

Trade Liberalization in the International Pork Sector: Analysis of Zero-for-Zero Options*

A Report Prepared by

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**Guelph, Ontario
November 1, 2000**

Paper presented at the annual meetings of the International Agricultural Trade Research Consortium (IATRC), Auckland, New Zealand, January 18-19, 2001.

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Executive Summary

The Uruguay Round Agreement on Agriculture started in motion a process to normalize trading relationships in agri-food products, bringing agriculture under trade rules and disciplines similar to those for other sectors. However, the failure to launch a new round of multilateral trade negotiations in 1999, the long process involved in multilateral negotiations in agriculture and depressed world commodity prices have prompted some countries to explore ways of reducing trade barriers short of a comprehensive reform package. One potential approach to trade liberalization is the zero-for-zero liberalization initiative that requires countries to eliminate export taxes and subsidies, and import tariffs for specific sectors only.

The purpose of this study is to assess the impacts of removing border protection on world pork production, consumption, trade, prices, producer revenues and the distribution of trade¹. To quantify these impacts, the Food and Agriculture Policy Research Institute (FAPRI) model of the world livestock sector is used. It is a partial equilibrium, non-spatial, policy-oriented, econometric model.

Several factors shaping developments in the world pork economy since the Uruguay Round have opened export opportunities for low-cost pork producers in North America and other countries. First, the continuing economic growth in East Asian countries with strong preferences for pork relative to other meats, but with limited agricultural and natural resources have fueled the growth in world pork import demand. Second, the breakdown in production infrastructure in Central and Eastern Europe and the Former Soviet Union has reduced the exportable surplus of pork from these countries. Third, pork prices reached their highest level in the last two decades, for two years in a row (1996 and 1997), as disease related problems exerted pressure on prices in disease free countries. The Bovine Spongiform Encephalopathy outbreak in the European Union shifted consumption away from beef to pork and poultry. Then the foot-and-mouth disease outbreak in Taiwan and classical swine fever in the European Union reduced the excess supply of pork from these countries. The high prices encouraged one of the largest build-ups in pork production capacity in history. However, with the Asian and Russian economic crisis hitting one after another, pork prices in North America dropped to record lows in 1998 and 1999. It is against this backdrop of untapped production potential in the North American swine-pork sector, and continuing low prices for pork that the zero-for-zero liberalization scenario gains appeal.

The attraction of the zero-for-zero proposal stems from its potential to increase world market prices for pork and to increase trade. However, when countries agree to a zero-for-zero proposal the tariff "concession" is extended on a non-discriminatory most-favored-nation basis. Consequently, it is possible for countries not liberalizing their pork markets to "free-ride" by maintaining their border protection and increasing their exports. Hence, trade negotiators need to identify a critical mass of countries that will benefit and agree to the zero-for-zero proposal, even in light of potential free riding by countries outside of the agreement.

¹ The reader is referred to section 5 where the subtle differences between the zero-for-zero proposal, the simulation analysis and the complete removal of border protection are discussed.

The distortions in the world pork market caused by large importers with import duties and large exporters using export subsidies have restricted pork trade, reduced world market prices, and distorted the distribution of trade among countries. Japan, the world's biggest importer of pork, also has one of the highest levels of protection with an implied import duty of 103 percent. This protection has restricted the growth in imports. Moreover, the way Japan implements its import protection, essentially a variable levy, has compromised the competitive advantage of North American low-cost suppliers by allowing high-cost suppliers such as Taiwan and South Korea to compete in the Japanese market.

South Korea liberalized pork imports in 1998 with its tariffs scheduled to decline to 25 percent by 2004. Taiwan, through a World Trade Organization accession agreement, has given the United States pork import quota of 15.5 thousand metric tonnes (tmt) at duties ranging from 15 to 50 percent. Pork imports by China are constrained by a 20 percent import tariff, a 17 percent value added tax and licensing procedures and phytosanitary controls that further restrict pork imports. Southeast Asian countries, including the Philippines, Thailand, and Indonesia have import duties ranging from 40 to 60 percent.

The European Union, the world's largest pork exporter, supports domestic prices through border measures and private storage aids. With a domestic price above world market levels the European Union has to subsidize some of its pork exports. The European Union reached its World Trade Organization limit of allowable subsidized exports in the 1998/99 marketing year. However, a substantial portion of European Union pork is exported without export subsidies, mostly pork from Denmark destined for Japan. The European Union has a tariff rate quotas on a variety of pork products equaling 76 tmt that are supplied largely by the Eastern European Countries, Baltic, and ACP countries at 20 to 45 percent import tariffs.

Trade in pork in the Americas is governed by bilateral and regional trade agreements with zero duties for imports from other member countries. Pork trade between Canada and the United States was liberalized during the Tokyo Round of multilateral trade negotiations. Under NAFTA, Mexico will have duty free access to pork from Canada and the United States in 2003. Brazil, Argentina, Uruguay, and Paraguay have liberalized pork trade in the MERCOSUR agreement.

Most Eastern European Countries have tariff rate quotas for pork imports, with over-quota tariffs ranging from 27 to 52 percent,² as well as subsidized exports particularly by Hungary and Poland. Estonia has an open pork import market, while the rest of the Former Soviet Union countries including the Russian Federation, Ukraine, Latvia, and Lithuania impose tariffs ranging between 15 and 40 percent.

The trade liberalization scenarios assume a five-year phased-in removal of implied duties between 2001 and 2005. A new pork market equilibrium price is determined under each scenario, in each year from 2001 to 2010, and the resulting production, consumption, trade, and prices are compared to the FAPRI 2000 baseline forecasts. The first simulation includes only World Trade Organization member countries in the zero-for-zero liberalization scenario. The second scenario includes both World Trade Organization

² Romania has higher rates.

member nations and non-member nations from the Former Soviet Union and the Eastern European Countries. In both the first and second scenarios China's pork trade is held at baseline levels. The third scenario includes China and Taiwan with a 27 percentage point reduction of implied duties in China. The fourth scenario is like the third but with more complete trade liberalization in China, a 70 percent reduction in implied duties, a reduction that is consistent with China's maximum capacity to handle imported pork.

As border protection is gradually eliminated, in all World Trade Organization member countries (Scenario 1), world pork imports increase by 50 percent in 2010, from 3,033 to 4,538 tmt. This exerts upward pressure on the world market price, which rises by 13 percent. Most of the increase in imports occurs in highly protected import markets such as Japan (859 tmt), the Philippines (370 tmt), and South Korea (162 tmt). High-cost producers also reduce their exports as export subsidies are eliminated. Hungary's exports decline by 52 percent, and the European Union's drop by 70 percent. Poland switches from an exporter to an importer of 202 tmt. The higher world prices encourage the expansion of pork production in low-cost producing countries, and re-allocate pork from domestic consumption to exports. Brazil's exports increase by 250 tmt, Canada's by 260 tmt, and the United States by 1,891 tmt. Importing countries with minimal or no border protection (e.g., Hong Kong) and non-WTO member importing countries (e.g., Russian Federation) reduce their imports as world market prices increase.

With additional import markets opening in the Former Soviet Union and Eastern European Countries in Scenario 2, pork imports increase by 65 percent and world pork prices rise by 16 percent. The major cause is larger imports by the Russian Federation which increase by 67 percent (579 tmt). This additional demand is met by the slower growth of imports from World Trade Organization member countries (e.g. Japan), slower decline in exports from high-cost pork producing World Trade Organization member countries (e.g., European Union), and additional supplies from the low-cost pork producing countries. Canada's exports increase by 299 tmt and the U.S. by 2,195 tmt.

Scenario 3 opens the import markets of China and Taiwan, which more than doubles world pork import demand, reaching 6,466 tmt in 2010. As a result, world pork prices rise by 18 percent. Brazil, Canada, and the United States have a combined increase in exports of 5,319 tmt.

With higher tariff reductions for China in Scenario 4, world pork imports more than triple (reaching 11,100 in 2010), and cause prices to rise by 35 percent above baseline levels and more than double from Scenario 1 levels. At this higher price, many countries are able to provide excess supplies of pork to the world market, including traditional exporters like Brazil, Canada and the United States. However, Hungary also expands its exports, and Australia and Mexico switch from being pork importers to being pork exporters. The European Union becomes a major pork exporter, 827 tmt above their baseline level, all without export subsidies.

Pork trade liberalization is very attractive to producers in North America and Brazil. Their gross revenues rise, as they are able to export more pork at higher prices. The producer revenue impacts in the European Union are not large, and European Union revenues are increased under Scenario 4. Producers in some highly protected markets receive lower gross revenues with liberalization including Japan, the Philippines, South Korea, Poland, and the Czech Republic.

The simulation results highlight the importance of China in any pork trade liberalization scenario. The more complete trade liberalization is in China the larger the gains to traditional pork exporting nations, the smaller the losses to pork producers in protected markets and the greater the opportunity for nations such as the European Union to export pork without the use of export subsidies.

1. Introduction

Trade and domestic policy reform are a continuing feature of world agrifood markets. While previous Rounds of multilateral trade negotiations were not successful in bringing agriculture under trade rules and disciplines similar to those for manufactured products, the Uruguay Round began the process of normalizing trade in agrifood products (Josling, Tangermann and Warley; IATRC). New multilateral trade negotiations were expected to be launched, in December 1999, during the Ministerial Meetings in Seattle. However, the negotiations to start the new round collapsed when Member countries were unable to agree on an agenda for the talks (Meilke and Huff).

Multilateral negotiations on agriculture and services began in 2000, as mandated by the Uruguay Round Agreement, but not much is expected to happen with no agreement on the scope of the negotiations and no deadline. The first meeting of the Committee on Agriculture, in March 2000, agreed on a work program for the first phase to March 2001, and a few weeks later a Chair for the Committee on Agriculture was selected. However, with world commodity prices at depressed levels, producers in low-cost exporting nations will be intensifying their efforts to open markets. This raises the question of whether there are ways to continue making progress in reducing agrifood trade barriers without having to negotiate a complete package of reforms?

One potential approach to agrifood trade liberalization is the zero-for-zero sectoral approach that would require countries to eliminate export subsidies, import tariffs and export taxes in a particular sector³. Several zero-for-zero agreements, in industries such as pharmaceuticals, medical devices, pulp and paper and allied paper products were reached during the Uruguay Round of negotiations. As a result of success in these areas, some agrifood sectors have been suggested as candidates for the zero-for-zero option. These commodity sectors include pork, barley and malt, oilseeds and oilseed products.

As one of the sectors in agriculture that is least affected by border policies, the pork sector may be a good candidate for the zero-for-zero approach to international policy reform. However, prior to the negotiations it is important to deepen the understanding of what the zero-for-zero proposal means for the pork market. For this reason, the Canadian Pork Council, the United States National Pork Producers Council and Agriculture and Agri-Food Canada commissioned the authors to conduct a quantitative analysis of the impacts of removing border protection in the international pork market.

The objective of this paper is to assess the impacts of removing border protection on world pork trade. The assessment provides quantitative measures of the economic impacts of trade liberalization that will help to weigh the benefits and costs of the proposal. In order to achieve this objective the Food and Agricultural Policy Research Institute (FAPRI) agricultural model is used. FAPRI is a multi-country, multi-commodity simulation system with the capability of examining international tariff and export subsidy

³ Throughout this report the term "removal of border measures" will be used as synonymous with the zero-for-zero proposal. However, there are subtle and important differences in the complete removal of border measures, zero-for-zero and the removal of implied protection as is done in the simulation exercises. These differences are discussed in detail in section 5.

elimination. The key questions addressed with regard to trade liberalization in the pork market are:

- the impacts on the price of pork;
- the impacts on the supply and disposition of pork;
- the impacts on the revenues of pork producers ;
- the distribution of trade changes across countries;
- the importance of obtaining a multilateral agreement on pork trade liberalization with at least a critical mass of World Trade Organization (WTO) members; and
- the importance of obtaining a multilateral agreement on pork trade liberalization with at least some non-WTO members, in particular China.

2. The World Pork Economy

Pork is widely consumed in East Asia, the European Union (EU), and the Central and Eastern European Countries (CEECs). Of the top 20 pork consuming countries in the world, five are East Asian countries, including Hong Kong, Taiwan, China, South Korea, and Japan (Table 1). With the exception of China, these countries are all net pork importers. Few Asian countries have the production capacity to meet the demand created by their preference for pork relative to other meats. In many Asian countries, land area is limited and the opportunity cost of labor in the pork sector is high. Asia's feed inputs, which account for 65 to 70 percent of production costs, are very dependent on imported feed grains and oilseed meals. As a result, East Asia has been the primary driver of the growth in pork trade in recent years. This is true, even though Asia has the most protected pork import markets in the world.

Table 2 shows that China, the European Union, the United States, Brazil, Canada, and Poland represent a combined share of 83 percent of world pork production and 88 percent of net exports. While China is the largest pork producer, with a share of 45 percent, its share of net exports is only 8.09 percent. Conversely, Canada's share of net exports is 18.24 percent, even though its share of world pork production is only 1.67 percent. The EU and the U.S. are both large producers and major exporters of pork. Japan and the Russian Federation account for more than one-half of world net pork imports.

Several important events have shaped the pork sector in the last 4 to 5 years. In 1995, the Bovine Spongiform Encephalopathy (BSE) crisis in the European Union (mostly in the United Kingdom) shifted consumption away from beef to pork and poultry. This put upward pressure on pork prices, which reached their highest level in the last two decades, at US\$57 per cwt. in 1996 (Figure 1).⁴ This was followed by the foot-and-mouth disease (FMD) outbreak in Taiwan in early 1997, and the classical swine fever (CSF) outbreak in the EU (mostly in the Netherlands) in late 1997.

These disease problems reduced the excess supply of pork in the world, particularly pork normally flowing to Japan, and sustained the upward pressure on price for another year. United States barrow and gilt prices in 1997 averaged US\$54 per cwt. The high prices for two years in a row provided strong incentives for existing producers to expand and to consolidate. The high prices also encouraged the entry of new large producers and faster adoption of new technology.

⁴ United States barrow and gilt price, live weight.

However, at the height of one of the largest pork production build-ups in history, the Asian crisis and the Russian economic crisis in 1998 depressed import demand, resulting in record low pork prices in many countries. United States swine prices averaged US\$34 per cwt. in both 1998 and 1999. It is against this backdrop of untapped production potential in the North American swine/pork sector, and continuing low swine/pork prices that the zero-for-zero liberalization scenario gains appeal. The attraction of zero-for-zero stems from its potential to raise world market prices for pork and increase trade.

FAPRI Baseline Forecasts for Pork

The FAPRI 2000 baseline forecast for pork shows a moderate recovery of world pork demand driven by favorable economic growth projections in most countries of the world, and continuing growth in population. On the supply side, the baseline includes the European Unions AGENDA-2000 reforms, which lowers feed grain prices in the EU making them more competitive in pork production. Canada's expansion of processing capacity changes its swine-meat export mix allowing it to export more pork. Continuing structural transformation into larger-size operations and faster adoption of advanced production technologies have expanded the production potential of the swine sector in many major producing countries.

3. Policy Environment for Pork Trade

Most countries have some form of protection for their domestic pork sector. The various policy regimes are influenced by each country's commitments under the WTO and/or regional (RTA) and bilateral trade agreements. What follows is a brief description of the major trade policies in selected pork producing and trading countries.⁵

Asia

Northeast Asia

Japan is one of the most protected pork markets in the world. It maintains domestic pork prices using a price support band (Fabiosa). The midpoint of the price band is determined using an average farm price adjusted by an index of the annual cost of finishing slaughter-ready swine. The Livestock Industry Promotion Corporation (LIPC) intervenes in the market through its purchase (or storage subsidies granted to producers), and selling activities to ensure that domestic market prices are always between the upper and lower limits of the price band. Japan's pork import regime has been in effect since April 1, 1995. In this regime, there are two sources of tariff increases, in addition to tariff increases available as special safeguards under the Agreement on Agriculture. First, if imported pork is priced (CIF basis) below the gate price, an additional duty is added to raise the value of the shipment up to the gate price. As of April 1, 2000, the gate price is 393 yen/kg for carcasses, 524 yen/kg for cut meat and 897.59 yen/kg for processed pork. If the price of pork is above the gate price, only the ordinary customs duty is applied (now 4.3%). Second, under a unique snapback provision negotiated by Japan during the Uruguay Round, if the volume of imports exceeds 119 percent of the previous three-year average, calculated on a cumulative quarterly basis, the gate price "snaps back" to a higher level (24 percent higher) for the remainder of the year. As well, under Article 5 of the Agreement on Agriculture, Japan can impose a special safeguard in the form of a

⁵ This discussion is illustrative of the policies used in the international pork market and cannot be considered comprehensive.

higher tariff if certain price or volume conditions are met. The snapback safeguard (in the form of a high gate price) was in place July 1, 1996 until July 1, 1997, as well as the special safeguard (in the form of a higher tariff) from January 1, 1997 until March 31, 1997.

Under the Uruguay Round Agreement, Korea established a gradually increasing import quota, in 1995, for frozen pork which was completely liberalized on July 1, 1997. The tariff for frozen pork in 2000 is 29.8 percent that will be reduced to 25 percent in 2004.

On April 2, 2000 Korea confirmed an outbreak of Foot and Mouth Disease (FMD) on a cattle farm and undertook nationwide measures to control the disease. While FMD did not spread to Korea's swine herd it has shut down Korea's pork export market. Prior to the FMD outbreak Korea had 13 percent of the Japanese pork market. It is expected that in the next 2 - 3 years, Korea's swine inventory will drop by an amount equal to the pork export volume.

Historically, Taiwan has exported premium pork cuts to Japan, with exports representing close to 40 percent of Taiwan's total slaughter at the peak of its trading activities. However, the FMD outbreak in 1997 closed Taiwan's export markets and caused contraction of its swine sector by 39 percent. Prior to its negotiations to become a member of the WTO, Taiwan banned imports of some pork products, mostly non-muscle meat and pork offal that was not exported to Japan. However, in 1998, in the course of its negotiations, Taiwan granted the U.S. quotas of 5,000 tonnes of bellies and ribs and 7,500 tonnes of pork offal. Other trading partners pressed Taiwan to extend quotas to other countries and, in July 1999, Taiwan allocated quotas to countries other than the U.S., effective until December 31, 1999. In January 2000, quotas for 3,080 tonnes pork bellies and 5,000 tonnes were renewed on a global basis, effective to June 30, 2000. The following tariff rates apply: 15 percent for bellies, ribs, and other muscles, 25 percent for stomachs, hocks and feet.

Hong Kong has a free market in pork. Of its total pork supply, 46 percent comes from the meat equivalent of imported swine (mostly coming from China) and 49 percent from imported pork. An increasing proportion of Hong Kong's pork imports are re-exported (primarily to China) accounting for 29 percent of 1999 total imports, and 63 percent of pork offal imports.

Official pork imports by China are constrained by a 20 percent import tariff, 17 percent value added tax, and strict licensing procedures (Fuller). Although sanitary issues are important, the State Administration of Entry-Exit Inspection/Quarantine (CIQ-SA) has approved pork imports from two Canadian exporters. More approvals are expected shortly. In 1999, the U.S. and China signed a bilateral agreement on U.S.-China Agricultural Cooperation, in which China agreed to recognize the U.S. certification system for meat and poultry, thereby permitting importation from all USDA-approved plants.

Southeast Asia

The Philippines agreed under the UR to provide liberalized market access for products through the implementation of a tariff-rate quota with an initial minimum access level of

32,500 tonnes per year beginning in 1995 reaching 54,000 tonnes by the year 2004. In 2000, the within-quota tariff is 30 percent and the over-quota tariff is 60 percent.

Very high import duties have limited exports to Thailand. The tariff in 2000 is 49 percent, with a reduction commitment to 40 percent in 2004 for carcasses, half-carcasses and ham (bone-in), and 30 percent for other products. An additional duty of five Baht per kilogram, plus 7 percent are added for processed pork.

Indonesians are predominately Muslim (87 percent), so pork is consumed by a small minority of the total population. A special import license is required to import pork products, and all products must bear a label indicating the pork content. Pork products must be kept separate from "halal" products during transportation and storage, which, given the small quantities of pork imported by Indonesia, adds to the cost of exporting pork to Indonesia⁶. Indonesia's declared bound import duty is 59 percent in 2000, and declines to 50 percent by 2004. However, the actual applied duty is reported to be in the neighborhood of 5 percent.

America

North America

Under NAFTA, the U.S. and Canadian pork markets are free of any restrictions. U.S. and Canadian exports of fresh, chilled and frozen pork to Mexico are charged an 8 percent tariff in 1999, while non-NAFTA members are charged 12.33 percent⁷. Variety meats and processed products are already duty-free, while the other meats will be duty-free within the NAFTA countries by 2003.

South America

Pork trade among MERCOSUR-member countries is duty free. Imports from non-MERCOSUR members are charged 35 percent in Argentina and 55 percent in Brazil. A number of South American countries prohibit imports from countries not free of Porcine Respiratory and Reproductive Syndrome (PRRS).

Europe

European Union

The EU administers a price support mechanism that is implemented through private storage aids. A "basic price" is set every 12 months that provides remunerative returns to producers without building structural surpluses. The basic price is currently Euro 150.9 per 100 kilograms carcass weight. A storage assistance payment is triggered when the EU reference price falls below 103 percent of the basic price and is expected to stay below this level, after adjusting for seasonal and cyclical movements in prices (Meat and Livestock Commission).

With domestic prices that are higher than world prices under this price support scheme, the EU subsidizes pork exports. The URAA limits the EU to a maximum quantity of 444 tmt of subsidized pork exports. In 1996/97, only 55 percent of the GATT limit was used by the EU, and in 1997/98 only 34 percent was used. However, with the recent record

⁶ Halal food products, including meat, are produced according to Islamic rules. Processing plants are certified by Islamic bodies which are recognized internationally.

⁷ Each member country of NAFTA also has bilateral accords with other nations, each with its own import regime.

low prices, the EU reached its 1998/1999 limit on March 1999. Despite high prices, the EU (particularly Denmark) is still able to export non-subsidized pork to lucrative markets in Asia such as Japan. The EU also has a TRQ for pork imports of 76 tmt, which is charged a specific duty of 536 Euro per ton⁸.

Russia and the FSU

Pork imports by the Russian Federation are charged a 15 percent duty but not less than 0.20 to 0.25 Euro per kilogram. A similar duty structure is used by the Ukraine, with a tariff of 30 percent but not less than 0.50 Euro per kilogram. For the other FSU countries, the Moldova duty of 20 percent is used as their measure of tariff protection. Estonia has no tariff on pork imports. Latvia and Lithuania have declared duties of 45 percent and 30 percent, respectively.

Central and Eastern Europe

Pork imports into Bulgaria are charged a 40 percent duty but not less than 0.62 Euro per kilogram. Slovenia has an import duty of 11 percent. The rest of the Eastern European countries have TRQs. The Czech Republic has a TRQ of 25 tmt with a within-quota rate of 27 percent and over-quota rate of 39 percent. Hungary has a TRQ of 20 tmt and rates of 15 and 52 percent, on within and over-quota shipments. Poland has a TRQ of 60 tmt and rates of 30 and 38 percent. Slovakia has a TRQ of 10 tmt and rates of 28 and 39 percent, and Romania has a combined TRQ for beef and pork of 19 tmt and rates of 115 and 333 percent.

