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A DYNAMIC ASSESSMENT OF WORLD DAIRY TRADE LIBERALIZATION

A Thesis

Presented to

The Faculty of Graduate Studies

of

The University of Guelph

by

CRAIG MARTIN

In partial fulfillment of requirements

for the degree of

Master of Science

November, 2002

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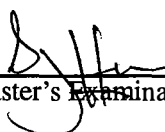
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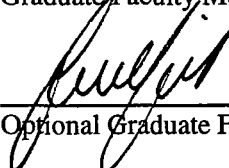
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Title: A Dynamic Assessment of World Dairy Trade Liberalization


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Date: NOV 27 2002

ABSTRACT

A DYNAMIC ASSESSMENT OF WORLD DAIRY TRADE LIBERALIZATION

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This research examines the impacts of changes in the level of protection of major dairy trading countries in a dynamic, multi-policy framework. The research also developed a method to deal with simultaneous reforms to tariff-rate quotas and export subsidies. It provides quantitative information on the impacts to production, consumption, trade flows and prices in the world dairy market and assesses their welfare effects on the various participants in the Canadian dairy industry from reforms to trade liberalization.

To examine these issues, the existing Guelph Dairy Trade Model was adapted from a static to a dynamic model. A method was developed to calculate a system of supply elasticities given technical relationships and a minimum set of assumptions that were internally consistent with economic theory.

In examining the results, it was discovered that singly or in combination single policy scenarios were not effective at predicting the welfare impacts of multi-policy scenarios.

I would like to dedicate this thesis to my grandfathers:

Howard Bearinger
November 4, 1922 to present

Who taught me much about agriculture and the dairy industry in particular.

and

Manasseh Martin
August 17, 1910 to June 13, 2002

Who never stopped learning though his formal education ended early in his life.
Unfortunately he did not live long enough to see this work completed.

ACKNOWLEDGEMENTS

I would like to thank the members of my committee John Cranfield, Rakhal Sarker and especially my supervisor Karl Meikle for their support and guidance in this work. I would also like to thank Karen Huff who as an early committee member helped in the early stages of this work and Sylvain Larivière who took the time to explain what he had done in his earlier research. This research would not have been possible without the financial support of three organizations: the Toronto Area Milk Producers, the Dairy Farmers of Ontario (DFO) and the Canadian Agrifood Trade Research Network (CATRN). Final, I would like to thank my wife Nancy for her undying support and confidence in me and the many things she did to make this thesis possible.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The Uruguay Round Agreement on Agriculture sets both a framework and the starting point for future agricultural trade negotiations. Agricultural negotiations began in early 2000 after the Seattle Ministerial Meetings in November 1999 failed to launch a comprehensive Round of Negotiations. The Doha declaration which resulted from the Doha Ministerial Meeting in November 2001 recognized the work already completed in the agricultural negotiations since early 2000 (WTO, 2001). The Doha declaration goes on to set a specific timeline for the conclusion of negotiations for agriculture and the more general round. The specific timeline for the agricultural negotiations is spelled out in paragraph 14 of the Doha declaration. It states that the, "Modalities for further commitments including provisions for special and differential treatment shall be established no later than 31 March 2003" (WTO, 2001). The second important date is the Fifth Session of the Ministerial Conference scheduled for late 2003 where the participants are to submit a comprehensive draft of their Schedules based on the modalities (WTO, 2001). This is an aggressive timeline especially considering the problems that occurred in Seattle and that the Uruguay Round agreement took seven years to negotiate.

1.2 CONTEXT OF THE RESEARCH

Dairy like other agricultural sectors was subject to tariffication and trade liberalization under the Uruguay Round Agreement on Agriculture. Likewise, it will be subject to any new agreement that comes out of the Doha Round of negotiations. This presents a problem, as the dairy sector is one of the most protected in agriculture. The level of government intervention in the dairy sector, in developed countries, is high even

by agricultural standards. The result is that dairy has the second highest producer subsidy equivalent in the OECD (OECD, 2000b). The politically sensitive nature of the dairy sector makes dealing with trade liberalization difficult, especially if it results in lower prices, incomes or revenues. Some or all of these could result from trade liberalization in most OECD countries.

Though there are several issues that will be discussed in the Doha Round of negotiations, there are five interrelated issues with respect to the dairy industry that will be central. These are: 1) the size and potential effects of over-quota and within-quota tariff reductions; 2) the formula for tariff reductions; 3) tariff-rate-quota administration; 4) enlarging minimum access; and 5) further reductions in export subsidies (Tangerman, 1997; Larivière, and Meilke, 1998; IATRC, 1997; Meilke et al, 1996; Larivière, 1999). The dairy sector, producers, processors, importers and exporters will all need to make adjustments to whatever agreement is finalized.

1.3 ECONOMIC PROBLEM

Changes in tariffs, minimum access and export subsidies will affect the world dairy market and national dairy industries. The problem is that the dairy sector is one of the most protected and supported of the agricultural sectors. This can be seen in the level of national isolation through border measures and the amount of total support the dairy sector receives in the domestic market.

The average agricultural tariff for all WTO members is 62 percent while the average dairy tariff is over 80 percent. This is second only to un-manufactured tobacco

worldwide. There are also regional differences between WTO members with Southern Africa having an average tariff on dairy products of 37 percent while non-EU Western Europe¹ has an average tariff of 230 percent. Only two regions, Southern Africa and South Asia, have average dairy tariff less than their average agricultural tariffs. Even countries with relatively low average agricultural tariffs such as the United States have high average tariffs on dairy on dairy products. The United States has an average agricultural tariff of 12 percent but an average dairy tariff of over 40 percent. (Gibson et al, 2001)

Average tariffs however can be deceiving especially in the light of TRQs where very low in-quota tariffs, which are applied to a small amount of imports, are averaged with very high over-quota tariffs that restrict trade. The resulting average understates the amount of protection to the industry. For example, the United States has an average dairy tariff of just over 40 percent but seven dairy tariffs are mega-tariffs² and are applied to imports of dairy products other than cheese and butter (Gibson et al, 2001).

The amount of domestic support can be measured using the producer support estimate (PSE). The PSE for all agricultural commodities in all OECD countries was 40 percent in 1999 (OECD, 2000b). This means that the value of gross transfers from consumers and taxpayers from direct and indirect sources equaled to 40 percent of gross farm receipts. While for all agricultural commodities it is 40 percent, milk is at 57

¹ Non-EU Western Europe is mainly Switzerland and Norway but also includes Liechtenstein, Monaco, San Marino and Andorra.

² Mega-tariffs are extremely high tariffs that effectively cut off all imports other than the minimum access amount.

percent. This is the second highest level of producer support after rice in 1999 (OECD, 2000b). However the amount of support for dairy varies greatly between the different members of the OECD. Table 1.1 presents the producer support estimates for both all agricultural commodities and for milk for selected OECD countries.

Table 1.1 Producer Support Estimates for Selected OECD Countries

Country	All Agricultural Commodities (%)	Milk (%)
OECD	40	57
Australia	6	18
Canada	20	58
EU	49	58
Iceland	68	81
Japan	65	80
Korea	74	70
Mexico	22	46
New Zealand	2	0
Norway	69	75
Poland	25	9
Switzerland	73	78
USA	24	57

(OECD, 2000b)

Only three countries, Korea, New Zealand and Poland, in Table 1.1 support their dairy industries less than the average support for all agricultural commodities and Korea still has relatively high levels of support. Of the selected countries, only Australia, New Zealand and Poland have relatively low levels of support for their dairy industries.

The high levels of both border protection and producer support create an economic and a political problem in many of the larger dairy producing countries/regions in the world. Therefore, stakeholders (producers, processors and government) in

considering dairy trade liberalization want to know: 1) what the impacts are; 2) where the impacts will be felt; and 3) how big are the impacts going to be. They would also like to know the answer to these questions in advance of an agreement being signed. The result is that they need projections about the impacts of an agreement before it is finalized.

1.4 RESEARCH PROBLEM

The research problem is to build a model capable of predicting the impacts of trade liberalization in the dairy industry. The impacts on consumers, processors and producers must be measured. The model must be able to measure these impacts over the implementation period (5 to 10 years) of the agreement, and it must be able to model changes in tariffs, minimum access and export subsidy commitments simultaneously.

1.5 OBJECTIVES

The objective of this study is to provide quantitative information on the impacts of tariff, minimum access and export subsidy commitments over the implementation period of a multilateral agreement. It is also to determine what effects these changes will have on trade flows and equilibrium prices and the distribution of these impacts on the dairy industry of the six major OECD producing countries/regions. These objectives will be met by:

- Outlining the importance of the dairy industry internationally and domestically in six OECD countries/regions (Australia, Canada, European Union, Japan, New Zealand and United States);

- Describing the nature of government regulation in the dairy sector of these countries and discussing the economic effects of these policies on the world dairy market;
- Compiling a baseline database that allows for projections to 2005;
- Modifying and expanding the Guelph Dairy Trade Model (Larivière, 1999) to assess the impact of tariff, minimum access and export subsidy commitments; and
- Drawing the implications of these results for dairy policy in the six OECD countries/regions.

1.6 OUTLINE OF THE THESIS

Chapter 2 presents an overview of the world dairy market and policies. It addresses world trade policy for agriculture under the GATT and WTO. It also describes domestic dairy policy and pricing systems in six OECD countries/regions (Australia, Canada, European Union (15), Japan, New Zealand and United States). It looks at the projections of the OECD Agricultural Outlook (OECD, 2000b) and describes the major features of the World Agricultural Simulation Model (AGLINK) of the OECD. Finally, Chapter 2 looks at the dairy trade model developed in Larivière, 1999. Chapter 3 examines the theoretical framework and a stylized version of the model. Chapter 4 discusses the data and parameters used in the simulation model. Chapter 5 reports the results from the different policy scenarios analyzed using the model. Chapter 6 summarizes the research and the policy implications along with the model's limitations and suggestions for further research.

