, they were responsible for not less than 26.4% in 2003. Increased sales from Argentina and Brazil explain the bulk of the surge in Chinese imports from Latin America's in recent years. In 2003, combined imports of agricultural products from Argentina and Brazil totaled US\$4.4 billion, or 95.7% of total Chinese imports from Latin America & the Caribbean.

TABLE 13
Chinese Agricultural Imports by Country of Origin

#	Country	1992		2000		2001		2002		2003	
		US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total
1	US	939.8	20.4%	695.6	29.8%	2,628.8	26.4%	2,553.0	25.1%	4,815.0	29.2%
2	Argentina	73.3	1.6%	87.0	3.7%	1,030.3	10.3%	868.1	8.5%	2,246.3	13.6%
3	Brazil	60.3	1.3%	31.8	1.4%	781.9	7.8%	1,141.9	11.2%	2,111.9	12.8%
4	Australia	543.8	11.8%	361.6	15.5%	1,336.4	13.4%	1,436.2	14.1%	1,207.5	7.3%
5	Malaysia	220.5	4.8%	112.6	4.8%	400.2	4.0%	712.4	7.0%	1,137.5	6.9%
6	EU	430.8	9.3%	295.1	12.6%	809.3	8.1%	761.6	7.5%	1,096.9	6.7%
7	Indonesia	64.8	1.4%	70.1	3.0%	234.9	2.4%	310.6	3.1%	511.9	3.1%
8	Thailand	109.2	2.4%	82.8	3.5%	494.2	5.0%	408.1	4.0%	501.3	3.0%
9	New Zealand	174.5	3.8%	74.0	3.2%	310.8	3.1%	328.2	3.2%	479.1	2.9%
10	Canada	925.1	20.1%	221.2	9.5%	678.4	6.8%	408.0	4.0%	413.9	2.5%
	Other	1,066.9	23.1%	303.2	13.0%	1,264.9	12.7%	1,254.9	12.3%	1,941.8	11.8%
	Total	4,609.0	100.0%	2,335.0	100.0%	9,970.0	100.0%	10,183.0	100.0%	16,463.0	100.0%

Source: China Customs Statistics.

Five of the ten largest agricultural exporters to China are in the Asia-Pacific region: Australia (4th), Malaysia (5th), Indonesia (7th), Thailand (8th), and New Zealand (9th). This is an indication of the region's central role in China's agricultural trade. However, while Australia's and New Zealand's shares in Chinese total agricultural imports declined overtime, the ASEAN countries have become increasingly important as sources of agricultural imports into China.

Chinese agricultural trade has not operated fully in line with its comparative advantage. Table 14 presents information on China's agricultural imports by main product categories. Oilseeds and oilseed by-products accounted for 43.4% of China's agricultural imports in 2000-2003. The substantial increase in oilseed imports starting in 2001 coincides with Beijing's removal of restrictions on soybean imports. Raw wool (6.7% of total Chinese agricultural exports), fruits & vegetables (6.0%) and meats (4.8%) were other main import items in 2000-2003. China is also a significant importer of cotton, but

price fluctuation in the international market makes it difficult to observe domestic policy-induced changes in trade patterns. In contrast, imports of wheat, rice and other cereals - commodities that are considered strategic and therefore subject to self-sufficiency requirements - represented only 4.4% of total Chinese agricultural imports in 2000-2003. Wheat imports fell significantly after the mid-1990s, and barley became the number one item in the cereal import basket in 1999 onwards.