A number of Eastern European countries have subsidy commitments under the URAA that are not used due to budgetary constraints. The Czech Republic has a subsidized pork export quantity limit of 10.1 tmt in 2000. Hungary has a combined maximum subsidized export limit of pork and slaughter pigs of 126 tmt in 2000 at a rate of 38.50 huf. per kilogram. Romania has a combined maximum subsidized export limit for beef, pork, and lamb of 141 tmt in 2004. Slovakia has a subsidized export limit of 5 tmt.

Poland's competitive advantage has suffered from structural deficiencies in its processing sector. As a consequence, price supports and border measures have been adopted. A price band is maintained through market intervention by a government agency. Export subsidies are used to sell pork abroad, being applied either directly or indirectly by the government agency charged with market intervention.

4. World Livestock Model Description

In order to assess the impacts of removing border protection on world pork trade, the FAPRI International Livestock and Poultry Model (FLPM) was used to simulate several liberalization scenarios. FAPRI conducts an annual 10-year baseline projection of the world agricultural market. For livestock, the baseline includes projections of herd size, meat production, consumption, stocks, trade, and prices, conditioned on the macroeconomic and policy environment. The results from the scenarios are compared to the FAPRI baseline to determine the impacts of policy changes.

⁸ The TRQ for pork covers several tariff lines and the duty represents an average over these tariff lines.

The FAPRI model is a partial equilibrium, non-spatial, policy-oriented, econometric model. It is a partial equilibrium model because it treats only the major commodities in the agricultural sector as endogenous, while the rest of the economy is considered exogenous. It is non-spatial because trade flows are aggregated without consideration of sources and destinations of bilateral trade flows. The model is oriented toward trade policy analysis by incorporating policy variables such as domestic support and border policies. It is an econometric model, in that the parameters of the model are estimated when there is sufficient historical data. When data is not available, parameters are taken from the literature or specified by market experts.

Table 3 shows that the FAPRI Livestock and Poultry Model (FLPM) covers 31 countries⁹ and 5 commodity groups.¹⁰ FLPM's coverage of the pork sector is extensive, representing 96 percent of world pork production reported by USDA. The livestock model is broken down into country sub-models, each containing demand, supply, trade, and price equations. As indicated in Table 3, commodity coverage varies across countries, but the vast majority include the three major meats: beef, pork, and broilers.

Domestic consumption of pork in each country is determined by a constant-elasticity, per-capita demand equation similar to the one shown in equation [1].

Pork Demand

$$[1] \quad \ln\left(\frac{D_{it}}{POP_t}\right) = \theta_{i0} + \sum_j \theta_{ij} \ln\left(\frac{P_{jt}}{CPI_t}\right) + \theta_{iy} \ln(y_t) \quad i = \text{pork}, j = \text{beef, pork, broilers}$$

In equation [1], D_{it} is the total demand in period t for pork, p_{jt} is the price of meat j , CPI is the consumer price index, y is the per capita real gross domestic product (GDP), and POP is the population. The greek letters are parameters.

Table 4 shows the highly disaggregated coverage of supply variables in the model. Except for the breeding herd, all of the animal stock variables are derived as accounting identities, while all of the flow variables are determined from behavioral equations. Feed costs are introduced in the supply system through a feed cost index, which is calculated for each animal category by aggregating the feed grain (corn, barley, sorghum, wheat, and oats) and oilseed meal (soy meal, sunflower meal, and rapeseed meal) prices according to each feed's historical share of total feed cost.

Although the specifications of equations vary across countries, the basic structure of pork supply is illustrated in equations [2]-[8]. The variables are defined in Table 5.

⁹ The European Union is an aggregate of its 15 member countries. Other Eastern Europe is an aggregate of Albania, Bosnia-Herzegovina, Croatia, Macedonia, and Yugoslavia. Other FSU is an aggregate of Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, and Uzbekistan. The Rest of the World Category includes all of the other countries.

¹⁰ Fish is covered in China (PRC), and eggs are covered in the U.S. and China.

Sow Ending Inventory (SWCOT)

$$[2] \quad \ln(\text{SWCOT}_t) = \theta_0 + \theta_1 \ln(\text{SWCOT}_{t-1}) + \theta_2 \ln\left(\frac{P_t}{\text{FCI}_t}\right)$$

Barrow and Gilt Ending Inventory (BGCOT)

$$[3] \quad \text{BGCOT}_t = \text{BGCOT}_{t-1} + \text{HQSBN}_t - \text{HQKBG}_t - \text{HQUDD}_t - \text{SWADD}_t$$

Pig Crop Born (HQSBN)

$$[4] \quad \ln\left(\frac{\text{HQSBN}_t}{\text{SWCOT}_{t-1}}\right) = \theta_0 + \theta_1 \ln(T)$$

Sow Slaughter (HQKSW)

$$[5] \quad \ln\left(\frac{\text{HQKSW}_t}{\text{SWCOT}_{t-1}}\right) = \theta_0 + \theta_1 \ln\left(\frac{P_t}{\text{FCI}_t}\right)$$

Boar and Gilt Slaughter (HQKBG)

$$[6] \quad \ln\left(\frac{\text{HQKBG}_t}{(\text{BGCOT}_{t-1} + \text{HQSBN}_t)}\right) = \theta_0 + \theta_1 \ln\left(\frac{P_t}{\text{FCI}_t}\right)$$

Average Carcass Weight (HQYAN)

$$[7] \quad \text{HQYAN}_t = \theta_0 + \theta_1 \left(\frac{P_t}{\text{FCI}_t}\right) + \theta_2 T + \theta_3 \left(\frac{\text{HQKSW}_t}{(\text{HQKBG}_t + \text{HQKSW}_t)}\right)$$

Pork Production (POSPR)

$$[8] \quad \text{POSPR} = \text{HQYAN}_t * (\text{HQKBG}_t + \text{HQKSW}_t)$$

The primary driver of pork production over time is the sow inventory equation [2]. Producers increase sow inventories in years when pork prices rise relative to the cost of feed, reducing sow slaughter [5] and retaining gilts [3]. Greater ending sow inventories increase the production of piglets [4] in the following year, increasing the number of animals available for slaughter. As the pork price rises, a greater proportion of the available animals for slaughter are processed [6], raising the supply of pork. Pork production [8] is calculated from the product of total slaughter and average slaughter weight [7]. Slaughter weights increase slightly as feed costs decline relative to pork prices, but the major source of pork production changes comes from fluctuations in slaughter numbers. Other equations and identities in the pork sector work with equations [2]-[8] to ensure that pork supplies do not exceed the quantities that can be supported by biologically feasible changes in animal inventories.

Table 6 shows the own-price elasticities of demand and the long-run supply elasticities of pork in various regions included in the model. Demand is price inelastic in all regions. The United States is the most price responsive consumption market with a demand price elasticity of -0.65, followed by Argentina (-0.41), Australia (-0.40) and New Zealand (-0.39). Pork demand is less elastic in Japan (-0.31), Canada (-0.21) and the European Union (-0.18). One-half of the countries in the model have direct pork price elasticities more inelastic than -0.20. The implication of the inelastic demands is that consumption increases in countries lowering tariffs will be modest.

The FLPM differentiates short-run and long-run supply response. As a result, pork supply does not react immediately to price changes. The longer prices remain above/below baseline levels the larger the supply response. Table 6 shows the long-run supply response elasticities in each of the countries. Only six countries have inelastic long-run supply responses, the European Union (0.38), Hong Kong (0.54), Japan (0.69), South Korea (0.89), Other FSU (0.75) and Other East Europe (0.96). The most price elastic markets are Russia (2.41) and the Ukraine (2.47). The United States and Canada have long-run supply elasticities of 1.39 and 1.49, respectively¹¹. Countries with the most elastic supplies will increase/decrease their pork production the most as domestic prices rise/fall with tariff reductions.

Each country's pork trade is determined as the excess supply (or demand) for pork on the domestic market. Given domestic pork prices, excess supply in the i^{th} country (ES_i) is defined in equation [9] as the difference between domestic production (S_i) and demand (D_i).

$$[9] \quad ES_i = S_i - D_i$$

When excess supplies are negative, they become excess demands. World market equilibrium occurs when the sum of net pork imports for all importing countries equals the sum of net pork exports for all exporting countries. In other words, the sum of excess supplies across countries equals zero when the global pork market is in equilibrium.

$$[10] \quad \sum_i ES_i = 0$$

Global equilibrium is achieved in the FAPRI model by finding the world reference price, which satisfies the equilibrium condition specified in equation [10]. The FLPM uses the U.S. Iowa-Southern Minnesota Barrow-Gilt price as the world reference price in the pork sector. Because wholesale pork prices consist of the cost of the raw material input (swine) and the cost of processing that input into pork, fluctuations in swine markets are transmitted to wholesale pork prices, particularly when processing costs are relatively stable. Moreover, variations in the price of swine influences the price of virtually all cuts of pork, allowing the swine price to represent changes in the prices of the complete spectrum of traded pork products. From equation [10], it follows that the U.S. barrow and gilt price that clears the global market is the price, where the excess supply of pork in the United States is exactly equal the sum of the excess demands from all other countries. This condition is shown in equation [11]

$$[11] \quad ES_{us} = -\sum_{i \neq us} ES_i = \sum_{i \neq us} ED_i$$

The world reference price is transmitted into the domestic price in markets outside the United States by adjusting for exchange rates, transportation costs, duties, and quality differences.¹² Pork producer prices in various countries are quoted in terms of carcass

¹¹ These elasticities imply that environmental rules and regulations, especially in North America, will not severely inhibit the expansion of swine production. North American swine production expands by 13-34 percent, by 2010, in the liberalization scenarios. To put this expansion in perspective, between 1990 and 1999 United States swine production increased by 21.5 percent and Canadian swine production by 28.7 percent.

¹² For details see Appendix I.

weight, wholesale cuts, or liveweight. In order to ensure comparability of prices, all domestic prices are converted to a liveweight equivalent using standard conversion ratios. Once the domestic price is converted into a liveweight equivalent, the relationship between the world reference price and the domestic price follows from equation [12].

$$[12] \quad p_t^d = \left(p_t^w (1 - \delta) + c \right) (1 + \tau_t) e_t$$

In equation [12], τ is the ad valorem implied import duty, p is the price of pork in liveweight equivalent, the index d denotes domestic, the index w denotes world, e is the exchange rate, $0 \leq \delta \leq 1$ is a quality adjustment parameter, and c is the cost of transportation.

FAPRI obtains its historical macroeconomic data from the International Financial Statistics, while its growth rate projections are obtained from WEFA and the United Nation's Project Link. Policy and price information is obtained from national and international sources (e.g., the WTO and the Foreign Agricultural Service of the United States Department of Agriculture (FAS-USDA)). The FAPRI model assumes policies are static in its baseline projections, implying that only currently scheduled trade liberalization and domestic policy reforms are incorporated. Historical supply and utilization data are obtained from the USDA's Production, Supply, and Demand (PS&D) View database, the Food and Agriculture Organization (FAO), and the Organization for Economic Cooperation and Development (OECD).

5. Description of Scenarios and Expected Results

Each of the four scenarios evaluated in this study involves the complete removal of implied tariffs, in the pork sector, in a selected subset of countries.¹³ The scenarios are designed to illustrate the importance of having various combinations of countries remove their border protection.¹⁴ The implied duty is used as a summary measure of net protection, accounting for all border instruments used by the country. It is estimated based on the price wedge between the domestic price and a comparable world market price in the baseline simulation. In order to better understand the simulations it is important to understand the differences between 1) the implied tariffs used in this study; 2) border protection; and 3) the zero-for-zero proposal. The zero-for-zero proposal requires countries to remove their tariffs and to eliminate export subsidies and taxes. The zero-for-zero proposal does not require countries to remove non-tariff border measures nor domestic support. Some forms of non-tariff border measures are inconsistent with zero tariffs, for example minimum import price schemes; and some forms of domestic support (e.g. market price supports) are inconsistent with an open border. However, even with zero tariffs and no export subsidies/taxes some non-tariff measures could be maintained. The most obvious non-tariff measures relate to animal and human health standards. Hence, the zero-for-zero proposal is similar but not equivalent to the removal of all border protection. In the simulations, the differences between quality adjusted domestic prices and a world reference price are used to measure implied tariffs. These

¹³ An exception to the removal of all border protection is China for reasons explained later in this section.

¹⁴ If only a sub-set of countries agrees to the zero-for-zero proposal the zero tariff rate has to be extended to all countries on a MFN basis.

implied tariffs capture any border measure that drives a wedge between domestic and world prices. Consequently, they are more consistent with the removal of all border protection than with a strict zero-for-zero trade liberalization scenario. A comparison of the implied tariffs with known applied tariffs suggests that the implied tariffs consist primarily of tariff protection or other forms of border protection that would be eliminated under the zero-for-zero proposal. However, the implied tariffs most likely include some non-tariff measures that could be maintained in the face of zero tariffs. To the extent that they do, the trade liberalizing effects of the zero-for-zero proposal have been overstated. The authors feel this bias is small, but without detailed quantitative measures of non-tariff barriers to trade in pork, by country, it is impossible to be more precise.

The world price is adjusted for transportation costs and product quality when necessary (Appendix I).¹⁵ The estimated implied duty is calculated according to equation [13].

$$[13] \quad \tau_i = \left(\frac{p_i^d}{p_i^w e_i - \delta p_i^w e_i + \lambda c e_i} \right) - 1$$

Transportation costs are added to the world price for importers using the parameter λ , where λ is 1 when the country is an importer and zero otherwise. The case of Poland is used as an illustration. The average implied duty for Poland is 35 percent. Polish pork is of lower quality compared to U.S. pork and is discounted by 10 percent. In the baseline, Poland is a net exporter, hence, no transportation cost is added to the world price. However, in some of the scenarios Poland switches from being a net exporter to a net importer, making transportation costs relevant.¹⁶

The implied duties incorporated in the model are an important element of the quantitative analysis. In Table 7, the implied duties from the FAPRI model are presented for three different time periods: a) the maximum tariff for the period 1994-99; b) the average implied tariff for 2000-2005; and c) the average implied tariff for 2006-2010. In addition, Table 7 contains two other columns of data showing the applied tariffs obtained from the TRAINS (UNCTAD) database and the declared tariffs obtained either from the WTO, or from United States attaches in the various countries. Unfortunately, there is not a close correspondence between the declared tariffs and the data from TRAINS. There are many potential reasons for the discrepancies but three important ones are: 1) applied and bound tariffs can differ greatly, 2) in many countries imported pork products cover more than one tariff line, and 3) simple recording errors.

For this study the most important thing is for the implied tariffs to be "reasonable". A comparison of the implied tariffs (2006-2010) from the FAPRI model with those from the other data sources shows that the implied tariffs are either the same or similar to those from at least one of the other sources in 17 of the countries. For the European Union, the implied tariff of 16.5 percent is more consistent with what is known about the EU domestic pork market than either the 90 or 1 percent tariffs from the other sources.

¹⁵ Some countries included in the model have foot and mouth disease, including the Baltic's, Brazil, Bulgaria, Philippines, Slovakia, Taiwan, Thailand, Russia and the Ukraine. However, imports by foot and mouth disease countries exceed exports from foot and mouth disease countries so it is not crucial to separate the foot and mouth free markets from the foot and mouth diseased markets. Appendix II shows the foot and mouth disease status of various countries.

¹⁶ Transportation costs are assumed to equal \$0.15 a pound of muscle meat.

For Japan and China, the FAPRI implied tariffs are considerably larger than the tariffs taken from the other sources. For Japan, the WTO and UNCTAD sources do not capture the influence of Japan's gate price system. For China, the FAPRI model projects a widening gap between domestic and world pork prices. Implicitly, the FAPRI baseline assumes that China's pork imports will be constrained using nontariff barriers.

In ten countries, the FAPRI implied tariffs (2006-2010) are significantly smaller than the declared or TRAINS tariffs. However, four of these countries are net exporters where domestic prices are expected to be low relative to world market prices. The remaining six countries are all in Eastern Europe or the Baltics. The largest tariff differences are in Romania where the implied tariff is 27.8 percent and the declared tariff is 115 percent, and in the Ukraine where the implied duty is 9.1 percent and the declared tariff is 73.4 percent. In these countries, it is possible that the applied duty is much less than the declared duty. In the other four countries the implied tariffs tend to be 10-25 percentage points below the duties from the other sources. To the extent that these duties are understated, so will the effects of trade liberalization.¹⁷

In three countries (Thailand, Australia and Brazil), over the 2000-05 time period the average implied tariffs are slightly negative. This implies that domestic prices are slightly below the world reference price. Unless, the country is using export taxes these negative values are mostly likely due to incomplete arbitrage, unaccounted for quality differences, or errors in the assumed transportation cost estimates.

Table 7 shows the FAPRI average implied duties for all the countries in the analysis. There is variability in the implied duties both in the historical, as well as in the simulation period. Among the importing countries, Japan has the highest level of implied protection in the baseline simulation, averaging 103 percent between 2006-2010. Other pork importers with significant protection include Russia (26 percent), the Philippines (31.5 percent), South Korea (25 percent), Taiwan (25.5 percent), and Argentina (15.8 percent). Importing Eastern European countries have implied protection rates for 2006 to 2010, ranging from 9 percent to 28 percent, with most of the countries in the mid to high teens. Among the major exporters, the U.S., Canada, and Brazil have either no or minimal border protection, while the European Union's implied protection is 16.5 percent, Poland's is 34.6 percent, and Hungary's is 14 percent. Current pork importers with low protection and the potential to export include Mexico, Australia, and the Ukraine, where the average implied tariffs for 2006-2010 are zero, 1.06, and 9.1 percent, respectively.

The simulation experiments remove the implied duties over a five-year period starting in 2001 and ending in 2005. In 2005, prices in importing countries are set at the world price plus transportation costs, while prices in exporting countries are equal to the world price.¹⁸ A new equilibrium solution is obtained for each scenario, for each year over the 2001-2010 time period, and the resulting production, consumption, trade, and price data

¹⁷ Domestic prices could also be "low" relative to world reference prices because of disease problems, especially foot-and-mouth disease, in the country. We are indebted to Pierre Charlebois for pointing this out.

¹⁸ Quality adjustments are also applied where necessary.

are compared to the FAPRI 2000 baseline numbers. The four simulations differ from one another in the mix of countries involved in the liberalization and in the assumptions about China. In all of the scenarios, net trade with the Rest of the World region is held at its baseline value. This assumption is made to isolate the impacts of liberalization in the countries explicitly included in the model. Table 8 indicates the countries included in each liberalization scenario.

China's enormous population and pork production create some unique problems in this study. China has a declared duty of 37 percent, but its baseline price implies a domestic-world price wedge of 80 percent or more in some years. The baseline assumption is that non-tariff barriers, such as licensing requirements and sanitary regulations, restrict imports to artificially low levels. As incomes continue to rise in China, consumer demand for pork grows, pushing domestic prices above world prices by more than the applied tariff.

While the baseline scenario is quite plausible if current Chinese import policies remain in place for the next decade, the high levels of implied protection produce problems for the liberalization analysis. The extreme size of the Chinese market translates relatively small changes in world prices into large changes in excess supply or demand. Consequently, reducing Chinese prices from the baseline level to the world price plus transportation costs would generate a tremendous demand for pork imports, reaching as much as 10-15 mmt per year. Import levels of this magnitude are not logistically feasible with China's expected port facilities, transportation, and storage capacity.

In order to accommodate these facts, three assumptions are made about the behavior of trade with China. First, when China does not participate in the zero-for-zero liberalization (Scenarios 1 and 2), China's net trade is held at the baseline levels.¹⁹ The reasoning is that Chinese prices, which rise well above the world price in the baseline, would prevent China from exporting pork above the baseline level. This is expected to be true even when world prices rise following liberalization in other countries. Second, when China is included in the zero-for-zero liberalization scheme, their protection level is reduced by 27 percentage points (Scenario 3), China's baseline implied protection in 2000. This scenario is quite plausible, given that current official protection (applied tariff and value added tax) is roughly 40 percent. Third, in Scenario 4 it is assumed that China reduces protection more substantially, allowing roughly 50 percent of the pork imports that might occur under complete liberalization. This scenario (Scenario 4), is considered to be an extremely optimistic outcome, yet one that is feasible with expected transportation and storage infrastructure in China in the next decade.

Briefly, the four simulations are summarized as follows. Scenario 1 involves the removal of implied tariffs in all WTO member countries (Table 8). As noted above, China's net

¹⁹ In our analysis we do not allow China to free-ride on the zero-for-zero initiative. China's main markets for pork exports are Hong Kong and Russia with a combined share of 94 percent in 1998. In Scenario 1, both Hong Kong and Russia reduce their pork imports. In Scenario 2, Russia increases its imports of pork and this provides the best opportunity for China to free-ride. However, much of the trade between China and Russia is based on special arrangements, e.g. barter. To the extent that China does increase its exports of pork, world price increases will be moderated and exports from low-cost exporters reduced. Finally, since China could only export using export subsidies, additional exports would be welfare reducing for China.

pork trade is held at the baseline level. Consequently, Scenario 1 shows the impacts on the world pork market if only current WTO members fully liberalize pork trade. Non-WTO member markets are allowed to react to the world price changes as their market structures suggest, with the exception of China. Scenario 2 builds on Scenario 1 and includes Other Eastern Europe, Lithuania, the Russian Federation, Ukraine, and Other FSU countries in the zero-for-zero liberalization scheme, even though they are not current WTO members. Pork trade with China is still held at the baseline level in this scenario. Scenario 3 builds on Scenario 2 by including implied tariff reductions in Mainland China and Taiwan in the simulation. In this case, China's implied duty is cut by 27 percentage points. Scenario 4 is the same as Scenario 3, except it incorporates larger reductions in the implied duty for China.

Countries in the world pork market can be categorized into three main groups. The first are importing countries that protect their domestic pork markets with border measures. Second, high-cost producing countries that export using export subsidies. Third, low-cost exporters. As discussed in section 3, virtually all importing countries have some form of border protection for pork imports, creating a positive wedge between their domestic price and a comparable world price, e.g. positive implied tariffs.²⁰ Among exporting countries, only the U.S., Canada, and Brazil are low-cost exporters. The remainder of the exporting countries, including the European Union, Hungary, Poland, and China are higher cost producers, exporting with some form of direct or indirect subsidy.

The direct impact of setting implied tariffs to zero is to expand imports at the baseline world price. As importing countries remove their duties, their domestic prices fall causing their production to decline, consumption to expand, and imports to increase. Also, as high-cost exporting countries implied tariffs go to zero, eliminating the effects of export subsidies, their domestic prices fall causing production to shrink, consumption to expand, and exports to decrease. Both the expansion in import demand from importing countries, and the reduction of export supply from high-cost producers exert upward pressure on world pork prices. Facing higher world prices, low-cost pork producers have an incentive to increase production and reallocate output away from domestic consumption towards exports. However, it is possible that the imports of some importing countries will decline and exports of some higher-cost producing countries will increase with trade liberalization. This can happen when world prices increase more than enough to compensate for the reduction in domestic prices caused by setting implied tariffs to zero.

The time path of the results is influenced by the 5-year phase-in assumption, where the full removal of implied duties begins in 2005. That is, imports will show the largest increase from 2005 onward, as a result of the complete removal of implied duties in this year. Similarly, exports from low-cost exporters will show their largest gains beginning in 2005.