CHAPTER 2

LITERATURE REVIEW AND OVERVIEW OF THE WORLD DAIRY MARKETS AND POLICIES

2.1 INTRODUCTION

This chapter provides general background information on conditions in the world dairy industry with special attention to selected OECD countries. It focuses on the production, consumption and trade of dairy products, and describes the dairy policies and pricing mechanisms in Australia, Canada, European Union (15), Japan, New Zealand and the United States. The Uruguay Round commitments of these countries as they pertain to the dairy sector are also outlined. Finally, the chapter will discuss the OECD Agricultural Outlook³.

2.2 THE WORLD DAIRY INDUSTRY

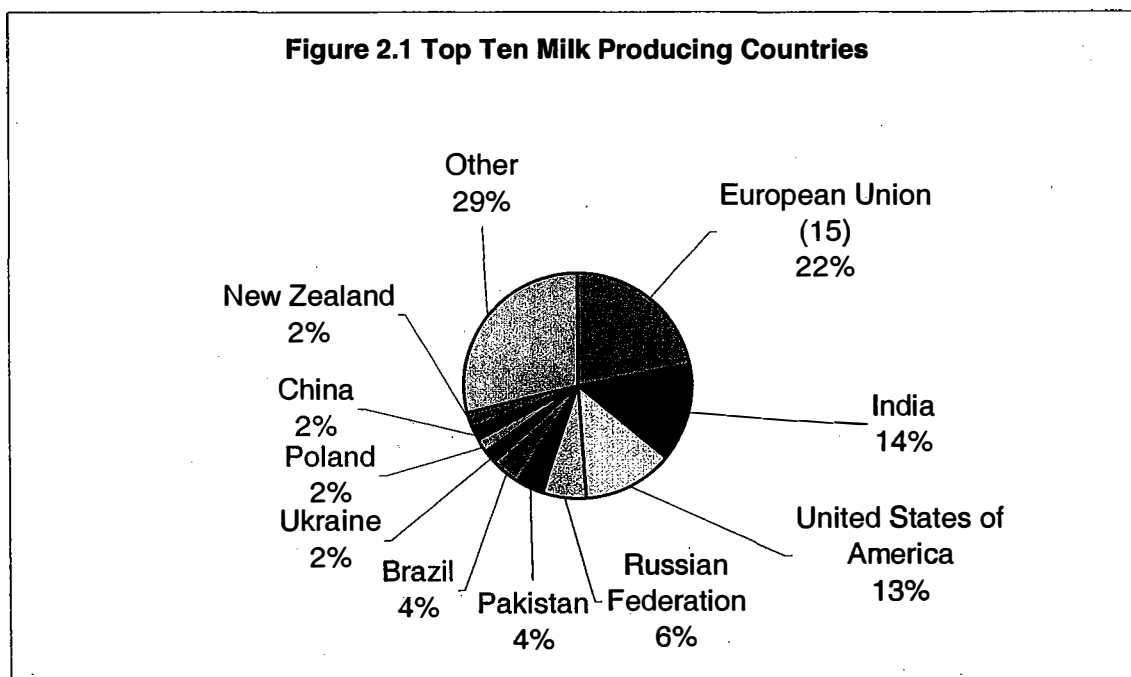
The level of government involvement in the dairy sector is shown by the high levels of government intervention in most industrial countries (Larivière, 1999; Grant, 1991; OECD, 2000a). This intervention results in only a small fraction of world dairy production being traded. This section reviews past, current and expected future trends in the production, consumption and trade in milk and dairy products. The discussion is focused on selected OECD countries.

³ OECD Agricultural Outlook forms the basis for most of the data used in the model.

2.2.1 Milk and dairy products production

In 1999, world milk production was 568.5 million tonnes, of which 85 percent, or 485 million tonnes, was cow's milk (FAO). The production of milk is concentrated in a few countries/regions. Figure 2.1 shows that, in 1999, the top ten countries/regions produced 71 percent of the world's milk. The world's largest producer is the European Union (15)⁴ with 22 percent of the world's production. The European Union is followed by India (14%) and the United States (13%). Considering that the European Union, the United States, Poland and New Zealand are all members of the OECD, there is a second area of concentration in the production of milk within the industrialized nations of the OECD. The OECD's 29 members produced 50%, or 285 million tonnes, of the world's milk and 58%, or 280 million tonnes of the world's cow's milk in 1999 (FAO). Outside of the OECD, the most important areas of milk production are India and Russia. These countries are normally excluded from trade analyses because they lack reliable data, especially prices, and because of their limited role in the world market (Grant, 1991; Larivière, 1999).

⁴ European Union (15) or EU (15) refers to the European Union in its current form with 15 member states. This differentiates it its past forms with fewer members. Historical data has been corrected to include data of all the current members even if they were not members at that time.



Source: FAO, 2000

The trend in world milk production has been generally upwards since the early 1970s and this trend is expected to continue to 2005. The OECD data used in Figure 2.2 reports actual data up to 1999 and projected estimates from 2000 to 2005. This convention is maintained for all time series data reported in this chapter. There were small declines in milk production in 1987, and the early 1990s but these declines were relatively short in duration with the upward movement continuing afterward. The production of milk in the OECD has been relatively stable compared to world production. While world production increased from 382 million tonnes in 1971 to an estimated 600 million tonnes in 2005⁵, an increase of 218 million tonnes, the OECD countries only increased production by 61 million tonnes over the same period (Figure 2.2). This trend can also be seen in Table 2.1, where the trends in milk production for the six major milk

producing countries/regions in the OECD are illustrated. The annual change in milk production for these six countries/regions is 0.49 percent per year between 1980 and 2005, while the rest of the world's production was growing by 1.99 percent annually, resulting in a 1.28 percent growth rate for the world. However, there is a large variance in the growth in milk production among the OECD (6). Australia and New Zealand's milk production is increasing at a faster rate than the world, at 4.49 and 3.72 percent per year respectively. The United States and Japan are increasing production at slightly higher rates than the world rate, but by less than the rest of the world. Canada and the European Union (15) fall well below the world's growth rate in milk production. The European Union (15) is actually decreasing milk production during this period. The production of milk in OECD countries shows a smaller growth rate than in the rest of the world.

