The Korean and Australian Beef Markets and Prospects for Trade

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KREI

Min-Kook Jeong

ABARE

Sheales Terry
Trish Gleeson
Daniel McDonald

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Foreword

The Korean beef industry went through a significant downturn following the financial crisis of 1997, with the number of domestic cattle falling sharply. The financial crisis also affected consumer incomes, resulting in decreased domestic beef consumption. Uncertainty about the future market situation in Korea following full market liberalization since 2001 has contributed to some farmers abandoning beef cattle production.

During 2002 and 2003, Australia faced the most severe and widespread drought since 1982-83. Drought induced turnoff and increased cattle deaths resulted in beef cattle numbers falling. As seasonal conditions improve and pasture availability increases, producer efforts to rebuild herds will limit beef production in the short term. It will likely take several years before cattle numbers recover to pre-drought levels.

Over the medium term, Beef consumption in Korea will increase, but with limited opportunities for further growth in Korean domestic beef production. Korea's dependence on import markets will continue to be high. With limited opportunities for further growth of Australian domestic demand and increasing beef and veal production, Australia's dependence on export markets will continue to increase.

Increasing consumer demand over time- driven by relatively strong economic growth and limited response from domestic beef producers in Korea, will result in an increasing demand for imported beef. This is expected to result in an increase in Australian exports being shipped to Korea. Trade in beef between the two countries is affected by import barriers, exchange rate relativities, economic growth and its effect on consumer demand, as well as supply developments in both Korea and Australia.

This report was conducted jointly by KREI and ABARE. This report is intended to assist in the understanding of the Korean and Australian beef markets, providing the basis data and analysis for the further development of each country's beef trade.

Lee, Jung Hwan	Brian S. Fisher
President	*Executive Director*
KREI	**ABARE**

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Summary

Korea and Australia play important roles in international markets, particularly in the Pacific Rim beef trade. Bilateral trade, with Korea as a major importer and Australia as a major exporter, has became increasingly important. A better understanding of each country's beef industry is likely to be useful to an appreciation of how the trade may develop in the future.

Beef supply and demand situation and outlook

Korean beef cattle production declined rapidly following the 1997 financial crisis. The financial crisis also affected consumer incomes, resulting in decreased Korean beef consumption. Uncertainty about the future market situation in Korea following full market liberalisation since 2001 contributed to some farmers abandoning beef cattle production. Between 1998 and 2002, Korean beef production fell by around 44 per cent to 147,400 tonnes (product weight basis).

As Korean supply declined, beef imports rose between 1998 and 2002. In 2002, with improving economic conditions, beef consumption recovered strongly. Further declines in domestic production in 2002 meant that increased consumer demand for beef was met by rising imports. The volume of beef imported rose 76 per cent in 2002 to a record 292 000 tonnes. The rapid reduction in the domestic beef cattle herd over the five years to 2002, combined with the strengthening of consumer demand for beef over the period, meant that domestic beef prices and, hence feeder calf prices rose sharply.

Beef production in 2004 is forecast to rise by 8.6 per cent and is projected to continue rising slowly over the next several years. Following the discovery of a single case of BSE in the United States and subsequent ban on imports of US beef, the volume of beef imports in 2004 is forecast to be 150,000 tonnes, half the volume of 2003. But beef imports from Australia and New Zealand are expected to increase albeit supply of grain-fed beef is forecast to be well down. Consumption per person in 2004 is forecast to remain steady at around 8.3 kg. Although beef imports are forecast to fall, higher domestic beef production and a substantial fall in beef stocks will allow consumption to remain unchanged.

In Australia, the medium term outlook for beef and veal is dominated by two broad issues. On the supply side, the 2002-03 (July-June) drought resulted in a significant cut

to the Australian cattle herd. As seasonal conditions improve and pasture availability increases, producer efforts to rebuild herds will limit beef production in the short term. It is likely take several years before cattle numbers recover to pre-drought levels.

On the demand side, the discovery of a single case of BSE (bovine spongiform encephalopathy) in the United States has caused considerable, albeit temporary shifts in demand for Australian beef in Australia's key export markets. The discovery of BSE in the United States is expected to have short-lived impacts in Australia's major export markets of Japan and the United States and demand for beef is expected to continue growing in these markets over the medium term. With limited opportunities for further growth in Australian domestic demand and increasing production of beef and veal over the medium term, Australia's dependence on export markets will continue to increase. Trade patterns over the medium term will be influenced by issues such as further possible snapback tariff increases in Japan and growth in US market access under the recent Australian-US free trade agreement.

Australian weighted average saleyard prices are estimated to average close to 290 cents per kilogram dressed weight in 2003-04 (July-June), up 13 per cent on the previous year. In 2004-05, saleyard prices are forecast to average 5 per cent lower at around 275 cents per kilogram (dressed weight equivalent) as restocker demand subsides and assuming that current bans on imported US beef in major markets are lifted by the end of the current financial year. Assuming seasonal conditions improve in 2004-05, more producers will begin to rebuild their herds. As a result, the Australian cattle herd is forecast to increase by 3 per cent by June 2005 to 27.1 million head.

Australian beef exports to the United States are estimated to be down 1.5 per cent in 2003-04 to 345 000 tonnes (shipped weight). The fall in exports to the United States is limited by the fact that the bulk of Australian exports to that market is of manufacturing beef which is not a perfect substitute for the grain fed beef that the US typically exports to Japan. The recently announced US-Australia free trade agreement, assuming it is ratified by the US Congress and Australian Parliament, will allow for some increase in shipments beyond the WTO Uruguay Round agreed tariff rate quota of 378 000 tonnes (product weight) a year.

The main gains for Australia from the BSE related banning of imports of US beef arise in the Japanese market. Around 45 per cent of Japanese beef imports are supplied by the United States. During the ban period it is assumed that exports to Japan from Australia will increase by around a third. Overall this would result in total Japanese imports during the ban period being 25 per cent lower than would otherwise be the case. Australian beef exports to Japan are estimated to be up 12 per cent to 310 000 tonnes (shipped weight) in 2003-04. Exports to Japan are forecast to be marginally lower in 2004-05 as US beef re-enters the Japanese market. The volatility in Japanese beef imports over the short term may result in Japan's snapback provisions (which were in

place up to 31 March 2004 on chilled beef imports) being re-triggered. Beef exports to Japan are expected to increase over the medium term as Australian beef production increases and Japanese consumer demand continues to recover from the effects of the 2001 discovery of BSE.

Exports to Korea for 2003-04 are estimated to be 68 000 tonnes, down 17 per cent on the previous year due to lower Australian production and stronger demand from other export markets. These factors will again affect exports in 2004-05 with exports to Korea forecast to recover only 6 per cent to 72 000 tonnes. Increases in exports to Korea as a result of the ban on US beef is likely to be more modest than the increases in shipments to Japan as exporters focus their attention on the Japanese market. Increasing consumer demand driven by relatively strong economic growth and limited response from domestic beef producers will result in increasing demand for imported beef. This is expected to result in a higher proportion of Australian exports being shipped to South Korea, with exports to that market projected to reach 103 000 tonnes in 2008-09.

Beef production

In Korea, the contribution of livestock production to the total value of agricultural production increased from 23 per cent in 1995 to 25.6 per cent in 2001. In contrast to the broader picture, after the Asian financial crisis, the value of Korean native cattle (Hanwoo) production declined —from 30.5 per cent of total livestock value in 1997 to only 20.5 per cent in 2001.

Since the mid 1990s, there has been a reduction in the number of farms producing Korean cattle as well as in the total number of cattle. The number of farms carrying Korean native cattle more than halved over the seven years to 2002 — from 520 000 in 1995 to 212 000 in 2002 — while the total number of cattle fell over the same period. After reaching a peak of 2.8 million in 1996, the number of cattle halved to 1.4 million in 2002.

The proportion of farms that raise less than 10 cattle has fallen slightly from 88 per cent in 1995 to 86 per cent in 2002 but the total number of cattle raised by farms in this category has fallen much faster from 52 per cent in 1995 to 33 per cent of the herd in 2002. The proportion of farms that raise more than 30 cattle increased from 1.7 per cent in 1995 to 4.3 per cent by 2002. The share of the total herd that was raised by these larger farms also increased during this period — from 16.6 per cent in 1995 to 43.9 per cent in 2002. The herd size per farm has increased because the total number of farms fell proportionally more than the number of cattle in the total herd.

Hanwoo cattle comprised 71 per cent of total cattle slaughter in 2002 while dairy cattle comprised 27 per cent. For the last ten years, dairy cattle slaughter has averaged around a 22 per cent share of cattle slaughter for beef production

Hanwoo producers tend to either be involved in breeding calves or involved in fattening cattle for slaughter. Before the Asian financial crisis, breeding farmers had higher income than farmers who fattened cattle. But from 1999 to 2002, fattening activities were favored with average monthly income at 80 626 won per head while income from breeding activities had fallen to an average of 33 863 won per head. From a farm household perspective, since the Asian financial crisis cattle fattening activities have been much more profitable than breeding activities.

The Australian livestock sector is one of the most important in the rural economy. The beef cattle and sheep industries contribute close to 40 per cent of the gross value of all agricultural production with the gross value of livestock turned off for slaughter (cattle, calves, sheep and lambs) or live export and the gross value of wool production together amounting to over $11.9 billion in 2002-03.

As at June 2002, there were around 70 000 farming establishments running beef cattle in Australia. The number of cattle on these farms was 24.7 million. The number of dairy cattle, which also contribute to beef production as cast for age cows and other surplus stock amounted to 3.1 million. Almost 12 000 farmers ran dairy cattle in 2002.

Beef cattle numbers increased to a peak of 29.8 million in 1976 before declining to a low of around 19.4 million in 1984. Numbers since have generally increased. The number of beef cattle in Australia increased by 1 per cent from 24.5 million in June 2001 to an estimated 24.7 million at the end of June 2002.

The Australian beef industry has developed a number of beef production systems in order to meet demands from various domestic and overseas markets. For example, producers may turn off young cattle for the domestic meat market, store cattle to the feedlot industry or older cows to the manufacturing beef market.

In Australia, cattle are usually placed in feedlots at around 12–22 months of age, with the period of feed varying depending on the market being targeted. Production can range from between 60–70 days on feed for the domestic market, which prefers leaner beef, to up to 300 days on feed to produce the highly marbled beef preferred by the Japanese market.

Lightweight feeder cattle (230-360 kg) are required for a wide range of domestic and export markets. Where the finished market requires a shorter feeding period (70–120 days) such as the domestic, restaurant and Korean trade, both steers and heifers of most breeds and crosses are generally acceptable. If lighter weight cattle are to be fed for

longer periods for Japan (200 days or more) they must be mid–late maturing British breed types.

Feedlot turnoff grew from only 5 per cent of total adult cattle slaughter in 1990-91 to 23 per cent of adult slaughter in 2002-03. There are currently 703 accredited feedlots in Australia representing a total capacity of around 900,000 cattle.

Cattle marketing and beef distribution

In Korea, beef is marketed through two channels; one path through merchants that purchase cattle and market beef, and the other through agricultural co-operatives. In the case of the first option, the producer sells cattle to the collection merchant, who has them slaughtered and sent to wholesale stores, and then to meat shops or large shops (discount store, and department stores). Prices are negotiated between farmers and merchants, with payment occurring on the transfer of cattle. The second option is through agricultural co-operatives with the farmer sending out cattle to an area cooperative association, which lists cattle in wholesale market auctions. Beef from wholesale markets is sold through meat shops or large shops.

Using the Hoeng Seong region, the main Hanwoo producing area in Korea, as an example, about 70 per cent of cattle are sold to merchants through cattle markets or commission agents. Around 40 per cent of cattle are sold through cattle markets. Hanwoo meat distribution is heavily dependent on the merchant and wholesale store.

The proportion of cattle auctioned declined from 1990 to 1995, but rose in 2000 and 2001. The proportion of stock that went through wholesale markets in 2001 was 32.2 per cent of cattle. The reason that the number increased recently was that in the case of beef, prices offered by bidders rose because of reduced supplies.

The number of beef retail shops increased from 16 296 in 1980 to 52 000 in 1997. But after the 1997-98 financial crisis, the number of beef retail shops decreased to 48 315 by 2000. In 2000, the retail sector comprised approximately 31 561 traditional butchers, 5 225 restaurants, 4 363 beef import shops, 3 937 supermarkets, 1 085 co-operative shops, 538 discount stores, 195 department stores, and 157 convenience stores.

The system of separating domestic and imported sales was abolished in 2001, as agreed under the Uruguay Round Agreement on Agriculture. Previously, imported beef shops handled only imported beef, including in beef corners of department stores and discount stores. After 2001 all retail stores were permitted to sell domestic and imported beef simultaneously.

In Australia, sale by auction remains the most method used to sell beef cattle. But the proportion of beef cattle sold per farm through the auction system has declined over the long term – dropping from as high as 51 per cent in 1996-97 to as low as 42 per cent in 2001-02. Large producers are more likely to sell over the hooks. Smaller producers, often with limited quality control systems prefer liveweight and saleyard selling systems The proportion of over the hooks sales in Australia increased from a low of 24 per cent in 1996-97 to an historical high of 33 per cent in 1998-99. Over the hooks sales declined to 27 per cent in 2001-02 as producers switched to using paddock sales and the auction system to turn off beef cattle.,

There are around 250–300 meat processors (beef and sheepmeat) in Australia. The largest 25 processors located across Australia process around 60 per cent of production. Processors are looking to embark increasingly on value-based livestock selling and marketing. Increasing integration up and down the value chain is reducing the role and influence of a separate wholesale function in Australia meat supply. A high degree of foreign investment in beef processing is a feature of the Australian industry.

In Australia, fresh beef is sold through major supermarket chains and butcher shops. Of the beef marketed domestically, 68 per cent is marketed through the retail sector, 27 per cent is marketed through the food service sector. The remaining 5 per cent is marketed to the processing sector to be further transformed into other food products. Supermarkets account for 64 per cent of all retail sales of beef. Butcher shops account for 29 per cent of retail sales and 7 per cent of beef sales are retailed through other outlets.

Consumption trends and consumer preference

In Korea, total consumption of meat has increased strongly over the past two decades. Total consumption of meat per person increased by 5 per cent a year from 11.3kg in 1980 to 33.5kg in 2002. Beef consumption per person in Korea increased from 2.6kg in 1980 to 8.5kg in 2002, a yearly average increase of 5.5 per cent. Pork consumption per person increased from 6.3kg in 1980 to 17.0kg in 2002, a yearly average rate of increase of 4.6 per cent. Chicken consumption per person increased by an average of 5.7 per cent a year from 2.4kg in 1980 to 8.0kg in 2002.

Between 1990 and 1999 per person consumption rose by 8.2 per cent a year on average, whilst consumption of pork and chicken increased at slower rate than in the preceding decade. Demand for beef is more responsive to income growth than is the case for the other two meats. A one per cent rise in income is estimated to result in consumption of beef rising by 1.3 per cent, chicken by 0.4 per cent, and pork by 0.3 per cent. Consumption is also sensitive to prices of each meat and of substitute meats. For example, when beef prices rise 1 per cent, beef consumption decreases 0.6 per cent, and

when pork prices rise 1 per cent, beef consumption increases 0.22 per cent as demand for pork is reduced.

Consumers' willingness to pay extra for Hanwoo beef over imported beef was tested using an imported loin price per 600g lot of 10 000 won (prime), and an imported rib price of 5 000 won per 600g lot. It can be seen that consumer's willingness to pay extra for Hanwoo beef was 17 863 won (1.8 times that of imported beef) for first grade loin, 15 175 won (1.5 times) for second grade loin, 13 188 won (1.3 times) for third grade loin, and 9 272 won (1.8 times) for rib

In Australia, there has been no significant trend in total consumption per person of the main meats (beef, sheep meat, pig and poultry meat) over the past forty years. Over this period, total consumption has averaged just over 100 kilograms a year per person on a carcass weight basis.

However, the composition of meat consumption has changed as consumers have increased the variety in their diets. In 1960 poultry and pig meat accounted for just 13 per cent of total meat consumption, while in 2002 that proportion had increased to 52 per cent. Conversely, consumption of beef and sheep meat has declined and now makes up less than half of total meat consumption.

Poultry meat consumption has increased, from just a few kilograms per person and to now rival beef in volume terms. Over the period 1981–2002, Australian consumption of poultry meat per person grew by 2.7 per cent a year from 48.0 kg to 37.1 kg. Pig meat consumption per person also grew steadily over the period, at 1.4 per cent a year from 15.3 kg to 20.7 kg.

Beef consumption per person in Australia declined by 0.9 per cent a year from 48.0 kg to 37.1 kg between 1981 and 2002. Beef consumption per person fell in 2001 to the lowest in over forty years as strong export demand helped drive saleyard beef prices to their highest level since 1985 (in real terms), contributing to increased retail prices. However, increased Australian production due to drought, as well as strong consumer demand, in part driven by the increasing popularity of grain fed been in the domestic market, contributed to beef consumption rising in 2002.

In terms of changes over the time, in the 1970s, beef consumption increased at 2.7 per cent a year, but from the 1980s consumption decreased. from the 1980s consumption of pork and chicken has increased (on average) every year.

When income increases 1 per cent, beef demand is estimated to increase 1.2 per cent, lamb 1.4 per cent, chicken 0.5 per cent, and pork 0.2 per cent. Therefore, if income increases over time, beef consumption can be expected to rise. When beef price rises 1

per cent, beef consumption decreases on estimated 1.3 per cent, and when lamb price rises 1 per cent, beef consumption increases 0.23 per cent by substituting beef for lamb.

International trade

Australia exports beef to over 100 countries with Japan and the United States being the dominant markets. Together, these two countries accounted for 76 per cent of exports in 2003. South Korea is Australia's third most important market to which 62 000 tonnes of beef (shipped weight) were exported in calendar 2003. The United States exceeded Japan in the 2003 calendar year as Australia's major beef export market in volume terms, accounting for 43 per cent of beef and veal exports. Japan took 33 per cent of Australia's beef and veal exports, South Korea 7 per cent,

Australian beef and veal exports expanded from the mid 1990s to reach a record 947 000 tonnes in 2001. In 2003 Australia's exports were reduced even further to 841 000 tonnes with the commencement of herd rebuilding after the widespread drought of the previous year, reduced the availability of beef for export.

In recent years more and more of Australia's beef production has been exported. In 1996, 59 per cent of Australia's beef production was exported (exports measured in carcass weight equivalent). In 1999 this rose to 64 per cent and in 2001 exports increased further to around 68 per cent of Australian beef and veal production. In 2003 the export share fell to around 64 per cent.

Only 25 per cent of Australia's beef exports are shipped chilled. Japan is by far Australia's largest market for chilled beef, taking 149 000 tonnes (shipped weight) of chilled beef in 2003 or 71 per cent of Australia's chilled beef exports. The remaining 75 per cent of Australian beef and veal exports are shipped in frozen form with the United States taking 54 per cent of frozen beef exports in 2003. Japan is second, taking 21 per cent of frozen exports in 2003 and the Republic of Korea is the third largest market for frozen beef, taking 9 per cent in 2003.

Over 35 per cent of the chilled beef exported to Japan is sent as full sets while the remainder is in a variety of cuts. 93 per cent of exports to the United States are in frozen form and, of this, two thirds is manufacturing beef (grinding beef) for the beef patty market. The two most popular chilled cuts sent from Australia to South Korea are tenderloin and chuck, that together account for 54 per cent of chilled beef exports to this market. While chilled exports comprised only 10 per cent of total Australian beef exports to Korea in 2003, they are expanding rapidly. 90 per cent of exports to Korea in 2003 were in frozen form. These comprised a wide range of cuts with quarters, trimmings and short ribs being most popular.

The Australian live cattle export trade is the largest in the world. In 2003 Australia exported around 684 000 slaughter cattle. These cattle were exported by sea from 17 Australian ports to destinations in 22 countries around the world – most of these in south east Asia and the Middle East. Indonesia was by far the major market, accounting for 55 per cent of the total trade.

As to the future potential for trade in Australian live cattle to Korea for fattening, several questions arise. Most important are likely to be the cost to Korean farmers of purchasing and transporting these stock from Australia, and the returns that can be expected from the sale of animals once grown out to the required slaughter weight in Korea.

On the basis of an Australian yearling cattle price of $2.89 per kg dressed weight and an exchange rate of 700 won per Australian dollar with the some assumptions, an analysis of farm incomes would suggest that the returns from imported live cattle are around 170 000 won per month, higher than Korean native cattle at around 110 000 won per month. With an exchange rate of 900 won per Australian dollar, and an Australian live cattle price of over A$1.70 per kg live weight, Korean native cattle fattening would have been more profitable than the fattening of imported live cattle –returning around 110 000 won per month in 2002. If it is assumed that Australian live cattle prices are $1.59 per kg live weight, and the exchange rate is over 950 won per Australian dollar, Korean native cattle fattening is more profitable than fattening of imported live cattle.

Policy in beef marketing and trade

The OECD (2003) has estimated that Korea producers received around 73 per cent of their incomes from various government support measures in 2002. This figure is well above the average producer support estimate of 34 per cent for beef and veal producers in the OECD as whole in 2002. Before the financial crisis occurred in Korea in 1997, the main policy thrust for beef was to cut-down production costs through large scale production of high quality beef. But because the breeding base was reduced greatly in the wake of the financial crisis, the main policy direction for beef production was toward on expanded herd base. Also, as the Korean beef market was liberalized and the consumer's concern about hygiene, safety, and freshness in beef rose, the main policy has been concentrated on high quality branded beef production that is differentiated from imported beef, and on the improvement of hygiene and safety in beef marketing.

Australia does not have price support or other major support structures for the beef industry or its main domestic competitors. The OECD (2003) has estimated that

Australian beef producers received around 4 per cent of their incomes from government programs. This supports was mainly to assist with industry research and development.

The Commonwealth government facilitates the marketing, promotion, industry coordination and research activities of Meat and Livestock Australia (MLA) by collecting transactions levies from industry participants.

Prospect for trade

Economic factors important to the future development of the trade in both beef and live cattle from Australia to Korea will include developments in beef supply and demand in each country, exchange rate movements, and trade barriers.

In the case of live cattle, it seems that variability in exchange rates and live cattle prices in Australia have potential to greatly affect the profitability of Korean fatteners of imported live cattle. Nevertheless, there is probably scope for at least a small trade of this kind to develop.

One possibility for live trade, albeit not explored in this paper is the development of a trade in native Hanwoo cattle from Australia to Korea. This would necessitate the introduction of Hanwoo cattle into Australia to form a breeding base. Experience with the introduction of Japanese Wagyu cattle into Australia suggests this would take a long time because of the need to meet Australian quarantine standards aimed at keeping exotic diseases out of the domestic herd.

Trade in beef to Korea will be assisted by further reductions in the tariff on imports, and by Australian producers turning off more beef specifically aimed at meeting the needs of the Korean market. In particular, it seems that with a preference for grain fed beef in Korea, and strong competition from imported north American beef, Australian supplies may need to focus more heavily on the production of this type of product if they are to grow their market share.

One perceived advantage for Australian beef in the Korean market may be its ‘clean-green’ image. Presumably, part of any marketing strategy in the Korean market will involve the highlighting of this particular attribute of Australian beef.

Chapter 1
Introduction

Korea and Australia play important roles in international markets, particularly in the Pacific Rim beef trade. Bilateral trade, with Korea as a major importer and Australia as a major exporter, has became increasingly important. A better understanding of each country's beef industry is likely to be useful to an appreciation of how the trade may develop in the future.

Australia is the largest beef exporter in the international market. Australia exports over 60 per cent of beef and veal production every year. Korea is the third largest export market for Australia - after Japan and the United states. Since the Asian financial crisis there has been a significant downturn in beef production in Korea. Accordingly there has been increasing reliance on imported beef which accounts for around two thirds of Korean beef consumption.

The discovery of BSE in United States in December 2003 will have a significant influence on Pacific Rim beef markets such as Australia and Korea. The United States is the supplier of imported beef for Korea, and the second largest export market for Australian beef. After the discovery of BSE in the United States, the Australia beef industry is likely to have an opportunity to increase market share in the Korean beef market.

In this report, the situation and outlook for production, processing, marketing and consumption of beef in both Korea and Australia is discussed. Within this content policies affecting each industry can be seen to be important to their future development. Korea can be expected to become an ever more significant market for the Australia beef industry. For its part, it seems likely that Korea will tend to look more to overseas sources for an increasing proportion of its beef consumption requirements.

For the Australian reader, this report may provide some useful insights to developments in the Korea beef industry and the factors driving those developments. Korean readers may gain a better understanding of the significance of Australian beef industry in the global market and of the industry's various components.

Chapter 2
Beef situation and outlook

1. Korea

Beef cattle production in Korea declined rapidly following the 1997 financial crisis. The sharp devaluation in the Korean won meant that the cost of imported feed supplies escalated, reducing the profitability of the Korean domestic beef and dairy industries. The financial crisis also affected consumer incomes, resulting in decreased Korean beef consumption.

Uncertainty about the future market situation in Korea following partial liberalisation of barriers to imports in the latter part of the 1990s and full market liberalisation since 2001 contributed to some farmers abandoning beef cattle production. Between 1998 and 2002, Korean beef production fell by around 44 per cent to 147,400 tonnes (product weight basis) (table 1).

