

Increasing Food-Safety Protection: Fresh Apple Markets in China

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Food-safety concerns have a highly visible impact on current U.S.-China agricultural trade. Initial concerns over melamine in imported pet and animal feed have spread to other products, and traditional made-in-China “cheap” goods are drawing great safety attention from U.S. customers and regulators. At the same time, China has raised concerns over U.S. products as diverse as orange pulp, health supplements, and pistachio nuts. Ultimately, the impact of food-safety regulation will be determined not only by regulatory content but also by administrative and structural characteristics of supply chains. This paper uses fresh apple markets in China as an example to illustrate the complexity of managing interactions among these three factors.

Background on China Apples

The economy of China grew at an average annual rate of 8.9 percent between 2001 and 2005, which is among the highest in the world and illustrative of rapid economic development. Over a longer period (the last three decades), agricultural production increased 18-fold and area planted to orchards increased almost 10-fold. China became the world’s largest fruit producing country in 1994 and has become a fierce competitor in the international fruit markets. Apples are the leading fruit produced in terms of volume and total production—China contributes approximately one-third of the world supply. While exports remain a relatively small percentage of total apple production in China, they increased 20-fold between 1990 and 2004 and accounted for 12 percent of the world total in 2004 (Ministry of Agriculture 2006).

Chinese apples and apple products have become very competitive in international markets, especially after China entered the WTO in 2001. While

quality and food-safety issues have been viewed as relatively lagging, Chinese apple trade has been stronger in global markets where prices count more than quality and safety (World Bank 2006). China has a long-term comparative advantage in labor, a source of competitiveness for many Chinese products, which results in relatively low apple prices in the international market. In addition, the Chinese government has placed a high priority on the apple industry, enacting a series of policies to support development, including provision of subsidized production materials (i.e. fertilizer, seeds), assistance to build greenhouses, financial support, and market information. Recently, Chinese fresh apples have been granted access to markets in Canada, Australia, and Argentina. China is currently requesting market access for fresh apples to the U.S. (processed apple products have already been granted access).

Laws and Regulations

Over the past two decades, the Chinese government has launched a series of laws and regulations related to plant quarantine and inspection (Figure 1). These laws and regulations are issued by the National People’s Congress, the highest executive agency in China, or its administrative authority, the State Council. For example, the Entry and Exit Animal and Plant Quarantine law was issued at the twenty-second meeting of the Standing Committee of the Seventh National People’s Congress on October 30, 1991. This law is formulated to prevent invasive species from spreading into or out of the country; protect the production of agriculture, forestry, animal husbandry and fisheries as well as human health; and to promote the development of foreign economic relations and trade. In addition, there are approximately 3,000 food-quality, hygiene, and safety standards currently in place; about half of them are international standards (World Bank 2006). More regulations are under development by the Chinese government to help promote implementation of some standard moni-

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Laws	<ul style="list-style-type: none"> • Entry and Exit Animals and plants quarantine law of the people's republic of China (1991) • Agriculture law of the People's Republic of China (1993) • Food hygiene law of the people's republic of China (1995) • Import and export commodity inspection law of the people's republic of China (2002) • Law of the People's Republic of China on Agricultural Product Quality Safety (2006)
Regulations	<ul style="list-style-type: none"> • Regulations for the implementation of the law of the People's Republic of China on import and export commodity inspection (1996) • Administrative regulations for implementation of pesticide (1999) • Administrative regulations of the people's republic of China on pesticides (2001) • Administrative regulation of sanitary registration for food processing establishment for export (2002) • Quality control guideline of analysis for residues (2002) • Regulation for administration of domestic manufacturers regarding food export registration in foreign countries (2002) • Regulation on administration of HACCP management System Certification (2002) • Regulations for the implementation of the law of the people's republic of China on the entry and exit animal and plant quarantine (2005)

Figure 1. Example of Current Laws and Regulations Related to Fruit Safety.

Source: Information taken from the Central People's Government of the Peoples' Republic of China (n.d.).

toring system, like HACCP (Hazard Analysis and Critical Control Point) or GAP (Good Agricultural Practice) in China.

From a regulatory point of view, laws and regulations for fruit safety do exist in China and new laws and regulations are constantly under construction and review by Chinese regulators. Even so, these laws and regulations have not been sufficient to prevent controversy and concerns over the safety controls needed to meet the high standards and phytosanitary measures of many international markets.