TABLE 14
Chinese Agricultural Imports by Product Category (current US\$ million)

Product Category	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Oilseeds	517	485	1,807	2,546	1,897	2,421	2,610	2,713	795	3,807	4,051	8,257
Grain & seeds	31	29	62	110	326	874	1,226	1,531	621	3,216	2,641	5,520
Oils & fats	486	457	1,744	2,436	1,571	1,547	1,384	1,181	174	591	1,410	2,737
Livestock/animal products	882	907	1,139	1,496	1,411	1,377	1,287	1,839	759	2,774	2,855	3,348
Raw wool	530	509	563	629	586	492	414	443	244	790	815	753
Poultry	67	69	82	95	155	144	118	421	117	453	438	477
Dairy products	62	50	78	59	54	63	85	160	52	218	271	349
Swine	0	0	1	3	3	4	11	28	21	43	83	93
Bovine	4	6	6	5	7	6	7	7	4	12	35	84
Other animal products	219	273	410	704	606	669	652	780	321	1,258	1,213	1,593
Horticultural products	731	756	626	1,149	1,971	2,274	2,071	1,455	515	2,113	2,139	2,791
Fruits & vegetables	93	96	99	176	290	328	337	384	133	661	685	872
Tobacco crops	204	200	32	359	457	254	106	88	30	268	243	309
Plant-based fibres	4	13	35	43	28	31	40	64	26	104	104	174
Other	430	447	459	570	1,197	1,661	1,588	920	327	1,081	1,106	1,435
Other	773	213	1,419	2,414	1,768	1,741	642	419	125	640	643	1,610
Cotton	454	24	921	1,422	1,264	1,396	359	83	23	84	191	1,187
Sugar & confectionery	273	133	446	935	428	254	177	182	41	376	280	216
Beverage & alcohol	47	56	52	57	76	90	106	154	60	180	172	207
Cereals	1,706	1,005	1,296	3,609	2,578	917	717	527	142	635	495	458
Barley	134	128	179	241	304	382	241	294	79	382	291	268
Rice	39	35	141	434	286	138	120	78	49	99	80	97
Wheat	1,504	834	961	2,026	1,890	368	279	86	7	121	103	77
Corn & other grains	0	0	0	881	74	1	56	40	0	5	8	3
Grain products	29	8	15	27	23	28	21	30	6	28	13	14
Total Agricultural Imports	4,609	3,367	6,286	11,213	9,625	8,730	7,327	6,953	2,335	9,970	10,183	16,463

Source: China Customs Statistics.

Table 15 lists the 10 main agricultural tariff lines imported by China. Agricultural imports in China are as concentrated as in Brazil. The top 5 tariff lines represented 46.2% of all agricultural imports: yellow soybeans (1201.00.91), uncarded/uncombed greasy shorn wool (5101.11.00), palm oil (1511.90.10), uncarded/uncombed cotton (5201.00.00), and crude soybean oil (1507.10.00). Yellow soybeans alone accounted for 28.4% of all Chinese agricultural imports in 2000-2003. China relied on few suppliers for most of its imports of key products in this period. Roughly all Chinese soybean imports came from the United States (43%), Brazil (28%) or Argentina (28%). Raw wool came from Australia (87%) and New Zealand (10%). Palm oil imports were concentrated in two ASEAN countries: Malaysia (74%) and Indonesia (25%). Soybean oil imports came mostly from Argentina (68%) and Brazil (26%). Cotton imports came mostly from the United States (56%), but also from Uzbekistan (12%), Australia (6%), Benin (6%), and others (20%).

TABLE 15
Chinese Agricultural Imports by Tariff Line (current US\$ Million)

HS8	Description	1997	1998	1999	2000	2001	2002	2003
12010091	Yellow soya beans excl. seed	0.0	570.4	777.0	421.0	2,735.2	2,482.8	5,416.9
52010000	Cotton, not carded or combed	1,329.7	331.8	66.9	18.7	71.0	179.7	1,162.8
15119010	Palm oil (excl. crude) & liquid fractions	0.0	0.0	0.0	0.0	295.9	619.4	1,005.6
15071000	Crude soya-bean oil	616.6	464.6	379.0	6.8	20.3	368.5	984.7
51011100	Greasy shorn wool, not carded or combed	308.6	294.3	355.6	222.0	686.0	689.4	612.7
41015019	Whole bovine hide/skin, nes, >16kg	0.0	0.0	0.0	0.0	0.0	361.9	472.2
15119020	Palm stearin	0.0	0.0	0.0	0.0	37.2	181.5	402.7
02071429	Frozen offal of chicken, nes	0.0	0.0	0.0	0.0	297.8	213.9	274.5
10030090	Barley excl. seed	382.3	241.0	293.6	79.4	381.9	291.0	268.3
24012010	Flue-cured tobacco, partly or wholly stemmed/stripped	11.3	7.5	31.6	13.2	197.9	195.2	253.2

