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# FOOD SAFETY IN FOOD SECURITY AND FOOD TRADE

## Case Study: Beef Industry in China

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**T**he beef industry provides a window on food safety issues in China's rapidly developing economy. This industry provides particularly useful insights because the government has targeted it for development and because it is dominated by household slaughtering and wet markets, making food safety concerns pervasive.

Balancing industry growth and development with improved food safety is not a straightforward matter. Regulations and policy initiatives aimed at modernizing Chinese beef supply chains for the mass market along Western lines are not necessarily desirable or feasible. However, greater consumer assurance about the inspection of cattle slaughtering and beef distribution may help grow the mid-value sector of the Chinese beef industry, which is vital to sustainable industry and rural development.

### BEEF SUPPLY CHAINS, CONSUMER PREFERENCES, AND FOOD SAFETY

The Chinese cattle and beef industry is extremely diverse. (For the purposes of this brief, only key aspects relevant to food safety will be discussed.) Prior to market-oriented reforms that began in the late 1970s, beef in China came from cull cattle only. A state network produced and distributed almost all of this beef among the Muslim (mainly Hui) community.

In the 1980s, market-oriented reforms had various impacts. First, restrictions on the slaughter of cattle were removed and specialized beef cattle production began to occur. Second, many households became involved in slaughtering and selling cattle and retailing beef and offal. Slaughter households competed with state abattoirs under the General Food Company (GFC) network. Many county-level abattoirs were established from the mid-1980s onward as a result of fiscal reforms that encouraged local investment and in response to a growing demand for beef in China and other countries, such as the former Soviet Union.

Although the beef industry in China is diverse, a simplified distinction can be made between the mass market and the remaining premium market. The mass market accounts for almost 90 percent of all cattle slaughtered in China. Sold as fresh, low-value, undifferentiated beef in local wet markets, mass-market beef comes primarily from cattle killed by slaughter households. Most of these households are of Hui ethnicity and many also operate beef stalls. The remaining beef sold in wet markets comes from GFC abattoirs. However, the price of beef received at these markets (around RMB14/kilogram, approximately US\$1.70 when these prices were observed) is insufficient to maintain the viability of GFC abattoirs, which need to sell at least some of their beef in premium markets. Slaughter households generate modest profits of around

RMB0.32/kilogram of beef by selling in the mass market, while GFC abattoirs incur a loss of around RMB2.53/kilogram of beef. GFC abattoirs cannot compete with slaughter households because of their higher overhead and labor costs. Thus many GFC abattoirs have been "mothballed," operated at very low levels of capacity, or undergone restructuring.

Hygiene in the mass market is poor, both for cattle slaughtering and beef distribution. The risk of food contamination is extremely high, but its severity is tempered by the short time interval between slaughter and consumption (often 8 to 16 hours) and by Chinese cooking methods. Although consumers in this low-value market may have food safety concerns, price is paramount. Both slaughter households and markets are supposed to be inspected, but this does not occur, even for beef sold in various markets in Beijing.

About 10 percent of slaughtered cattle is sold through a small but growing premium market. For the highest quality beef, five-star restaurants and hotels and related outlets purchase at prices of up to RMB150/kilogram. These prices apply to specific cuts of beef that carry an assurance of safety and such quality attributes as tenderness. Much of this extremely limited market is supplied by overseas beef exporters, although some comes from a select group of trusted Chinese suppliers. Modern abattoirs have been built and some GFC abattoirs refurbished to exacting hygiene standards with the aim of supplying this high-value domestic market as well as lucrative export markets in Japan and South Korea.

The mid-value part of the premium market is the most rapidly growing part of the beef sector. Its prices modestly exceed those in the mass market. Price premiums relate not so much to quality attributes—although the beef is more differentiated than in the mass market—but to the assurance of a safe product. Beef sold through state stores, sourced from abattoirs perceived to be regularly inspected, or sold in markets promoting hygiene and "guaranteeing" safe beef, serves the mid-value market. Beef sold in state stores typically commands a premium of around RMB6/kilogram over the mass-market price. Consumers who buy mid-value beef are affluent urban residents concerned about food safety and willing and able to pay a premium for safe beef.

In response to food safety concerns, the Ministry of Agriculture has established "Green Food" certification for a wide range of foods, including beef. In the cattle production stage, certification prohibits the use of growth promotants, imposes withholding periods for some veterinary products, and sets national standards that must be met on the use of feed additives and antibiotics. In the processing and distribution stages, hygiene levels are set in conjunction with the Ministry of Health. Surveys reveal that affluent consumers are prepared to pay premiums of 20 to 30 percent for a variety of "Green Foods."