Table 1: Korean beef demand and supply situation [a]

	Units	1998	1999	2000	2001	2002
Supply						
Opening stocks	kt	46.6	42.2	39.0	73.5	18.0
Production	kt	264.1	226.9	214.1	162.6	147.4
Imports	kt	77.0	162.6	222.8	166.0	292.3
Total	kt	387.7	431.7	475.9	402.1	457.7
Demand						
Domestic consumption	kt	260.1	239.7	212.4	164.4	147.4
Import consumption	kt	85.4	153.0	190.0	219.7	255.3
Closing stocks	kt	42.2	39.0	73.5	18.0	55.0
Total	kt	387.7	431.7	475.9	402.1	457.7
Total consumption	kt	345.5	392.7	402.4	384.1	402.7
Consumption per person	kg	7.4	8.4	8.5	8.1	8.5
Rate of self-sufficiency	%	75.3	61.0	52.8	42.8	36.6

[a] Quantities are on a product weight(boneless equivalent) basis.
Source: NACF, Materials on Price, Supply & Demand of Livestock Products, 2003

As Korean supply declined, beef imports rose between 1998 and 2002. However, there was a short term decline in imports in 2001 as demand fell in response to publicity associated with discoveries of BSE (bovine spongiform encephalopathy or 'mad cow' disease) in Europe.

In 2002, with improving economic conditions and growing consumer confidence, beef consumption recovered strongly. Further declines in domestic production in 2002 meant that increased consumer demand for beef was met by rising imports. The volume of beef imported rose 76 per cent in 2002 to a record 292 000 tonnes, valued at over US$100 million.

Table 2: Outlook for Korean beef demand and supply situation [a]

	Units	2003s	2004 z	2006 z	2008 z	2010 z
Supply						
Opening stocks	kt	55	100	0	44	50
Production	kt	140	152	164	182	195
Imports	kt	302	150	225	300	324
Total	kt	497	402	389	526	569
Demand						
Domestic consumption	kt	140	152	164	182	195
Import consumption	kt	257	250	225	296	322
Closing stocks	kt	100	0	0	48	52
Total	kt	497	402	389	526	569
Total consumption	kt	397	402	389	478	517
Consumption per person	kg	8.3	8.3	8.0	9.7	10.4
Rate of self-sufficiency	%	35.3	37.8	42.2	38.1	37.7

[a] Quantities are on a product weight(boneless equivalent) basis. **s** KREI forecast, **z** KREI projection

The rapid reduction in the domestic beef cattle herd over the five years to 2002, combined with the strengthening of consumer demand for beef over the period, meant that domestic beef prices and, hence feeder calf prices rose sharply. Given the biological lags in the cattle cycle, it is likely to take some years for Korean beef production to respond to higher prices.

Beef production in 2003 decreased by 9.1 per cent as farmers retained stock for breeding, while the volume of beef imported rose 3.3 per cent. In 2004 beef production

is forecast to rise by 8.6 per cent and is projected to continue rising slowly over the next several years (table 2).

Following the discovery of a single case of BSE in the United States and subsequent ban on imports of US beef, the volume of beef imports in 2004 is forecast to be 150,000 tonnes, half the volume of 2003 – US beef accounted for 68 per cent of Korean imports in 2003. Following the prohibition of beef imports from the United States, beef imports from Australia and New Zealand are expected to increase, but supply of grain-fed beef is forecast to be well down.

While the period that US beef will remain excluded from the Korean market is uncertain, US imports are forecast to rise gradually over the medium term. Consumption per person in 2004 is forecast to remain steady at around 8.3 kg. Although beef imports are forecast to fall, higher domestic beef production and a substantial fall in beef stocks will allow consumption to remain unchanged.

2. Australia

The medium term outlook for beef and veal is dominated by two broad issues. On the supply side, the 2002-03 (July-June) drought resulted in a significant cut to the Australian cattle herd. As seasonal conditions improve and pasture availability increases, producer efforts to rebuild herds will limit beef production in the short term. It is likely take several years before cattle numbers recover to pre-drought levels.

On the demand side, the discovery of a single case of BSE (bovine spongiform encephalopathy) in the United States has caused considerable, albeit temporary shifts in demand for Australian beef in Australia's key export markets. However, supply constraints in the short term will limit the extent to which Australia can alter its supply response over the coming year. Overall, the discovery of BSE in the United States is expected to have short-lived impacts in Australia's major export markets of Japan and the United States and demand for beef is expected to continue growing in these markets over the medium term.

With limited opportunities for further growth in Australian domestic demand and increasing production of beef and veal over the medium term, Australia's dependence on export markets will continue to increase. Trade patterns over the medium term will

be influenced by issues such as further possible snapback tariff increases in Japan and growth in US market access under the recent Australian-US free trade agreement.

Short term BSE influence on prices

Australian weighted average saleyard prices are estimated to average close to 290 cents per kilogram dressed weight in 2003-04 (July-June), up 13 per cent on the previous year (table 3). Prices rose over the first half of the financial year as improving seasonal conditions led to lower turnoff, combined with strong export demand from the United States. In the second half of 2003-04 saleyard cow prices are expected to ease because of weaker demand from the US in the wake of the BSE occurrence, but prices for young cattle and steers seem likely to average higher because of stronger demand from Japan and South Korea.

In 2004-05, saleyard prices are forecast to average 5 per cent lower at around 275 cents per kilogram (dressed weight equivalent) as restocker demand subsides and assuming that current bans on imported US beef in major markets are lifted by the end of the current financial year.

Table 3: Outlook for the Australian beef and veal industry [a]

		2001-02	2002-03	2003-04	2004-05	% change a
Saleyard price (dressed)	Ac/kg	306	256	289	275	-4.8
Cattle numbers	million	27.9	26.5	26.4	27.1	2.7
- beef cattle	million	24.7	23.4	23.4	24.0	2.6
Slaughterings	'000	8 589	9 228	8 500	8 320	-2.1
Production	kt	2 028	2 073	1 965	1 958	-0.4
Exports (shipped weight)						
- to United States	kt	403	350	345	340	-1.4
- to Japan	kt	243	277	310	308	-0.6
- to Korea. Rep. of	kt	71	82	68	72	5.9
- total	kt	902	902	835	832	-0.4
- value	A$m	4 189	3 756	3 934	3 717	-5.5
Live cattle	'000	797	968	600	700	16.7

[a] From 2003-04 to 2004-05.

Source: Daniel McDonald and Brian S. Fisher, Agriculture outlook for 2004-05 and farm performance estimates for Rockhampton, ABARE conference paper 04.4

Should the trade bans remain in place for the entire 2004 calendar year, saleyard prices are forecast to average only 4 per cent lower in the 2004-05 financial year. A continued spike in prices is the main impact of an extended trade ban because of the constraints on production in the short term due to herd rebuilding.

Over the medium term, saleyard prices are forecast to ease. With domestic restocker demand easing over time as herd rebuilding steadies, Australian beef prices will largely be determined on international markets.

While there will be short term volatility as a result of the trade bans, US beef prices are expected to decline moderately over the medium term as US production increases. However, an assumed depreciation in the Australian dollar between 2004-05 and 2008-09 will partially offset the impact on Australian export returns of declining prices in the Pacific Basin market. Australian beef saleyard prices are projected to average 230 cents per kilogram in 2008-09 in real terms (in 2003-04 dollars).

Herd rebuilding to constrain supply

Seasonal conditions across the country remain patchy, with drought still affecting some regions. High slaughter, particularly of cows and heifers continued into spring 2003, with many producers either unable to rebuild herds or being forced to destock further because of poor pasture availability. With herd rebuilding delayed by the ongoing drought, cattle numbers are estimated to be 26.4 million head in June 2004, largely unchanged from the previous year.

Assuming seasonal conditions improve in 2004-05, more producers will begin to rebuild their herds. As a result, the Australian cattle herd is forecast to increase by 3 per cent by June 2005 to 27.1 million head.

However, because of the widespread nature of the drought and the biological lags in increasing breeding cow numbers – for instance, it takes at least two years for retained heifer calves to produce calves themselves – it is expected to take several years before cattle numbers recover to pre-drought levels.

Reasonably attractive returns from beef relative to alternative farm enterprises and assumed average seasonal conditions are expected to assist the rebuilding of herd numbers in the next few years. The national herd is projected to rise to 28.2 million head by June 2009.

Domestic Production

In the short term, production will be constrained by lower overall cattle numbers, a reduced calf crop, and the retaining of stock to build herd numbers. As a result, slaughterings are estimated to decline by 8 per cent in 2003-04 to 8.5 million head. An increase in average slaughter weights, due to less calves and fewer drought affected stock making up slaughter numbers, will partially offset lower slaughterings. Production is estimated to fall 5 per cent to 1.9 million tonnes in 2003-04. Herd building activity will continue to constrain slaughter in 2004-05, with production forecast to be about the same as the preceding year.

Over the medium term, beef and veal production is forecast to increase in line with the expanded cattle herd. Increases in average slaughter weights, in part due to greater fed cattle turnoff will also contribute to increased production. Beef and veal production is projected to be around 2.2 million tonnes in 2008-09.

Fed cattle turnoff reached a record 2.1 million head in 2003, driven by a considerable increase in consumption of grain-fed beef on the domestic market as seasonal conditions prevented cattle being finished to specifications on grass. While much of the increase was due to drought, it is expected that domestic demand for grain-fed beef will increase over time as quality and consistency characteristics become increasingly important to Australian consumers. Grain feeding for markets such as Japan and Korea is also forecast to increase over the outlook period to 2009 as demand in those countries improves. As a result, total annual feedlot turnoff is projected to reach 2.3 million head by the end of the outlook period.

BSE affects demand for Australian beef

On 23 December 2003 a single case of BSE was diagnosed in the United States. Trace back operations determined that the cow originated in Canada and authorities attempted to trace all of its cohorts that entered the United States. US authorities also implemented additional safeguard measures to prevent BSE infected material from entering the food chain, including the banning of non-ambulatory cattle from slaughter for human consumption. In response to the discovery, many countries have temporarily banned imports of US beef, including the key markets of Japan and Korea.

BSE can affect beef markets in two distinct ways. First, it can reduce beef demand as consumers reduce their consumption due to food safety concerns. Second, it can affect export supply, altering international trade patterns as trade bans restrict exports from afflicted countries. For the case of BSE in the United States, it is the trade impacts that

will have the greatest influence on Pacific Rim beef markets and, hence, Australian beef.

In recent years, the discovery of BSE in both Europe and Japan had considerable adverse effects on domestic consumer demand in the respective countries. In the case of Japan, consumption initially fell by over 50 per cent. Consumer confidence in these cases was relatively slow to recover for a number of reasons including multiple disease occurrences, limited consumer knowledge of food safety risks, and the relatively small role of beef in European and Japanese diets.

The May 2003 incident of BSE in Canada had little apparent impact on Canadian or US consumer demand for beef. In fact, an increase in domestic supply because of bans on Canadian beef imports by other countries and subsequent lower prices resulted in an increase in consumption of beef in Canada. The limited consumer reaction in this case can be attributed to a number of factors, including the scale of the incidents, greater awareness of the risks, confidence in the safety measures in place to prevent risk material entering the food chain, and the higher significance of beef in Canadian and US diets.

Based on events in Canada, it is not expected that the single case of BSE will have a significant negative impact on consumer demand in the United States. It has also been assumed that the US case of BSE will have minimal impacts on consumer demand for beef in other Pacific markets, including Japan and Korea.

Turning to the trade impacts, a ban on US exports has two broad effects on the Australian beef industry. First, supply is reduced in the key North Asian markets of Japan and South Korea. Assuming that consumer demand is unaffected, the reduction in supply should result in an increase in demand for Australian beef (although total demand will remain unchanged) and higher prices for imported beef.

Second, the import bans will result in increased supplies on the US domestic market, reducing demand for imported Australian beef and hence lowering prices for beef shipped to this market. The net effect of the US BSE incident on the Australian beef industry depends on the gains and losses in each market. For the duration of the trade ban there is likely to be some benefit to the Australian beef industry, with saleyard prices for cattle in Australia likely to average around 8 per cent higher than would have otherwise been the case during the ban period.

Weaker US market

Although the United States exports around 10 per cent of its beef production, in recent years it has been a net importer. Over the trade ban period, US exports are estimated to fall by around 90 per cent, with Canada remaining the only major importer of US beef.

US imports of Australian beef are forecast to fall by around 20 per cent for the duration of the ban as Australian exporters look to capitalise on a stronger Japanese market. Sharply reduced exports and only a modest decline in imports will result in a forecast increase in domestic US consumption of about 7 per cent. US beef prices are forecast to decrease proportionally more, falling by 11 per cent. Prices of imported Australian 90CL beef may be slightly less affected because US supply increases will be in the form of grain fed beef (which would otherwise have been exported) rather than in pasture fed cow beef.

Australian beef exports to the United States are estimated to be down 1.5 per cent in 2003-04 to 345 000 tonnes (shipped weight). The fall in exports to the United States is limited by the fact that the bulk of Australian exports to that market is of manufacturing beef which is not a perfect substitute for the grain fed beef that the US typically exports to Japan. Australian exports to the United States in January 2004 were 13 766 tonnes, down 24 per cent from January 2003 and 62 per cent from December 2003.

Assuming the United States resumes exporting from around mid 2004, Australian exports of beef to the United States are forecast to fall another 1.5 per cent to 340 000 tonnes in 2004-05. Driven mainly by higher Australian production, exports are projected to recover over the medium term. The recently announced US-Australia free trade agreement, assuming it is ratified by the US Congress and Australian Parliament, will allow for some increase in shipments beyond the WTO Uruguay Round agreed tariff rate quota of 378 000 tonnes (product weight) a year. The trade agreement will also result in the lifting of the 4.4 US cents per kilogram tariff applied to in quota beef exports to the United States.

Gains in Japan

The main gains for Australia from the BSE related banning of imports of US beef arise in the Japanese market. Around 45 per cent of Japanese beef imports are supplied by the United States. During the ban period it is assumed that exports to Japan from Australia will increase by around a third. Overall this would result in total Japanese imports during the ban period being 25 per cent lower than would otherwise be the case. While there will be a very limited increase in domestic Japanese production and a run-down of

stocks, it is expected that Japanese consumption will be around 15 per cent lower during the ban period than would otherwise be the case.

Because consumer demand for beef in Japan is relatively unresponsive to beef price, the proportional increase in price will be greater than the proportional decrease in consumption. Immediately following the implementation of the ban wholesale prices for selected Australian beef cuts in Japan recorded price rises of over 50 per cent compared to pre-ban prices. It is expected that the unit value for Australian beef exports to Japan will average around 25 per cent higher than pre-BSE expectations during the trade ban period as a whole.

There are a number of factors that limit the potential gains to Australia from the US beef ban in Japan, with the main one being the non-perfect substitution between Australian and US beef. US product is grain fed for long periods and the scale of the US beef industry allows the United States to send large quantities of specific cuts to overseas markets. The bulk of Australian trade consists of grass fed and short period grain fed beef and is typically shipped as fullsets rather than specific cuts. While there is some capacity to increase grain fed beef production in Australia and divert some cattle on feed for the domestic market to the Japanese market, significant increases in fed beef production will not be possible in the short term due to the long feeding times required.

Australian beef exports to Japan are estimated to be up 12 per cent to 310 000 tonnes (shipped weight) in 2003-04. Beef exports to Japan in January 2004 were 23 701 tonnes, up 40 per cent on January 2003 and 24 per cent from December 2003.

Exports to Japan are forecast to be marginally lower in 2004-05 as US beef re-enters the Japanese market. The volatility in Japanese beef imports over the short term may result in Japan's snapback provisions (which were in place up to 31 March 2004 on chilled beef imports) being re-triggered. A resumption of US trade in 2004-05 could result in Japanese beef imports in the 2005 June quarter triggering the snapback provisions. However, this is not expected to have a significant longer term impact on growth in Australian exports to Japan. Beef exports to Japan are expected to increase over the medium term as Australian beef production increases and Japanese consumer demand continues to recover from the effects of the 2001 discovery of BSE.

Exports to Korea low

Beef exports not destined for the major markets of Japan and the United States tend to be more volatile, resting on the fortunes of the major markets. For instance following the BSE incident in Japan in 2001, sharply lower demand in that market resulted in an increase in the proportion of Australian beef exported to small markets. Conversely, the

very strong US market in the first half of 2003-04 resulted in a curtailing of shipments to the smaller markets. The strong demand from Japan due to the trade ban imposed on the United States is likely to restrict exports to these markets during the ban period. Many of these smaller markets are also more open to competition from beef from countries such as Brazil, whereas countries such as Japan import from just a handful of countries due to stricter biosecurity measures.

The most significant of the smaller markets is South Korea. Exports to Korea for 2003-04 are estimated to be 68 000 tonnes, down 17 per cent on the previous year due to lower Australian production and stronger demand from other export markets. These factors will again affect exports in 2004-05 with exports to Korea forecast to recover only 6 per cent to 72 000 tonnes.

Increases in exports to Korea as a result of the ban on US beef is likely to be more modest than the increases in shipments to Japan as exporters focus their attention on the Japanese market. Exports to Korea in January 2004 were 3 580 tonnes, down 38 per cent on the previous month and 14 per cent lower than in January 2003.

Since the Asian financial crisis there has been a significant downturn in beef production in South Korea with a halving of the cattle herd. Accordingly there has been increasing reliance on imported beef which now accounts for around two thirds of Korean beef consumption.

Increasing consumer demand over the outlook period driven by relatively strong economic growth and limited response from domestic beef producers will result in increasing demand for imported beef. This is expected to result in a higher proportion of Australian exports being shipped to South Korea, with exports to that market projected to reach 103 000 tonnes in 2008-09.

Live export markets

Limited supply due to herd rebuilding, increased demand for cattle from domestic processors, weaker demand in the key export markets, particularly Indonesia and a sharp appreciation in the Australian dollar are estimated to result in exports of live cattle for slaughter falling in 2003-04 by 38 per cent to 600 000 head.

In the second half of 2003, there was a marked fall in live cattle exports reflecting weaker demand. In Indonesia, ongoing drought conditions have filled feedlots to near capacity with increasing numbers of domestic cattle. As a result, Australian cattle exports to Indonesia in the six months to December were down by 40 per cent compared with the same period in 2002. In the Philippines, the strength of the Australian dollar

relative to the peso is affecting the competitiveness of Australian cattle in that market and exports of slaughter cattle to the Philippines in the second half of 2003 were 29 per cent lower than in the same period of 2002. Overall, exports of slaughter cattle in the six months to December totaled just 313 000 head, down 47 per cent on the same period a year earlier.

Live cattle exports to Egypt (the second most important market after Indonesia in 2002) in 2003 were down 95 per cent from the previous year. The major factor contributing to the decline in demand for Australian cattle has been a sharp depreciation in the Egyptian pound, which fell 60 per cent against the Australian dollar over the course of 2003.

Over the medium term live exports are projected to rebound and exceed the highs of 2002-03, reaching 1 020 000 head in 2008-09. This will be driven by a combination of income growth in south-east Asian markets, an easing Australian dollar and greater availability as herd expansion plateaus in Australia.

Chapter 3
Beef production

1. Korea

The gross value of livestock production in Korea rose from around 6000 billion won in 1995 to over 8300 billion won in 2001 (table 4). The contribution of livestock production to the total value of agricultural production increased from 23 per cent in 1995 to 25.6 per cent in 2001.

In contrast to the broader picture, after the Asian financial crisis, the value of Korean native cattle (Hanwoo) production declined —from 30.5 per cent of total livestock value in 1997 to only 20.5 per cent in 2001. Of all the livestock industries, the Korean native cattle sector suffered the largest loss from the financial crisis.

Table 4: Value of agricultural production (current market prices)

	Units	1995	1996	1997	1998	1999	2000	2001
Livestock production (A)	billion won	5 958	6 934	6 903	7 515	7 937	8 082	8 312
Korean cattle (B)	billion won	1 776	2 105	2 107	1 836	1 778	1 878	1 700
Dairy	billion won	1 103	1 162	1 025	1 161	1 455	1 423	1 500
Pigs	billion won	1 406	1 901	1 960	2 390	2 687	2 372	2 692
Chickens	billion won	773	769	773	858	768	821	863
Eggs	billion won	563	636	634	778	655	651	828
Cultivation	billion won	19 855	21 191	22 351	22 123	23 520	23 715	24 136
Rice	billion won	6 779	8 613	9 192	9 182	10 015	10 504	10 721
Agriculture (C)	billion won	25 855	28 129	29 258	29 638	31 857	31 828	32 447
Korean cattle share of total livestock (B/A)	%	29.8	30.4	30.5	24.4	22.4	23.2	20.5
Livestock share of total agriculture (A/C)	%	23.0	24.7	23.6	25.4	24.9	25.4	25.6

Source: MAF, Statistical Yearbook of Agriculture and Forestry, 2002.

Since the mid 1990s, there has been a reduction in the number of farms producing Korean cattle as well as in the total number of cattle (table 5). The number of farms carrying Korean native cattle more than halved over the seven years to 2002 — from

520 000 in 1995 to 212 000 in 2002 — while the total number of cattle fell over the same period. After reaching a peak of 2.8 million in 1996, the number of cattle halved to 1.4 million in 2002.

Table 5: Livestock farm households and livestock numbers (thousand)

	1995	1996	1997	1998	1999	2000	2001	2002
Korean native cattle (Hanwoo)								
Households	520	513	464	427	350	290	235	212
Number of cattle	2 594	2 843	2 735	2 383	1 951	1 590	1 405	1 410
Dairy cattle								
Households	24	21	17	16	14	13	13	12
Number of cattle	553	551	544	539	535	544	548	544
Pigs								
Households	46	33	27	27	24	24	20	17
Number of cattle	6 461	6 516	7 096	7 544	7 864	8 214	8 720	8 974
Poultry								
Households	203	187	162	168	210	218	201	176
Number of cattle	85 800	82 829	88 251	85 847	94 587	102 547	102 392	101 693

Source: NAQS, Livestock Statistics, 2003.

Historically, smaller scale farmers (under 10 head per farm) have played an important role in breeding Korean native cattle, with most of these farmers producing both calves and crops.

The proportion of farms that raise less than 10 cattle has fallen slightly from 88 per cent in 1995 to 86 per cent in 2002 (table 6) but the total number of cattle raised by farms in this category has fallen much faster from 52 per cent in 1995 to 33 per cent of the herd in 2002.

Table 6: Distribution of Korean cattle farms and total cattle numbers, by herd size

	1995 %	1996 %	1997 %	1998 %	1999 %	2000 %	2001 %	2002 %
Under 10 cattle								
Households	88.1	86.0	85.5	87.5	87.9	88.6	87.9	86.2
Number of cattle	51.9	48.6	43.6	42.3	39.2	39.4	35.9	33.1
10 to 29 cattle								
Households	10.2	11.9	11.7	9.5	8.7	8.3	8.5	9.5
Number of cattle	31.5	33.1	31.1	26.6	24.7	24.1	23.1	23.0
30 cattle and over								
Households	1.7	2.1	2.8	3.0	3.3	3.1	3.7	4.3
Number of cattle	16.6	18.3	25.3	31.1	36.1	36.4	41.0	43.9

Source: NAQS, Livestock Statistics, 2003.

The proportion of farms that raise more than 30 cattle increased from 1.7 per cent in 1995 to 4.3 per cent by 2002. The share of the total herd that was raised by these larger farms also increased during this period — from 16.6 per cent in 1995 to 43.9 per cent in 2002. The herd size per farm has increased because the total number of farms fell proportionally more than the number of cattle in the total herd.

Productivity

Most beef cattle farmers purchase calves for beef production in cattle markets or from farms in their district. The average calf purchase weight increased from 122kg in 1995 to 141kg in 2002 and the average market weight increased from 538kg to 593kg during the same period (table 7). The major reason for the increase in market weight is because the number of raising days increased over the period in response to Korean consumers' growing preference for highly marbled beef (figure A). Increasing the number of raising days increases the amount of marbled fat in the beef.

A decline in productivity is evident with the longer raising period, however, as the average weight gained daily declined from 0.94kg in 1995 to 0.90kg in 2002.

Table 7: Korean beef cattle productivity

	Units	1995	1996	1997	1998	1999	2000	2001	2002
Purchased weight	kg	122	120	121	128	133	135	136	141
Market weight	kg	538	543	551	559	550	584	592	593
Raising days	days	443	451	460	481	474	495	500	502
Daily gained weight	kg	0.94	0.94	0.94	0.90	0.88	0.91	0.91	0.90

Source: NAQS, Livestock Production Cost, 2003.

Cattle slaughter

Until 1998, the total number of cattle slaughtered (Hanwoo beef cattle and dairy cattle) had been rising — from around 780 000 in 1995 to over 1.28 million in 1998 (table 8). Between 1998 and 2002, however, the number of cattle slaughtered annually halved with only 633 000 cattle being slaughtered in 2002.

The number of Hanwoo cattle slaughtered increased by 76 per cent from 1995 to 1.02 million in 1998. After 1998, however, Hanwoo cattle slaughter fell by 56 per cent to 449 000 in 2002.