Source: China Customs Statistics.

On the import side, possible adjustments in China's grain-self sufficiency policy could affect its grain imports. In the past decade, the self-sufficiency target was lowered from 100% to 95%. As serious water shortage problems threaten grain growing in the northern part of the country, it is possible that the target is lowered to 90%, in order to ease the situation.¹³ The adjustment of self-sufficiency policy also includes possible adjustment of covered crops. As shown earlier, because soybean is not subject to self-sufficiency requirements, its imports have experienced dramatic rises in recent years. To exclude corn used for animal feed is another possibility that has been discussed, in response to the rising domestic demand for meat consumption. In the short run, with a large grain reserve and the application of TRQs, the 95% target can be maintained. But as China implements its WTO commitments, inflows of grain from North America and Australia could make it very expensive to maintain this target and this could be another pressure for the government to re-adjust this policy.

The possible increase in imports of grain products would help restructure Chinese agriculture, as resources destined to grain production could be transferred to horticulture. This in turn would help exploit the export potential of horticultural products.

Food derived from soybean is traditionally popular among Chinese. Also, as they get wealthier, they tend to consume more meat and quality cooking oil. Those are the driving forces behind the rising soybean import to China in recent years. Therefore, soybean import is expected to continue to grow in the

¹³ David Murphy, "A Fearsome Thirst," *Far Eastern Economic Review*, July 22, 2004.

near future, despite the new regulations governing the imports of GM crops and the recent SPS incident involving Brazilian soy.

Because the expected phase-out of the Multi-fiber Arrangement will probably result in increased demand for textile and clothing products made in China, the country's demand for cotton imports shall grow, at least in the long run.

Figure 5 demonstrates the importance of Asia-Pacific to China's agricultural exports. The region accounted for not less than 68.4% of the country's total foreign sales in 2000-2003. Western Europe (10.8%) came at a distant second place, followed by the United States & Canada (6.8%) in third. The fact that Latin America & the Caribbean (1.4%) came in the very last position reflects the region's lack of strategic importance as far as Chinese agricultural exports are concerned.

Table 16 summarizes China's agricultural exports by country of destination. As it was the case in Brazil, the top five destinations absorbed 77.0% of total Chinese agricultural exports in 2003. Three of the top five importers were neighboring Asian countries or customs entities. Japan was the single most important foreign market for China's agriculture in 2003. It purchased US\$3.9 billion worth of Chinese agricultural goods, or 29.0% of China's total agricultural foreign sales. Hong Kong came in second with US\$2.1 billion, or 15.4% of total exports. Prior to 1993, Chinese customs used to treat sales destined to third countries but shipped through Hong Kong as if they were exports to Hong Kong. Since then, efforts have been made to identify the final destination of such goods shipped through Hong Kong. This is expected to improve data quality. However, it is still not clear to what extent efforts have been exhaustive. It may well be possible that Chinese customs data still overestimate exports to Hong Kong.

South Korea came in third place, with imports worth US\$1.8 billion, or 13.5% of total Chinese agricultural foreign sales. Four ASEAN countries were also among China's top 10 export markets: Malaysia (6th), Indonesia (8th), Vietnam (9th), and the Philippines (10th). Together these four countries accounted for a larger percentage of China's total agricultural exports (12.0%) than was the case of the European Union (11.5%) or the United States (7.7%). Formation of an "ASEAN-plus-Three" – a free trade area between ASEAN, China, Japan, and South Korea – could push China's agricultural exports even further and could have profound implications for the multilateral trading system.

