Korea's Beef Market in a Pacific Context

Paper presented at the annual meetings
of the AAEA, Manhattan, Kansas,
August 5, 1991

Jeffrey Jones
Foreign Agricultural
Service, USDA

John Dyck
Economic Research
Service, USDA

#20541

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I. Introduction

In 1989-90, vigorous negotiations took place among the governments of the United States, Australia, New Zealand and South Korea about Korea's beef import barriers. These discussions occurred in an environment of some tension about trade throughout Northeast Asia. At present, a settlement of the beef trade issue has been reached that will be in force through 1997, when Korea will be obligated to completely liberalize or otherwise bring policy into conformance with the General Agreement on Tariffs and Trade (GATT). Minimum quota levels have been set for 1990-92; in 1992, expanded interim trade levels will be negotiated for the 1993-96 period. An obvious question is whether the Korean beef trade is important enough monetarily to occupy so much time and energy for the governments involved, especially the U.S. government. This paper shows that potential Korean beef imports are large relative to the Pacific beef trade, and that both the United States and Australia are in good positions to capture a significant portion of Korea's potential imports. Other issues related to Korean beef trade liberalization, such as the welfare impact on Korean farmers and the effects on Pacific Rim trading relationships are important. The paper focuses only on the potential for the beef trade itself.

In the 1970's, domestic agricultural policy considerations drove Korea's import policy. Beef imports were allowed only to fulfill domestic shortfalls and when imports for general consumption did come in, they came from Oceania. A small but rather stable trade in grainfed beef for tourist hotels was filled by U.S. exporters.

South Korea has changed greatly since the 1970's, and so have the dimensions of the Pacific beef trade. Within Korea, the domestic beef supply situation has worsened, beef demand has grown, and views about global free trade have changed. Together, these changes have generally increased the cost to Korea of maintaining trade barriers to beef. At the same time, increased movement of beef to Japan has brought greater market integration and specialization in the Pacific beef trade. This has lowered export costs for Pacific Rim beef trading firms, especially in the United States.

II. Changes in Korea and in the Pacific Beef Trade

A) Increasing costs of the beef policy regime in Korea

Korea's policy of self-sufficiency in beef has been carried out chiefly by means of import barriers and limits on market outlets. Korea's principal means of controlling the beef trade are quotas and state-authorized monopoly trading by the Livestock Product Marketing Organization (LPMO). Tariff levels are bound at 20%. Declining domestic supply and rising demand trends in the Korean market make this policy increasingly difficult to sustain. In addition, trade barriers have irritated the country's relations with important trade partners.

Korea's agricultural sector is dominated by small-scale rice production which is no longer able to compete on world markets or provide adequate incomes to farmers without costly subsidies. Agricultural policymakers, anxious about small rice farmers' prospects, have long sought ways to diversify their sources of income. One major intiative has been to encourage cattle raising for beef production on existing rice farms. Another has been to establish and nurture a

dairy industry on new, larger farms. Soaring demand for dairy products and trade barriers that protected the markets for manufactured dairy products caused rapid growth in dairy output. The slaughter of older cows, young bulls, and some heifers from this herd produces beef as a coproduct. However, the efforts to stimulate more widespread and more specialized raising of cattle for beef, chiefly using native Korean cattle as the breeding base, have been fraught with problems. Total herd size has fluctuated wildly, with extremely high prices for cattle prevailing in some periods, while at other times much lower prices have resulted from near-panic selling. The effort to build a cattle industry linked to a base of small rice farmers has suffered many disappointments, and farmers are likely to be less willing to expand cattle numbers in the future. With profound outmigration from farming, the continued small size of paddies, and external and internal pressures to liberalize the trade in food, the viability of small-scale farming continues to decline.

Korean cuisine has demonstrated a strong preference for beef, with beef stews, kalbi, and bulgogi all prominent items in traditional cooking. It is commonly assumed that beef is the preferred meat in Korea. The country has urbanized rapidly in the last two decades, and real incomes for urban households have increased. Women's labor force participation has risen somewhat. These factors favor increased consumption of food away from home, including in restaurants. Together with the preference for beef, they also mean that beef consumption away from home is favored. Restaurant beef dishes often use specific cuts of beef. This fosters a differentiated market for beef cuts that puts pressure on the old system of beef sales, in which all pieces of meat are sold at the same unit price. One indication of the rapid growth of urban restaurant use of beef is the popularity of grainfed boxed beef in Korea's imports of beef. A decade ago such imports were small, destined only for international tourist hotels. The greater volumes of imports in 1988-91 are destined not just for those hotels, but also for restaurants catering to Koreans.