6. Scenario 1 Results

In Scenario 1, 23 WTO member countries, of the 31 countries included in the model, are assumed to participate in the removal of border measures (Table 8). Russia is the only

²⁰ Estonia and Hong Kong are the only exceptions. Both do not apply any duty on pork imports.

major pork importer that is not included in this scenario, while China is the only major exporter that is excluded.²¹

As border protection is gradually eliminated, opening import markets, world pork trade increases, first by 4 percent in 2001, 33 percent in 2005, and 50 percent in 2010. Table 10 shows that total imports increase from 3,033 tmt in the baseline to 4,538 tmt with implied tariff elimination by 2010. Figure 2 shows the total import levels for all four scenarios and Figure 3 shows the world pork price path for all four scenarios. The higher demand for pork in the world exerts upward pressure on the world reference price for pork throughout the simulation period. Tables 11 to 14 show the impacts of Scenario 1 on the U.S., Canadian, EU, and Japanese pork sectors. The first peak in pork prices is in 2005 at 13.3 percent above baseline levels (Table 11), the first year in which all implied tariffs of WTO-member countries are fully removed. The rising rate of increase in price from 2001 through 2005 provides enough incentive to expand world pork production that the pressure on prices is alleviated somewhat from 2006 to 2008, when price increases are in the 5 to 10 percent range. However, by the end of the simulation period, 2009 and 2010, pork prices are about 14 percent, above baseline levels.

The increase in imports, by 2010, occurs largely in the more protected markets of Asia (Table 10), including Japan (859 tmt), the Philippines (370 tmt), and South Korea (162 tmt). The increase in world import demand is moderated by higher prices reducing imports from countries with low implied tariffs, such as Hong Kong (-34 tmt), Mexico (-113 tmt), and the Ukraine (-107 tmt). Likewise pork importing countries not required to liberalize in this scenario such as Taiwan (-17 tmt), Other Eastern Europe (-4 tmt), Lithuania (-8 tmt), and the Russian Federation (-173 tmt) reduce their imports as a result of higher world prices.

Low-cost exporters like Brazil (250 tmt), Canada (260 tmt), and the U.S. (1,891 tmt) increase their exports to meet the increase in import demand, and to compensate for the decline in exports from high-cost producers (Table 10). Net exports from Hungary (-27 tmt), Poland (-330 tmt) and the EU (-907 tmt) decline substantially by 2010.

Japan, the most protected pork import market, increases its pork imports by 78 percent by the end of the simulation period, rising in 2010 from the baseline level of 1,096 tmt to 1,955 tmt (Table 10). This increase is induced by a 31 percent reduction in production and a 23 percent expansion of consumption (Table 14). Argentina, the Czech Republic, Indonesia, Philippines, Slovakia, Slovenia, and South Korea increase their imports. Given their high implied tariffs both the Philippines and South Korea increase their pork imports. From a baseline projection of 17 tmt in 2010, the Philippines is expected to import 387 tmt under Scenario 1. South Korea increases its imports from 65 to 227 tmt. Bulgaria switches from being a net exporter of 2 tmt to a net importer of 43 tmt.

Pork imports in some countries fall below the baseline level following liberalization. Given Hong Kong's free trade regime, its net imports decline from 227 tmt in the baseline to 193 tmt, a decrease of 15 percent due to the higher world price in 2010. The same impact is seen in Estonia where its imports decline by 31 percent. Mexico and New Zealand have low protection from pork imports in the baseline, so their net imports

21 China's net pork trade is held at its baseline level in this scenario.

decrease by 94 and 30 percent, respectively. The reduction in their domestic prices, as a result of removing their implied tariffs, is more than offset by the increase in world pork prices. Consequently, production expands, consumption contracts, and net imports decline. Importing countries not required to liberalize under this scenario also buy less on world markets as they face higher world prices. Taiwan's pork imports fall by 86 percent, the Russian Federation by 30 percent and Other Eastern Europe by 8 percent. The Ukraine switches from a net importer to a net exporter of 104 tmt of pork.

High-cost exporters such as Hungary, Poland, and the EU reduce their exports. With substantially lower domestic prices following the removal of implied duties, Poland switches from an exporter of 128 tmt in the baseline to an importer of 202 tmt by 2010 in Scenario 1. Hungary and the European Union increase their net exports by 17 and 2 percent, respectively, in the early years of the simulation, when the partial reduction in their implied duties is more than offset by the increase in the world price. However, with the full removal of their implied tariffs in the later years, their net exports decline by 70 percent in the European Union, from 1,293 tmt to 386 tmt, and by 52 percent in Hungary, from 52 tmt to 25 tmt in 2010.

The higher pork prices resulting from growing import demand and reduced exports from high-cost countries, cause exporters with lower costs, like Brazil, Canada, and the United States, to significantly increase in their net exports. In the United States net exports increase dramatically from 723 tmt in the baseline to 2,614 tmt by 2010. With abundant feed resources, advanced production technology, and minimal production constraints in the long run, production in the U.S. increases by 11.6 percent in response to the higher domestic prices (Table 11). The higher prices also reallocate the utilization of pork away from domestic consumption, which declines by 9.8 percent. The same adjustments influence the swine-pork sector in Canada. That is, the higher price of pork encourages pork producers to expand production by 18 percent, and domestic consumption declines by 3 percent (Table 12). Canada's net exports increase from 682 tmt in the baseline to 942 tmt in 2010. At the same time, Brazil's net exports increase from 82 tmt to 332 tmt.

In the Other FSU region, an exporter not required to liberalize in this scenario, exports increase by 34 percent.

7. Scenario 2 Results

Scenario 2 adds five non-WTO members to the list of countries participating in trade liberalization (Table 8). The five new countries include three exporting countries, Other FSU, the Ukraine, and Lithuania; and two importing countries Other Eastern Europe, and the Russian Federation. The main new driver in this scenario is the rise in imports by the Russian Federation, where imports increase by 67 percent, from 579 tmt in the baseline to 964 tmt in 2010 (Table 10). This rise in import demand is slightly moderated by the reduction in imports in the Other Eastern European countries as the higher world price more than compensates for the removal of their duties. On the export side, the Other FSU reduces its exports by 15 percent. The Ukraine and Lithuania switch from being importers in the baseline solution to net exporters in Scenario 1, but with the removal of their implied duties in this scenario, they switch back to being net importers.

In Scenario 2 world pork imports increase by 65 percent, compared to baseline levels, reaching 4,996 tmt in 2010. World pork imports are 10 percent higher by 2010 in

Scenario 2 compared to Scenario 1. This additional demand puts pressure on the world price, which increases by 15 percent in 2005 and 16 percent in the last two years of the simulation period (Table 15). Pork price increases, in 2010, are 1.6 percentage points higher in Scenario 2 (15.5 percent) in comparison to Scenario 1 (13.9 percent).

The rise in imports in WTO member countries is lower in Scenario 2 than in Scenario 1 because of higher world prices. For example, Japan's imports increase in Scenario 1 by 78 percent, but in Scenario 2 the growth is 77 percent (Table 18). Hong-Kong further reduces its imports; while Mexico, a WTO member importing country with a low implied tariff, exports small quantities of pork in the later years of the simulation. The decline in exports of high-cost exporting WTO member countries in Scenario 1 is moderated, as they face higher world prices in this scenario. The EU's pork exports decline by 71 percent in Scenario 1 but only 58 percent in this scenario (Table 17). Export opportunities for low-cost WTO member countries are further enhanced by increased demand for pork. Brazil's exports increase from 332 tmt in Scenario 1 to 384 tmt in this scenario. Likewise Canada's exports increase by 44 percent in Scenario 2 compared to 38 percent in Scenario 1, and U.S. pork exports increase from 2,614 tmt to 2,917 tmt between the two scenarios in 2010.

8. Scenario 3 Results

Scenario 3 adds China and Taiwan to the liberalization experiment of Scenario 2. The FAPRI baseline simulation shows strong pent-up demand in China driving a large wedge between their domestic pork price and the world pork price. The implied tariff in China ranges between 27 and 145 percent over the simulation period. In Scenario 3 China liberalizes pork trade, but their implied tariff is only reduced by 27 percentage points. The world pork price, prior to the inclusion of China, increased by 16 percent, in 2010. Even a 27 percentage point reduction in China's implied tariff raises their imports dramatically from 72 tmt in 2001, to 852 tmt in 2005, and 1,917 in 2007, before it settles at 1,526 at the end of the simulation period. In addition, Taiwan imports 215 tmt more pork (Table 10). Total pork imports more than double in Scenario 3, reaching 6,446 tmt in 2010 from a baseline of 3,033. With this additional import demand, the world pork price increases by 18 percent in 2005 and also in the last two years of the simulation period (Table 19).

The much higher prices in this scenario further moderates the rise in imports of WTO member countries, especially Asian importers including Japan, Hong Kong, South Korea, and the Philippines. Mexico becomes an exporter beginning in 2005 and exports reach 41 tmt by the end of the simulation. Russian imports are also moderated rising by only 56 percent, compared to 67 percent in Scenario 2. The decline in exports of high-cost exporters is also moderated with EU pork exports now declining by only 31 percent.

Low-cost exporters continue to expand their exports in response to strong world import demand reflected in higher world prices. Brazil exports 529 tmt in Scenario 3 compared to 384 tmt in Scenario 2. United States exports reach 3,700 tmt compared to 2,917 in Scenario 2, while Canada exports climb from 981 tmt to 1,090 tmt.

9. Scenario 4 Results

Scenario 4 changes the implied tariff reduction assumption applied to China. A full removal of the implied tariff for China scenario was conducted, but only one-half of the net trade in this solution was considered feasible for logistical reasons.²² As a result Scenario 4 is equivalent to an average tariff reduction, in China, of 24 percent from 2001 to 2005 and 70 percent from 2006 to 2010.

Under this assumption China's imports rise to an average of 968 tmt in the first half of the simulation period, and 5,151 tmt from 2006-2010. China's pork imports peak in 2010 at 7,129 tmt. Total pork imports more than triple in Scenario 4, reaching 11,100 tmt in 2010 (Table 10). With this additional import demand, world pork prices rise by 2 percent in 2001, 28 percent in 2005, and 35 percent in 2010 (Table 23). To meet this large increase in demand, growth in imports by other importing countries and the decline in exports from high-cost exporters slows down. Moreover, exports from low-cost exporters continue to grow.

Japan's imports now increase 63 percent compared to 74 percent in Scenario 3, and Russia's imports grow 28 percent compared to 56 percent. Exports from the EU now increase by 64 percent instead of declining, and Poland regains its status as an exporter. Faced with strong world import demand, Brazil continues to expand its exports to 866 tmt compared to 529 tmt in Scenario 3, exports from the U.S. reach 6,046 tmt compared to 3,700 tmt, and Canada's pork exports increase to 1,350 tmt compared to 1,090 tmt in Scenario 3. Australia, Hungary, and Ukraine also export substantial quantities of pork, equal to 155, 100, and 154 tmt, respectively (Table 10).

10. The Effects of Trade Liberalization on Pork Producers Gross Revenue

Trade liberalization in the international pork sector will be supported by pork producer's in North America. This is clear from the price and production projections discussed in sections 6 through 9. However, the attractiveness of the liberalization scenarios is even more obvious when the effects on gross revenues are considered (Table 27).²³ For United States pork producers gross revenues increase by 27.1 percent, US\$3,118 million under Scenario 1, and 80.5 percent, US\$9,258 million, under Scenario 4, in 2010. The percentage increases in gross revenue in Canada are similar to those for the United States, although in value terms they are smaller, ranging from a gain of US\$468 million under Scenario 1 to US\$692 million under Scenario 4. Pork producers in Mexico and Brazil are also winners with trade liberalization. Gross revenues in both countries increase by more than US\$300 million or about 14 percent under Scenario 1, by 2010. In addition, Australia's pork producers gain from trade liberalization as do those in Hong Kong.

²² The Scenario 4 results are very dependent on the FAPRI baseline simulation which projects a growing gap between domestic prices in China and the world reference price. The authors are indebted to Merritt Cluff for this observation.

²³ The detailed simulation results for the United States, Canada and the EU contain estimates of pork producer's revenue above estimated feed costs. These results are consistent with the gross revenue results and are not discussed in this section.

The revenue of pork producers in the European Union fall modestly (less than 10 percent) under Scenario 3, but increase by nearly 10 percent under Scenario 4 (US\$2,758).²⁴ Pork producers in some highly protected markets would face drops in gross revenues. Japan would face the steepest decline, with gross revenues declining 61.8 percent under Scenario 1 and 53.2 percent under Scenario 4. In value terms, Japan's gross revenue from pork production would drop by US\$2,760 million under Scenario 1 and US\$2,377 under Scenario 4.

The importance of China in the liberalization experiments and in the real world can not be over emphasized. With limited trade liberalization (Scenario 3) gross revenues from pork production in China fall by only 5.1 percent, but it provides a significant boost to world pork prices. The more complete the trade liberalization in

China the smaller the effects on pork producers in other protected markets around the world.

11. Cross-Commodity Effects

The removal of border protection in the pork industry will cause reactions in other livestock markets and it is important to understand these effects and their implications for the pork sector. The detailed livestock cross-commodity effects for the United States, Canada and the European Union are documented in Tables 28-39 for each of the four scenarios. These results are sufficient to give the reader the flavor for what is happening in the international beef and poultry markets. Before proceeding to a brief summary of the results it is useful to describe the general outcome. In countries like Canada and the United States, who are low-cost pork exporters, trade liberalization raises the market price of pork for both producers and consumers. As pork prices increase consumers shift some of their meat consumption from the now relatively more expensive pork to relatively less expensive beef and chicken. Conversely, in countries like Japan, and other protected pork markets the decline in pork prices, resulting from liberalization, causes consumers to shift consumption from the now relatively more expensive beef and chicken, where markets have not been liberalized, to the relatively less expensive pork. These shifts in the demand for beef and poultry cause the excess supply and excess demand curves for beef and poultry to shift to the left. The new equilibrium price in the beef and pork markets can be either higher or lower than in the baseline simulation, depending on the relative size of the shifts in the excess supply and excess demand curves for beef and poultry.

Livestock: United States:

In Scenario 1, the price of both beef and broilers increase by 0.4 percent in the United States by 2010 (Table 28). As expected beef and broiler consumption increase by 2.4 and 2.6 percent, respectively as a result of higher pork prices. The small price increases cause production of beef to increase by 0.1 percent and broilers by 0.3 percent in 2010.

As the pork market is liberalized more fully in Scenarios 2 through 4, and U.S. pork prices continue to increase, the effects in the beef and poultry markets become larger. In

²⁴ In all of the scenarios European Union grain prices are held at the baseline values. Reductions in EU domestic grain prices would make the EU more competitive in the international pork market.

Scenario 4, fed cattle prices are up 2.2 percent compared to 0.4 percent in Scenario 1, and broiler prices are up 1.6 percent compared to 0.4 percent in Scenario 1 (Table 28 and Table 31). Production increases in the U.S. beef and poultry markets remain small with increases of less than 1.0 percent (Table 31).

Livestock: Canada

The cross-commodity effects in Canada are quite similar to those in the United States. In Scenario 4, by 2010 fed cattle prices are up 2.4 percent and broiler prices by 1.6 percent (Table 35). The pork price increases beef and broiler consumption by 1.1 percent and 2.7 percent, and increases beef and broiler output by 0.7 percent and 3.7 percent, respectively.

Livestock: European Union

International trade liberalization in the pork sector raises the world market price of beef and broilers and also raises the price of these goods in the EU by 2.5 percent and 1.4 percent under Scenario 4 (Table 39). As a result, beef output increases by 0.2 percent and broiler output by 1.7 percent. The price and output effects of less comprehensive liberalization scenarios have smaller impacts on the beef and broiler markets.

Grain and Oilseed Markets

Trade liberalization in the international pork market also has potential impacts in the international grain and oilseed markets through the demand for animal feed. These potential cross-commodity effects in the grain and oilseed sector have been ignored in the analysis of the pork trade liberalization scenarios. The demand for animal feed is closely related to the production of livestock, especially pork and broilers. When trade in pork is liberalized the production of pork declines in protected markets and increases in markets with minimal protection. The net change in pork production is an empirical question depending on the size of demand and supply elasticities in various countries. In this analysis, the largest change in total world pork production is 0.1 percent. This small change in world pork production is augmented by modest increases in beef and broiler production. These small increases in world livestock output would increase the global demand for grains and oilseeds. However, with continued low prices for grains and oilseeds projected through 2010, the price impacts in the grain and oilseeds markets resulting from trade liberalization in pork would be minor. To the extent that grain and oilseed prices increase, the estimated production effects in the pork market would be smaller and the price effects larger following trade liberalization.

In addition to the global change in the demand for grains and oilseeds there will be local market effects. Most of the increase in hog production, following trade liberalization, takes place in countries that are surplus grain producers. However, it is possible that the increased pork, broiler and beef production following trade liberalization could turn some regions/countries that are currently surplus in grain, into deficit grain producing regions. Under Scenario 4, Canada is projected to increase its hog production by 32 percent. This increase in production would require about another 1.4 mmt of grains and oilseed meal. With Canada's exportable surplus of barley equaling 1.5 to 4.0 mmt in recent years it is not impossible for the projected increase in hog production to put upward pressure on the local barley basis, at least in some years. It is impossible to pick-up these spatial effects in a non-spatial model but they should be considered in a more complete analysis.

12. Study Limitations

The results presented in this report are based on econometric techniques that implicitly assume that individuals and markets will respond to price changes in the future as they have in the past. It is worth mentioning some factors that may influence these responses and in so doing influence the projected outcomes.

First, the enormous volumes of exports described in some of the scenarios would allow pork processors and pork transportation companies to lower transportation costs, and to improve the quality of the delivered meat. Importing countries might find it optimal to import boneless boxed meat rather than to import the feed grains needed to produce this pork. This change in pork transportation rates without any offsetting change in grain transportation costs might result in the additional movement of pork production from grain deficit countries to grain surplus countries. It is almost impossible to build large models of world commodity markets that capture possible switch-over points between importing raw commodities and value added commodities.

Second, the simulations assume that the implied tariffs in importing countries go to zero and that they will not be replaced by maintaining or erecting new non-tariff barriers.

Third, it is assumed that the existence of foot-and-mouth disease free and infected countries will not seriously hamper world pork trade.

Fourth, the models assume a very stable world economy, and average crop yields and pork productivity measures. In reality, it is likely that some major macroeconomic disturbance, drought or disease problem will occur over the next ten years. These forces would disrupt the world pork market in a way that cannot be forecast.

Fifth, the response of exports to exchange rate movements is more complex than modeled. For example, a strengthening of the U.S. dollar makes U.S. labor and capital very expensive to foreign importers. This in turn makes all exports that include labor and capital less competitive than otherwise would be the case. Under these circumstances it may make more sense for these importers to import feed grains, rather than to import meat.

The importance of exchange rate movements and relative transportation costs to world meat trade can be observed in the behavior of U.S. export patterns for beef, pork and poultry from 1985 to 1999. Beginning in about 1985, exports of all three of these meats began to grow in an exponential fashion. This growth was associated with a weakening of the U.S. dollar and the development of technology that permitted meat to be transported chilled rather than frozen. This growth leveled off when the U.S. dollar began to strengthen in 1998. Any further strengthening of the dollar in the projection period might cause U.S. pork exports to fall, even if export barriers are also falling during that period.

Sixth, the simulation results do not account for interactions with the grain and oilseed sector. Since the effects on total meat output arising from trade liberalization in the pork sector are not large, these grain and oilseed price effects are likely to be geographically isolated and small. However, to the extent that grain and oilseed prices would increase following trade liberalization in the pork sector, pork production effects are likely overstated and pork price effects understated.

Seventh, this study has assumed that environmental problems and environmental activists will not curtail the expansion of pork production facilities, particularly in the United States, Canada and Brazil.

Eighth, trade liberalization in the pork sector alone is likely to encourage lower trade barriers in the grains, oilseed and other livestock sectors. Countries that lower their barriers to trade in pork, but maintain their trade barriers in grains and oilseed meals are taxing their pork sector, i.e. providing negative effective protection. Similarly, lower pork prices as a result of the elimination of trade barriers will encourage countries to lower their barriers to trade in other livestock products as consumption shifts to relatively cheaper pork products.

13. Conclusions

The analysis presented in this paper shows that North American pork producers as well as producers in several other countries would be major beneficiaries following trade liberalization in the international pork market by current WTO member nations. The gains would be even larger if non-WTO members, and especially China agreed to liberalize their pork markets. China plays a huge role in determining the distribution of potential gains and losses across countries. The more China liberalizes its pork market, the larger the increase in world market prices. The larger the world price increase, the smaller the adjustments that are required in countries where implied tariffs are high. However, some countries would see their pork production sector shrink as protection is removed. Japan's pork production would decline by more than 26 percent and their producer gross revenues by more than 50 percent if border measures are removed by most countries as in Scenario 4. Conversely, the United States and Canada could see their producer gross revenues growing by 30-80 percent depending on the mix of countries engaging in liberalization. Other major beneficiaries under trade liberalization are Brazil, Mexico, Hong Kong, Australia and New Zealand. If China significantly liberalizes its trade in pork, other countries also stand to benefit. This includes the European Union that could increase both its exports and its producers gross revenues and eliminate the use of export subsidies, as well as pork producers in Indonesia, Thailand, Slovakia, Slovenia, Former Soviet Union, Latvia, Lithuania and the Ukraine.

The discussion in this report has ignored pork consumers. Clearly, in markets where pork prices decline, as a result of trade liberalization, consumers reap large benefits. For the world as a whole trade liberalization is welfare enhancing. However, the previous discussion has pointed out there would be potentially large transfers in income that would shift from producer interests to consumer interests in heavily protected markets, and in the other direction in unprotected markets. These are the changes that are expected as the world shares the gains from trade. However, experience has shown that consumers in protected markets are seldom a strong force in arguing for trade liberalization. Consequently, the task of selling trade liberalization often falls to representatives of low-cost producing nations. Their task is to convince protected importers that their scarce resources could be better utilized in producing products where they have a competitive advantage, and that given world price increases following trade liberalization that the adjustment problems may not be as difficult as they imagine. This result is clearly illustrated in Scenario 4 where the European Union increases its pork exports, above baseline levels, all without the use of export subsidies or liberalization of its cereals policy.

