

A Preliminary Economic Analysis of Live Cattle Imports in Korea [\[1\]](#)

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Abstract

Korea is short of resources to raise more cattle to meet its increasing demand for beef. One of the options to fill the demand-supply gap is to import live cattle. However, Korea's live cattle imports have been small and exporting live cattle to Korea remains difficult. In this study, we examine the current status of Korea's live cattle trade and assess the impacts of such trade on cattle farmers, beef distribution systems, animal disease control and the national economy. Our analyses show that live cattle imports tend to generate economic benefits for participants in the beef cattle industry while the negative effects on Korea's native cattle industry are negligible. Policy issues concerning live cattle trade are discussed.

Key words: live cattle, trade policy, Korea

1. Introduction

Australia is a major supplier of live cattle to Korea. It is most likely that Australia will continue to be the major supplier. Currently, Korea's live cattle imports are small and exporting live cattle to Korea remains difficult. However, Korea's live cattle import requirements can be potentially sizeable. As such, the dynamics of live cattle trade in Korea deserve close attention from all who are concerned about Australia's live cattle exports. Changes in Korea's live cattle trade should also interest those engaged in beef

exports as any significant increase in live cattle imports by Korea may have an important impact on its demand for beef imports.

Literature on Korea's live cattle trade has been very scarce. Contributing to this scarcity is (1) short experience of Korea's live cattle trade - live cattle import for meat purpose has only started since 2001 and (2) political sensitivity surrounding this issue. This paper represents an early attempt to address issues related to Korea's live cattle trade. We examine the current status of Korea's live cattle trade and assess the impacts of such trade on cattle farmers, beef distribution systems, animal disease control and the national economy.

In the next section, we highlight the current status of live cattle trade in Korea and the causes that have resulted in live cattle trade difficulties. Section 3 addresses various concerns in relation to live cattle imports and demonstrates that live cattle imports render various benefits to the economy. In Section 4, we pinpoint some key external factors that may affect Korea's future live cattle trade. In Section 5, some internal factors, i.e., some policy and industry related issues that affect Korea's live cattle trade, are discussed. The last section concludes the paper.

2. Live Cattle Imports in Korea

Korea's live cattle import for meat purposes started in early 2001. In the Uruguay Round negotiations which were concluded at the end of 1993, Korea agreed to liberalise the import of beef and live cattle from 2001. From 1 January 2001, beef and live cattle import were allowed to enter Korea at a tariff rate of 41.2% in 2001.[\[2\]](#) The tariff rate was scheduled to be reduced to be 40% after 2004.

From 2001 till April 2006, a total of 9363 head of cattle were imported to Korea. Table 1 shows that majority of the live cattle imports are from Australia. The USA is the only other country that has also exported a small number of live cattle to Korea.

Given that the majority of the live cattle are imported from Australia, we will use the imports from Australia as an example to show how live cattle are imported and channeled through to cattle farmers for rearing.

Live cattle imports into Korea are carried out by private traders. Before actually conducting the imports, contracts are signed with farmers, clarifying who are the farm applicants, the allocation of cattle head, and the sale price. A down-payment is also required. This process is aimed to secure funds as well as prevent the rejection of live cattle after being imported.[\[3\]](#)

When purchasing the live cattle in Australia, the average weight of a head is about 350kg. Most are Black Angus or Murray Gray-type bullocks, whose age is below 24 months or which have four or fewer front teeth. For the export quarantine process, the purchased live cattle are isolated for four months. When they are uploaded on the ship for export, the average weight per head is about 477kg.

Table 1. Korea's Live Cattle Imports: Head Count by Year and Country Origin

Year	Heads of Imported Cattle by Country			Note
	Australia	US	Subtotal	
2001	1322	-	1322	660 heads in May, 662 heads in July
2002	563	-	563	563 heads in October
2003	2492	753	3245	836 heads in March, 829 heads in April, 827 heads in June, 753 heads in December
2004	1692	-	1692	842 heads in February, 850 heads in March
2005	851	-	851	851 heads in May
2006 (up to April)	1690	-	1690	850 heads in January, 840 heads in April
Total	8610	753	9363	

Source: National Veterinary Research & Quarantine Service (2006), *Annual Report on Quarantine and Inspection*.

Live cattle are transported via the livestock transportation-dedicated ship. Normally, 15 days are taken for the delivery. During the delivery, a few head die for various reasons, e.g., stresses due to the small and confined space. The cattle that survive the transportation stress generally lose several kilograms, but they recover their weight soon after their arrival in Korea.

The imported live cattle stay in quarantine for some 15 days. When they pass the quarantine examination, 40% of the unit import price is charged as tariff. When the tariff is paid, the cattle are allowed to enter Korea, being handed over to cattle-raising farmers.

Currently, there are two quarantine stations in Korea: the Yeongjong-do Quarantine Station and the Bulnodong Quarantine Station. The maximum number of animals that can be imported at any one point of time by these two stations is 850 head. A station can be used about ten times a year. Thus, presently Korea's maximum live cattle importing capacity is about 8,500 head a year.

If imported live cattle are slaughtered within six months of their arrival, the beef produced cannot be treated as domestic product but as imported beef. If they are reared on Korean farms for six months or longer, then, according to government regulations (Notice No. 2005-50 of the Ministry of Agriculture and Forestry, July 1, 2005), the beef produced can be marketed as domestically-produced beef. However, the name of the exporting country should be indicated. In this way, imported live cattle beef is differentiated from the Korean native beef.

To date, beef from imported live cattle has not been sold at the auction market where native beef is sold. Rather, the live cattle importers re-purchase the cattle from farmers for slaughtering and meat distribution. Currently, the imported live cattle volume is very small, and the consumer preference is generally not in favour of beef from imported live cattle. Subsequently, distribution merchants are not very keen to distribute beef from imported live cattle.

Live cattle imports into Korea have not been without difficulties. In 2001 when the market was first opened to live cattle imports for meat purposes, a total of 1,338 head were imported. This was met with severe protests from cattle farmers. This was partly due to the need to protect their native cattle industry and partly triggered by the discovery of bluetongue antibodies in several animals during the quarantine process. The imported live cattle were not sold to farmers who were prepared to buy. Instead, the National Agricultural Cooperatives took them over (The Livestock Times, 30 May 2001). In 2002, as a result of the 2001 incident, only 563 head of live cattle were imported and this time the cattle were purchased by farmers. The process of purchasing imported live cattle was each time painful due to the conflicts between Korean native cattle farmers and those who buy imported live cattle. In 2006 the opposition to live cattle imports had another surge due to the likely increased imports of live cattle and the plan to import New Zealand cows called Limousine that look similar to Korean native cattle. The plan to import New Zealand cows was later cancelled by the importer (The Livestock Times, 17 July 2006).