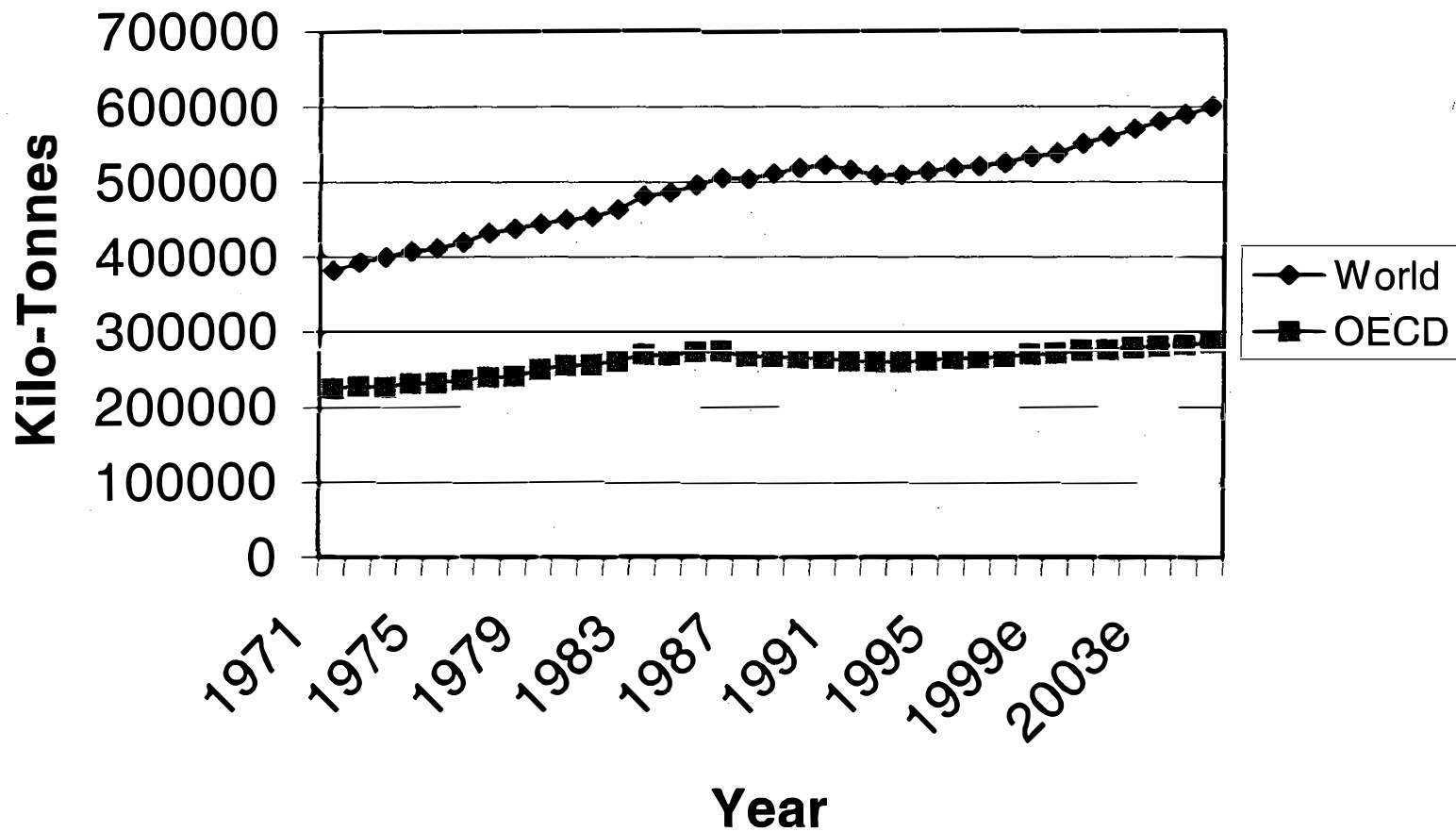
Table 2.1 National Milk Production

Regions	Production (kt)								Annual Change
	1980		1990		2000e		2005e		1980 - 2005
	Quantity	Percent	Quantity	Percent	Quantity	Percent	Quantity	Percent	Percent
Australia	5,600.39	1.24	6,457.15	1.23	10,925.98	1.99	12,135.09	2.02	4.49
Canada	7,966.04	1.77	8,074.91	1.54	8,141.99	1.48	8,390.43	1.4	0.20
EU(15)	129,738	28.83	125,205.5	23.93	121,200	22.02	120,800	20.16	-0.26
Japan	6,505	1.45	8,189.3	1.57	8,521.05	1.55	8,859.83	1.48	1.39
New Zealand	6,834	1.52	7,594.35	1.45	12,218.16	2.22	13,447.53	2.24	3.72
United States	58,244	12.94	67,004.74	12.81	74,440.73	13.53	78,683.62	13.13	1.35
OECD (6)	214,887.4	47.76	222,526	42.53	235,447.9	42.79	242,316.5	40.43	0.49
Rest of the World	235,085.4	52.24	300,664.9	57.47	314,845.1	57.21	357,016	59.57	1.99
World	449,972.8	100.00	523,190.8	100.00	550,293	100.00	599,332.5	100.00	1.28

Source: OECD, 2000c

⁵ Milk and dairy product projections are based on the OECD Agricultural Outlook and are subject to their assumptions. The OECD Agricultural Outlook and its assumptions are discussed in detail in Section 2.5 of this chapter.

**Figure 2.2 World and OECD Milk Production
1971 to 2005**

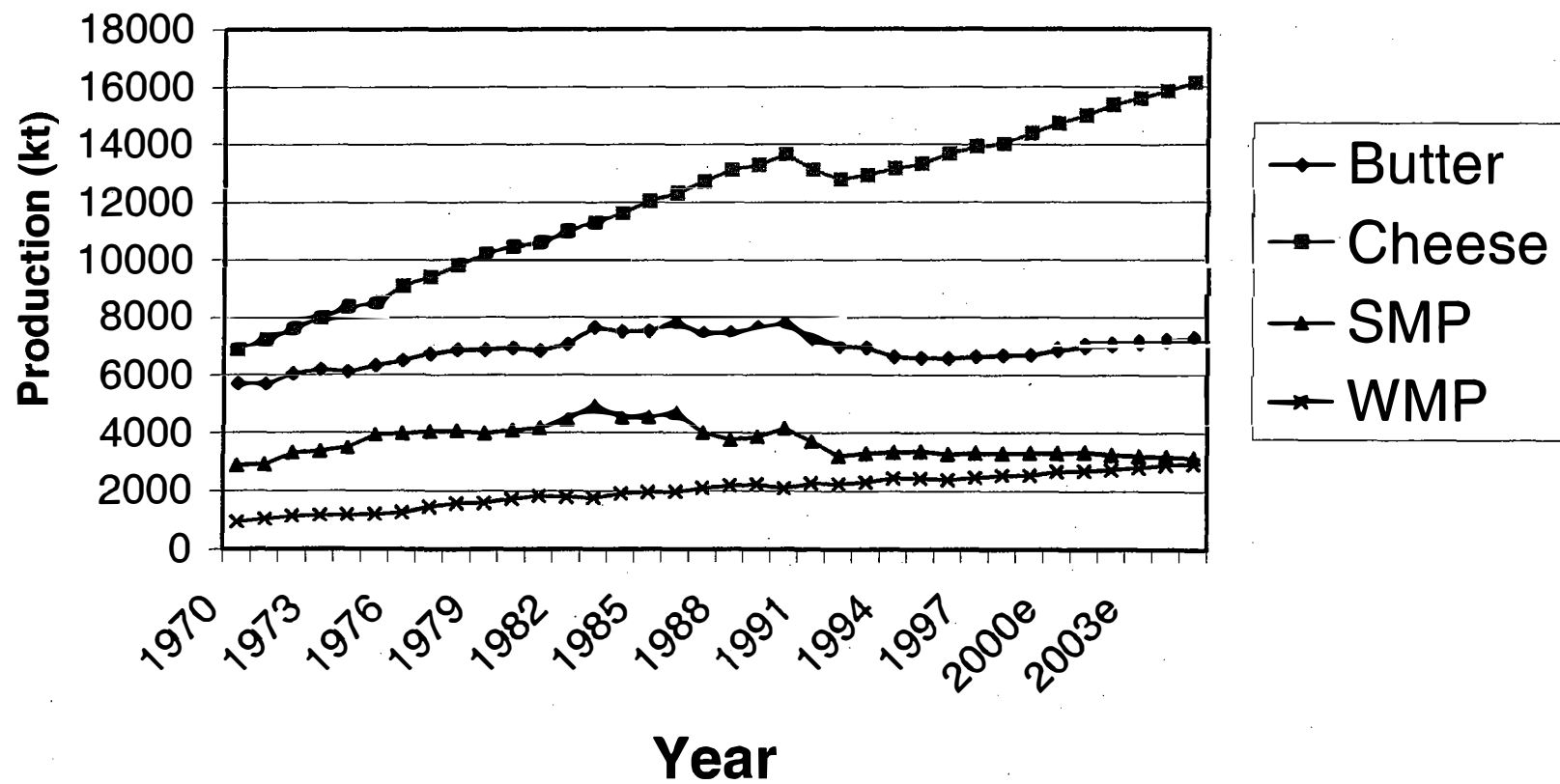


Source: OECD, 2000c

The production of dairy products is important because of the perishable nature of fluid milk and the increased value these products add to the sector. This is especially true for international trade since it is often easier and cheaper to ship dairy products than to ship fluid milk over long distances. The production of milk for fluid consumption represents less than 30 percent of total milk production in OECD countries (OECD, 2000) and about 33 percent in the world (Larivière, 1999). Therefore, over 66 percent of milk production is processed into dairy products.

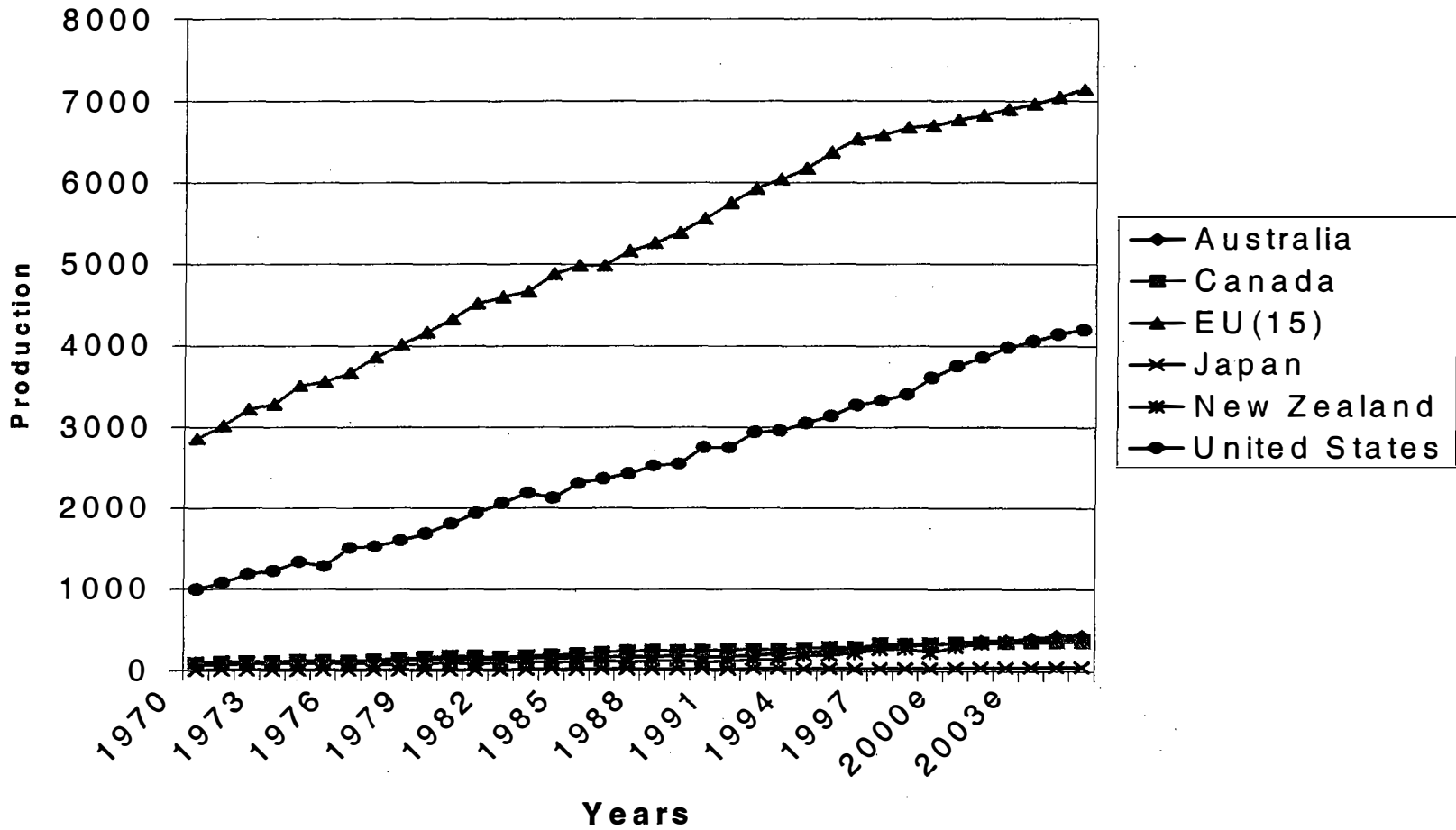
The production of dairy products is led by cheese. It represents the largest in terms of tonnes produced (Figure 2.3) and value of production. Cheese production has been steadily increasing since 1970 with only a small dip in production in the early 1990s. The increasing trend in cheese production is expected to continue through to 2005. The production of cheese is highly concentrated in the EU(15) and the United States. The EU(15) and the United States represented 72 percent of the world cheese production and are expected to remain above 70 percent of world production to 2005 (OECD, 2000). Australia, Canada and New Zealand were producing around 300kt per year in the late 1990s and are expected to remain small producers compared with the EU and the United States (Figure 2.4). Japan's production is expected to remain below 55kt per year until 2005 (Figure 2.4).

