The Chinese Market for U.S. Pork Exports

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Introduction

Current living standards in China are about equal to living standards in Taiwan 25 years ago (*The Economist)*. This fact suggests that when incomes in China reach current income levels in Taiwan, the Chinese economy will be greater in size than the combined economies of the United States, Canada, the European Union, and Japan.

If this level of development is to be achieved, China's markets must be allowed to work freely, and consumers must be allowed to increase their consumption of meat, dairy products, alcohol, and fish to levels commensurate with their rising incomes. The challenge for China is that the country must achieve this consumption growth with only seven percent of the world's arable land. Given current population levels, China must feed 5.2 people for each acre of arable land in the country, whereas Europe feeds 1.64, the United States feeds .56, and the Russian Federation feeds only .44 persons per arable acre (see Table 1).

Table 1. Arable Land Mass and Population of China Compared to Data for the United States, the Russian Federation, and Europe

	Arable Land (1,000 acres)	Population (1,000 people)
China	231,770	1,208,842
Europe	305,435	505,502
Russian Federation	323,750	147,370
United States	464,355	260,631

Source: *FAO Production Yearbook 1994.*

Most experts believe China will need to import feed grains or livestock products as its income rises.

It has become obvious to most experts that China will need to import feed grains or livestock products to achieve consumer diets similar to those of the developed world, and that China's transition from a net exporter to a net importer of feed grains has enormous implications for U.S. pork producers.

Various studies have projected that China will be a large net importer, importing somewhere between 30 and 50 million metric tons of feed grains early in the next century (Coyle).* Countries that export feed grains, as China did in the early 1990s, must sell grains

*One metric ton of wheat is 36.74 bushels, and one metric ton of barley is 45.93 bushels.

at a discount to world market prices in order to cover transportation costs; whereas, countries that import feed grains must pay a premium over world market prices. These trade principles are evident in Japan and Taiwan, where pork producers pay about twice as much for feed as do pork producers in Iowa. China is in the midst of a transition from Iowa-level corn prices to Japanese-level corn prices. This transition will make the world's largest pork producer unable to compete with imported products.

In examining the Chinese market, U.S. pork producers must consider the following:

- Chinese consumer tastes are highly complementary with U.S. tastes since consumers in each country will pay a premium for cuts and products that consumers in the other country dislike;

- livestock feeding industries have proven to be extremely mobile in response to economic incentives;

- China currently has a larger trade surplus with the United States than does Japan and hopes to join the World Trade Organization in the near future; and

- the United States has a significant competitive advantage in supplying China with large volumes of the pork cuts that Chinese consumers will demand at an acceptable price.

This evidence suggests that U.S. pork producers have an unprecedented opportunity to create market growth. In this analysis, pork refers to muscle meats including the loin, chops, etc. and variety meats which include tongue, stomach, ears, kidney, feet, heart, and tail. Potential market growth is addressed in the following discussion about (1) the supply and demand situation for pork in China through 2007; (2) the Chinese market for pork variety meats and the potential benefits that will accrue to U.S. producers if this market is opened; and (3) actions that would allow U.S. pork producers to make optimal use of new market opportunities in China.

U.S. pork producers have an unprecendented opportunity to create market growth.

Pork Supply and Demand in China through 2007

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Data on the size of the Chinese pork market are readily available, but the quality of that data is extremely suspect. The USDA uses disappearance data provided by the Chinese government and shows per capita consumption of meat and poultry of 42 kilograms* (92.4 lbs.) in 1996. A study by Huang, a researcher at the Chinese Academy of Agricultural Sciences, uses household expenditure surveys, in which consumers actually report how much they buy, to calculate a per capita consumption level that is less than half of the USDA's estimate.

The USDA data are derived by estimating how many hogs were slaughtered and then estimating how much meat disappeared. The disappearance data includes spoiled meat and is upwardly biased if local officials inflate production levels to match production criteria. On the other hand, the survey data does not account for consumption that is obtained for free.

This issue of accurately measuring per capita consumption is important for two reasons. First, some analysts have looked at the USDA's high per capita number and predicted a decrease in its rate of growth as consumers reach saturation. Second, ten percent growth from a 42-kilogram base is much greater than ten percent growth from a 20-kilogram base.

