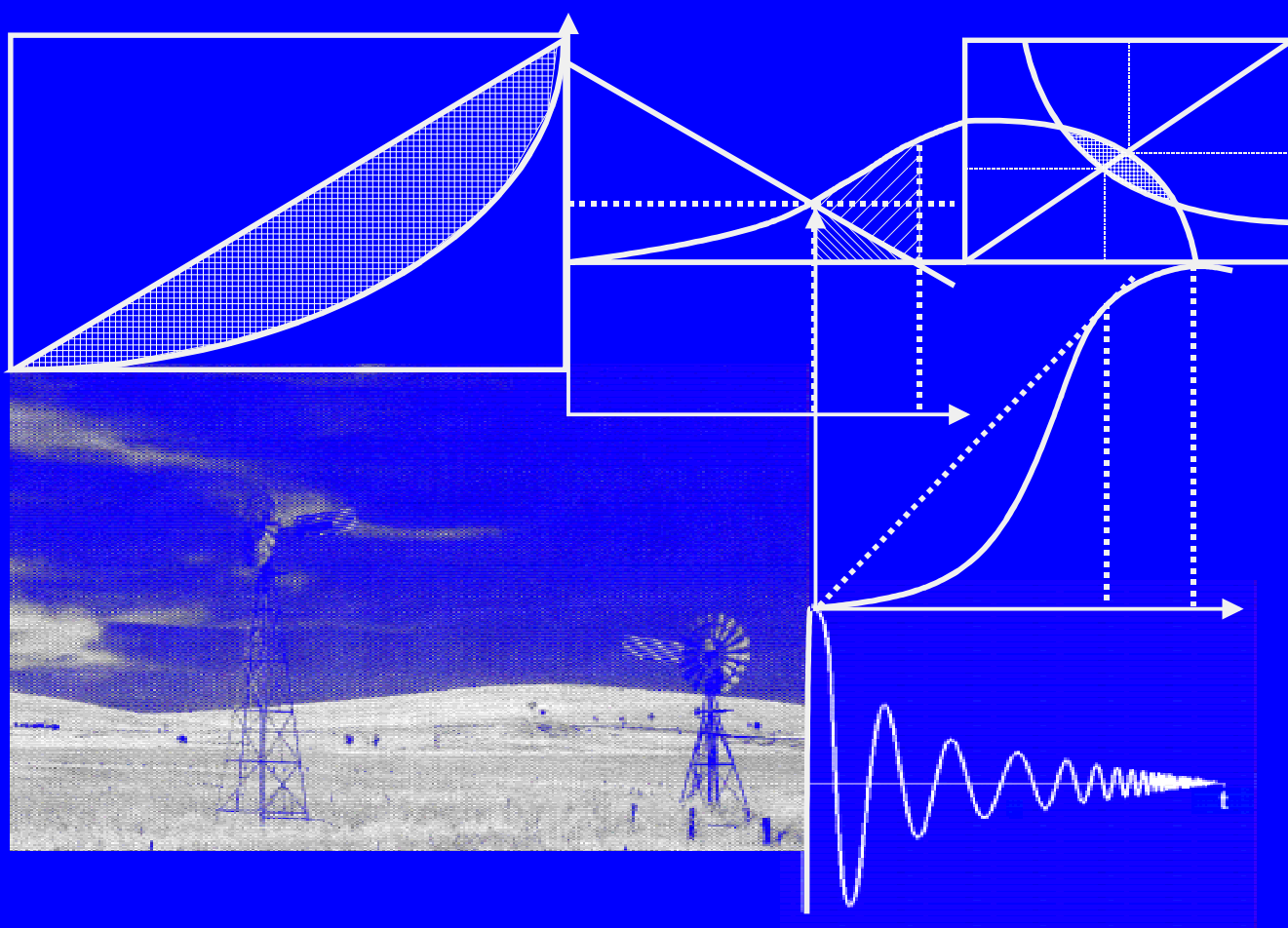


# Agricultural and Natural Resource Economics Discussion Paper Series



School of Natural and Rural Systems Management  
University of Queensland  
St. Lucia 4072 Australia

# Beef Marketing in China

Lin Xiangjin and Ian Jarratt

January 1998

Agricultural and Natural Resource Economics Discussion Paper 5/98

School of Natural and Rural Systems Management  
University of Queensland  
St. Lucia 4072  
Australia

© January 1998

# Beef Marketing in China<sup>1</sup>

Lin Xiangjin<sup>2</sup> and Ian Jarratt<sup>3</sup>

Developments during the next few years in China's beef and cattle marketing regulations (including animal and public health provisions), grading and product description systems, and market reporting arrangements will play crucially important roles in the rate and direction of the industry's growth and development. They will greatly influence the quantity and quality of China's beef production and consumption as well as its exports and imports.