With the onset of the Asian financial crisis, the cost of raising cattle rose sharply and the number of cattle sent to market increased temporarily as farmers liquidated herds. But the decline in the number of breeding cattle subsequently resulted in an overall decline in the number of cattle available for slaughter. From table 8, it can be seen that the

proportion of females in the total Hanwoo cattle slaughter increased sharply in 1997 (the onset of the Asian financial crisis) to over 50 per cent and remained relatively high until 2001. By the end of 2002, commencement of herd rebuilding was evident with the share of female cattle in the slaughter falling below 50 per cent in that year.

Figure A: Korean beef cattle productivity

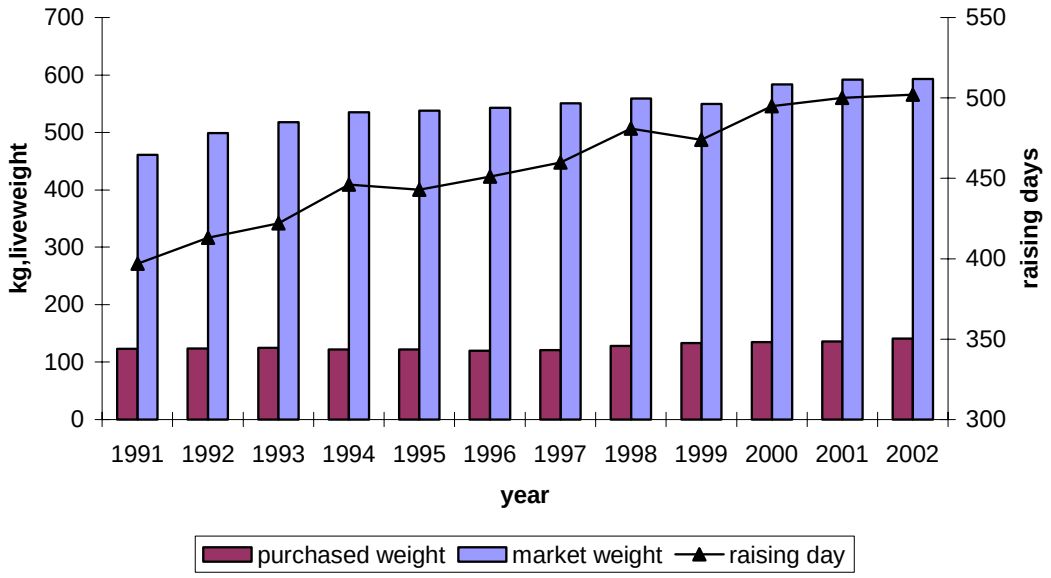


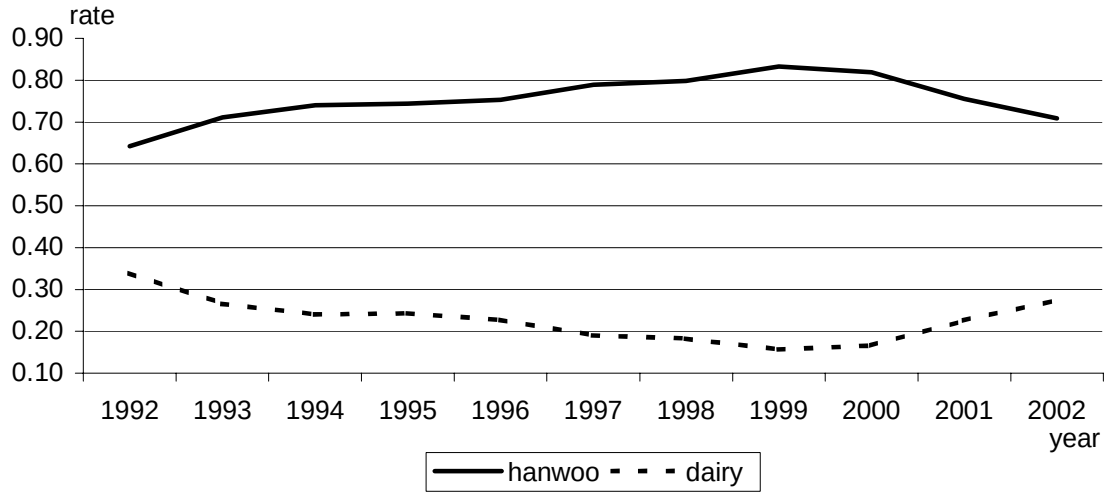
Table 8: Cattle slaughter (thousand)

	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
Hanwoo cattle (A)	579.8	639.9	887.4	1023.2	911.5	816.9	550.5	448.6
Female (B)	234.4	254.5	471.0	506.9	524.9	464.8	290.7	216.7
Male	345.4	385.5	416.4	516.3	386.7	352.1	259.8	231.9
Ratio of females (B/A)	*0.4043*	*0.3976*	*0.5308*	*0.4954*	*0.5758*	*0.5690*	*0.5281*	*0.4831*
Dairy cattle (C)	189.0	193.0	213.4	233.7	171.0	165.1	164.5	173.7
Female (D)	83.8	94.5	92.1	121.6	83.0	76.6	74.5	93.1
Male	105.2	98.5	121.3	112.1	88.1	88.6	90.0	80.6
Ratio of females (D/C)	*0.4433*	*0.4896*	*0.4318*	*0.5203*	*0.4852*	*0.4636*	*0.4530*	*0.5358*
Total cattle (E)	779.8	849.7	1125.4	1282.3	1094.9	997.3	729.2	633.0
Female (F)	322.2	354.5	574.0	643.3	613.3	547.7	369.0	313.5
Male	457.6	495.2	551.5	639.0	481.6	449.6	360.2	319.6
Ratio of females (F/E)	*0.4132*	*0.4172*	*0.5100*	*0.5017*	*0.5601*	*0.5492*	*0.5061*	*0.4952*

Source: NACF, Materials on Price, Supply & Demand of Livestock Products, 2003.

Hanwoo cattle comprised 71 per cent of total cattle slaughter in 2002 while dairy cattle comprised 27 per cent (figure B). For the last ten years, dairy cattle slaughter has averaged around a 22 per cent share of cattle slaughter for beef production. As beef cattle numbers have declined in recent years, the proportion of Hanwoo cattle in total slaughter has fallen.

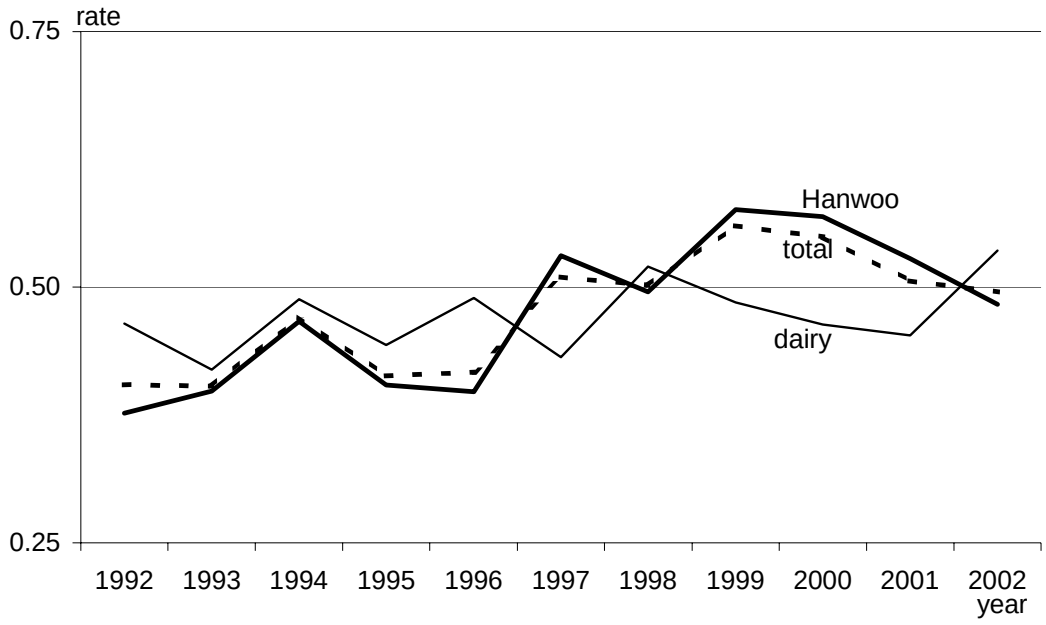
Figure B: Domestic beef production: ratio of Hanwoo and dairy cattle



The ratio of females in the Hanwoo cattle slaughter is an important indicator of breeding intentions and, therefore, of any expansion or contraction in total cattle numbers. The proportion of female cattle in the total cattle slaughter, which was 40 per cent in 1992, had risen to 56 per cent by 1999 (figure C). In 2000 it fell again slightly to 50 per cent (table 8). In 2002, the ratio of female Hanwoo slaughtered fell to 48 per cent as producers held on to more females to rebuild herds, encouraged by strong demand for calves and high calf prices.

The slaughter of dairy cows exceeded 50 per cent in 1998 and 2002 (figure 3). In 1998, increased slaughter of older dairy cows occurred when higher penalties were applied for milk quality — the penalty for somatic cell 3 grade rose from 30 won to 60 won per kilogram of milk. In 2002, high stocks of powdered milk resulted in the dairy termination program being enforced.

Figure C: Ratio of female cattle slaughtered to total slaughter



Farm incomes

In Korea, Hanwoo producers tend to either be involved in breeding calves or involved in fattening cattle for slaughter. Before the Asian financial crisis, breeding farmers had higher income than farmers who fattened cattle (figure D). From 1991 to 1996, average monthly income for fattening activities was 51 598 won per head, while average monthly income for breeding farmers was 66 260 won per head. But from 1999 to 2002, fattening activities were favored with average monthly income at 80 626 won per head while income from breeding activities had fallen to an average of 33 863 won per head. Both activities returned negative incomes in 1998 as a result of the effects of the financial crisis (figure D). Fattening activities resulted in a loss of 4827 won per head per month and breeding activities resulted in a loss of 21 699 won per head per month. From a farm household perspective, since the Asian financial crisis cattle fattening activities have been much more profitable than breeding activities (figure 4).

During the Asian financial crisis prices fell for both calves for fattening and for adult cattle for slaughter (figure E). Because the industry moved into a contractionary phase, it was more profitable for farmers to sell cows than to have the cow produce a calf for sale. This resulted in the high rate of cow slaughter at that time and in the years following.

Figure D: Beef cattle and breeding cattle: comparison of income per month

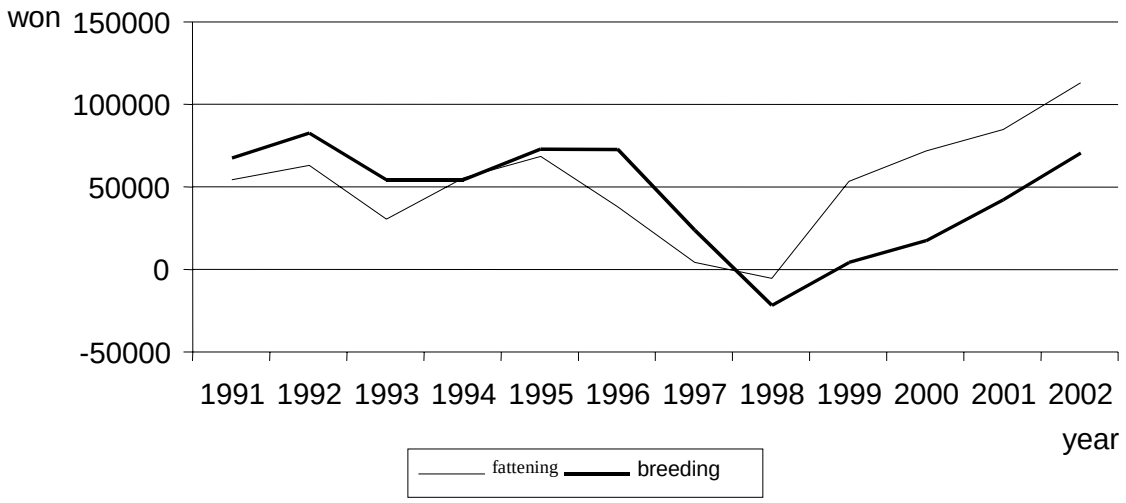
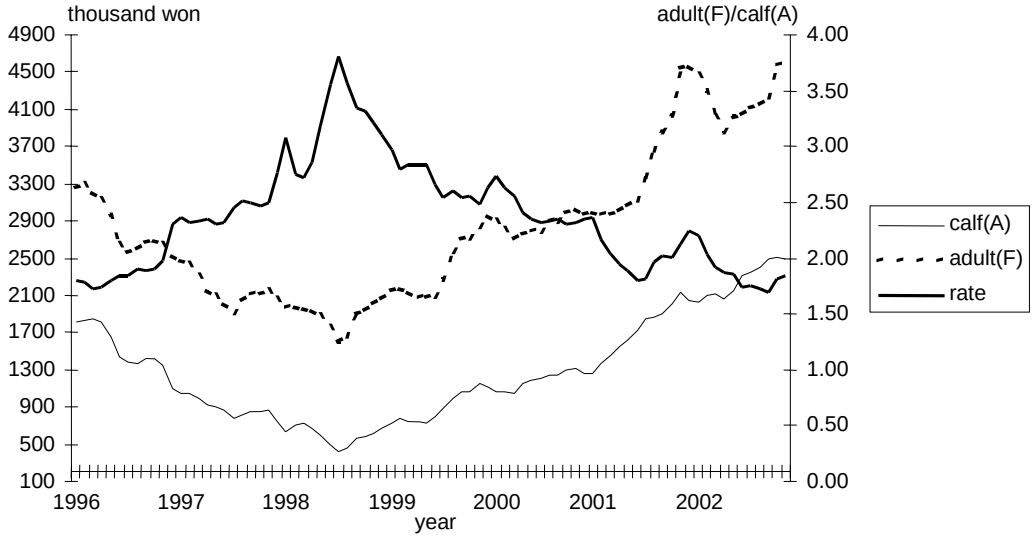


Figure E: Cow and calf prices and ratio of cow to calf prices



2. Australia

The livestock sector is one of the most important in the Australian rural economy. The beef cattle and sheep industries contribute close to 40 per cent of the gross value of all agricultural production with the gross value of livestock turned off for slaughter (cattle, calves, sheep and lambs) or live export and the gross value of wool production together amounting to over $11.9 billion in 2002-03 (table 9). The beef cattle and sheep industries also contributed over $9.2 billion in export revenue to the Australian economy in 2002-03 — around 34 per cent of the value of all rural exports.

Table 9: Value of agricultural production: Australia

	Units	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
Farming Livestock (A)	A$m	12 089	12 916	12 663	13 310	15 928	18 572	17 583
Beef cattle (B)	A$m	3 597	4 138	4 477	5 048	6 431	7 162	6 413
Sheep	A$m	1 043	1 066	1 053	1 053	1 559	2 335	2 039
Pigs	A$m	765	710	690	792	822	968	891
Poultry	A$m	932	1 054	1 019	1 031	1 060	1 175	1 225
Wool	A$m	2 621	2 754	2 141	2 149	2 541	2 713	3 547
Milk production	A$m	2 811	2817	2 900	2 845	3 053	3 717	3 045
Other livestock	A$m	321	377	384	392	462	501	423
Cultivation	A$m	16 170	15 503	16 140	17 041	18 908	21 360	14 196
Grains and oilseeds	A$m	7 998	6 621	6 922	7 827	8 448	10 603	4 973
Industrial crops	A$m	3 106	3 508	3 466	3 402	3 864	3 908	3 093
Other crops	A$m	5 065	5 373	5 752	5 812	6 596	6 849	6 130
Agriculture (C)	A$m	28 259	28 418	28 803	30 351	34 836	39 932	31 779
B/A	%	29.8	32.0	35.4	37.9	40.4	38.6	36.5
A/C	%	42.8	45.4	44.0	43.7	45.7	46.5	55.3

Source: ABARE, Australian Commodities 04.1.

As at June 2002, there were around 70 000 farming establishments running beef cattle (table 10). The number of cattle on these farms was 24.7 million. The number of dairy cattle, which also contribute to beef production as cast for age cows and other surplus stock amounted to 3.1 million. Almost 12 000 farmers ran dairy cattle in 2002.

Table 10: Livestock farm households and livestock numbers (thousand): Australia

	1995	1996	1997	1998	1999	2000	2001	2002
Beef cattle								
Establishments	-	-	-	77.3	75.9	76.7	72	69.7
Head	22 991	23 569	23 736	23 776	23 358	24 448	24 504	24 739
Dairy cattle								
Establishments	-	-	-	15.5	15.3	14.8	13.8	11.9
Head	2 740	2 808	2 958	3 076	3 220	3 140	3 217	3 131
Sheep								
Establishments	-	-	-	54.7	52.9	51.4	49.8	48.1
Head	120 862	121 116	120 228	117 491	115 456	118 600	110 928	106 166
Pigs								
Establishments	-	-	-	3.9	3.5	3.4	3.5	3.2
Head	2 653	2 526	2 555	2 768	2 626	2 511	2 748	2 940
Poultry								
Establishments	-	-	-	-	-	1.4	-	1.3
Head	-	-	-	89 540	91 775	84 928	90 973	85 002

** As at 30 June.*

While the size of Australia's beef herd is small when compared with countries such as the United States, Brazil and China, Australia is the largest exporter of beef in the world. In 2002 Australia exported 1.41 million tonnes (carcass weight equivalent) of beef — 22 per cent of all beef traded globally — while the United States, the next largest trader, exported 1.1 million tonnes (cwe).

Beef cattle production is the most common enterprise on Australian farms. Properties running beef cattle can be found in almost all parts of Australia, except for the arid central area of Western Australia. Production is generally more intensive in the higher rainfall regions of the southern states. In northern Australia, the number of hectares needed per animal is much higher.

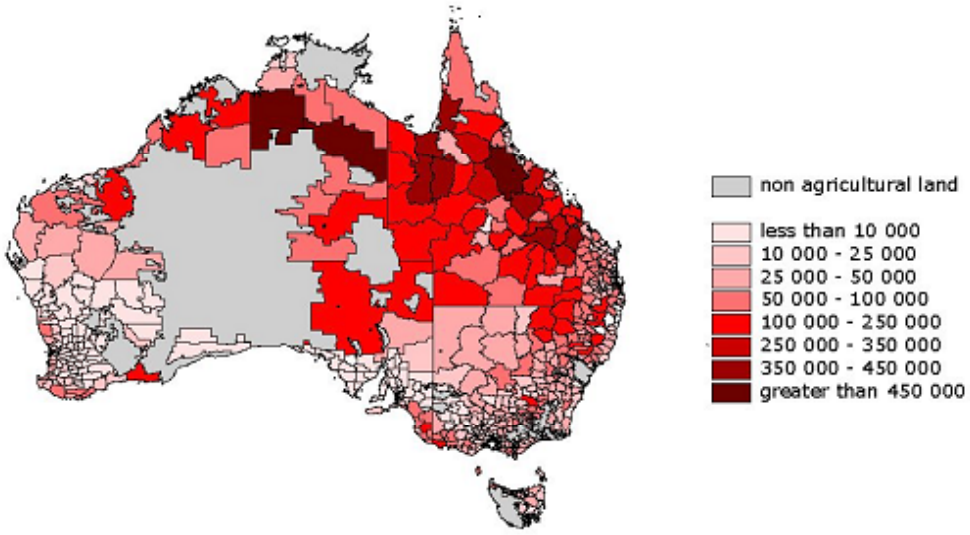
Australian beef and veal production takes place in two major production systems, the northern pastoral zone, where the year is marked by wet and dry seasons, and the high rainfall and wheat–sheep zones in southern Australia. The largest number of beef cattle are located in Queensland (map 1).

In the northern pastoral zone, cattle are run extensively on large holdings, grazing native pastures at low stocking densities. In the harsh northern conditions, tropical breeds such as Brahman and Santa Gertrudis dominate. Given the vast size of properties in the north, and the fact that cattle grazing is the only broadacre activity carried out, average herd sizes per farm are generally higher in this zone than in other regions in Australia.

In the south, cattle are produced on smaller holdings, grazing largely on improved pastures. With the greater availability of pasture, stocking rates tend to be higher. However, because properties are generally smaller, herd sizes are smaller and hence the number of cattle turned off is lower than in the northern cattle production system. Principal beef breeds in the south include Angus, Hereford and Murray Grey. Beef production in the southern regions of Australia is often carried out alongside other broadacre farming activities such as sheep grazing (for wool and/or sheep meat) and cropping.

The markets targeted by beef producers vary across the two production systems. Specialist beef properties in northern Australia produce slaughter cattle for the manufacturing beef market, store cattle for southern markets or feeder cattle for the feedlot sector. Also a large number of these properties now also turn off cattle targeted at the live export trade. Properties in southern Australia generally sell younger cattle for slaughter to supply beef to the domestic market and to Korea and Japan. Southern properties also produce store cattle for feedlots and cull cow slaughter from both beef cattle farms and dairy farms produces beef for the manufacturing beef market.

Beef cattle by statistical local area (shire)



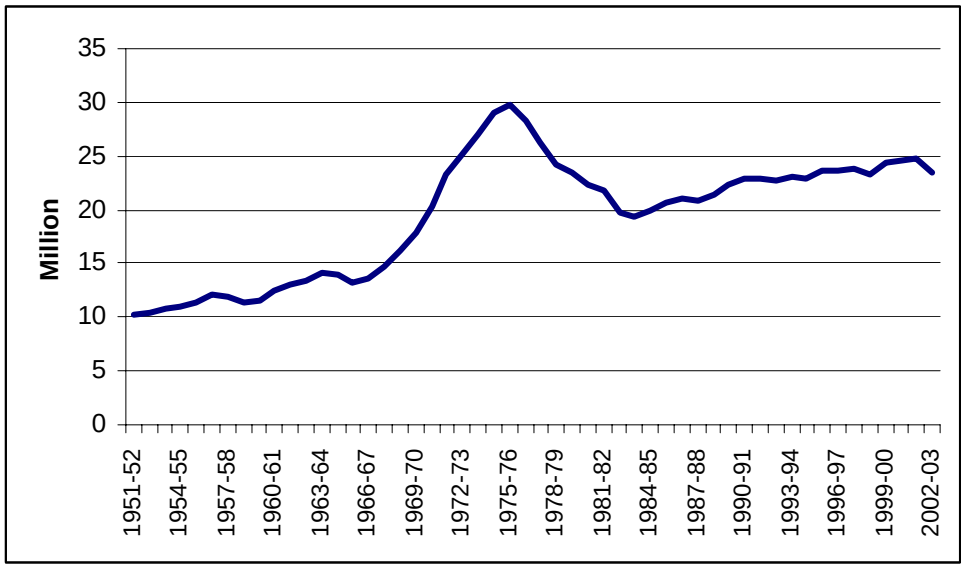
Source: ABS preliminary Agricultural Census Information 2001.

Trends in beef cattle numbers

Beef cattle numbers increased to a peak of 29.8 million in 1976 before declining to a low of around 19.4 million in 1984. Numbers since have generally increased (figure F). The number of beef cattle in Australia increased by 1 per cent from 24.5 million in June 2001 to an estimated 24.7 million at the end of June 2002. In addition, there were an estimated 3.1 million dairy cattle, taking the total number of cattle in Australia to 27.9 million at the end of June 2002.

During 2002 and 2003 Australia faced the most severe and widespread drought since at least 1982-83. All states and territories have felt its impact and in some areas of Queensland, Western Australia and New South Wales farms experienced more than two years of low rainfall. Drought induced turnoff and increased cattle deaths are estimated to have resulted in beef cattle numbers falling by 1.2 million or around 5 per cent from 24.7 million at the end of June 2002 to 23.5 million at the end of June 2003.

Figure F: Trends in Australian beef cattle numbers



Australian beef production systems

The Australian beef industry has developed a number of beef production systems in order to meet demands from various domestic and overseas markets. For example, producers may turn off young cattle for the domestic meat market, store cattle to the feedlot industry or older cows to the manufacturing beef market.

Grass fed beef production

Australia has a comparative advantage over other countries in the production of grass fed beef because land is in large supply and relatively inexpensive. Production is based on both native pastures and improved or sown pastures. Sown pastures usually use introduced plant species with large fertiliser inputs. Other sources of nutrients including fodder and grain are used to supplement the pasture–based diet.

Four main production and fattening systems for grass fed beef are used in Australia. The first two account for most of the cattle turned off for slaughter. Many producers operate under two or more of the following systems.

a. Breeding and fattening vealers

The breeding and fattening of vealer cattle of either sex that are turned off for slaughter at 6–12 months of age. The live weight at turnoff ranges from 170kg to 340kg, resulting in carcass weights of about 90-180kg. The carcasses are targeted primarily for the domestic market as table beef.

b. Breeding and fattening older cattle

In this system male cattle of 12 months or more are produced and sold for slaughter. These cattle comprise yearlings (12–16 months, with live weights of 300–400kg), steers (16 months to 3 years, with live weights of 400–540kg) and bulls (more than 3 years old, with similar to heavy weights to the steers). Because of the range in ages, there is a wide variety in the weight of such cattle and in the degree of finish of the carcass.

c. Breeding and selling store cattle

In this system, cattle (mainly males) are produced to the stage at which they require further fattening and possibly growing before slaughter. The system differs from the two above in that it is oriented to producing cattle to be sold as store animals instead of being finished for slaughter on the farm on which they are bred. The range of ages is 1–2 years.

d. Purchasing and fattening store cattle

This system involves the purchase and fattening of the store cattle described above, turning them off for slaughter generally within 12 months. This type of system provides greater scope for flexibility than the first two fattening systems, where the cattle are bred on the property.