Since supply is limited by domestic herd size and tight controls on beef imports, surging growth in consumer income has contributed to rising retail beef prices. Reported retail prices rose sharply in the last decade, reaching peaks in 1984 and 1989. Assuming a negative own-price elasticity of demand for beef, some consumption has been choked off by rising beef prices, as well as consumption foregone because of limits on marketing outlets. Reduced consumption for either reason can also be considered a cost of the self-sufficiency policies. Consumers have born the brunt of Korea's beef trade barriers, and the aggregate Consumer Subsidy Equivalent (CSE) measure partly captures this. CSEs for beef in Korea have been high throughout the 1980's, generally about -70 percent, for an estimated extra cost to consumers of over one billion U.S. dollars per year in recent years (3)[1].

Korea's non-agricultural sectors have expanded rapidly relative to the agricultural sector over the last two decades, reducing farming's importance to the domestic economy. In the 1980's, the pressures for free trade in agriculture grew outside Korea. One of the goals of the Uruguay Round of GATT negotiations has been the liberalization of agricultural trade. Korea's dependence on exports and on access to export markets ensures that there is a Korean interest in free trade, and this tends to balance interests that favor protection of industries such as Korean cattle.

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[1] Numbers in parentheses refer to items in the reference list.

B) Decreasing costs of exporting beef to Korea

One key to the current interest in the Korean beef market is the experience that beef traders and foreign governments had in Japan in the 1980's. The process that brought Japan into the Pacific beef market began in the late 1960's and will culminate in April 1993 with the removal of most nontariff barriers to beef imports. The result is already clear. Japan has become the second-largest market for imported beef in the world, behind the United States, and large flows of beef from Oceania and North America to Japan have added significantly to total beef import demand in the Pacific. Further growth in Japanese consumption and imports is expected. Major beef markets in the Pacific are being integrated into one market, and total demand is growing as a result.

Another result of the falling trade barriers in Japan has been a growing realization that the beef market is differentiated by the type/quality of beef. While the United States once was regarded only as a major beef importer, now it dominates a newer export trade in grainfed beef. In Australia, the Japanese market has stimulated a resurgence of the feedlot industry. Where once frozen or processed beef were the principal products in Pacific trade, now chilled beef is growing in importance. Instead of just shipping carcasses, trade in beef cuts has become common. The experience of traders in Japan suggests that Korea and other countries will also consume differentiated products, given suitable marketing and investment.

Beef packing firms' costs of exporting to East Asia fall into three categories. There are the normal costs of purchasing cattle, slaughtering/cutting, packaging, and shipping that apply to any modern beef packing firm, which we can call processing/distribution costs. There are also less obvious marketing costs, such as learning where unmet beef demand might exist, learning what quality and price standards must be met, what national licensing/testing requirements are, what institutional relationships exist in a new market, and then hiring, training, and traveling to ensure that a firm's product can pass these hurdles. These can be called international market development costs. And finally there are the costs of overcoming explicit trade barriers imposed by foreign governments. The costs involved in all three areas can be a substantial barrier to trade and to penetrating new markets. Furthermore, such costs are mostly of uncertain magnitude before they are incurred, and are best seen as a wide distribution of possible costs, rather than as a fixed amount. Thus there is a risk of incurring costs so high that the enterprise is unprofitable.

In particular, East Asian markets, with diets and culture markedly different from the western culture of Oceania and North America, have presented large and uncertain market development costs to the beef trade, in addition to the cost of overcoming the various formal trade barriers that have existed. However, exporting countries and firms have taken serious steps to overcome the barriers to operating in the East Asian business environment.

In the case of the United States, these steps have been taken over three decades in the Japanese market. A great deal of market research, of rethinking of market strategies by firms formerly considered only domestic traders, and of adjustment of product form and shipping has gone on among U.S. firms. This investment was made because of a gradual realization that the Japanese market for imported beef is large, and that beef is not a homogeneous product in Japan. Consequently, products from both the United States and Oceania could find consumers there as barriers were removed. The potential revenues from sales to

Japan appeared commensurate with the costs of market entry.