**Figure 2.3 World Production of Dairy Products
1970 to 2005**



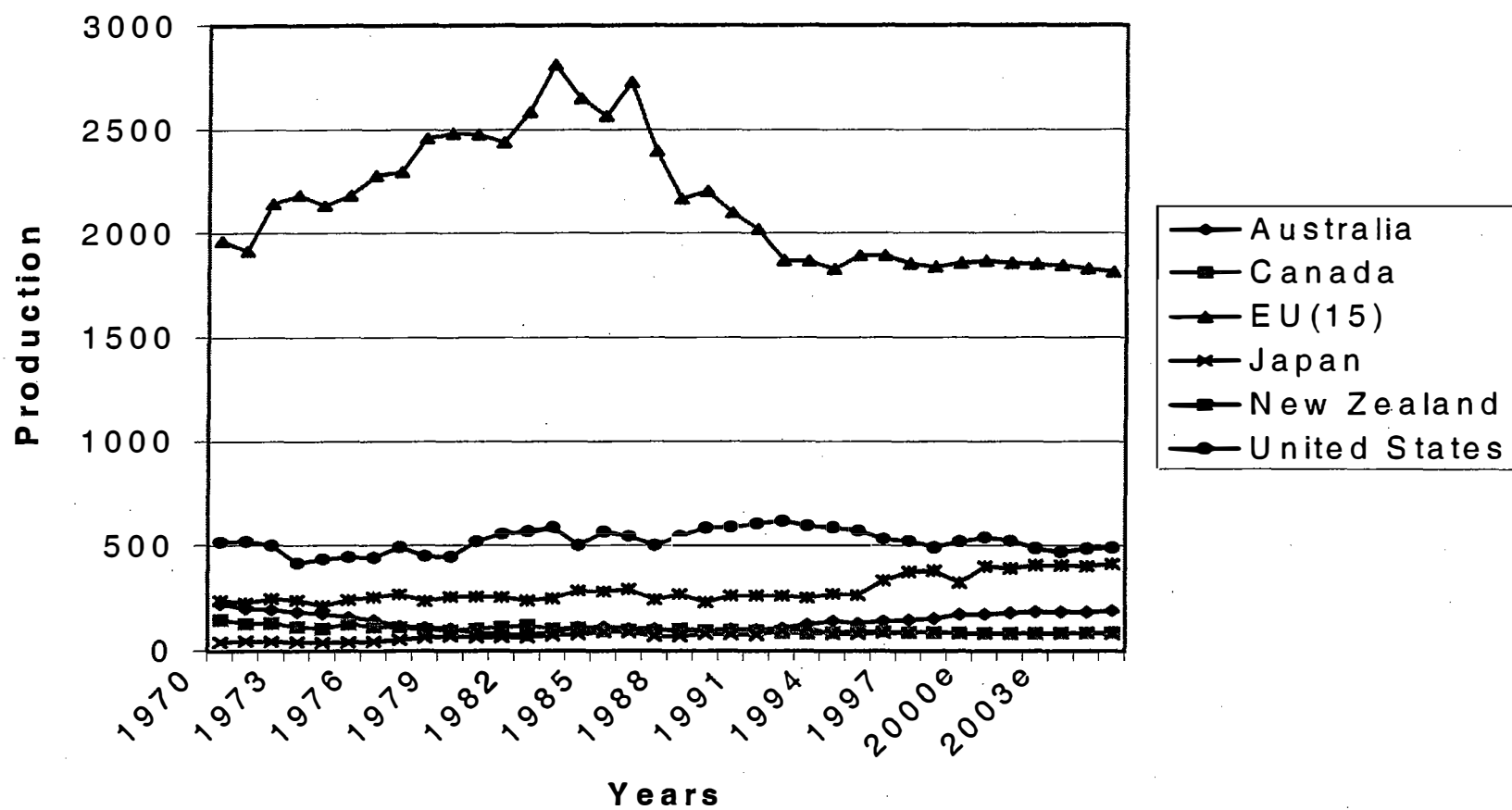
Source: OECD, 2000c

**Figure 2.4 Production of Cheese in Selected Countries
1970 to 2005**



Source: OECD, 2000c

**Figure 2.5 Production of Butter in Selected Countries
1970 to 2005**

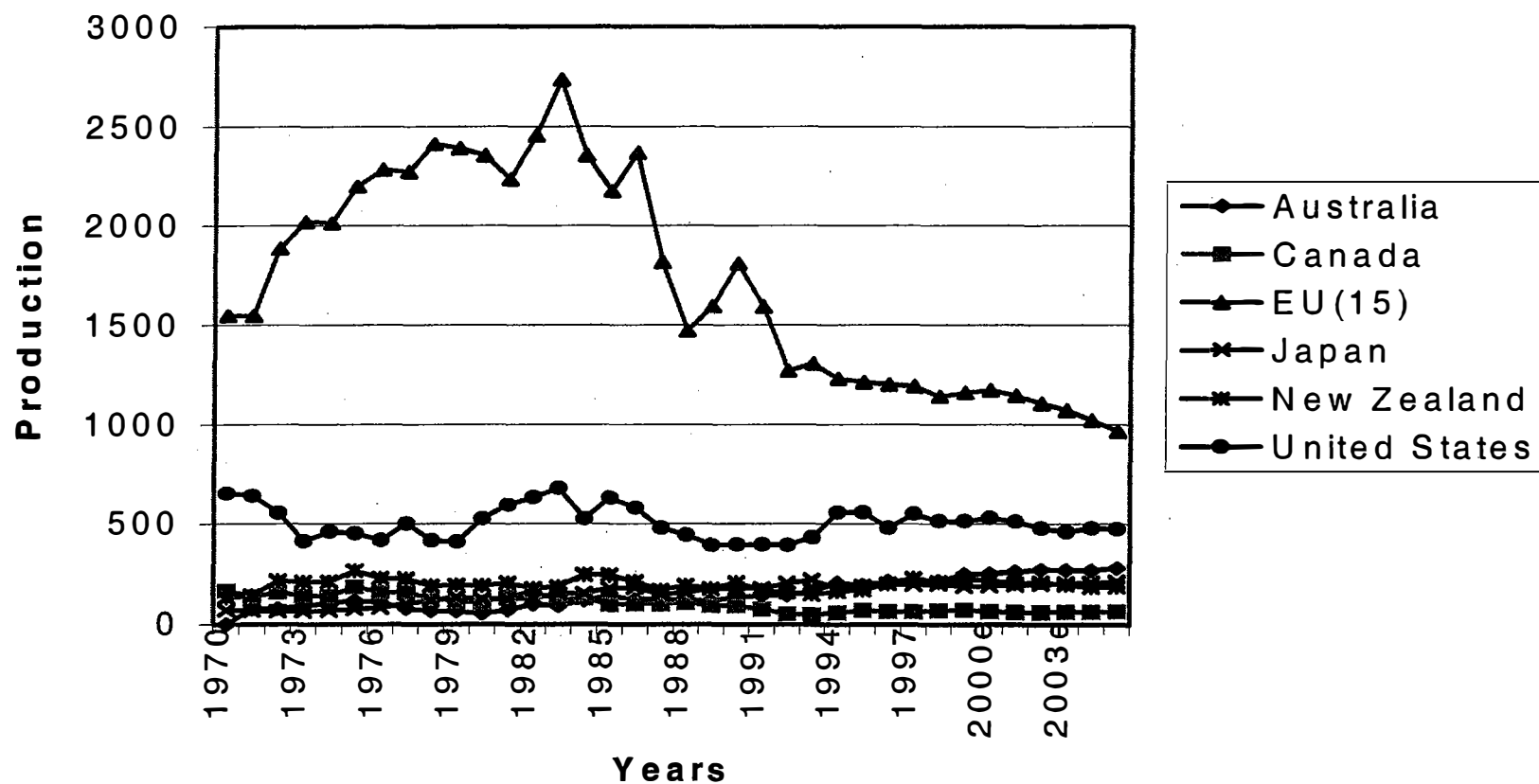


Source: OECD, 2000c

World butter production rose from 1970 to the early 1990s at which time world production dropped and then remained fairly stable. It is expected to remain stable until 2005 (Figure 2.3). The concentration of butter production is far less than for cheese. The EU(15) only accounts for 28 percent of the world production. The United States is at 8 percent and New Zealand is at 6 percent of world production. Much of the drop in world production has occurred in the EU(15). Between 1983 and 1992, EU(15) butter production dropped from 2,812kt to 1,869kt (OECD, 2000) and its share of world production has dropped from 36 percent to 28 percent. Only New Zealand is expected to increase its butter production significantly between 2000 and 2005, with production in much of the rest of the world remaining relatively stable (Figure 2.5).