Grain fed beef production

While pasture fed production dominates the industry, the use of feedlots as a means of finishing cattle for specific markets has developed dramatically from the mid-1980s. Feedlot production exists both in the north and south, close to grain growing areas. This sector provides high quality marbled product aimed primarily at Japanese consumers, with some shorter fed beef also suitable for the domestic market. The domestic market is a growing market and currently accounts for 50 per cent of cattle on feed (table 11).

In Australia, cattle are usually placed in feedlots at around 12–22 months of age, with the period of feed varying depending on the market being targeted. Production can range from between 60–70 days on feed for the domestic market, which prefers leaner beef, to up to 300 days on feed to produce the highly marbled beef preferred by the Japanese market.

Table 11: Cattle on feed by intended market destination: as at 30 June 2003

	Numbers	**Proportion of total (%)**
Japan	288 283	43.2
Korea	13 314	2.0
Other export	21 859	3.3
Domestic	335 300	50.2
Unknown	8 839	1.3
Total	**667 595**	**100**

Source: MLA/ALFA

Lightweight feeder cattle (230-360 kg) are required for a wide range of domestic and export markets. Where the finished market requires a shorter feeding period (70–120 days) such as the domestic, restaurant and Korean trade, both steers and heifers of most breeds and crosses are generally acceptable.

If lighter weight cattle are to be fed for longer periods for Japan (200 days or more) they must be mid–late maturing British breed types. Although Angus, Murray Grey and Hereford form the basis of these markets, some European crosses are proving successful.

Feeders for the long fed (150 days and 200 days plus) Japanese market are required from about 360–500 kg liveweight. They must be well grown 16–22 month old steers with good frame and muscling. Most feedlots prefer British breeds, particularly Angus, Murray Grey and Hereford to maximise marbling.

Large numbers of British breeds are fed for the 150 day markets where moderate marbling is required. For the short fed (100–120 day) markets, marbling is not so important and a wider range of breeds is suitable.

The feedlot system in Australia has been almost entirely confined to dry lot feeding. Cattle are fed mainly on grain sorghum, barley and, to a lesser extent, wheat and oats plus roughage.

There are two types of feedlot operations — commercial feedlots and 'farmer' or 'opportunity' feedlots. Commercial feedlots feed and turn off cattle all year round, with capacity for more than 1000 head at a time, while opportunity feedlots are used on an intermittent basis and have much smaller feeding capacity. Many opportunity feedlots are set up with facilities for 200–300 head. Whereas the commercial feedlots are heavily capitalised and rely on operational efficiency to generate returns, opportunity feedlots are highly flexible and can be used when cattle and grain prices are favourable or in time of drought.

Many commercial feedlots are used for 'custom' feeding — that is cattle owners place their store cattle in the feedlots, and the feedlot owners do not own these cattle but charge a fee to the cattle owners. The custom feeding of cattle in feedlots is becoming increasingly important. Custom feeding is used by cattle producers, processors and investors who either want to retain ownership longer, source cattle earlier or merely profit from the value added opportunities in the beef production chain.

Feedlot situation

As at 30 June 2003 Australia had around 667 600 cattle on feed. Around half of these cattle were located in Queensland, Australia's largest state for lotfeeding cattle. Prior to the 2002-03 drought, the lotfeeding industry had been expanding in response to favorable beef prices, and low feed costs as a result of good growing conditions and abundant feed grain harvests. Feedlot turnoff grew from only 5 per cent of total adult cattle slaughter in 1990 to 23 per cent of adult slaughter in 2002-03.

There are currently 703 accredited feedlots in Australia representing a total capacity of around 900,000 cattle (ALFA/MLA June 2003 survey). Of the total feedlot capacity Queensland holds 50 per cent; New South Wales holds 36 per cent; Victoria holds 6 per cent; South Australia holds 2 per cent and Western Australia 5 per cent.

However, due to relatively less favourabe market conditions during 2002-03, the feedlotting sector operated well below capacity (73 per cent as at June 2003, compared with 82 per cent in June 2002). This was largely due to high grain prices, continued

weak Japanese demand, and the appreciation of the Australian dollar that adversely affected the competitiveness of Australian beef in export markets.

The lot feeding industry turned off approximately 2.1 million head of cattle in the 2002-03 fiscal year (July to June). The number of cattle on feed destined for the domestic market continues to increase, as beef demand remains firm particularly for grain fed beef.

Live cattle

The live export market sources cattle from both northern and southern production systems in Australia. The close proximity to South East Asian markets and the suitability of Bos indicus cattle to the markets of North Africa has resulted in enormous growth of this industry in northern Australia. This region, covering the Northern Territory and the north western regions of Queensland and northern Western Australia, supplies 75–80 per cent of the live cattle trade.

Live cattle exports increased rapidly in the mid 1990s, encouraged by a growing Asian feedlot industry. The economic downturn in several South East Asian countries in 1998 dramatically reduced live cattle demand from the region, especially from the largest market, Indonesia. Some of the effects of the downturn in demand from South East Asia were offset by improved demand for live cattle in the north African and Middle East markets and cheaper freight costs. Market recovery in South East Asia in 1999 was led by Indonesia and the Philippines and live cattle exports returned to their pre-Asian economic downturn levels.

According to ABARE's survey of agricultural and grazing industries (Gleeson et al 2003), almost all properties in the upper Northern Territory sell some live export cattle. In the Kimberley area of Western Australia around 65 per cent of properties sold live export cattle in 2001-02 and in the southern Northern Territory, north west Queensland and Pilbara region of Western Australia up to 30 per cent of properties sold live export cattle.

Farm incomes

The beef industry covers properties engaged mainly in running beef cattle and accounts for around 60 per cent of Australia's beef production. The beef industry contains a large number of small farms.

Beef cattle numbers decreased by around 4 per cent on beef industry farms in 2002-03 as a result of increased turnoff due to drought. Death rates were low in comparison with many past droughts when there were fewer market opportunities and greater difficulties in moving livestock and fodder.

Despite increased turn off, total cash receipts fell because of lower saleyard prices and sales of unfinished stock. At the same time, total cash costs increased as expenditure on supplementary feeding and agistment increased and farm cash income declined by over 40 per cent from the historical high recorded in 2001-02 (figure G).

Figure G: Farm cash income: Beef

Beef cattle turnoff is forecast to fall in 2003-04 as farms begin to rebuild herds. So, despite higher saleyard prices, average beef cattle receipts per farm are expected to rise only modestly.

In addition, purchases of beef cattle are forecast to increase by over 40 per cent, largely offsetting the reduction in fodder expenditure as pasture growth recover.

With only a small increase in total cash receipts and small fall in farm costs, farm cash income is forecast to increase only modestly.

The extent of overall herd rebuilding in 2003-04 has been subdued by continued drought into 2004 in Queensland, where around 50 per cent of Australia's beef cattle are located. The rate of turnoff of beef cattle in parts of northern and western queensland

increased in 2003-04. Nevertheless, cattle numbers in the beef industry are forecast to increase and farm business profit is forecast to increase by almost $31 000 per farm, but to remain negative (table 12).

Table 12: Australian beef industry farm financial performance, Average per farm

		2001-02	2002-03 [p]	2003-04 [s]
Total cash receipts	A$	256 672	203 400	185 100
Total cash costs	A$	176 596	170 540	158 900
Farm cash income	A$	80 076	32 860	26 100
- farm with less than 500 beef cattle	A$	13 330	9 630	15 100
- farm with more than 500 beef cattle	A$	201 765	86 210	96 300
- farm with negative farm cash income	%	23	39	44
Farm business profit	A$	31 047	-45 310	-14 600
- farm with less than 500 beef cattle	A$	-30 476	-52 420	-29 300
- farm with more than 500 beef cattle	A$	151 500	-34 780	-54 200
-farm with negative farm business profit	%	63	76	72
Farm capital at 30 June [a]	A$	2 032 785	1 929 970	na
Farm debt at 30 June [b]	A$	153 822	118 920	127 000
Farm liquid assets at 30 June [b]	A$	79 401	156 420	na
Rate of return				
Excl. cap. appreciation	%	2.2	-1.7	0.0
- farm with less than 500 beef cattle	%	-2.8	-4.2	-2.0
- farm with more than 500 beef cattle	%	4.3	0.1	-0.1
Incl. cap. appreciation	%	6.9	5.5	na
Off-farm income [c]	A$	27 229	30 420	na

[a] Excludes leased plant and equipment.
[b] Average per responding farm at 30 June.
[c] Off-farm income of owner management and spouse, per responding farm.
[p] Preliminary estimates.
[s] Provisional estimates.

Chapter 4
Cattle marketing and beef distribution channels

1. Korea

Marketing channels for cattle and beef

Beef is marketed through two channels; one path through merchants that purchase cattle and market beef, and the other through agricultural co-operatives. In the case of the first option, the producer sells cattle to the collection merchant, who has them slaughtered and sent to wholesale stores, and then to meat shops or large shops (discount store, and department stores). Prices are negotiated between farmers and merchants, with payment occurring on the transfer of cattle. The second option is through agricultural co-operatives with the farmer sending out cattle to an area cooperative association, which lists cattle in wholesale market auctions. Beef from wholesale markets is sold through meat shops or large shops.

- Merchant path: producer ⇒ cattle market ⇒ merchant that carries out slaughter ⇒ wholesale store ⇒ retailer ⇒ consumer
- Agricultural co-operative path: producer ⇒ agricultural co-operative in region ⇒ wholesale market ⇒ retailer ⇒ consumer

Using the Hoeng Seong region, the main Hanwoo producing area in Korea, as an example, about 70 per cent of cattle are sold to merchants through cattle markets or commission agents. Around 40 per cent of cattle are sold through cattle markets. Hanwoo meat distribution is heavily dependent on the merchant and wholesale store. About half of the going through merchant are distributed through wholesale stores.

About 20 per cent of sales are through regional agricultural cooperatives (AFMC, *Situation of main agricultural product marketing, 2001*).

Cattle market

The number of Hanwoo cattle marketed decreased to 515 000 in 2001 from 1.25 million in 1990 (table 13). At the same time the number of cattle markets decreased from 287 to 106. The number of Hanwoo sold per market increased from 4 358 to 4 855. Sales of Hanwoo cattle as a percentage of total cattle delivered to markets went down to 67 per cent in 2001 from 76 per cent in 1990.

The reason why cattle market numbers are decreasing is that numbers of Hanwoo delivered are also falling, and mergers and closures have occurred in the smaller cattle markets. The reason why Hanwoo numbers marketed decreased is that in 1995 compulsory marketing of cattle through livestock markets was abolished. The number of Hanwoo marketed has decreased continuously since 1997.

Table 13: Situation in Korea cattle market

	Units	1990	1995	1997	2000	2001
Number of cattle market(A)		287	159	143	128	106
Number of Hanwoo delivered to market(B)	'000	1 251	1 129	1 272	670	515
Number of Hanwoo per market(B/A)		4 358	7 101	8 895	5 234	4 855
Annual sales of Hanwoo(C)	'000	951	789	888	435	345
Proportion of Hanwoo sold(C/B)	%	76.0	69.9	69.8	64.9	67.1

Source: NLCF.

Slaughter house and livestock processing complex (LPC)

The number of slaughter houses decreased to 114 in 2001 from 179 in 1980. Average utilisation of slaughter house equipment is very low - cattle 23.2 per cent, and pigs 45.7 per cent in 2001 (table 14). Capacity utilisation in private slaughter houses was cattle 20.7 per cent, and pigs 41.0 per cent; in local government operation it was cattle 14.4 per cent, pigs 18.3 per cent; in co-operatives it was cattle 42.3 per cent, pigs 82.5 per cent.

The scale of slaughter houses mostly is small, equipment is outdated, and the hygiene environment is generally inferior. Slaughter fees are the main source of income. With slaughter taxes being paid to local governments, the decline in number of establishments means tax revenues have also fallen.

Table 14: Slaughter houses by operation, Korea, 2001

Operation subject	**Number**	**Slaughter capacity**		**Actual slaughter rate**	
Unit		head a day		%	
		Cattle	Pigs	Cattle	Pigs
Private	102	9 209	92 659	20.7	41.0
Local government	4	118	361	14.4	18.3
Co-operative	8	1 232	12 148	42.3	82.5
Total	114	10 559	105 168	23.2	45.7

Source: MAF. 2002 February, livestock workshop.

A system of livestock processing complexes was establish in 1994 to change the circulation system of beef carcasses and frozen meat to a system of chilled meat and branded meat. These complexes contract production from farmers, and then carry out the slaughter, processing, and sale of brand name meat.

As at March 2003, there were 9 LPCs in operation and slaughter capacity of cattle was 740 a day and pigs were 14 000 a day (table 15). Average actual slaughter utilisation per day was cattle 23 per cent, and pigs 54 per cent. LPCs account for 34 per cent of total Korean cattle slaughter capacity and 27.1 per cent of pig slaughter capacity. With respect to actual utilisation, LPCs account for 7.9 per cent of total cattle slaughter and 14.3 per cent of total Korean slaughter of pigs.

Currently LPCs are suffering some financial difficulty because of the cost of meeting HACCP requirements and low slaughter throughput. The reason why LPC's actual slaughter rate is low is that pork exports were discontinued because of the occurrence of foot-and-mouth disease. Small scale slaughter houses are discounting slaughter commission in order to maintain capacity utilisation. Also, the burden of financing daily working expenses because of the time lag between raw material purchase and sale of product is a problem for many. Whereas payment for farmers takes about two days, receipts from sales of beef take one month for domestic sales, and seven days for exports to Japan.

Table 15: Korean livestock processing complexes by region

LPCs	Slaughter capacity		Actual slaughter rate					
Units	head a day		%					
			2001		2002		2003(1/4)	
	Cattle	Pigs	Cattle	Pigs	Cattle	Pigs	Cattle	Pigs
Ansung	110	2 250	28	63	16	46	18	66
Wonju	50	750	-	39	58	130	82	129
Cheongwon	160	2 000	50	69	45	74	39	76
Chechon	50	750	14	22	12	55	16	33
Hongsung	100	2 000	-	-	11	26	15	31
Kimjae	-	2 000	-	84	-	60	-	57
Iksan	120	2 000	-	-	-	18	-	30
Kunwi	100	1 500	10	30	16	83	5	53
Pohang	50	750	52	19	36	19	38	22
Total	740	14 000	20	38	23	53	23	54

Source: MAF.

Livestock Wholesale Market (LWM)

There were 14 livestock wholesale market in operation in 2001 and slaughter capacity of cattle was 2 571 a day and pigs were 22 374 a day (table 16). Average actual slaughter utilization per day was cattle 34.4 per cent, and pigs 65.9 per cent. Capacity utilization in private livestock wholesale markets was cattle 25.4 per cent, and pigs 51.8 per cent; in co-operatives it was cattle 47.2 per cent, and pigs 82.3 per cent.

Table 16: Wholesale markets by operation, Korea, 2001

Operation subject	Number	Slaughter capacity		Actual slaughter rate	
Unit		head a day		%	
		Cattle	Pigs	Cattle	Pigs
Private	7	1 510	12 000	25.4	51.8
Co-operative	7	1 061	10 374	47.2	82.3
Total	14	2 571	22 374	34.4	65.9

Source: MAF. 2002 February, livestock workshop.

The proportion of cattle and pigs auctioned declined from 1990 to 1995, but rose in 2000 and 2001(table 17). The proportion of stock that went through wholesale markets in 2001 was 32.2 per cent of cattle, and 31.2 per cent of pigs. The reason that the number increased recently was that in the case of beef, prices offered by bidders rose because of reduced supplies. In the case of pork, with a halt to exports due to food-and-mouth disease in 2000, amounts of pork sent directly to meat processing companies flowed to the wholesale market. Whereas most of wholesale market is largely concerned with slaughter and auction functions, a high dependence on wholesale brokers means there is limited direct sales activity.

As the sales from wholesale markets are mainly whole carcass the added value is low. Recently the amount of meat cuts in circulation has increased. However, cut meat processing infrastructures at wholesale market are generally poor and auctions of meat cuts are not active. For these reasons, the diversification of product from wholesale markets is limited. .

Table 17: Circulation through livestock wholesale market (auction)

	Total number slaughter(A)		**Wholesale number auctioned(B)**		**Proportion auctioned (B/A)**	
Units	**'000**	**'000**	**'000**	**'000**	**%**	**%**
	Cattle	Pigs	Cattle	Pigs	Cattle	Pigs
1990	554	8 605	161	3 418	29.1	39.7
1995	798	10 178	180	3 224	23.0	31.7
2000	997	13 293	262	3 366	26.2	25.3
2001	728	14 333	234	4 482	32.2	31.2

Source: MAF.

Beef retail sector

The number of beef retail shops increased from 16 296 in 1980 to 52 000 in 1997. But after the 1997-98 financial crisis, the number of beef retail shops decreased to 48 315 by 2000. In 2000, the retail sector comprised approximately 31 561 traditional butchers, 5 225 restaurants, 4 363 beef import shops, 3 937 supermarkets, 1 085 co-operative shops, 538 discount stores, 195 department stores, and 157 convenience stores (table 18).

The system of separating domestic and imported sales was abolished in 2001, as agreed under the Uruguay Round Agreement on Agriculture. Previously, imported beef shops

handled only imported beef, including in beef corners of department stores and discount stores, this discriminating against the marketing of imported beef. After 2001, all retail stores were permitted to sell domestic and imported beef simultaneously.

Table 18: Composition of livestock retail shop, Dec 2000

	Number	**%**
Department store	195	0.4
Supermarkets	3 937	8.1
Discount store	538	1.1
Convenience store	157	0.3
Co-operative shop	1 085	2.3
Beef import shop	4 363	9.0
Restaurant	5 225	10.8
Traditional butchers	31 561	65.3
Etc	310	0.6
Total	48 315	100.0

Source : MAF.

Scale of retail stores that sell beef is small. Up to now small scale traditional meat shops were the leading retailers of meat. But the amount of meat sold through big stores such as supermarkets, discount stores, department stores etc, where one-stop shopping is available, is increasing fast. Forward purchases of beef and sales by big retail stores may greatly influence the amounts of imported and domestically produced beef sold.

MARKETING IMPORTED BEEF IN KOREA

History of beef imports

After Korea joined the GATT in 1967, it maintained self-sufficiency in beef until 1975. Korea imported 694 tonnes of beef in 1976, and imported live cattle in 1978. Both beef and live cattle were imported from 1981 to 1983. When prices of cattle slumped in 1983 and 1984, the government discontinued imports of beef and live cattle, but subsequently came under pressure from the US government to reopen the market to imports. Korea resumed beef imports in July 1988. Later by negotiation between Korea and the United States, and as a result of the Uruguay Round negotiations, a compromise settlement was reached in 1993 that provided for Korean beef and live cattle import liberalization schedules.

Under the Uruguay Round Agreement on Agriculture, Korean beef imports were limited by quota from 1994 to 2000. The quota was increased to 225 000 tonnes in 2000 from 106 000 tonnes in 1994 (table 19). The SBS (Simultaneous Buy and Sell Tender System) part of the quota was raised from 20 per cent to 70 per cent over this period. Beef imports were subject to tariff only measures from January 2001. The imported beef tariff rate was 41.2 per cent in 2001, and decreased by 0.4 per cent every year until 2004. Live cattle imports were subject to tariff only restriction (rate 41.2 per cent) from January 2001. Tariffs beyond 2004 are to be decided in the current round of WTO negotiations.

Table 19: Beef import schedule from UR negotiation

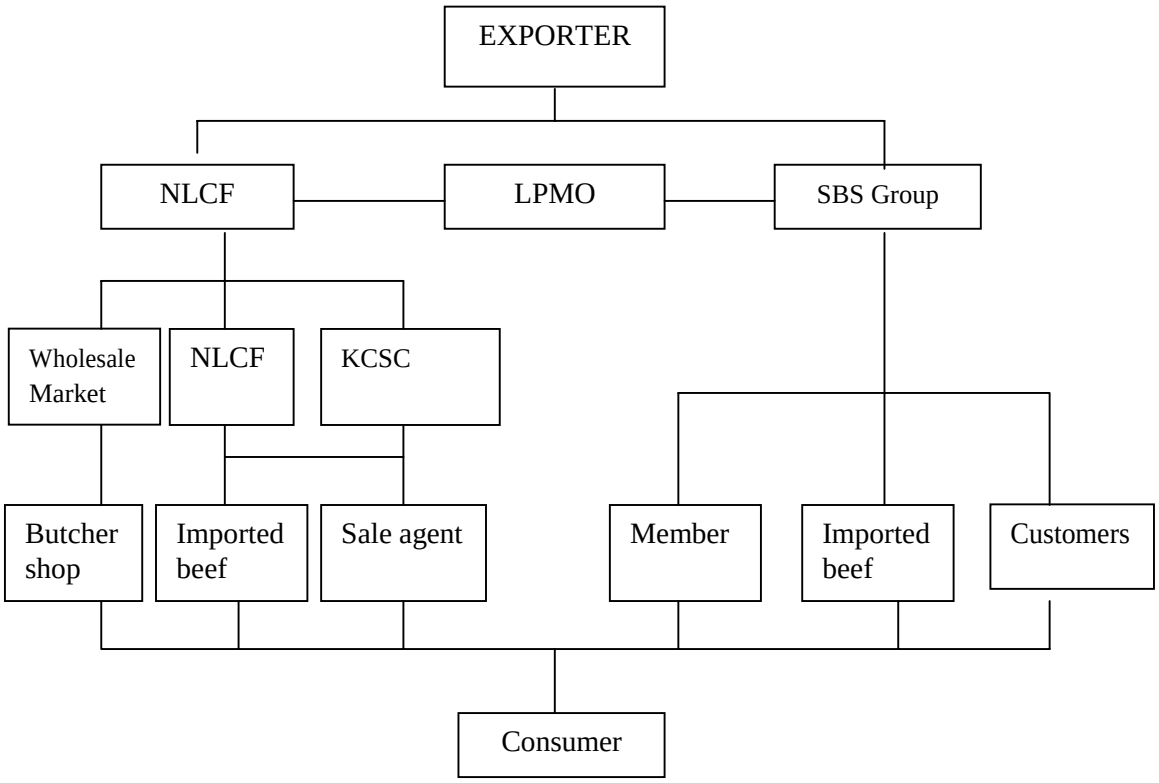
	Units	1994	1995	1996	1997	1998	1999	2000
Volume of quota	kt	106	123	147	167	187	206	225
SBS ratio	%	20	30	40	50	60	70	70
SBS Volume	kt	21	37	59	84	112	144	158
Mark-up [a]	%	95	70	60	40	20	10	0
Tariff rate	%	20	43.6	43.2	42.8	42.4	42.0	41.6

[a] Mark-up was imposed to narrow the gap between imported beef price and internal beef price. This amount was reduced as part of Uruguay Round Agreement.

Distribution channel of imported beef

Internal distribution of imported beef during the period when imports were subject to quota was divided between the NLCF (National Livestock Cooperatives Federation) channel with releases adjusted to stabilise domestic prices and the SBS channel of private trade. Most of the SBS groups imported beef was ordered by members and supplied from within the import quota allocated by government. After the move to tariff only restraints on imports, the NLCF channel for adjusting demand and supply disappeared, with former members of the SBS group and new companies taking part in imported beef market.

The distribution of imported beef in Korea **before import quotas abolished**



The essential differences in internal circulation of imported beef after the move the tariff only system of import restraints were:

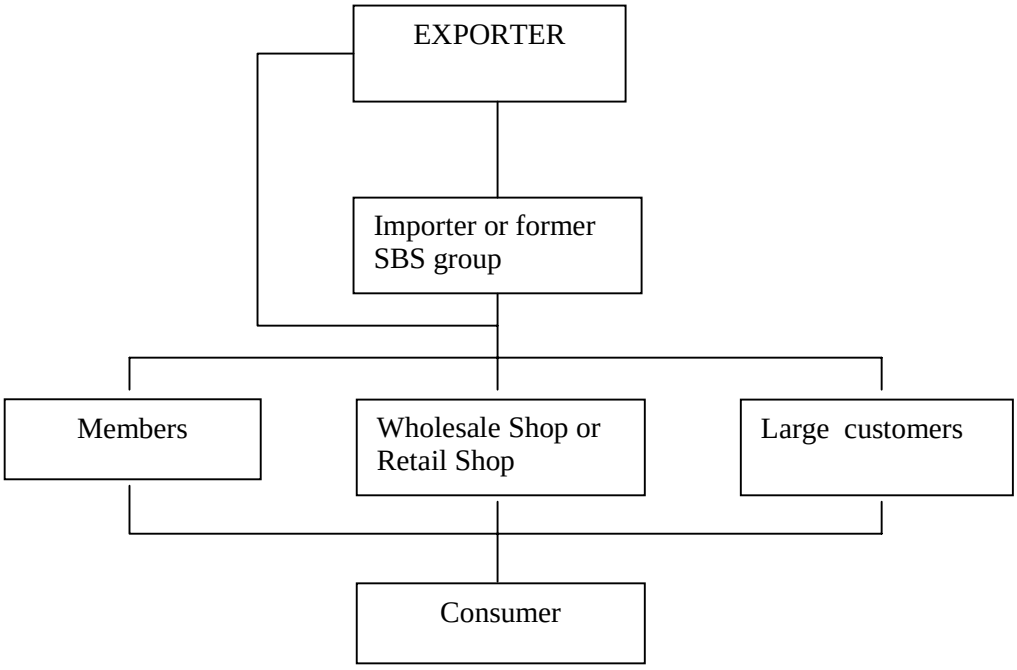
a. Regulation of beef demand and supply disappeared.

b. Former SBS members, wholesale shops and retail shops could directly import beef.

c. Foreign suppliers could sell beef wholesale.

d. At retail level, imported beef shops disappeared, with all shops permitted to handle domestic and imported beef.

