Economic Impacts of the U.S. - Australia Free Trade Agreement

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Abstract

The general objective of this study is to analyze the economic impact of the recently negotiated U.S. - Australia Free Trade Agreement (FTA). Specific objectives are to estimate changes in trade and prices in different sectors of the U.S. and Australian economies and to determine the impact on U.S. agriculture and the U.S. beef industry in particular. The results of a general equilibrium analysis suggest that the FTA will not have significant effects on the economies of Australia, the United States, or the rest of the world. The United States could achieve gains in the manufacturing sector, but the U.S. agricultural sector could experience small losses as Australia could increase exports of dairy products and beef to the United States. The results of an econometric model, however, indicate that the quota increases under the 18-year phase-in period of the agreement would have a minimal impact on the U.S. beef industry. Benefits for U.S. agriculture appear to be small. Australia is not an important market for U.S. agriculture. U.S. soybean meal exports could increase, as could horticultural exports, but the bigger effect would likely be on exports of manufacturing products.

Keywords: Australia, free trade agreement, exports, imports, beef

Highlights

The general objective of this study is to analyze the economic impact of the recently negotiated U.S. - Australia Free Trade Agreement (FTA). Specific objectives are to estimate changes in trade and prices in different sectors of the U.S. and Australian economies and to determine the impact on U.S. agriculture and the U.S. beef industry in particular. A general equilibrium simulation model is used to estimate the impact on exports, imports, and prices for the manufacturing, service, and agricultural sectors in the United States and Australia. These estimates are obtained through the use of the Global Trade Analysis Project (GTAP) model. This model is also used to estimate changes in GDP in the two countries. A separate econometric model is developed to estimate more specific effects on the U.S. beef industry. The impact on U.S. prices of increased beef imports under the agreement are estimated.

Exports are very important for agricultural producers in Australia. This is especially true for producers of beef, sugar, and dairy. Exports of these commodities to the United States are currently restricted by tariffs and quotas. The agreement would gradually increase access to the U.S. market for Australian beef and dairy products, but sugar is excluded. Beef is Australia's top agricultural export to the United States, followed by wine, dairy products, and sugar. Australia has been filling its quota of beef exports to the United States in recent years and may have the potential to export greater quantities. Australia is only a minor market for U.S. agricultural exports. Soybean meal is the most exported U.S. commodity to Australia. The United States maintains an agricultural trade deficit with Australia that has equaled about $1.5 billion in recent years. For most years, U.S. exports of certain agricultural-related products to Australia, including farm machinery, fertilizers, and chemicals, surpass those of actual agricultural products, in dollar terms.

Overall, the results of the general equilibrium analysis suggest that the U.S. - Australia FTA will not have significant effects on the economies of Australia, the United States, or the rest of the world. The United States could achieve small gains and the rest of the world could experience small losses. The gains achieved by the United States are in the manufacturing sector. The U.S. agricultural sector, on the other hand, could experience small losses. Traded products that are likely to be affected by the agreement are dairy products and meat, with the United States importing more of these products from Australia.

The U.S. - Australia FTA calls for restrictions on U.S. beef imports from Australia to be gradually eliminated over a period of 18 years. The quota will initially increase by 15 thousand metric tons and will rise 70 thousand metric tons beyond the current quota level during the 18-year phase-in period before being eliminated. Since beef imports from Australia are used for ground beef, the U.S. beef market needs to be segregated into ground beef and table-cut beef components to determine the effect of increased imports on the U.S. beef industry. An econometric model is developed to determine the effect of increased imports on U.S. ground beef price.

According to the results, increasing annual beef imports from Australia by 20 thousand metric tons would have little impact on U.S. price. Ground beef price would decrease by 0.22 cents per pound, which is a decrease of only 0.1 percent. A 70 thousand metric ton increase in imports would cause the price to drop by 0.76 cents per pound.

The quota increases under the U.S. - Australia FTA could have minimal impact on the U.S. beef industry. Adding an additional 15 to 70 thousand metric tons would have a small impact on supply and would likely have little impact on price, as indicated by the empirical results. The above-quota tariff will be eliminated 18 years after implementation of the agreement. At that point, Australia would have unlimited access to the U.S. market and could more significantly increase exports to the United States, though the quantity of imports is difficult to estimate. If Australia increased exports to the United States by 500 thousand metric tons, U.S. ground beef price would decline by 5.4 cents per pound according to these results, and price would decrease by 10.8 cents per pound if U.S. imports increased by 1 million metric tons. One issue not considered in this analysis is the possibility of Australia exporting table-cut beef to the United States.

Benefits for U.S. agriculture appear to be small. Australia is not an important market for U.S. agriculture. Soybean meal exports could increase, as could horticultural exports, but the bigger effect would likely be on exports of manufacturing products and agricultural-related products. These agricultural-related products include farm machinery and fertilizers. The FTA may benefit exporters of agricultural inputs. The United States may benefit overall from this FTA, but the benefits will largely be for non-agricultural industries.

Economic Impacts of the U.S. - Australia Free Trade Agreement

Jeremy W. Mattson, Anatoliy Skripnitchenko, and Won W. Koo[*]

INTRODUCTION

Negotiations for a U.S. - Australia Free Trade Agreement (FTA) were completed in February 2004. The United States Trade Representative (USTR) argues that increased access to the Australian market under the FTA will boost trade in goods and services between the two countries and will enhance employment opportunities in both countries. Further, proponents of the FTA argue that it will result in greater business integration, especially in the information technology sector, increasing the efficiency and competitiveness of the U.S. industry. Opponents of the agreement, however, argue that it will have a negative effect on U.S. agriculture.

Exports are very important for agricultural producers in Australia, accounting for a large percentage of production. This is especially true for producers of beef, sugar, and dairy. Exports of these commodities to the United States are currently restricted by tariffs and quotas. Throughout the negotiations, Australia demanded increased access to the United States for exports of these commodities. The agreement would gradually increase access to the U.S. market for Australian beef and dairy products. Sugar, on the other hand, was excluded from the agreement. Possible gains for U.S. agriculture under the agreement may be small. The United States is much more important to Australia as a market for agricultural exports than Australia is to the United States. The United States maintains an agricultural trade deficit with Australia that has been growing in recent years. The U.S. manufacturing sector, by contrast, could benefit from the agreement.

The general objective of this study is to assess the economic impact of the U.S. - Australia FTA. Specific objectives are to estimate changes in trade and prices in different sectors of the U.S. and Australian economies and to determine the impact on U.S. agriculture and the U.S. beef industry in particular. A general equilibrium simulation model is used to estimate the impact on exports, imports, and prices for the manufacturing, service, and agricultural sectors in the United States and Australia. These estimates are obtained through the use of the Global Trade Analysis Project (GTAP) model. This model is also used to estimate changes in GDP in the two countries. A separate econometric model is developed to estimate more specific effects on the U.S. beef industry. The impact of increased beef imports on U.S. prices is estimated.