TABLE 16
Chinese Agricultural Exports by Country of Destination

#	Country	1992		2000		2001		2002		2003	
		US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total	US\$ million	% of Total
1	Japan	1,976.6	24.4%	3,455.4	33.7%	3,769.6	36.9%	3,545.2	30.9%	3,888.6	29.0%
2	Hong Kong	2,129.1	26.3%	1,698.4	16.6%	1,678.3	16.4%	1,805.7	15.7%	2,062.6	15.4%
3	South Korea	766.8	9.5%	1,241.0	12.1%	1,016.7	10.0%	1,359.0	11.8%	1,811.2	13.5%
4	European Union	1,221.7	15.1%	1,322.1	12.9%	1,422.4	13.9%	1,362.0	11.9%	1,543.1	11.5%
5	United States	271.7	3.4%	644.9	6.3%	662.7	6.5%	828.6	7.2%	1,030.9	7.7%
6	Malaysia	264.5	3.3%	435.0	4.2%	357.4	3.5%	547.4	4.8%	586.2	4.4%
7	Russia	660.6	8.2%	164.8	1.6%	213.8	2.1%	403.4	3.5%	502.6	3.7%
8	Indonesia	161.2	2.0%	404.7	3.9%	279.7	2.7%	523.2	4.6%	490.7	3.7%
9	Vietnam	12.1	0.1%	88.2	0.9%	104.3	1.0%	177.4	1.5%	275.8	2.1%
10	Philippines	29.9	0.4%	166.6	1.6%	138.5	1.4%	188.1	1.6%	262.4	2.0%
	Other	601.6	7.4%	633.6	6.2%	570.8	5.6%	728.3	6.4%	956.9	7.1%
	Total	8,095.5	100.0%	10,254.7	100.0%	10,214.2	100.0%	11,468.4	100.0%	13,411.0	100.0%

Source: China Customs Statistics.

Tables 17 and 18 indicate China's main agricultural export items by product category and by tariff line respectively. While overall grain exports did not change very much, exports of rice and corn increased considerably. The rise of corn exports in the past years is the result of over-production in the late 1990s, which led the government to provide subsidies and dispose the surplus reserve in the international market.¹⁴ In comparison, horticultural exports have been growing at a faster pace.

The numbers suggest that for the highly regulated grain sector, trade patterns do not seem to follow China's comparative advantage, whereas for the more liberalized soybean and horticultural trade, they do seem to be moving in that direction. Horticultural products hold the greatest export potential for China, while grain, oilseeds and cotton represent import potentials. Data presented earlier illustrate that patterns of Chinese agricultural trade have been changing in line with its comparative advantage only modestly and almost no change in the case of grain. Obviously, the country's import and export potentials would be better developed if barriers to trade in other countries are lowered or removed and China's own agricultural policy is adjusted to be more trade-friendly.

¹⁴. Fred Gale, "China Corn Exports: Business as Usual, Despite WTO Entry," *USDA/ERS Electronic Outlook Report*, December 2002.

TABLE 17
Chinese Agricultural Exports by Product Category (current US\$ million)