To a certain extent, these errors will tend to offset each other. A projection that reduces expected growth from ten percent to five percent due to market saturation might well produce the same per capita consumption as a projection based on ten percent growth from a much smaller base. Because of the importance of accurately estimating this per capita level, the author undertook a field study on this topic during the summer of 1995.

Hayes found that a large potential for increased pork consumption clearly exists among rural consumers and lower-middle-class (and below) urban consumers in China. These groups together comprise about 90 percent of the population. Therefore, the projections presented here do not include a saturation effect.

Estimates by Hayes and others show that ten percent income growth in China will cause pork demand to increase by six percent.

* a kilogram is 2.2 pounds

Most projections show continued ten percent per capita income growth that, coupled with a population growth of 1.2 percent, should cause pork demand to increase by six percent to seven percent per year. This outward shift in demand will cause an increase in either prices or consumption, depending on whether the Chinese government allows pork imports.

Interviews with top Chinese government officials, conducted by Hayes during a second field trip in the summer of 1996, indicated that opening its pork muscle meat market to outside competition is very unlikely. As discussed in the following section, however, there is a strong possibility that the Chinese government will open its market for pork variety meats. In the absence of any liberalization in China's pork import policies, Chinese demand for pork will be met by domestic pork producers, who in turn will increasingly depend on imported grain. The demand increase will force pork prices up, allowing Chinese pork producers to modestly expand production in the face of increased production costs. Therefore, this analysis shows 2.5 percent annual growth in Chinese pork consumption.

Relatively slow consumption growth along with higher internal prices will make Chinese pork exports less competitive. However, the Chinese government has shown itself willing to subsidize its pork industry and, by extension, pork exports (USDA). The Chinese government accomplishes this by subsidizing feed inputs for some smaller producers and by allowing the state-owned processing industry to operate at a loss. Most of China's pork exports consist of vacuum-packaged muscle meats. This meat appears to be of good quality and competes directly with U.S. product in some destination countries (Russia and Hong Kong).

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For much of 1996, the cost of hog feed in China, converted to U.S. dollars, was 11.5 cents per pound, or RMB 2 per kilogram. This data was obtained by Hayes during interviews with a representative of the Hope Group, China's largest feed grain manufacturing company. Using the feed conversion factor obtained by the best operators (3.6:1) implies a *feed cost* of about $40 per hundredweight, which is roughly equilvalent to the total U.S. cost of production. United States' feed costs ranged from five cents to eight cents per pound over the same period. In addition to the U.S. feed cost advantage, a U.S.-Chinese quality differential of about thirty percent can be attributed to poor carcass composition for much of the Chinese inventory, in part because of low protein levels in hog diets and the presence of foot-and-mouth disease in

China. In addition, the Chinese packing and transportation industries operate at much lower levels of efficiency than do similar U.S. industries. These U.S. advantages imply that, in the absence of subsidies, China cannot compete against the United States at *today's* costs. As China's production costs grow within a protected environment, the U.S. advantage will increase. Although a more formal analysis of these subsidies would be required to prove a case against China in the World Trade Organization (WTO), U.S. pork producers would benefit from a WTO entry agreement prohibiting direct and indirect use of export subsidies.

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In the event that China continues to subsidize its domestic pork industry, U.S. feed grain exports will increase to meet China's wheat import needs. Total Chinese feed grain imports should reach about thirty million tons by 2010. Huang has argued convincingly that China's wheat imports will fall as its feed grain imports rise. This means that, all else being equal, economic forces in the U.S. will cause land now devoted to wheat to shift into feed grain production. One could make an argument that the benefits of increased U.S. pork exports would accrue to the corn belt, while the benefits of larger U.S. grain exports would be felt over a wider area as barley production grows. However, this conclusion would require a more formal analysis that linked comprehensive U.S. and China agricultural models.