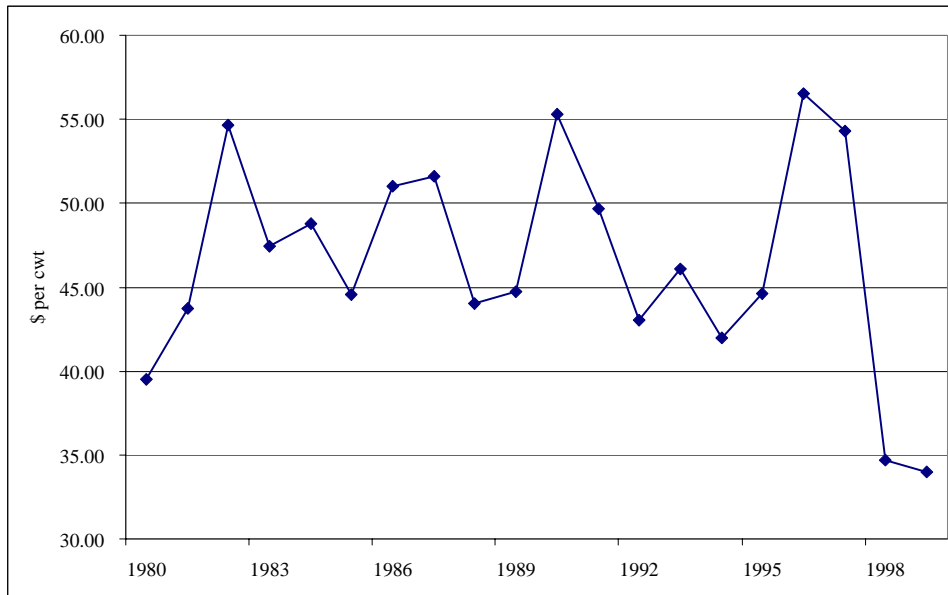


Figure 1. Iowa-Southern Minnesota Barrow-Gilt Price, US dollars, 1980-1999

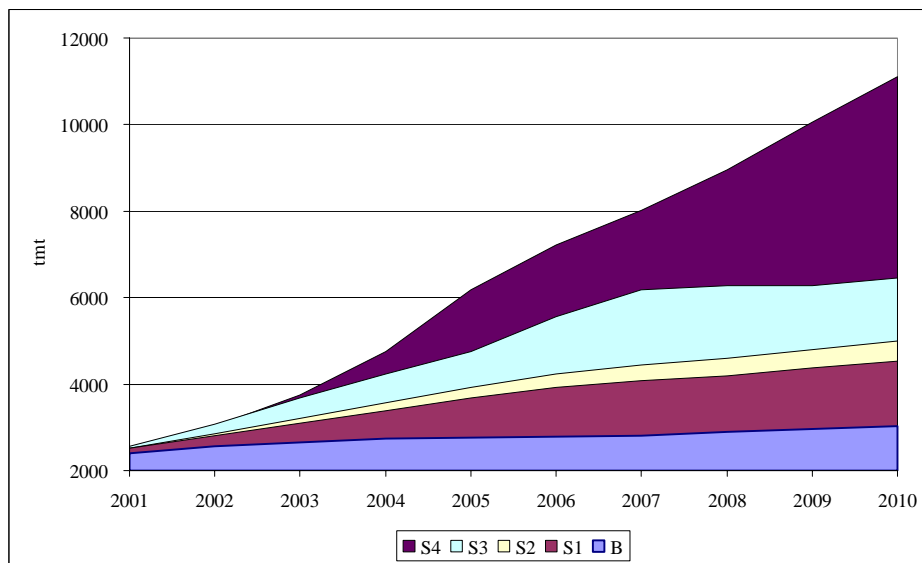


Figure 2. Total Pork Imports for All Scenarios, 2001-2010

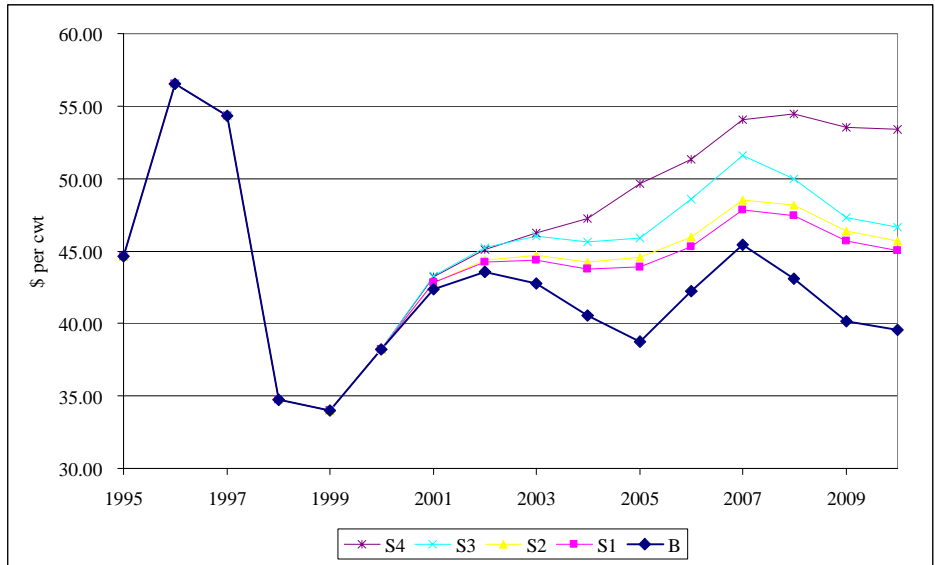


Figure 3. Iowa-Southern Minnesota Barrow-Gilt Price for All Scenarios,

1995-2010

Table 1. Supply, Utilization and Per Capita Consumption of Pork, 1998

Country	Per Capita Consumption	Production	Consumption	Import	Export	Stocks
	Kilograms		Thousand Metric Tons			
Asia						
China	28.09	36,180	36,057	41	164	0
Hong Kong	52.0	161	368	252	45	0
Indonesia	3.3	759	761	1	0	
Japan	16.6	1,285	2,090	721	0	106
Philippines	12.1	933	940	8	0	10
South Korea	19.5	992	940	66	116	22
Thailand	5.7	370	369	0	2	
Taiwan	42.1	892	971	22	3	40
Eastern Europe						
Bulgaria	29.9	235	248	6	0	1
Czech Republic	66.1	673	681	35	19	15
Hungary	39.7	408	374	34	75	22
Other East. Eur.	30.9	689	724	52	18	
Poland	38.6	1,700	1,487	59	222	70
Romania	15.6	323	341	29	6	30
Slovakia	47.5	227	259	33	1	0
Slovenia	37.8	57	72	25	9	
European Union	42.5	17,581	16,380	44	1,045	643
Baltics						
Estonia	23.9	32	35	28	25	
Latvia	18.6	37	35	5	7	
Lithuania	19.9	51	53	2	0	
FSU						
Russian Federation	6.2	1,510	1,884	375	1	0
Ukraine	14.3	700	705	3	1	127
Other FSU	14.4	559	547	10	22	
South America						
Argentina	5.8	156	219	65	1	0
Brazil	9.6	1,663	1,585	1	74	5
North America						
Canada	31.2	1,330	956	63	432	25
Mexico	10.2	950	1,026	97	21	0
United States	30.0	8,623	8,304	319	557	266
Oceania						
Australia	18.6	356	350	7	13	0
New Zealand ^a	15.9	55	63	0	-8	

^a Net exports

Source: USDA. PS&D View.

Table 2. World Shares of Pork Production and Trade, by Country, 1994-1998

Major Producers	Average Share (percent)
China	45.00
European Union	21.71
United States	10.63
Brazil	1.99
Canada	1.67
Poland	2.07
Russia	2.31
Japan	1.73
Mexico	1.22
South Korea	1.14
Philippines	1.10
Taiwan	1.49
Major Net Exporters^a	
European Union	45.62
Canada	18.24
United States	8.09
Poland	6.23
China - Mainland	7.51
Taiwan	7.30
Brazil	2.69
Hungary	2.65
Major Net Importers^a	
Japan	38.88
Russia	20.59
Hong Kong	7.97
Mexico	2.37
Argentina	2.58

^a Shares of net exports or net imports.

Source: USDA. PS&D View.

Table 3. FAPRI World Livestock Model Country and Commodity Coverage

Country	Beef/Veal	Pork	Broilers	Lamb/Mutton	Eggs
North America					
Canada	X	x	x		
Mexico	X	x	x		
United States	X	x	x		x
South America					
Argentina	x	x	x		
Brazil	x	x	x		
European Union					
	x	x	x	x	
Eastern Europe					
Bulgaria	x	x	x	x	
Czech Republic	x	x	x		
Hungary	x	x	x		
Poland	x	x	x		
Romania	x	x	x		
Slovakia	x	x	x		
Slovenia	x	x	x		
Other EE	x	x	x		
FSU					
Russia	x	x	x		
Ukraine	x	x	x		
Other FSU	x	x	x		
Baltics					
Estonia	x	x	x		
Latvia	x	x	x		
Lithuania	x	x	x		
Middle East					
Saudi Arabia			x		
Asia					
China (PRC)	x	x	x	x	x
Hong Kong	x	x	x		
Indonesia	x	x	x	x	
South Korea	x	x	x		
Philippines	x	x	x		
Thailand	x	x	x		
Taiwan	x	x	x		
Oceania					
Australia	x	x	x	x	
New Zealand	x	x	x	x	
Rest of the World	x	x	x		

Table 4. FAPRI World Livestock Model Variable Coverage

Cattle-Beef Sector	Swine-Pork Sector	Sheep-Lamb Sector	Poultry-Broiler Sector
Stock Variables	Stock Variables	Stock Variables	Flow Variables
Ending Cattle Stock	Ending Sow Stock	Ending Sheep Stock	Poultry-Broiler Production
Ending Beef Cow Stock	Ending Other Swine Stock	Ending Ewe Stock	Poultry-Broiler Export
Ending Dairy Cow Stock	Flow Variables	Ending Other Sheep Stock	Poultry-Broiler Import
Ending Other Cattle Stock	Pig Crop	Flow Variables	Poultry-Broiler Stock
Flow Variables	Swine Death	Lamb Crop	
Calf Crop	Sow Slaughter	Sheep Death	
Cattle Death	Other Swine Slaughter	Lamb Slaughter	
Calf Slaughter	Total Slaughter	Ewe Slaughter	
Cow Slaughter	Live Swine Export	Other Sheep Slaughter	
Other Cattle Slaughter	Live Swine Import	Live Sheep Export	
Live Cattle Export	Swine Slaughter Weight	Live Sheep Import	
Live Cattle Import	Pork Production	Sheep Slaughter Weight	
Cattle Slaughter Weight	Pork Export	Lamb-Mutton Production	
Beef Production	Pork Import	Lamb-Mutton Export	
Beef Export	Pork Stock	Lamb-Mutton Import	
Beef Import		Lamb-Mutton Stock	
Beef Stock			

Table 5. FAPRI World Livestock Model Variable Definitions

Variable Code	Definition
D	Total Demand
POP	Total Population
P	Price
Y	Per Capita Real GDP
T	Trend
CPI	Consumer Price Index
FCI	Feed Cost Index
SWCOT	Sow Ending Stock
HQSNB	Total Pig Crop
HQKSW	Sow Slaughter
HQKBG	Other Swine Slaughter (i.e., Barrow and Gilt)
BGCOT	Other Swine Ending Stock
SWADD	Gilt Added to the Sow Stock
HQUDD	Swine Death
HQYAN	Average Slaughter Weight in Carcass
POSPR	Pork Production

Table 6. Pork Own-Price Demand Elasticities and Long-Run Supply Elasticities

Country	Demand Elasticity	Supply Elasticity
Asia		
China (PRC)	-0.30	1.06
Hong Kong	-0.15	0.54
Indonesia	-0.32	1.38
Japan	-0.31	0.69
Philippines	-0.22	1.66
South Korea	-0.18	0.89
Thailand	-0.32	1.74
Taiwan	-0.30	1.44
Eastern Europe		
Bulgaria	-0.20	1.49
Czech Republic	-0.08	1.22
Hungary	-0.12	1.29
Other East. Europe	-0.01	0.96
Poland	-0.15	1.14
Romania	-0.20	1.07
Slovakia	-0.18	1.49
Slovenia	-0.20	1.47
European Union	-0.18	0.38
Baltics		
Estonia	-0.20	1.87
Latvia	-0.20	1.78
Lithuania	-0.18	1.77
FSU		
Russian Federation	-0.29	2.41
Ukraine	-0.26	2.47
Other FSU	-0.04	0.75
South America		
Argentina	-0.41	1.74
Brazil	-0.32	1.93
North America		
Canada	-0.21	1.49
Mexico	-0.28	1.11
United States	-0.65	1.39
Oceania		
Australia	-0.40	1.64
New Zealand	-0.39	1.54

Source: FAPRI. International Livestock and Poultry Model.

Table 7. Implied Tariffs for Pork, Various Countries

Country	FAPRI	FAPRI	FAPRI	WTO	UNCTAD
	Maximum Tariff	Ave Implied Tariff	Ave Implied Tariff	Declared ^a Tariff	TRAINS
	1994-99	2000-05	2006-10	1998	1998
Asia					
China	39.09	24.64	80.14	37.00	
Hong-Kong	0.00	0.00	0.00	0.00	0.00
Indonesia	22.26	12.93	20.00	67.78	20.00
Japan	114.88	84.04	103.02	35.67	3.80
Philippines	68.29	21.01	31.52	30.00	55.00
South-Korea	42.25	27.00	25.00	33.00	28.20
Thailand	8.40	-1.11	10.49	60.00	60.00
Taiwan	28.79	25.93	25.52	20.00	15.00
Baltics					
Estonia	0.00	0.00	0.00	00.00	0.00
Latvia	8.00	4.12	5.24	45.00	45.00
Lithuania	16.38	8.81	15.32	30.00	30.00
Eastern Europe					
Bulgaria	38.38	11.44	17.25	40.00	
Czech-Republic	7.30	11.59	15.48	27.00	30.00
Hungary	54.10	4.14	14.01	25.00	56.50
Other-E-Europe	10.00	10.00	10.00	10.00	10.00
Poland	56.80	18.30	34.57	30.00	48.80
Romania	31.70	12.78	27.75	115.00	
Slovakia	14.48	11.66	15.80	41.42	
Slovenia	21.05	5.00	10.00	13.34	
European Union	42.27	10.43	16.51	90.00	1.00
FSU					
Other FSU	20.00	20.00	20.00	20.00	20.00
Russian Fed	33.43	14.67	26.02	26.79	15.00
Ukraine	62.80	13.38	9.15	73.39	
North America					
Canada	0.00	0.00	0.00	0.00	0.00
Mexico	32.23	1.43	0.00	10.00	20.00
United States	0.00	0.00	0.00	0.00	0.00
Oceania					
Australia	6.57	-0.57	1.06	0.00	0.00
New Zealand	13.34	2.34	4.01	13.10	6.50
South America					
Argentina	31.15	14.47	15.78	35.00	13.00
Brazil	41.22	-3.59	2.70	55.00	13.00

^a Some of the declared duties are specific duties and their ad valorem rates have been calculated.

Table 8. Country Coverage in the Pork Trade Liberalization Scenarios

Country	Scenario 1	Scenario 2	Scenario 3
Asia			
China	No	No	Yes
Hong Kong	Yes	Yes	Yes
Indonesia	Yes	Yes	Yes
Japan	Yes	Yes	Yes
Philippines	Yes	Yes	Yes
South Korea	Yes	Yes	Yes
Thailand	Yes	Yes	Yes
Taiwan	No	No	Yes
Eastern Europe			
Bulgaria	Yes	Yes	Yes
Czech Republic	Yes	Yes	Yes
Hungary	Yes	Yes	Yes
Other East. Eur.	No	Yes	No
Poland	Yes	Yes	Yes
Romania	Yes	Yes	Yes
Slovakia	Yes	Yes	Yes
Slovenia	Yes	Yes	Yes
European Union	Yes	Yes	Yes
Baltics			
Estonia	Yes	Yes	Yes
Latvia	Yes	Yes	Yes
Lithuania	No	Yes	Yes
FSU			
Russian Fed.	No	Yes	Yes
Ukraine	No	Yes	Yes
Other FSU	No	Yes	Yes
South America			
Argentina	Yes	Yes	Yes
Brazil	Yes	Yes	Yes
North America			
Canada	Yes	Yes	Yes
Mexico	Yes	Yes	Yes
United States	Yes	Yes	Yes
Oceania			
Australia	Yes	Yes	Yes
New Zealand	Yes	Yes	Yes

Table 9. Country Membership in the WTO and Regional Trade Agreements

Countries	WTO	RTAs
Asia		
China	Accession	APEC
Hong Kong	1-Jan-95	APEC
Indonesia	1-Jan-95	ASEAN
Japan	1-Jan-95	APEC
Philippines	1-Jan-95	ASEAN
South Korea	1-Jan-95	APEC
Taiwan	Accession	APEC
Thailand	1-Jan-95	ASEAN
Eastern Europe		
Bulgaria	1-Dec-96	EA - Dec 95
Czech Republic	1-Jan-95	EA - Jan 96
Hungary	1-Jan-95	EA - Mar 94
Poland	1-Jul-95	EA - Apr 94
Romania	1-Jan-95	EA - Jun 95
Slovakia	1-Jan-95	EA - Jun 95
Slovenia	30-Jun-95	EA - Jun 96
Other Eastern Europe		
Albania	Accession	
Bosnia Herzg	Observer	
Croatia	Accession	
Macedonia	Accession	
Yugoslavia	No	
European Union		
	1-Jan-95	EA
Austria	1-Jan-95	
Belgium	1-Jan-95	
Denmark	1-Jan-95	
Finland	1-Jan-95	
France	1-Jan-95	
Germany	1-Jan-95	
Greece	1-Jan-95	
Ireland	1-Jan-95	
Italy	1-Jan-95	
Luxembourg	1-Jan-95	
Netherlands	1-Jan-95	
Portugal	1-Jan-95	
Spain	1-Jan-95	
Sweden	1-Jan-95	
Great Britain	1-Jan-95	

**Table 9. Country Membership in the WTO and Regional Trade Agreements
(Continued)**

Countries	WTO	RTAs	
Former Soviet Union			
Estonia	13-Nov-95	EA - Nov 95	
Latvia	10-Feb-95	EA - Oct 95	CEFTA
Lithuania	Accession	EA - Dec 95	CEFTA
Russian Federation	Accession	APEC	
Ukraine	Accession		
Other FSU			
Armenia	Accession		
Azerbaijan	Accession		
Belarus	Accession		
Georgia	Accession		
Kazakhstan	Accession		
Kyrgyzstan	20-Dec-98		
Moldova Rep	Accession		
Tajikistan	No		
Turkmenistan	No		
Uzbekistan	Accession		
Middle East			
Saudi Arabia	Accession		
North America			
Canada	1-Jan-95	NAFTA	APEC
United States	1-Jan-95	NAFTA	APEC
Mexico	1-Jan-95	NAFTA	APEC
Oceania			
Australia	1-Jan-95	APEC	
New Zealand	1-Jan-95	APEC	
South America			
Argentina	1-Jan-95	MECUSOR	
Brazil	1-Jan-95	MECUSOR	

WTO - World Trade Organization

APEC - Asia-Pacific Economic Cooperation

EA - European Agreement

CEFTA - Central European Free Trade Agreement

NAFTA - North American Free Trade Agreement

MERCOSUR - Southern Common Market

Table 10. Impacts On Pork Net Exports of Various Trade Liberalization Alternatives

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Total Net Exports										
Baseline	2413	2550	2659	2742	2771	2793	2815	2884	2966	3033
WTO Members Only	2510	2801	3097	3382	3671	3925	4076	4202	4372	4538
WTO Members Plus NIS	2515	2841	3198	3556	3934	4240	4440	4605	4806	4996
All Countries	2569	3077	3686	4243	4743	5562	6184	6267	6275	6446
All Countries-China Optimistic	2541	3029	3738	4757	6184	7222	8027	8954	10048	11100
Americas										
Argentina										
Baseline	-65	-66	-66	-66	-66	-67	-67	-67	-67	-67
WTO Members Only	-66	-71	-78	-80	-78	-89	-98	-92	-83	-80
WTO Members Plus NIS	-66	-70	-77	-77	-73	-84	-93	-87	-78	-75
All Countries	-64	-66	-69	-68	-63	-68	-72	-69	-65	-63
All Countries-China Optimistic	-64	-66	-68	-61	-45	-49	-53	-40	-22	-12
Brazil										
Baseline	80	78	77	78	80	80	80	81	82	82
WTO Members Only	101	127	161	192	219	262	327	357	349	332
WTO Members Plus NIS	101	129	167	204	238	289	361	399	396	384
All Countries	107	145	198	251	301	384	489	539	539	529
All Countries-China Optimistic	106	143	199	275	372	482	617	728	804	866
Canada										
Baseline	740	789	799	778	745	761	782	754	711	682
WTO Members Only	746	801	830	844	865	906	949	952	942	942
WTO Members Plus NIS	746	803	834	853	882	929	977	985	979	981
All Countries	751	816	862	896	937	1009	1082	1100	1093	1090
All Countries-China Optimistic	750	814	863	914	995	1093	1195	1256	1300	1350
Mexico										
Baseline	-72	-76	-83	-86	-94	-92	-90	-100	-112	-120
WTO Members Only	-70	-76	-67	-50	-26	-29	-27	-17	-9	-7
WTO Members Plus NIS	-69	-75	-64	-44	-17	-18	-14	-3	6	8
All Countries	-65	-66	-48	-23	8	21	35	42	42	41
All Countries-China Optimistic	-66	-67	-46	-8	48	65	85	115	142	162
United States										
Baseline	205	281	380	467	491	501	533	575	651	723
WTO Members Only	261	421	663	1066	1570	1686	1523	1768	2270	2614
WTO Members Plus NIS	263	437	709	1153	1710	1870	1737	2013	2546	2917
All Countries	313	573	951	1497	2128	2490	2595	2888	3339	3700
All Countries-China Optimistic	303	552	963	1693	2723	3302	3457	4103	5133	6046
Asia										
China										
Baseline	92	85	79	73	68	63	58	55	51	47
WTO Members Only	92	85	79	73	68	63	58	55	51	47
WTO Members Plus NIS	92	85	79	73	68	63	58	55	51	47
All Countries	-72	-267	-542	-733	-852	-1454	-1917	-1799	-1564	-1526
All Countries-China Optimistic	-36	-207	-606	-1383	-2605	-3424	-4104	-5006	-6093	-7129

**Table 10. Impacts On Pork Net Exports of Various Trade Liberalization Alternatives
(Continued)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Hong Kong										
Baseline	-163	-172	-180	-189	-196	-203	-210	-215	-221	-227
WTO Members Only	-162	-171	-174	-174	-172	-186	-196	-193	-189	-193
WTO Members Plus NIS	-162	-170	-173	-173	-171	-184	-195	-191	-188	-192
All Countries	-160	-167	-168	-167	-165	-174	-183	-183	-183	-187
All Countries-China Optimistic	-160	-168	-168	-163	-154	-166	-176	-171	-165	-167
Japan										
Baseline	-824	-860	-896	-935	-946	-959	-971	-1011	-1059	-1096
WTO Members Only	-888	-1021	-1179	-1372	-1565	-1670	-1721	-1791	-1880	-1955
WTO Members Plus NIS	-888	-1019	-1174	-1364	-1553	-1656	-1707	-1776	-1864	-1940
All Countries	-881	-1005	-1151	-1335	-1523	-1609	-1651	-1732	-1833	-1911
All Countries-China Optimistic	-883	-1007	-1148	-1312	-1465	-1556	-1600	-1656	-1726	-1787
Philippines										
Baseline	-14	-15	-15	-15	-15	-16	-17	-17	-17	-17
WTO Members Only	-29	-58	-97	-159	-250	-280	-298	-326	-357	-387
WTO Members Plus NIS	-29	-56	-94	-154	-242	-270	-286	-312	-342	-372
All Countries	-25	-49	-79	-134	-218	-233	-242	-270	-303	-334
All Countries-China Optimistic	-26	-50	-78	-121	-184	-197	-197	-203	-213	-225
South Korea										
Baseline	-15	-20	-27	-34	-39	-45	-50	-55	-59	-65
WTO Members Only	-32	-65	-104	-139	-167	-201	-229	-233	-228	-227
WTO Members Plus NIS	-32	-64	-102	-134	-160	-193	-220	-223	-218	-217
All Countries	-28	-57	-88	-117	-140	-164	-185	-192	-193	-196
All Countries-China Optimistic	-29	-58	-87	-105	-109	-130	-148	-141	-123	-112
Thailand										
Baseline	1	1	1	1	1	1	1	1	1	1
WTO Members Only	9	17	22	19	10	6	9	0	-21	-37
WTO Members Plus NIS	9	18	24	23	15	12	16	8	-13	-29
All Countries	12	23	33	35	29	34	44	33	7	-11
All Countries-China Optimistic	11	22	34	44	53	60	72	73	62	55
Taiwan										
Baseline	-54	-52	-49	-45	-38	-30	-20	-19	-19	-20
WTO Members Only	-50	-44	-30	-4	3	0	-6	-9	-8	-3
WTO Members Plus NIS	-50	-43	-27	2	3	0	-8	-10	-8	-2
All Countries	-67	-86	-111	-137	-159	-182	-198	-210	-214	-215
All Countries-China Optimistic	-68	-87	-110	-124	-122	-136	-145	-137	-114	-92
Europe										
Bulgaria										
Baseline	2	2	2	1	2	2	2	2	2	2
WTO Members Only	3	1	-3	-11	-19	-25	-29	-33	-39	-43
WTO Members Plus NIS	3	1	-3	-10	-18	-24	-27	-31	-36	-40
All Countries	3	3	0	-6	-14	-17	-19	-23	-28	-33
All Countries-China Optimistic	3	2	0	-4	-9	-11	-11	-11	-13	-14