Administrative System

The overall government system in China is relatively complicated. At least 16 institutions, including ministries, banks, and commissions, are involved in governing agriculture and its upstream and downstream sub-sectors (O'Brien 2006). The National People's Congress (NPC) ranks the highest in the administrative-system pyramid and the State Council is the chief administrative authority (Figure 2). Several ministries, commissions, and organizations are directly under the State Council and are responsible for enforcing enacted laws and regulations: MOA (Ministry of Agricultural), AQSIQ (General administration of quality supervision, inspection, and quarantine), MOH (Ministry of Health), SEPA (the State Environment Protection Administration), and CNCA (Certification and Accreditation Administration of the People's Republic of China). MOA and AQSIQ are the primary agencies responsible for food-safety administration in China. Within each agency, responsibility is designated to several different departments. For example, within AQSIQ, the Bureau of Food Safety for Imports and Exports focuses on imported and exported agricultural products, the Department of Quality Supervision focuses on good quality in general, and the Certification and Accreditation Administration focuses on product certification.

To further complicate the administrative structure, the NPC and most of the agencies directly under the State Council have corresponding local branches at provincial, city, and/or county levels. For example, within one agricultural area the MOA under the State Council would have branches at the province (e.g., Shandong), capital city (e.g., Jinan), other major city (e.g., Tsingtao), and county levels

(e.g., Jiyang, a county in Jinan).

From an administrative point of view, responsibilities between different agencies in this complex government system are often overlapping and confusing. Overlap occurs not only from horizontal relationships between agencies but also from vertical relationships among different branches (general, province, city, and county) within a single agency.

Supply-Chain Organization

From the structural point of view, coexistence of three market forms and two supply-chain organizations impact the effectiveness and efficiency of food-safety control. At present, Chinese fruit markets can be divided into three categories: traditional fruit markets, new emerging modern markets, and export or industrial markets (World Bank 2006). Traditional local fruit markets have historically been the most popular market format and even now still retain the largest market share. This market consists of millions of small-scale farmers, who normally average less than 0.5 hectares per person. A small portion of the fruit is consumed for home use but most is collected by fruit dealers/brokers or by farmers themselves and then sold through outlets that combine retail and wholesale functions. Sales are to local urban and rural markets, including restaurants, street markets, or grocery stores. Traditional fruit markets are characterized by little food-safety control, heterogeneous quality, absence of standardization, low prices for growers and consumers, very low value-added, and a lack of long-term relationships between buyers and sellers.

Over the last ten years supermarkets have replaced many of the traditional wet and flea markets in urban centers. Supermarket sales are growing at a rate of 30–40 percent per year, and the supermarket revolution in China is spreading faster than anywhere else in the world (Hu et al. 2004). Compared to traditional fruit markets, modern domestic supermarkets are characterized by better food-safety control, convenient shopping environments, emerging awareness of tighter supply-chain organization, sharing market information and trust between buyers and sellers, increased value-added, and existence of market leaders. However, the development of supermarket sales in the fruit sector, especially for fresh fruit, has not been as fast as in