Product Category	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Cereals	1,517	1,516	1,574	139	370	1,318	1,578	1,189	1,694	1,103	1,722	2,671
Maize	1,187	1,154	944	13	30	856	532	450	1,047	626	1,167	1,767
Rice	218	253	515	16	112	264	927	652	561	329	380	495
Wheat, barley & other cereals	80	67	73	47	45	54	39	33	31	79	103	327
Grain products	32	43	42	63	183	144	80	54	55	69	72	83
Oilseeds	599	631	1,151	961	829	891	558	484	512	557	542	664
Seeds & grain	469	434	666	522	478	276	285	373	417	460	462	576
Vegetable oils & fats	131	196	485	439	351	615	273	111	96	97	80	88
Horticultural products	4,289	4,576	5,670	6,514	6,281	6,057	5,609	5,459	5,828	6,523	7,389	8,699
Fruits & vegetables	2,024	2,162	2,818	3,276	3,050	3,018	2,930	3,060	3,277	3,686	4,196	5,099
Tobacco crops	441	640	686	999	976	656	577	336	302	386	433	493
Other	1,824	1,774	2,166	2,238	2,255	2,383	2,102	2,063	2,250	2,451	2,760	3,107
Livestock/animal products	2,112	1,975	2,643	3,190	3,174	3,048	2,712	2,534	2,932	2,955	2,856	2,975
Other meat & products	286	378	352	449	467	439	363	423	565	694	734	799
Swine	367	334	398	524	508	497	471	304	301	357	424	486
Poultry	260	276	485	746	812	722	619	637	691	675	483	387
Raw silk	279	188	296	301	264	274	213	239	272	243	243	212
Bovine	103	84	88	90	97	89	114	65	61	66	52	46
Other animal products	818	715	1,024	1,080	1,025	1,026	932	866	1,042	920	919	1,046
Other	1,219	1,181	906	678	719	666	694	884	977	814	1,000	961
Beverage & alcohol	331	303	382	395	400	467	452	459	496	576	600	630
Sugar & confectionery	671	654	363	234	305	194	183	140	173	156	227	196
Cotton	217	224	161	49	14	5	59	285	307	82	172	135
Total Agricultural Exports	9,736	9,880	11,943	11,483	11,372	11,981	11,151	10,552	11,943	11,951	13,509	15,970

Source: China Customs Statistics.

TABLE 18
Chinese Agricultural Exports by Tariff Line (current US\$ million)

HS8	Description	1997	1998	1999	2000	2001	2002	2003
10059000	Maize excl. seed	856.07	531.64	449.92	1,047.18	624.80	1,166.43	1,766.46
16023290	Preparations of chicken meat or offal, nes	83.25	108.80	170.76	274.04	368.14	441.49	445.95
07032010	Bulbs of garlic, fresh or chilled	0.00	70.04	95.70	120.58	193.07	328.37	324.57
21069090	Other food preparations, nes	162.20	168.19	158.72	157.36	190.07	247.17	274.81
12022000	Ground-nuts, shelled, whether or not broken	105.01	113.45	166.12	197.01	223.49	222.50	268.67
10063090	Other semi-milled or wholly milled rice	0.00	0.00	0.00	0.00	0.00	184.39	263.08
20097900	Apple juice (incl. must), unfermented, w/o added spirit	0.00	0.00	0.00	0.00	0.00	172.66	253.56
22019010	Natural waters	0.00	0.00	0.00	0.00	0.00	300.49	249.36
02071419	Frozen cuts chicken, nes	0.00	0.00	0.00	0.00	484.49	334.20	243.92
10019090	Other wheat or maslin nes	0.05	0.30	0.03	0.21	45.63	66.24	240.41

Source: China Customs Statistics.

Chinese agricultural exports to developed countries often face various trade restrictions, ranging from SPS to TBT and anti-dumping measures. While some consist of disguised protectionism imposed by the importing countries, Chinese products also need to improve in quality. Most of the country's food processing

consists of largely simple labor-intensive operations. Foreign direct investment (FDI) has proven to be an effective way to upgrade the quality of horticultural exports. The most vivid example is the surge of Chinese vegetables exports to Japan, which was made possible by Japanese companies operating in vegetable production and processing in China.¹⁵ Unfortunately, compared to the share of agriculture in China's GDP (around 15% in recent years), FDI in agriculture has been very small - only 1.8% of the total realized FDI between 1999 and 2001 was in agriculture, forestry, animal husbandry and fishery (China State Statistical Bureau data) - even though China has been one of the largest FDI recipients in the world since 1990.