Despite the strong resistance by some farmers, Korea needs to import live cattle, chiefly due to the domestic demand for beef. The demand for beef products by Korean consumers has increased rapidly in recent decades (from 1.2kg per capita in 1970 to 8.5kg per capita in 2000, growing at over 7% per annum) (Choi, *et al.* 2002). This consumption is projected to increase further to 10.3kg per capita by 2012 (KREI, 2007). On the other hand, Korea has a serious shortage of resources to raise increased numbers of cattle. Any further exploitation of the land to increase the number of cattle will lead to serious environmental problems. Consequently, unless the Koreans choose to reduce beef consumption, they are left with two choices: import beef or import live cattle.

Imported beef accounts for about 50-60% of total beef consumption in Korea. In the early years of this decade, Korea's total beef consumption hit 400,000 tonnes (NACF, 2006). The consumption level dropped to some extent in 2004 and 2005 due to reduced imports from the USA because of the occurrence of BSE in 2003 in the USA.

While beef imports have been high (around 300,000 tonnes per annum, excluding 2004 and 2005), live cattle imports to Korea remain very low. The supply of beef from

imported live cattle is negligible. For example, in 2004 and 2005, the number of slaughtered imported live cattle accounted for far less than 0.5% of the total number of slaughtered cattle.

Although the quantity of live cattle imports to Korea is small, it remains very difficult to import live cattle to Korea, due to the continued resistance of the Korean native cattle producers. Some major concerns over live cattle import include: it will have a negative impact on Korean native cattle farm income; it may lead to illegal distribution of imported beef as native beef; and it may lead to the spread of foreign livestock diseases.

Interestingly, so far very limited effort has been devoted to studying Korea's live cattle import issues and validating the industry's concerns. Jeong *et al.* (2004) is the only exception. Jeong *et al.* compared the rearing of imported Australian live cattle with the rearing of Korean native cattle in terms of farm household income using the 2002 data. They concluded that the monthly average income of the imported live cattle farm households is KRW 1.7 million, which is higher than the monthly average income of the Korean native cattle farm households, being KRW 1.1 million. However, if the Australian dollar is appreciated and one Australian dollar is traded at KRW 950 or higher, the rearing of Korean native cattle will be more profitable than the rearing of imported Australian cattle. Jeong *et al.*, however, suffer from data deficiency: they were unable to use the actual import price and rearing data for their analysis.

In the following section, we will use actual import price data and farm cattle rearing data to examine economic benefits for farmers that raise imported live cattle and compare these with the benefits gained by native cattle producers. In addition, we will also address the concerns the Korean native industry has.

3. Live Cattle Imports: Economic Values and Impacts on Domestic Cattle Industry

If live cattle imports do not deliver net economic values to Korea, then this trade will not take place in the first instance. If the imports do generate net economic values, other effects of the imports, especially on the native cattle industry, should also be brought into consideration so that the overall welfare to Korea can be assessed. Hence, in this section, we first determine whether rearing imported live cattle renders farmers an income higher than that of raising native Hanwoo cattle and whether importing live cattle makes a contribution to Korea's GDP that is higher than that of the import of beef. Then, we will focus our analysis on whether live cattle imports will have a negative impact on the domestic native cattle industry, considering the impacts on Hanwoo producers' income, disease control and beef distribution channels.

3.1 Earnings of Imported Live Cattle Producers

One of the controversies concerning the live cattle imports is whether rearing imported live cattle will benefit cattle farmers. Let us use the rearing of live cattle imported from

Australia as an example to determine the income of the farmers and compare their income with that of Korean native cattle producers.

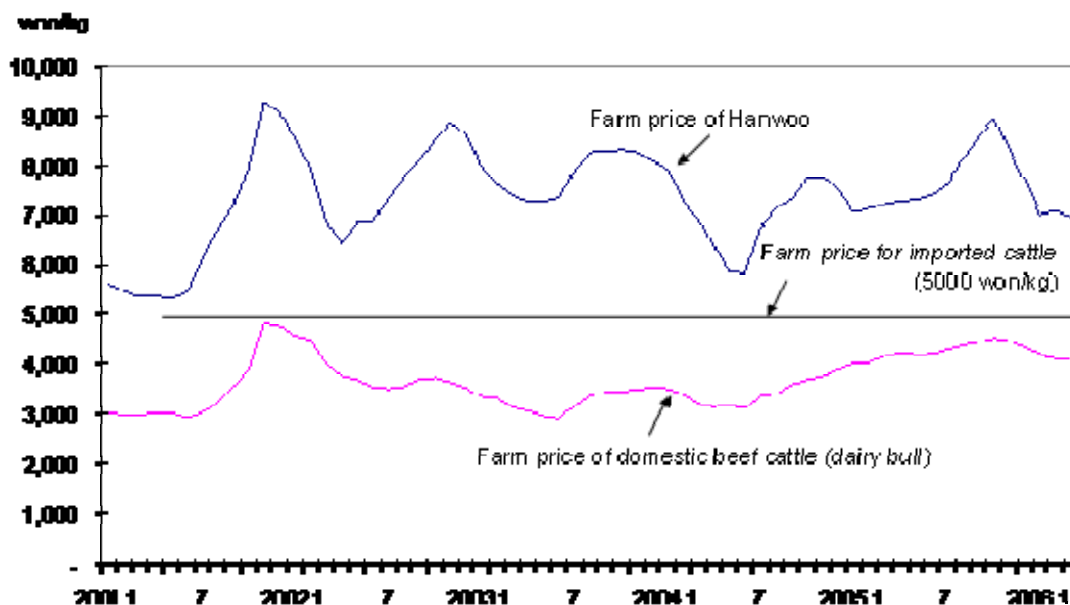
Because the live cattle import costs differ depending on the time of imports (as affected by, for example, market demand-supply conditions and changes in exchange rates), for our analyses in this paper, we make use of the information related to the lot of cattle purchased in May 2005 in Australia and transported to Korea around December 2005 (and passing quarantine in January 2006, the import quantity thus being included in the 2006 reported data).