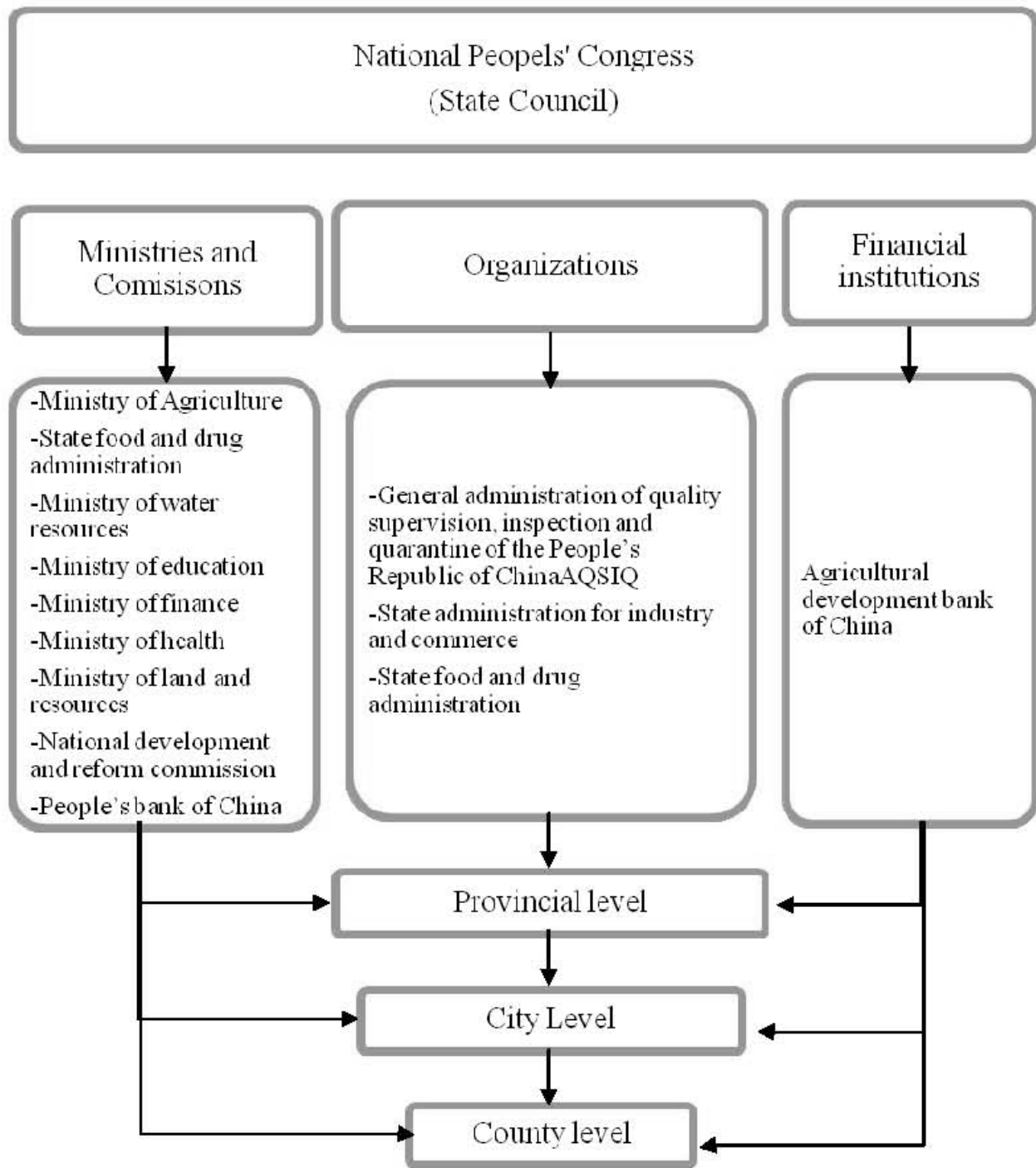


Figure 2. Government Administrative Systems Related to Fruit Safety.

Source: Information taken from The Central People's Government of the Peoples' Republic of China (n.d.).

other sectors in general due to the difficulties of quality and safety control of fresh fruits and higher prices (World Bank 2006). Even though improved infrastructure and increased cold-storage capacity have helped enhance the distribution networks in China (USDA-FAS 2006), only specialized wholesale markets or large-scale dealers are able to afford expensive cold-storage facilities. Many supermarkets still buy produce through large, centralized wholesale markets.

With privatization and economic liberalization, producers in China have been increasingly able to respond to foreign demand in Japan, Korea, Hong Kong, and Chinese ethnic markets in Southeast Asia and North America (World Bank 2006). Exports are almost entirely supplied from larger domestic fruit companies. Export fruit markets are often even more demanding than domestic supermarkets in terms of quality and safety requirements. They are characterized by the highest standards, food-safety control systems, higher requirements for grading and supply schedules, higher value-added, relatively higher price levels, and existence of trust between buyers and sellers. At present, the export market probably constitutes not more than two percent of sales volume for fresh fruits and vegetables (World Bank 2006).

The coexistence of these three market forms has resulted in coexistence of two supply-chain systems: traditional and new emerging coordinated supply chains (Figure 3). Coordinated and integrated upstream and downstream relationships satisfy requirements of the modern fruit domestic and export markets to meet higher standards and restricted phytosanitary measures. Participants have durable relations in a coordinated supply chain by exchanging information and consulting each other. In a centralized procurement system, transaction costs can be largely reduced; there are fewer suppliers and wholesalers, resulting in easier control over quality and food safety; and standards are generally higher than in traditional market. However, the traditional fruit market still has the largest market share for fresh apples.

Guanxi

In China, "Guanxi," which means "interpersonal relationship," is an important consideration that affects all aspects of society including laws and

regulations, administrative systems, and supply-chain organization. Guanxi is defined as an interpersonal and characteristic-based trust, and has always been an important part of Chinese business society (Xin and Pearce 1996)—no friends, no business. Guanxi can be developed among relatives, friends, classmates, employees and employers, husband and wife, or even people who have the same hobbies. Although such relationships exist in other countries, they often have greater impact in China. Legal, administrative, and market structures are all influenced by these informal, non-institutional, bonds within society.