The distribution of imported beef in Korea **after removal of import quotas**



Beef imports by nation

Except during the financial crisis in 1998 and the mad-cow disease events in Europe in 2001, Korean beef imports have increased every year. Main sources of beef imports are the United States, Australia, Canada, and New Zealand (table 20). Imports from the United States and Australia accounted for about 90 per cent of the total volume of beef imported in 2003. Most of the beef imported from the United States is grain-fed, whilst most of the beef imported from Australia is grass-fed.

Whereas, the amount of beef imported from the United States increased in 2003, that imported from Australia fell. The proportion of beef imported from the United States increased to 67.9 per cent of total imports in 2003 from 50.3 per cent in 1994, but the proportion of beef imported from Australia decreased to 21.8 per cent in 2003 from 34.8 per cent in 1994. Canadian beef share of imports in Korea decreased in 2003 because of the BSE (bovine spongiform encephalopathy or mad cow disease) related ban on iproduct from Canada.

Table 20: Volume of beef imports by nation (boneless), 1994-2003 [a]

	USA	Australia	Canada	New Zealand	Total
Units	kt (%)	kt (%)	kt (%)	kt (%)	kt (%)
1994	63.4(50.3)	43.9(34.8)	1.6(1.3)	17.1(13.6)	126.0(100.0)
1995	77.2(52.2)	46.5(31.4)	2.5(1.7)	21.7(14.7)	148.0(100.0)
1996	77.3(52.6)	45.7(31.1)	3.7(2.5)	20.3(13.8)	147.0(100.0)
1997	90.4(54.1)	56.9(34.1)	5.9(3.5)	13.9(8.3)	167.0(100.0)
1998	49.0(56.2)	30.2(34.6)	4.0(4.6)	3.9(4.5)	87.1(100.0)
1999	97.7(49.5)	79.6(40.3)	11.6(5.9)	8.5(4.3)	197.5(100.0)
2000	131.5(55.3)	70.3(29.5)	18.6(7.8)	11.2(4.7)	237.8(100.0)
2001	95.7(57.5)	54.4(32.7)	5.7(3.4)	10.2(6.1)	166.3(100.0)
2002	186.6(63.9)	76.8(26.3)	11.6(4.0)	17.2(5.9)	292.2(100.0)
2003	199.4(67.9)	64.1(21.8)	4.8(1.6)	25.3(8.6)	293.6(100.0)

[a] Calendar years

Source: Korea Meat Trade Association (KMTA).

Imports of chilled beef

The volume of chilled beef imports increased to 7.76 per cent in 2003 from 0.01 per cent in 1995 (table 21)**.** The reason why the volume of chilled beef imported by Korea is low is that the maximum chilled beef period of circulation for this category is 90 days under the law. But when the period required for shipment and entry is taken into account, the actual circulation period may be only 45-60 days. Prior to 2002 chilled beef was not permitted to be sold after being converted to frozen beef. But amendments to the relevant law means that since August 2002 chilled beef can be sold after being converted to frozen beef. Furthermore, a lack of infrastructure suitable for chilled meat circulation did not favour the development of the trade. As a result of the changes in 2002, the risks associated with chilled meat circulation have decreased, with the result that imports of chilled beef are forecast to increase.

Table 21: Imports of beef, boneless, 1995-2003

	Frozen beef (A)	**Chilled beef (B)**	**Total(C)**	**B/C**
Units	tonnes	tonnes	tonnes	%
1995	147 787	8	147 995	0.01
1996	146 968	23	147 000	0.02
1997	166 937	49	166 986	0.03
1998	86 919	159	87 078	0.18
1999	195 649	1 837	197 489	0.93
2000	234 264	3 577	237 841	1.50
2001	160 937	5 336	166 273	3.21
2002	278 323	13 923	292 246	4.76
2003	270 829	22 777	293 606	7.76

Source: KMTA.

The proportion of Australian chilled beef exports to Korea is higher than for other exporters. In 2003, 10 per cent of Australian exports to Korea were of chilled beef - higher than the average of 8 per cent (table 22). In the case of the United States, the proportion of chilled beef exports to Korea was 8 per cent; Canada's was 6 per cent; and New Zealand's was 0.4 per cent of its total shipments.

In 2003 on a value basis, chilled beef accounted for 17 per cent of total Australian shipments of beef to Korea (table 22). The US chilled beef export value ratio to Korea was 10 per cent, Canada's was 10 per cent, and New Zealand's chilled beef export value ratio to Korea was 1 per cent.

Table 22: Volume and value of chilled beef import by nation, 2003 [a]

	Units	USA	Australia	Canada	New Zealand	Total
Chilled						
Volume	kt(%)	16.0(8)	6.4(10)	0.3 (6)	0.1(1)	22.8(8)
Value	US$million(%)	87.9(10)	33.7(17)	1.6(10)	0.6(1)	123.9(11)
Frozen						
Volume	kt(%)	183.4(92)	57.7(90)	4.5(94)	25.2 (99)	270.8(92)
Value	US$million(%)	759.0(90)	162.2(83)	15.3(90)	66.4 (99)	1 002.9(89)
Total						
Volume	kt(%)	199.4(100)	64.1(100)	4.8(100)	25.3(100)	293.6(100)
Value	US$million(%)	846.9(100)	195.9(100)	16.9(100)	67.0(100)	1 126.8(100)

[a] Values are C&F(cost & freight) basis, boneless .

Source: KMTA.

Imported beef is sold in 10 selected cuts. These cuts are rib, loin, chuck, shank, round, tenderloin, foreshank, brisket, rump, and striploin. Korean consumers prefer mostly ribs, and then chuck. In 2003, on a selected cuts basis, rib accounted for 54.7 per cent of total imports and chuck was 19.9 per cent (table 23). Brisket was 6.8 per cent, and loin 5.2 per cent. The amount of rib is keeping over 50 per cent, while the proportion of imported chuck is increasing. The proportion of loin has decreased over time.

Table 23: Volume of beef imported by selected cut [a]

	Units	2001	2002	2003
Rib	kt(%)	92.6 (55.8)	145.2 (49.7)	160.7 (54.7)
Loin	kt(%)	11.8 (7.1)	15.8 (5.4)	6.4 (2.2)
Chuck	kt(%)	12.5 (7.5)	54.1 (18.5)	58.3 (19.9)
Shank	kt(%)	5.8 (3.5)	11.3 (3.9)	9.6 (3.3)
Round	kt(%)	7.5 (4.5)	4.2 (1.4)	2.2 (0.8)
Tenderloin	kt(%)	2.2 (1.3)	2.5 (0.8)	2.4 (0.8)
Foreshank	kt(%)	8.8 (5.3)	14.0 (4.8)	14.8 (5.0)
Brisket	kt(%)	10.0 (6.0)	20.9 (7.1)	20.1 (6.8)
Rump	kt(%)	-	9.2 (3.2)	6.9 (2.4)
Striploin	kt(%)	-	1.5 (0.5)	2.0 (0.7)
Etc	kt(%)	14.8 (8.9)	13.6 (4.7)	10.3 (3.5)
Total	kt(%)	166.0(100.0)	292.2(100.0)	293.6(100.0)

[a] Boneless equivalent.

By selected cuts of imported beef, in 2003 the ratio of chilled beef imports in tenderloin was 35.0 per cent, chuck 16.6 per cent, loin 15.2 per cent, striploin 11.0 per cent, and rib 5.5 per cent (table 24). The proportion of chilled beef imports in most cuts rose after the August 2002 revision to the law requiring chilled beef to be frozen if not sold within 90 days. The weight of chilled beef imports in tenderloin increased from 23.6 per cent in 2001 to 35.0 per cent in 2003. The share of chilled beef in imports of rib increased from 0.8 per cent in 2001 to 5.5 per cent in 2003 (table 24).

Table 24: Ratio of chilled beef imports by selected cuts of beef

	Units	2001	2002	2003
Rib	%	0.8	2.8	5.5
Loin	%	12.0	6.1	15.2
Chuck	%	16.6	10.1	16.6
Shank	%	0.2	0.7	1.4
Round	%	2.5	2.0	6.0
Tenderloin	%	23.6	30.4	35.0
Foreshank	%	2.2	3.0	2.5
Brisket	%	0.7	2.3	2.5
Rump	%	-	4.8	10.1
Striploin	%	-	8.6	11.0
Etc	%	1.0	8.1	4.3
Total	%	3.2	4.8	7.8

Price of imported beef by source

From a recent low in 2001 (the year of import quota removal), average prices of imported beef have risen. The average price of imported beef was US$3.84, compared with US$2.84 in 2001 (table 25). Import beef prices rose as the proportion of chilled meat imports increased. By nation, the price of beef imported from the United States in 2003 averaged US$4.25, beef imported from Australia averaged US$3.05, beef imported from Canada averaged US$3.56, and the price of beef imported from New Zealand averaged US$2.65. The principal reason for US and Canadian sourced beef being at higher prices than that from Australia and New Zealand is likely to be that US and Canadian beef is principally grain fed, beef from Australia and New Zealand is mainly grass or pasture fed.

Table 25: Average price of beef imports by nation

	USA	Australia	Canada	New Zealand	Total
Units	US$/kg	US$/kg	US$/kg	US$/kg	US$/kg
1994	3.99	2.93	3.85	2.96	3.48
1996	3.92	2.60	3.94	2.62	3.33
1998	3.18	1.80	2.94	2.24	2.65
2000	3.75	2.00	3.46	2.47	3.10
2001	3.21	2.33	2.92	2.15	2.84
2002	3.31	2.39	2.67	2.37	2.99
2003	4.25	3.05	3.56	2.65	3.84

Source: KMTA.

Importer or import group

The total volume of beef imports increased by close to 90 per cent to 238 000 tonnes in 2000 from 126 000 tonnes in 1994. The amount of beef imported under SBS arrangements increased by 650 per cent to 158 000 tonnes from 21 000 tonnes during same period (table 26). Of SBS imports, KMIA accounted for 15.2 per cent of the volume in 2000, and KCSC 11.5 per cent. The number of groups importing under SBS arrangements increased to 13 in 2000 from 6 in 1994.

In 2001 the first year of beef imports under a tariff only regime, the number of SBS groups decreased, and former group member companies such as CJ, and LG, became entrants to the new beef import market in their own sight. As a result, the proportion of the beef import market held by KMIA fell sharply to 0.2 per cent in 2001 from 15.2 per cent in 2000.

The situation of others in the SBS group, such as KCSC was similar to that of KMIA. The proportion of KCSC in the beef import market decreased to 9.0 per cent in 2001 from 11.5 per cent in 2000; KOSCA to 3.6 per cent from 6.3 per cent; and KFMP to 2.5 per cent from 6.3 per cent. Overall the proportion of beef imports through the former SBS group decreased to 27.4 per cent in 2001 from 66.0 per cent in 2000.

Table 26: Beef imports by SBS group and others [a]

	Units	1994	1995	1996	1997	1998	1999	2000	2001
NLCF	tonnes	3 330	5 582	8 698	12 351	15 830	10 000	6 980	-
	(%)	(15.7)	(15.1)	(14.8)	(14.8)	(14.1)	(7.3)	(4.4)	
KCSC	tonnes	3 330	5 582	8 698	12 351	17 810	23 139	27 430	15 000
	(%)	(15.7)	(15.1)	(14.8)	(14.8)	(15.9)	(16.8)	(17.4)	(9.0)
KTHSC	tonnes	4 664	5 762	7 961	9 281	11 090	7 139	9 055	6 500
	(%)	(22.0)	(15.6)	(13.6)	(11.1)	(9.9)	(5.2)	(5.7)	(3.9)
KMIA	tonnes	4 676	7 118	7 420	12 491	16 710	30 836	36 190	300
	(%)	(22.1)	(19.3)	(12.6)	(15.0)	(14.9)	(22.4)	(23.0)	(0.2)
KOSCA	tonnes	3 200	8 644	10 073	13 887	12 700	5 673	15 150	6 000
	(%)	(15.1)	(23.4)	(17.1)	(16.6)	(11.3)	(4.1)	(9.6)	(3.6)
KRSC	tonnes	2 000	4 212	6 290	9 421	10 420	5 673	6 700	5 000
	(%)	(9.4)	(11.5)	(10.7)	(11.3)	(9.3)	(4.1)	(4.3)	(3.0)
KFMP	tonnes	-	-	6 660	9 458	12 020	14 120	15 190	4 134
	(%)			(11.3)	(11.3)	(10.7)	(10.3)	(9.6)	(2.5)
KLMC	tonnes	-	-	3 000	4 260	11 120	18 497	8 420	7 800
	(%)			(5.1)	(5.1)	(9.9)	(13.5)	(5.3)	(4.7)
KMPA	tonnes	-	-	-	-	6 000	11 230	13 540	-
	(%)					(5.3)	(8.2)	(8.6)	
CJ	tonnes	-	-	-	-	-	-	-	15 000
	(%)								(9.0)
LG	tonnes	-	-	-	-	-	-	-	2 000
	(%)								(1.2)
Etc	tonnes	-	-	-	-	-	11 190	18 845	104 530
	(%)						(8.1)	(12.0)	(62.8)
Total	tonnes	21 200	36 900	58 800	83 500	112 200	137 497	157 500	166 273
	(%)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Ratio of SBS	%	20	30	40	50	60	70	70	100

[a] NLCF: National Livestock Co-operatives Federation, KCSC: Korean Cold Storage, KTHSC: Korean Tourist Hotel Supply Centre, KMIA: Korean Meat Industries Association, KOSCA: Korean Super Chain Association, KRSC: Korea Restaurant Supply center, KFMP: Korea federation of Meat Purveyors, KLMC: Korea Livestock Marketing Cooperation, KMPA: Korea Meat Packers Association, Etc in 1999: Meat Processing Cooperative (MPC), Uzoo Industry(UI), Korea Import Meat Distribution association (KIMDA), 2000: MPC, UI, KIMDA, Meat Mart Auction, 2001: former SBS members, wholesaler, large customer, and so on.

Source: M.K. Jeong, et.al, An Analysis on Beef Marketing and Consumption Pattern after the Tariffication in 2001, KREI, 2002.12.

Wholesaler and retailer's purchasing and selling of imported beef

The wholesalers and retailers referred to here are large discount stores (both wholesale and retail) and department stores (retail only). The survey period was from June to July 2002. The number in the sample was 54. The ratio of large discount stores in the survey was 58.2 per cent. This survey was conducted by the Korea Rural Economic Institute (KREI).

Wholesalers who also are involved in retail selling and who purchase imported beef from importers accounted for 44.9 per cent of total purchases. Those who import directly amounted to 18.7 per cent, and those who purchase imported beef from food wholesale companies accounted for 18.7 per cent. Wholesaler's frequency of purchase in a week averaged 3.5 times, and the average purchase amount was 593 kilograms (table 27).

Table 27: Purchases of imported beef by wholesalers

Purchase frequency per week	**%**	**Amount per purchase**	**%**
Less than 2	22.4	Less than 300kg	36.2
2 to 4	40.9	300 to 700kg	34.0
4 to 6	22.4	700 to 1000kg	6.4
More than 6	14.3	More than 1000kg	23.4
Average	3.5 times	Average	593kg

When wholesalers purchase imported beef, the main factors that they consider in beef imported from Australia are freshness and safety (24.1 per cent), and price (17.7 per cent) (table 28). In the case of the United States the main factors aare freshness and safety (20.6 per cent), and quality grade (20.1 per cent). When wholesalers buy Australian beef, it appears that they consider important the quality grade and whether it is in the chilled or frozen state. Packaging was not considered important.

Wholesalers'preference for US beef appeared to be based on its popularity with consumers, and its quality. The quality grade of US beef was mostly Choice (62.3 per cent) and Prime (35.8 per cent), and was regarded as better than Australian beef. When wholesalers purchase imported beef, one problem that they face is freshness

management. Australian beef is regarded more favourably than US beef in this regard because of a perceived greater shelf life.

Table 28: Main factors considered by wholesalers when purchasing imported beef

	Australian beef	USA beef
	%	%
Price	17.7	19.8
Quality grade	16.5	20.1
Chilled or frozen	16.5	12.1
Package	2.5	4.7
Freshness, hygiene, safety	24.1	20.6
Place of origin, brand	8.9	12.1
Other	13.8	10.6
Total	100.0	100.0

In evaluating the qualities of imported beef supplied to wholesalers, Australian beef was rated inferior to US beef in all areas except promotion (table 29). The US rated clearly higher than Australian beef in timely supply of meat cuts, and hygiene control and safety of circulation process. The latter response seem possibly inconsistent with the greater importance wholesalers place on freshness, hygiene and safety when purchasing Australian beef (table 28).

Table 29: Evaluation of supply qualities for imported beef [a]

	Australian beef	USA beef
Cutting beef suitable to Korean food culture	3.6	4.0
Ability of timely cut meat supply	3.3	3.6
Uniformity of quality standard	3.3	3.5
Hygiene control and safety of circulation process	3.4	3.6
Information offer of production, marketing, price etc	3.3	3.4
Ad, sale promotion activity and support	3.5	3.5

[a] Scale: 5 is very good, 4 is good, 3 is middle (not good, not bad), 2 is bad, 1 is very bad.

Based on the survey, it appears that wholesaler's beef purchase strategy is that if quality is good they will purchase beef in the case of Hanwoo beef even if price is high (table 30). In the case of imported beef, if price and quality are about middle or if quality is good and price is high, they will purchase such beef. Beef quality here is taken to mean that the quality grade is high, and meat is fresh and safe. Wholesalers think quality rather than price is important in imported beef as well as in Hanwoo beef. In the current beef grading system, grades are determined mainly according to marbling degree. Some 61.1 per cent of wholesalers considered the current grading system to be suitable to evaluate beef quality, and that the system meets consumer's needs.

Table 30: Wholesaler's beef purchase strategy

	Hanwoo beef	**Imported beef**
	%	**%**
Even if quality drops, if price is cheap, purchase	5.5	5.6
Even if price is high, if quality is good, purchase	78.2	37.8
If price and quality are middle level, purchase	12.7	38.9
Other	3.6	18.5
Total	100.0	100.0

Among wholesalers, a half of them decreased the total volume of Hanwoo beef since import quotas were removed in 2001 (table 31). However about half of wholesalers increased sales of branded Hanwoo beef. In the case of imported beef, 91.8 per cent of wholesalers increased chilled beef sales and two-thirds either decreased or kept constant their sales of frozen beef.

Table 31: Volume of beef sale for wholesalers after moving to tariff only import system in 2001

	Increase	**Decrease**	**Constancy**	**Total**
	%	**%**	**%**	**%**
Hanwoo beef	24.5	52.8	22.6	100.0
Hanwoo beef - Brand	50.0	29.2	20.8	100.0
Imported beef - Frozen	34.6	36.5	28.8	100.0
Imported beef - Chilled	91.8	2.0	6.1	100.0

Source: M.K. Jeong, et.al, An Analysis on Beef Marketing and Consumption Pattern after the Tariffication in 2001, KREI, 2002.12.

The observed behavior of wholesalers contrasts with their stated plans at about the time of beef import liberalisation. About 32 per cent of respondents indicated they would increase sales of Hanwoo beef and 62.1 per cent had plans to increase sales of branded Hanwoo beef (table 32). Some 57.1 per cent of respondents had plans to reduce sales of frozen imported beef, and most (96.0 per cent) had plans to increase sales of chilled imported beef.

With respect to marketing margins of imported beef and Hanwoo beef, most respondents (90.7 per cent) replied that the margin was greater for imported beef than Hanwoo beef, and that the marketing margin of imported beef was, on average, 1.4 times that for Hanwoo beef.

Table 32: Beef sale plans of wholesalers after liberalization

	Increase	**Decrease**	**Constancy**	**Total**
	%	**%**	**%**	**%**
Hanwoo beef	32.1	26.4	41.5	100.0
Hanwoo beef - Brand	62.1	6.9	31.0	100.0
Imported beef - Frozen	28.6	57.1	14.3	100.0
Imported beef - Chilled	96.0	2.0	2.0	100.0

Source: M.K. Jeong, et.al, An Analysis on Beef Marketing and Consumption Pattern after the Tariffication in 2001, KREI, 2002.12.

2. Australia

Cattle marketing

Cattle production

ABARE conducts annually an Australian agricultural and grazing industries survey (AAGIS), which provides a unique farm database combining physical, financial and socioeconomic information.

Of the 70 600 farms represented in the 2001-02 AAGIS, an estimated 18 400 farms were engaged in mainly running beef cattle. These properties are termed 'specialist beef properties'. A further 21 950 properties in the surveyed broadacre industries ran more than 50 beef cattle but were engaged mainly in enterprises other than beef cattle. These properties are termed 'non specialist beef properties'. Specialist beef properties carried 62 per cent of Australia's beef cattle in 2001-02 and non specialist beef properties carried around 27 per cent of the total beef cattle. In addition, properties with fewer than 50 beef cattle (in the surveyed industries) carried a further 1 per cent of the national beef herd.

Overall it is estimated that the survey covered a total of around 23 million beef cattle (around 91 per cent of the national beef herd) in 2001-02. The remaining beef cattle not covered by the survey, or 9 per cent of the national beef herd were on dairy farms, farms with an estimated value of operations less than $22 500, in feedlots, and on properties in other industries not covered by ABARE's surveys.

Dairy farms are an important source of beef cattle for slaughter in southern Australia. Estimates from ABARE's Australian dairy industry survey indicate that around 434 000 beef cattle, or around 2 per cent of the national beef herd, were held on dairy farms in 2001-02. Small beef herds are often run by dairy farmers in conjunction with their dairy herd and many dairy farmers often mate cows from the dairy herd with a beef breed bull. The resultant crossbred calves are reared either as vealers or as yearlings. Farmers in industries other than dairying raise a proportion of these cattle up to slaughter weight. Cull dairy cows and bobby calves (less than a week old) also contribute to the total slaughter of cattle in Australia. In 2001-02, dairy farmers sold an estimated 1.6 million cattle for slaughter comprising 250 000 beef cattle, 1 million bobby calves and 320 000 cull dairy cows. In total, cattle sold for slaughter by dairy farmers accounted for an estimated 18 per cent of the national cattle slaughter in 2001-02.

Cattle sale methods

Over the longer term, changes in the distribution of property size and the distribution of the beef herd across beef production region are likely to have had a significant effect on survey estimates of cattle selling methods. Large producers are more likely to sell over the hooks or over the scales liveweight. Smaller producers, who are largely in the higher rainfall areas of the southern states, are much more likely to use the traditional auction system as opposed to other selling methods. Smaller producers, often with limited quality control systems prefer liveweight and saleyard selling systems where they are not directly penalised for poor carcass quality.

Sale by auction remains the most common method used to sell beef cattle in Australia. But the proportion of beef cattle sold per farm through the auction system has declined over the long term — dropping from as high as 51 per cent in 1996-97 to as low as 42 per cent in 2001-02 (table 33). Auction sales accounted for a relatively large proportion of total beef cattle turn off per property particularly in the southern states because a wide variety of livestock can be sold by this method (for example, stud and store stock, and slaughter cattle). The proportion of auction sales was temporarily higher in 1999-2000 and 2000-01, with the recent increase reflecting a temporary shift by producers, especially in Queensland, to turning off cattle through the auction during a period of higher cattle prices.

The proportion of over the hooks sales has varied from year to year according to producer preferences especially in Queensland. The proportion of over the hooks sales in Australia increased from a low of 24 per cent in 1996-97 to an historical high of 33 per cent in 1998-99. Over the hooks sales declined to 27 per cent in 2001-02 as producers switched to using paddock sales and the auction system to turn off beef cattle.

Table 33: Methods of selling beef cattle [a]

	Units	1996/97	1997/98	1998/99	1999/00	2000/01p	2001/02p
Paddock sales	%	9 (13)	9 (16)	8 (15)	2 (16)	12 (19)	10 (18)
Over the hook sales	%	24 (13)	28 (7)	33 (9)	25 (11)	26 (10)	27 (10)
Auction sales	%	51 (6)	45 (5)	43 (7)	46 (7)	48 (6)	42 (7)
Over the scale	%	8 (19)	11 (15)	7 (27)	9 (30)	8 (20)	12 (21)
Transfers off farm	%	7 (17)	8 (17)	8 (23)	8 (37)	6 (20)	10 (24)

[a] Figures in parentheses are standard errors.

Source: ABARE 2003, Australian Beef Industry,

Cattle sale methods

Paddock sales: Buyers inspect stock on the producer's property, price is negotiated on a dollars per head basis, and ownership is generally transferred at the farm gate. This method is used for stud, store and slaughter sales.

Over the hooks: Cattle are sold direct to the abattoir, with ownership usually transferred at the point of slaughter. Prices offered are based on categories such as age, weight, fat score, etc.