As noted earlier, prior to import, contracts are signed between the private traders and the cattle farmers which oblige the farmers to buy the cattle when they arrive. The importer calculates the live cattle price by dividing the total costs related to import by the cattle weight. To import 850 head, a total of about 1.3 billion Korean won is needed. When cattle arrive in Korea, they stay in the quarantine station for about 15 days. When they pass the quarantine examination, 40% of the unit import price is charged as tariff. After paying the tariff, the cattle are collected by farmers. The quarantine examination cost is about KRW 31,200 per head for epidemiological test and KRW 65,000 per head for mooring management costs. (Feed cost is covered by the importer separately.) Therefore, including the domestic quarantine cost and tariff, approximately KRW 4,800 to 5,000 per kg is needed to import live cattle. This price is payable by cattle farmers.

The importer and cattle farmers also sign an agreement for the latter to sell their cattle back to the importer at the same per kg price they purchased the cattle. At present, regardless of meat grade, the importer buys back the imported live cattle for KRW 5,000 per kg. Therefore, the farmers' earnings can be calculated by subtracting the feed and other input costs from the income earned from the weight gain of cattle between the time points of purchasing and selling. It may be argued that it is more desirable to link the buy-back price to meat grade. Nevertheless, this shortcoming in setting the price is currently tolerated since the current distribution arrangement makes it difficult for farmers to negotiate a price for their finished products.

Figure 1 shows that KRW 5,000 per kg for imported live cattle is a bit lower than the Korean native cattle price but a bit higher than the beef cattle (chiefly, dairy bull).^[4] Between December 2005 and March 2006, the producer price of a Korean native bull weighing 500kg was somewhere between KRW 3,838,000 and KRW 3,479,000, or between KRW 6,958 to KRW 7,676 per kg (NACF 2006). The producer price of beef cattle (dairy bull) weighing 500kg during the same period was somewhere between KRW 2,163,000 and KRW 2,042,000, or between KRW 4,084 to KRW 4,326 per kg (NACF 2006).

Figure 1. Price Comparison by Beef Type



Source: NACF 2006, Materials on Price, Supply, and Demand of Livestock Products.

Next, we calculate the net earnings from farmers raising imported live cattle and compare their net earnings with that from raising Korean native cattle. In 2004, the National Agriculture Products Quality Management Service (NAQS) surveyed the production costs of Korean native cattle farms. We studied the ledgers of a farm which purchased 70 head of imported live cattle for cost information. With these data we are able to derive the net earnings of each of the two kinds of cattle farms and to carry out a comparison.

Important factors to be considered include the rearing period, the daily weight increase, feed costs, calf purchase/sales prices, and so on. In 2004, when the Korean native calves were purchased, they weighed 146kg per head on average. They were reared for 573 days. When they were sold, their weight was 628kg per head (NAQS 2005). The daily weight increase was 0.827kg. The imported live cattle weighed 440kg per head on average when purchased by Korean cattle farms. They were reared for 252 days. They weighed 776kg when they were sold. Therefore, the daily weight gain was 1.33kg.

Regarding the daily feed cost, the Korean native cattle consumed less feed than their imported counterparts. The former eat feed worth KW 2,157 per head, while the latter eat feed worth KRW 3,453. As such, the production cost of the imported live cattle was found to be higher.

The Korean native cattle-rearing farms earned a gross return of KRW 977,000 per head after subtracting the management cost from the sales price, while the imported live cattle rearing farm households earned KRW 685,000. However, if the monthly income is

calculated, Korean native cattle farms earned KRW 51,892 per month, while the imported live cattle farm households earned KRW 82,689 per month. It is clear that the income earned from rearing imported live cattle is much higher than that of Korean native cattle. Details of the returns and costs of rearing the two kinds of cattle are given in Table 2.

Table 2. Comparison of Production Costs and Earnings between Korean Native Cattle and Imported Live Cattle

	Unit	Hanwoo	Imported Live Cattle	Note
Live weight when purchased	kg	146	440	
Weight gained daily	kg/day	0.827	1.33	
Feeding days	day	573	252	
Live weight when marketed	kg	628	775	
Price when purchased (A)	won/head	2,335,327	2,200,000	5,000 won/kg for imported cattle
Cost of feed (B)		1,235,766	870,245	Hanwoo 2,157 won/day,
- Mixed feed	won/head	1,014,523	795,488	imported cattle 3,453 won/day
- Hay		195,581	74,757	
Other cost (C)	won/head	273,952	120,482	
Operating cost (D=A+B+C)	won/head	3,845,075	3,190,727	
Family labour and interest (E)	won/head	862,473	379,307	
Production cost (F=D+E)	won/head	4,707,548	3,570,034	
Farm selling price (G)	won/head	4,822,626	3,875,000	7,679 won/kg for Hanwoo, 5,000 won/kg for imported cattle
Farm income (G-D)	won/head	977,551	685,073	
- Monthly income		51,892	82,689	
Net income (G-F)	won/head	115,078	305,766	
- Monthly net income		6,109	36,906	

Sources: The data for Hanwoo (beef cattle) were extracted from “livestock production cost 2004” by National Agricultural Products Quality Management Service.

Data for imported live cattle were obtained from the production cost records of a sample of farms.

It must be noted, however, that the earnings of imported live cattle-rearing farms are subject to fluctuations in the sales price. Everything else the same, the monthly income of the Korean native cattle farm households and that of the imported cattle producers become the same when the sales price of imported cattle falls to KRW 4,671 per kg. If the sales price falls below KRW 4,116 per kg, the imported live cattle farm households earn less than the cost they have to bear.