The next section of this study presents general economic and demographic characteristics of the United States and Australia. After this section, U.S. - Australia agricultural trade in recent years is discussed. The subsequent section presents the results from the GTAP model. A section on the beef industry follows, including a discussion of the model used and the estimated results which show the effect of increased imports on U.S. ground beef prices. The final section presents a summary and conclusions.

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GENERAL CHARACTERISTICS OF THE UNITED STATES AND AUSTRALIA

Australia is a country of 20 million people with a GDP of $493 billion in 2003 (Table 1). In comparison, the United States has a population of 290 million and a GDP of $10.9 trillion. Per capita GDP in 2003 was $37,312 in the United States and $24,684 in Australia. Australia has a total land size of 768 million hectares, compared to the United States' 916 million hectares. Australia has 456 million hectares of agricultural land, which is slightly larger than the 411 million hectares in the United States, but the United States has more arable land since about 90 percent of Australia's agricultural land is permanent pasture. However, Australia has four times more arable land per capita, which indicates the country can export significant quantities of agricultural products.

Table 1. General Characteristics of the United States and Australia

		United States	Australia
Population	(million people)	290.3	19.7
GDP	(billion U.S. dollars)	10,875	493
Per Capita GDP	(U.S. dollars)	37,312	24,685
Total Land	(1000 hectares)	915,896	768,230
Agricultural Land	(1000 hectares)	411,259	455,500
Arable Land	(1000 hectares)	175,209	50,304
Per Capita Arable Land	(hectares)	0.60	2.55

Sources: U.S. Census Bureau, International Database; International Monetary Fund, World Economic Outlook Database; FAOSTAT

About 4 percent of Australia's workforce is directly employed in agriculture, and agriculture accounts for just 3 percent of GDP. Wheat is the top agricultural commodity produced in Australia in terms of value. According to data from the Royal Agricultural Society of New South Wales, wheat accounts for 17.9 percent of the total value of agricultural commodities produced in Australia each year. The next most valuable commodities produced are cattle and calves (12.5 percent), milk (10.3 percent), wool (9.5 percent), fruits and nuts (6.2 percent), vegetables (6.2 percent), and sugar cane (4.4 percent).

Despite its small share of the country's GDP, agriculture represents a large share of Australia's exports. Australia is one of the world's major exporters of a number of agricultural products, including wheat, beef, dairy, and sugar. Australia's key export markets for wheat are China, Japan, India, Iran, Taiwan, Egypt, Indonesia, Iraq, and South Korea. About 70 percent of Australia's beef production is exported, the largest markets being Japan, the United States, Korea, Canada, and Taiwan. Australia exports 60 percent of its dairy production, behind only the European Union and New Zealand in exports of dairy products.

U.S. overall exports of goods to Australia in 2002 were $13.1 billion, and imports from Australia were $6.5 billion, resulting in a U.S. trade surplus of $6.6 billion. This surplus is an increase from the $4.5 billion surplus in 2001. With regards to agriculture, however, the United States has a trade deficit with Australia.

U.S.-AUSTRALIA AGRICULTURAL TRADE

U.S. agricultural imports from Australia equaled $2.1 billion in 2003, while agricultural exports to Australia totaled $612 million (Figure 1). Agricultural imports from Australia have been increasing each year since 1996, when imports from the country totaled $855 million. Conversely, U.S. agricultural exports to Australia had been fairly constant, averaging $335 million during the 1993-2002 period, until they increased in 2003. Much of the jump in U.S. exports to Australia in 2003 is due to a large increase in the value of horses shipped to Australia for breeding, although exports of other commodities such as soybean meal also increased.

Agricultural Products Exported by Australia to the United States

Nearly all of the agricultural products imported from Australia are classified as competitive products. That is, these products are produced competitively in the United States. Figure 2 classifies the agricultural imports from Australia over the last 10 years into major categories. Livestock and meat products account for over half of the imports from Australia. Most imports of products classified in this category consist of beef. Beef is Australia's primary agricultural export to the United States, totaling $900 million in 2003. The next category of imports from Australia is horticultural products. Most imports under this category consist of wine. Australian wine exports to the United States have increased substantially over the past decade, rising to $625 million in 2003. The next most imported products include dairy products and sugar. Table 2 shows imports of specific agricultural products from Australia over the past six years in dollar terms.

Australia, Canada, and New Zealand supply 85 to 90 percent of U.S. beef imports. Imports from both Australia and Canada have been increasing and have been similar in quantity in recent years (Figure 3). In terms of value, imports of beef from Canada surpass those from Australia since the United States imports lower-valued beef from Australia. Due to the recent BSE incident in Canada, however, beef imports from Australia surpassed those from Canada in 2003 in terms of both quantity and value. Beef imports from Australia grew from 182 thousand metric tons in 1996 to

Figure 1. U.S. Agricultural Trade with Australia

Source: FAS/USDA

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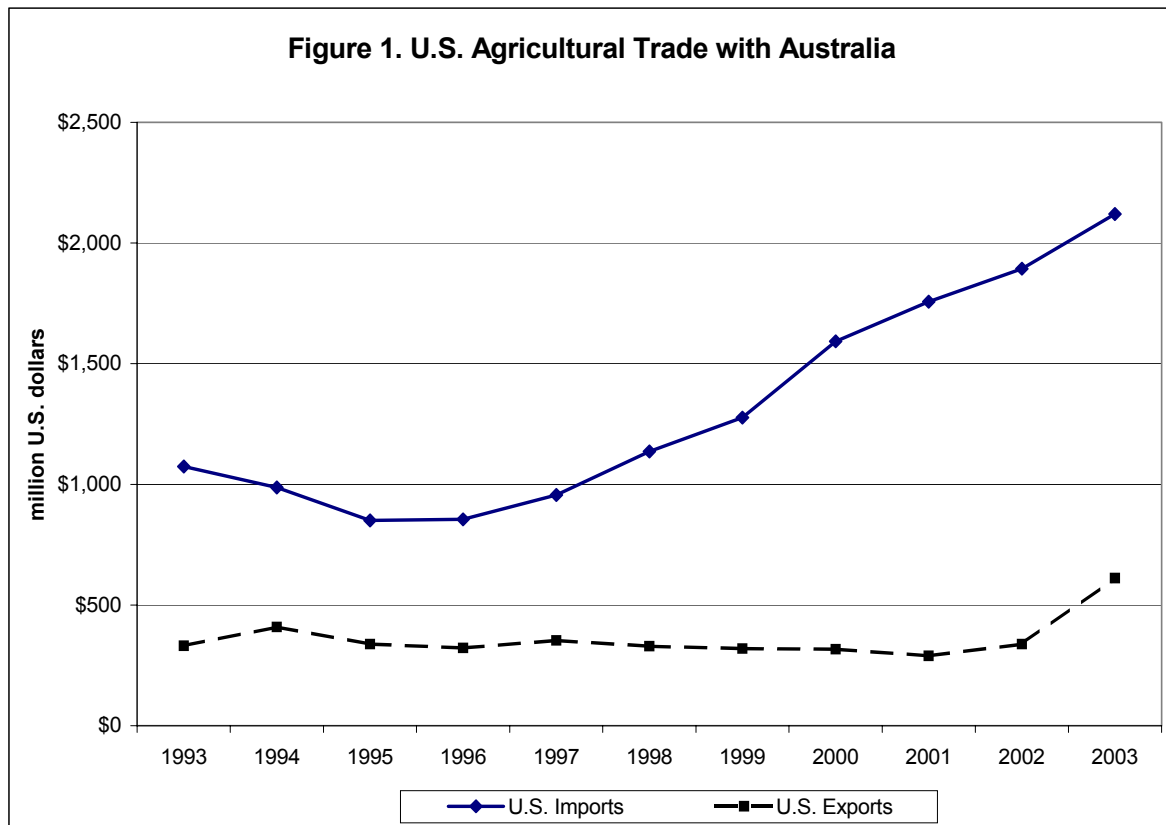
384 thousand metric tons in 2001 before leveling off in the past two years.