This paper describes the current marketing regulations and other arrangements and reports on the current state of the Chinese beef marketing system and the main changes in recent years. It also identifies several important problems which are constraining the development of China's beef marketing system and proposes some possible solutions.

## 1. Overview

Before 1978, the central government controlled the marketing of beef cattle. In the agricultural areas, the cattle were protected by law as farm animals. The slaughtering of older farm cattle was subject to approval by the government. Although beef cattle were designated as a category II commodity by the central government, (ie the State allocated production quotas had to be filled by each province or autonomous region at a fixed price), over-quota of beef still had to be sold to the State at the same price. So at that time, beef marketing was monopolised by the State.

After 1978, the central government adopted some new policies such as:

- increased prices of agricultural products, including beef ;
- open free markets; and
- permitting farmers to sell over-quota animal and poultry products in the free market.

In 1985, the central government rescinded the unified purchase and distribution system for hogs, beef cattle, mutton, eggs, and wool. Since the late 1980s, a diversified beef marketing system has been established.

## 2. Beef Marketing Channels

Currently there are six beef marketing channels in China: slaughtering and processing factories, individual slaughtering households, partnerships, State-owned shops, wholesale markets, and exports.

---

<sup>1</sup> Paper presented to the 42<sup>nd</sup> Annual Conference of the Australian Agricultural and Resource Economics Society held at the University of New England, Armidale, 19-21 January 1998. The paper draws upon research from Australian Centre for International Agricultural Research (ACIAR) and Meat Research Corporation (MRC) funded projects on an analysis of socio-economic and agribusiness developments in the Chinese cattle and beef industries. The projects involve collaboration between The University of Queensland, the Institute of Agricultural Economics within the Chinese Academy of Agricultural Sciences, the Rural Development Institute within the Chinese Academy of Social Sciences, and the Department of International Co-operation within the Chinese Ministry of Agriculture. The authors would like to thank the other collaborating scientists on the research projects for their help in preparing this paper and to ACIAR and MRC for their funding support.

<sup>2</sup> Rural Development Institute, Chinese Academy of Social Sciences.

<sup>3</sup> Queensland Department of Primary Industries.

## ***2.1 Slaughtering and processing factories***

Before 1985, when State-owned trading monopolised beef marketing, there were 1700 State-owned slaughtering and meat processing factories in China employing 850,000 workers. Since the economic reforms of the late 1980s, many slaughtering and processing factories were established resulting in under-used equipment and financial losses because of high costs, declining market share, and reduced government subsidies of increasing meat prices.

According to the statistics of the Ministry of Internal Trade, until early 1990, the annual loss of State-owned slaughtering and processing factories reached more than 4 billion yuan<sup>4</sup>. In response, the government adopted several measures to reform slaughtering and meat processing factories. These included: separating enterprises from government, developing joint ventures; implementing consolidation, and shutting down or selling enterprises which are making serious losses.

According to reports from each provincial Animal Husbandry Bureau, after the above reforms, there were only 121 beef slaughtering and processing factories which annually slaughter 2,470,000 head of cattle and in 1996 produced 38 percent of total beef production by weight (including 30,000 tons of export fresh and frozen beef). Of these 121 factories 41 percent are State-owned or collective owned enterprises, 47 percent are joint ventures enterprises, 6 percent are foreign funded enterprises, and 6 percent are private enterprises. Within these factories, there were 8 larger enterprises with annual slaughtering of more than 30,000 head of cattle (see Table 1), the rest each slaughter between 10,000 and 30,000 head pa. Beef production can be categorised into two groups: fresh and frozen beef or cooked meat.