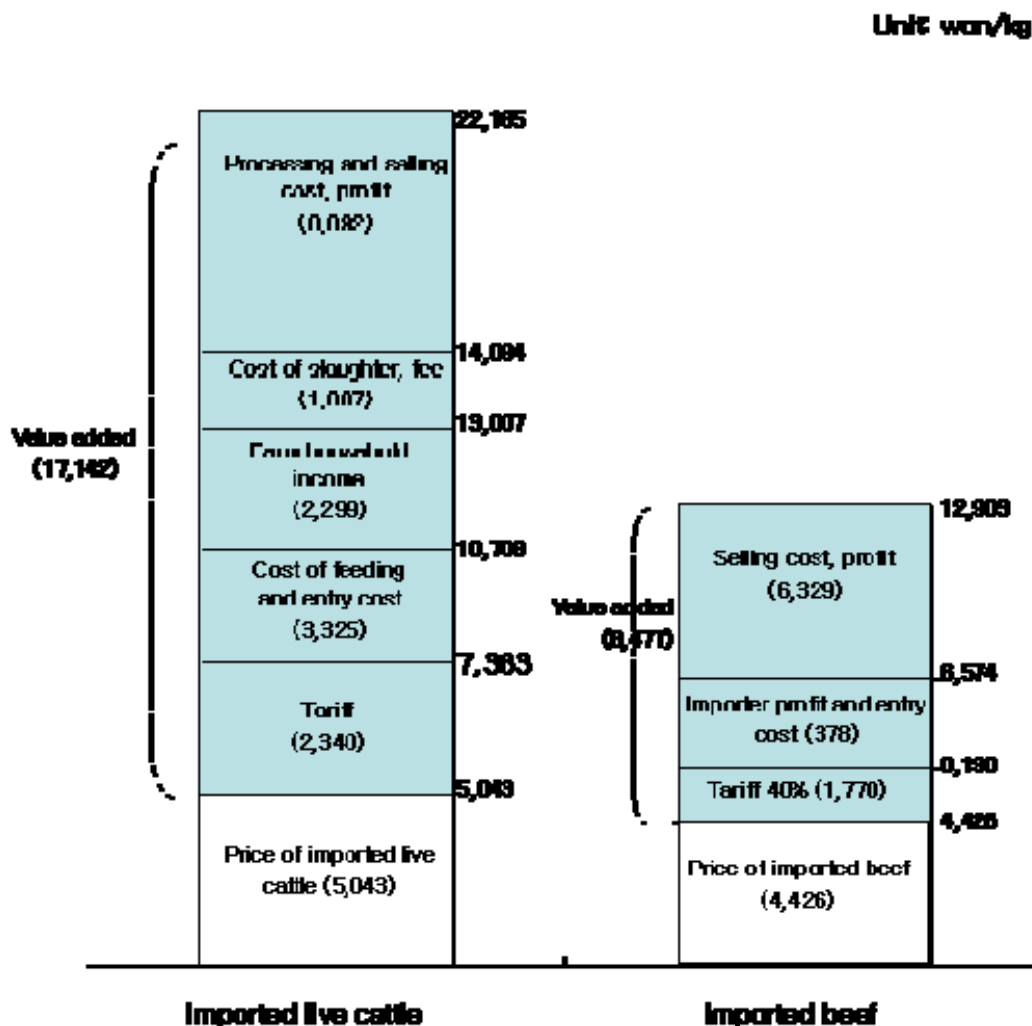
3.2 Contributions to the National Economy

Around 50-60% of Korea's beef consumption relies on imports. As pointed out earlier, two options are available: one is to import beef and the other is to import live cattle. From a pure economic point of view, then, which option adds more value to the nation's economy?

Added values refer to the values newly created in the course of production. Figure 2 shows the costs and income per head in each step of beef production, processing and distribution for imported live cattle and imported beef. Their respective added values were compared on a per-kg basis. When calculating the added values, the import price is excluded in both live cattle import and beef import. As such, the value added from imported live cattle is KRW 17,142 per kg, while the value added by imported beef is KRW 8,477 per kg. Clearly, *ceteris paribus*, importing live cattle adds more value, being KRW 8,665 per kg more, to the national economy. Assuming 2,500 head of live cattle are imported each year, this can substitute for the import of 885 tonnes of beef and increase Korea's GDP by KRW 7.7 billion per year. Should more live cattle imports be allowed, for example, at the current maximum capacity of 8500 per year, the value added to the nation's economy will be even greater.

In addition to the above direct benefits, importing live cattle also brings about some indirect benefits to Korea. One is the greater job creation capacity in various directly- and indirectly-related industries along the supply chain from cattle rearing on farms to the distribution of final products to the consumers. Slaughtering cattle in Korea also enables the better and fuller use of different parts of the animal, e.g., making use of offal and other parts of the carcass that are not normally consumed by people in beef-exporting countries such as in Australia. In addition, live cattle can also be better prepared before slaughtering to suit local consumption traditions.

Figure 2. Comparison of Added Values: Imported Live Cattle vs. Imported Beef



Sources: Korea Agro-Fisheries Trading Corporation (2006), *The Agricultural Products Trade Information* and Korea Meat Trade Association (2006), *Report of Meat Trade and Consumption*.

3.3 Concerns over Possible Spread of Foreign Livestock Diseases

While importing live cattle brings more economic benefits to Korea, there have been concerns that imported live cattle may bring foreign livestock diseases to Korea. Then, what is the chance that foreign livestock diseases may be brought to Korea?

Live cattle import requires the observance of the Korea's National Veterinary Research and Quarantine Service's import procedure and the hygiene criteria given according to the country of origin. Korea is famous for its strict quarantine practice. Presently, all animals imported to Korea are required to go through full inspection. In the case of cattle, an

importer needs to submit the application for animal import to the National Veterinary Research and Quarantine Service. When the cattle arrive, the due procedures, including ship inspection, entering into the inspection site, and animal quarantine, will be carried out. Only if this examination is passed will the import of the cattle be permitted. Otherwise, the cattle will be returned or burned or buried. Furthermore, before going through Korea's domestic import procedures, the importer is required to purchase live cattle in the exporting country and go through the quarantine procedures as required of the exporting country.

Currently, the cattle imported from Australia are required to go through a precision test on eight diseases such as brucellosis, bluetongue, Johne's disease, leukemia, tuberculosis etc. The cattle imported from Australia to Korea should be raised in Australia for six months at least. The exporting country should meet the requirements that during the past three years, there should be no occurrence of cattle plague and Contagious Bovine Pleuropneumonia, and during the past five years there should be no report of BSE. In addition, from birth, the exported animals should not have been inoculated against the above diseases (MAF 1998). The exported animals should be separately in custody at the facilities recognised to be safe from the quarantine perspective by the exporting government agency for 30 or longer days to receive the export quarantine examination certificate from the government veterinary service (MAF 1998).

The animals for export are put to the clinical test during the separate examination period. In the case of bluetongue, the test should be conducted at least once in the area where the occurrence is small, and two times in other areas. The initial test should be conducted 30 days after the separation, and the second test should be conducted at least 40 days later from the initial examination date (also during the separation period). The bovine leukemia should be tested twice at the interval of four months prior to the operation (MAF 1998).

Queensland, which exports live cattle in the largest volume from Australia, is required to conduct the bluetongue tests two times. Therefore, the live cattle imported to Korea mostly come from the west region (Western Australia) where the bluetongue test is required once. The Australian government raised a complaint saying that the Korean government is too tight since the bluetongue-affected cattle can be slaughtered, and the meat can be eaten. In addition, the Australian government argues that the mandatory test of leukemia twice is excessive (Personal Communication, J.H. Song). However, Korea is known to be a country whose quarantine test is very demanding and Korea is unlikely to ease its quarantine examination. As such, the entry and thus the spread of foreign livestock diseases into Korea are most unlikely.