Conclusion

This paper uses Chinese apple markets as an example to illustrate the complexity of managing interactions among regulatory, administrative, and structural constraints on food-supply chains. Regulatory factors refer to laws and regulations that guide the supply-chain operations; administrative factors refer to government administration agencies and services; and structural factors refer to supply-chain organization and activities. Ultimately, achievement of food safety will be determined not only by strength in one set of factors but by the necessary coordination among all three.

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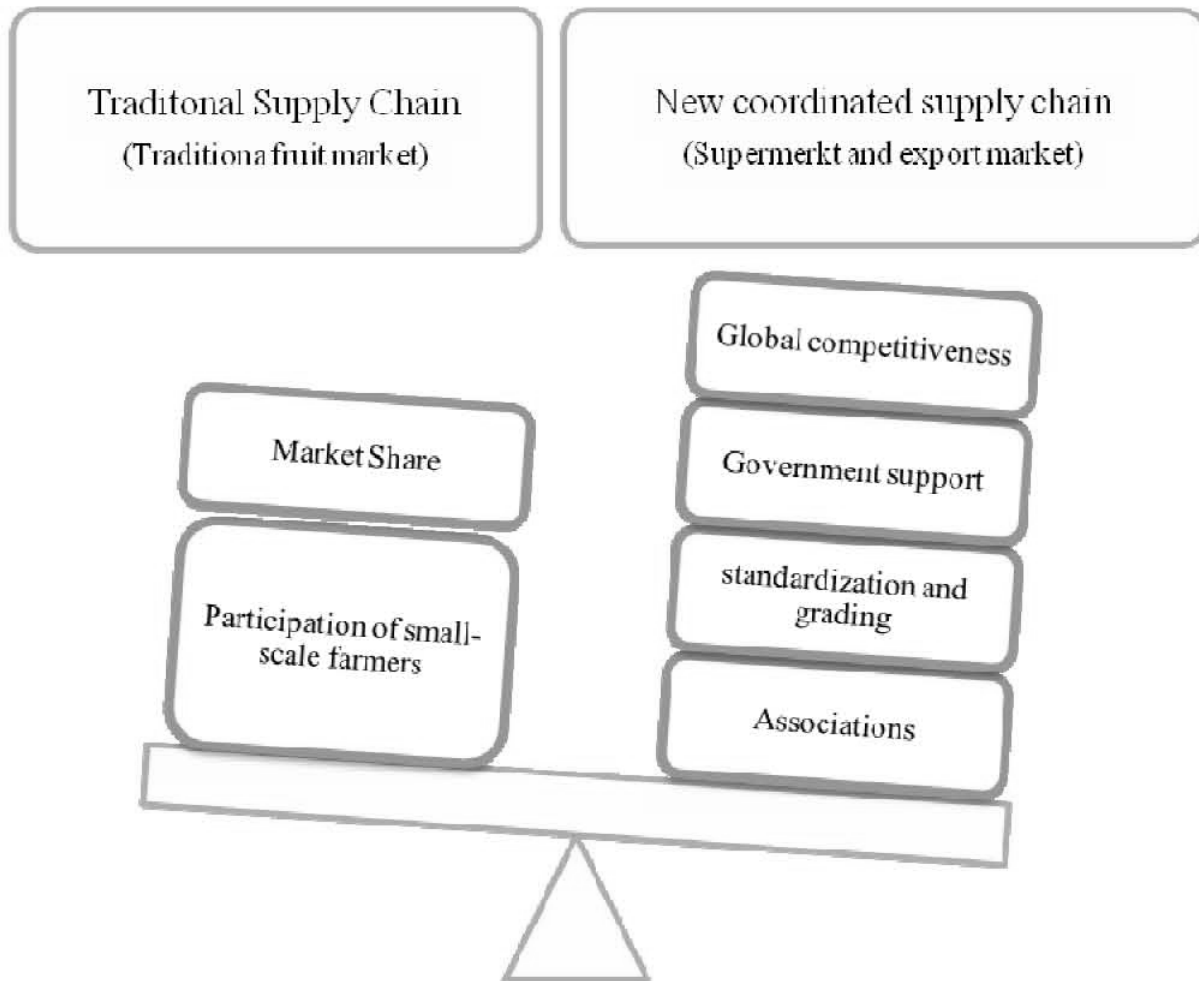


Figure 3. Comparison between Two Supply-Chain Organizations.