4.3. Brazil-China Bilateral Trade in Agriculture

Brazil exported US\$ 1.7 billion f.o.b. worth of agricultural products to Mainland China in 2003. This represented 8.1% of Brazil's total agricultural exports and placed China as the second most important foreign market for Brazil's agriculture, only behind the European Union (which accounted for 39.2% of total Brazilian agricultural exports). Agricultural exports to China grew at an annual average rate of 57.5% in the 2000-2003 period, and accounted for 37.5% of Brazil's total exports to this country in 2003 (the remainder being made up mostly by iron ore, its derivatives, and wood). If one also considers trade with the special administrative regions of Hong Kong and Macao, Brazilian agricultural exports to China reached US\$2.0 billion f.o.b. in 2003 (9.7% of total Brazilian agricultural exports).

Approximately 13.2% of Mainland China's agricultural imports originated from Brazil in 2003. The South American country was the third largest supplier of agricultural products to China in 2003 (behind the United States and Argentina) and second in 2002 (behind the United States). Chinese agricultural imports from Brazil are extremely concentrated in a very small list of products. One single tariff line - soybeans excluding seeds (HS 1201.00.91) - accounted for 79.7% of all Chinese agricultural imports in 2003. The soy agro-industrial chain, which also includes soy oil and soy meal, represented no less than 93.1% of all Chinese imports of agricultural products from Brazil.

The central role played by soybeans and its byproducts on Brazil-China trade calls attention to four very important facts. First, the soybean sub-sector is among the most liberalized in China. Unlike cereals, it is not subject to self-sufficiency requirements linked to food security concerns. Therefore, it is not surprising that soybeans are the single most important agricultural product

¹⁵. Sophia Wu Huang, "China Increases Exports of Fresh and Frozen Vegetables to Japan," *USDA/ERS Electronic Outlook Report*, August 2002.

imported by China (32.9% of total Chinese agricultural imports in 2003). Second, China has used SPS measures to block the entry of soybean shipments at times when international prices were not in its favor. In 2004, China instituted a zero-tolerance policy on the presence of fungicides in soy seeds and suspended imports from Brazil. Beijing was accused of imposing unnecessary restrictions and failing to meet its WTO obligations regarding the determination and implementation of SPS measures affecting the importation of soybeans. Third, Brazilian exports of soy oil to China have decreased significantly at the same time that soybean exports have soared. This has been due to the development of China's crushing industry and to the imposition of a tariff-rate quota (TRQ) on soy oil as part of China's WTO accession package (the TRQ is to be removed by 2006). Finally, the dominant role that the soybean agro-industrial chain plays in Brazil's exports to China demonstrates the humble performance of other Brazilian agricultural products in the Chinese market.

Although China was the world's second largest importer of sugar in 2003, Brazilian sales to the Chinese market reached only 2 thousand tons. This represented only 0.26% of China's total sugar imports of 775 thousand tons in 2003. Importation of sugar into Chinese territory is subject to both a TRQ and state trading. The fill rates for the TRQs of 1.8 million tons in 2002 and 1.9 million tons in 2003 were of respectively 67% and 40%. Despite being the world's largest producer and exporter of sugar, Brazil has failed to capture a significant share of China's imports. Nearly half of China's imports of raw cane sugar currently come from Cuba, while over 80% of refined sugar imports come from South Korea.

Brazilian meat exports to China are hindered by the lack of transparency. Internal Chinese regulations significantly constrict the space of action available to Brazilian exporters. Hong Kong has become an important hub port for Brazilian poultry. In 2003, Hong Kong was the single most important importer of Brazilian frozen chicken cuts and offal in the world (measured in terms of volume). The over 200 thousand tons of Brazilian poultry meat that entered Hong Kong in 2003 dwarfed the 11 thousand tons that were sent directly to Mainland China. It is believed that a great majority of the poultry meat that enters Hong Kong is destined to Mainland China, mostly through smuggling.¹⁶ Non-transparent regulations also hold down Brazilian exports of swine and bovine meat. The process for obtaining import licenses has been systematically criticized by exporters. Burdensome certification and inspection requirements are allegedly used to control the pace of entry of imports.