The results of quarantine tests carried out from 2001 to 2006 show that the number of animals carrying serious diseases was zero. The 19 unsatisfactory cases detected were all about positive reactions to bluetongue disease tests. Eleven head of the cattle were from Australia with 8 from the USA. Given that a total of 9,363 head were tested, the occurrence of unsatisfactory cases is about 0.2%. Since 2004, no cases of test failure have been reported (see Table 4). The above results suggest that, if proper procedures are followed in selecting and checking the cattle in the exporting countries, and strict

quarantine examinations are carried out before the cattle enter into Korea, the chance of letting foreign livestock diseases enter into Korea is very slim.

Table 3. Live Cattle Quarantine Test Failure Status by Year and Country Origin

Year	Month	Number of Cattle Imported by Country Origin		Number of Test Failures and Causes
		Australia	US	
2001	May	660	-	8 heads, bluetongue antibodies
	July	662	-	2 heads, bluetongue antibodies
2002	October	563	-	-
2003	March	836	-	1 head, bluetongue antibodies
	April	829	-	-
	June	827	-	-
	December		753	8 heads, bluetongue antibodies
2004	February	842	-	-
	March	850	-	-
2005	May	851	-	-
2006	January	850	-	-
	April	840	-	-
Total		8,610	753	19 heads

Source: National Veterinary Research & Quarantine Service, *Annual Report on Quarantine and Inspection*, various years.

3.4 Income Impact of Live Cattle Imports on Korean Native Cattle Producers

There has been a concern that the live cattle imports would negatively affect the income of Hanwoo producers. If this is the case, the availability of beef from imported live cattle would have been substituting the Hanwoo beef and in the meantime placing a downward pressure on the price of Hanwoo beef. To evaluate the substitution effect of imported live cattle beef on Hanwoo beef, sufficiently long time-series data containing their quantities sold and prices and other related information are needed. However, due to the fact that live cattle import to Korea has not been for long, and the import volume has also been erratic, it is only possible for us to focus on the price relationships between different kinds of beef. Broadly, beef available in the Korean market may be placed into four categories: Hanwoo beef, which is most valued by Korean consumers; beef from imported live cattle that have been reared in Korea for six months or longer; imported beef; and other domestically produced beef (including beef from other breeds of beef cattle, male dairy cattle, and meat from dairy cows).

The price of the beef from imported live cattle is about 20 percent lower compared with the Korean native beef price. This gap has been fairly consistent in the market. This suggests that the availability of imported live cattle beef in the market has generated little

impact on consumers' preference for Hanwoo beef and placed almost no pressure on Hanwoo price. On the other hand, it is noted that the price gap between imported live cattle beef and other domestically produced beef or imported beef is also quite substantial. Table 4 provides a comparison of beef prices by cuts and by the origin of the beef.

Table 4. Sample Price of Beef by Cuts in Korea, won/100g

Cut	Hanwoo (Grade 1+)	Imported Beef from Australia	Domestic Beef Cattle (Grade 2)	Beef from Imported Live Cattle from Australia (Grade 1)
Loin	8400	5200	4380	5900
Short Loin	8100	5000	4180	5900
Tender Loin	8000	4900	4180	NA
Top Blade	NA	3600	3280	5900
Thin Flank	6900	4900	3580	5900
Shoulder	4500	2000	2680	3200
Shoulder Loin	3580	1380	2880	NA
Eye of Round	4800	2000	NA	3200
Brisket Navel End	5200	2200	3280	2580
Shin	4200	1490	2580	NA
Bone of Cattle	NA	NA	1480	2000

Source: Collected by authors at various supermarkets in Seoul during 21-24 May 2006.

In Korea, imported live cattle beef is the second most popular amongst consumers, after the native Hanwoo beef. Other locally produced beef, chiefly from male dairy cattle, is less favoured by Korean consumers due to lower meat quality (Jeong *et al.* 2005). Imported beef, especially frozen beef, is regarded less well than fresh beef from imported cattle. Nonetheless, despite the fact that beef from imported live cattle has the “freshness” and also good quality, it is still not in a position to compete with the Hanwoo beef. The major reason is that imported live cattle are mainly grass-fed before being imported to Korea. They are then grain-fed for six to ten months before slaughtering. Furthermore, producers raising imported live cattle cannot provide best and consistent quality of meat because of unstable live cattle supply and irregular period of rearing – marketers cannot wait until the cattle has best quality and producers have to market their cattle whenever marketers ask them to do so. If a regular and stable amount of live cattle were imported, this quality problem could be mitigated to a great extent. As such, compared with Korean native cattle which are grain-fed throughout the entire rearing period, beef from imported live cattle does not have the same quality features as locally fed cattle, particularly in terms of marbling.

The other fact that suggests the beef from imported live cattle is not in a position to compete with, and generate a significant impact on the price of, Hanwoo beef is that, until now, the imported live cattle accounted for a very small portion of total domestic cattle slaughter (see Table 5). For example, in 2004 and 2005, the number of slaughtered

imported live cattle accounted for only 0.37% and 0.12%, respectively, of total slaughtering.

Table 5. Number of Slaughtered Cattle by Cattle Type (Head)

	Hanwoo	Beef Cattle (Domestic)	Dairy Cattle	Imported Live Cattle	Total
2004	324,442	158,956	91,028	2,148	576,574
2005	391,302	137,823	82,609	738	612,472

Source: NACF 2006, Materials on Price, Supply, and Demand of Livestock Products.

Since 2001, when live cattle import for beef purpose was first allowed, live cattle imports were only around 2,500 head each year. Even if the import volume was increased to 8,500 head (which is the maximum capacity of the current quarantine mooring facilities), it would still only have accounted for around 1.5% of the total slaughtering. Hence, the import of live cattle is most unlikely to bring about a significant negative impact on the income level of Hanwoo producers. Besides, it is a fact that about 50-60% of domestic beef consumption is met by imported beef. Hence, overall, live cattle import has very limited impact on the beef market in Korea.

3.5 Concerns over Possible Illegal Distribution of Beef

The price gap between Korean native beef, domestically produced beef cattle meat, and imported beef is huge. It is not easy for consumers to distinguish, by visual inspection, the difference between them. This provides strong incentives for some people to sell any other beef (locally-produced beef cattle meat, dairy cow meat or imported beef) as native beef. Under the current laws, imported live cattle beef can be sold as domestically produced if they are raised in Korea for six months or longer. This sometimes leads to the imported live cattle meat being misunderstood by consumers to be Korean native cattle. This has thus become one of the arguments used by those who support the abolition of the importing of live cattle.