Projections

Because the Chinese government places a strong emphasis on self-sufficiency in pork, Chinese negotiators at the WTO accession meetings will likely request permission to maintain the current *de facto* ban on pork imports. However, the United States is in a position to obtain some concessions from China, and one of these concessions might be to open China's pork market. Two sets of projections, each representing one of the above outcomes are presented in Figures 1 through 3. Both scenarios assume that Chinese pork exports will decrease. In the self-sufficiency (baseline) scenario, the decrease occurs because internal prices increase. In the import access scenario, the decrease occurs because free trade in pork products precludes subsidized exports.

Figure 1. Pork Production 1986-2007

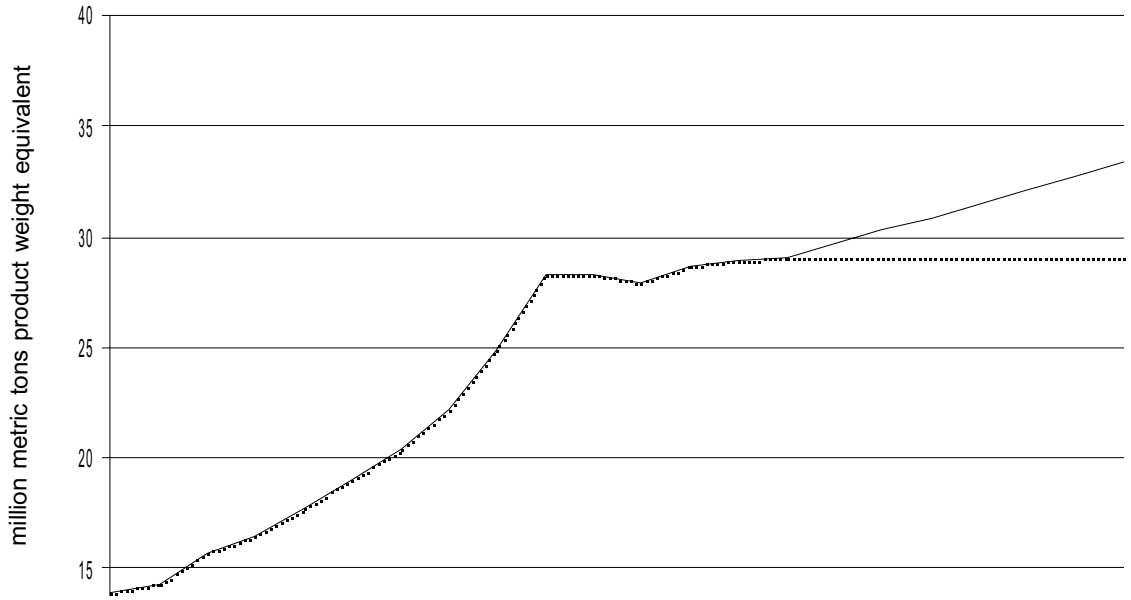


Figure 2. Pork Consumption 1986-2007

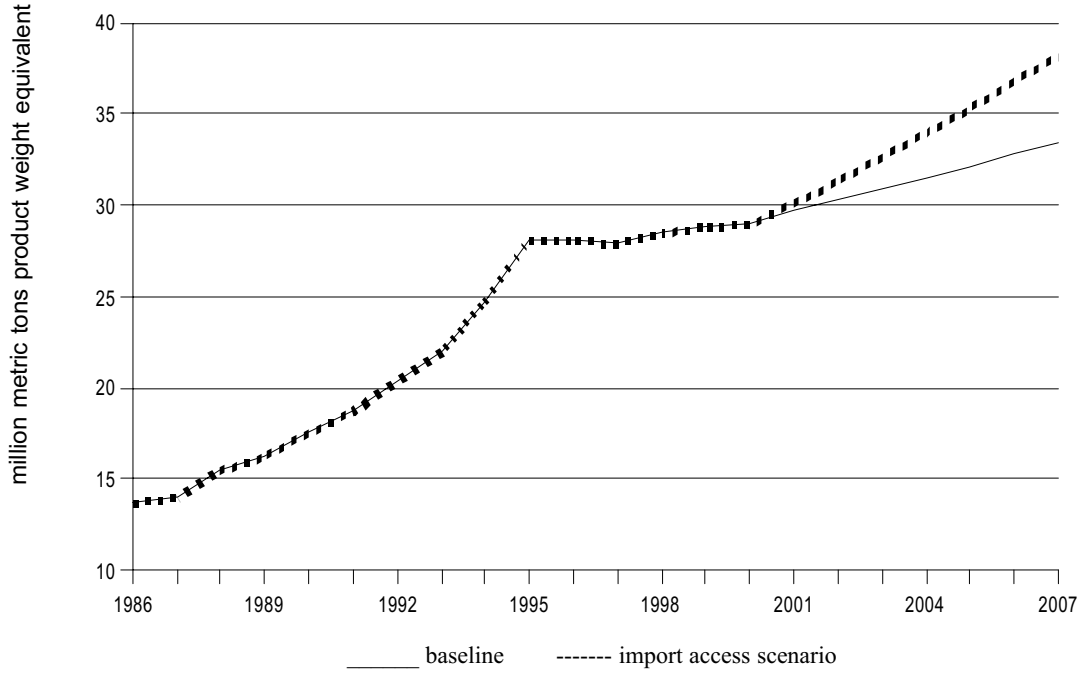
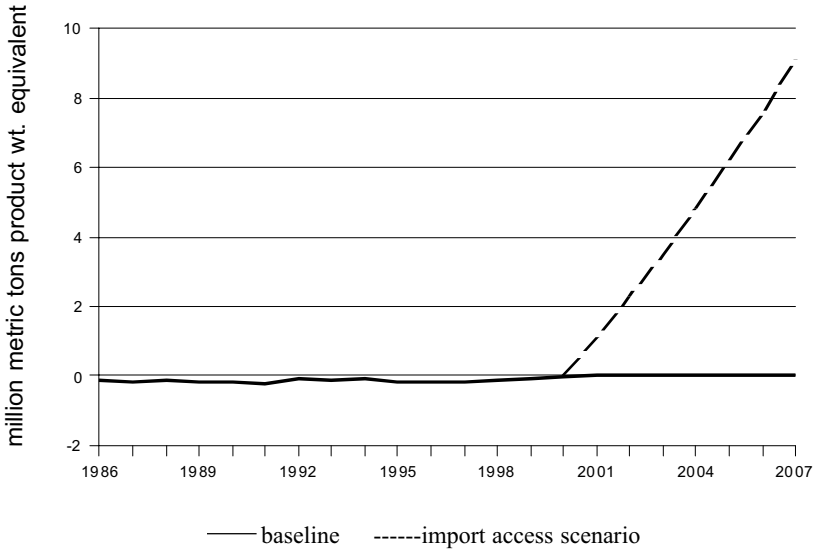


Figure 1 shows that production will be higher if the Chinese government continues a policy of self-sufficiency (the baseline), than if the government allows imports. Figure 2 illustrates that consumption will be higher with imports than with the baseline assumption of a policy of self-sufficiency.

Both scenarios assume that consumption and production will level off for the next two years as the market responds to the current surplus of frozen pork and relatively high production costs. After 1998, the import access scenario shows four percent growth in per capita consumption and zero growth in production. (Note that the four percent growth figure is lower than the six percent figure mentioned earlier to account for overestimated consumption levels inherent in the USDA data.) The self-sufficiency scenario shows two percent annual growth in both production and consumption.

Figure 3. Pork Imports 1986-2007



The self-sufficiency scenario shows a no-trade situation throughout the projection period. The import access scenario shows large imports at a level that exceeds total U.S. production. These figures make a very simple point; China is in the process of building a pork industry in the wrong place. If China continues its current policies, pork that could be produced in grain-surplus countries like the U.S. would instead be produced at great expense in a grain-deficit country. This misallocation of resources would cause Chinese pork prices to be much higher than would otherwise be the case and would divert Chinese invesment in agriculture away from other, more lucrative, opportunities.

The costs of this misallocation will increase over time as China tries to extract more and more pork from a limited supply base. Eventually, China will be forced to import some pork to reduce food prices as has happened in South Korea and Japan. Nevertheless, Chinese policy makers will work to delay this date.

China's concern about pork self-sufficiency can be understood when one considers the enormous quantity of pork (9.1 million metric tons, product weight equivalent) that China would need to import in the year 2007 under the import access scenario. Chinese policy makers are concerned about the possibility of an embargo or pressure to change their economic and social policies in response to the threat of a trade war. Curiously, this concern is less important when it comes to grain imports.