Auction sales: Stock are sold by open auction on either a dollars per head basis or, if stock are weighed, on a cents per kilogram live weight basis. Auction sales are usually conducted at council saleyards, although they may also be held on the farm. Ownership is generally transferred at point of sale. This method is used for stud, store and slaughter sales.

Over the scales: Stock are sold on a cents per kilogram live weight basis. This method is generally used for slaughter sales.

Other sale methods: These include various computer or video aided selling methods. This method is used mainly for slaughter and store cattle sales.

Meat processing

There are around 250–300 meat processors (beef and sheepmeat) in Australia. The largest 25 processors located across Australia process around 60 per cent of production.

Boning (where bones are removed from slaughtered carcass) is done primarily at the abattoir where the animal is killed. A substantial part of Australia's overseas trade in beef is in the form of boneless meat.

Increasingly, large producers are retaining ownership of their beef beyond the farm gate and marketing it under their own brands. Therefore they use toll processors.

Processors are looking to embark increasingly on value-based livestock selling and marketing. Increasing integration up and down the value chain is reducing the role and influence of a separate wholesale function in Australia meat supply.

Because of the large scale of major processing establishments, barriers to new entrants (in terms of required capital, access to export markets and access to sufficient throughput of carcass volumes) are relatively high. A high degree of foreign investment in beef processing is a feature of the Australian industry.

Beef distribution

Fresh beef is sold through major supermarket chains and butcher shops. Of the beef marketed domestically, 68 per cent is marketed through the retail sector, 27 per cent is marketed through the food service sector – 92 per cent of which is through commercial food service outlets, and 8 per cent is distributed through institutional food service providers. The remaining 5 per cent is marketed to the processing sector to be further transformed into other food products.

Supermarkets account for 64 per cent of all retail sales of beef, with the main firms being: Woolworths (around 30 per cent of total domestic sales); Coles (around 20 per cent of sales); and Bilo (a little under 10 per cent of sales). Butcher shops account for 29 per cent of retail sales and 7 per cent of beef sales are retailed through other outlets.

The large retailers possess significant capacity in processing that provides them with scope to improve their control over product quality, packaging and the overall returns from the sale of different parts of the carcass.

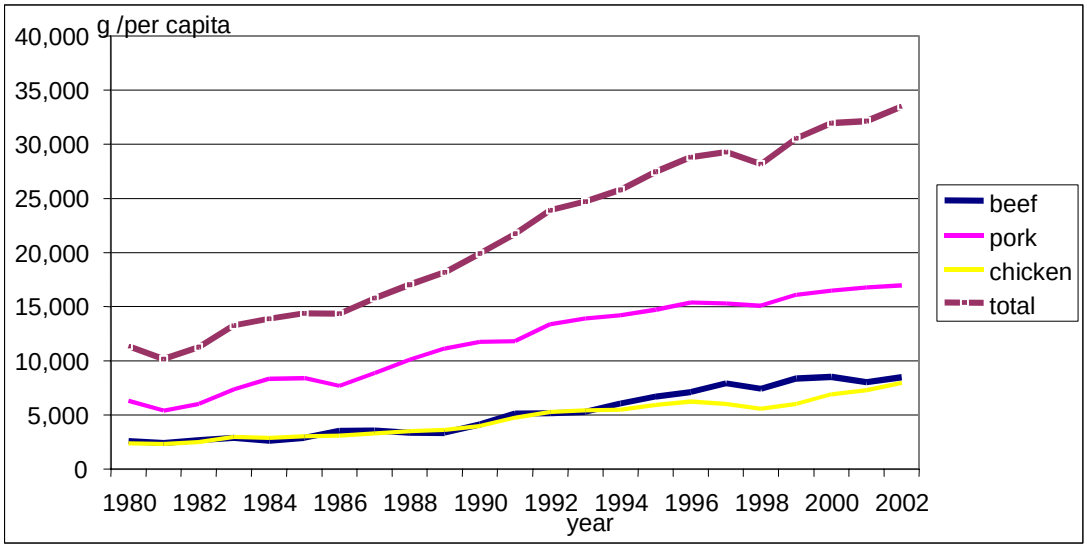
Chapter 5
Consumption trends and consumer preferences

1. Korea

Trends in beef consumption

Total consumption of meat in Korea has increased strongly over the past two decades (figure H). Total consumption of meat per person increased by 5 per cent a year from 11.3kg in 1980 to 33.5kg in 2002. Beef consumption per person in Korea increased from 2.6kg in 1980 to 8.5kg in 2002, a yearly average increase of 5.5 per cent. Pork consumption per person increased from 6.3kg in 1980 to 17.0kg in 2002, a yearly average rate of increase of 4.6 per cent. Chicken consumption per person increased by an average of 5.7 per cent a year from 2.4kg in 1980 to 8.0kg in 2002.

Figure H: Meat consumption per person in Korea, 1980-2002



Examination of rates of consumption increase in the 1980s and 1990s reveals beef consumption accelerated in the latter decade (table 34). Between 1990 and 1999 per person consumption rose by 8.2 per cent a year on average, whilst consumption of pork and chicken increased at slower rate than in the preceding decade.

Table 34: Average rate of increase in meat consumption per year (1980 to 2002)

	Beef	Pork	Chicken	Meats
	%	%	%	%
1980 to 1989	2.9	6.4	4.9	5.4
1990 to 1999	8.2	3.6	4.7	4.9
1980 to 2002	5.5	4.6	5.7	5.0

Such behaviour is not unexpected, as Lee (1999) has estimated that demand for beef is more responsive to income growth than is the case for the other two meats. A one per cent rise in income is estimated to result in consumption of beef rising by 1.3 per cent, chicken by 0.4 per cent, and pork by 0.3 per cent (table 35). Therefore as income increases, the upward trend in beef consumption is expected to continue. Consumption is also sensitive to prices of each meat and of substitute meats. For example, when beef prices rise 1 per cent, beef consumption decreases 0.6 per cent, and when pork prices rise 1 per cent, beef consumption increases 0.22 per cent as demand for pork is reduced.

Lee also found that if imported beef prices rise 1 per cent, imported beef consumption decreases 0.9 per cent; if domestic beef prices rise 1 per cent, imported beef consumption increases 1.4 per cent. When income increases 1 per cent, consumption of imported beef increases 1.1 per cent.

Table 35: Price elasticity of meats [a]

		Price				
		Beef	Pork	Chicken	Other food	Expenditure
Consumption	Beef	-0.621	0.215	0.037	-0.891	1.261
	Pork	0.248	-0.352	0.001	-0.163	0.266
	Chicken	0.210	0.003	-0.294	-0.296	0.378
	Other food	-0.012	-0.015	-0.003	-0.980	1.010

[a] Model: LA/AIDS, data: 1976 to 1998 time series data. Percentage in cunsumption for a one per cent change in price or consumer expenditure.

Source: Lee (1999)

Beef purchase patterns

To analyze consumer's beef purchase patterns, a survey of housewives was conducted in the capital region (Seoul, Kyong-gi) with respondents writing their answers directly in a questionnaire. The survey period was July 1 to 15, 2002. The number in the sample was 700 with a response rate of 86.4 per cent. The survey was conducted by the Korea Rural Economic Institute (KREI).

When consumers purchase beef, the main factors that decide the quality was freshness and safety (42.1 per cent). Other decision factors were whether the beef was imported or Hanwoo (37.7 per cent), and quality grade (9.4 per cent). But Lee (1999) showed that consumers rank color of meat higher than hygiene and safety of meat. From the more recent study, it seems that consumer's interest about hygiene and safety of beef rose very much after the mad-cow disease event in Europe in 2001.

Hanwoo beef

In the 2002 survey, it was found that housewives buy Hanwoo beef once (33.6 per cent) or two times (24.1 per cent) a month by 600g lots. Some 25.6 per cent of housewives buy Hanwoo beef more than four times a month. Most (75.4 per cent) of the Hanwoo beef that households buy is chilled meat. More housewives preferred unpackaged Hanwoo beef to packaged Hanwoo beef. The reason that consumers prefer chilled Hanwoo beef is because chilled meat is fresh (49.6 per cent) and tasty (47.4 per cent). The reason that consumers prefer unpacked meat is because they think that unpacked meat is more fresh and higher quality than packed.

Table 36: Purchase place and consumers' preferred cuts of Hanwoo beef

Purchase place	**%**	**preference cuts (cooked)**	**%**
Large supermarket	20.5	Rib (braised, grilled spare ribs)	18.2
Large discount store	13.2	Chuck (roast)	12.8
Traditional butcher	33.8	Brisket (soup)	29.7
Department store	14.2	Loin (grilled, steak)	16.5
Co-operative shop	16.3	Tender loin (grilled, steak)	11.5
Other	2.0	Other	11.2
Total	100.0	Total	100.0
Number of responses	600	Number of responses	593

Consumers buy Hanwoo beef in traditional butchers (33.8 per cent) and large supermarket (20.5 per cent) mainly (table 36). When consumers buy Hanwoo beef, the cut of beef that they prefered was brisket (29.7 per cent) for soup making and rib (18.2 per cent).

Imported beef

Housewives in 2002 survey mainly bought imported beef once (53.1 per cent) or two times (21.0 per cent) a month by 600g lots. Some 5 per cent of housewives buy imported beef more than four times a month. Most (78.2 per cent) of imported beef that households buy is frozen meat. In terms of intentions, 51.1 per cent of consumers with previous experience in buying chilled meat would buy chilled imported beef again. Housewives preferred more packed imported beef than unpacked imported beef, something that contrasts with their preference for Hanwoo beef.

Consumers buy imported beef mainly in large supermarkets (33.2 per cent) and large discount stores (21.7 per cent) (table 37). When consumers buy imported beef, the cut of beef that they prefer was rib (45.0 per cent) and chuck (13.0 per cent) for roast. The reason that consumers buy imported beef was because the price is cheap (46.6 per cent) and uncertainties about whether Hanwoo beef was correctly labelled or described (26.8 per cent).

Table 37: Purchase place and consumers' preferred cuts of imported beef

Purchase place	**%**	**preference cuts (cooked)**	**%**
Large supermarket	33.2	Rib (braised, grilled spare ribs)	45.0
Large discount store	21.7	Chuck (roast)	13.0
Traditional butcher	19.1	Brisket (soup)	11.2
Department store	16.7	Loin (grilled, steak)	8.4
Brand shop	3.8	Tender loin (grilled, steak)	8.1
Other	5.4	Other	14.2
Total	100.0	Total	100.0
Number of response	497	Number of response	491

Consumption patterns when eating out

In this section, the consumption patterns of households that ate out alone or with family within one month of the survey starting time are discussed.

Where consumer's eating out frequency was more than once a month, the proportion who answered that they ate beef more than once a month when eating out was 10.4 per cent. The proportion who eat out more than once every two months, and answered that the frequency with which they eat beef when eating out was 35.2 per cent. The place that they eat beef was mainly Korean restaurants (50.0 per cent) and Hanwoo beef specialized restaurants (38.0 per cent).

The number who eat beef when eating out was 30.8 per cent on average. Household consumers who answered that they eat beef when they are eating out is more than 60 per cent was 17.4 per cent (table 38). The cut of beef preferred in eating out was ribs (60.3 per cent), followed by loin (15.3 per cent).

Table 38: Weight of eating out in beef consumption and preference cuts at eating out [a]

Weight of eating out in consumption	**%**	**Preference cuts at eating out**	**%**
Less than 20 %	37.0	Rib	60.3
20 to 40 %	27.6	Loin	15.3
40 to 60 %	18.2	Tender loin	11.5
60 to 80 %	10.0	Chuck	5.9
More than 80 %	7.4	Other	7.0
Total	100.0	Total	100.0
Number of response	505	Number of response	427

[a] Average weight of eating out in beef consumption is 30.8%

Willingness to pay

In June, 2002, the beef retail price per 600g was Hanwoo rib 23 400 won, imported rib 5 340 won, first grade Hanwoo loin 32 400 won, second grade Hanwoo loin 27 600 won, imported beef loin 11 340 won. Most consumer regarded Hanwoo beef as expensive relative to imported beef.

Consumers' willingness to pay extra for Hanwoo beef over imported beef was tested using an imported loin price per 600g lot of 10 000 won (prime), and an imported rib price of 5 000 won per 600g lot.

From table 39, it can be seen that consumer's willingness to pay extra for Hanwoo beef was 17 863 won (1.8 times that of imported beef) for first grade loin, 15 175 won (1.5 times) for second grade loin, 13 188 won (1.3 times) for third grade loin, and 9 272 won (1.8 times) for rib. In general, consumer's willingness to pay for Hanwoo beef increases as their income level rises for all classes of beef. However in the case of second and third grade Hanwoo beef, it appears that this preference to pay more according to income level is not as strong as for first grade loin.

Table 39: Willingness to pay for Hanwoo beef by consumer income and beef grade

Income level per month	**Beef grade (Loin)**			
	1st	**2nd**	**3rd**	**Rib**
	won /600g	won /600g	won /600g	won /600g
Less than 1mil1ion won	16 323	14 279	12 617	8 867
	(3 819)	(2 750)	(1 723)	(2 640)
1 to 2 mil1ion won	16 756	14 665	13 046	8 375
	(4 381)	(3 370)	(2 577)	(2 838)
2 to 2.5 mil1ion won	17 883	15 254	13 282	9 741
	(4 679)	(3 283)	(2 366)	(3 812)
2.5 to 3 mil1ion won	18 152	15 336	13 504	9 354
	(4 529)	(3 050)	(2 425)	(3 059)
3 to 4 mil1ion won	18 125	15 388	13 168	9 881
	(4 610)	(3 498)	(2 556)	(3 605)
4 to 5 mil1ion won	18 230	15 230	12 876	9 111
	(4 605)	(3 196)	(2 190)	(2 527)
More than 5 mil1ion won	18 457	15 178	12 971	9 615
	(4 639)	(3 567)	(2 327)	(3 233)
Average	17 863	15 175	13 188	9 272
	(4 642)	(3 330)	(2 475)	(3 311)
Actual market price(June 2002)	32 400	27 600	20 400	23 400

[a] ( ) it is standard deviation.

Consumer's preference for imported beef

The proportion of household consumers with experience in purchasing imported beef was 83.4 per cent, and the proportion of household consumers with intentions to continue to purchase imported beef was 53.7 per cent. As a result household consumers were asked about their intention to purchase imported beef, after explaining to them that the safety of imported beef is becoming a problem because of BSE disease in Europe. Some 32.9 per cent point of household consumers indicated that their intention to purchase imported beef would change.

In the light of the above preference, consumers' purchase intentions for imported beef and the public relations effect on these for different categories of households were analysed using discrete regression analysis. Intentions to purchase imported beef were positively related to consumer ages and level of education, but were negatively related to incomes and the number of persons in the household. Information effect on behavior appeared greatest with consumers having less education and lower incomes. In the case of consumers with more education, intentions to purchase imported beef were high but information (about safety of imported beef) appeared to little effect on intentions to purchase imported beef.

Table 40: Imported beef purchase intention and information impact (Logit)

	Imported beef purchase intention		**Public relation effect**	
Variable	**OLS**	**WLS**	**OLS**	**WLS**
Constant	-0.8738	-0.8760	0.0971	0.0536
	(-47.664)	(-68.707)	(4.880)	(3.940)
Age	0.5758	0.5567	0.3438	0.3399
	(158.008)	(200.020)	(86.961)	(124.854)
Education	0.1678	0.1695	-0.0511	-0.0522
	(52.151)	(75.805)	(-14.633)	(-21.948)
Income	-0.0488	-0.0480	-0.0134	-0.0135
	(-23.843)	(-33.810)	(-6.020)	(-8.909)
Number in household	-0.2263	-0.2156	-0.3704	-0.3541
	(-79.972)	(-104.862)	(-120.634)	(-160.337)
R-square	0.98	0.99	0.98	0.99
D.W	1.79	1.65	1.78	1.77

( ) it is t-value.

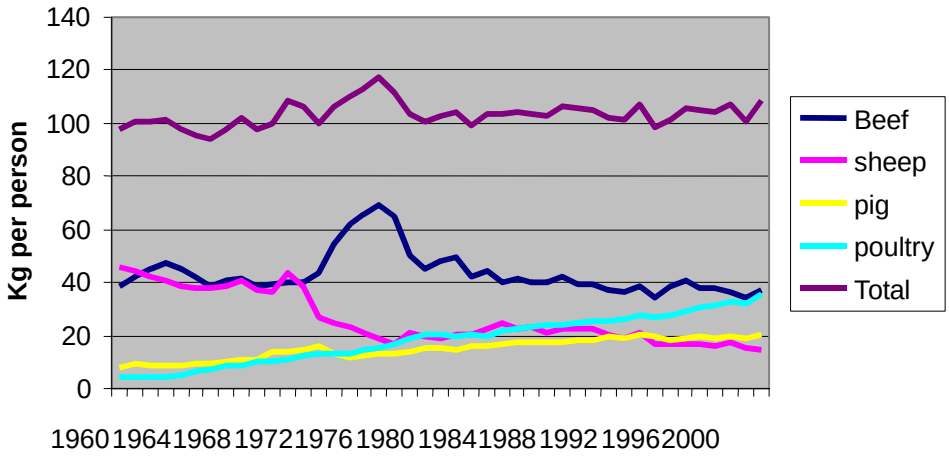
source: M.K, Jeong et al.,2002.12).

2. Australia

There has been no significant trend in total consumption per person of the main meats (beef, sheep meat, pig and poultry meat) in Australia over the past forty years (figure I). Over this period, total consumption has averaged just over 100 kilograms a year per person on a carcass weight basis.

However, the composition of meat consumption has changed as consumers have increased the variety in their diets. In 1960 poultry and pig meat accounted for just 13 per cent of total meat consumption, while in 2002 that proportion had increased to 52 per cent. Conversely, consumption of beef and sheep meat has declined and now makes up less than half of total meat consumption.

Figure I: Australian meat consumption



Poultry meat consumption has increased, from just a few kilograms per person and to now rival beef in volume terms. Over the period 1981–2002, Australian consumption of poultry meat per person grew by 2.7 per cent a year (table 41). Pig meat consumption per person also grew steadily over the period, at 1.4 per cent a year.

Beef consumption per person in Australia declined by 0.9 per cent a year between 1981 and 2002. Beef consumption per person fell in 2001 to the lowest in over forty years as strong export demand helped drive saleyard beef prices to their highest level since 1985 (in real terms), contributing to increased retail prices. However, increased Australian production due to drought, as well as strong consumer demand, in part driven by the increasing popularity of grain fed been in the domestic market, contributed to beef consumption rising in 2002.

It is sheep meat consumption that has decreased most significantly over time, however, as Australians have increased their consumption of pig and poultry meats. In 1960 sheep meat consumption per person was 46 kilograms, while in 2002 consumption had fallen to just 15 kilograms. Sheep meat consumption, particularly mutton, fell rapidly over the 1970s. This was primarily caused by the rapid increase in beef consumption (to a peak of 69 kilograms per person in 1977) as beef prices slumped in the mid-1970s. Over the past two decades, sheep meat consumption has continued to decline, falling by an average of 1.9 per cent a year between 1981 and 2002. Over this period the decline was largely in lamb consumption, which fell from 16 to 11 kilograms per person.

In terms of changes over the time, in the 1970s, beef consumption increased at 2.7 per cent a year, but from the 1980s consumption decreased. from the 1980s consumption of pork and chicken has increased (on average) every year.

Table 41: Average rate of increase in Australian meat consumption per person

	Beef	**Lamb**	**Pork**	**Chicken**	**Meats**
	%	**%**	**%**	**%**	**%**
1970 to 1979	2.7	-6.0	-0.1	6.7	0.4
1980 to 1989	-0.7	1.5	1.5	2.0	0.7
1990 to 1999	-0.4	-3.8	0.5	2.6	-0.1
1980 to 2002	-0.9	-1.2	1.4	2.7	0.2

The meat consumption patterns discussed here are the result of the interaction of a range of factors. Changing retail meat price relativities are usually regarded as the single most important determinant of consumption of the different meats. Over the period 1981–2002 there were considerable changes in the relative retail prices of the different meats. For instance, real retail prices for poultry (for which consumption per person grew the most over the past four decades) declined at a faster rate than those for the other meats.

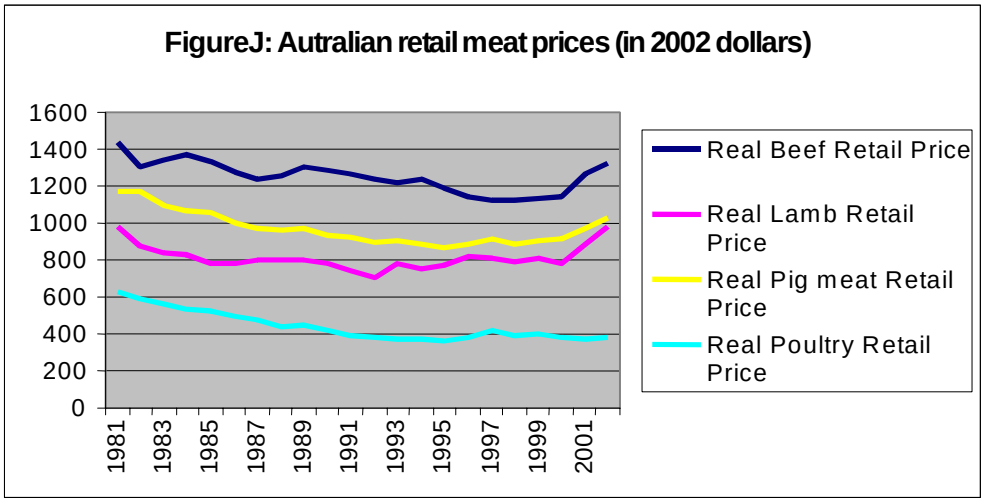


Figure J: Australian retail meat prices (in 2002 dollars)

Figure I: Australian meat consumption

Other factors affecting meat consumption in Australia over this period include consumer incomes, changes in tastes and meal preparation techniques, growth of the food service sector and changing population demographics.

The sensitivity of meat consumption in Australia to price and income changes has been analysed. The model utilized in the analysis was an AIDS (Almost Ideal Demand System) model. Meat data by year from 1972 to 2002 were used. The estimated results had a system weighted R-square of 0.492, and estimated coefficients for own price and income (expenditure) were statistically significant.

Table 42: Estimated coefficients for Australian meat demand using an AIDS model [a b c]

		Weight		
		Beef	**Pork**	**Chicken**
Constant		-0.0028	0.0023	0.0033***
	Beef	-0.0950**	-0.0206	-0.0337***
Price	**Lamb**	0.1493***	-0.0355	-0.0106
	Pork	-0.0206	0.0762***	-0.0201
	Chicken	-0.0337***	-0.0201	0.0643***
Expenditure		0.1299*	-0.1338***	-0.0574**
D.W		2.49	2.54	2.49

[a] Model: LA/AIDS, data: 1972 to 2002 time series data.

[b] System weighted R-square 0.492.

[c] Statistical significant level *** is 1%, ** is 5%, * is 10%.

Demand elasticities calculated using the estimated parameters from table 42 are given in table 43 below. When income increases 1 per cent, beef demand is estimated to increase 1.2 per cent, lamb 1.4 per cent, chicken 0.5 per cent, and pork 0.2 per cent. Therefore, if income increases over time, beef consumption can be expected to rise. When beef price rises 1 per cent, beef consumption decreases on estimated 1.3 per cent, and when lamb price rises 1 per cent, beef consumption increases 0.23 per cent by substituting beef for lamb. Changes in pork and chicken prices appear to have almost no effect on beef demand.

Table 43: Price and income elasticity of Australia meats [a]

		Price				
		Beef	**Lamb**	**Pork**	**Chicken**	**Expenditure**
	Beef	-1.304	0.233	-0.079	-0.088	1.238
Consumption	**Lamb**	0.672	-1.660	-0.267	-0.101	1.355
	Pork	0.305	-0.337	-0.423	-0.031	0.221
	Chicken	-0.022	-0.299	-0.384	-0.360	0.480

[a] Marshallian demand function.

Demand change that excludes the effect of incomes on price changes (Hicksian demand function) was also calculated (table 44). In this case, when beef price rises 1 per cent, beef demand decreases 0.6 per cent, and when lamb price rises 1 per cent, beef demand increases 0.45 per cent as beef is substituted for lamb. Chicken price changes have little

effect on beef demand, but a 1per cent rise in pork prices result in 0.13 per cent rise in beef consumption.

Table 44: Price and income elasticity of Australian meats [a]

		Price				
		Beef	**Lamb**	**Pork**	**Chicken**	**Expenditure**
Consumption	**Beef**	-0.629	0.446	0.134	0.049	1.238
	Lamb	1.411	-1.426	-0.034	0.049	1.355
	Pork	0.425	-0.034	-0.385	-0.006	0.221
	Chicken	0.240	0.077	-0.010	-0.307	0.480

[a] Income compensated demand function (Hicksian demand function).

Chapter 6
International Trade

Australia exports beef to over 100 countries with Japan and the United States being the dominant markets. Together, these two countries accounted for 76 per cent of exports in 2003. South Korea is Australia's third most important market to which 62 000 tonnes of beef (shipped weight) were exported in calendar 2003 (table 45).