Much progress has been made to avoid the possible illegal distribution of imported live cattle beef as Korea's native Hanwoo beef. Imported live cattle beef can be labelled as domestically-produced product if the cattle have been reared in Korea for six months or more. However, the government requires that the name of the original exporting country should be labelled as well as identified at the meat retailer shops. Therefore, the imported live cattle beef could be differentiated from the Korean native beef. Still, many consumers have doubt about the proper operation of the country-of-origin labelling system. Thus, from 2007, the Korean government has also made it mandatory for the restaurants with a floor area greater than 300m² to label the country-of-origin of beef they offer. Also, from 2008, the beef history tracking system was to be implemented in full scale. When such institutions are in place, the possibility of fraudulent distribution of beef is expected to be significantly reduced.

The above analyses show that live cattle import is unlikely to produce much negative impact on Korea's native beef industry. On the other hand, live cattle imports bring about much greater benefits to the nation compared to the import of beef. Beef produced from imported live cattle is better liked by consumers than imported beef. As such, considering that 50-60% of Korea's beef consumption is met from imported beef, it is sensible for Korea to import live cattle to prepare for slaughtering domestically. It is indeed to Korea's benefit to increase live cattle import from current 2500 head per annum to 8500 head per annum as the present capacity allows, or even to consider importing more in the future. Then, what are the likely factors that may affect Korea's future live cattle imports?

4. Factors Affecting Korea's Future Live Cattle Imports

(1) US beef import resumption and the Korea-US FTA. Since December 2003, US beef imports have been banned due to the outbreak of mad cow disease in the United States. The US was eager to re-commence its export of beef to Korea and several rounds of negotiations were held between US and Korean negotiators to push for the resumption of US beef export to Korea. On 13 February 2006, it was finally agreed that the boneless, lean meat of the cattle aged less than 30 months were allowed to be exported to Korea. The US has also been negotiating to ask Korea to allow its export of bone-in meat and meat from animals aged more than 30 months to Korea (Song, pers. Comm. 2008).

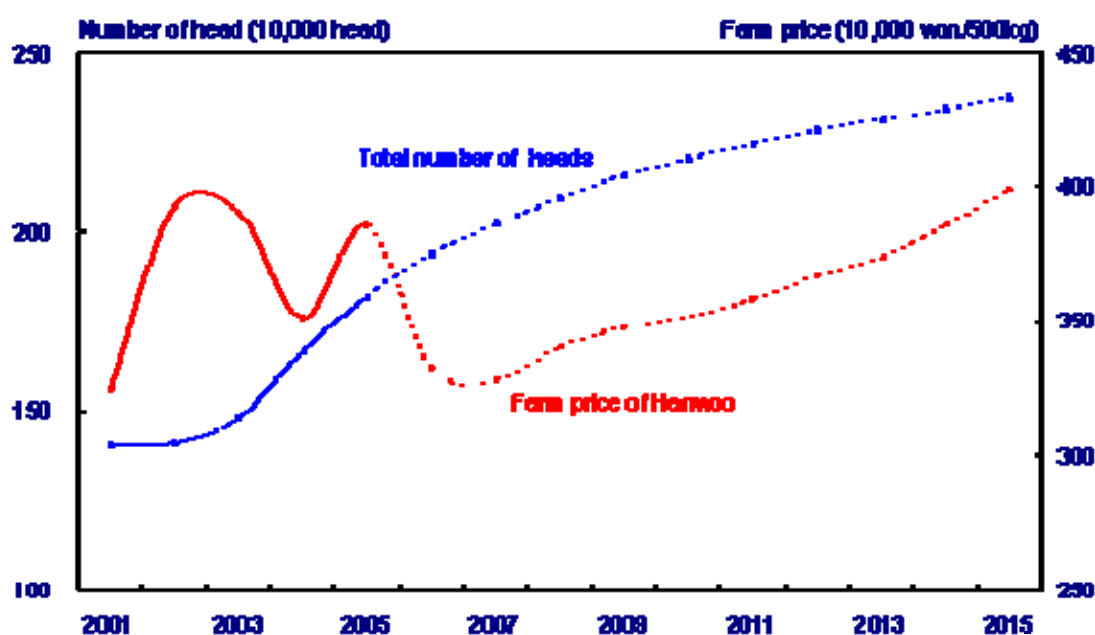
On 30 June 2007, the US and Korea signed a free trade agreement, in which beef and live cattle trade is included – beef and live cattle can be exported to Korea, subject to quarantine, at a declining tariff (USTR 2007). The tariff will be 40% when the FTA is initially implemented. The tariff will then be reduced evenly to zero over a 15 year time period. As such, beef imports from the US will be increased gradually. Despite the lower tariff, US live cattle exports to Korea are unlikely to increase significantly in the near future. This is partly due to the record of BSE occurrence in 2003, and partly due to the fact that the US is a major live cattle importer and is not a major exporter (FAS/USDA 2006). Nonetheless, the easier imports of US beef and live cattle into Korea at a lower tariff rate will adversely affect Australia's live cattle exports to Korea.

(2) Outcomes of WTO negotiations and other FTA negotiations. The Doha Round negotiations started in 2001. So far, the progress has been minimal, leading to the suspension of the negotiations. There have been recent efforts to revive the negotiations, to a great extent, in response to the current difficult economic times. How successful of such efforts will be is yet to be seen.

As a consequence of the slow progress in WTO negotiations, countries have been active in negotiating bilateral or regional free trade agreements (FTAs). As of June 2006, Korea's FTAs with Chile, Singapore and EFTA had taken effect. Korea's negotiation with Canada and EU for FTA has also been underway. An FTA between Korea and the United States has been signed in June 2007. In August 2008, Korea and Australia started preparatory talks on a bilateral FTA. The preparatory talks were concluded in December 2008 and had prepared the way for the start of actual FTA negotiations (DFAT 2008). The signing of FTAs, particularly with beef exporting countries such as Australia, is likely to lead to increased imports of live cattle.

(3) Domestic cattle production. The number of cattle raised by Korean farmers experienced a sharp decrease in the late 1990s, dropping from a record high of some 2,800,000 in 1997 to below 1,500,000 in 2001. It further dropped to 1,371,000 head by March 2002 (MAF 2005). However, the size of the cattle herd has been steadily increasing since 2002 and is projected to continue to increase although it is unlikely to reach, if ever, its historical peak of 1997 (see Figure 3). The expected increase in farm price from 2006 provides incentives for farmers to produce. Increased domestic production will reduce the demand for imports, including live cattle imports.