## KEY REGULATORY MEASURES

The Chinese government's response to public concerns over the safety of meat products encompasses many segments of the beef marketing chain, making inspection mandatory from the ante-mortem to the retail outlet stages. At the beef distribution stage, the intent has been to close down smaller, less hygienic markets and restrict the sale of beef to larger wholesale and retail markets that have higher standards and are regularly inspected. However, many smaller beef dealers remain outside the practical control of local government health and hygiene authorities.

Another important regulation has been the restriction of livestock slaughter activities to designated locations. These measures have their origins in 1992 rules that initially targeted the pig industry but which were implemented more widely and forcibly in 1997. Despite efforts at enforcement over several years, there is still a great deal of variation in the way this regulation has been interpreted in different regions. Some regions have banned household slaughtering. Others have decided that designating slaughter points does not prohibit household slaughtering—it only requires that slaughtering occur at designated and inspected facilities. The regulation seeks to ensure proper ante- and post-mortem inspection of cattle and more hygienic slaughtering, but the reduction in number and the centralization of slaughter points also facilitates the collection of slaughter and product taxes.

## IMPROVING FOOD SAFETY AND RURAL DEVELOPMENT

Linkages between the beef industry's development and food safety vary among different value segments of the beef market. In the low-value mass market, the upgrading and centralization of markets and slaughter facilities will increase costs in what is an already competitive food market in which consumers resist higher prices. Introducing more stringent hygiene standards for beef marketing may increase supply costs beyond those that consumers are willing to pay, pricing beef out of local markets.

Many GFC abattoirs see food-safety regulations as advantageous because they restrict competition from household slaughtering. However, even if some regions do interpret regulations in a way that effectively bans household slaughtering, GFC abattoirs are unable to profitably supply low-value mass markets.

One way to achieve the multiple objectives of maintaining a vibrant household slaughter sector, improving inspection and hygiene, and utilizing existing GFC abattoir facilities is to operate GFC abattoirs as designated slaughter points that offer slaughter facilities. Slaughter households could use the facilities for a fee but retain ownership of the beef and by-products. If centralized abattoirs facilitate timely and efficient distribution of wet beef to consumers, they will reduce both risk (through greater inspection and cleaner facilities) and hazard (through more timely dis-

tribution). However, in rural areas where designated slaughter points are not available, systems must be put in place to ensure efficient redistribution of beef to local wet markets. Otherwise centralization of slaughtering will increase the hazard and be counterproductive in terms of food safety.

For slaughter households, designated slaughter points may overcome some of the problems of a fragmented system by providing access to centralized cold storage and distribution facilities as well as to a more competitive and larger trading environment for beef and by-products. Such facilities come at a cost. Given the already low margins of slaughter households, they are unlikely to slaughter at these points. If public benefits arise from designated slaughter points—be they health- or tax-related—there might be grounds for subsidizing and promoting these facilities and services. Such investments may be better for local governments than large-scale, top-down projects if the goals are to provide the local mass market with safer beef while maintaining participation from local slaughter and trading households.

The situation for premium markets is very different, because efforts to assure safer beef are likely to grow the premium market. A system that enhances consumer knowledge and belief in food safety will facilitate the payment of premiums by more affluent consumers—premiums needed to ensure a more sustainable cattle production and slaughter sector in China. By not being able to guarantee product safety through the market, up-market hotels and restaurants have been forced into making direct arrangements with particular beef suppliers. The costs to enter these barely competitive direct marketing arrangements can be significant, especially when hotels are trying to decrease their food storage capacity. Thus measures aimed at developing greater safety assurance may also expand this up-market segment.

## CONCLUSIONS

Following rapid, production-driven growth during the 1980s and 1990s, the cattle and beef industry in China is now entering a phase of modernization and maturation. A key facet of this maturation is attention to food safety and development of quality assurance systems. Although such attention is warranted and desirable, food-safety measures carefully targeted to each market segment are needed to avoid unintended adverse effects and to meet industry and rural development objectives. ■

For further reading see **C. G. Brown, J. W. Longworth, and S. A. Waldron**. "Food Safety and Development of the Beef Industry in China," *Food Policy* 27 (2002): 269–84; **J. W. Longworth, C. G. Brown, and S. A. Waldron**, *Beef in China: Agribusiness Opportunities and Challenges* (St. Lucia: University of Queensland Press, 2001); and **S. A. Waldron, C. G. Brown, and J. W. Longworth**, *Rural Development in China: Insights from the Beef Industry* (Aldershot, UK: Ashgate Publishing, 2003 forthcoming).

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