Australian beef is subject to a tariff of 4.4 cent/kg for imports less than 378,214 metric tons. Imports above the quota level are subject to a higher tariff of 26.4 percent. Australia has been filling its quota allotment in recent years, which may indicate that raising the quota level would result in increased Australian exports to the United States. Australia produces about 2 million metric tons of beef per year and exports 1.3 million metric tons (Table 3).

Figure 2. U.S. Agricultural Imports from Australia

Legend (top to bottom):
- Other
- Oilseeds & Products
- Grains & Feeds
- Dairy
- Sugar & Tropical Products
- Horticultural Products
- Livestock & Meats
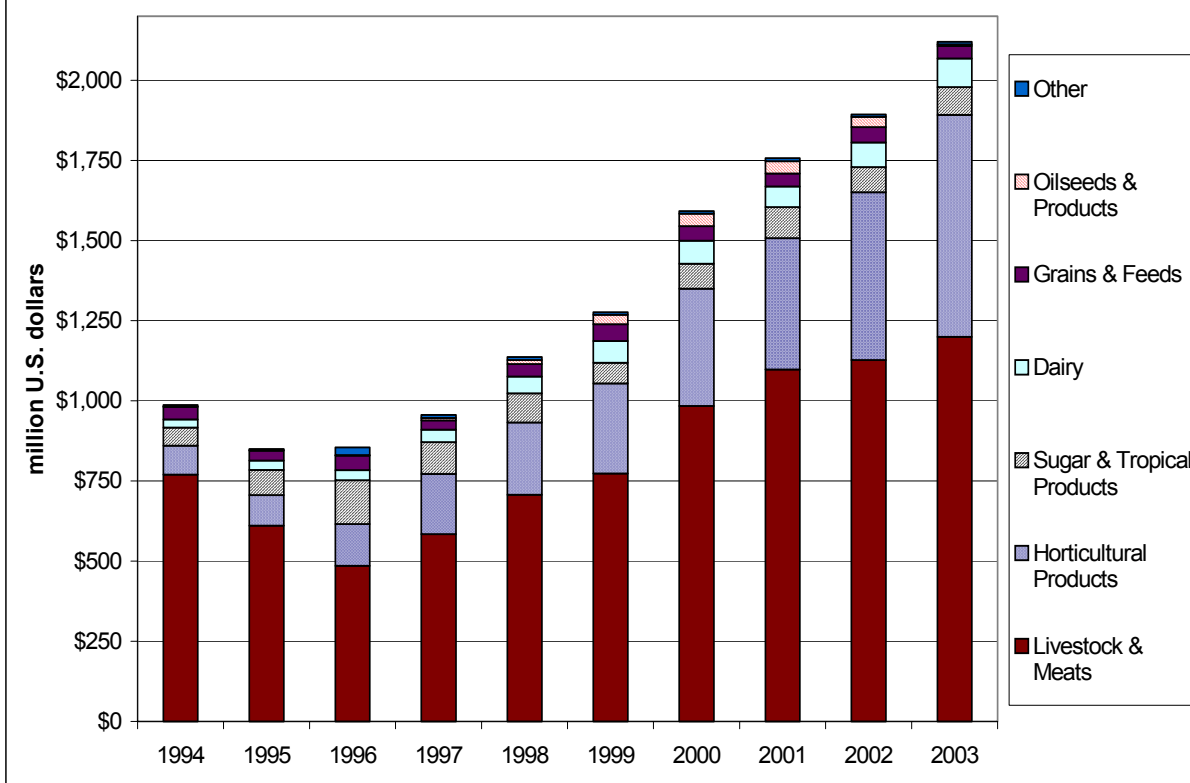
Source: FAS/USDA

Table 2. Agricultural Imports from Australia

	1999	2000	2001	2002	2003
	----------------------thousand dollars----------------------				
Total	1,276,562	1,592,344	1,757,333	1,893,792	2,120,032
Beef & Veal	506,130	670,156	850,336	883,949	899,911
Wine	203,597	281,330	345,358	457,857	625,434
Mutton Goat & Lamb	102,235	131,755	150,797	165,392	219,399
Dairy Products	67,789	72,114	64,471	76,393	91,788
Grains & Feeds	55,865	49,930	44,096	53,262	46,000
Sugar	33,729	33,148	34,956	38,307	33,367