China's current restrictive trade policy will cause Chinese pork prices to rise above world market levels, and China's pork industry will evolve in a manner similar to that of Japan. Even if this occurs, there is some good news for U.S. pork producers from the continuation of a restrictive trade policy. China has been exporting between 150,000 and 200,000 metric tons (product weight equivalent) of pork muscle meat, excluding live animal exports to Hong Kong, and these exports should decline to zero over the next five years.

Also of relevance is the perception among Chinese policy makers that such enormous quantities of imports would drive world pork prices so high that pork would no longer be affordable. This latter concern is clearly false because pork prices in China will be much higher under the baseline scenario than under the import access scenario.

The level of concern about self-sufficiency among senior policy makers interviewed by the author makes it extremely unlikely that China will eliminate its ban on pork imports as part of the WTO process. However, it may be possible to obtain an agreement to replace the ban with a tariff or to open the market at some future date. Working to achieve these goals is probably the most important policy-related work that U.S. pork producers can undertake.

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There is one possible market opening that is achievable as part of WTO negotiations and that, if accepted, would be of immediate benefit to U.S. pork producers. That opening would be immediate and unlimited access to China's pork variety meat market.

The Potential Market for U.S. Pork Variety Meats in China

Unlike U.S. consumers, Chinese consumers view products such as loins and tenderloins as uninteresting and lacking in taste. Most Chinese dishes call for small pieces of strong-tasting products, and Chinese consumers will pay accordingly.

Chinese restrictions on pork variety meat imports are currently under review.

During May 1996, Hayes collected prices for pork and pork variety meats at Chinese wet markets and wholesale markets (see Table 2). The prices are presented both in U.S. dollars per pound and as a ratio of the meat or variety meat price to the loin price to avoid errors due to currency valuation.

The direct price comparison in Table 2 is somewhat suspect because of production subsidies in China, questions about currency exchange rates, and the different locations from which the prices were collected. The price ratios are, however, an accurate measure of the taste differences that exist between Chinese and U.S. consumers. For example, pork stomach sells at 82 percent of the loin price in China but at 40 percent of the loin price in the United States. Lungs sell at only 2 percent of the loin price in the United States but at 20 percent of the loin price in China.

The reason these ratios are so different is that, until recently, China has protected its variety meat market. Discussions between Hayes and numerous individuals along the Chinese pork chain indicate that Chinese restrictions on pork variety meat imports are currently under review. One reason for this review is that the market price differences shown in Table 2 are creating a large and very visible black market in imported variety meats, mostly from the United States. The Chinese government's attitude seems to be that some control over this market is better than no control. Also, the Chinese government is acutely aware of recent food price inflation, especially in urban areas. Imported variety meats are viewed by urban Chinese as being much more palatable and more attractive than the frozen split pork sides currently on offer from Sichuan province. Chinese pork producers realize that they cannot produce sufficient variety meats to satisfy local tastes without producing a surplus of loins.

These factors suggest that the United States could quite easily obtain a variety meat exemption as part of the WTO accession agreement,

Table 2. Price Comparison for Pork Cuts and Variety Meats in China and the United States

Cut	Observed Price in China ($/lb.)	Ratio of Product Price to Loin Price in China (percent)	Reported Price in the U.S. ($/lb.)	Ratio of Product Price to Loin Price in the U.S. (percent)
Loin	1.20	N/A	1.32	N/A
Lung	0.24	20	0.03	2
Stomach	0.98	82	0.54	40
Kidney	0.71	59	0.17	13
Lard	0.72	60	0.25	19
Feet	0.87	72	0.20	15
Boneless Butt	1.20	100	0.81	61
Ham	1.27	106	0.84	63
Tongue	1.61	135	0.55	41
Small Intestine	0.70	50	N/A	N/A
Large Intestine	0.38	31	N/A	N/A
Nape of Neck (incl. bones)	1.32	110	0.10	7
Head Mask	0.33	28	N/A	N/A

and it is useful to speculate as to what might happen if Chinese restrictions on variety meat imports were lifted and a low or zero tariff were applied to imported variety meats.