A largely unforeseen benefit of incurring international market development costs in Japan was that U.S. firms found that the marginal costs of entering the markets of South Korea and Taiwan had dropped. Korea, Japan, and Taiwan represent three quite different cultures, diets, and business environments. However, they are geographically close and investigation of the Japanese market, which in practice often involved opening an office in Japan and visiting Japan, reduces the extra expense required to investigate markets in the other areas. Furthermore, once the U.S. industry had reoriented itself to export to Japan, all the resources dedicated to exporting became available for use in other markets as well (of course, with some additional investment or cost). The fixed costs of investments made in establishing a Japanese market can to some extent now be spread over a larger East Asian market, reducing average costs. In other words, the marginal costs of market development of entering South Korea are lower after the opening of the Japanese market.

In addition to these marginal costs of international market development, the perceived costs of overcoming explicit trade barriers also decreased. Success in Japan was twofold. On the one hand, the Japanese quota system was challenged successfully in bilateral negotiations, and on the other hand, U.S. beef sold well in Japan as the market started to open. Thus, grave doubts in the United States about actually developing a profitable market were weakened, and the degree of perceived risk associated with an effort to overcome formal trade barriers and establish other overseas markets diminished. Resistance to challenging trade barriers to beef was lower, and in that sense the costs to firms of urging governmental action decreased.

III. Two Potential Scenarios for a Liberalized Korean Market

A) General approach

Given income and price elasticities of demand and assumptions about supply, it is possible to construct scenarios of consumption and trade over time. Doing so entails major assumptions, such as: elasticities or demand relationships remain constant over time; unmeasured relationships (i.e., those not accounted for in estimation equations) have no influence; price changes can be projected; etc. Nevertheless, making such scenarios is a common practice that can produce interesting albeit oversimplified results.

The domestic beef supply from the combined dairy and native cattle herds is held constant at the 1990 level in the scenarios. Some increases in dairy beef supply are expected, and at least a modest decline in beef from the native cattle herd is likely. This assumes continued government intervention to support native cattle prices. Given the fixed domestic supply assumption, a simplified scenario for beef market liberalization comprises two parts: a price effect as Korean consumer prices fall to world levels; and an income effect as further economic growth stimulates additional demand. The scenarios look at a possible market size in 2000, arbitrarily assuming liberalization in 1990. Following discussion of the market size, the issue of U.S. market share in Korea is addressed.

The scenarios use the elasticity results of other studies. A log-linear relationship between consumption per person and price and income effects is assumed, even though such a relationship was not used in some of the estimation in the earlier studies. Econometric evidence has upheld the assumption that the

income elasticity of beef demand is above 1 (see Table 1), and the scenarios use two income elasticities that are high by developed country standards. Real gross domestic product growth per person is fixed at 5.6% per year over the forecast period. This is optimistic, but a reasonable assumption given Korea's past performance. Population increase is fixed at .9% per year.

Beef consumption per person has remained very low by developed country standards and both pork and chicken meat consumption have surpassed that of beef in the last decade. The relatively slow growth of Korean beef consumption is difficult to explain without reference to prices. Beef prices have risen

Table 1. Elasticity Estimates for Beef in South Korea

	Own-price	Cross-price			Income	Data Sources
	Beef	Pork	Chicken	Fish		
Huh et al., 1989 (8)	-.17			.83	1.10	FBS, RPS 1974-88
Hayes et al., 1990 (6)	-.58	-.17	.06	-.51	1.51	FBS, RPS 1961-87
Harris et al., 1989 (5)	-.72	.06	.03	.25	1.10	FBS,RPS, WPC 1969-87
Cho, 1982 (1)	-1.34	.19	.24	.36	1.38	FIES 1966-79

Notes: FBS=Food Balance Sheet data, RPS=Retail Price Survey data, WPC=Wholesale price of chicken, FIES=Family Income and Expenditure Survey data. Huh et al. used a linear form, and calculated elasticities at the means of the data. Hayes et al. used all marine products rather than fish.

relative to other prices, in particular relative to other meat prices. However, because the number and location of beef sales outlets and retail beef prices have been the targets of various forms of government control and administrative guidance (7, 4), it is not clear that the quoted time series of retail beef prices represents market-clearing prices. It is possible 1) that actual prices paid sometimes have diverged from the quoted prices, if retailers and consumers evaded controls and/or 2) that demand has not been satisfied at the administered retail prices[2].