The production of skim milk powder (SMP) has followed a similar pattern as butter production. This is expected, since SMP is normally produced as a by-product of butter (Figure 2.3). The EU(15) is the largest producer with 36 percent of the world's production. The United States represents 17 percent. Therefore, the EU(15) and the United States produced over half of the SMP in 1997 (OECD, 2000; Figure 2.6). Australia, Japan and New Zealand all produce around 200kt per year. Canada is a very small producer (Figure 2.6).

Figure 2.6 Production of SMP in Selected Countries 1970 to 2005

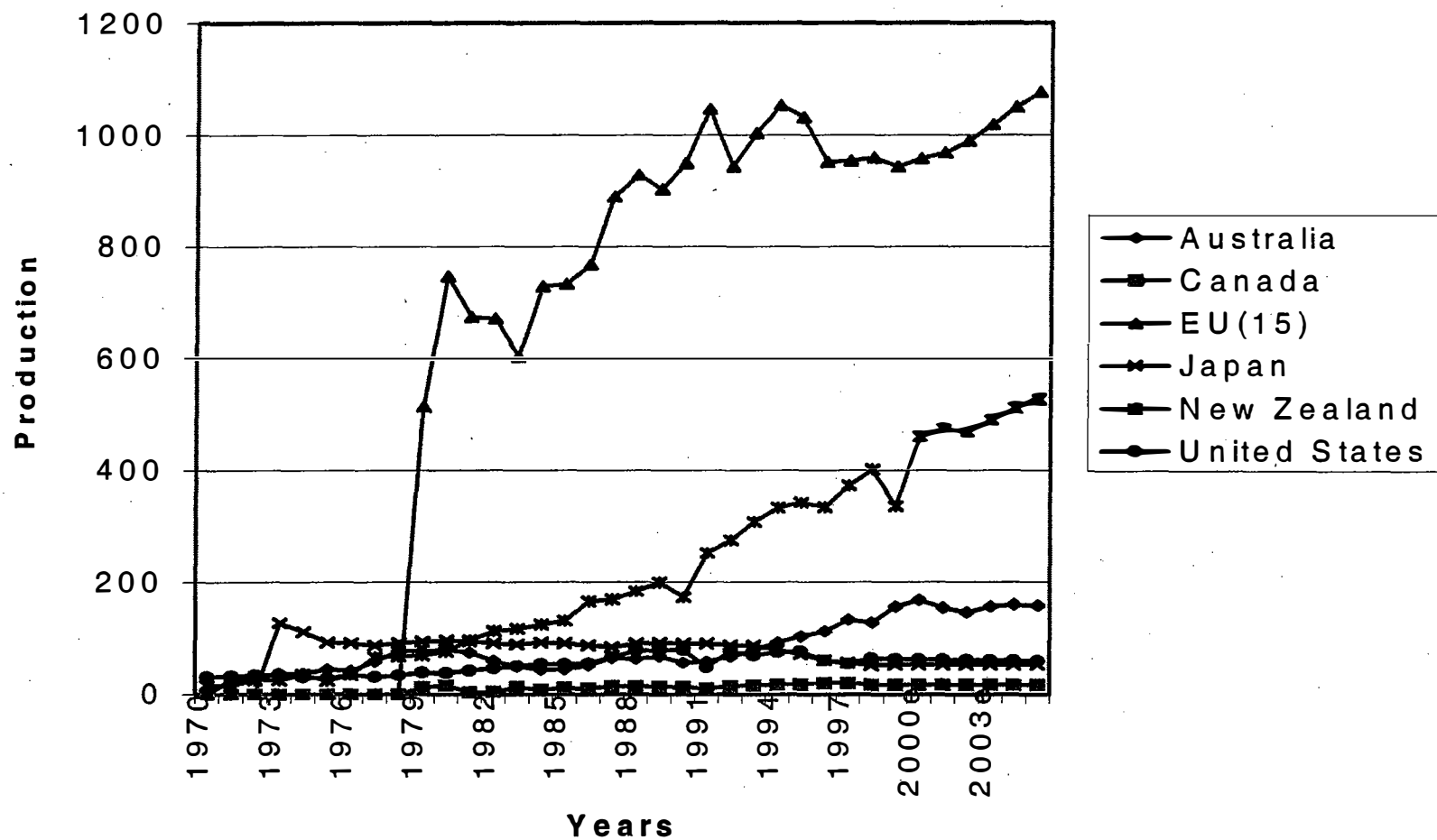


Source: OECD, 2000c

The world production of WMP has been steadily increasing since 1970 and is expected to continue trending upward to 2005 (Figure 2.3). It is expected that by 2005, WMP production will almost be equal to SMP production. The major producers of WMP are the EU(15)⁶ and New Zealand with 39 percent and 15 percent of world production respectively, in 1997. Both the EU(15) and New Zealand have seen significant increases in production from 1980 and are expected to continue to increase production for the near future. Australia, another major producer, has 5 percent of the world's production. Canada, Japan and the United States are relatively small producers of WMP (Figure 2.7).

⁶ The EU(15)'s sharp increase in production in 1979 is related to the start of data collection for WMP and not a major increase in actual production so prior to 1979 recorded WMP production was zero.

**Figure 2.7 Production of WMP in Selected Countries
1970 to 2005**



Source: OECD, 2000c

As the figures in this section illustrate the world production of dairy products is concentrated in four countries, the EU(15), the United States, New Zealand, and Australia. All other countries are relatively small producers.

2.2.2 Dairy consumption past, present and future

The trends in dairy consumption follow similar trends as the production of dairy products. Per capita consumption of milk and dairy products for the world was 95kg of milk equivalent in 1999 (FAO). However, there is a large disparity between developed and developing countries. Consumption in developed countries in 1999 was 246kg of milk equivalent per person, while in the developing countries, it was only 78kg of milk equivalent per person (FAO). The trend in total consumption of dairy products is similar to the trend in production (Figure 2.3) since stock level changes are relatively small. However, an increasing world population affects per capita consumption. Butter and SMP, which have had stagnant levels of production since the early 1990s, have seen per capita consumption decline. Butter per capita consumption is expected to go from 1.6kg in 1980 to 1.11kg in 2005, a 31 percent decline. The per capita consumption of SMP has seen an even greater drop, from 0.90kg/person in 1980 to an expected 0.49kg/person in 2005. This represents a decline in per capita consumption of 46 percent. Cheese, has had a 56 percent increase in total consumption, and a 7 percent increase in per capita consumption between 1980 and the amount projected for 2005. However, per capita consumption of cheese in 2000 and 2005 are lower than 1990. Only WMP has seen and is

expected to see a steady increase in per capita consumption between 1980 and 2005 (Table 2.2).

The developed countries shown in Table 2.2 have generally been higher in per capita consumption than the rest of the world in all dairy products. The only exception to this has been WMP consumption in the United States and New Zealand, and butter consumption in Japan. Japan historically tended to consume less cheese per capita than the rest of the world, but it has increased its per capita consumption during the 1990s and is now higher than the rest of the world (Table 2.2). The general trend has been for per capita consumption of butter and SMP to decrease while per capita consumption of cheese has increased. The per capita consumption of WMP has varied depending on the country. Australia, the EU(15), the United States and the rest of the world have had increases in per capita consumption. Canada, Japan and New Zealand have decreased per capita consumption of WMP (Table 2.2). Therefore, the general trend in the world consumption of milk and dairy products has been decreasing due to the decline of butter and SMP consumption (Larivière. 1999).

Table 2.2 Per Capita Consumption (kg/person/year)

Region	1990				2000e				2005e			
	Butter	Cheese	SMP	WMP	Butter	Cheese	SMP	WMP	Butter	Cheese	SMP	WMP
Australia	2.87	8.13	2.69	1.60	3.69	10.32	1.96	1.73	3.51	11.63	1.91	1.77
Canada	3.50	9.88	1.58	0.44	2.59	10.81	1.05	0.59	2.57	10.87	1.04	0.56
EU(15)	4.89	14.77	3.51	1.23	4.64	17.22	2.56	1.38	4.53	17.94	2.29	1.45
Japan	0.72	1.14	2.23	0.74	0.66	1.76	1.97	0.42	0.63	2.07	2.07	0.42
New Zealand	9.96	8.92	1.75	0.15	8.31	10.51	2.08	0.21	7.94	11.60	2.00	0.20
United States	1.88	11.20	1.33	0.31	2.05	14.09	1.42	0.19	1.77	15.10	1.16	0.17
Rest of the World	1.14	1.12	0.41	0.33	0.81	0.69	0.31	0.38	0.83	0.73	0.29	0.40
World	1.44	2.58	0.71	0.40	1.12	2.44	0.54	0.44	1.11	2.50	0.49	0.46