Source: FAS/USDA

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Figure 3. U.S. Beef Imports, by Source
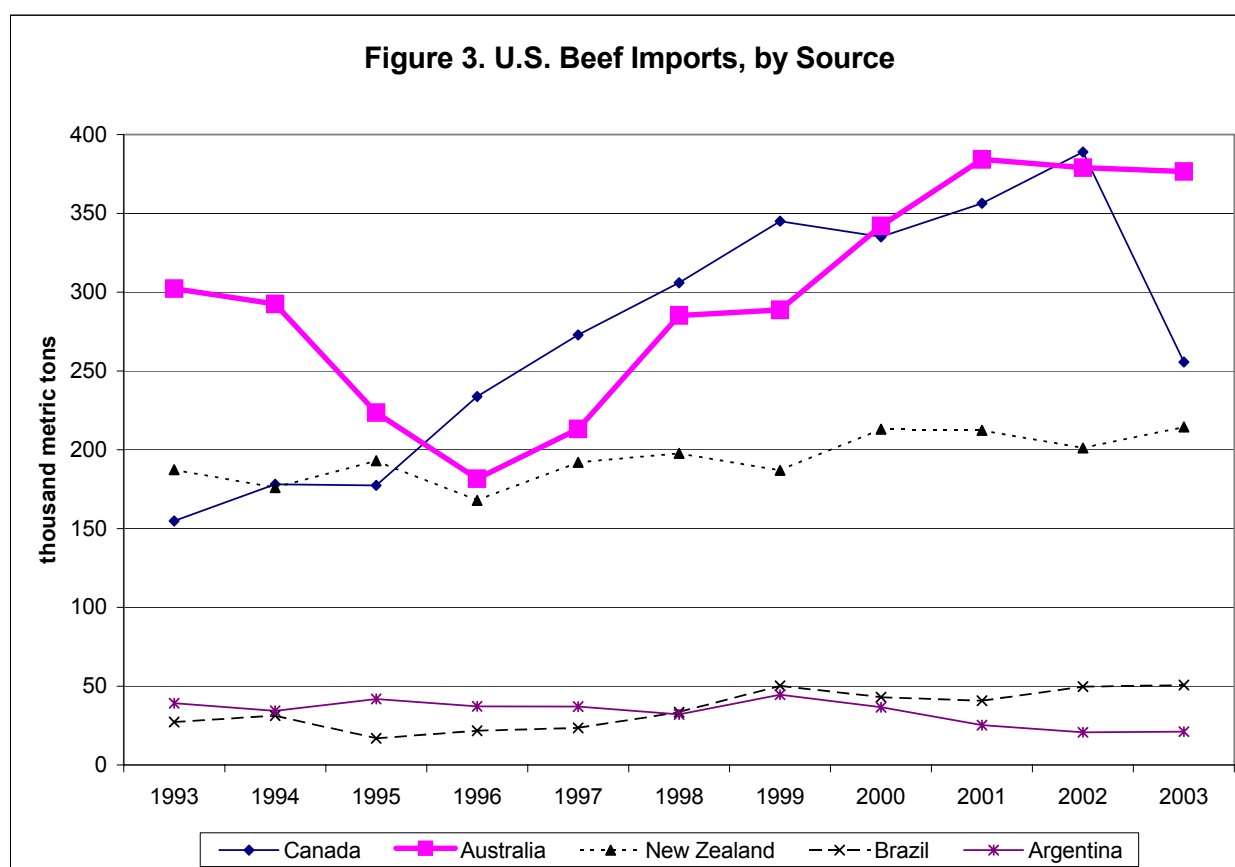
Source: FAS/USDA

Table 3. Australia's Beef and Veal Production, Consumption, and Exports

	2000	2001	2002	2003	2004
	(1000 metric tons, carcass weight equivalent)				
Production	1,988	2,049	2,089	1,946	1,935
Domestic Consumption	645	654	704	717	669
Exports	1,338	1,398	1,365	1,250	1,300

Source: PS&D Database, FAS/USDA

The United States has imported about 80 to 90 thousand metric tons of sugar per year from Australia in recent years (Table 4). Over the last five years, Australia has ranked as the seventh-largest exporter of sugar to the United States, after Guatemala, Brazil, the Dominican Republic, the Philippines, Mexico, and Colombia. However, Australia has the potential to export much greater quantities to the United States. The country produced 5.4 million metric tons of sugar in 2002-2003 and exported 4.2 million metric tons (Figure 4). Less than 3 percent of Australia's sugar exports are currently shipped to the United States. Australia is the fourth-largest exporter of sugar, following Brazil and not far behind the European Union and Thailand. Sugar production in Australia is comparable to the level of production in Mexico. The country ranks behind Brazil, India, the European Union, China, the United States, and Thailand in total production.

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Table 4. U.S. Sugar Imports by Source

	1999	2000	2001	2002	2003	Average
	----------------------------------metric tons----------------------------------					
Total	*1,612,341*	*1,473,581*	*1,356,445*	*1,394,046*	*1,530,657*	*1,473,414*
Guatemala	351,689	151,490	85,779	92,006	238,687	183,930
Brazil	179,127	152,202	230,731	129,189	154,705	169,191
Dominican Republic	143,333	199,981	151,366	170,439	178,656	168,755
Philippines	141,533	91,663	89,573	76,692	137,761	107,444
Mexico	101,027	86,556	126,367	182,896	35,534	106,476
Colombia	93,083	68,535	58,774	91,428	153,800	93,124
Australia	**76,802**	**92,158**	**83,413**	**90,756**	**79,197**	**84,465**
El Salvador	60,944	60,661	80,197	55,557	77,947	67,061
Panama	57,137	65,835	47,070	37,609	38,334	49,197
Costa Rica	74,212	67,920	22,821	15,274	39,574	43,960

Source: FAS/USDA

Figure 4. Australian Sugar Production and Exports
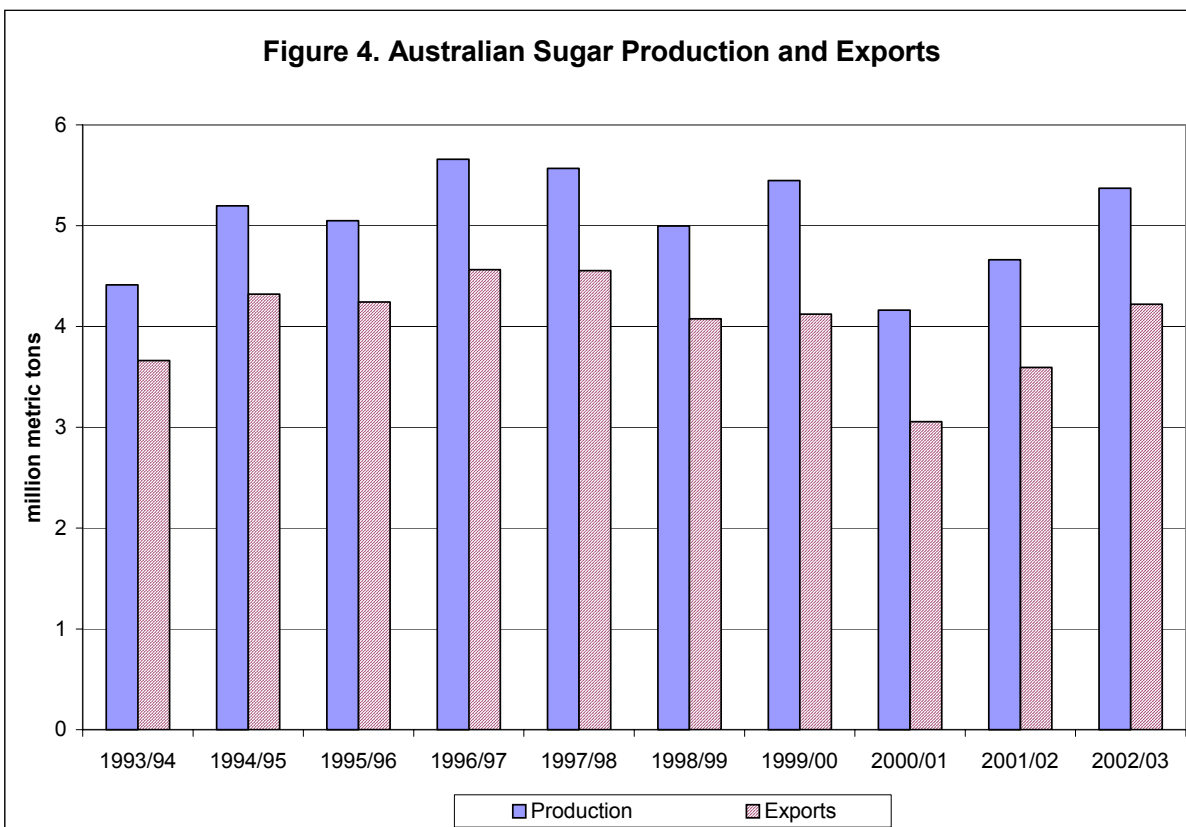
Source: PS&D Database, USDA