¹⁶ U.S. Department of Agriculture, "China, People's Republic of, Poultry and Products, Annual Poultry Report" USDA/FAS, GAIN Report CH4045, 2004.

Notwithstanding the difficulties faced by some Brazilian exporters, China's rising income level, mounting urbanization, and significant changes in consumption patterns present many export opportunities. The Chinese urban middle-class is increasingly demanding less grains and more meats, milk, oils, and processed foods. Brazil could benefit from increased Chinese imports of these products. Prospects also seem encouraging for cotton growers. Although China is the world's number one producer of cotton, its domestic production is insufficient to supply the country's rising textile and apparel industries. The phase-out of the WTO Agreement on Textiles and Clothing (ATC) should further boost Chinese demand. Brazil's emerging cotton production could play an important role in supplying China. However, while the United States accounts for almost 60% of China's current cotton imports, Brazil detains a market share of less than 1%. The settlement of the cotton dispute between Brazil and the United States, the successful conclusion of the Doha Round under the agricultural framework reached last July, and the expansion of the Chinese clothing and textile sector as a result of the MFA phase-out would help to improve the export prospects of Brazilian cotton to China.

In its agricultural trade relations with Brazil, China usually assumes the position of importer. However, for a select list of products, China plays an important role as exporter. Agricultural exports from China to Brazil totaled US\$27.7 million in 2003, or only 1.4% of the total value of Brazilian exports to China in the same year. Garlic is the single most important product, representing 40% of all Chinese agricultural sales to Brazil. Since the mid-1990s, Chinese garlic exports have been subject to anti-dumping duties in Brazil. Other important products include animal feed preparations, pig bristles, and dried vegetables. No other tariff line accounted for more than US\$1 million in exports to Brazil in 2003. Brazil, as South America in general, is not a main destination for China's agricultural exports. More than 98% of what China exported to Brazil in 2003 consisted of non-agricultural products.

5. BRAZIL-CHINA RELATIONS: CHALLENGES AND OPPORTUNITIES

Brazil and China found common ground for cooperation in the context of the G-20 in the WTO Doha Round talks on agriculture. This coalition of developing countries – which includes other important emerging markets such as India, South Africa, Thailand, and Argentina – was formed to offset the joint paper presented by the European Union and the United States. The members of the G-20 aspire to dismantle agricultural subsidies in the developing world. However, China has a very unique position within the group: as a recently-acceded country to the WTO, it wants to shield itself from making further concessions at the current round of negotiations. Beijing believes that great liberalizing efforts were taken in China since its accession to the WTO, and that it would be excessive to require additional commitments. Given that Chinese consumers also benefit from imports of subsidized grains and cotton from the developed world, it could be argued that China would be less interested than Brazil in disciplining subsidies. However, the “food security” concern, justified or not, has been overshadowing the agricultural trade policy debate in China. Out of this concern, China could choose to stay in the G-20, pushing for the elimination of agricultural subsidies in OECD countries. The G-20 works in the advantage of China also because it is a strong group where it can voice its call for a “round for free” for recently-acceded countries.

For the Brazilian and the Chinese agribusiness sectors, the WTO is a main opportunity to improve conditions for the international trade of agricultural products. It is at the multilateral level that developing countries can find space to address systemic issues such as domestic support and export competition, subjects that are usually excluded from regional and bilateral trade agreements.