Figure 3. Number of Korean Native Cattle/Beef Cattle Heads Raised, Producer Price Forecast (Korean Native Bull, 500kg)



Source: Korea Rural Economic Institute (KREI) 2007, *Agricultural Outlook 2007*.

(4) Changes in currency exchange rates. Changes in exchange rates have a significant bearing on the import unit price of live cattle. In turn, import unit price has a great impact on the price competitiveness of imported live cattle beef. If the Korean won is appreciated, the import price will be relatively lower, leading to possible higher live cattle imports. In recent years, the Korean won has appreciated quite significantly against several major currencies, e.g., the US dollar and the Australian dollar. Between 2004 and 2006, the Australian dollar has depreciated against the Korean won by over 20%. In January 2004, one Australian dollar traded at KRW 910.19. But in March 2006, one Australian dollar traded at KRW 709.12. In mid 2008, the Australian dollar appreciated against Korean won, with one Australian dollar being equal to about KRW 1000 in late June and early July of 2008. Recently, the Australian dollar again depreciated against Korean won, being KRW 880 in early February 2009. It has been held that the Korean won will remain relatively strong in the near future (Yang *et al.* 2006, SERI 2007).

(5) Earnings from rearing imported live cattle. Presently, if farm households can sell live cattle for KRW 5,000 per kg, they will make profits from rearing imported live cattle. However, if the price falls, it will reduce their profitability, lowering the attractiveness of raising live cattle. The buy-back price is affected by a number of factors such as the purchasing price of cattle in Australia, the exchange rate, and domestic beef sales prices. The further opening up of the Korean beef market under the Korea-US FTA is likely to exert a downward pressure on beef price in the market, thus impacting negatively on the income of farmers raising live cattle. As such, reducing live cattle import costs, enhancing product quality and raising the value of imported live cattle beef through brand image building and recognition are some ways that can help to improve the earnings for farmers that raise imported live cattle.

The above factors are major external forces that are largely beyond the control of Korean government and beef industry. There are other forces that affect Korea's live cattle imports and they can be significantly affected by government and industry policies towards the live cattle imports. Addressed below in the next section are some important policy issues that can facilitate live cattle imports and help the operations of farmers that raise imported live cattle.

5. Policy Issues regarding Live Cattle Imports

(1) Co-existence of imported live cattle raising and native cattle raising. Earlier analysis has shown that raising imported live cattle renders Korea a higher benefit compared to the imports of beef. It is beneficial to facilitate the rearing of imported live cattle. Efforts may be made to foster an environment where the operations of raising imported live cattle can co-exist with Korean native/beef cattle production. The government can play a role in mitigating the conflicts between native cattle farmers and farmers raising imported live cattle. Attention should also be given to some operational aspects of live cattle imports. That is, import volume may not be increased sharply in a short time period to avoid the likely strong resistance of native cattle producers. Instead, the import should be increased slowly and gradually. The import of cows that look similar to Korean native cattle should be carried out with great caution and perhaps should be avoided if native producers strongly oppose such imports.

(2) Stable Supply of Imported Live Cattle and Quality Improvement. Policy efforts are needed to plan the import of live cattle on a regular basis. Presently, the beef produced from imported live cattle is distributed at department stores or sold at some restaurants under the brand name of "Seolcheongwoo" (literally, this means "snow and clean cattle", or "clean-as-snow cattle"). When selling a brand beef (in fact, any other products) in an attempt to attract long-term customers, it is very important to be able to provide a regular supply with consistent quality. The irregular imports of live cattle have made it very difficult to supply the beef in a regular and stable manner with consistent quality. This has also caused less efficient use of cattle raising facilities. Live cattle should be imported under a plan throughout a year on a regular basis, so that farmers are able to (1) regularly provide "Seolcheongwoo" with consistent quality, (2) put inputs into the building of images of their product, and (3) make better utilisation of their shed facilities throughout a year.

(3) Capacity expansion at the quarantine stations. Presently, the two animal quarantine stations in Korea have a combined capacity of 850 head. This caps the maximum number of animals that can be imported at any one point of time at 850 head.

The quarantine examination needs 15 days (if a disease is found, animals will stay at the station longer). Cleaning and sterilising the facilities require about one to two weeks. Thus, the Stations can be used once a month. However, during the summer season when typhoons arrive, ship transportation becomes difficult. Taking all these into consideration, a station can be used about ten times a year. This means the maximum importing capacity is about 8,500 head a year.

Existing quarantine station capacity is rather limiting. Given the larger benefits rendered to Korea by importing live cattle compared to the import of beef, and considering the current large amount of beef imports, in the long run there is a need to increase the capacity of live cattle imports.^[5] In the near future, however, emphasis should be given to the full use of the existing capacity.

(4) Coordinating the demand from importers. Due to the limited quarantine capability, importers tend to compete with each other for the limited importing capacity. These may cause disturbances to cattle imports. There is a need for either a government department or a beef industry body to provide coordination among importers to help them reach an agreement on their import timing and volume.

(5) Helping imported live cattle farmers to achieve a stable and regular income. The earnings of imported live cattle farmers are significantly affected by the prices at which they purchase and sell the cattle. Both of the prices, as noted earlier, have been largely identical so far; i.e., farmers sell their cattle back to the importer at the same per kg price they purchased the cattle. However, there is no guarantee that such a price regime will stay forever. It is believed that the prices at which farmers buy and sell the cattle will become more and more influenced by external factors (Personal Communication, J.H. Song). Clearly, the purchase price depends importantly upon live cattle purchasing price from the exporting country, currency exchange rates, importing costs, and variations of various other variables. The sales price depends upon the prices of other locally produced beef. Therefore, in the future, the earnings of imported live cattle are likely to become more volatile than those of the Korean native cattle/beef cattle farmers.

To help imported live cattle farmers to earn a stable income, the Korean government needs to enable them to acquire a stable source of imported live cattle by having a regular live cattle importing plan. Only by doing so can the farmers develop the image as a reliable supplier of consistent quality beef to the market and make use of their rearing facilities as fully as possible so as to achieve a relatively stable income. Efforts by both the live cattle importing industry and the government should also be devoted to reducing importing costs.