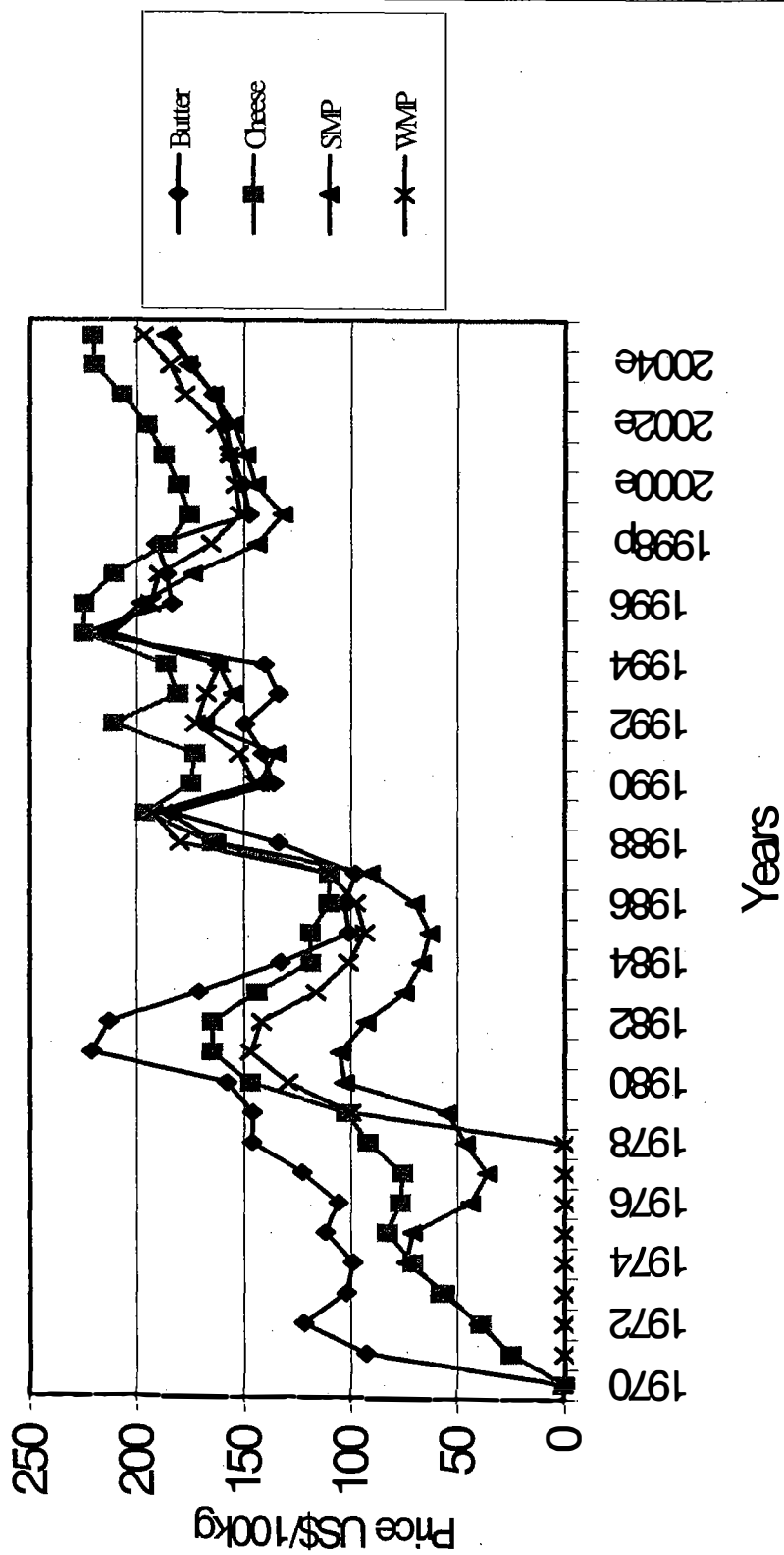
Source: OECD, 2000c

The demand for milk and dairy products is dependent on relative prices in domestic markets and the income of consumers. The trends shown above illustrate that the relatively wealthy countries of the OECD have significantly higher levels of milk and dairy product consumption. This is consistent with empirical results, which show that income elasticities are higher in poor countries (Zhu et al., 1998). This means that without an increase in income in developing countries, or a decrease in the price of milk and dairy products, it will be difficult to increase per capita consumption worldwide. The world price of dairy products has tended to be increasing since 1970 (Figure 2.8). The higher world prices, in the 1990s, partially due to the reduction of export subsidies, limited the ability of developing countries to import dairy products (Larivière, 1999).

2.2.3 Trade in dairy products

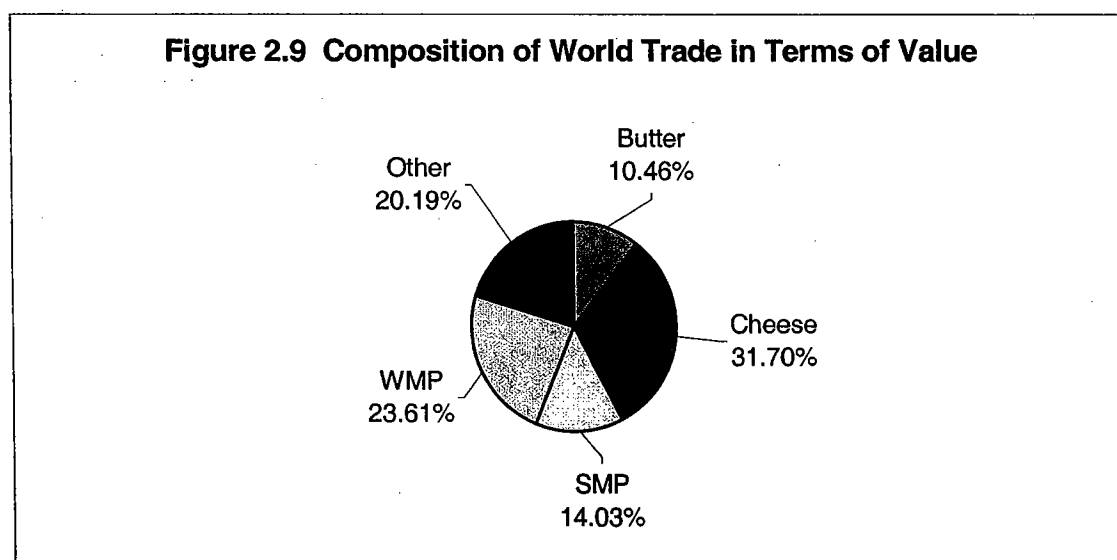
The world trade in milk and dairy products is 68 million metric tonnes of milk equivalent and it was worth US\$ 26 billion in 1999(FAO). Trade within the EU(15) accounted for 45 percent of the milk equivalent volume and 56 percent of the value of world trade in milk and dairy products (FAO). If intra-EU(15) trade is excluded, world trade drops to 37.5 million metric tonnes and the value declines to US\$ 11.4 billion (FAO). Butter, cheese, SMP and WMP, dominate the trade in milk and dairy products. These four dairy products represented almost 80 percent of the US\$ 11.4 billion in world trade in 1999 (Figure 2.9). In comparison, fluid milk, fresh, evaporated and condensed milk represented only 6.6 percent of the value of world trade (FAO). The remainder of trade is made up of soft products and other powdered products. Therefore, the modeling

Figure 2.8 World Prices for Dairy Products



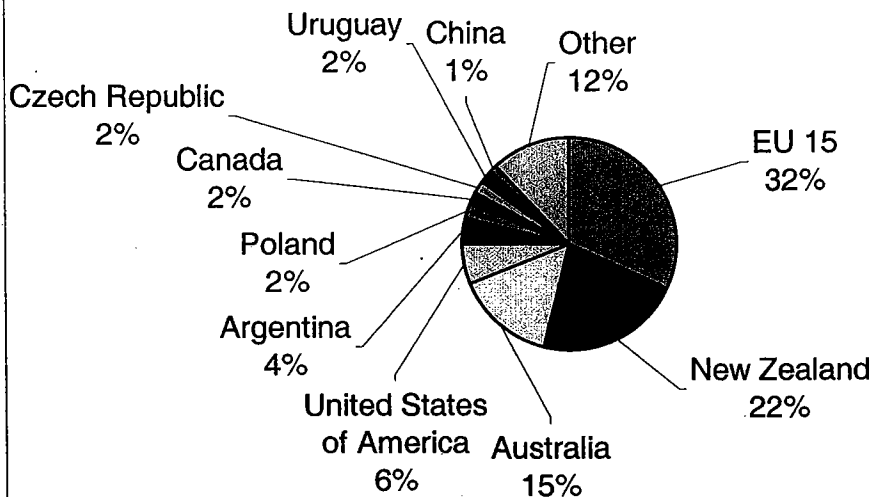
Source: OECD, 2000c

of butter, cheese, SMP and WMP captures most of the world trade in dairy products. The sources for world trade in dairy products are very concentrated. The top ten exporting nations/regions account for 88 percent of the volume of world exports (Figure 2.10). There is no direct relationship between dairy product production and the ability to export. The EU(15) is the largest producer of milk (Figure 2.1) and is the largest exporter of dairy products (Figure 2.10). However, after the EU(15), things change. New Zealand, which is the tenth largest milk producer (Figure 2.1) is the second largest exporter (Figure 2.10). New Zealand exports more than 80 percent of its production (Meilke et al., 2001). Australia, which is not one of the top ten producers in the world, is the third largest exporter with 15 percent of the world export market (Figure 2.10). Four other countries are like Australia in that they are not among the top ten producers, but are among the top ten exporters. They are Argentina, Canada, the Czech Republic, and Uruguay (Figure 2.10). Imports are far less concentrated than exports. The top ten importers only account for 50 percent of the world trade. While developed countries dominate exports, imports are dominated by developing countries (Figure 2.11).