If the Cancún WTO Ministerial Meeting can be considered a failure due to the deadlock that prevented advances in the negotiations, the emergence of the G-20 was a major success of the multilateral negotiations. The coalition, consistent of a heterogeneous group of developing countries, was formed around the agriculture issue but after the ministerial meeting, it continued to act collectively. In the middle of many other coalitions that are formed in the WTO negotiations, the G-20 has been recognized, by developing and developed countries, as an important and strategic player in the current negotiations.

Brazil and China are also involved in regional and bilateral trade talks. Beijing has discussed the possibility of establishing trade agreements with ASEAN, Japan, South Korea, Australia, New Zealand, India, and Chile. On the other

hand, Brazil is involved in negotiations with the European Union and with 34 countries in the Western Hemisphere. The Free Trade Area of the Americas (FTAA) initiative was launched in 1994, and aims at promoting a gradual hemispheric integration through the substantial and progressive elimination of trade and investment barriers. Though initially scheduled to be concluded by 2005, there is now a general perception that negotiations, like those at the WTO, will be most probably extended to 2007.

Since 2003, FTAA negotiations have become more contentious, moving towards a deadlock between the US and Mercosur. Facing the US insistence to remove subsidies and trade remedy laws from regional talks, Mercosur responded by proposing the transfer of rules in investment, services and intellectual property to the WTO. The single undertaking and most-favored nation treatments, two core guiding principles of the negotiations, have already been broken. Under the negotiating format set up in the Miami ministerial meeting of November, 2003, countries were left free to pursue agreements bilaterally or plurilaterally, with only a minimum set of common rules being applied. For different reasons, it appears that Brazil and the US, co-chairs of the negotiations, have opted for a more modest approach, considerably lower in ambition when compared to what was observed at the early stage of negotiations.

The European Union (EU) absorbs 35% of Mercosur's total agricultural exports, or the equivalent to 48% of the bloc exports to the EU. Export products of particular relevance to Mercosur include meats (bovine, poultry and pork), sugar, ethanol, tobacco, milk powder, corn, wheat, orange juice and fruits. Though agriculture is at the center of Mercosur's interests, the sector continues to suffer from a high protectionist system in the EU, based on tariff peaks, tariff quotas, minimum entrance price, special safeguards and sanitary measures, together with domestic support and export subsidies. The EU maintains an inflexible position relative to market access for agricultural products, and restricts negotiations in this area to a small expansion of tariff quotas for selected products. Moreover, the concrete results of the EU-Mercosur negotiations are expected to be influenced by the CAP reform implementation and EU enlargement.

Finally, South-South cooperation has become an increasingly important topic in Brazilian foreign policy. A trade-strengthening initiative has been launched between India, Brazil and South Africa (known as the IBSA initiative), a preferential trade agreement between Mercosur and India was signed in January 2004, a preferential trade agreement between Mercosur and the Southern Africa Customs Union (composed of South Africa, Botswana, Lesotho, Namibia and Swaziland) is under negotiation, and a free trade agreement

between Mercosur and the Andean Community was signed in October 2004. The establishment of a deeper economic partnership between Brazil and China would fit in well with Brazil's foreign policy goals of expanding ties with key developing countries.

Nonetheless, recent bilateral trade relations between Brazil and China have been marked by skirmishes in the soy sector. In 2002, Brazilian soybean shipments were blocked from entering Chinese customs' territory due to allegations that they included genetically-modified grains. In 2003, Brazilian soybeans were once again denied entry into China, this time because of claims that they were contaminated with the fungus *Phytophthora sojae*. In 2004, the Chinese government barred the entry of soybean imports from Brazil due to a "zero tolerance" policy on treated seeds. This requirement imposed by China's General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) is substantially stricter than international standards and is not necessary to assure human health. The Chinese embargo has cost US\$400 million to Brazil in 2004. If the downfall in soybean prices in the Chicago Board of Trade (CBOT) are taken into consideration, total Brazilian losses linked to China's new policy on soybeans could reach US\$ 1 billion.

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