Over the past five years, Australia has been the seventh-largest exporter of dairy products to the United States (Table 5). The leading exporters of dairy products to the United States are New Zealand and Canada. Dairy imports from Australia have increased over the last decade, rising from $26 million in 1994 to $90 million in 2003. A large portion of U.S. dairy imports from Australia consists of casein and cheese. Various other dairy products are also imported.

Table 5. U.S. Dairy Imports by Source

	1999	2000	2001	2002	2003	Average
	----------------------------thousand dollars----------------------------					
Total	*1,557,594*	*1,656,801*	*1,766,521*	*1,745,899*	*1,975,462*	*1,740,455*
New Zealand	323,654	357,272	461,411	374,037	409,141	385,103
Canada	234,981	213,371	229,990	225,555	266,692	234,118
Italy	149,350	149,720	169,545	172,608	218,291	171,903
France	139,562	132,662	125,641	133,474	148,618	135,991
Ireland	132,621	137,037	120,497	121,571	126,484	127,642
Netherlands	76,634	91,505	91,259	86,858	95,298	88,311
Australia	**67,739**	**71,816**	**64,461**	**76,376**	**89,616**	**74,002**
Germany	68,770	83,506	72,797	73,780	70,324	73,835
Denmark	65,438	64,114	63,179	70,446	87,330	70,101
Switzerland	32,571	34,110	32,434	51,137	69,106	43,872

Source: FAS/USDA

U.S. Agricultural Exports to Australia

Australia is only a minor market for U.S. agricultural exports. Less than one percent of the total value of U.S. agricultural exports in dollar terms are shipped to Australia. Until 2003, exports to the country had been very stable over the last decade, averaging $335 million. The jump in 2003 was due, in large part, to a significant increase in the value of horses exported to Australia for breeding, although U.S. exports of soybean meal to the country also increased. Figure 5 shows U.S. agricultural exports to Australia by category, and Table 6 presents exports of specific commodities. In most years, horticultural products are the largest class exported to Australia. These exports include a number of different products, including fruits, vegetables, and nuts. There is no specific product that accounts for a large portion of the horticultural exports. Oilseeds and oilseed products are the next largest class exported to Australia. About half of the oilseed exports consist of soybean meal, which is the largest exported commodity to Australia. Australia was the fourth-largest destination for U.S. exports of soybean meal in 2003. Total U.S. soybean meal exports equaled 5.3 million metric tons in 2003, and 364 thousand metric tons were shipped to Australia.

Figure 5. U.S. Agricultural Exports to Australia, by Category
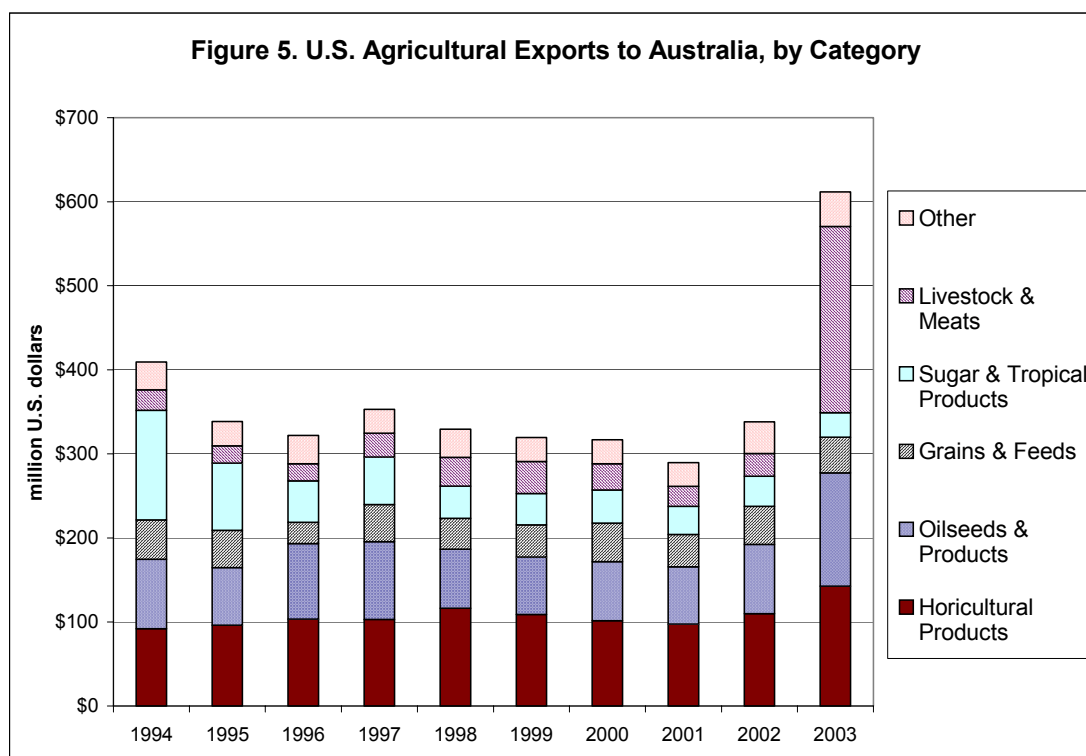
Source: FAS/USDA

In most years, U.S. exports of certain agricultural-related products to Australia, in dollar terms, surpass those of actual agricultural products (Table 6). These agricultural-related products include farm machinery, tractors, fertilizers, and chemicals. Exports to Australia of these select non-agricultural products totaled $502 million in 2003, a decrease from $727 million in 1997.