In recent years most slaughtering and processing factories have adopted the strategy of integration of production with distribution, ie not only to own specialised cattle feedlots in adjacent areas or use marketing contracts with farmers to integrate beef cattle production and marketing, but also to build a distribution network which includes long distance movement, storage and delivery of meat to retailers and other consumers. For a example, the Hua An Meat Co. Ltd., whose major products are fresh and frozen beef, has founded a sales organisation with 38 salesmen. More than 20 percent of the total salesforce has a college or higher education level.

Hua An has established branch sales offices in Beijing, Shanghai, Guangzhou, Harbin. Qingdao, Dalian, XiAn, and Zhangqing cities. In most cases, refrigerated trucks are used to ship fresh meat to each city, then deliver it to retailers, high class restaurants and hotels etc. Recently, Hua An purchased 28 larger refrigerated trucks.

In the past decade, Hua An has slaughtered, processed, and sold 250,000 cattle, 100,000 hogs, and 200,000 sheep and goats.

The Shuanghui Group is another example. Its major products are sausage, canned meat and ham. It has established 40 branch sales offices in larger cities and has a national distribution network which integrates more than 480 merchant wholesalers. Its sales team consists of more than 200 people. Most salesmen have been educated to college level or higher. As a result of the integration of production with distribution, the Shuanghui Group has implemented high-volume flow of commodities. The sales of sausage increased from 10,000 tons in 1992 to 156,000 tons in 1996.

Integration of production and distribution provides an opportunity for slaughtering and processing factories to lower costs and increase productivity through the more effective administration of production and distribution and the better coordination of the flow of goods through them. At the same time, this integration can provide specialised distribution and marketing services which individual wholesalers, retailers, and other middlemen are unable to provide, ie. processors have

---

<sup>4</sup> The exchange rate on 13 January 1998 was 5.372415 yuan to one Australian dollar.

adopted refrigerated or temperature controlled national distribution of perishable products. This has also allowed processors to conduct national advertising campaigns.

Table 1 Larger Chinese beef cattle slaughtering and processing factories in 1996

| Factory name  | Location                  | Ownership     | Total Fixed Assets<br>(10 thousand yuan ) | Annual slaughtering cattle<br>(10 thousand head ) |
|---|---------------------------|---------------|---|---|
| Anhui Guo Yang beef and mutton processing factory   | Anhui, Guoyang county     | state-owned   | 3560                                      | 12.6  |
| Lida food and meat Limited obligation cooperation   | Anhui, Lixin county       | state-owned   | 2030                                      | 7.0   |
| Lu Ben meat production industry and trading company | Shandong, GaoTang county  | state-owned   | 6500                                      | 6.0   |
| LuYu Food limited company                           | Shandong, Yu cheng county | state-owned   | 3000                                      | 3.0   |
| Hua An Meat co. .Ltd.                               | Hebei, Dachang            | Joint         | 17000                                     | 3.0   |
| De Xin slaughtering & processing factories          | Jilin, DeXin County       | joint venture | 12000                                     | 10.0  |
| Shuanghui Group                                     | Henan, Luohe City         | state-owned   | 208000                                    | 50.0  |
| Chun Du Group                                       | Henan,                    | joint venture | 56000                                     | 60.0  |

Source: 5<sup>th</sup> National Meeting of Agriculture and Animal Husbandry Development (1996); National Conference of Cattle Industrialization (1995).

## 2.2 Individual slaughtering households

According to present Chinese regulations, individuals who do not have the necessary equipment for a slaughtering and processing factory are permitted to operate a slaughtering household if they accepted epidemic prevention and health standards supervised by the government. They purchase cattle from farmers and slaughter them, then transport the beef to market for sale. Every carcass must pass inspection with the exception of inspection before the animal is slaughtered. The family members are the major workers in individual slaughtering households but some times they hire two to three workers.

Individual slaughtering households sell their beef in many ways. Generally, such ways can be grouped as follows:

- *Delivery of beef to retailers and restaurants*

Some individual slaughtering households have fixed contacts with their regular retailer and restaurant customers in cities. They sent beef to them by refrigerated truck weekly or monthly.