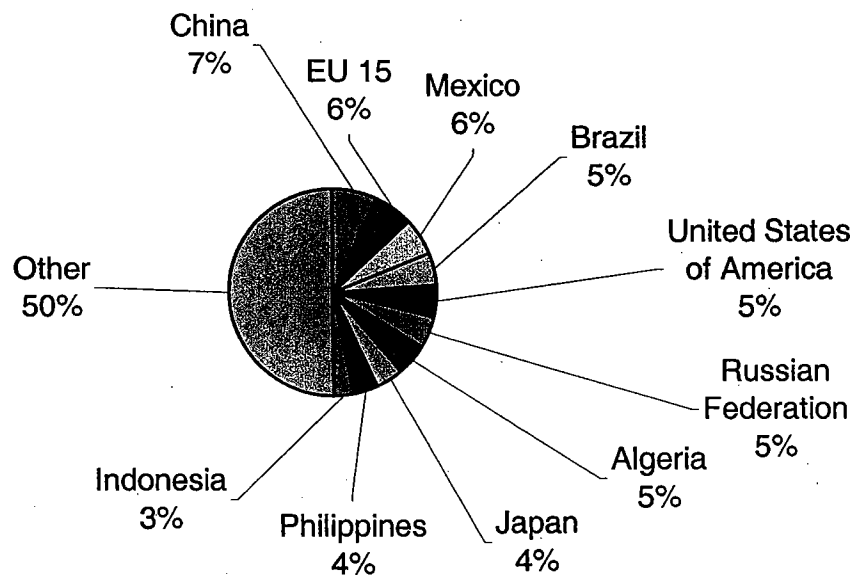
Source: FAO, 2000

Figure 2.10 World Exports by Country



Source: FAO, 2000

Figure 2.11 World Imports by Country



Source: FAO, 2000

Trade in individual dairy products tends to be dominated by three to five major exporters, with a large number of importers (Meilke et al., 2001). In the case of cheese, exports are concentrated in Australia, the EU(15) and New Zealand. These three account for nearly 70 percent of the total cheese exports. Since cheese is a high priced dairy product, its importers also tend to be developed countries. The major importers of cheese are the EU(15), the United States and Japan, with 11.6, 15.3 and 16.5 percent of the imports respectively. Imports are still less concentrated than exports, with the top ten cheese importers accounting for almost 70 percent of total imports.

New Zealand, the EU(15) and Australia also dominate butter exports with over 70 percent of the exports. The EU(15) and the Russian Federation account for a little over one quarter of total butter imports. Imports though, are still less concentrated than cheese, with the top 15 major importers accounting for less than 70 percent of total butter imports.

The exports of SMP are slightly less concentrated than butter and cheese. New Zealand, Australia and the EU(15) account for 56.5 percent of SMP exports. If Poland and the United States' exports are added to New Zealand, Australia and the EU(15), the percentage of total exports rises to nearly 75 percent. Imports of SMP are less concentrated than exports and not surprisingly are dominated by the developing nations. The only developed nations with significant imports of SMP are the EU(15) and Japan with 5.8 and 5.1 percent of imports respectively. The top 15 importers account for about 70 percent of SMP imports.

The concentration of exports of WMP is the highest of the four dairy products discussed. The three largest exporters, EU(15), New Zealand, and Australia, account for a little over 80 percent of total exports and the top ten exporters account for over 98 percent of all WMP exports. The concentration on the import side is similar to SMP. Imports are dominated by developing nations. The top ten importers account for slightly more than 50 percent of imports and no one country imports more than 10 percent of the world trade (FAO).

2.3 WORLD TRADE ORGANIZATION AND THE GENERAL AGREEMENT ON TARIFFS AND TRADE⁷

In the last decade, international trade agreements have begun to change agricultural trade in general and the dairy industry specifically. Central to this has been the evolution in the treatment of agriculture by the General Agreement on Tariffs and Trade (GATT) and after 1994 the World Trade Organization (WTO). This evolution has come both in the legal text of the GATT and WTO agreements and in member countries' attitude toward agriculture's treatment by GATT and WTO disciplines. This has meant that agriculture has moved from nearly complete exemption from GATT disciplines in the past to full inclusion in the WTO process today.

⁷ This section draws heavily on Hudec, 1998.

2.3.1 Pre-Uruguay Round Period⁸

Conventional wisdom holds that in the pre-Uruguay Round period, the GATT was unable to impose any of its disciplines on agricultural trade as it had done on industrial goods. It is also conventional wisdom that this failure to impose disciplines on agricultural trade was due to a weakness within the legal text of the GATT itself. It is important to note that the GATT does not have a separate body of rules to regulate agricultural trade. So, the failure to regulate agricultural trade cannot be solely the result of a weakness of the legal text since the successful regulation of industrial goods was accomplished with the same text. There were however, two special rules that only applied to agriculture, Article XI:2(c)(i) on quotas and Article XVI:3 on export subsidies. These special rules are dealt with below in more detail.

The question then that arises is if the GATT was successful at disciplining industrial trade, why then did it fail to discipline agricultural trade. Part of the answer lies in the nature of international law. Unlike domestic law, which has the power of the state to impose its rules, international law has no such body to guarantee its rules. International law must rely on the political will of member countries to obey the rules they have agreed to and failing this, international law must resort to moral persuasion or economic costs to discipline a member country. This does not always work. If the political will of the member country is strong enough, it can oppose any external pressure. Therefore, what

⁸ Primary products are defined as any product of farm, fishery or forest in its natural form, or which had undergone such processing as is customarily required to prepare it for marketing in substantial volume in international trade. This definition was later stretched to include wheat flour and wine.

determines if an international law is well written or not is how relatively difficult or easy it is for a member country to resist the legal discipline over its policy.

It is convenient when discussing GATT rules and agriculture to divide them into three categories: Market Access, Export Subsidies, and Domestic Production Subsidies. This will also make comparisons with the Uruguay Round Agreement easier because it used these three categories in addressing agriculture.

2.3.1.1 Market Access

Throughout the history of the GATT, most developed countries isolated their domestic agricultural market to support high domestic price policies. Governments employed three main methods to isolate their domestic markets: quotas, tariffs and tariff-like measures and voluntary export restraints.

Quotas were a common method that governments used to isolate domestic markets. The relevant GATT article that deals with quotas is Article XI. Article XI:1 prohibits all quotas, however, many countries had there existing quotas grandfathered in to the GATT, and no one sought to challenge them under Article XI:1. Other countries, specifically Canada, used Article XI:2(c)(i) which qualifies Article XI:1 by granting agriculture a very specific exception. Article XI:2(c)(i) states that a country can use quotas on imports of agricultural products that are necessary to protect domestic agricultural price support programs. There were two main conditions imposed by Article

XI:2(c)(i) on the government price support programs. First, the price support program must limit domestic production. Second, imports had to be given the same percentage share of the domestic market that they would have had in absence of the restriction.

In the case of dairy, Article XI:2(c)(i) does play an important role for Canada. Canada used Article XI:2(c)(i) to justify its use of import quotas to protect its supply management program.

The use of tariffs and tariff-like measures to protect domestic markets originated from a non-rule as opposed to a GATT rule. Under the GATT, countries are free to set tariffs at any level they wish until they agree to “bind” tariffs at a ceiling or maximum level. Since many agricultural products had no agreed “bound” tariff levels, and with little incentive to agree to ceiling levels, tariffs could be set at levels prohibitive to all trade. When tariffs are unbound or bound at prohibitive levels countries can effectively turn tariffs into quotas. One thing countries can do to effectively turn a tariff into a quota is to use tariff-rate-quotas. This is where a low tariff is charged on a certain quantity of imports and a prohibitive tariff is charged on the rest. A second thing that could be used was a variable levy. A variable levy is a tariff that varies depending on the price of the imported product. As the price of the imported product decreases, the tariff increases so that the import price remains higher than the domestic price. This was employed by the European Union to ensure the price of imports were higher than their domestic support price.

The third type of measure utilized to protect domestic markets was voluntary export restraints. Under this system, the exporting nation “voluntarily” limited its exports to an agreed quantity. This meant that voluntary export restraints fell into a GATT grey area and, since the importing nation had not imposed any restrictions on imports it was not in violation. It is the exporting nation that was in violation of the ‘spirit’ of the GATT agreement because it had reduced trade by limiting exports. Since no one complained about this violation it meant that voluntary export restraints were virtually immune from legal action.

2.3.1.2 Export Subsidies

The GATT article that deals with export subsidies is Article XVI and in particular Article XVI:4 and Article XVI:3. Article XVI:4 prohibits any export subsidies of any kind on “nonprimary” products. Article XVI:3 allows for export subsidies on “primary” products, with the condition that the use of the subsidy does not result in more than an equitable share of world export trade in that product.

It is the lack of clear definitions within the GATT’s legal text that has caused the greatest difficulty in disciplining export subsidies. The concept of equitable share was something like the share of trade the country could expect in a normal market. The problem was that by the mid to late 1970s, agricultural markets were so distorted that it was impossible to determine a country’s normal share of trade. This made it impossible to bring any legal action against a country’s export subsidy program.

2.3.1.3 Domestic Production Subsidies

The third aspect of most domestic agricultural programs is the use of domestic production subsidies. On first appearance, domestic production subsidies would seem to violate the National Treatment obligations of the GATT, as domestic and foreign producers are not being treated equally. However, Article III:8(b) provides a major exception from the National Treatment obligations by allowing countries to grant subsidies directly to their producers. The exception in Article III:8(b) is limited by four peripheral legal disciplines: (1) indirect subsidies are not permitted, (2) subsidies on products subject to tariff concessions can be subject to legal action⁹, (3) domestic subsidies can be subject to countervailing duties if the domestic subsidy causes material injury in the import market, and (4) the 1979 Subsidies Code expanded the nullification and impairment remedy to include domestic subsidies that cause injurious trade distortions.

The uses of these forms of legal discipline, with the exception of countervailing duties by some countries, are not very effective in disciplining domestic subsidies on agricultural products. This meant that there were virtually no GATT legal actions taken against domestic agricultural subsidies in the pre-Uruguay Round period.

⁹ The subsidy had to undercut the competitive advantage expected by the tariff concession. In other words, the subsidy could not have been in existence or likely to come into existence at the time the tariff concession was granted.

It should be noted in conclusion that the same GATT legal conditions in Market Access, Export Subsidies, and Domestic Production Subsidies existed for both agricultural and non-agricultural products. This means that had the political will existed in agriculture as it did in non-agriculture, these problems could have been dealt with in the pre-Uruguay Round period.