Table 6. U.S. Exports to Australia

	1999	2000	2001	2002	2003
	------------------------thousand dollars------------------------				
Total Agricultural	*319,337*	*316,861*	*289,594*	*338,029*	*611,648*
Live Horses	14,606	7,401	6,853	6,653	202,220
Soybean Meal	33,010	34,145	30,655	48,473	83,496
Feeds & Fodders	15,434	21,769	24,647	22,073	29,683
Fruits, Fresh	6,742	9,745	10,311	16,456	23,943
Essential Oils	14,754	10,043	11,619	16,232	22,675
Selected Ag-Related Products	*560,858*	*579,171*	*478,361*	*498,520*	*502,366*
Farm Machinery	250,996	296,111	207,300	266,731	280,508
Nitrogen	210,204	170,776	178,020	150,338	164,536
Ag Chemicals	46,424	48,761	44,315	39,663	26,492

Source: Foreign Agricultural Trade of the United States, USDA

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GENERAL EQUILIBRIUM SIMULATION OF U.S.-AUSTRALIA FTA

A general equilibrium simulation model is used to estimate the effects of the U.S. - Australia FTA on different sectors of the U.S. and Australian economies. The RunGTAP version 3.21 program was used to run the general equilibrium simulations. The GTAPAgg program was also used to aggregate the base GTAP 5.4 database[**] to make it suitable for simulation of the U.S.- Australia FTA. The new aggregated dataset includes six sectors and three regions. The aggregation was implemented in such a way that we could focus on sugar, dairy, and meat products. The remaining commodities were aggregated into three broad categories – manufacturing products, services, and food products. Regional aggregation left Australia and the United States as separate regions and combined the rest of the countries together under a rest-of-the-world (ROW) category.

The results of simulations are static in nature. They represent final effects of the U.S. - Australia FTA rather than its immediate impact on Australian and U.S. economies because, in reality, tariff reductions under the FTA provisions will be implemented gradually over time. It should be noted that results from the GTAP model are merely approximations.

Simulation results are presented as changes in trade flows, price levels, domestic production, etc. The costs and benefits of the U.S. - Australia FTA are measured using the equivalent variation concept. The additional income consumers require to achieve the post-simulation level of utility given pre-simulation price levels is calculated. Positive values indicate welfare improvement and negative values indicate welfare deterioration.

Table 7 shows estimated changes in trade balance disaggregated according to commodity groups. The U.S. - Australia FTA could result in improvement of the trade balance in dairy and meat products for Australia and deterioration of the trade balance in the same categories for the United States. The agreement does not affect sugar trade because sugar remains protected. However, if sugar trade is liberalized, Australia's sugar trade balance could improve by $319 million and the U.S. sugar trade balance could decrease by $201 million. The United States could experience an improvement in the trade balance of manufactured products. Australia's trade balance in manufactured products and services could decrease. Changes in trade balance for food products are not as large as for manufacturing and services. The United States will likely import relatively more food under the agreement.

Overall terms of trade for each region in the model are an important characteristic of the export and import potential of that region. They are calculated as a ratio of aggregate export and import prices. Negative changes in the terms of trade favor exports and positive changes favor imports. Terms of trade for Australia and the United States improved slightly, favoring imports. However, such small changes in the terms of trade are unlikely to significantly alter aggregate volume of trade between the two countries.

[**] GTAP 5.4 database corresponds to the global economy in the year 1997.

Table 7. Change in Trade Balance under the FTA

	Australia	U.S.	ROW
	----------million U.S. dollars----------		
Manufacturing Products	-473	414	28
Services	-75	-323	446
Food Products	22	-57	32
Dairy	129	-86	-45
Meat	91	-71	-32

Changes in import and export flows can be seen more clearly in Table 8. Australia will likely increase both exports and imports of dairy, meat, food products, and manufactured products. Australian exports of meat and especially dairy products significantly exceed its imports of the same commodities. Dairy exports by Australia could increase by 10 percent when dairy trade is liberalized, and Australian meat exports could grow by 2.86 percent.

Table 8. Change in Imports and Exports under the FTA

	Australia	U.S.	ROW
Imports (value of merchandise regional imports by commodity CIF, % Change)			
Manufacturing Products	1.64	0.1	-0.02
Services	0.19	0.06	-0.02
Food Products	2.02	0.21	-0.02
Dairy	1.27	7.87	-0.02
Meat	0.93	1.51	-0.03
Exports (value of merchandise regional exports by commodity FOB, % Change)			
Manufacturing Products	1.12	0.21	-0.02
Services	-0.27	-0.1	0.02
Food Products	0.81	0.05	-0.02
Dairy	10.02	0.15	-0.19
Meat	2.86	-0.04	-0.11

U.S. exports are not expected to change significantly. However, the United States is expected to start importing more meat and dairy products. U.S. dairy imports could increase by 8 percent and meat imports by 1.5 percent. Values of imports and exports for the rest of the world are not expected to undergo significant changes.

Table 9 shows changes in import and export prices as the result of introduction of the U.S. - Australia FTA. As was the case with overall terms of trade, there are no major changes in price

levels in most of the categories. U.S. dairy import prices decrease by 2.5 percent and U.S. meat import prices drop slightly by 0.65 percent under the FTA provisions. The rest of the U.S. import price changes are well under one percent. Australian import prices could decrease slightly; prices for manufacturing and food products could decrease the most. Changes in Australian export prices are even smaller than corresponding changes in Australian import prices. Prices of agricultural exports may increase the most. The Australian price of dairy products increases by 0.22 percent, meat by 0.17 percent, sugar by 0.12 percent and food products by 0.11 percent.

The U.S. - Australia FTA will likely have a small impact on U.S. domestic prices (Table 10). The magnitude of changes depends on the size of the economy. The United States and the rest of the

Table 9. Change in Import and Export Prices under the FTA

	Australia	U.S.	ROW
Import Prices (market price of composite imports, % change)			
Manufacturing Products	-0.78	-0.02	-0.01
Services	-0.02	-0.01	0
Food Products	-0.77	-0.07	0
Dairy	-0.21	-2.46	0
Meat	-0.22	-0.65	0
Export Prices (aggregate export price index, % change)			
Manufacturing Products	-0.03	0.02	-0.01
Services	0.09	0.03	-0.01
Food Products	0.11	0.02	-0.01
Dairy	0.22	0.01	-0.02
Meat	0.17	0.01	-0.01

world experience only negligible changes in prices of commodities and factors of production. Domestic price changes in Australia were higher than those in the United States. Land values will rise by 1.07 percent and food prices will increase by 0.11 percent.