- *Selling in the free market*

Some individual slaughtering households have established booths in free markets in urban and rural areas. Some free markets are only open in the morning and are commonly called "markets of the morning". For a example, in Xifeng county of Liaoning province, the individual slaughtering households have established more than 50 beef selling booths in Shenyang, Wushun, Shiping and Ansan cities, and in Chuangtu county of Liaoning province they have established 126 beef booths in these cities and local free markets.

- *Joint marketing with large stores in cities*

Some individual slaughtering households have adopted joint marketing with large stores in the cities so that they can expand their markets. For a example, a farmer Ma Renwu who live in Jiayin village, Huaiyang county, Henan province has established three joint marketing arrangements with large stores in Shanghai city . He established a specialised beef feedlot for with an annual output of 600 head of cattle which are transported live to Shanghai and which on average weigh more than 450 kg. The annual sale of beef is 119 tons.

According to investigations by one of the authors, in 8 beef cattle demonstration counties, there were 8318 individual slaughtering households, with an average of 1040 per county. If each household annually slaughters for 180 days (some slaughtering households are seasonal operations), and average sales are half a head of cattle per day during the slaughtering season, the annual sales of beef cattle are about 740,000 head, and account for about 56 percent of the total number of beef cattle slaughtered in these 8 counties.

According to statistics of the Ministry of Internal Trade, the national sales of beef in the free markets in urban and rural areas were 1,580,000 tons in 1996. If sales of slaughtering and processing factories are deducted from this amount, the sales of individual slaughtering households are about 920,000 tons, and account for 58.3 percent of total beef sales by weight. Because their marketing costs are lower, the households are more competitive than slaughtering and processing factories which need more investment in fixed assets and higher staff costs. Nevertheless, most of the beef from individual slaughtering households is primarily of lower quality which is not acceptable to high class restaurants and hotels. This lower quality beef comes mainly from pastoral areas in North China or old draught cattle in agricultural areas which are not fed grain in feedlots before slaughter.

### **2.3 Partnerships.**

A partnership is a voluntary association of three or more persons who are individual slaughtering households before entering a partnership to carry on, as co-owners, a business for profit. A partnership is created by a verbal or written agreement . Every person invests certain amounts of money in the business as capital. Often the partners invest equal amounts of money and divide profits equally. Most partnerships occur because of long distances involved in travel to purchase cattle in the in pastoral areas or to sell beef in free markets in urban areas. Because of a lack of capital and labour, individual households can not do things alone. Therefore, several households work together not only extend the marketing channel but also to obtain some profit from economies of scale. For example, Wulei and another 3 farmers who live in Jixian county, Hebei province, each invested 10,000 yuan in their partnership. They go to Dongwuzhumuqin and Xiwuzhumuqin counties, Inner Mongolian Autonomous Region to purchase cattle, then rent a truck to transport the cattle back to their village. Every morning they transport about 1,000 kg of beef, which was slaughtered and processed a few hours earlier, to sell in the free market of morning in the city.

Because there is little difference in selling methods between individual slaughtering households and partnerships, the marketing share of partnerships is included with individual households in the government statistics quoted earlier.

## **2.4 State-owned wholesalers and retailers of beef**

As mentioned earlier, before 1985, State-owned enterprises monopolised beef marketing. With the reforms and liberalisation policies increasing, the State-owned share of the market has been greatly reduced. According to statistics of the Ministry of Internal Trade, the sale of beef in State-owned trade was 138,000 tons in 1996, accounting for only 7.9 percent of total beef commodity trade by weight. Nevertheless, State-owned trading is still important in some conditions. In some residential areas of the Hui nationality, such as Niujie Street in Beijing, beef supplies were provided by State-owned traders. Also, some local governments attempt to stabilise the domestic price of beef via State-owned major marketing channels. For example, Beijing Muslim Food Company is a State-owned enterprise which is under the jurisdiction of the Beijing Second Bureau of Commerce. It was founded in the 1950s and used to employ more than 800 people. It has an A class slaughtering and processing factory which can slaughter 1100 head of cattle daily, a refrigerated storage capacity of 150,000 tons, a processing factory for cooked meat, and a processing factory for fat. During the planned economy period the company was required to supply the beef and mutton needs of 300,000 Muslim people and provided 20,000 tons of beef annually. The cattle came from Inner Mongolia Autonomous Region and Qinghai province and were allocated and transferred by the Ministry of Commerce (i.e. Ministry of Internal Trade) according to a plan. When cattle were slaughtered, the carcasses were allocated to State-owned shops for retailing. Since 1992, when Beijing city government decided to open up the market for meat, the sales of beef of the Beijing Muslim Food Company have gradually reduced to 10,000 tons annually in 1996. This represents only 14 percent of the total Beijing beef market, which has expanded to more than 70,000 tons. The major competitors of the Beijing Muslim Food Company are individual slaughtering households which account for about 70 percent of total sales of beef. Meanwhile, the Beijing city government provides 10 million yuan to the Beijing Muslim Food Company to operate a storage program which aims to stabilise beef prices.