The nature of the quoted retail prices and of retail distribution is of interest because the few studies available reveal widely differing own price elasticity estimates for beef (see table 1). Note that three studies (5, 6, 8) that used somewhat similar data arrived at quite different elasticities. This may reflect a data problem in the time series of retail beef prices. One strategy for addressing the elasticity problem is to seek alternative data. Cho (1) did this, using the Family Income and Expenditure Survey data as a source for average consumption and expenditures. The survey samples only a portion of the population (most urban households) and only home consumption of fresh meat. The data are thus less general than the data used in other studies, which use food

[2] This was pointed out by John Antle, of the Council of Economic Advisors.

balance sheets for quantity data (assessing all forms of beef consumption and beef use throughout Korea) and urban retail price survey data for prices. Cho used a systems approach to estimation, incorporating restrictions suggested by economic theory. He obtained a price elasticity considerably higher than the elasticities estimated using the other data. Cho's result is consistent with elasticity estimates for Japan, another country where beef is evidently a preferred meat. A survey of these estimates showed own-price and income elasticities both to be quite high (2), which is consistent with the homogeneity restriction and the intuitive conclusion that a good's own-price elasticity should be larger than a cross-price elasticity, for a broadly defined product such as beef.

The post-liberalization price used is a composite based on 1989 import prices. To simplify the scenario, it is not assumed to change in real value over the projection period. Thus, the price elasticity is used only once, to determine a consumption level as Korean barriers to beef imports fall. Although clearly contrafactual, this is assumed to occur in 1990. It is of course unrealistic to assume a complete adjustment of the Korean market from domestic to world prices in one year. However, forecasting a path of adjustment and future prices is not necessarily more realistic.

The price drop, given full liberalization, would be from current Korean retail prices to an import price plus tariff, processing charges, and a retail-wholesale margin. The last element is difficult to estimate, because margins have changed markedly over time and considerable change in the wholesale and retail structures for selling beef would be possible following a market liberalization. It is assumed that the current margin persists after liberalization. Current processing charges and import duties are assumed to remain the same. The hypothetical Australian and U.S. import prices are weighted by the Australian and U.S. volume shares in Korea's 1989 imports to construct a composite import price. Because of the lack of differentiation evident in the domestic Korean market, it is likely that free trade would force most Korean beef to sell at the price of imported beef. Conditions observed in 1989 (10, 5) are used to construct a price that is assumed constant through the 1990's. That price, 4937 won/kilogram, is about 50% lower than the 1989 observed price. Several elements of this exercise could change. If some domestic beef commanded a price premium after liberalization, or if imported grainfed beef gained in market share, average beef prices would be higher. If imported grassfed beef gained share, average prices would move lower. Retail-to-wholesale margins could change in either direction. However, such changes are very hard to predict, quite possibly would be minor, and could cancel each other out. Although the price used is an imperfect representation of a price that would really prevail after liberalization, it indicates the order of magnitude by which Korean prices could drop.

Table 2 presents results of the two scenarios. The high scenario uses the elasticities estimated by Cho (1). The low scenario uses those estimated by Huh et al. (8). Both scenarios include full liberalization in 1990, with full adjustment to the same retail price change. Both scenarios freeze domestic beef production at the same level. The estimates of income elasticities are both high, and agree with conventional wisdom that the Korean beef demand is income elastic. The essential difference is between the price elasticities.

Despite the extremely low price elasticity, the low scenario shows strong growth in Korean consumption and imports, caused by rapid income growth and a high income elasticity of demand. Korean imports reach 340,000 tons by 2000,

over three times the 1989 level. This would amount to 18% of the 1989 level of North American and Oceania exports of beef to all destinations, and should be seen as a major addition to the trade in beef among hoof and mouth disease-free areas in the Pacific.

Under the high scenario, Korea's imports in 2000 would reach 700,000 tons, equivalent to 37% of 1989 levels of the Pacific beef trade. This would be a very significant addition to export demand for exporting areas. Using the lower income elasticity of 1.1 in the high scenario would reduce the import level by only about 100,000 tons. Thus Korea's import demand by 2000, given liberalization in 1990, would be somewhere between 340,000 tons (using the lowest reported price elasticity) and 700,000 tons (using the highest). A level anywhere in this range would be of great interest to beef traders. Korea represents a major potential market for beef, perhaps the third largest in the world.

B) Potential U.S. share of Korean imports

Only countries free of foot-and-mouth disease (fmd) can ship beef to Korea. Several factors have led observers (e.g., 9) to assume that, of these countries, Australia would provide the great majority of any Korean beef imports. Historically, this was the case from 1978-87; whenever Korea allowed substantial quantities of imports, Australia shipped the bulk of them. Three reasons, not necessarily consistent, are usually given: 1) Australian grassfed beef is cheaper than most other fmd-free beef; 2) Koreans prefer grassfed beef to grainfed beef; 3) Koreans do not discriminate between various types of beef, and thus purchase according to price. While the first reason is beyond dispute, the other reasons may not be valid.