The U.S. - Australia FTA is expected to have a very small effect on GDP (Table 11). Australia and the United States may experience slight growth. The inclusion of sugar in the FTA would have a more prominent effect on Australian GDP (0.12 percent, as compared to 0.01 percent under the negotiated FTA). According to the simulation results, the negotiated FTA between the United States and Australia benefits the United States overall and negatively influences the welfare of Australia. However, U.S. gains are significantly larger than Australian losses. Equivalent variation calculations (Table 11) show that Australia would lose $13 million, while the United States would gain $379 million as a result of the agreement.

Overall, the results of general equilibrium analysis suggest that the U.S. - Australia FTA will not have significant effects on the economies of Australia, the United States, or the rest of the world. The United States could achieve small gains and the rest of the world could experience small losses.

The gains achieved by the United States are in the manufacturing sector. The U.S. agricultural sector, on the other hand, could experience small losses. Traded products that are likely to be affected by the agreement are dairy products and meat, with the United States importing more of these products from Australia.

Table 10. Domestic Market Prices under the FTA (% change)

	Australia	U.S.	ROW
Land	1.07	-0.02	-0.02
Unskilled Labor	0.17	0.03	-0.02
Skilled Labor	0.15	0.03	-0.02
Capital	0.15	0.03	-0.02
Natural Resources	-0.03	0.04	-0.02
Manufacturing	-0.03	0.02	-0.01
Services	0.09	0.03	-0.01
Food Products	0.11	0.02	-0.01
Dairy	0.22	0.01	-0.02
Meat	0.17	0.01	-0.01

Table 11. Effect on GDP and Welfare

	Changes in GDP (%)	Equivalent Variation (million US$)
Australia	0.01	-13
United States	0.03	379
ROW	-0.02	-461

IMPLICATIONS FOR THE U.S. BEEF INDUSTRY

More specific analysis needs to be done for U.S. beef imports from Australia. Most of the meat imports from Australia discussed in the previous section consist of beef. The U.S. - Australia FTA calls for restrictions on U.S. beef imports from Australia to be removed over a period of 18 years. The United States uses a tariff-rate quota (TRQ) to restrict beef imports from Australia and other countries. The in-quota tariff is 4.4 cents/kg and the above-quota tariff is 26.4 percent. The quota for Australia is 378,214 metric tons per year. This quota was set during the Uruguay Round of GATT negotiations. The high above-quota tariffs prohibits imports beyond the quota level. Under CUSTA and NAFTA, Canada and Mexico have unrestricted access to the U.S. beef market.

The U.S. - Australia FTA will immediately eliminate the in-quota tariff, phase-out the above-quota tariff over an 18-year period, and gradually increase the quota level. The quota will increase initially by 15 thousand tons. It will increase five thousand tons every two years until years 15 and 16, when it will increase five thousand tons per year. The quota will increase 10 thousand tons per year in years 17 and 18. By the end of year 18, it will have risen a total of 70 thousand tons. The above-quota tariff will not change during the first eight years of the agreement. It will decrease about 1.76 percent per year from years 9 to 13 and then will decline 3.52 percent per year until reaching zero by year 18 (USDA/FAS, April 2004). However, the quota increases will not take effect until U.S. beef exports return to their 2003 (pre-BSE) levels, or three years after the effective date of the agreement, whichever comes first. The agreement allows for a price-based safeguard after the transition period that is designed to be sensitive to market disruptions for high-quality beef (USTR 2004). A volume-based safeguard will be in effect for years 9 through 18 of the agreement that allows for safeguard duties to be applied if imports from Australia reach 110 percent of quota for that year (USDA/FAS, April 2004).

Empirical Model

The beef which the United States imports from Australia is lean beef from grass-fed cattle. It is viewed as lower-quality beef and is used to produce ground beef. Increased imports from Australia could have a negative effect on U.S. ground beef prices, as well as prices for non-fed cattle that are used to produce ground beef. However, prices of higher quality table-cut beef and prices of fed cattle could be unaffected.

Since beef imports from Australia are used for ground beef, the U.S. beef market needs to be segregated into ground beef and table-cut beef components to determine the effect of increased imports on the U.S. beef industry. An econometric model is developed to determine the effect of increased imports on U.S. ground beef price. U.S. ground beef price is estimated as a function of supply and prices of substitutes as follows:

$$P_{Gt} = f(Q_{Gt,} \, P_{Tt}, \, P_{Pt}, \, P_{Ct}) \,,$$

where P_{Gt} is the U.S. price of ground beef in time t, Q_{Gt} is the supply of ground beef in the United States in time t, P_{Tt} is the U.S. price of table-cut beef in time t, P_{Pt} is the U.S. price of pork in time t, and P_{Ct} is the U.S. price of chicken in time t. Supply, which includes both ground beef

imported and produced domestically during the time period, is expected to have a negative effect on ground beef price. Table-cut beef, pork, and chicken are substitutes for ground beef and could have a positive effect on ground beef price. In this model, the prices of ground beef and table-cut beef are assumed to be endogenous, while the other variables are exogenous. Therefore, the prices of ground beef and table-cut beef are estimated simultaneously using three stage least squares (3SLS), as follows:

$$P_{Gt} = \alpha_0 + \alpha_1 Q_{Gt} + \alpha_2 P_{Tt} + \alpha_3 P_{Pt} + \alpha_4 P_{Ct} + \varepsilon_t \,,$$

$$P_{Tt} = \beta_0 + \beta_1 Q_{Tt} + \beta_2 P_{Gt} + \beta_3 P_{Pt} + \beta_4 P_{Ct} + e_t \,.$$

where Q_{Tt} is the supply of table-cut beef in the United States in time t. The model uses monthly data from January 1989 to June 2000. Since production and imports in a given month can affect price not only in the current month but also in following months, a three-month moving average of production and imports is used.

Data

Ground beef supply consists of both U.S. produced ground beef and imported beef from Australia and other countries. Table-cut beef supply consists of U.S. produced table-cut beef and imports from Canada minus U.S. exports. Ground beef import is calculated as beef imports from all countries except Canada. Imports from Canada consist of table-cut beef while imports from Australia and other countries are used for ground beef. Roughly half of the ground beef imports are from Australia, about one third are from New Zealand, and the remainder are from Central and South American countries. Imports are categorized together with domestic beef production in the estimation because imports and domestic production should affect price similarly.