## **2.5 Wholesale markets.**

According to statistics of the State Industry and Commerce Bureau, there were 3,000 wholesale markets for agricultural products in China in 1996. Most of these were comprehensive wholesale markets which engage in the wholesaling of vegetables, fruit, fish, meat and poultry. However, a few are specialist wholesale markets for beef (see Table 2).

Normally, meat wholesaling is only a small part of the operations of the comprehensive wholesale markets. For example, in Dazhongsi wholesale market in Beijing the vegetable area occupies 75 percent of the area of the market. The meat area is about 12.5 percent of the area and is used for the sale of fish, meat and poultry.

All wholesale markets for agricultural products today perform a wide variety of sales-related marketing services for their clients, eg sales places, equipment, and information for both sellers and buyers. They usually do not take title to products and are paid a commission for their services. According to government regulations, both seller and buyer must pay an administration charge of 2 percent of sales. Twenty percent of the administration charge goes to the tax department and the remaining 80 percent of the charge goes to the wholesale market. The sellers must pay a 3 percent sales tax to the Tax Bureau. The sellers include farmer marketing specialised households, such as individual slaughtering households, and marketing firms. They purchase agricultural products from free markets in urban and rural areas, then transport goods to wholesale markets for sale. The buyers include retailers, restaurants, and universities.

Table 2 Name list of national specialist wholesale markets for beef

| Name | Location |
|------|----------|
|------|----------|

|   |   |
|---|---|
| Beijing Muslim meat wholesale market Village, Beijing | Yongdingmenwai Nandingcun                           |
| Jining city meat wholesale market, Shandong province  | The center of city of Shandong province             |
| Yiyang county Hancheng beef market, Henan province    | Hancheng village of yiyang county of Hebei province |
| Hengchuan county flesh market, Henan province         | County Huancheng Road                               |

---

Source: State Industry and Commerce Bureau

In recent years, the wholesaling of beef has tended to decline because of competition from individual slaughtering households which sell beef to retail stores or directly to consumers. For example, Beijing city's Muslim wholesale meat market has shut down because lack of sellers and buyers.

### **2.6 Exports.**

Relative to production, China's beef exports are small. There are two categories of exports fresh/frozen beef and live cattle. In 1996, the export volumes were 30,000 tons of beef and 150,000 head of cattle giving a total equivalent of 45,000 tons. Both types of exports combined account for only 2.8 percent of total beef production.

The live cattle exports are shipped to Hong Kong and Macao. These exports are based on the quota decided by the Ministry of Foreign Trade and Economic Cooperation according to supply and demand in international and domestic markets. When the total quota is decided, the Ministry of Foreign Trade and Economic Cooperation divides the quota into each administrative bureau for foreign trade at the provincial level.

Exports of fresh and frozen beef are allowed only if a license has been issued. However, if an export enterprise has an export contract with a foreign trader it can apply for an export license and these are not restricted.

### **3 Problems and proposals**

A number of problems impede the modernisation of meat marketing in China. Firstly, some meats sold in free markets have not passed epidemic prevention and health standards. The 1992 Detailed Rules and Regulations of Livestock and Poultry Epidemic Prevention Regulations prohibit the sale of meats which have not been inspected or the certifications do not meet the required standards. However, some people attempt to save quarantine and inspection fees and the time involved in getting them. This is unfavourable for the elimination of animal diseases and to protect the health of the people. This situation mainly results from there being too many slaughtering points and lax implementation of the regulations. Secondly, lack of standardised administration of markets. For example, several years ago, meat including beef could not be sold at the morning markets in Beijing city. However, such markets are common today. There are about 100 morning markets now in Beijing. Every morning, about 10 head of cattle are sold by individual slaughtering households or partnerships in each morning market in Beijing.