(6) Financial support to live cattle imports. According to interviews of live cattle importers by Professor JooHo Song, the import of 850 head of cattle requires at least 1.7 billion Korean won including all costs such as cattle purchase price, shipping expenses,

quarantine costs, and tariff (Personal Communication, J.H. Song). Presently, there is no government payment guarantee or low interest loan for live cattle imports. Consequently, this places huge financial burden and risks on live cattle importers. In practice, these importers have passed such financial burden and risks to farmers, demanding them to make down-payments, interim payments, and final payments. If the government provides payment guarantee or low interest rate loan to live cattle importers, it will help more plan-based live cattle imports and make it less burdensome for farmers.

6. Conclusions and Implications

In 2001, live cattle for meat purpose were first time allowed to be imported into Korea. Since then, around 2500 head of cattle have been imported to Korea each year. A 40% tariff is currently imposed on imported live cattle. Majority of imported live cattle are from Australia with a very small quantity from the USA. Korea's live cattle importing capacity is limited, being about 8,500 head per annum. The expansion of such capacity is unlikely in the near future.

Live cattle imports to Korea have met with severe resistance. The resistance is due to various concerns regarding the benefits of live cattle imports to Korea and their impacts on Korea's native cattle industry. In this study, we addressed such concerns and have shown that:

- Live cattle imports bring about greater benefits to Korea compared with the import of beef
- Farmers can earn a reasonable income by rearing imported live cattle
- Importing live cattle has been found to have very little negative impact on the income of native cattle producers
- Thanks to Korea's very stringent quarantine procedures, it is very unlikely that foreign livestock diseases will be brought into Korea through live cattle imports
- Illegal distribution of imported live cattle beef as native Korean beef is likely to take place but the recent introduction of various institutions will significantly reduce the possibility.

Some useful implications can be derived from our study. It is beneficial for Korea to import live cattle. The Korean government and beef industry should help to mitigate conflicts between native cattle producers and imported live cattle producers and foster an environment in which farmers can raise imported live cattle without too much opposition. Live cattle imports are facilitated and, where necessary and possible, payment guarantee or low interest rate loan are provided to ensure smooth and regular conduct of live cattle imports, which is crucial for farmers to maximise the use of their facilities and to achieve a more stable income. Import volumes need to be increased (gradually over time) and if necessary, quarantine capacity expanded. Also, efforts should be made to reduce live cattle importing costs to better safeguard farmers' income.

Despite the fact that, at present, the volume of Korea's live cattle imports is small and exporting live cattle to Korea still remains difficult, Korea's live cattle import requirements can be potentially sizeable. Australia is a major supplier of live cattle to

Korea and is likely to continue to be the major supplier.^[6] The Australian government and live cattle export industry should work together with the Korean counterparts to reduce Korea's live cattle importing costs. The Australian live cattle export industry may also consider providing support and training to Korean farmers on how to best look after the animals once they arrive on to their farms.

References

Choi, J.S., Zhou, Z.Y. and Cox, R.J. 2002, 'Beef consumption, supply and trade in Korea', Australian Agribusiness Review, Vol. 10, paper 3.

DFAT (Department of Foreign Affairs and Trade) (2008), 'Australia–Korea free trade agreement preparatory talks conclude', 19 December 2008, http://www.trademinister.gov.au/releases/2008/sc_105.html, accessed on 21 January 2009.

FAS/USDA 2006, Livestock and Poultry: World Markets and Trade, Washington, D.C.

Jeong, M.K., Song, J.H., Song, W.J. , Lee, Hyung-W., Kim, H.J., 2005. 'An analysis on the impact of US beef re-entry to Korean market', Korea Rural Economic Institute, Seoul.

Jeong, M.K., Terry, S., Gleeson, T. and McDonald, D. 2004, 'The Korean and Australian beef markets and prospects for trade', M-56/2004.9, Korea Rural Economic Institute, Seoul, and ABARE (Australian Bureau of Agricultural and Resource Economics), Canberra.

Korea Agro-Fisheries Trading Corporation 2006, The Agricultural Products Trade Information, Seoul.

Korea Meat Trade Association 2006, Report of Meat Trade and Consumption, Seoul.

Korea Rural Economic Institute (KREI) 2007, Agricultural Outlook 2007, Seoul.

Kwon, O.B., Choi, S.K., Song, J.H. 2006, 'Strategies for agricultural sector to cope with Free Trade Agreements', Korea Rural Economic Institute, Seoul.

MAF (Ministry of Agriculture and Forestry, Korea) 1998, MAF Notification No. 1998-77, Seoul.

MAF 2005, Basic Statistics in Agriculture and Fishery, Seoul.

NACF (National Agricultural Cooperative Federation) 2006, Materials on Price, Supply, and Demand of Livestock Products, Seoul.

NAQS (National Agricultural Products Quality Management Service) 2005, Livestock Production Cost 2004, Seoul.

National Veterinary Research & Quarantine Service 2006, Annual Report on Quarantine and Inspection, Seoul.

SERI (Samsung Economic Research Institute) 2007, Economic Outlook 2008, Seoul.

The Livestock Times, various issues.

USTR (United States Trade Representatives, Office of the,) (2007), 'United States and the Republic of Korea sign landmark free trade agreement', 30 June 2007, http://www.ustr.gov/Document_Library/Press_Releases/2007, accessed on 16 December 2008.

Yang, D.Y., Oh, Y.H. 2006, 'How much Korean won will go down in the Future?' Korea Institute of Economy and Policy, Seoul.

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^[2] Before the 2001 beef market opening up, live cattle import was operated under a TRQ arrangement and Korea imported cattle for breeding purposes.

^[3] Data and information were obtained from major importers through personal correspondence.

^[4] Korean native cattle, Hanwoo, command a price premium. Hanwoo beef is favoured by Korean consumers. Dairy bull provides another beef source. Imported live cattle meat, though still at a very small quantity, is a new addition to the Korean beef market. Beef from imported cattle is regarded well in Korea, though below Hanwoo beef but above dairy bull meat. Aged dairy cows also produce meat which is least preferred and mainly used for cooking soup and for mince.

^[5] Quarantine facilities expansion in the Seoul Metropolitan area is very costly due to the very high land price. In view of this, Australia argued that in cases where public quarantine facilities are limited, privately-owned farms can be commissioned to conduct the quarantine examination. It is unlikely that the Korean government is prepared to put the quarantine examination into the hands of private organisations.

^[6] Around the world, the United States is the No. 1 live cattle importer. Mexico is the No. 1 live cattle exporter. Canada is also a large exporter of live cattle. However, Mexico and Canada mainly export live cattle to the United States. Thus, should Korea's future live cattle import increases, Australia will remain to be a major exporter to Korea, and followed perhaps by the EU.