The United States exceeded Japan in the 2003 calendar year as Australia's major beef export market in volume terms, accounting for 43 per cent of beef and veal exports. Japan took 33 per cent of Australia's beef and veal exports, South Korea 7 per cent, Chinese Taipei 4 per cent, Canada 3 per cent, Southeast Asia 4 per cent and all other countries 6 per cent in 2003.

Australian beef and veal exports expanded from the mid 1990s to reach a record 947 000 tonnes in 2001. Exports fell in 2002 to around 920 000 tonnes as the discovery of BSE (Bovine spongiform encephalopathy or 'mad cow' disease) in Japan resulted in reduced demand for beef in Japan. In 2003 Australia's exports were reduced even further to 841 000 tonnes with the commencement of herd rebuilding after the widespread drought of the previous year, reduced the availability of beef for export.

In recent years more and more of Australia's beef production has been exported. In 1996, 59 per cent of Australia's beef production was exported (exports measured in

carcass weight equivalent). In 1999 this rose to 64 per cent and in 2001 exports increased further to around 68 per cent of Australian beef and veal production. In 2003 the export share fell to around 64 per cent.

1. Major export markets for Australian beef

Japan

Beef demand in Japan has recovered reasonably strongly following the discovery of BSE in the Japanese cattle herd on 10 September 2001. The initial incidents of BSE resulted in a slump in domestic Japanese consumption of beef with consumption falling by around 50 per cent after the first BSE case. However, the more recent detected cases of BSE appear to have had little or no impact on demand. This is because the Japanese government has gone to considerable lengths to guarantee consumer safety with all slaughter cattle tested for BSE. With this more stringent inspection regime, additional discoveries had been expected.

Table 45: Australian exports of beef and veal, by destination [a]

	Unit	1996	1997	1998	1999	2000	2001	2002	2003
Beef and veal									
Americas									
Canada	kt	28.7	35.0	38.6	43.3	41.5	50.9	82.9	29.0
United States	kt	179.9	220.9	285.2	291.1	352.3	397.7	385.9	368.0
Asia									
Chinese Taipei	kt	23.8	35.0	33.7	34.7	28.6	29.1	34.4	31.1
Hong Kong, China	kt	3.8	3.4	6.2	3.2	3.6	3.1	2.9	2.1
Indonesia	kt	16.6	24.3	1.7	11.6	13.1	9.6	14.6	13.0
Japan	kt	280.5	311.7	320.9	313.3	325.7	319.1	237.0	279.3
Korea, Rep. of	kt	57.6	60.9	33.5	77.9	73.3	56.8	80.2	62.3
Malaysia–Singapore	kt	11.7	12.7	11.0	10.6	9.4	8.8	11.3	10.2
Philippines	kt	20.5	26.9	20.2	20.4	14.3	19.7	12.9	8.6
Europe									
European Union	kt	11.9	10.8	11.0	8.9	5.6	6.5	6.5	5.5
CIS	kt	3.2	9.6	24.5	8.4	1.4	5.3	1.4	0.3
Eastern Europe	kt	4.7	8.9	18.7	2.5	2.1	0.4	3.0	1.4
Middle East									
Kuwait	kt	0.9	0.7	1.4	0.5	0.1	1.1	0.4	2.5
Saudi Arabia	kt	2.3	1.1	2.6	1.0	0.5	5.0	2.3	1.8
United Arab Emirates	kt	1.5	0.9	1.6	0.6	0.9	2.0	1.7	1.2
Oceania									
New Zealand	kt	3.7	1.8	1.8	1.6	3.1	1.4	6.8	3.5
Pacific Isles	kt	3.1	3.1	3.1	2.1	2.3	2.5	2.7	2.1
Papua New Guinea	kt	12.8	10.8	7.0	8.2	7.1	4.8	4.3	2.3
Total beef and veal	kt	694.8	801.7	855.3	868.0	901.6	946.6	920.4	840.9

[a] Fresh, chilled or frozen, in shipped weight.

Source: Agriculture, Fisheries and Forestry - Australia, *Export Statistics, Livestock Exports,* Canberra.

The recovery in domestic Japanese demand has also flowed into improved demand for imported beef. Exports to Japan for 2003 were 18 per cent higher than exports to Japan in 2002, but they were still 14 per cent below exports in 2000, the year prior to the first BSE discoveries.

This increase in imports led to the Japanese 'safeguard' tariff on imported product being invoked in August 2003 with the result that the beef import tariff rose from 38.5 per cent to the WTO bound rate of 50 per cent. For this to occur, cumulative quarterly imports had to have increased by more than 17 per cent on the same period a year earlier. The tariff increase applied from 1 August 2003 to the end of the Japanese fiscal year on 31 March 2004. The safeguard measures can be applied separately to chilled and frozen beef and on this occasion only chilled beef imports triggered the safeguard measures, with imports of frozen beef coming in below the trigger level.

United States

The United States is the largest market in volume terms for Australian beef with the majority of the trade being in frozen boneless beef for manufacturing. With the downturn in beef demand in Japan, the United States also became the highest value market for Australian beef in 2002. During the year, Australia exported 386 000 tonnes (shipped weight) of beef and veal to the United States (table 45), with these exports valued at around $1.6 billion.

In 2003, Australian beef exports to the United States fell to 368 000 tonnes, down 5 per cent from the previous year. With Australia recovering from the drought, many producers would have been withholding cows from market to rebuild herds in the latter part of the year, reducing beef supplies for export.

There is likely to be some disruption to the trade with the United States in the short term, however, with the discovery of BSE in the US cattle herd in late December 2003. With markets all over the world temporarily closed to US beef exports, US demand for Australian beef imports is likely to fall as US beef previously destined for export is diverted onto the US domestic market.

The United States has reopened its market to Uruguayan fresh boneless beef following the declaration by the OIE (Office International des Epizooties) at the 71st general session in May 2003 that Uruguay is free of foot and mouth disease (with vaccination). Uruguay has access to a US tariff rate quota of 20 000 tonnes. Uruguay's re-entry to the US market is not expected to affect on Australian exports to the United States given the relative size of Uruguay's quota (Australia's quota is 378 214 tonnes).

Republic of Korea

Korea is the third largest export market for Australia beef – after Japan and the United States. Australian beef exports to Korea increased from 58 000 tonnes (shipped weight) in 1996 to 80 000 tonnes in 2002.

The proportion of grain fed beef in total exports increased from 3 per cent to 13 per cent between 1996-97 and 2002-03 (table 46). The amount of chilled grain fed beef in the trade increased rapidly. Chilled grain fed beef exports to Korea rose by 97 per cent in fiscal 2002-03 to around 3 900 tonnes.

Exports to South Korea fell to 62 000 tonnes in 2003 (table 45). This was 23 per cent lower than the previous year. With reduced Australian beef production constraining exports to all markets in 2003 and stronger demand from Japan, product is likely to have been diverted to Japan as well as the Australian domestic market.

Australia can be expected to experience stronger competition in north Asian markets if South American beef producers such as Uruguay, Argentina and Brazil manage to gain entry to FMD sensitive Pacific rim beef markets such as Japan and South Korea.

Table 46: Australia beef export to Korea [a]

	Units	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03 [b]
Total(A)	tonnes	55 512	43 590	72 893	68 866	56 738	71 141	81 572 (15)
- Chilled(B)	tonnes	20	7	106	390	963	3 310	6 367 (92)
- Frozen	tonnes	55 492	43 583	72 877	68 477	55 774	67 831	72 204 (11)
Grass fed	tonnes	53 612	41 319	70 706	63 328	51 658	63 609	70 776 (11)
- Chilled	tonnes	19	6	91	314	567	1 309	2 425 (85)
- Frozen	tonnes	53 594	41 313	70 615	63 014	51 091	62 300	68 350 (10)
Grain fed(C)	tonnes	1 900	2 271	2 277	5 538	5 079	7 532	10 795 (43)
- Chilled	tonnes	2	1	15	76	396	2 001	3 941 (97)
- Frozen	tonnes	1 898	2 270	2 263	5 462	4 683	5 531	6 854 (24)
B/A	%	0.04	0.02	0.15	0.56	1.70	4.65	7.81
C/A	%	3.42	5.21	3.12	8.04	8.95	10.59	13.23

[a]. In shipped weight.

[b] Percentage increasing in comparison with 2001/02 is shown in parentheses.

Source: DAFF(AU)

Canada

Australian beef exports to Canada were sharply lower in 2003 at around 29 000 tonnes, compared with 83 000 tonnes in 2002. Following the discovery in May 2003 of a single case of BSE in a beef cow, many countries immediately closed their borders to beef imports from Canada. Countries closing off across to Canadian beef included the United States, Canada's largest beef and live cattle customer. With more domestically produced beef staying within Canada, prices fell and the market became less attractive to overseas suppliers such as Australia.

Chinese Taipei

Chinese Taipei is Australia's fifth largest beef export market and accounted for 4 per cent of beef and veal exports in 2003. Australian exports to this market fell by 10 per

cent from to 34 400 tonnes exported in 2002, to around 31 100 tonnes in 2003. In April 2003, Australia formed an international beef alliance with the United States, Canada and New Zealand to conduct a campaign aimed at increasing beef consumption in Chinese Taipei.

2. Composition of Australian beef exports

Only 25 per cent of Australia's beef exports are shipped chilled. Japan is by far Australia's largest market for chilled beef, taking 149 000 tonnes (shipped weight) of chilled beef in 2003 or 71 per cent of Australia's chilled beef exports (table 47). The remaining 75 per cent of Australian beef and veal exports are shipped in frozen form with the United States taking 54 per cent of frozen beef exports in 2003. Japan is second, taking 21 per cent of frozen exports in 2003 and the Republic of Korea is the third largest market for frozen beef, taking 9 per cent in 2003.

Table 47: Composition of Australian beef and veal exports, 2003 [a]

	Chilled beef exports tonnes	Share of total chilled exports %	Frozen beef exports tonnes	Share of total frozen exports %
Japan	148 698	71.4	130 619	20.6
United States	27 358	13.1	340 652	53.8
Republic of Korea	6 465	3.1	55 824	8.8
Canada	5 437	2.6	23 566	3.7
Chinese Taipei	1 151	0.6	29 68	4.7
Total beef and veal exports	208 178		632 761	

[a] In shipped weight.
Source: Agriculture, Fisheries and Forestry - Australia, *Export Statistics, Livestock Exports,* Canberra.

Japan

Over 35 per cent of the chilled beef exported to Japan is sent as full sets while the remainder is in a variety of cuts (table 48). Frozen shipments to Japan are dominated by trimmings and forequarter and hindquarter cuts.

Table 48: Composition of Australian beef and veal exports to Japan, 2003 [a]

Cuts	Chilled beef exports tonnes	Share of total chilled beef exports %	Cuts	Frozen beef exports tonnes	Share of total frozen beef exports %
Full sets	52 700	35.4	Trimmings	48 716	37.3
Blade or clod	12 923	8.7	Fore and hind quarters	30 362	23.2
Chuck	14 589	9.8	Chuck and blade	14 458	11.1
Striploin	8 112	5.5	Brisket	20 097	15.4
Silverside	7 018	4.7	Other	16 987	13.0
Brisket	14 197	9.5			
Topside	6 415	4.3			
Thick flank	4 916	3.3			
Rump	6 083	4.1			
Other	21 745	14.6			

[a] In shipped weight.
*Source:*Agriculture, Fisheries and Forestry - Australia, *Export Statistics, Livestock Exports, Canberra*

United States

Only 7 per cent of exports to the United States are in chilled form, but the US market for chilled beef has been expanding over recent years. The most popular product is tenderloin (28 per cent of chilled beef exports to the United States). A range of other cuts is also exported to the United States in chilled form (table 49).

Table 49: Composition of Australian beef and veal exports to United States, 2003 [a]

Cuts	Share of total chilled beef exports %	Cuts	Share of total frozen beef exports %
Tenderloin	27.7	Manufacturing	66.7
Inside	24.9	Inside	6.0
Striploin	6.9	Shin / shank	5.7
Cube roll	5.7	Outside flat	3.0
Knuckle	5.0	Knuckle	2.0
Flap meat	5.0	Other	16.6
Rostbiff	4.4		

[a] In shipped weight.
Source: Agriculture, Fisheries and Forestry - Australia, Export statistics, livestock Exports, Canberra

The remaining 93 per cent of exports are in frozen form and, of this, two thirds is manufacturing beef (grinding beef) for the beef patty market.

Republic of Korea

The two most popular chilled cuts sent from Australia to South Korea are tenderloin and chuck, that together account for 54 per cent of chilled beef exports to this market (table 50). While chilled exports comprised only 10 per cent of total Australian beef exports to Korea in 2003, they are expanding rapidly. In 2001 chilled exports only accounted for 2 per cent of total beef exports to this market. The remaining 90 per cent of exports to Korea in 2003 were in frozen form. These comprised a wide range of cuts with quarters, trimmings and short ribs being most popular.

Table 50: Composition of Australian beef and veal exports to Korea, 2003 [a]

Cuts	Share of total chilled beef exports %	Cuts	Share of total frozen beef exports %
Tenderloin	29.3	Bone-in quarters	17.9
Chuck	24.3	Trimmings	17.3
Cube roll	12.6	Short ribs	11.8
Blade or clod	9.7	Shin / shank	8.2
Japan full sets	5.7	Chuck roll	6.4
Striploin	4.9	Brisket	4.6
Other	13.5	Blade / clod	4.3
		Eye round	3.6
		Bone-in neck meat	2.9
		Other	23.0

[a] In shipped weight.

Source: Agriculture, Fisheries and Forestry - Australia, *Export Statistics, Livestock Exports,* Canberra.

3. Live cattle exports

The Australian live cattle export trade is the largest in the world. In 2003 Australia exported around 684 000 slaughter cattle (table 51). These cattle were exported by sea from 17 Australian ports to destinations in 22 countries around the world – most of these in south east Asia and the Middle East. Indonesia was by far the major market, accounting for 55 per cent of the total trade.

Growth in the Australian live cattle trade has been variable, with economic conditions in importing countries and exchange rates along with variable consumer demand, overseas competition and political and market access all affecting performance from year to year (Shiell 2003). The Asian economic downturn resulted in live cattle exports falling by 34 per cent in 1998, with shipments to Indonesia (falling 90 per cent) being severely affected. The BSE outbreak in Europe affected consumer confidence in the Philippines in 2001, with exports to that market falling 56 per cent on the previous year.

Despite the inherent fluctuations in the trading environment, strong demand for live animals in preference to carcass meat underpins Australia's live cattle export trade in some markets. In many Asian markets, particularly, the fresh (non-refrigerated) meat market is the only option available to consumers and Australia is well positioned to provide the livestock capable of meeting this consumer demand because of its capacity to supply and its geographic position in relation to markets in Asia, particularly (Shiell 2003).

A specialised industry has developed in northern Australia to supply cattle for the live trade. Escalation of south east Asian demand for live feeder cattle in the early to mid-1990s influenced the breeding management systems of many northern Australian properties. Traditional breeding and fattening systems that typically turned off bullocks at around 4–5 years of age were converted to enterprises with a higher proportion of breeders and turning cattle off at a much younger 2–3 years of age.

Markets for live cattle

Live cattle exports increased rapidly in the mid-1990s, encouraged by a growing Asian feedlot industry. The Australian live cattle export trade has been dominated by south east Asia and north Africa with the largest buyers being Indonesia, Egypt, the Philippines and Malaysia (figure K). Other important markets include Saudi Arabia and Israel with Brunei, Japan and Mexico also importing significant quantities of Australian cattle.

When the live cattle trade to south east Asia was disrupted by the Asian economic downturn in 1998, the Middle East and north African region grew in importance as a market for Australian live cattle exports. Apart from the strong growth in trade to Egypt, markets that have emerged over the past five years include Israel, Jordan, Palestine and Saudi Arabia.

Figure K: Live cattle exports, by destination

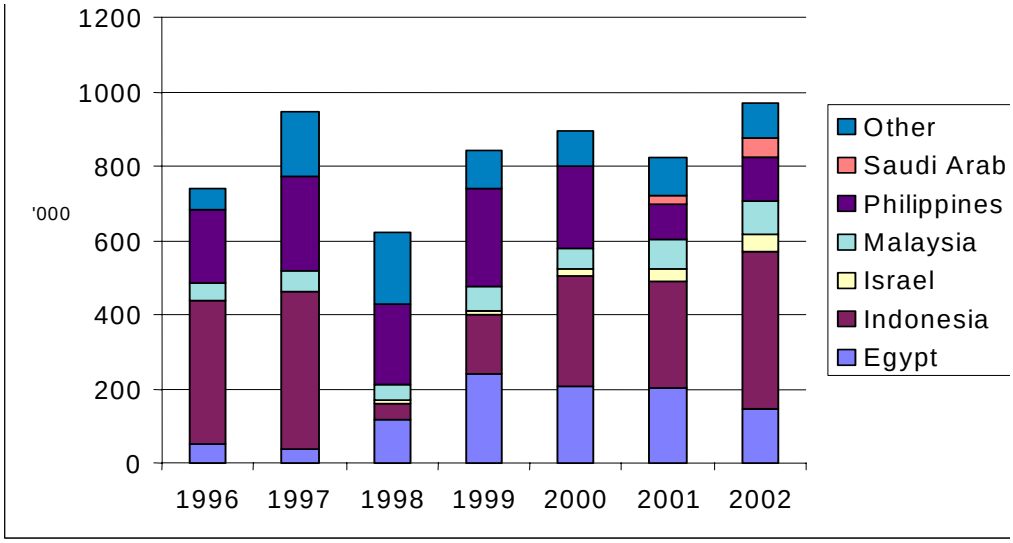


Table 51: Australian exports of live cattle, by destination

	Unit	1996	1997	1998	1999	2000	2001	2002	2003
Slaughter cattle									
Asia									
Indonesia	'000	386.5	421.7	41.2	159.5	296.7	287.7	425.6	375.8
Japan	'000	14.9	19.4	17.0	12.4	14.4	17.4	14.0	21.0
Malaysia	'000	44.0	57.5	42.7	65.2	56.5	77.5	90.9	86.4
Philippines	'000	200.0	253.8	215.9	266.1	223.8	97.4	113.1	74.5
Middle East									
Egypt	'000	52.2	37.5	119.6	240.5	207.6	203.2	143.9	7.6
Israel	'000	1.0	0.0	8.7	8.7	15.8	32.6	47.8	43.2
Jordan	'000	4.3	2.5	18.1	37.6	40.7	13.2	4.4	23.1
Libya	'000	10.0	105.3	120.7	23.1	0.0	0.0	0.0	0.0
Saudi Arabia	'000	0.0	1.1	0.0	0.0	0.0	20.8	54.3	15.7
Total	'000	724.1	910.5	597.0	833.7	887.0	797.9	951.1	683.7
Breeding cattle	'000	17.0	35.2	24.1	10.6	9.0	24.6	16.8	84.9
Total live cattle	'000	741.1	945.7	621.1	844.2	896.0	822.5	967.9	768.6

Source: ABS, *International Trade,* electronic data service, cat. no. 5464.0, Canberra.

4. Economics of importing live cattle for fattening in Korea

The Korean cattle breeding herd was greatly reduced after the financial crisis in 1997, and the Korean beef self sufficiency rate was only about 35 per cent in 2003. Because of a continuous rise in calf prices, returns to farmer engaged in fattening enterprises could be reduced.

With high calf prices in Korea, farmers have been considering importing live cattle for fattening from Australia and the United States. Korea has imported Australian live cattle on several occasions since 2001. Recently, however, Australian saleyard cattle prices have been relatively high as turn-off decreased following the easing of drought conditions in many regions. The rise in the Australia dollar and higher prices of feeder cattle in Australia mean the returns from importing feeder cattle for fattening has declined.

As to the future potential for trade in Australian live cattle to Korea for fattening, several questions arise. Most important are likely to be the cost to Korean farmers of purchasing and transporting these stock from Australia, and the returns that can be expected from the sale of animals once grown out to the required slaughter weight in Korea.

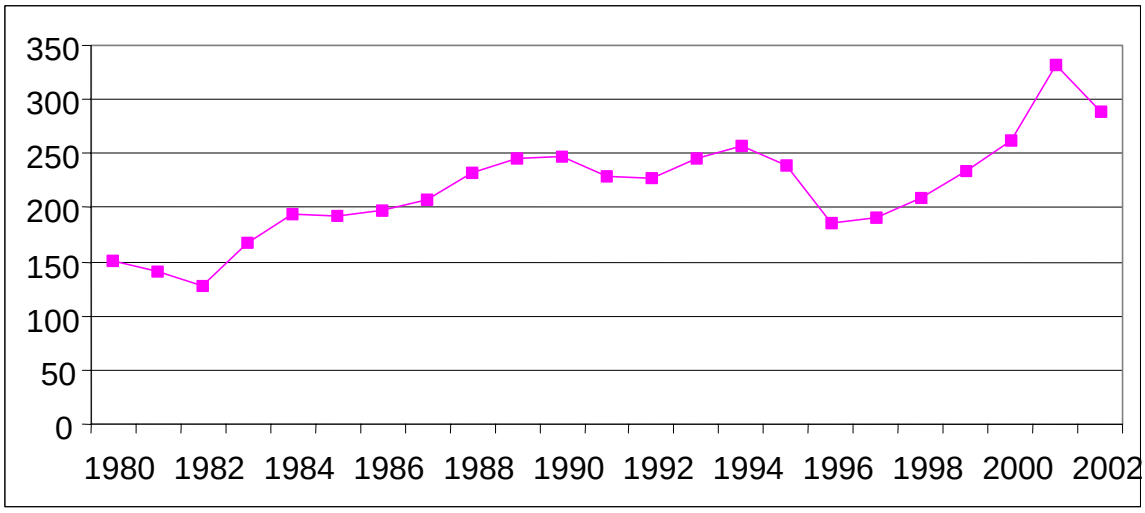
In considering the above questions, assumptions were needed for several factors — including exchange rate fluctuations between Australia and Korea and for variability in Australian domestic cattle prices. In the discussion that follows, the estimated relative returns from Korean native cattle fattening and the fattening of Australian live cattle in Korea are compared.

Costs of importing live cattle to Korea

Australian saleyard prices of cattle have fluctuated year to year but with a rising trend (in nominal terms) since 1980 (figure L). Important factors that influence these price fluctuations include such things as seasonal and pasture conditions, demand for Australian beef in the export and domestic markets, and exchange rate changes.

For this analysis, average prices in 2002 were used. The Australian saleyard price of yearling cattle averaged $2.89 per kg dressed weight in 2002. They averaged $3.31 per kg in 2001 and $2.62 a kg in 2000.

Figure L: Australian saleyard price of cattle: live weight



Korean livestock farmers' preferred live weight of cattle for fattening is more than 400 kg. Economic returns are regarded as best when such animals are grown to a weight of over 600 kg before slaughtering. The shortest fattening period to achieve that weight with imported live cattle is around six months.

The various components used in the cost calculations are listed in table 51. In undertaking the analysis, a live cattle average purchase weight in Australia of 420kg and a price of $1.59 per kilogram live weight (which is about 55 per cent of the average dressed weight price of $2.89 a kg for yearlings in 2002) was used.

Transport costs per live animal exported from Australia to Korea were assumed to be $0.40 per kilogram (live weight). The insurance premium was 1.2 per cent of the C&F price. The exchange rate was assumed to be 700 won per Australia dollar.

The beef tariff in 2002 was 40.8 per cent of the landed cost. Health and quarantine inspection costs on arrival of 130 000 won per beast were used for the analysis. An additional cost of 5 per cent of the post inspection cost of the animal was added to cover incidental costs that may arise in the purchase, shipment and import process. An importer's profit margin of 10 per cent of the total cost (arrival price + tariff + inspection cost + incidental expenses) was added to give a final price to the Korean farmer.

All up, Korean farmers purchasing Australia live cattle at 420kg live weight in 2002, would have paid around one million won per animal (table 52).

Table 52: Estimated costs of live cattle imports from Australia (2002)

	Unit	Value
Purchase price (A)	dollar/head	668
Transport cost (B)	dollar/head	168
C&F landed price (C=A+B)	dollar/head	836
Insurance (D)	dollar/head	10
Landed cost (C+D)	dollar/head	846
Exchange rate	won/dollar	700
Arrival price at port	won/head	592 081
Tariff (40.8%)	won/head	241 569
Inspection cost	won/head	130 000
Incidental expenses	won/head	29 604
Importer profit margin	won/head	99 325
Total cost to Korean farmer (at port)	won/head	1 092 579

Feed costs in raising native Korean calves

In 2002, feed costs were estimated for a Korean livestock farmer who buys a calf of 141 kg and then fattening it during 502 days before selling at 593kg weight.

Feed supplies were 4 749kg with a cost per head of 929 818 won. Feed cost per kg were 195.8 won, concentrates 238.7 won per kg, and roughage 98.8 won per kg (table 53).

Table 53: Cost of feed in fattening beef cattle in Korea, 2002 (per head)

	Supplies (A)	Value (B)	Value per kg (B/A)
	kg	won	won
Feed	4 749	929 818	195.8
- Concentrates	3 293	785 926	238.7
- Roughage	1 456	143 892	98.8

Source: NAPQMS 2003, Livestock Production Cost 2002.