**Table 10. Impacts On Pork Net Exports of Various Trade Liberalization Alternatives
(Continued)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Czech Republic										
Baseline	-13	-12	-12	-14	-14	-13	-13	-13	-12	-12
WTO Members Only	-14	-19	-27	-37	-49	-54	-56	-62	-70	-73
WTO Members Plus NIS	-14	-19	-26	-35	-46	-50	-51	-57	-63	-66
All Countries	-12	-16	-20	-27	-36	-34	-32	-38	-45	-47
All Countries-China Optimistic	-13	-16	-19	-21	-22	-19	-12	-8	-6	-1
European Union										
Baseline	1087	1109	1114	1136	1175	1172	1146	1205	1260	1293
WTO Members Only	1087	1131	1131	998	755	822	1016	863	550	386
WTO Members Plus NIS	1089	1150	1177	1073	869	947	1154	1014	707	544
All Countries	1158	1274	1390	1330	1147	1415	1698	1448	1055	886
All Countries-China Optimistic	1145	1257	1421	1556	1684	1878	2195	2241	2134	2120
Hungary										
Baseline	59	57	55	54	54	53	52	52	52	52
WTO Members Only	64	65	65	58	49	52	60	49	32	25
WTO Members Plus NIS	64	66	67	62	54	57	66	55	39	31
All Countries	68	71	76	72	65	78	89	73	53	47
All Countries-China Optimistic	67	71	77	83	89	96	110	108	100	100
Other Eastern Europe										
Baseline	-52	-55	-56	-56	-55	-53	-52	-51	-50	-50
WTO Members Only	-52	-54	-55	-54	-52	-51	-49	-48	-46	-46
WTO Members Plus NIS	-53	-55	-56	-56	-54	-53	-52	-50	-49	-49
All Countries	-52	-55	-56	-55	-53	-52	-50	-49	-48	-47
All Countries-China Optimistic	-52	-55	-55	-54	-52	-51	-49	-47	-45	-44
Poland										
Baseline	123	124	123	122	122	123	124	125	127	128
WTO Members Only	121	118	99	54	9	-26	-45	-90	-150	-202
WTO Members Plus NIS	122	120	104	62	22	-9	-25	-67	-124	-176
All Countries	128	133	129	96	37	33	23	-14	-75	-124
All Countries-China Optimistic	127	131	131	117	92	81	82	64	51	32
Romania										
Baseline	-16	-20	-23	-25	-25	-25	-25	-26	-25	-24
WTO Members Only	-15	-22	-30	-41	-55	-61	-64	-76	-85	-91
WTO Members Plus NIS	-15	-22	-29	-40	-53	-59	-62	-73	-82	-87
All Countries	-14	-20	-26	-35	-48	-50	-52	-64	-73	-78
All Countries-China Optimistic	-15	-20	-26	-32	-40	-42	-42	-49	-53	-54
Slovakia										
Baseline	35	38	39	41	41	42	44	44	45	46
WTO Members Only	36	43	53	60	63	71	77	75	71	69
WTO Members Plus NIS	36	43	53	58	61	68	74	72	68	67
All Countries	34	41	48	53	56	61	65	64	63	62
All Countries-China Optimistic	35	41	48	49	46	51	55	50	44	41

**Table 10. Impacts On Pork Net Exports of Various Trade Liberalization Alternatives
(Continued)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Slovenia										
Baseline	-17	-18	-19	-20	-20	-21	-22	-22	-22	-22
WTO Members Only	-16	-18	-19	-21	-21	-24	-25	-25	-24	-24
WTO Members Plus NIS	-16	-18	-19	-21	-21	-23	-25	-24	-23	-23
All Countries	-16	-17	-18	-19	-19	-20	-21	-21	-21	-21
All Countries-China Optimistic	-16	-17	-18	-18	-16	-17	-18	-17	-15	-14
Former Soviet Union										
Estonia										
Baseline	1	0	0	-1	-1	-1	-2	-2	-2	-2
WTO Members Only	1	0	0	0	0	-1	-1	-1	-1	-2
WTO Members Plus NIS	1	0	0	0	0	-1	-1	-1	-1	-1
All Countries	1	1	0	0	0	-1	-1	-1	-1	-1
All Countries-China Optimistic	1	1	0	0	0	0	-1	-1	0	-1
Latvia										
Baseline	3	3	3	3	3	2	2	2	2	2
WTO Members Only	3	3	3	3	3	3	2	3	3	3
WTO Members Plus NIS	3	3	3	3	4	3	2	3	4	4
All Countries	3	3	3	4	5	4	4	4	5	5
All Countries-China Optimistic	3	3	3	5	6	6	6	7	8	8
Lithuania										
Baseline	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
WTO Members Only	0	0	1	3	5	5	4	5	7	7
WTO Members Plus NIS	0	-1	-2	-4	-5	-7	-8	-8	-6	-6
All Countries	0	0	0	-2	-3	-4	-5	-5	-4	-4
All Countries-China Optimistic	0	0	0	-1	0	-1	-2	0	2	3
Russia										
Baseline	-456	-520	-559	-574	-573	-570	-571	-572	-576	-579
WTO Members Only	-451	-511	-538	-530	-493	-483	-472	-447	-423	-405
WTO Members Plus NIS	-455	-547	-642	-711	-769	-836	-896	-930	-951	-964
All Countries	-450	-537	-621	-681	-731	-781	-828	-862	-887	-902
All Countries-China Optimistic	-451	-538	-620	-664	-685	-726	-761	-765	-754	-740
Ukraine										
Baseline	-3	-4	-4	-4	-3	-3	-3	-3	-3	-3
WTO Members Only	-1	1	8	22	43	51	59	75	91	104
WTO Members Plus NIS	-3	-11	-18	-28	-36	-32	-19	-11	-7	3
All Countries	-1	-5	-7	-11	-15	-1	22	33	37	48
All Countries-China Optimistic	-1	-6	-6	-2	10	31	64	94	120	154
Other Former Soviet Union										
Baseline	19	21	25	27	30	33	35	31	26	20
WTO Members Only	19	22	26	30	35	37	39	36	32	27
WTO Members Plus NIS	18	20	22	25	28	29	30	26	22	17
All Countries	18	20	23	26	29	31	32	29	24	19
All Countries-China Optimistic	18	20	23	27	32	34	35	32	29	25

**Table 10. Impacts On Pork Net Exports of Various Trade Liberalization Alternatives
(Continued)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Oceania										
Australia										
Baseline	0	-1	-2	-3	-4	-5	-6	-6	-8	-9
WTO Members Only	4	8	10	20	35	32	31	38	47	50
WTO Members Plus NIS	4	9	12	23	41	39	39	47	56	59
All Countries	6	14	22	37	57	63	69	77	81	81
All Countries-China Optimistic	6	13	22	45	80	91	103	123	143	155
New Zealand										
Baseline	-8	-8	-8	-7	-7	-7	-7	-7	-7	-7
WTO Members Only	-7	-7	-6	-6	-7	-5	-3	-2	-4	-5
WTO Members Plus NIS	-7	-6	-6	-6	-6	-4	-2	-1	-3	-4
All Countries	-7	-6	-4	-4	-4	-1	2	2	0	-1
All Countries-China Optimistic	-7	-6	-4	-3	0	3	6	8	9	10

Table 11. Impact of Trade Liberalization on the U.S. Pork Sector - Scenario 1

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	8349	8406	8613	8815	8985	8971	9031	9250	9444	9618
Scenario	8360	8461	8722	9059	9468	9668	9661	9916	10340	10734
Change	11	55	108	244	483	696	630	666	896	1117
Percent Change	0.1	0.7	1.3	2.8	5.4	7.8	7.0	7.2	9.5	11.6
Consumption										
Baseline	8150	8120	8224	8343	8488	8475	8499	8665	8788	8895
Scenario	8107	8036	8053	7992	7899	7984	8139	8142	8068	8123
Change	-44	-84	-172	-351	-590	-491	-359	-523	-720	-773
Percent Change	-0.5	-1.0	-2.1	-4.2	-6.9	-5.8	-4.2	-6.0	-8.2	-8.7
Net Exports										
Baseline	205	281	380	467	491	501	533	575	651	723
Scenario	261	421	663	1066	1570	1686	1523	1768	2270	2614
Change	56	140	283	600	1079	1184	990	1193	1619	1891
Percent Change	27.2	49.7	74.4	128.5	219.8	236.4	185.9	207.6	248.7	261.7
IA-MN Barrow-Gilt Price	U.S. Dollars per cwt. (Liveweight)									
Baseline	42.37	43.53	42.78	40.58	38.77	42.22	45.42	43.13	40.12	39.55
Scenario	42.84	44.25	44.39	43.76	43.91	45.31	47.84	47.46	45.71	45.06
Change	0.47	0.72	1.61	3.19	5.14	3.09	2.42	4.34	5.59	5.51
Percent Change	1.1	1.7	3.8	7.9	13.3	7.3	5.3	10.1	13.9	13.9
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	4.37	4.55	4.34	3.75	3.25	4.09	4.89	4.27	3.41	3.19
Scenario	4.50	4.76	4.82	4.72	4.90	5.31	5.94	5.88	5.48	5.35
Change	0.12	0.21	0.48	0.98	1.64	1.22	1.05	1.61	2.07	2.16
Percent Change	2.8	4.7	11.0	26.0	50.5	29.8	21.4	37.6	60.7	67.5

Table 12. Impact of Trade Liberalization on Canada's Pork Sector - Scenario 1

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1779	1840	1872	1877	1866	1875	1892	1892	1882	1872
Scenario	1782	1850	1895	1926	1958	2004	2048	2068	2082	2101
Change	3	9	23	49	93	129	155	176	200	229
Percent Change	0.2	0.5	1.2	2.6	5.0	6.9	8.2	9.3	10.6	12.2
Consumption										
Baseline	1038	1052	1073	1099	1121	1114	1110	1137	1171	1190
Scenario	1036	1048	1065	1082	1093	1098	1099	1116	1140	1159
Change	-2	-3	-8	-17	-28	-16	-12	-22	-30	-31
Percent Change	-0.2	-0.3	-0.7	-1.5	-2.5	-1.4	-1.0	-1.9	-2.6	-2.6
Net Exports										
Baseline	740	789	799	778	745	761	782	754	711	682
Scenario	746	801	830	844	865	906	949	952	942	942
Change	5	13	31	65	120	145	167	198	230	260
Percent Change	0.7	1.6	3.8	8.4	16.2	19.0	21.3	26.2	32.4	38.1
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	31.17	31.84	31.24	29.67	28.47	31.16	33.64	32.00	29.89	29.68
Scenario	31.51	32.37	32.41	32.00	32.24	33.45	35.43	35.22	34.06	33.81
Change	0.35	0.53	1.18	2.33	3.77	2.28	1.79	3.22	4.16	4.13
Percent Change	1.1	1.7	3.8	7.9	13.3	7.3	5.3	10.1	13.9	13.9
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	1.01	1.07	1.03	0.93	0.83	0.98	1.12	1.01	0.87	0.85
Scenario	1.03	1.10	1.11	1.09	1.10	1.19	1.32	1.31	1.23	1.21
Change	0.02	0.03	0.08	0.16	0.26	0.21	0.20	0.29	0.35	0.37
Percent Change	2.0	3.3	7.8	17.2	31.7	20.9	18.1	29.2	40.7	43.1

Table 13. Impact of Trade Liberalization on the EU Pork Sector - Scenario 1

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	17953	18030	18107	18183	18251	18294	18320	18388	18451	18518
Scenario	17953	18042	18117	18117	18033	18079	18186	18145	18027	17968
Change	0	12	11	-66	-218	-215	-134	-243	-424	-550
Percent Change	0.0	0.1	0.1	-0.4	-1.2	-1.2	-0.7	-1.3	-2.3	-3.0
Consumption										
Baseline	16866	16921	16993	17048	17078	17122	17175	17185	17193	17226
Scenario	16866	16911	16987	17118	17277	17259	17173	17281	17476	17582
Change	1	-10	-6	70	199	137	-2	96	283	356
Percent Change	0.0	-0.1	0.0	0.4	1.2	0.8	0.0	0.6	1.6	2.1
Net Exports										
Baseline	1087	1109	1114	1136	1175	1172	1146	1205	1260	1293
Scenario	1087	1131	1131	998	755	822	1016	863	550	386
Change	-1	22	17	-138	-420	-350	-130	-341	-710	-907
Percent Change	-0.1	2.0	1.5	-12.2	-35.7	-29.9	-11.3	-28.3	-56.4	-70.2
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	44.85	44.97	45.34	45.91	46.75	47.30	47.77	48.90	49.97	50.39
Scenario	44.85	45.13	45.46	44.91	43.91	45.31	47.84	47.46	45.71	45.06
Change	0.00	0.16	0.11	-0.99	-2.84	-1.99	0.07	-1.43	-4.26	-5.34
Percent Change	0.0	0.4	0.2	-2.2	-6.1	-4.2	0.1	-2.9	-8.5	-10.6
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	14.10	14.93	15.18	15.35	15.79	15.98	16.22	16.77	17.35	17.54
Scenario	14.10	15.03	15.25	14.76	14.06	14.71	16.14	15.77	14.63	14.12
Change	0.00	0.10	0.07	-0.60	-1.74	-1.27	-0.08	-1.01	-2.72	-3.42
Percent Change	0.0	0.7	0.5	-3.9	-11.0	-8.0	-0.5	-6.0	-15.7	-19.5

Table 14. Impact of Trade Liberalization on Japan's Pork Sector - Scenario 1

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1282	1267	1250	1227	1203	1194	1184	1167	1149	1135
Scenario	1262	1213	1149	1068	979	918	870	832	802	779
Change	-20	-53	-101	-159	-223	-275	-314	-335	-348	-356
Percent Change	-1.6	-4.2	-8.1	-13.0	-18.6	-23.1	-26.5	-28.7	-30.2	-31.4
Consumption										
Baseline	2107	2127	2146	2162	2178	2163	2156	2178	2208	2230
Scenario	2150	2233	2326	2437	2571	2598	2592	2623	2680	2733
Change	43	106	180	275	393	435	436	445	473	502
Percent Change	2.1	5.0	8.4	12.7	18.1	20.1	20.2	20.4	21.4	22.5
Imports										
Baseline	824	860	896	935	946	959	971	1011	1059	1096
Scenario	888	1021	1179	1372	1565	1670	1721	1791	1880	1955
Change	65	161	283	437	620	711	750	780	821	859
Percent Change	7.9	18.7	31.6	46.7	65.6	74.1	77.2	77.2	77.6	78.4
Pork Wholesale Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	113.13	116.38	117.79	118.24	117.90	124.21	128.50	128.19	128.06	130.20
Scenario	105.20	99.27	91.41	81.71	71.07	72.75	75.79	75.33	73.23	72.44
Change	-7.93	-17.10	-26.38	-36.53	-46.82	-51.45	-52.71	-52.86	-54.83	-57.75
Percent Change	-7.0	-14.7	-22.4	-30.9	-39.7	-41.4	-41.0	-41.2	-42.8	-44.4

Table 15. Impact of Trade Liberalization on the U.S. Pork Sector - Scenario 2

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	8349	8406	8613	8815	8985	8971	9031	9250	9444	9618
Scenario	8360	8464	8737	9094	9532	9767	9783	10062	10512	10929
Change	11	58	123	280	547	795	753	812	1067	1311
Percent Change	0.1	0.7	1.4	3.2	6.1	8.9	8.3	8.8	11.3	13.6
Consumption										
Baseline	8150	8120	8224	8343	8488	8475	8499	8665	8788	8895
Scenario	8105	8024	8022	7942	7824	7899	8048	8043	7963	8014
Change	-45	-96	-202	-401	-665	-577	-451	-622	-825	-881
Percent Change	-0.6	-1.2	-2.5	-4.8	-7.8	-6.8	-5.3	-7.2	-9.4	-9.9
Net Exports										
Baseline	205	281	380	467	491	501	533	575	651	723
Scenario	263	437	709	1153	1710	1870	1737	2013	2546	2917
Change	58	156	329	686	1219	1369	1205	1439	1895	2195
Percent Change	28.2	55.3	86.6	147.0	248.3	273.3	226.2	250.3	291.2	303.7
IA-MN Barrow-Gilt Price	U.S. Dollars per cwt. (Liveweight)									
Baseline	42.37	43.53	42.78	40.58	38.77	42.22	45.42	43.13	40.12	39.55
Scenario	42.85	44.38	44.69	44.22	44.56	45.96	48.52	48.15	46.39	45.69
Change	0.49	0.85	1.91	3.64	5.78	3.74	3.10	5.03	6.26	6.14
Percent Change	1.2	1.9	4.5	9.0	14.9	8.9	6.8	11.7	15.6	15.5
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	4.37	4.55	4.34	3.75	3.25	4.09	4.89	4.27	3.41	3.19
Scenario	4.50	4.80	4.91	4.87	5.12	5.56	6.21	6.18	5.78	5.65
Change	0.13	0.25	0.57	1.12	1.86	1.47	1.32	1.90	2.37	2.46
Percent Change	3.0	5.5	13.0	29.8	57.3	35.8	27.0	44.5	69.6	77.1

Table 16. Impact of Trade Liberalization on Canada's Pork Sector - Scenario 2

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1779	1840	1872	1877	1866	1875	1892	1892	1882	1872
Scenario	1782	1851	1898	1933	1972	2024	2073	2098	2116	2137
Change	3	10	26	56	106	148	181	206	234	265
Percent Change	0.2	0.5	1.4	3.0	5.7	7.9	9.5	10.9	12.4	14.1
Consumption										
Baseline	1038	1052	1073	1099	1121	1114	1110	1137	1171	1190
Scenario	1036	1048	1064	1080	1090	1095	1096	1113	1137	1156
Change	-2	-4	-9	-19	-31	-19	-15	-25	-34	-34
Percent Change	-0.2	-0.4	-0.9	-1.7	-2.8	-1.7	-1.3	-2.2	-2.9	-2.9
Net Exports										
Baseline	740	789	799	778	745	761	782	754	711	682
Scenario	746	803	834	853	882	929	977	985	979	981
Change	6	14	35	75	137	167	195	231	268	299
Percent Change	0.8	1.8	4.4	9.6	18.4	22.0	25.0	30.7	37.6	43.8
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	31.17	31.84	31.24	29.67	28.47	31.16	33.64	32.00	29.89	29.68
Scenario	31.53	32.46	32.63	32.33	32.72	33.92	35.93	35.73	34.56	34.29
Change	0.36	0.62	1.39	2.66	4.25	2.76	2.29	3.73	4.67	4.61
Percent Change	1.2	2.0	4.5	9.0	14.9	8.9	6.8	11.7	15.6	15.5
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	1.01	1.07	1.03	0.93	0.83	0.98	1.12	1.01	0.87	0.85
Scenario	1.04	1.11	1.12	1.11	1.13	1.23	1.37	1.36	1.28	1.27
Change	0.02	0.04	0.09	0.18	0.30	0.25	0.25	0.35	0.41	0.42
Percent Change	2.1	3.8	9.2	19.8	36.0	25.1	22.4	34.3	46.7	49.2

Table 17. Impact of Trade Liberalization on the EU Pork Sector - Scenario 2

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	17953	18030	18107	18183	18251	18294	18320	18388	18451	18518
Scenario	17954	18052	18142	18161	18102	18161	18281	18251	18140	18083
Change	1	22	36	-23	-149	-133	-39	-137	-311	-435
Percent Change	0.0	0.1	0.2	-0.1	-0.8	-0.7	-0.2	-0.7	-1.7	-2.4
Consumption										
Baseline	16866	16921	16993	17048	17078	17122	17175	17185	17193	17226
Scenario	16865	16902	16966	17087	17232	17216	17130	17237	17431	17539
Change	-1	-19	-26	39	155	94	-44	52	238	313
Percent Change	0.0	-0.1	-0.2	0.2	0.9	0.5	-0.3	0.3	1.4	1.8
Net Exports										
Baseline	1087	1109	1114	1136	1175	1172	1146	1205	1260	1293
Scenario	1089	1150	1177	1073	869	947	1154	1014	707	544
Change	2	41	62	-63	-306	-225	8	-191	-553	-749
Percent Change	0.2	3.7	5.6	-5.5	-26.1	-19.2	0.7	-15.9	-43.9	-57.9
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	44.85	44.97	45.34	45.91	46.75	47.30	47.77	48.90	49.97	50.39
Scenario	44.86	45.26	45.76	45.38	44.56	45.96	48.52	48.15	46.39	45.69
Change	0.02	0.29	0.42	-0.53	-2.20	-1.34	0.74	-0.74	-3.58	-4.70
Percent Change	0.0	0.6	0.9	-1.1	-4.7	-2.8	1.6	-1.5	-7.2	-9.3
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	14.10	14.93	15.18	15.35	15.79	15.98	16.22	16.77	17.35	17.54
Scenario	14.11	15.11	15.44	15.05	14.46	15.13	16.59	16.24	15.09	14.56
Change	0.01	0.18	0.26	-0.31	-1.33	-0.85	0.38	-0.53	-2.26	-2.98
Percent Change	0.1	1.2	1.7	-2.0	-8.4	-5.3	2.3	-3.2	-13.0	-17.0

Table 18. Impact of Trade Liberalization on Japan's Pork Sector - Scenario 2

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1282	1267	1250	1227	1203	1194	1184	1167	1149	1135
Scenario	1262	1214	1150	1070	983	923	876	837	807	784
Change	-20	-53	-100	-157	-219	-271	-309	-330	-342	-351
Percent Change	-1.6	-4.2	-8.0	-12.8	-18.3	-22.7	-26.1	-28.2	-29.8	-30.9
Consumption										
Baseline	2107	2127	2146	2162	2178	2163	2156	2178	2208	2230
Scenario	2150	2232	2322	2431	2562	2589	2583	2613	2671	2723
Change	43	104	177	269	385	425	427	435	463	493
Percent Change	2.0	4.9	8.2	12.5	17.7	19.7	19.8	20.0	21.0	22.1
Imports										
Baseline	824	860	896	935	946	959	971	1011	1059	1096
Scenario	888	1019	1174	1364	1553	1656	1707	1776	1864	1940
Change	64	159	278	428	607	697	736	765	806	844
Percent Change	7.8	18.5	31.1	45.8	64.2	72.7	75.7	75.7	76.1	77.0
Pork Wholesale Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	113.13	116.38	117.79	118.24	117.90	124.21	128.50	128.19	128.06	130.20
Scenario	105.24	99.49	91.87	82.34	71.84	73.53	76.60	76.16	74.04	73.21
Change	-7.90	-16.89	-25.92	-35.90	-46.05	-50.68	-51.90	-52.03	-54.02	-56.99
Percent Change	-7.0	-14.5	-22.0	-30.4	-39.1	-40.8	-40.4	-40.6	-42.2	-43.8