Domestic ground beef production is estimated using fed and non-fed cattle slaughter data. Brester and Wohlgenant (1997) calculated ground beef supply using estimates from the Livestock Marketing Information Center that indicated that 25 percent of meat obtained from fed beef carcasses and 86 percent of meat obtained from non-fed beef carcasses are marketed as ground beef. U.S. ground beef production was estimated using this information and data published by the Economic Research Service (ERS) of the USDA in the *Red Meat Yearbook* for fed and non-fed cattle slaughter and averaged dressed weight. Similarly, domestic table-cut beef production was estimated assuming that 75 percent of meat obtained from fed beef carcasses and 14 percent of meat obtained from non-fed beef carcasses are marketed as table-cut beef. U.S. import data were obtained from the USDA through the Foreign Agricultural Service's U.S. Trade Internet System.

Data for U.S. ground beef price were obtained from the Bureau of Labor Statistics. Table-cut beef and pork price data were obtained from the ERS's *Red Meat Yearbook* where they are defined as the choice retail beef value and the retail pork value, respectively; U.S. retail price data for chicken breasts were obtained from the ERS's *Poultry Yearbook*. The price data are in cents per pound and were corrected for inflation using the Consumer Price Index (CPI) published by the Bureau of Labor Statistics, which has a base of 1982-84.

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Results

As expected, supply has a negative and significant effect on ground beef price, and the prices of table-cut beef and pork have positive and significant effects on ground beef price (Table 12). The magnitude of the effect of supply on price, though, is not large. The estimated coefficient indicates that increasing the three-month average supply by one thousand metric tons would decrease price by 0.07 cents per pound in 1983 dollars, which is equal to 0.13 cents per pound in current dollars (as of January 2004). The estimated price flexibility coefficient is -0.259, which means that a one percent increase in U.S. ground beef supply causes a 0.259 percent decrease in price.

According to these results, increasing annual imports from Australia by 20 thousand metric tons, or about 1,667 metric tons per month, will have little impact on U.S. price. Increasing imports by 20 thousand metric tons would result in a 0.22 cent per pound decrease in ground beef price in current

Table 12. Results of 3SLS Estimates of U.S. Beef Prices

	Estimated coefficient	Price flexibility coefficient
Dependent variable: Real Ground Beef Price		
Intercept	-28.79	
Ground beef supply	-0.00007*	-0.259
Real choice beef price	0.590*	1.127
Real pork price	0.208*	0.312
Real chicken price	0.088*	0.122
Dependent variable: Real Choice Beef Price		
Intercept	151.06*	
Table-cut beef supply	-0.0002	-1.458
Real ground beef price	-0.275	-0.144
Real pork price	0.154	0.121
Real chicken price	0.947	0.688

*Significant at the 10% level.

dollars, which would be a decrease of only 0.1 percent from the December 2003 price of 232 cents per pound. A 70 thousand metric ton increase in imports would cause price to drop by 0.76 cents per pound (Table 13).

Table 13. Effect of Additional Beef Imports on U.S. Ground Beef Price

Additional imports per year	Price change	
(metric tons)	(cents/lb)	(% change)
20,000	-0.22	-0.1%
50,000	-0.54	-0.2%
70,000	-0.76	-0.3%
100,000	-1.08	-0.5%
500,000	-5.40	-2.3%
1,000,000	-10.80	-4.7%

Brester and Wohlgenant (1997) estimated the impact that the decrease in beef trade restrictions under the Uruguay Round of GATT negotiations would have on U.S. prices. They estimated that increasing U.S. beef imports by 6 percent would result in a 0.6 percent decrease in ground beef price, while increasing imports by 12 percent and 19 percent would decrease ground beef price by 1.51 percent and 2.57 percent, respectively. The magnitude of price change in their study is larger than the price change in our study, but it is still small. Seventy thousand metric tons is equivalent to about a 10 percent increase in total ground beef imports, and the resulting 0.76 cent per pound price decline is equivalent to a 0.33 percent drop.

Some within the cattle industry think the agreement could have significantly more adverse effects on U.S. industry (R-CALF 2003). However, the majority opinion of the beef industry featured in the report of the Agricultural Technical Advisory Committee (March 2004) was that there would be no net negative price effect on live utility cows during the first 10 years of the agreement. This is due to annual growth in demand that would counter the increase in Australia's quota. If there is no increase in demand, they estimate that a 70 thousand ton increase in imports would cause a 0.85 cent per pound decrease in the U.S. utility cow price.

The quota increases under the U.S. - Australia FTA could have a minimal impact on the U.S. beef industry. U.S. ground beef production, according to the most recent ERS data in 1999 and 2000, was approximately 4.1 million metric tons per year, and U.S. imports from Australia, New Zealand, and South/Central America totaled 728 thousand metric tons in 2003. U.S. supply, therefore, is about 4.8 million metric tons. Adding an additional 15 to 70 thousand metric tons would have a small impact on supply and would likely have little impact on price, as indicated by the empirical results. The above-quota tariff will be eliminated 18 years after the implementation of the agreement. At that point, Australia would have unlimited access to the U.S. market and could significantly increase exports to the United States, although the quantity of imports is difficult to estimate. Before that point, the above-quota tariff could be decreased enough that it no longer prohibits above-quota imports, but that is also difficult to estimate. According to the results of this study, if Australia increases exports to the United States by 500 thousand metric tons, U.S. ground beef price would decline by 5.4 cents per pound; price would decrease by 10.8 cents per pound if U.S. imports increase by 1 million metric tons.

CONCLUSION

The U.S. - Australia Free Trade Agreement could have an overall positive impact on the United States. The overall gain from the agreement could be small, however, and U.S. agriculture could be negatively impacted. Australia is a major producer of agricultural commodities, such as beef, sugar, and dairy, that could be exported to the United States in significantly greater quantities. The agreement will not impact sugar producers since that commodity was excluded, but it does gradually eliminate trade barriers for beef and dairy products. The immediate impact on U.S. beef producers appears to be small, since the reduction in trade barriers will be implemented over an 18-year period. One issue of concern that deserves further research is the long-term effects after the 18-year period for beef is over. These long-term effects are difficult to estimate, but results indicate that a substantial increase in ground beef imports would have a noticeable but small impact on prices. Another issue that could be researched further is the potential to import higher quality table-cut beef from Australia. Importing table-cut beef would have a more noticeable effect on U.S. industry.

Benefits of the FTA for U.S. agriculture appear to be small. Australia is not an important market for U.S. agriculture. Soybean meal exports could increase, as could horticultural exports, but the largest effect would likely be on exports of manufacturing products and agricultural-related products. These agricultural-related products include farm machinery and fertilizers. The FTA may benefit exporters of agricultural inputs. The United States may benefit overall from this FTA, but the benefits will largely be for non-agricultural industries, and there may be some small negative effects for U.S. dairy and beef producers.

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