Comparing returns from fattening imported and domestic cattle

In order to analyse the returns from fattening imported live cattle relative to Korean native cattle, the same unit costs of feed used in fattening Korean native cattle were assumed. Details of the estimates are in table 54.

Table 54: Estimated returns from feeding imported and Korean native cattle, 2002

	Unit	Live cattle imported	Korean native cattle
Live weight imported or purchased weight	kg	420	141
Price purchased at farm (A)	won	1 092 579	1 622 620
Daily gained weight	kg	1.25	0.9
Raising days	day	180	502
Market weight			
- Live weight	kg	650	593
- Carcass weight	kg	402	367
- Carcass weight / live weight	%	61.8	61.8
Daily feed supplies			
- Concentrates	kg/day	9.0	6.6
- Roughage	kg/day	1.5	2.9
Feed cost (B)	won/head	413 370	934 652
- Concentrates	won/head	386 694	790 819
- Roughage	won/head	26 676	143 833
Other cost (C)	won/head	74 989	209 135
Operating cost (D=A+B+C)	won/head	1 580 917	2 766 407
Family labor and capital interest (E)	won/head	235 910	657 926
Production cost (F=D+E)	won/head	1 816 827	3 424 333
Market price (G)			
- Live weight	won/head	-	4 659 293
- Dressed weight	won/head	2 614 798	-
Income (G-D)	won/head	1 033 880	1 892 886
- Income a month	won/head	172 313	113 121
Net income (G-F)	won/head	797 971	1 234 960
- Net income a month	won/head	132 995	73 802

Daily weight gain for imported cattle was assumed to be 1.25 kg, compared with a daily gain of 0.9kg for Hanwoo stock. Because imported live cattle weigh over 400kg, daily concentrate requirements for imported live cattle are more than for Korean native cattle.

Daily feed requirements for imported cattle were assumed to be 9.0kg of concentrates and 1.5 kg of roughage, compared with 6.6kg and 2.9kg respectively for Hanwoo cattle.

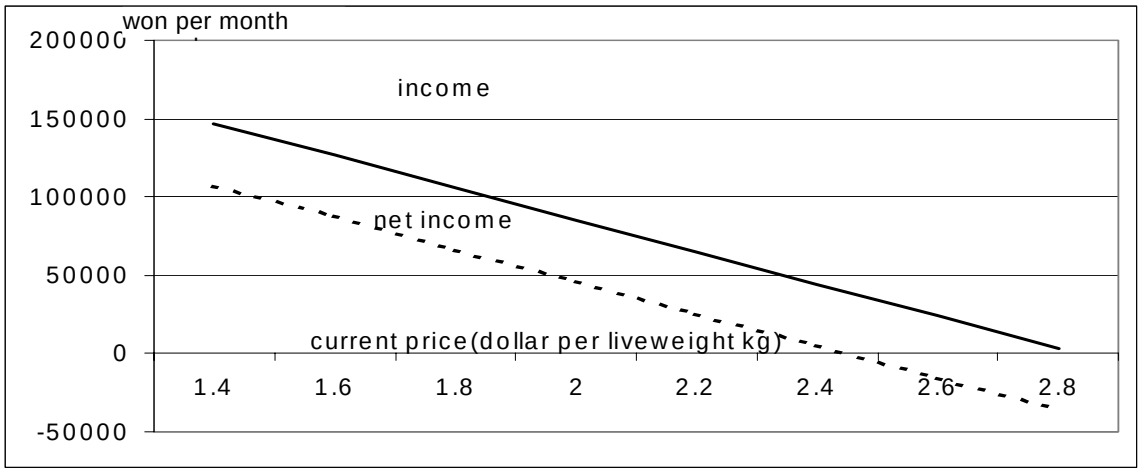
If imported cattle are fattened over 6 months, the meat is classified as domestic beef, although the calf may be from Australia. About 60 per cent of dairy bullocks slaughtered have a grade of B3. Assuming the carcass of imported cattle has a grade of B3, a price of 6,500 won per kg (dressed weight) was used — the same as for dairy bullock in 2002.

On the basis of the above assumptions, an analysis of farm incomes would suggest that the returns from imported live cattle are around 170 000 won per month, higher than Korean native cattle at around 110 000 won per month (table 54).

Sensitivity of farm incomes to prices and exchange rates

Returns to Korean farmers from feeding imported cattle can vary considerably as exchange rates and cattle prices vary. The above analysis was on the basis of an Australian yearling cattle price of $2.89 per kg dressed weight (A$1.59/kg live weight) and an exchange rate of 700 won per Australian dollar.

Figure M: Sensitivity of Korean farm incomes of change in Australian live cattle price [a]



[a] Exchange rate: 900 won per AUdollar

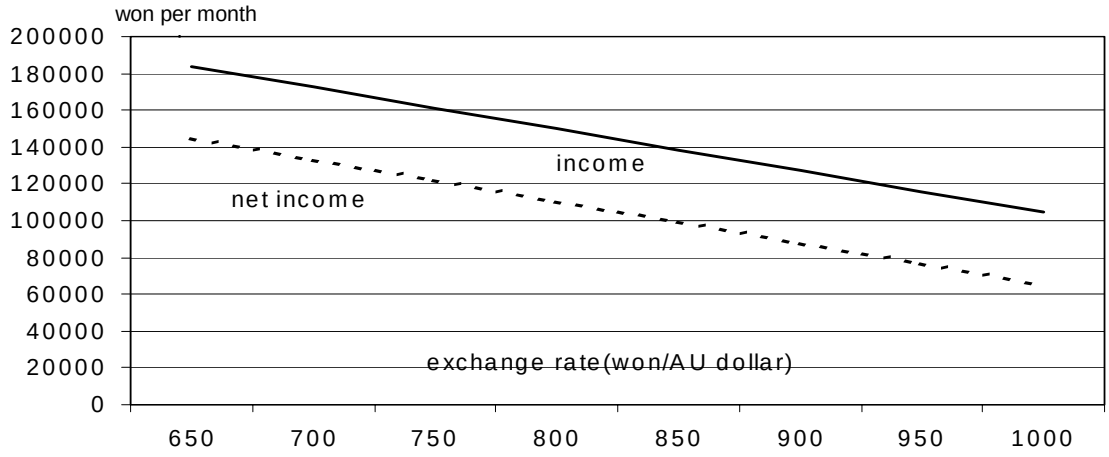
With an exchange rate of 900 won per Australian dollar, and an Australian live cattle price of over A$1.70 per kg live weight, Korean native cattle fattening would have been

more profitable than the fattening of imported live cattle –returning around 110 000 won per month in 2002 (figure M).

Exchange rate changes and returns from fattening imported live cattle

If it is assumed that Australian live cattle prices are $1.59 per kg live weight, and the exchange rate is over 950 won per Australian dollar, Korean native cattle fattening is more profitable than fattening of imported live cattle (figure N).

Figure N: Korean farm income change by exchange rate [a]



[a] Current price: 2.89 dollar/ dressed weight kg , 2002

Because of limits to Korean inspection capacity, the number of live cattle that could be imported from Australia is estimated as 10,000 head a year. Quarantine capacity is limited at any one time to Seoul 381 head, Pusan 290 head, Inchon 182 head, and Cheju 176 head.

Allowing for cleaning time, quarantine period, and so on, the turnover of stock through the above facilities would be about 10 times a year. In order to overcome the inspection capacity limitation in Korea, development of the trade in live cattle between Korea and Australia could potentially benefit from the positioning of a quarantine officer from Korea in Australia.

5. Prospects for growth in trade between Australia and Korea

Economic factors important to the future development of the trade in both beef and live cattle from Australia to Korea will include developments in beef supply and demand in each country, exchange rate movements, and trade barriers.

In the case of live cattle, it seems that variability in exchange rates and live cattle prices in Australia have potential to greatly affect the profitability of Korean fatteners of imported live cattle. Nevertheless, there is probably scope for at least a small trade of this kind to develop.

One possibility for live trade, albeit not explored in this paper is the development of a trade in native Hanwoo cattle from Australia to Korea. This would necessitate the introduction of Hanwoo cattle into Australia to form a breeding base. Experience with the introduction of Japanese Wagyu cattle into Australia suggests this would take a long time because of the need to meet Australian quarantine standards aimed at keeping exotic diseases out of the domestic herd.

Trade in beef to Korea will be assisted by further reductions in the tariff on imports, and by Australian producers turning off more beef specifically aimed at meeting the needs of the Korean market. In particular, it seems that with a preference for grain fed beef in Korea, and strong competition from imported north American beef, Australian supplies may need to focus more heavily on the production of this type of product if they are to grow their market share.

One perceived advantage for Australian beef in the Korean market may be its ‘clean-green’ image. Presumably, part of any marketing strategy in the Korean market will involve the highlighting of this particular attribute of Australian beef.

Chapter 7
Policy in beef marketing and trade

1. Korea

The Korean beef industry has undergone a great deal of change over the last decade. After the Uruguay Round agricultural negotiation reached a compromise agreement in 1993, some liberalisation in the Korean beef import market occurred with quotas and tariffs. The Korean beef market has been liberalized to a tariff only restraint on imports since January 2001 - as the result of the Uruguay Round agreement on agriculture.

Despite these changes, Korean beef producers still receive a large proportion of their incomes from government programs. For example, the OECD (2003) has estimated that Korea producers received around 73 per cent of their incomes from various government support measures in 2002. This figure is well above the average producer support estimate of 34 per cent for beef and veal producers in the OECD as whole in 2002.

Before the financial crisis occurred in Korea in 1997, the main policy thrust for beef was to cut-down production costs through large scale production of high quality beef. But because the breeding base was reduced greatly in the wake of the financial crisis, the main policy direction for beef production was toward on expanded herd base. Also, as the Korean beef market was liberalized and the consumer's concern about hygiene, safety, and freshness in beef rose, the main policy has been concentrated on high quality branded beef production that is differentiated from imported beef, and on the improvement of hygiene and safety in beef marketing.

Production supports

Korea uses few policy measures to support beef production. These are listed in table 55, along with expenditure in recent years. One measure is the Calf Breeding Stabilisation Scheme. The scheme's purpose is to promote a stable business environment for the breeding of Korean native cattle (Hanwoo). Under this scheme, farmers who have contracted with the local livestock cooperative receive a payment equivalent to the difference between the average price of calves in the market and the stabilisation price.

As of 2002, the stabilisation price level is 1.2 million won and the ceiling of the deficiency payment is 250 000 won.

Another policy measure is the Incentive Payment for Keeping Mature Cows for Additional Calves. As its name suggests, this payment was introduced to ensure an ample supply of calves by discouraging the slaughter of cows. Farmers are eligible to receive 200 000 won for each cow that has given birth three or four times and 300 000 won for each cow that has given birth five times or more. This policy was abolished in 2003.

The Incentive Payment for Castration is intended to improve the quality of beef by promoting the castration of Hanwoo bulls. Farmers receive 200 000 won per steer that has been castrated. This policy was also abolished in 2003. But from July 2004, farmer can receive compensation assistance when grade of cattle sent out to market is high.

Table 55: Measures to support beef production [a]

	1992-99	2000	2001	2002	2003p
Calf breeding stabilization scheme	12 226	62 739	72 920	60 097	57 834
Incentive payment for keeping mature cows	-	6 630	32 300	27 275	20 281
Incentive payment for castration	-	9 586	25 276	20 300	10 400
Incentive payment for good cattle production	7 115	4 104	3 853	-	-

[a] Unit is million won.

Source: MAF-Korea.

Quality control

Hazard Analysis Critical Control Points (HACCP) was applied compulsorily to all slaughter houses from July 2003 in order to raise hygiene levels. According to related draft revisions to the law, hygiene standards will be created and their use will be made mandatory for storage and transportation as well as for the slaughter and processing of livestock. According to this, latest development, meat shops can also meet HACCP standards on a voluntary basis.

To raise transparency in circulation of domestic beef, a traceability system from production, slaughter, and marketing of beef, using barcode or electron chip, will be introduced by 2004, and will be compulsory by 2005. Traceability is in the process of being enforced compulsorily in Australia, and Japan.

According to a livestock law revision (27.12.2003.), a livestock registration system is to be introduced from 2004. Cattle farmers who have a cattle shed with an area that

exceeds 300m2 must be registered. Livestock registrants must meet minimum standards for cattle shed area per herd.

Trade

Korea's Uruguay Round commitment also scheduled a reduction in barrier to beef imports. From 2001, a tariff only was applied to beef and quotas were disallowed. The final bound tariff rate has been set at 40 per cent in 2004. The tariff rate after 2004 will be decided following the result of the Doha Development Agenda negotiation.

The Korean beef market was further liberalised in January 2001. The Livestock Products Marketing Organisation, which formerly had the sole right to import beef, is no longer active in this area — anyone who wants to import beef can do so, subject to the tariff. Live cattle can also now be imported.

2. Australia

Australia does not have price support or other major support structures for the beef industry or its main domestic competitors. The OECD (2003) has estimated that Australian beef producers received around 4 per cent of their incomes from government programs. This supports was mainly to assist with industry research and development.

The Commonwealth government facilitates the marketing, promotion, industry coordination and research activities of Meat and Livestock Australia (MLA) by collecting transactions levies from industry participants. The rationale for government involvement in research is to provide coordination of economically worthwhile activities that would not be carried out by individual small operators and to fund research that has a broader set of beneficiaries than participants in the beef industry.

Chapter 8
Conclusions

Beef industry is very important for both Korea and Australia. The contribution of livestock production to Korean agriculture is 25.6 per cent, and the value of Korea native cattle (Hanwoo) share of total livestock was 20.5 per cent in 2001. The contribution of livestock production to Australian agriculture is 55 per cent, and Australian beef cattle and sheep industries contribute close 40 per cent of gross value of all agricultural production in 2002-03.

The Korean beef industry went through a significant downturn following the financial crisis of 1997, with the number of native Hanwoo cattle falling sharply. After reaching a peak of 2.8 million in 1996, the number of cattle halved to 1.4 million in 2002. During 2002 and 2003 Australia faced the most severe and widespread drought since at least 1982-83. Drought induced turnoff and increased cattle deaths resulted in beef cattle numbers falling by 1.2 million or around 5 per cent from 24.7 million at the end of June 2002 to 23.5 million at the end of June 2003.

Economic recovery in more recent years, coupled with the move to a tariff only system of restriction on imports, means Korean consumes of beef are turning more to imports to satisfy their requirements. Korean consumers prefer grain fed beef to grass fed beef. Korean consumer's interest about hygiene and safety of beef rose very much after the mad-cow disease event in Europe in 2001. When Korean consumers buy imported beef, the cut of beef that they prefer is rib and chuck for roast.

Trade in beef between the two countries is affected by import barriers, exchange rate relativities, economic growth and its effect on consumer demand, as well as supply developments in both Korea and Australia. Australia exported 841 000 tonnes, around 68 per cent of beef and veal production in 2003. Korea was the third largest export market - after Japan and the United states, but exports to Korea reached only 62 000 tonnes (shipped weight) in 2003.

Increases in Australia exports to Korea as a result of the ban on imports of US beef is likely to be more modest than the increases in shipments to Japan as exporters focus their attention on the Japanese market. But increasing consumer demand over time driven by relatively strong economic growth and limited response from domestic beef producers in Korea will result in increasing demand for imported beef. This can be expected to result in a higher Australian exports being shipped to Korea.

In terms of future development, it seems likely that mutual dependence of Australia and Korea in the area of beef supply, demand and trade will grow over time. Although there may be some scope for development of trade in live animals from Australia to Korea – for fattening and slaughter in the latter country – it seems likely that the backbone of the trading relationship will remain in meat. Further reductions in trade barriers in Korea and increased Australian production of beef aligned to Korean specifications will be important to the further development of that trade.

한·호 쇠고기 시장과 무역 전망

한국과 호주는 국제 쇠고기 시장, 특히 환태평양 쇠고기 무역에 있어 중요한 역할을 담당하고 있다. 한국은 쇠고기 무역에 있어 주요 수입국이며, 호주는 주요 수출국이다. 양국의 상호 무역의 중요성은 시간이 지남에 따라 더욱 증가하고 있다. 따라서 양국의 쇠고기 산업에 대한 이해의 증진은 향후 두 국가의 쇠고기 무역발전에 매우 중요하다.

쇠고기 수요와 공급

한국의 쇠고기 생산은 1997년 외환 위기 이후 급격히 감소하였다. 외환 위기는 소비자의 소득에도 영향을 크게 미쳤으며, 결과적으로 쇠고기 소비의 감소를 가져왔다. 더욱이 2001년 쇠고기 시장의 관세화에 따른 시장 상황의 불확실성은 많은 농가들로 하여금 쇠고기 생산을 중단하도록 만들었다. 2002년까지 5년 동안 사육두수의 감소로 국내산 쇠고기 공급은 감소한 반면 경제 상황이 호전되고 수요가 회복됨에 따라 쇠고기 수입량이 증가하였으며, 소와 송아지 가격은 크게 상승하였다.

2004년 쇠고기 생산은 전년 대비 8.6% 증가하고 향후 몇 년 동안 지속적으로 증가할 것으로 추정된다. 2003년 말 미국의 광우병 발생으로 2004년부터 미국산 쇠고기 수입이 금지됨에 따라 2004년 수입물량은 전년 대비 절반 수준인 15만 톤으로 추정된다.

호주는 전국적인 가뭄으로 물과 목초가 부족해짐에 따라 사육두수가 감소하였다. 그러나 2003-004년 기후가 호전되고 목초 이용이 용이해짐에 따라 농가들은 사육두수 확충을 위해 소 출하를 줄이고 입식을 증가시키고 있어 쇠고기 공급량은 감소할 것으로 추정된다. 그러나 사육두수가 가뭄 발생 전 수준으로 회복되는 데에는 다소 시간이 걸릴 것으로 보인다.

미국의 광우병 발생은 일본과 미국 등 호주의 주요 수출 시장에도 영향을 미치고 있다. 2003-04년 한국 시장으로의 수출량은 호주의 생산량 감소와 다른 수출 시장의 강한 수요 때문에 전년보다 다소 낮은 68,000톤으로 추정된다. 미국의 광우병 발생에 따른 쇠고기 수출 금지로 호주 쇠고기 수출업자들이 일본 시장에 관심을 집중함에 따라 2004-05년 한국으로 수출량도 전년보다 약간 증가한 72,000톤이 될 것으로 전망된다. 중장기적으로 호주 국내 수요 증가의 한계와 쇠고기 생산의 증가로 수출 시장에 대한 의존은 계속 증가할 것으로 보인다.

육용우 생산과 유통

한국 농업 생산액에서 축산업생산이 차지하는 비중은 1995년 23%에서 2001년 25.6%로 증가하였다. 그러나 축산업 생산액에서 차지하는 한우의 비중은 1995년 30%에서 2001년 21%로 감소하였다. 한우 사육 농가 수는 2002년 21만 2천 호이며, 사육두수는 140만 두로 지난 7년 동안 절반가까이 감소하였다.

2001년 소 출하 물량의 도매시장 경유 비율은 32.2%였다. 도매시장 경유 비율은 대형 유통업체들의 산지와 소비지 간 직거래 비중이 커짐에 따라 1990년부터 낮아졌으나 2000년 이후 다시 상승하기 시작하였다. 최근 도매시장 경유 비율이 높아진 이유는 공급량이 감소함에 따라 경매 참가자가 제시하는 가격이 높게 형성되었기 때문이다. 한국 식육 소매점수는 1980년 16,296개에서 1997년 52,000개로 증가하였으나 2000년 48,315개로 감소하였다. 국내산 쇠고기와 수입 쇠고기의 구분판매제가 2001년 폐지됨에 따라 모든 식육소매점에서 국내산 쇠고기와 수입 쇠고기를 동시에 판매할 수 있게 되었다.

호주 축산업은 농촌경제의 가장 중요한 산업 중 하나이다. 농업 생산액에서 축산업이 차지하는 비중은 1996-97년 43%에서 2002-03년 55%로 증가하였으며, 축산업 생산액에서 육용우가 차지하는 비중은 같은 기간에 30%에서 37%로 증가하였다. 2002년 6월 기준 육용우 농가 수는 약 7만호이며, 사육두수는

2,470만 두이다. 육용우 두수는 1976년 2,980만 두로 최고점에 달한 이후 1984년 1940만 두까지 감소하였으며, 그 후 계속 증가 추세에 있다.

호주의 쇠고기 산업은 다양한 국내외 시장 수요를 충족시키기 위하여 많은 생산 체계를 발전시켜 왔다. 생산자들은 국내 고기시장 수요를 위해 어린 소를 출하하며, 곡물 급여를 하는 비육장 수요를 위해 저장우를 출하한다. 그리고 제조용 쇠고기 시장을 위해 늙은 암소를 출하한다. 목표시장에 따라 비육장의 곡물 급여 기간을 달리하여 출하한다. 호주 내수시장으로 출하되는 소는 60-70일 비육되며, 한국 시장으로 수출하기 위해 비육되는 소는 70-120일, 일본 시장용은 300일까지 비육된다.

호주의 경매시장을 통한 육용우의 판매는 가장 일반적인 거래 형태이다. 그러나 경매시장 경유 유통비율은 1996-97년 51%에서 2001-02년 42%로 낮아졌다. 규모별 거래형태에 있어 대규모 생산 농가는 지육 형태의 후크(hooks)방식을 선호하고 있으며, 육질 관리에 한계를 가지는 소규모 농가는 생체의 문전거래를 선호한다.

호주 국내에서 쇠고기 유통은 슈퍼마켓과 정육점 등 소매 부문을 통하여 68%가 이루어지며, 식품 서비스 부분을 통하여 27%가 이루어진다. 그리고 나머지 5%는 가공 부분을 통하여 유통된다. 소매 부문에서 슈퍼마켓이 쇠고기 소매의 64%, 정육점이 29%를 차지한다.

한국의 육류 소비는 지난 20년 동안 꾸준히 증가하여 왔다. 1인당 육류 소비량은 정육 기준 1980년 11kg에서 2002년 34kg으로 연간 5%씩 증가하였으며, 쇠고기 소비량은 이 기간에 3kg에서 9kg으로 연간 5.5%씩 증가하였다.

호주의 육류 1인당 소비량은 지난 40년간 큰 변화는 없었다. 1인당 육류 소비량은 지육 기준으로 100kg을 약간 상회하는 수준이었다. 그러나 육류 소비구성은 다양하게 변화하였다. 1981-2002년, 1인당 쇠고기 소비량은 48kg에서 37kg으로 감소하였고, 돼지고기는 15kg에서 21kg으로, 닭고기는 25kg에서 35kg으로 증가하였다.

쇠고기 무역과 전망

호주는 주요 시장인 일본과 미국을 포함하여 세계 100국 이상에 쇠고기를 수출하고 있다. 2003년 일본과 미국이 호주 수출량의 76%를 차지한다. 한국은

호

주의 세 번째로 중요한 시장이며, 2003년 호주는 한국 시장으로 쇠고기 62,000톤을 수출하였다. 호주의 쇠고기 생산량 중 수출 비중은 해마다 증가 추세이다. 생산 대비 수출 비중은 1994년 64%에서 2001년 68%로 증가하였으며, 2003년 호주달러가 평가절상됨에 따라 수출 비중은 64%로 다소 감소하였다.

호주는 세계에서 가장 큰 생우 수출국이기도 하다. 2003년 호주는 도축용 소 68만 4천두를 아시아와 중동 지역에 수출하였다. 인도네시아는 지금까지 호주의 가장 큰 생우 수출 시장이며, 호주 생우 수출 물량의 55%를 수입하고 있다. 한국도 2001년 생우 수입이 자유화됨에 따라 호주산 생우 수입이 몇 차례 이루어졌다. 한국 축산농가의 비육용 생우 수입의 채산성은 2002년 한우농가 소득을 기준으로 할 때 호주 산지가격이 1kg당 1.59달러로 주어져 있을 때 호주달러를 기준으로 환율이 950원을 상회하면 생우 수입보다 한우를 비육하는 것이 더 유리한 것으로 분석되었다.

한국과 호주 간 쇠고기를 비롯한 생우 무역의 발전에 있어 요소는 각국의 쇠고기 수급, 환율 변동, 무역장벽 등이 될 것이다. 따라서 호주의 생우 가격과 환율 변동은 생우를 수입하는 한국 비육농가의 수익성에 매우 중요한 영향을 미친다. 한국과 호주 간 생우 무역 발전의 가능성 중 하나로 호주에서 한우 품종을 도입하여 한우 생산기반을 구축하고 한국으로 한우를 수출하는 것을 검토할 수 있다. 한국 시장에서 호주산 쇠고기의 중요한 이점 중 하나는 ‘clean-green’ 이미지이다. 이러한 이미지는 호주가 한국 시장에서 쇠고기를 판매하는 데에 있어 중요한 마케팅 전략의 한 부분으로 자리를 잡을 것으로 전망된다.

향후 쇠고기 공급, 수요, 그리고 무역 분야의 한국과 호주 간 상호 의존성은 시간이 지남에 따라 증가할 것으로 보인다. 비록 양국 간 생우 무역의 발전의 범위는 넓지 않더라도 양국 무역관계의 뼈대는 쇠고기에 있다. 한국의 쇠고기 수입관세의 인하와 호주의 한국 시장 수요에 목표를 둔 쇠고기 생산은 양국 쇠고기 무역의 발전에 있어 더욱 중요해질 것으로 전망된다.

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