Table 19. Impact of Trade Liberalization on the U.S. Pork Sector - Scenario 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	8349	8406	8613	8815	8985	8971	9031	9250	9444	9618
Scenario	8368	8512	8834	9264	9765	10081	10246	10620	11071	11478
Change	19	106	221	450	781	1109	1216	1370	1627	1860
Percent Change	0.2	1.3	2.6	5.1	8.7	12.4	13.5	14.8	17.2	19.3
Consumption										
Baseline	8150	8120	8224	8343	8488	8475	8499	8665	8788	8895
Scenario	8064	7936	7880	7768	7640	7597	7655	7726	7729	7780
Change	-86	-184	-344	-575	-848	-878	-844	-940	-1059	-1115
Percent Change	-1.1	-2.3	-4.2	-6.9	-10.0	-10.4	-9.9	-10.8	-12.0	-12.5
Net Exports										
Baseline	205	281	380	467	491	501	533	575	651	723
Scenario	313	573	951	1497	2128	2490	2595	2888	3339	3700
Change	108	292	570	1030	1637	1989	2063	2313	2688	2978
Percent Change	52.9	103.7	150.0	220.8	333.4	396.9	387.3	402.3	412.9	412.1
IA-MN Barrow-Gilt Price	U.S. Dollars per cwt. (Liveweight)									
Baseline	42.37	43.53	42.78	40.58	38.77	42.22	45.42	43.13	40.12	39.55
Scenario	43.32	45.21	46.01	45.61	45.88	48.55	51.60	49.96	47.30	46.67
Change	0.96	1.67	3.23	5.03	7.11	6.33	6.18	6.83	7.17	7.12
Percent Change	2.3	3.8	7.5	12.4	18.3	15.0	13.6	15.8	17.9	18.0
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	4.37	4.55	4.34	3.75	3.25	4.09	4.89	4.27	3.41	3.19
Scenario	4.62	5.04	5.32	5.35	5.63	6.52	7.46	7.10	6.40	6.28
Change	0.25	0.49	0.97	1.60	2.38	2.43	2.57	2.82	2.99	3.08
Percent Change	5.8	10.7	22.4	42.7	73.1	59.5	52.5	66.1	87.6	96.6

Table 20. Impact of Trade Liberalization on Canada's Pork Sector - Scenario 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1779	1840	1872	1877	1866	1875	1892	1892	1882	1872
Scenario	1785	1860	1920	1969	2021	2092	2164	2204	2225	2241
Change	6	20	48	92	155	217	272	313	343	369
Percent Change	0.4	1.1	2.5	4.9	8.3	11.6	14.4	16.5	18.3	19.7
Consumption										
Baseline	1038	1052	1073	1099	1121	1114	1110	1137	1171	1190
Scenario	1034	1044	1057	1073	1084	1083	1083	1105	1133	1151
Change	-5	-8	-15	-25	-37	-31	-28	-33	-38	-39
Percent Change	-0.4	-0.8	-1.4	-2.3	-3.3	-2.7	-2.5	-2.9	-3.2	-3.3
Net Exports										
Baseline	740	789	799	778	745	761	782	754	711	682
Scenario	751	816	862	896	937	1009	1082	1100	1093	1090
Change	11	28	63	117	192	247	300	346	381	407
Percent Change	1.5	3.5	7.9	15.1	25.8	32.5	38.3	45.8	53.6	59.7
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	31.17	31.84	31.24	29.67	28.47	31.16	33.64	32.00	29.89	29.68
Scenario	31.87	33.07	33.59	33.35	33.69	35.83	38.21	37.07	35.24	35.02
Change	0.71	1.23	2.36	3.68	5.22	4.67	4.57	5.07	5.34	5.34
Percent Change	2.3	3.8	7.5	12.4	18.3	15.0	13.6	15.8	17.9	18.0
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	1.01	1.07	1.03	0.93	0.83	0.98	1.12	1.01	0.87	0.85
Scenario	1.06	1.15	1.19	1.19	1.22	1.39	1.58	1.51	1.39	1.38
Change	0.04	0.08	0.16	0.26	0.39	0.41	0.46	0.50	0.52	0.53
Percent Change	4.1	7.5	15.8	28.5	46.5	41.6	41.1	49.9	59.5	62.3

Table 21. Impact of Trade Liberalization on the EU Pork Sector - Scenario 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	17953	18030	18107	18183	18251	18294	18320	18388	18451	18518
Scenario	17990	18121	18269	18325	18292	18463	18642	18577	18430	18360
Change	37	91	162	141	41	169	322	189	-21	-158
Percent Change	0.2	0.5	0.9	0.8	0.2	0.9	1.8	1.0	-0.1	-0.9
Consumption										
Baseline	16866	16921	16993	17048	17078	17122	17175	17185	17193	17226
Scenario	16833	16848	16880	16994	17144	17051	16948	17128	17373	17474
Change	-33	-73	-113	-53	66	-71	-227	-57	180	248
Percent Change	-0.2	-0.4	-0.7	-0.3	0.4	-0.4	-1.3	-0.3	1.0	1.4
Net Exports										
Baseline	1087	1109	1114	1136	1175	1172	1146	1205	1260	1293
Scenario	1158	1274	1390	1330	1147	1415	1698	1448	1055	886
Change	71	165	276	194	-28	242	552	243	-205	-407
Percent Change	6.5	14.9	24.7	17.1	-2.3	20.7	48.2	20.2	-16.2	-31.5
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	44.85	44.97	45.34	45.91	46.75	47.30	47.77	48.90	49.97	50.39
Scenario	45.36	46.10	47.11	46.81	45.88	48.55	51.60	49.96	47.30	46.67
Change	0.51	1.13	1.77	0.90	-0.87	1.25	3.82	1.06	-2.67	-3.73
Percent Change	1.1	2.5	3.9	2.0	-1.9	2.6	8.0	2.2	-5.4	-7.4
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	14.10	14.93	15.18	15.35	15.79	15.98	16.22	16.77	17.35	17.54
Scenario	14.40	15.62	16.29	15.97	15.35	16.82	18.65	17.54	15.84	15.33
Change	0.30	0.70	1.11	0.62	-0.45	0.84	2.44	0.77	-1.51	-2.22
Percent Change	2.2	4.7	7.3	4.0	-2.8	5.3	15.0	4.6	-8.7	-12.6

Table 22. Impact of Trade Liberalization on Japan's Pork Sector - Scenario 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1282	1267	1250	1227	1203	1194	1184	1167	1149	1135
Scenario	1264	1219	1159	1081	995	939	894	856	824	798
Change	-18	-48	-91	-146	-208	-255	-290	-311	-325	-337
Percent Change	-1.4	-3.8	-7.3	-11.9	-17.3	-21.3	-24.5	-26.7	-28.3	-29.7
Consumption										
Baseline	2107	2127	2146	2162	2178	2163	2156	2178	2208	2230
Scenario	2145	2223	2307	2414	2544	2557	2546	2587	2656	2709
Change	39	95	162	252	366	394	390	409	448	479
Percent Change	1.8	4.5	7.5	11.6	16.8	18.2	18.1	18.8	20.3	21.5
Imports										
Baseline	824	860	896	935	946	959	971	1011	1059	1096
Scenario	881	1005	1151	1335	1523	1609	1651	1732	1833	1911
Change	58	145	255	400	577	650	680	722	774	815
Percent Change	7.0	16.9	28.4	42.8	61.0	67.7	70.0	71.4	73.2	74.4
Pork Wholesale Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	113.13	116.38	117.79	118.24	117.90	124.21	128.50	128.19	128.06	130.20
Scenario	106.08	100.86	93.88	84.27	73.44	76.63	80.29	78.32	75.13	74.38
Change	-7.05	-15.51	-23.90	-33.98	-44.46	-47.57	-48.21	-49.86	-52.93	-55.82
Percent Change	-6.2	-13.3	-20.3	-28.7	-37.7	-38.3	-37.5	-38.9	-41.3	-42.9

Table 23. Impact of Trade Liberalization on the U.S. Pork Sector - Scenario 4

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	8349	8406	8613	8815	8985	8971	9031	9250	9444	9618
Scenario	8366	8503	8828	9308	9975	10516	10760	11283	12063	12868
Change	18	97	215	493	990	1544	1729	2033	2619	3250
Percent Change	0.2	1.2	2.5	5.6	11.0	17.2	19.1	22.0	27.7	33.8
Consumption										
Baseline	8150	8120	8224	8343	8488	8475	8499	8665	8788	8895
Scenario	8072	7949	7862	7619	7261	7219	7308	7179	6933	6828
Change	-78	-171	-362	-723	-1228	-1256	-1191	-1486	-1855	-2067
Percent Change	-1.0	-2.1	-4.4	-8.7	-14.5	-14.8	-14.0	-17.2	-21.1	-23.2
Net Exports										
Baseline	205	281	380	467	491	501	533	575	651	723
Scenario	303	552	963	1693	2723	3302	3457	4103	5133	6046
Change	98	271	583	1226	2232	2801	2925	3528	4482	5324
Percent Change	48.1	96.1	153.4	262.8	454.6	558.9	549.2	613.7	688.5	736.8
IA-MN Barrow-Gilt Price	U.S. Dollars per cwt. (Liveweight)									
Baseline	42.37	43.53	42.78	40.58	38.77	42.22	45.42	43.13	40.12	39.55
Scenario	43.23	45.10	46.27	47.26	49.66	51.30	54.07	54.46	53.54	53.39
Change	0.86	1.56	3.48	6.68	10.89	9.08	8.65	11.34	13.42	13.84
Percent Change	2.0	3.6	8.1	16.5	28.1	21.5	19.1	26.3	33.4	35.0
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	4.37	4.55	4.34	3.75	3.25	4.09	4.89	4.27	3.41	3.19
Scenario	4.60	5.00	5.38	5.84	6.89	7.68	8.64	9.08	9.24	9.65
Change	0.23	0.45	1.04	2.09	3.64	3.59	3.75	4.80	5.83	6.46
Percent Change	5.2	10.0	23.9	55.7	111.8	87.7	76.6	112.4	171.1	202.2

Table 24. Impact of Trade Liberalization on Canada's Pork Sector - Scenario 4

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1779	1840	1872	1877	1866	1875	1892	1892	1882	1872
Scenario	1784	1859	1919	1980	2062	2165	2268	2342	2406	2472
Change	6	18	47	103	196	290	376	451	524	599
Percent Change	0.3	1.0	2.5	5.5	10.5	15.5	19.8	23.8	27.8	32.0
Consumption										
Baseline	1038	1052	1073	1099	1121	1114	1110	1137	1171	1190
Scenario	1034	1044	1056	1066	1067	1072	1073	1086	1105	1121
Change	-4	-7	-17	-33	-54	-42	-37	-51	-65	-69
Percent Change	-0.4	-0.7	-1.6	-3.0	-4.8	-3.8	-3.4	-4.5	-5.6	-5.8
Net Exports										
Baseline	740	789	799	778	745	761	782	754	711	682
Scenario	750	814	863	914	995	1093	1195	1256	1300	1350
Change	10	26	64	136	250	332	413	502	589	668
Percent Change	1.3	3.2	8.0	17.4	33.5	43.6	52.8	66.6	82.8	97.9
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	31.17	31.84	31.24	29.67	28.47	31.16	33.64	32.00	29.89	29.68
Scenario	31.80	32.98	33.78	34.55	36.47	37.87	40.05	40.42	39.89	40.07
Change	0.64	1.14	2.54	4.89	7.99	6.70	6.41	8.41	10.00	10.38
Percent Change	2.0	3.6	8.1	16.5	28.1	21.5	19.1	26.3	33.4	35.0
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	1.01	1.07	1.03	0.93	0.83	0.98	1.12	1.01	0.87	0.85
Scenario	1.05	1.14	1.20	1.27	1.42	1.57	1.78	1.85	1.84	1.90
Change	0.04	0.07	0.17	0.34	0.59	0.59	0.66	0.84	0.97	1.05
Percent Change	3.7	7.0	16.9	37.0	70.1	60.1	59.1	82.7	111.2	123.4

Table 25. Impact of Trade Liberalization on the EU Pork Sector - Scenario 4

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	17953	18030	18107	18183	18251	18294	18320	18388	18451	18518
Scenario	17983	18112	18283	18444	18591	18766	19004	19114	19137	19191
Change	30	81	176	260	340	472	684	726	686	673
Percent Change	0.2	0.5	1.0	1.4	1.9	2.6	3.7	3.9	3.7	3.6
Consumption										
Baseline	16866	16921	16993	17048	17078	17122	17175	17185	17193	17226
Scenario	16839	16855	16864	16889	16909	16890	16812	16873	17002	17071
Change	-27	-66	-129	-159	-168	-232	-363	-312	-190	-155
Percent Change	-0.2	-0.4	-0.8	-0.9	-1.0	-1.4	-2.1	-1.8	-1.1	-0.9
Net Exports										
Baseline	1087	1109	1114	1136	1175	1172	1146	1205	1260	1293
Scenario	1145	1257	1421	1556	1684	1878	2195	2241	2134	2120
Change	57	148	306	419	509	705	1050	1037	874	827
Percent Change	5.3	13.4	27.5	36.9	43.3	60.2	91.6	86.1	69.4	64.0
Pork Producer Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	44.85	44.97	45.34	45.91	46.75	47.30	47.77	48.90	49.97	50.39
Scenario	45.26	45.99	47.37	48.50	49.66	51.30	54.07	54.46	53.54	53.39
Change	0.41	1.02	2.03	2.60	2.91	4.00	6.30	5.57	3.57	2.99
Percent Change	0.9	2.3	4.5	5.7	6.2	8.5	13.2	11.4	7.1	5.9
Gross Revenue Less Feed Cost	Billion U.S. Dollars									
Baseline	14.10	14.93	15.18	15.35	15.79	15.98	16.22	16.77	17.35	17.54
Scenario	14.35	15.55	16.45	17.02	17.72	18.66	20.44	20.65	20.06	19.91
Change	0.25	0.63	1.27	1.67	1.93	2.68	4.22	3.88	2.71	2.37
Percent Change	1.8	4.2	8.4	10.9	12.2	16.8	26.0	23.1	15.6	13.5

Table 26. Impact of Trade Liberalization on Japan's Pork Sector - Scenario 4

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Thousand Metric Tons									
Production										
Baseline	1282	1267	1250	1227	1203	1194	1184	1167	1149	1135
Scenario	1264	1218	1159	1087	1009	956	916	883	857	838
Change	-18	-49	-91	-140	-193	-237	-269	-284	-292	-297
Percent Change	-1.4	-3.9	-7.3	-11.4	-16.1	-19.9	-22.7	-24.4	-25.4	-26.2
Consumption										
Baseline	2107	2127	2146	2162	2178	2163	2156	2178	2208	2230
Scenario	2146	2224	2305	2397	2502	2522	2516	2538	2582	2625
Change	39	97	160	234	324	359	360	360	375	394
Percent Change	1.9	4.5	7.4	10.8	14.9	16.6	16.7	16.5	17.0	17.7
Imports										
Baseline	824	860	896	935	946	959	971	1011	1059	1096
Scenario	883	1007	1148	1312	1465	1556	1600	1656	1726	1787
Change	59	147	252	377	520	597	629	645	667	691
Percent Change	7.1	17.1	28.1	40.3	54.9	62.2	64.7	63.8	63.0	63.1
Pork Wholesale Price	U.S. Dollars per cwt. (Liveweight Equivalent)									
Baseline	113.13	116.38	117.79	118.24	117.90	124.21	128.50	128.19	128.06	130.20
Scenario	105.92	100.68	94.28	86.55	77.97	79.94	83.26	83.73	82.63	82.44
Change	-7.22	-15.70	-23.51	-31.69	-39.93	-44.27	-45.24	-44.46	-45.44	-47.76
Percent Change	-6.4	-13.5	-20.0	-26.8	-33.9	-35.6	-35.2	-34.7	-35.5	-36.7

Table 27. Impact of Pork Trade Liberalization on Pork Sector Gross Revenues

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Million U.S. Dollars									
Americas										
Argentina										
Baseline	235	254	271	268	266	300	335	331	321	330
WTO Members Only	233	244	249	246	250	260	277	288	297	311
WTO Members Plus NIS	233	245	252	250	257	268	286	298	307	321
All Countries	237	253	266	267	274	299	326	329	328	340
All Countries-China Optimistic	236	252	268	283	313	337	366	393	417	446
Brazil										
Baseline	1594	1683	1754	1807	1863	1926	1993	2066	2143	2206
WTO Members Only	1635	1780	1909	2001	2082	2209	2399	2509	2522	2520
WTO Members Plus NIS	1636	1785	1921	2025	2120	2258	2460	2580	2599	2601
All Countries	1650	1818	1986	2115	2230	2437	2709	2823	2808	2802
All Countries-China Optimistic	1647	1813	1991	2178	2409	2654	2963	3212	3362	3482
Canada										
Baseline	1674	1770	1766	1682	1604	1765	1923	1828	1699	1678
WTO Members Only	1696	1808	1855	1861	1907	2024	2191	2199	2141	2146
WTO Members Plus NIS	1697	1814	1870	1887	1948	2073	2250	2264	2208	2213
All Countries	1718	1858	1947	1983	2056	2264	2498	2468	2368	2370
All Countries-China Optimistic	1714	1851	1958	2066	2271	2476	2743	2859	2898	2991
Mexico										
Baseline	1717	1855	1843	1839	1838	1991	2147	2140	2110	2162
WTO Members Only	1726	1853	1898	1957	2046	2157	2305	2372	2400	2468
WTO Members Plus NIS	1727	1858	1908	1975	2074	2189	2341	2412	2440	2508
All Countries	1741	1887	1960	2038	2142	2312	2497	2531	2524	2589
All Countries-China Optimistic	1739	1883	1968	2097	2292	2451	2647	2774	2861	2978
United States										
Baseline	10682	11052	11129	10801	10521	11439	12387	12047	11444	11488
WTO Members Only	10814	11308	11693	11972	12555	13229	13959	14213	14274	14606
WTO Members Plus NIS	10819	11345	11792	12144	12826	13556	14335	14632	14725	15081
All Countries	10948	11621	12275	12761	13532	14780	15966	16023	15813	16176
All Countries-China Optimistic	10923	11581	12335	13285	14960	16292	17571	18559	19506	20746
Asia										
China										
Baseline	46322	51050	55835	62448	69042	75708	82815	90490	98906	107052
WTO Members Only	46322	51050	55835	62448	69042	75708	82815	90490	98906	107052
WTO Members Plus NIS	46322	51050	55835	62448	69042	75708	82815	90490	98906	107052
All Countries	45687	49754	53640	59793	66167	70264	75368	83943	93494	101615
All Countries-China Optimistic	45815	49987	53289	56817	58449	61873	66219	69790	72823	75656
Hong Kong										
Baseline	561	562	546	515	491	515	536	511	479	469
WTO Members Only	568	573	572	568	577	569	578	583	574	563
WTO Members Plus NIS	568	575	577	575	587	578	587	593	584	572
All Countries	578	592	605	606	617	637	657	639	610	599
All Countries-China Optimistic	576	589	608	635	689	688	702	722	728	727

**Table 27. Impact of Pork Trade Liberalization on Pork Sector Gross Revenues
(Continued)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Million U.S. Dollars									
Indonesia										
Baseline	1356	1535	1582	1603	1598	1741	1867	1834	1773	1810
WTO Members Only	1239	1438	1443	1450	1443	1496	1578	1614	1608	1642
WTO Members Plus NIS	1240	1442	1453	1464	1463	1517	1600	1637	1631	1665
All Countries	1252	1468	1494	1508	1506	1600	1700	1698	1665	1701
All Countries-China Optimistic	1250	1464	1501	1560	1624	1689	1783	1851	1879	1940
Japan										
Baseline	4381	4452	4446	4381	4282	4477	4595	4518	4445	4464
WTO Members Only	4010	3638	3171	2635	2102	2018	1992	1892	1773	1704
WTO Members Plus NIS	4011	3648	3191	2661	2133	2049	2025	1926	1805	1734
All Countries	4051	3712	3285	2751	2207	2173	2168	2024	1869	1794
All Countries-China Optimistic	4043	3703	3300	2840	2377	2309	2302	2232	2139	2087
Philippines										
Baseline	2021	2163	2254	2361	2503	2506	2532	2618	2735	2876
WTO Members Only	1946	1963	1915	1809	1646	1667	1735	1746	1732	1749
WTO Members Plus NIS	1947	1968	1927	1828	1672	1696	1768	1782	1770	1787
All Countries	1966	2003	1987	1896	1740	1812	1911	1895	1857	1872
All Countries-China Optimistic	1962	1999	1995	1957	1877	1936	2049	2118	2159	2220
South Korea										
Baseline	2572	2687	2703	2641	2618	2825	3026	2981	2903	2942
WTO Members Only	2452	2416	2310	2181	2095	2146	2241	2273	2279	2327
WTO Members Plus NIS	2453	2422	2324	2202	2125	2179	2277	2311	2317	2365
All Countries	2476	2464	2391	2276	2197	2305	2432	2423	2390	2434
All Countries-China Optimistic	2471	2458	2401	2347	2362	2450	2578	2659	2717	2807
Thailand										
Baseline	540	569	596	622	645	670	695	721	747	763
WTO Members Only	560	608	645	659	657	675	714	711	680	664
WTO Members Plus NIS	561	610	650	668	670	690	730	729	698	681
All Countries	567	623	675	698	702	746	803	786	738	718
All Countries-China Optimistic	566	621	678	726	772	814	875	897	887	888
Taiwan										
Baseline	2834	2906	2974	2904	2859	3092	3319	3239	3114	3125
WTO Members Only	2862	2956	3090	3142	3215	3343	3511	3508	3440	3455
WTO Members Plus NIS	2863	2964	3110	3177	3253	3380	3544	3542	3475	3490
All Countries	2746	2711	2648	2487	2361	2445	2549	2488	2408	2420
All Countries-China Optimistic	2740	2703	2659	2571	2561	2632	2754	2809	2840	2921
Europe										
Bulgaria										
Baseline	317	331	348	359	362	365	369	375	380	383
WTO Members Only	318	328	330	320	304	303	308	303	295	290
WTO Members Plus NIS	318	328	332	322	307	307	312	308	300	295
All Countries	320	332	339	331	316	322	331	323	311	306
All Countries-China Optimistic	319	332	340	338	333	338	348	351	349	349

