

Transportation and Distribution: Will Bottlenecks Be Eliminated?

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While reduced tariffs, nontrade barriers, and other border measures may increase access to China's market, the market will still be effectively closed to foreign suppliers if goods cannot get from the port to the consumer. The efficiency of the transportation and distribution network will also determine whether the millions of farmers in China's interior heartland will be able to compete for the food dollars spent by consumers in wealthy coastal cities and other Asian markets. As transport and other marketing costs fall, the economy will become more efficient in sending price signals that will realign regional production patterns, eliminate spot shortages, equalize prices, and raise farm incomes in China's interior provinces.

Freight Traffic Booming

The Chinese Academy of Social Sciences estimates that transportation and logistics account for 20 percent of the retail prices of goods in China (and even higher for perishable products), about five times the transportation share of food costs in the United States. China's leadership seeks to reduce that share and has taken significant measures to improve the country's notoriously poor transportation infrastructure. A surge in highway and airport construction and a proliferation of highly competitive trucking firms, bus lines, and airlines now provide alternatives to China's aging railways for transporting people and freight. From 1990 to 2000, highway mileage in China increased by 36 percent and existing highways were greatly improved. China's railways, already the longest in Asia, also increased track length by 19 percent. Double tracking, electrification, and higher speed trains were introduced throughout the country. Even the length of China's inland waterways increased by 9 percent. Newly constructed rail and highway connections to networks in Southeast and Central Asia and Russia are opening additional avenues for trade.

¹ The views expressed in this article are those of the author and do not necessarily reflect the views of Agriculture and Agri-food Canada.

Despite this growth in capacity, China's transportation network remains strained because freight traffic is growing at an even faster rate. Total freight traffic increased by 39.6 percent from 1990 to 2000, with most of the increase hauled on highways (table G-1). The highway share rose from 75 to 77 percent between 1990 and 2000 as the railway share fell. More food is being transported by truck, but rail remains the chief transport mode for grain and other bulk commodities. Civil air routes tripled in length during the 1990s and air freight has grown dramatically, but air transportation still accounts for only a small share of total freight traffic.

While the global shipping industry has generally been contending with overcapacity, China's seaports struggled to keep up with 160-percent growth in seaborne freight volume from 1990 to 2000 (fig. G-1). The country's ports handled 56 million tons of grain in 2000, up 87 percent from 1990. Containerization and intermodal facilities account for a growing share of shipping freight. Container-handling facilities are in short supply in China.

Cold Chain Facilities Critical

Warehousing and other storage facilities are critical to an efficient marketing system. With China's growing consumption of high-value frozen and perishable foods, cold warehousing and transport facilities are becoming an important link in the country's marketing chain. Cold storage capacity is believed to be only 20-30 percent of growing cargo demand, and spoilage losses of up to 33 percent of perishable freight are

Table G-1—Increase in China freight traffic, 1990-2000

Mode	1990	2000	Change
	— Million tons —		Percent
Highways	7,240	10,388	43.5
Rail	1,506	1,744	15.8
Waterways	801	1,224	52.8
Pipelines and other	159	189	18.9
Total	9,706	13,545	39.6

Source: China National Bureau of Statistics, *China Statistical Abstract 2001*.

Figure G-1

Major China ports, by volume of freight traffic, 2000 (million tons)

Note: 23 million tons of freight were shipped through other ports not shown.
Source: China National Bureau of Statistics, *China Statistical Abstract 2001*.

common. Most of China's food is still transported by rail, but lack of temperature-controlled equipment and logistical problems make it costly to transport foods, particularly frozen and perishable foods.

China's lack of electricity and its inadequate infrastructure also have indirect impacts on food demand. Refrigerator ownership enables Chinese consumers to purchase more frozen and perishable foods and spend more of their food dollars at supermarkets. Refrigerator ownership, in turn, depends not only on consumer incomes but also on reliability of electricity supplies. Similarly, improvements to local roads and increases in automobile ownership will change the food distribution system by making it cheaper for consumers to travel to centralized retail centers and improving access to modern food markets to rural consumers.

Industry Restructuring Needed

China will continue to expand its transportation infrastructure through a combination of public and private

investment. In the next 5 years, China is expected to add an additional 200,000 km of highways to the existing 1.4 million km. Annual public highway spending has been roughly \$25 billion in recent years, but international financing agencies and private investors have assisted in funding highway projects. Nearly all high-grade highways generate significant toll revenues that can make highway investments attractive. Joint ventures with overseas interests have played an important role in upgrading port facilities.

An improved infrastructure by itself will not bring efficiency to China's food marketing system. Restructuring and competition in the marketing sector are needed to ensure that food is transported, stored, and marketed efficiently. A government monopoly still manages the rail system. The State Price Bureau sets rail rates based on socialist accounting principles rather than market forces, financial viability, or customer impact. A large proportion of cold storage facilities are controlled by local bureaus formerly under the now-defunct Ministry of Internal Trade. In rail transport, grain bureaus, and other

What We Need to Know

Will lack of refrigerated and container handling facilities affect trade patterns?

Will transportation and marketing infrastructure allow agricultural production to concentrate in least-cost regions?

Will transportation bottlenecks limit the growth of China's fruit and vegetable exports?

Will improved transportation reduce regional inequality by allowing coastal growth to spill over to interior regions?

parts of the marketing chain, the volume of product handled per employee is very low, suggesting considerable inefficiencies.

China's government is trying to reform domestic distribution industries by separating policy and administrative functions from commercial operations and breaking up monopolies into multiple commercial companies that will compete with one another. Competition will intensify as a result of the country's WTO accession, when foreign companies will be allowed to enter the railway cargo service sector and operate their own internal distribution networks. China's domestic food marketing sector appears vulnerable; however, foreign entrants in China's food retailing sector have faced stiff competition and a number have exited the China market altogether.

Shifting Regional Production and Trade

The geographic distribution of food supply and demand makes distribution costs an important factor in determining the structure of both foreign and domestic inter-regional trade. Imported rice, wheat, edible oils, and other high-value products are consumed largely in wealthy coastal cities, mostly in southern China. Since these areas are near ports and have good transport infrastructure, transportation bottlenecks will be less of a concern for importers of these products. New soybean crushing plants have been constructed near ports to facilitate access to imported beans. Transport problems will have more effect on feed grain imports and the livestock sector. Currently, much of China's livestock production occurs in inland provinces, while demand for livestock products is growing in wealthy coastal cities. As livestock numbers and the adoption of modern feeding practices increase, more feed grain imports will be needed to

meet demand. If the cost of transporting feed grain to inland locations remains high, livestock production may shift eastward toward coastal cities to give producers better access to both final markets and imported feed grains. Unless managed carefully, this trend could increase land and labor costs and the likelihood of environmental damage by expanding the livestock industry in highly populated, wealthy areas.

Failure to reduce transport costs may also increase regional income differentials. If domestic transportation margins remain high, it will be difficult for farmers in inland provinces to compete with suppliers in other regions. Continued bottlenecks in the country's domestic transportation infrastructure and inefficient marketing industries will make it difficult for inland Chinese producers to compete with overseas producers for the growing coastal China market and markets in neighboring Asian countries. High transport and marketing costs would therefore limit the potential size of the market for inland farm products and keep farm incomes low in China's interior.

Further Reading

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