Korean imports in 1988-90 showed marked differences from earlier periods. Grainfed beef, primarily from the United States but also from Australia, has had a major share of the imports. The landed price of the main U.S. grainfed product, boxed beef, exceeded that of the main Australian grassfed product, carcass beef, by only 22% in 1989. This price difference is not large, given the difference in product type and convenience between the two kinds of imported beef. Korean end uses of beef are becoming more diverse as the restaurant market and the urban household market move upscale. This favors a large share for grainfed beef. The foreign firms supplying grainfed beef, as noted above, are more ready than in the past to supply and develop the Korean market. Because the overall size of the potential Korean beef market is so large, the prospect of an increasing role for grainfed beef in Korea provides a strong incentive for U.S. firms, and the U.S. Government, to encourage the removal of Korea's trade barriers.

Tabl 2. Two Scenarios for Korean Beef Imports

1985-89 actual/estimated; 1995 and 2000 projected

	Unit	1985	1986	1987	1988	1989	1995	2000
Assumptions common to both scenarios:								
Population growth rate	percent	0.7	0.9	0.9	1.0	0.9	0.9	0.9
Real GDP growth rate	percent	6.9	12.5	11.7	11.3	6.5	6.5	6.5
Real retail price change, beef	percent	-17.4	-13.4	-1.5	16.0	19.7	0	0
Scenario 1--High price elasticity								
Income elasticity	ratio						1.38	1.38
Own-price elasticity	ratio						-1.34	-1.34
Change in consumption/person	percent	12	20.9	1.5	-7.6	1.1	7.7	7.7
Consumption/person	kg/yr, cwe	4.1	5.0	5.1	4.7	4.7	12.1	17.6
Consumption	1,000 mt	168	205	210	196	200	542	822
Production	1,000 mt	161	208	206	175	120	120	120
Imports	1,000 mt	5	1	1	20	93	422	702
Imports as prop. of 1989 total exports of N.Am. & Oceania	percent	0.2	0.0	0.0	1.1	5.0	22.5	37.5
Scenario 2--Low price elasticity								
Income elasticity	ratio						1.10	1.10
Own-price elasticity	ratio						-0.17	-0.17
Change in consumption/person	percent	12	20.9	1.5	-7.6	1.1	6.2	6.2
Consumption/person	kg/yr, cwe	4.1	5.0	5.1	4.7	4.7	7.3	9.9
Consumption	1,000 mt	168	205	210	196	200	327	461
Production	1,000 mt	161	208	206	175	120	120	120
Imports	1,000 mt	5	1	1	20	93	207	341
Imports as prop. of 1989 total exports of N.Am. & Oceania	percent	0.2	0.0	0.0	1.1	5.0	11.1	18.2

IV. Conclusions

In an era of controversy over agricultural protectionism, South Korea's beef import barriers have emerged as an important issue. This is not surprising, because the country has the potential by 2000 to import a lot of beef in the absence of the trade barriers--likely between 340,000 and 700,000 tons. At the same time, the real and perceived costs to traders of penetrating the Korean beef market have dropped because of the opening of the Japanese market. The beef industries in Oceania and North America have an interest in removing Korea's trade barriers and are likely to move to increase their operations in Korea when possible. Even under quite conservative assumptions, the potential size of Korea's beef market is considerable in the context of the world beef trade. There are good reasons to expect that the U.S. beef industry could maintain a significant share of this large, growing market, and export volume is certain to grow. The costs to U.S. firms of selling beef to Korea have dropped in the last decade as the Pacific (especially Japanese) market has developed. Grainfed beef

has a secure foothold in the hotel and restaurant markets in Korea, an important marketing factor in an urbanizing, growing economy. While the trade experience in 1989 revealed a 22% difference between the landed costs of the principal U.S. and Australian beef products, given the quality differences between the two kinds of beef, the extra cost of U.S. beef is not large enough to discourage further marketing efforts. Also the import quota and the role of the LPMO as the sole conduit to the Korean market, which has limited the free exchange of information between buyers and sellers, is changing. In view of the cost difference noted in 1989 and opportunities for increased marketing efforts that would occur in the wake of trade liberalization, it is reasonable to expect that U.S. beef would have a growing volume in a growing Korean import market.

The wide range of possible trade outcomes is in large part due to lack of knowledge about the degree to which Korean consumers respond to price changes. This is ultimately a data problem, one that will be difficult to resolve.

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