**Table 27. Impact of Pork Trade Liberalization on Pork Sector Gross Revenues
(Continued)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Million U.S. Dollars									
Czech Republic										
Baseline	1223	1306	1326	1292	1291	1300	1310	1321	1328	1318
WTO Members Only	1217	1255	1233	1175	1122	1134	1169	1151	1109	1094
WTO Members Plus NIS	1217	1258	1240	1187	1139	1152	1189	1172	1132	1115
All Countries	1229	1279	1275	1226	1178	1222	1276	1237	1180	1165
All Countries-China Optimistic	1226	1276	1280	1263	1265	1296	1355	1369	1356	1364
European Union										
Baseline	24316	24487	24795	25209	25770	26133	26431	27153	27845	28183
WTO Members Only	24314	24591	24871	24574	23915	24740	26276	26008	24886	24449
WTO Members Plus NIS	24327	24675	25073	24888	24358	25208	26786	26541	25412	24952
All Countries	24642	25231	25993	25905	25347	27070	29048	28028	26325	25876
All Countries-China Optimistic	24580	25155	26157	27016	27882	29074	31035	31439	30944	30941
Hungary										
Baseline	611	629	647	662	678	693	709	727	746	756
WTO Members Only	627	657	677	672	656	683	733	717	674	660
WTO Members Plus NIS	627	659	684	683	671	699	750	735	692	678
All Countries	638	678	714	717	705	764	830	786	725	712
All Countries-China Optimistic	636	675	720	756	793	832	899	909	888	890
Poland										
Baseline	2153	2226	2343	2467	2581	2681	2773	2870	2971	3051
WTO Members Only	2147	2204	2245	2189	2167	2209	2313	2269	2151	2086
WTO Members Plus NIS	2148	2212	2264	2219	2210	2257	2367	2327	2210	2144
All Countries	2176	2264	2354	2323	2201	2381	2521	2472	2311	2250
All Countries-China Optimistic	2171	2257	2368	2424	2430	2518	2671	2695	2740	2745
Romania										
Baseline	438	467	490	508	525	539	550	581	592	599
WTO Members Only	439	457	459	444	418	423	438	432	418	413
WTO Members Plus NIS	440	459	462	448	424	430	445	440	427	422
All Countries	444	466	475	462	439	455	476	464	444	439
All Countries-China Optimistic	443	465	477	476	470	482	505	511	508	512
Slovakia										
Baseline	233	246	256	251	248	263	276	271	263	264
WTO Members Only	231	234	229	218	212	213	217	220	222	225
WTO Members Plus NIS	231	235	230	220	215	216	221	225	226	229
All Countries	234	239	238	228	223	230	238	237	234	236
All Countries-China Optimistic	233	239	239	236	242	247	255	263	270	276
Slovenia										
Baseline	104	106	108	108	105	112	118	114	110	109
WTO Members Only	105	107	107	104	103	103	105	106	106	107
WTO Members Plus NIS	105	107	108	105	105	105	108	109	109	109
All Countries	106	109	112	110	110	114	118	116	113	113
All Countries-China Optimistic	106	109	113	115	121	124	128	132	135	137

**Table 27. Impact of Pork Trade Liberalization on Pork Sector Gross Revenues
(Continued)**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Million U.S. Dollars									
Former Soviet Union										
Estonia										
Baseline	69	69	67	64	62	66	69	66	63	62
WTO Members Only	69	70	69	68	68	69	71	71	69	68
WTO Members Plus NIS	69	70	70	68	68	70	72	71	70	69
All Countries	70	71	71	70	70	72	75	73	71	70
All Countries-China Optimistic	70	71	71	72	74	75	78	78	77	77
Latvia										
Baseline	71	72	74	71	69	73	77	74	71	71
WTO Members Only	71	73	73	72	73	73	76	76	75	75
WTO Members Plus NIS	71	73	74	73	74	75	77	78	77	77
All Countries	72	75	76	76	77	80	83	82	80	79
All Countries-China Optimistic	72	74	77	79	84	86	89	92	93	94
Lithuania										
Baseline	95	104	108	111	109	116	123	120	115	115
WTO Members Only	96	107	115	125	132	135	140	143	143	145
WTO Members Plus NIS	98	104	105	101	98	98	99	100	101	103
All Countries	99	107	110	106	103	106	110	108	106	107
All Countries-China Optimistic	99	107	110	111	115	117	120	125	128	132
Russia										
Baseline	1455	1579	1677	1628	1612	1752	1880	1834	1763	1775
WTO Members Only	1468	1601	1728	1732	1793	1920	2062	2081	2061	2099
WTO Members Plus NIS	1459	1509	1480	1365	1282	1287	1304	1262	1214	1216
All Countries	1472	1536	1526	1419	1340	1382	1422	1363	1298	1298
All Countries-China Optimistic	1470	1532	1532	1462	1444	1485	1540	1541	1536	1578
Ukraine										
Baseline	844	930	956	955	947	955	972	991	1008	1000
WTO Members Only	852	945	989	1025	1069	1066	1085	1150	1207	1215
WTO Members Plus NIS	844	909	917	899	882	915	978	1005	1009	1018
All Countries	853	926	947	937	924	986	1069	1088	1081	1091
All Countries-China Optimistic	851	924	951	967	999	1063	1161	1232	1282	1332
Oceania										
Australia										
Baseline	518	543	571	555	542	595	646	630	602	605
WTO Members Only	530	568	602	614	642	677	724	737	733	745
WTO Members Plus NIS	530	570	607	623	656	694	744	759	755	766
All Countries	537	585	634	658	695	760	829	829	807	813
All Countries-China Optimistic	536	583	638	687	773	840	919	965	991	1026
New Zealand										
Baseline	92	95	99	102	104	107	110	114	118	122
WTO Members Only	93	98	103	105	106	112	122	126	125	126
WTO Members Plus NIS	93	99	104	106	108	115	125	129	128	129
All Countries	94	101	108	111	114	124	138	139	135	136
All Countries-China Optimistic	94	100	109	116	125	135	150	159	162	168

Table 28. U.S. Beef and Broiler Supply and Utilization - Scenario 1

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	11355	11236	11362	11583	11838	12141	12387	12480	12501	12505
Scenario	11355	11236	11363	11585	11840	12144	12390	12487	12512	12518
Change	0	0	1	1	3	3	3	7	11	13
Percent Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Beef Consumption										
Baseline	11566	11338	11399	11507	11631	11815	11968	12041	12034	12004
Scenario	11583	11370	11463	11637	11850	11998	12103	12237	12304	12295
Change	17	32	64	130	218	183	135	197	270	291
Percent Change	0.1	0.3	0.6	1.1	1.9	1.5	1.1	1.6	2.2	2.4
Beef Net Exports										
Baseline	-211	-102	-39	74	204	325	417	440	468	502
Scenario	-227	-134	-102	-53	-8	146	286	252	211	227
Change	-17	-32	-63	-127	-213	-179	-131	-188	-257	-275
Percent Change	7.9	30.9	161.3	-171.9	-104.1	-54.9	-31.5	-42.7	-54.9	-54.8
Broiler Production										
Baseline	14567	15063	15509	15898	16276	16682	17123	17596	18100	18630
Scenario	14567	15065	15514	15908	16294	16709	17153	17629	18140	18678
Change	1	2	5	10	18	26	30	33	40	48
Percent Change	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3
Broiler Consumption										
Baseline	12163	12498	12753	13010	13280	13626	13971	14329	14715	15151
Scenario	12184	12540	12839	13187	13581	13877	14152	14592	15078	15542
Change	21	42	87	178	300	251	181	263	363	391
Percent Change	0.2	0.3	0.7	1.4	2.3	1.8	1.3	1.8	2.5	2.6
Broiler Exports										
Baseline	2258	2413	2603	2734	2837	2928	3021	3134	3251	3343
Scenario	2238	2372	2521	2566	2554	2703	2870	2905	2927	3000
Change	-20	-40	-82	-169	-283	-225	-151	-229	-324	-343
Percent Change	-0.9	-1.7	-3.2	-6.2	-10.0	-7.7	-5.0	-7.3	-10.0	-10.3
Fed Cattle Price										
	U.S. Dollars per cwt. (Liveweight)									
Baseline	73.74	75.58	76.16	74.57	71.51	68.86	67.17	67.68	69.25	71.41
Scenario	73.75	75.61	76.24	74.76	71.84	69.09	67.32	67.91	69.57	71.72
Change	0.01	0.03	0.08	0.18	0.33	0.23	0.14	0.23	0.32	0.31
Percent Change	0.0	0.0	0.1	0.2	0.5	0.3	0.2	0.3	0.5	0.4
Wholesale Broiler Price										
	U.S. Dollars per cwt.									
Baseline	57.38	56.96	56.40	55.92	55.67	55.73	55.83	55.80	55.80	55.73
Scenario	57.41	57.00	56.48	56.07	55.92	55.87	55.91	55.99	56.06	55.97
Change	0.03	0.04	0.08	0.16	0.25	0.14	0.08	0.19	0.26	0.24
Percent Change	0.1	0.1	0.1	0.3	0.4	0.3	0.1	0.3	0.5	0.4

Table 29. U.S. Beef and Broiler Supply and Utilization - Scenario 2

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	11355	11236	11362	11583	11838	12141	12387	12480	12501	12505
Scenario	11355	11236	11363	11585	11841	12145	12390	12488	12513	12520
Change	0	0	1	2	3	3	4	8	12	15
Percent Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Beef Consumption										
Baseline	11566	11338	11399	11507	11631	11815	11968	12041	12034	12004
Scenario	11583	11375	11475	11656	11877	12030	12137	12274	12343	12335
Change	17	37	76	149	246	215	169	233	309	331
Percent Change	0.2	0.3	0.7	1.3	2.1	1.8	1.4	1.9	2.6	2.8
Beef Net Exports										
Baseline	-211	-102	-39	74	204	325	417	440	468	502
Scenario	-228	-138	-114	-72	-35	116	253	217	174	189
Change	-17	-36	-75	-146	-240	-209	-164	-223	-293	-313
Percent Change	8.2	35.3	190.9	-197.0	-117.3	-64.4	-39.3	-50.6	-62.7	-62.3
Broiler Production										
Baseline	14567	15063	15509	15898	16276	16682	17123	17596	18100	18630
Scenario	14567	15066	15514	15909	16296	16712	17158	17635	18148	18687
Change	1	2	5	11	20	30	35	40	48	57
Percent Change	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Broiler Consumption										
Baseline	12163	12498	12753	13010	13280	13626	13971	14329	14715	15151
Scenario	12185	12547	12855	13213	13619	13920	14199	14642	15131	15597
Change	22	48	102	204	338	295	228	313	416	445
Percent Change	0.2	0.4	0.8	1.6	2.5	2.2	1.6	2.2	2.8	2.9
Broiler Exports										
Baseline	2258	2413	2603	2734	2837	2928	3021	3134	3251	3343
Scenario	2237	2366	2506	2541	2518	2663	2828	2861	2882	2954
Change	-21	-46	-97	-193	-319	-265	-193	-273	-369	-389
Percent Change	-0.9	-1.9	-3.7	-7.1	-11.2	-9.1	-6.4	-8.7	-11.3	-11.6
Fed Cattle Price										
	U.S. Dollars per cwt. (Liveweight)									
Baseline	73.74	75.58	76.16	74.57	71.51	68.86	67.17	67.68	69.25	71.41
Scenario	73.75	75.61	76.25	74.78	71.88	69.14	67.38	67.98	69.64	71.79
Change	0.01	0.03	0.09	0.21	0.37	0.28	0.20	0.30	0.38	0.38
Percent Change	0.0	0.0	0.1	0.3	0.5	0.4	0.3	0.4	0.6	0.5
Wholesale Broiler Price										
	U.S. Dollars per cwt.									
Baseline	57.38	56.96	56.40	55.92	55.67	55.73	55.83	55.80	55.80	55.73
Scenario	57.41	57.01	56.49	56.09	55.95	55.90	55.94	56.03	56.10	56.01
Change	0.03	0.04	0.09	0.18	0.28	0.18	0.12	0.23	0.30	0.28
Percent Change	0.1	0.1	0.2	0.3	0.5	0.3	0.2	0.4	0.5	0.5

Table 30. U.S. Beef and Broiler Supply and Utilization - Scenario 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	11355	11236	11362	11583	11838	12141	12387	12480	12501	12505
Scenario	11355	11237	11364	11586	11843	12149	12398	12496	12523	12533
Change	0	1	2	3	5	8	11	16	22	28
Percent Change	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
Beef Consumption										
Baseline	11566	11338	11399	11507	11631	11815	11968	12041	12034	12004
Scenario	11598	11406	11525	11718	11944	12138	12279	12389	12430	12424
Change	32	68	126	211	313	323	310	349	396	420
Percent Change	0.3	0.6	1.1	1.8	2.7	2.7	2.6	2.9	3.3	3.5
Beef Net Exports										
Baseline	-211	-102	-39	74	204	325	417	440	468	502
Scenario	-242	-168	-161	-131	-99	14	122	112	98	114
Change	-31	-65	-122	-205	-303	-311	-294	-328	-370	-388
Percent Change	14.8	64.0	312.6	-276.5	-148.4	-95.7	-70.6	-74.5	-79.1	-77.3
Broiler Production										
Baseline	14567	15063	15509	15898	16276	16682	17123	17596	18100	18630
Scenario	14568	15068	15520	15919	16310	16732	17185	17670	18184	18723
Change	1	5	11	21	35	50	63	74	84	94
Percent Change	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.5
Broiler Consumption										
Baseline	12163	12498	12753	13010	13280	13626	13971	14329	14715	15151
Scenario	12205	12590	12925	13299	13709	14068	14392	14797	15243	15708
Change	42	92	172	289	429	442	421	468	529	557
Percent Change	0.3	0.7	1.4	2.2	3.2	3.2	3.0	3.3	3.6	3.7
Broiler Exports										
Baseline	2258	2413	2603	2734	2837	2928	3021	3134	3251	3343
Scenario	2218	2326	2442	2465	2443	2535	2662	2739	2806	2879
Change	-41	-87	-161	-269	-394	-393	-359	-395	-445	-464
Percent Change	-1.8	-3.6	-6.2	-9.8	-13.9	-13.4	-11.9	-12.6	-13.7	-13.9
Fed Cattle Price										
	U.S. Dollars per cwt. (Liveweight)									
Baseline	73.74	75.58	76.16	74.57	71.51	68.86	67.17	67.68	69.25	71.41
Scenario	73.79	75.70	76.41	74.95	72.03	69.43	67.76	68.25	69.78	71.89
Change	0.05	0.12	0.24	0.38	0.52	0.57	0.59	0.57	0.53	0.48
Percent Change	0.1	0.2	0.3	0.5	0.7	0.8	0.9	0.8	0.8	0.7
Wholesale Broiler Price										
	U.S. Dollars per cwt.									
Baseline	57.38	56.96	56.40	55.92	55.67	55.73	55.83	55.80	55.80	55.73
Scenario	57.44	57.07	56.58	56.20	56.04	56.09	56.18	56.17	56.17	56.09
Change	0.06	0.11	0.18	0.28	0.37	0.37	0.35	0.37	0.37	0.36
Percent Change	0.1	0.2	0.3	0.5	0.7	0.7	0.6	0.7	0.7	0.6

Table 31. U.S. Beef and Broiler Supply and Utilization - Scenario 4

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	11355	11236	11362	11583	11838	12141	12387	12480	12501	12505
Scenario	11355	11236	11364	11588	11846	12153	12402	12505	12540	12556
Change	0	1	2	4	8	11	15	25	38	51
Percent Change	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.4
Beef Consumption										
Baseline	11566	11338	11399	11507	11631	11815	11968	12041	12034	12004
Scenario	11595	11401	11531	11770	12076	12269	12399	12582	12713	12763
Change	29	63	132	263	445	454	431	542	679	759
Percent Change	0.3	0.6	1.2	2.3	3.8	3.8	3.6	4.5	5.6	6.3
Beef Net Exports										
Baseline	-211	-102	-39	74	204	325	417	440	468	502
Scenario	-239	-163	-167	-179	-223	-109	9	-66	-161	-194
Change	-28	-61	-128	-253	-428	-434	-407	-506	-629	-696
Percent Change	13.5	59.8	327.8	-342.3	-209.3	-133.6	-97.8	-115.0	-134.4	-138.6
Broiler Production										
Baseline	14567	15063	15509	15898	16276	16682	17123	17596	18100	18630
Scenario	14568	15068	15520	15922	16323	16756	17217	17711	18241	18800
Change	1	5	11	24	47	73	95	116	142	171
Percent Change	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9
Broiler Consumption										
Baseline	12163	12498	12753	13010	13280	13626	13971	14329	14715	15151
Scenario	12201	12584	12934	13372	13897	14256	14564	15066	15635	16177
Change	38	85	181	362	616	631	593	737	920	1026
Percent Change	0.3	0.7	1.4	2.8	4.6	4.6	4.2	5.1	6.3	6.8
Broiler Exports										
Baseline	2258	2413	2603	2734	2837	2928	3021	3134	3251	3343
Scenario	2221	2332	2433	2395	2267	2369	2522	2512	2471	2486
Change	-37	-81	-170	-339	-570	-559	-499	-622	-780	-857
Percent Change	-1.6	-3.4	-6.5	-12.4	-20.1	-19.1	-16.5	-19.9	-24.0	-25.6
Fed Cattle Price										
	U.S. Dollars per cwt. (Liveweight)									
Baseline	73.74	75.58	76.16	74.57	71.51	68.86	67.17	67.68	69.25	71.41
Scenario	73.79	75.69	76.43	75.14	72.52	69.92	68.22	68.91	70.69	72.95
Change	0.05	0.11	0.27	0.57	1.00	1.06	1.05	1.23	1.44	1.54
Percent Change	0.1	0.1	0.3	0.8	1.4	1.5	1.6	1.8	2.1	2.2
Wholesale Broiler Price										
	U.S. Dollars per cwt.									
Baseline	57.38	56.96	56.40	55.92	55.67	55.73	55.83	55.80	55.80	55.73
Scenario	57.44	57.06	56.60	56.32	56.33	56.32	56.36	56.51	56.67	56.64
Change	0.06	0.10	0.20	0.41	0.67	0.59	0.53	0.71	0.87	0.91
Percent Change	0.1	0.2	0.4	0.7	1.2	1.1	1.0	1.3	1.6	1.6

Table 32. Canada's Beef and Broiler Supply and Utilization - Scenario 1

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	1216	1228	1252	1278	1303	1329	1354	1378	1395	1407
Scenario	1216	1228	1253	1279	1304	1330	1354	1380	1398	1410
Change	0	0	0	1	1	1	1	2	2	2
Percent Change	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.2
Beef Consumption										
Baseline	1003	1012	1023	1038	1056	1082	1104	1113	1117	1122
Scenario	1003	1013	1025	1041	1062	1085	1106	1117	1123	1129
Change	1	1	2	4	6	3	2	5	6	6
Percent Change	0.1	0.1	0.2	0.3	0.5	0.3	0.2	0.4	0.6	0.6
Beef Net Exports										
Baseline	213	216	229	240	246	247	250	265	279	285
Scenario	213	216	228	237	242	245	248	262	275	281
Change	0	-1	-1	-3	-5	-3	-2	-3	-4	-4
Percent Change	-0.2	-0.3	-0.6	-1.2	-1.8	-1.0	-0.8	-1.1	-1.4	-1.4
Broiler Production										
Baseline	897	907	910	913	917	931	944	949	955	967
Scenario	897	908	913	918	925	937	949	956	964	977
Change	1	1	2	5	8	7	5	7	9	10
Percent Change	0.1	0.1	0.3	0.5	0.9	0.7	0.5	0.7	0.9	1.0
Broiler Consumption										
Baseline	916	932	938	942	948	962	978	985	992	1006
Scenario	917	933	941	949	958	969	983	994	1004	1018
Change	1	1	3	6	11	6	5	9	12	12
Percent Change	0.1	0.1	0.3	0.7	1.1	0.7	0.5	0.9	1.2	1.2
Broiler Net Imports										
Baseline	19	25	28	29	30	32	34	36	37	39
Scenario	19	25	28	31	33	31	34	38	40	41
Change	0	0	1	2	3	-1	0	2	3	3
Percent Change	1.7	0.8	2.9	5.9	9.2	-2.0	-0.5	6.1	8.3	7.1
Fed Cattle Price										
	Canadian Dollars per 100 kg (Carcass Weight)									
Baseline	364	368	368	358	342	328	319	319	325	333
Scenario	364	369	368	359	344	330	320	321	326	335
Change	0.10	0.18	0.43	0.98	1.72	1.23	0.77	1.23	1.66	1.64
Percent Change	0.0	0.0	0.1	0.3	0.5	0.4	0.2	0.4	0.5	0.5
Poultry Producer Price										
	Canadian Dollars per 100 kg									
Baseline	145	146	151	154	156	161	164	167	170	173
Scenario	145	147	151	155	157	161	165	168	170	173
Change	0.07	0.11	0.23	0.47	0.75	0.43	0.24	0.57	0.79	0.73
Percent Change	0.0	0.1	0.1	0.3	0.5	0.3	0.1	0.3	0.5	0.4

Table 33. Canada's Beef and Broiler Supply and Utilization - Scenario 2

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	1216	1228	1252	1278	1303	1329	1354	1378	1395	1407
Scenario	1216	1228	1253	1279	1304	1330	1355	1380	1398	1410
Change	0	0	0	1	1	1	1	2	3	3
Percent Change	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Beef Consumption										
Baseline	1003	1012	1023	1038	1056	1082	1104	1113	1117	1122
Scenario	1003	1013	1025	1042	1063	1085	1107	1118	1124	1129
Change	1	1	2	4	6	4	3	5	7	7
Percent Change	0.1	0.1	0.2	0.4	0.6	0.4	0.3	0.5	0.6	0.6
Beef Net Exports										
Baseline	213	216	229	240	246	247	250	265	279	285
Scenario	213	216	227	237	241	244	248	262	274	281
Change	0	-1	-2	-3	-5	-3	-2	-3	-4	-4
Percent Change	-0.2	-0.4	-0.8	-1.3	-2.1	-1.2	-0.9	-1.2	-1.5	-1.5
Broiler Production										
Baseline	897	907	910	913	917	931	944	949	955	967
Scenario	897	908	913	919	926	939	950	957	966	978
Change	1	1	3	5	9	8	6	8	11	11
Percent Change	0.1	0.1	0.3	0.6	1.0	0.9	0.7	0.9	1.1	1.2
Broiler Consumption										
Baseline	916	932	938	942	948	962	978	985	992	1006
Scenario	917	933	942	950	960	970	984	995	1006	1019
Change	1	2	4	7	12	8	6	10	13	14
Percent Change	0.1	0.2	0.4	0.8	1.3	0.8	0.6	1.0	1.3	1.4
Broiler Net Imports										
Baseline	19	25	28	29	30	32	34	36	37	39
Scenario	19	25	29	31	33	31	34	38	40	41
Change	0	0	1	2	3	-1	0	2	3	2
Percent Change	1.8	1.3	3.8	6.7	10.0	-2.0	-1.0	5.4	7.6	6.3
Fed Cattle Price										
	Canadian Dollars per 100 kg (Carcass Weight)									
Baseline	364	368	368	358	342	328	319	319	325	333
Scenario	364	369	369	359	344	330	321	321	327	335
Change	0.10	0.19	0.47	1.09	1.92	1.49	1.08	1.57	2.00	1.96
Percent Change	0.0	0.1	0.1	0.3	0.6	0.5	0.3	0.5	0.6	0.6
Poultry Producer Price										
	Canadian Dollars per 100 kg									
Baseline	145	146	151	154	156	161	164	167	170	173
Scenario	145	147	151	155	157	161	165	168	170	173
Change	0.07	0.12	0.26	0.53	0.85	0.53	0.35	0.69	0.91	0.84
Percent Change	0.0	0.1	0.2	0.3	0.5	0.3	0.2	0.4	0.5	0.5