The prevalence of beef selling in morning markets has several negative effects:

*Tax avoidance.* According to one of the authors' investigations in the Beijing morning markets, the retailers of beef are asked to pay only an administration tax for the morning market, but do not need to pay a business tax like in the Dazhongsi wholesale market.

*Created distortions across different markets.* Because tax rates are lower in morning markets, and retail costs are also lower (a booth rent which includes refrigerator rent, is 15,000 yuan annually in Beijing's Hongqiao free market), the beef price in the morning markets is only 5.0-5.5 yuan/500 gm, compared with 7.0 to 7.5 yuan in State-owned shops or wholesale markets.

*It does not contribute to improved beef quality and health standards.* Much beef which do not pass through grading or region quarantine and inspection enters the market. This would be prevented by the development of high quality beef production and the implementation of State epidemic prevention and health laws.

*It does not contribute to the protection of the environment.*

These problems are probably made worse by some government departments. For example, most of the morning market administration taxes are levied by the street government on behalf of the State Industry and Commerce Bureau. According to present administrative regulations in China, most of these taxes are allocated to local governments, except for about 20 percent of the total which goes to the State Industry and Commerce Bureau. Therefore, increases in the number of beef booths in morning markets, results in increases in the taxes allocated to street governments (for each vegetable booth the market administration tax is 15 yuan, and for beef booths is 50 yuan).

To solve these problems, the following measures are required:

*(a) Improved supervision of epidemic prevention and health standards*

The establishment of slaughtering and processing factories must accord with the provisions of the Livestock and Poultry Epidemic Prevention Regulations with the exception of accord with the law of administration of industry and commerce enterprises. According to 1992 Detailed Rules and Regulations of Livestock and Poultry Epidemic Prevention, issued by the Ministry of Agriculture, the establishment of slaughtering and processing factories must accord with following demands, i.e. there be a special section for the supervision of epidemic prevention and health standards and certain number veterinarians who have achieved a college level or higher education.; and there must be necessary quarantining and inspecting equipment etc. These laws must be implemented conscientiously. Also, there is need to strengthen the administration for individual slaughtering households of the veterinary and health quarantine and inspection laws. On July 26 1997, the meeting of the Standing Committee of National Congress passed the Animal Epidemic Prevention Law of the People's Republic of China, and it was signed by the President Jiang Zemin the same day. This law stipulates that the State will restrict slaughtering to certain points. This law will become effective on January 1st, 1998. When this law has been implemented, selling which does not accord with the requirements of veterinary and health quarantine and inspection will cease.

*(b) Improved administration of beef markets.*

The health standard of meats are of concern to everyone. Meat retailers must be up to standard to get a business license and a health certificate of inspection. The retailer must also have a fixed business place and the necessary infrastructure. Because most beef retailers at the morning markets or streets markets do not meet these requirements these marketing channels should not be developed. To improve beef marketing, encouragement is required for the development of larger slaughtering and processing factories and larger slaughtering households, supermarkets, and chain stores, and the Animal Epidemic Prevention Law should be implemented without exception.

### 3.1 Grading standards of beef

Prior to the 1980s, research into quality grading of beef had not developed in China because the consumption per person is low and the quality of beef is low. (Most of beef came from old farm cattle or old dairy cows. Each cut of these carcass was similar in quality.) Before the reforms, most of the cooking methods at home were not like western countries cooking methods such as barbecues, steak grills, baking ovens, or Japanese methods who prefer to boil beef in thin slices. Most Chinese cooking methods use beef for stewing or as a meat filler. Therefore, most consumers did not require cuts and marbled beef. Most of Chinese people did not know much about beef cuts and how to use them to advantage. Therefore, there are no national grading standards for beef either according to marbling cuts meat.