Recently, China permitted the importation of selected variety meats for sale in hotels. The official tariff on these imports was forty-four percent to which a seventeen percent sales tax was added. Discussions between Hayes and the individual who imported these products suggest that, after paying tariffs and sales tax, the variety meats imported under the official exemption were closely competitive with smuggled imports. This suggests that the tariff equivalent of the current ban is between forty and fifty percent.

Likely suppliers to China's variety meat market would include the United States (with an annual production of 8 million metric tons), Canada (production of 1.2 million metric tons), Denmark (prodution of 1.5 million metric tons), and the Netherlands (production of 1.36 million metric tons). Exporters that value variety meats such as Eastern Europe, Taiwan, and Mexico would not be in a position to supply this market. Thus, the potential suppliers have a combined production level of nine million metric tons (product weight equivalent). Contrast this with Chinese production of thirty-six million metric tons (product weight equivalent) and it becomes clear that variety meat prices in the rest of the world would tend to rise to Chinese levels, rather than Chinese variety meat prices falling to world levels. In other words, China would be the dominant market in pork variety meats.

Opening China's variety meat market could increase the value of the U.S. drop credit by at least forty percent.

To understand the impact of this liberalization on the U.S. pork industry, it is necessary to calculate the effect on U.S. drop credits of the removal of a forty percent to fifty percent tariff. The drop credit is the value of the variety meat package. Because U.S. prices would *rise* to Chinese levels, this is equivalent to calculating a forty percent to fifty percent increase in the U.S. drop credit. This method of calculating the impact of liberalization was used since it does not require projecting the actual volume of U.S. exports of variety meats. Due to the large number of variety meats, each with specific end uses, it is difficult to estimate aggregate export levels.

Prior to the recent surge in U.S. pork variety meat exports, U.S. drop credits averaged $6.50 per hog. More recently, the drop credit has risen to about $10.50 per animal as U.S. exports have grown because much of that product is smuggled into China. This drop credit does not include all the items that could possibly be exported under such a ban, such as lard and ears, but it is a reasonable approximation of

the current value of these products. A forty-five percent increase in the U.S. drop credit would add $4.72 to the value of each hog carcass or about $1.90 per hundredweight.

This additional value would eventually make its way back to U.S. hog producers without increasing retail pork prices in the United States. In fact, the U.S. broiler industry has discovered that new export markets for chicken legs and wing tips have actually reduced the cost of producing chicken breasts, thereby allowing U.S. poultry producers to become more competitive on the U.S. domestic market while at the same time improving profits.

Because U.S. hog producers and U.S. *and* Chinese pork producers would gain from liberalization with only a very small reduction in Chinese hog prices, almost all participants would benefit from such a change. It should therefore be possible to obtain some concession in this area during the WTO accessions talks. The net annual benefit to the U.S. pork industry of such a concession would be approximately $300 million per year.

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Conclusion

Used efficiently, Chinese agricultural resources would favor labor-intensive crops such as vegetables and fruits. This land use pattern would not include feed grain production because feed grains are land intensive and labor extensive. When China becomes an importer of feed grains, Chinese grain prices will increase dramatically, reflecting international grain transportation costs. It is much less expensive to transport boneless boxed pork at $0.14 per pound from Iowa to China than to transport the feed grain equivalent--$0.54 for the feed grain equivalent of one pound of pork. The high cost of transporting feed grains means that future growth in Chinese pork consumption should, in theory, be filled by meat imports. However, the enormous volume of China's import needs, 9.1 million metric tons, coupled with a very strong desire among Chinese policy makers for pork self-sufficiency, make it highly unlikely that China will open its market for pork muscle meats in the near future.

Chinese and American consumers complement each other because they each prefer different parts of the hog. It is the author's opinion, based on twenty days of interviews with Chinese officials and pork industry representatives, that China is prepared to open its variety meat market. Such a move would allow Chinese consumers access to products they view as delicacies but which are not effectively used in the United States. The move would also add about $300 million to revenues earned by U.S. pork producers without increasing pork prices on the U.S. domestic market.

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