Table 34. Canada's Beef and Broiler Supply and Utilization - Scenario 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	1216	1228	1252	1278	1303	1329	1354	1378	1395	1407
Scenario	1216	1229	1253	1279	1304	1331	1357	1381	1399	1412
Change	0	0	1	1	2	2	3	3	4	5
Percent Change	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Beef Consumption										
Baseline	1003	1012	1023	1038	1056	1082	1104	1113	1117	1122
Scenario	1004	1014	1026	1043	1064	1088	1109	1119	1125	1130
Change	1	2	3	5	8	6	5	7	8	8
Percent Change	0.1	0.2	0.3	0.5	0.7	0.6	0.5	0.6	0.7	0.7
Beef Net Exports										
Baseline	213	216	229	240	246	247	250	265	279	285
Scenario	213	215	227	236	240	243	247	262	275	282
Change	-1	-1	-2	-4	-6	-4	-3	-3	-4	-3
Percent Change	-0.3	-0.6	-1.1	-1.6	-2.3	-1.5	-1.0	-1.2	-1.3	-1.2
Broiler Production										
Baseline	897	907	910	913	917	931	944	949	955	967
Scenario	898	910	916	923	930	945	959	964	971	983
Change	1	3	6	9	13	15	15	15	15	15
Percent Change	0.2	0.4	0.7	1.0	1.4	1.6	1.6	1.6	1.6	1.6
Broiler Consumption										
Baseline	916	932	938	942	948	962	978	985	992	1006
Scenario	918	935	944	952	962	975	989	999	1008	1021
Change	2	3	6	10	15	12	11	13	15	15
Percent Change	0.2	0.3	0.6	1.1	1.5	1.3	1.2	1.4	1.5	1.5
Broiler Net Imports										
Baseline	19	25	28	29	30	32	34	36	37	39
Scenario	19	25	28	30	32	29	31	34	37	39
Change	0	0	0	1	1	-2	-4	-2	0	0
Percent Change	1.7	-0.8	0.4	1.8	4.5	-7.7	-10.4	-5.3	-0.7	0.7
Fed Cattle Price										
	Canadian Dollars per 100 kg (Carcass Weight)									
Baseline	364	368	368	358	342	328	319	319	325	333
Scenario	364	369	369	360	345	331	322	322	327	336
Change	0.33	0.68	1.28	2.00	2.71	2.97	3.05	2.97	2.74	2.49
Percent Change	0.1	0.2	0.3	0.6	0.8	0.9	1.0	0.9	0.8	0.7
Poultry Producer Price										
	Canadian Dollars per 100 kg									
Baseline	145	146	151	154	156	161	164	167	170	173
Scenario	145	147	152	155	158	162	165	168	171	174
Change	0.18	0.31	0.56	0.85	1.14	1.11	1.07	1.11	1.12	1.08
Percent Change	0.1	0.2	0.4	0.6	0.7	0.7	0.6	0.7	0.7	0.6

Table 35. Canada's Beef and Broiler Supply and Utilization - Scenario 4

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	1216	1228	1252	1278	1303	1329	1354	1378	1395	1407
Scenario	1216	1229	1253	1280	1306	1333	1358	1385	1404	1418
Change	0	0	1	2	4	4	4	7	9	10
Percent Change	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.5	0.6	0.7
Beef Consumption										
Baseline	1003	1012	1023	1038	1056	1082	1104	1113	1117	1122
Scenario	1004	1014	1027	1044	1067	1089	1110	1122	1129	1135
Change	1	2	3	7	11	8	6	9	12	13
Percent Change	0.1	0.2	0.3	0.6	1.0	0.7	0.6	0.8	1.1	1.1
Beef Net Exports										
Baseline	213	216	229	240	246	247	250	265	279	285
Scenario	213	215	227	236	239	243	247	262	276	283
Change	-1	-1	-3	-5	-7	-4	-2	-3	-3	-2
Percent Change	-0.3	-0.5	-1.1	-1.9	-2.8	-1.6	-1.0	-1.1	-1.1	-0.8
Broiler Production										
Baseline	897	907	910	913	917	931	944	949	955	967
Scenario	898	910	917	926	939	955	967	976	988	1003
Change	1	3	6	13	22	24	24	27	33	36
Percent Change	0.1	0.3	0.7	1.4	2.4	2.6	2.5	2.9	3.4	3.7
Broiler Consumption										
Baseline	916	932	938	942	948	962	978	985	992	1006
Scenario	918	935	944	955	969	979	993	1006	1019	1033
Change	2	3	7	13	21	17	16	21	26	28
Percent Change	0.2	0.3	0.7	1.4	2.2	1.8	1.6	2.1	2.6	2.7
Broiler Net Imports										
Baseline	19	25	28	29	30	32	34	36	37	39
Scenario	19	25	28	29	30	25	26	30	31	30
Change	0	0	0	0	-1	-7	-8	-6	-7	-8
Percent Change	1.8	-0.3	0.8	0.5	-2.2	-22.3	-23.4	-17.4	-17.6	-21.8
Fed Cattle Price										
	Canadian Dollars per 100 kg (Carcass Weight)									
Baseline	364	368	368	358	342	328	319	319	325	333
Scenario	364	369	369	361	347	334	325	326	332	341
Change	0.28	0.61	1.41	2.98	5.20	5.49	5.40	6.34	7.39	7.87
Percent Change	0.1	0.2	0.4	0.8	1.5	1.7	1.7	2.0	2.3	2.4
Poultry Producer Price										
	Canadian Dollars per 100 kg									
Baseline	145	146	151	154	156	161	164	167	170	173
Scenario	145	147	152	155	158	162	166	169	172	175
Change	0.15	0.29	0.62	1.24	2.04	1.80	1.63	2.16	2.66	2.77
Percent Change	0.1	0.2	0.4	0.8	1.3	1.1	1.0	1.3	1.6	1.6

Table 36. European Union Beef and Broiler Supply and Utilization - Scenario 1

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	7672	7797	7770	7737	7705	7667	7629	7589	7554	7521
Scenario	7672	7798	7771	7738	7707	7668	7630	7591	7557	7524
Change	0	0	1	1	2	1	1	2	3	3
Percent Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beef Consumption										
Baseline	7343	7398	7368	7336	7309	7275	7239	7199	7162	7124
Scenario	7343	7398	7367	7324	7278	7253	7236	7182	7122	7076
Change	0	1	-1	-12	-31	-22	-3	-17	-40	-48
Percent Change	0.0	0.0	0.0	-0.2	-0.4	-0.3	0.0	-0.2	-0.6	-0.7
Beef Net Exports										
Baseline	450	462	465	464	459	455	452	453	456	461
Scenario	389	399	403	414	429	415	394	409	435	448
Change	-61	-63	-62	-49	-30	-40	-58	-44	-21	-14
Percent Change	-13.5	-13.7	-13.2	-10.7	-6.5	-8.8	-12.9	-9.7	-4.6	-2.9
Broiler Production										
Baseline	6147	6207	6256	6316	6379	6445	6510	6581	6650	6731
Scenario	6149	6211	6264	6333	6407	6466	6524	6602	6680	6762
Change	2	4	8	17	28	22	14	21	30	31
Percent Change	0.0	0.1	0.1	0.3	0.4	0.3	0.2	0.3	0.5	0.5
Broiler Consumption										
Baseline	5607	5661	5708	5765	5823	5883	5942	6009	6073	6148
Scenario	5607	5661	5707	5755	5800	5868	5942	5997	6042	6109
Change	-1	0	-1	-9	-23	-15	-1	-12	-32	-38
Percent Change	0.0	0.0	0.0	-0.2	-0.4	-0.2	0.0	-0.2	-0.5	-0.6
Broiler Net Exports										
Baseline	538	545	548	552	556	562	567	572	577	583
Scenario	541	549	557	578	607	598	582	606	638	652
Change	3	4	9	26	51	36	14	34	62	69
Percent Change	0.5	0.7	1.7	4.8	9.2	6.5	2.5	5.9	10.7	11.9
Beef Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	228	213	210	208	206	204	203	203	203	202
Scenario	228	213	211	209	207	205	203	204	204	203
Change	0.06	0.12	0.28	0.64	1.11	0.79	0.50	0.80	1.07	1.06
Percent Change	0.0	0.1	0.1	0.3	0.5	0.4	0.2	0.4	0.5	0.5
Poultry Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	105	106	108	110	112	114	116	118	120	121
Scenario	105	106	108	110	112	114	116	118	120	121
Change	0.04	0.06	0.14	0.28	0.45	0.26	0.15	0.34	0.47	0.44
Percent Change	0.0	0.1	0.1	0.3	0.4	0.2	0.1	0.3	0.4	0.4

Table 37. European Union Beef and Broiler Supply and Utilization - Scenario 2

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	7672	7797	7770	7737	7705	7667	7629	7589	7554	7521
Scenario	7672	7798	7771	7738	7707	7669	7630	7592	7558	7524
Change	0	0	1	1	2	1	1	3	3	3
Percent Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beef Consumption										
Baseline	7343	7398	7368	7336	7309	7275	7239	7199	7162	7124
Scenario	7343	7399	7369	7327	7282	7257	7239	7186	7126	7080
Change	0	2	1	-9	-27	-18	0	-13	-36	-44
Percent Change	0.0	0.0	0.0	-0.1	-0.4	-0.2	0.0	-0.2	-0.5	-0.6
Beef Net Exports										
Baseline	450	462	465	464	459	455	452	453	456	461
Scenario	389	398	401	411	425	411	391	406	432	445
Change	-61	-64	-64	-53	-34	-44	-61	-47	-24	-16
Percent Change	-13.5	-13.9	-13.7	-11.3	-7.4	-9.6	-13.6	-10.4	-5.2	-3.6
Broiler Production										
Baseline	6147	6207	6256	6316	6379	6445	6510	6581	6650	6731
Scenario	6149	6211	6266	6336	6411	6471	6528	6607	6685	6767
Change	2	5	10	19	32	26	19	26	35	36
Percent Change	0.0	0.1	0.2	0.3	0.5	0.4	0.3	0.4	0.5	0.5
Broiler Consumption										
Baseline	5607	5661	5708	5765	5823	5883	5942	6009	6073	6148
Scenario	5607	5662	5709	5758	5804	5872	5946	6000	6046	6113
Change	0	1	1	-7	-19	-11	3	-8	-28	-35
Percent Change	0.0	0.0	0.0	-0.1	-0.3	-0.2	0.1	-0.1	-0.5	-0.6
Broiler Net Exports										
Baseline	538	545	548	552	556	562	567	572	577	583
Scenario	541	549	557	578	607	599	583	607	639	654
Change	3	4	9	26	51	37	15	35	63	71
Percent Change	0.5	0.7	1.6	4.7	9.2	6.6	2.7	6.1	10.9	12.1
Beef Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	228	213	210	208	206	204	203	203	203	202
Scenario	228	213	211	209	207	205	204	204	204	203
Change	0.07	0.12	0.30	0.71	1.24	0.97	0.70	1.01	1.29	1.27
Percent Change	0.0	0.1	0.1	0.3	0.6	0.5	0.3	0.5	0.6	0.6
Poultry Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	105	106	108	110	112	114	116	118	120	121
Scenario	105	106	108	110	112	114	116	118	120	121
Change	0.04	0.07	0.16	0.32	0.51	0.32	0.21	0.41	0.55	0.51
Percent Change	0.0	0.1	0.1	0.3	0.5	0.3	0.2	0.3	0.5	0.4

Table 38. European Union Beef and Broiler Supply and Utilization - Scenario 3

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	7672	7797	7770	7737	7705	7667	7629	7589	7554	7521
Scenario	7672	7798	7772	7739	7708	7671	7633	7593	7559	7526
Change	0	1	2	2	3	4	4	5	5	5
Percent Change	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Beef Consumption										
Baseline	7343	7398	7368	7336	7309	7275	7239	7199	7162	7124
Scenario	7346	7404	7376	7334	7289	7270	7252	7192	7129	7085
Change	3	6	8	-2	-20	-5	13	-7	-33	-39
Percent Change	0.0	0.1	0.1	0.0	-0.3	-0.1	0.2	-0.1	-0.5	-0.5
Beef Net Exports										
Baseline	450	462	465	464	459	455	452	453	456	461
Scenario	386	394	395	405	419	401	381	401	431	442
Change	-64	-68	-70	-59	-40	-54	-71	-51	-26	-19
Percent Change	-14.2	-14.7	-15.0	-12.6	-8.7	-11.9	-15.8	-11.4	-5.6	-4.2
Broiler Production										
Baseline	6147	6207	6256	6316	6379	6445	6510	6581	6650	6731
Scenario	6152	6218	6277	6349	6424	6492	6557	6629	6698	6778
Change	6	12	21	33	45	48	47	48	48	47
Percent Change	0.1	0.2	0.3	0.5	0.7	0.7	0.7	0.7	0.7	0.7
Broiler Consumption										
Baseline	5607	5661	5708	5765	5823	5883	5942	6009	6073	6148
Scenario	5609	5666	5716	5765	5811	5885	5960	6010	6051	6118
Change	2	5	7	1	-12	2	18	1	-23	-29
Percent Change	0.0	0.1	0.1	0.0	-0.2	0.0	0.3	0.0	-0.4	-0.5
Broiler Net Exports										
Baseline	538	545	548	552	556	562	567	572	577	583
Scenario	542	552	562	584	613	608	596	619	647	660
Change	4	7	14	32	57	46	29	47	71	77
Percent Change	0.7	1.2	2.5	5.8	10.3	8.2	5.1	8.2	12.3	13.1
Beef Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	228	213	210	208	206	204	203	203	203	202
Scenario	228	214	211	209	207	206	205	205	205	203
Change	0.21	0.44	0.83	1.29	1.75	1.92	1.97	1.92	1.77	1.61
Percent Change	0.1	0.2	0.4	0.6	0.9	0.9	1.0	0.9	0.9	0.8
Poultry Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	105	106	108	110	112	114	116	118	120	121
Scenario	105	106	108	110	113	114	116	118	121	121
Change	0.10	0.19	0.33	0.51	0.68	0.67	0.64	0.67	0.67	0.65
Percent Change	0.1	0.2	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.5

Table 39. European Union Beef and Broiler Supply and Utilization - Scenario 4

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef Production										
	Thousand Metric Tons									
Baseline	7672	7797	7770	7737	7705	7667	7629	7589	7554	7521
Scenario	7672	7798	7772	7741	7711	7673	7635	7598	7566	7534
Change	0	1	2	4	6	6	7	9	12	13
Percent Change	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
Beef Consumption										
Baseline	7343	7398	7368	7336	7309	7275	7239	7199	7162	7124
Scenario	7346	7403	7378	7343	7306	7278	7257	7207	7151	7106
Change	2	6	10	6	-3	3	18	8	-11	-18
Percent Change	0.0	0.1	0.1	0.1	0.0	0.0	0.3	0.1	-0.2	-0.2
Beef Net Exports										
Baseline	450	462	465	464	459	455	452	453	456	461
Scenario	386	395	394	398	405	396	378	392	415	428
Change	-63	-68	-71	-66	-54	-59	-74	-61	-41	-33
Percent Change	-14.0	-14.6	-15.3	-14.2	-11.8	-13.1	-16.4	-13.6	-8.9	-7.2
Broiler Production										
Baseline	6147	6207	6256	6316	6379	6445	6510	6581	6650	6731
Scenario	6151	6217	6279	6362	6455	6523	6583	6668	6756	6847
Change	5	11	23	45	77	79	73	88	106	116
Percent Change	0.1	0.2	0.4	0.7	1.2	1.2	1.1	1.3	1.6	1.7
Broiler Consumption										
Baseline	5607	5661	5708	5765	5823	5883	5942	6009	6073	6148
Scenario	5609	5665	5717	5773	5829	5898	5973	6032	6082	6153
Change	1	4	9	9	6	16	30	23	9	5
Percent Change	0.0	0.1	0.2	0.1	0.1	0.3	0.5	0.4	0.1	0.1
Broiler Net Exports										
Baseline	538	545	548	552	556	562	567	572	577	583
Scenario	542	552	562	588	626	625	610	637	674	694
Change	3	6	14	37	70	63	43	65	98	111
Percent Change	0.6	1.1	2.5	6.7	12.6	11.2	7.6	11.3	17.0	19.0
Beef Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	228	213	210	208	206	204	203	203	203	202
Scenario	228	214	211	210	209	207	206	207	208	207
Change	0.18	0.39	0.91	1.92	3.36	3.55	3.49	4.09	4.77	5.08
Percent Change	0.1	0.2	0.4	0.9	1.6	1.7	1.7	2.0	2.4	2.5
Poultry Producer Price										
	Euros per 100 kg (Carcass weight)									
Baseline	105	106	108	110	112	114	116	118	120	121
Scenario	105	106	108	111	113	115	117	119	121	122
Change	0.09	0.17	0.37	0.74	1.22	1.08	0.98	1.29	1.60	1.66
Percent Change	0.1	0.2	0.3	0.7	1.1	1.0	0.8	1.1	1.3	1.4

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Appendix I

Quality and Transportation Adjustments by Region

Asia

Imports of pork by Asia are assessed a transportation cost of \$0.28 per pound of muscle meat and there is no quality adjustment except for Thailand. Thailand has a highly protected feed sector that constrains the use of imported feed grains. In addition, disease outbreaks are a perennial problem. Consequently, a quality adjustment factor of 0.83 is applied to pork from Thailand.

Central and Eastern Europe

Transportation costs to Central and Eastern European countries range from \$0.15 to \$0.35 per pound of muscle meat. The quality adjustment factor applied in Central and Eastern European countries is 0.90, with the exception of Hungary. No quality adjustment factor is applied to Hungary. Hungary has a commercial pork industry and the animal health situation is satisfactory. Large food manufactures apply detailed hygiene and technical standards stipulated by the EU, to which they export significant quantities of pork. Japan includes Hungary on their list of approved meat suppliers.

Former Soviet Union and Baltic Countries

Transportation costs to the Former Soviet Union and the Baltic countries range from \$0.30 to \$0.35 per pound of muscle meat. No quality adjustment factor is applied.

North America

The United States price is the reference price in the model. No transportation costs or quality adjustments are applied to U.S. and Canadian pork. Transportation costs to Mexico are \$0.38 per pound of muscle meat and a quality adjustment factor of 0.90 is applied. The high transportation costs reflect the poor infrastructure (roads) and facilities (trucks) in Mexico.

South America

Transportation costs for South America have been set to zero since most of the pork trade takes place among the MECUSOR countries. The quality adjustment factor for Brazil is 0.90 and 1.00 (no adjustment) for all other countries in South America.

Oceania

Pork imports by Oceania are assessed transportation costs ranging from \$0.10 to \$0.30 per pound of muscle meat. No quality adjustments are made for pork from Oceania.

European Union

Transportation costs for European Union exports are \$0.12 per pound of muscle meat. However, it is assumed that there is a quality premium for European pork that is exactly equal to the transportation costs. This is equivalent to a quality premium of about 8.8 percent.

Conversion Factors

The assumed carcass yield from live weight is 75 percent and the retail weight yield from carcass is 78 percent.

Appendix II

List of FMD free countries

(April 2000)

RESOLUTION No. XIV

Recognition of the Foot and Mouth Disease Status of Member Countries

CONSIDERING THAT

1. During the 63rd General Session, the International Committee adopted Resolutions XI and XII, 'Establishment of a list of foot and mouth disease (FMD) free countries where vaccination is not practiced', and 'Procedure for the recognition of the foot and mouth disease status of Member Countries',
2. During the 64th General Session, the International Committee adopted Resolution XII which asks that the Director General publish in the *Bulletin* a list of the countries or zones within national territories that fulfil the criteria of one of the FMD free categories described in Chapter 2.1.1. of the *International Animal Health Code*,
3. The Foot and Mouth Disease and Other Epizootics Commission has continued to apply the procedure approved by the International Committee and has supported the recognition of the FMD free status of additional countries and zones within national territories for annual adoption of the list by the International Committee,
4. During the 65th General Session, the International Committee adopted Resolution XII which stated that the Delegates of Member Countries where countries or zones within their national territories are recognized as FMD free annually confirm by letter each November both their status and that the criteria by which their status was recognized remain the same.
5. During the 65th General Session, the International Committee adopted Resolution XVII delegating to the Foot and Mouth Disease and Other Epizootics Commission the authority to recognize, without further International Committee consultation, that a Member Country or zone within its territory has regained its previously recognized FMD free status following outbreaks that are eradicated in accordance with the relevant provisions of Chapter 2.1.1 of the International Animal Health Code.
6. Information published by the OIE is derived from declarations made by the official Veterinary Services of Member Countries. The OIE is not responsible for inaccurate publication of country disease status based on inaccurate or incomplete information or changes in epidemiological status or other significant events that were not promptly reported to the Central Bureau subsequent to the time of declaration of freedom.

THE COMMITTEE RESOLVES

That the Director General publish in the *Bulletin* the following list of Member Countries recognized as FMD free countries where vaccination is not practiced, according to the provisions of Chapter 2.1.1 of the *International Animal Health Code*¹:

Australia	Greece	New Zealand
Austria	Haiti	Norway
Belgium	Honduras	Panama
Bulgaria	Hungary	Poland
Canada	Iceland	Portugal
Chile	Indonesia	Romania
Costa Rica	Ireland	Singapore
Croatia	Italy	Slovakia
Cuba	[Korea]*	Slovenia
Cyprus	[Japan]*	Spain
Czech Rep.	Latvia	Sweden
Denmark	Lithuania	Switzerland
El Salvador	Luxemburg	United Kingdom
Estonia	Madagascar	United States of America
Finland	Malta	Uruguay
Former Yug. Rep. of Macedonia	Mexico	Vanuatu
France	Netherlands	
Germany	New Caledonia	

AND

That the Director General publish in the *Bulletin* the following Member Countries as having an FMD free zone where vaccination is not practiced, according to the provisions of Chapter 2.1.1 of the *International Animal Health Code*:

Botswana², Colombia³, Namibia⁴ and South Africa⁵.

AND

That the Director General publish in the *Bulletin* the following Member Country as having an FMD free zone where vaccination is practiced, according to the provisions of Chapter 2.1.1 of the *International Animal Health Code*:

Brazil⁶.

AND

That the Director General publish in the *Bulletin* the following Member Countries as being FMD free countries where vaccination is practiced, according to the provisions of Chapter 2.1.1 of the *International Animal Health Code*¹:

Argentina and Paraguay.

(Adopted by the International Committee of the OIE on 19 May 1999)

* [country] between brackets have their FMD free status suspended due to recent occurrence of disease

(1) For information about the status of non-contiguous territories of Member Countries recognized as FMD free address inquiries to that country's Delegate or the Director General.

- (2) Zone designated by the Delegate of Botswana in documents addressed to the Director General on 26 August 1996 and 24 September 1997.
- (3) Zone designated by the Delegate of Colombia in documents addressed to the Director General on 25 November 1995 (Area I - Northwest region of Choco Department) and 3 April 1996.
- (4) Zone designated by the Delegate of Namibia in a document addressed to the Director General on 6 February 1997.
- (5) Zone designated by the Delegate of South Africa in documents addressed to the Director General on 3 May and 18 December 1995.
- (6) Zone designated by the Delegate of Brazil in documents addressed to the Director General on 17 September 1997 and 19 December 1997, comprising the states of Rio Grande do Sul and Santa Catarina.