Since the reforms and liberalisation, because of the demands of high class hotels and restaurants, the improvement of people's living standards, and the introduction of western cooking methods and hamburger style eating habits, the demand for high quality beef is increasing. According to statistics of the Ministry of Foreign Trade and Economic Cooperation, in recent years, annual imports of fresh and frozen high quality beef have been between 20,000 and 30,000 tons. To change this situation, some institutions have begun to produce high quality beef through establishing feedlots and improving the way the carcasses are broken down. With the growth in production, slaughtering and processing of high quality beef, there are two questions to be answered. Firstly, what is high quality beef? Secondly, how do you evaluate carcasses and cuts? Therefore, some institutions have suggested grading standards.

The Beijing Academy of Agriculture and Forestry is one of the initial units to research high quality beef. From 1980 to 1986, they purchased feeder cattle many times in the Inner Mongolia Autonomous Region and transported them back to a suburban district of Beijing city for feeding in a feedlot. After feeding three or four months, they were slaughtered and the beef was sold to restaurants and high class hotels in part-cuts. In 1994, Jiang Hongmao who is a research fellow of the Beijing Academy of Agriculture and Forestry suggested a grading standard for high quality beef on the basis of combining Chinese experiences and foreign advanced experiences. This proposed grading standard for high quality beef can be summarised as follows:

- *live cattle assessment*

The age of beef cattle is above 30 months; weight is more than 500kg; fatness is good (i.e. there are not outstanding points of bones on the surface of the body); build and appearance is rectangle, belly does not hang down; The head is big, upright and square; the four limbs are thick and strong the foot is bigger; The surface is smooth and does not have a hollow under the tail head; the back is even and wide; the skin on the shoulder, heart, loin, belly, and rump is thicker and the fat is also thicker.

- *carcass assessment*

The colour of fat on the surface of the carcass is white, and fat covers more than 80 percent of the carcass surface. There are not serious defects on the surface of the carcass. The thickness of fat at the 12th/13th rib section is from 10 mm to 20 mm, and the fat is hard.

- *meat quality assessment*

There are three indexes for meat quality evaluation. First, the tenderness of meat. It must be easy to chew. Second, the degree of marbling. There are six grade categories of marbling suggested by Beijing Academy of Agriculture and Forestry, with 1st grade being best and 6th grade being inferior. The 1st grade and 2nd grade is required for high quality cut meat. Third, weight of cut meats. Tenderloins must be more than 2kg, strip loins more than 5kg and ribeyes more than 6 kg.

- *Cooking assessment*

The meat is required to be suitable for western cooking methods.

Most of the high quality beef producers are happy to accept the above standards in China.

On the other hand, the Hua An Meat Co. Ltd. is the first institution to use grading standards for pricing. They have established grades and prices for cut meats according to the demands of consumers. They negotiate orders with customers using these standards (see Table 3).

In short, most researchers, producers and consumers now tend to support grading methods which consider both the characteristics of the cuts and the degree of marbling.

Table 3 Cut beef grades and prices of Hua An Meat Co. Ltd.

| Item             | Requirement                                | Price (yuan/kg)<br>(23 April, 1997) |
|------------------|--|-------------------------------------|
| Topside          |  | 19                                  |
| Silverside       |  | 18.5                                |
| Thickflank       |  | 19                                  |
| Rump             |  | 18                                  |
| Shin             |  | 19                                  |
| Strip loin S     | selected, thick, marbled with fat          | 116                                 |
| Strip loin A     | selected, thick, with fat 50 cm $\pm$ 5 cm | 65                                  |
| Strip loin A     | short                                      | 60                                  |
| strip loin B     |  | 58                                  |
| Ribeye A         | marbled                                    | 100                                 |
| Ribeye           |  | 68                                  |
| Tender loin S    | marbled >1.6 kg                            | 100                                 |
| Tender loin A    | 1.3 - 1.6 kg                               | 85                                  |
| Tender loin B    | 0.9 - 1.3 kg                               | 60                                  |
| Tender loin C    | < 0.9 kg                                   | 30                                  |
| Shoulder         |  | 18                                  |
| Neck             |  | 18                                  |
| Forequarter      |  | 15                                  |
| Brisket          |  | 18                                  |
| Minced meat      | 60% lean                                   | 18                                  |
| Flank boneless A |  | 20                                  |

Source: Hua An meat Co. Ltd.

#### 4.Beef prices

Before 1992, because the government had not opened the meat market in urban areas, the prices of beef were stable as also were the price relations with mutton, pork, poultry meat. Since 1993, because prices were liberated, the situation has changed (see Table 4). First, from 1992 to 1996, the average beef prices doubled. Second, the price ratio between beef and poultry meat has changed from 1.00:1.10 in 1992 to 1.00:0.79 in 1996. This reflects the increased real demand for beef.

Monthly beef prices at the national level suggest that the following relationships exist: First, the regions which had higher consumption expenditures also had higher beef prices. For example, in 1996, in Beijing, Shanghai, Zhejiang, Fujian, Guangdong, the per capita annual expenditure for consumption of urban residents were 5730 yuan, 6763 yuan, 5764 yuan, 4248 yuan, 6730 yuan respectively which exceeded the national average level (3919 yuan). Average beef prices there also exceeded the national average level. Second, the regions which had higher production of beef and

lower consumption expenditure had lower beef prices. For example, in 1996, in Shandong, Henan , Hebei , Anhui , Liaoning , Jilin , Heilongjiang , the per capital annual production of beef was 9.18kg , 7.96kg , 9.38kg , 4.88kg , 8.83kg , 9.85kg , 8.32kg respectively, which exceeded the national average level (4.04kg ), and per capita annual expenditure for consumption of urban residents was only 3771 yuan , 3009 yuan , 3424 yuan , 3607 yuan , 3493 yuan , 3037 yuan , 3111 yuan respectively which were lower than national average level and their beef prices were lower than the national average level. Third ,beef consumption is seasonal. Beef consumption (in January, February and March is higher than all the other months combined due to the Chinese New Year), yet most beef cattle are slaughtered in November and December. Therefore, the prices differ in these two periods i.e. the former was higher and the latter was lower. As a result of this, beef prices in Shandong and Henan were lowest during December and November.

Table 4 Per capital annual consumption and expenditure of meat of urban residents in China – 1985 to 1996

| Year | Per capital annual consumption of meat |       |              |       | Retail prices (yuan/kg) |        |       |         | Expenditure on meat as % of income |
|------|--|-------|--------------|-------|-------------------------|--------|-------|---------|------------------------------------|
|      | beef and mutton                        | pork  | poultry meat | total | beef                    | mutton | pork  | Chicken |                                    |
| 1985 | 2.04                                   | 16.68 | 3.24         | 21.96 |                         |        |       |         |                                    |
| 1989 | 2.37                                   | 17.53 | 3.65         | 23.91 | 7.28                    | 6.07   | 6.18  | 7.27    | 11.0                               |
| 1990 | 3.28                                   | 18.46 | 3.42         | 25.16 | 6.39                    | 6.83   | 5.34  | 8.02    | 9.7                                |
| 1991 | 3.34                                   | 18.8  | 4.40         | 26.60 | 6.53                    | 7.14   | 5.86  | 7.92    | 9.8                                |
| 1992 | 3.71                                   | 17.70 | 5.08         | 26.49 | 6.74                    | 8.10   | 6.03  | 7.39    | 10.2                               |
| 1993 | 3.36                                   | 17.40 | 3.70         | 24.46 | 8.18                    | 9.77   | 7.29  | 7.74    | 9.7                                |
| 1994 | 3.10                                   | 17.12 | 4.13         | 24.35 | 11.13                   | 13.29  | 9.92  | 10.53   | 9.6                                |
| 1995 | 2.44                                   | 17.24 | 3.97         | 23.65 | 15.59                   | 16.73  | 12.34 | 11.33   | 9.7                                |
| 1996 | 3.29                                   | 17.07 | 3.97         | 24.33 | 15.53                   | 16.40  | 15.52 | 12.28   | 9.1                                |

Source: 1985—1994 prices, China Price Yearbook ; 1985—1996 prices, Animal Husbandry Bureau statistics; China Statistical Yearbook.

These price differences are probably caused by the national market not yet being fully integrated, i.e. most beef is sold in local markets. The establishment of a national integrated market will depend on improvements being made to marketing organisations, institutions, and infrastructure.