2.3.2 Uruguay Round Agreement

Having looked at the problems the GATT had in dealing with agriculture, attention can be turned to what was done to deal with these problems in the Uruguay Round Agreement. For this the same three categories mentioned above, market access, export subsidies and domestic production subsidies are used. The WTO Agreement on Agriculture spells out the general rules that each country is expected to follow.

2.3.2.1 Market Access

The market access provisions come in two main areas, tariffication and minimum access. The first part of the market access provisions, tariffication, is found in Part III of the Agreement on Agriculture. This required all member countries to convert all non-tariff border measures into their bound tariff equivalents. This was done by measuring the domestic and world price differential during the base period 1986-1988 and calculating the tariff equivalent that would generate this differential. In the case of dairy products this resulted in some countries having very high tariffs. The excess protection

was created by dirty tariffication and the fact that the base period 1986-1988 represented a period with very low dairy prices; by 1994 when the tariffs were implemented prices had risen, see Figure 2.8, and the tariffs produced through tariffication were much higher than were necessary for protection in 1994.

Dirty tariffication occurs when countries set their initial tariffs at levels higher than the straightforward calculation of the difference between of the world and domestic price. For example the Canadian tariff on butter is 351.4 percent, however when you calculate the difference between the average domestic and world prices for the base period the tariff equivalent is 244.7 percent, almost 110 percent less than the actual tariff. This excess protection created by dirty tariffication was then compounded when world prices rose by 1994.

For developed countries, the tariffication process was accompanied by an obligation to reduce these bound tariffs over the six-year implementation period. The reduction had two obligations to meet. First, there had to be an average 36 percent reduction across all tariff lines and second, a minimum reduction of 15 percent per tariff line. Developing countries followed a similar formula but had an average reduction of 24 percent and a minimum reduction of 5 percent per tariff line over 10 years.

Importing countries were also granted a special safeguard provision for tariffied commodities under the market access provisions. The safeguard provision allowed tariff

increases if either price declined too significantly or if imports increased beyond “trigger” amounts.

The tariffication process produced many tariffs that would have been prohibitive to all trade. This then brings about the second main area under market access provisions, minimum access. To insure that market access was not decreased by the tariffication process, minimum access provisions were included in the Agreement on Agriculture. Minimum access was to be set at the current quota amounts or in the absence of imports an amount equal to 3 percent growing to 5 percent of domestic consumption was suggested, although for dairy products these targets were often not met. The minimum access amounts were to have low or zero tariffs to insure access.

The market access provisions are summarized for developed countries in Table 2.3 below.

Table 2.3 Market Access Provisions in the Agreement on Agriculture

- *Non-tariff border measures converted to tariffs
- *All tariffs bound (i.e., cannot be increased without negotiation with other countries)
- *Target reduction of tariffs 36 percent (on average) over 6 years from 1986 – 88 base
- *Minimum reduction of 15 percent per tariff line
- *Additional duties (up to one-third of normal duties) can be levied for remainder of market year if imports surge
- *Alternatively, additional duties can be levied if world prices fall below preset “trigger” price levels, on a sliding scale, for goods subject to tariffication
- *Import opportunities to be granted for a share of domestic consumption

(IATRC, 1994)

2.3.2.2 Export Subsidies

The provisions regarding export subsidies are found in Part V of the Agreement on Agriculture. The approach to dealing with the problems of “equitable share” that arose in applying Article XVI:3 of the GATT was to abandon the concept altogether. Part V of the Agreement on Agriculture replaced article XVI:3 of the GATT. Part V of the Agreement on Agriculture places two commitments on export subsidies. First, it binds and reduces the amount of money spent on export subsidies and second, binds and reduces the volume of exports that can be subsidized. The reduction commitments were set at 36 percent for budgetary outlays and 21 percent for the volume of subsidized exports on a 1986 to 1990 base period.

The Agreement on Agriculture also prohibited any new export subsidies from being created. It granted an exception from the reduction commitments for “genuine” food aid.

A summary of the export subsidy provisions for developed countries is listed in Table 2.4.

Table 2.4 Export Subsidy Provision in the Agreement on Agriculture

*Budget expenditures on export subsidies to be reduced by 36 percent over 6 years, from 1986 – 90 levels
*Volume of subsidized exports to be reduced by 21 percent over 6 years from 1986 – 90 levels
*“Genuine” food aid is exempt from reductions
*No reductions on non-subsidized exports
*Subsidies include payments-in-kind; subsidized stock exports; producer-financed export subsidies; export marketing cost subsidies; export-specific transportation subsidies; subsidies on goods incorporated into exports
*Other subsidies should not be applied in a way that would undermine the cuts in export subsidies
*No new export subsidies on other commodities can be introduced
*Export credits and credit guarantees to be covered by a separate agreement

(IATRC, 1994)

2.3.2.3 Domestic Production Subsidies

The issue of domestic production subsidies represents the most complex issue that the Agreement on Agriculture had to deal with. Due to the variety of different domestic subsidy programs it was necessary to classify the different subsidies as either trade distorting or non-trade distorting. Non-trade distorting subsidies were classified as “green box” subsidies and are not subject to binding or reduction commitments.

Trade distorting subsidies were classified as “amber box” programs and were subjected to binding and reduction commitments. These subsidies were totaled to calculate an Aggregate Measure of Support (or AMS) for the base period of 1986-1988. The AMS was then to be reduced by 20 percent over the implementation period.

There were two major exceptions to the AMS provisions for domestic production subsidies. The first exception is called the “de minimis” exception, which allows support that does not exceed 5 percent of the total value of that product’s production for the year to be exempted from the AMS calculation. The second exception was for direct subsidies under production-limiting programs or “blue box” programs. This resulted in a major exception for the very large U.S. “deficiency payments” program and the very large EU “compensation payments” program.

A summary of all domestic production subsidy provisions for developed countries are in Table 2.5 below.

Table 2.5 Domestic Subsidy Provisions in the Agreement on Agriculture

- *Reduction in total trade distorting domestic support, aggregated across all commodities, of 20 percent in 6 years, from 1986 – 88 base
- *Policies fulfilling certain “green box” criteria need not be counted (research, extension, inspection, marketing and promotion, infrastructure; food security stocks, domestic food aid, crop insurance, income safety-net schemes, disaster payments, retirement programs, set-asides, structural adjustment programs, environmental programs; “decoupled” income support)
- *If current AMS is less than 5 percent of the value of the product in developed countries, it is exempted
- *Direct payments under production-limiting programs not subject to reduction if they are (a) based on fixed area and yields, (b) made on 85% or less of base production, and (c) livestock payments made on fixed number of head

(IATRC, 1994)

2.3.3 Post Uruguay Round Period

The Agreement on Agriculture mandated that new negotiations were to begin one year prior to the end of the implementation period (Article 20, Josling, 2000). Even with the failure at Seattle to start a general round of trade negotiations, agriculture began its mandated negotiations in early 2000. The negotiations began with members submitting proposals for the next round of negotiations. Even with more than 130 proposals, technical submissions and non-papers being submitted by more than 125 countries (Rude and Meilke, 2002), the failure to start a more general round of negotiations hampered the agricultural negotiations since there was no specified deadline and no trade-offs with

non-agricultural sector were possible. The Doha meetings and the launch of the Doha Development Round signaled a start of the comprehensive negotiations. The WTO members have set an aggressive timetable for the completion of the agricultural negotiations. The major agricultural issues are to be discussed in a series of meetings throughout 2002. In mid-December 2002 Mr. Stuart Harbinson, the Chair of the agricultural negotiating group, is to table an overview document containing the modalities of the negotiations and any new rules. The final text of the agreement for agriculture is to be completed by March 2003. Countries are then to prepare their comprehensive draft of commitments in time for the Fifth Ministerial meeting in late 2003 (Rude and Meilke, 2002).

The proposals have all centered on the three areas of market access, export competition and domestic support in the Agreement on Agriculture and it appears that few countries are willing to abandon the Uruguay Round framework in this round of negotiations (Rude and Meilke, 2002).

In the area of market access the United States has called for tariff reductions using a "Swiss Formula" so that after five years no individual tariff exceeds 25 percent. They also want all TRQs to increase by 20 percent and to eliminate all in-quota tariffs (USDA, 2002). The European Union also wants to increase market access but at a much slower rate. The Cairns Group¹⁰ wants to negotiate much deeper cuts in tariffs, tariff peaks and tariff escalation. (Josling, 2000)

¹⁰ The Cairns Group members are Argentina, Australia, Brazil, Canada, Chile, Colombia, Fiji, Indonesia, New Zealand, Paraguay, Philippines, South Africa, Thailand and Uruguay.

In the area of export competition, most countries are calling for major reductions or the total elimination of export subsidies. The European Union is the only member who would face significant problems in agreeing to dismantle their export subsidies (Josling, 2000).

Domestic support represents a difficult problem. The Cairns Group points out that overall support in agriculture far exceeds support in other industries (Josling, 2000). The United States has called for all trade distorting domestic support to be limited to 5 percent of the value of domestic agricultural production after a five year implementation period. They also propose that the blue and amber boxes be combined under this one WTO cap. (USDA, 2002) Other countries, like Canada, are calling for broader restrictions on all forms of domestic support (green, blue and amber boxes) (Josling, 2000). The difficulty with this position is that the European Union has announced that one of its goals is to defend the “blue box”. They need to defend the “blue box” to protect payments under the Agenda 2000 programs (Josling, 2000). Therefore, the three areas developed in the Agreement on Agriculture during the Uruguay Round will continue to be important in the future.

2.4 DAIRY MARKETS AND POLICIES IN SELECT OECD COUNTRIES

As shown in Section 2.2, the OECD represents a region of significant dairy product production and consumption. The OECD is also the primary source for the trade

in dairy products. Therefore, the domestic and trade policies of the OECD countries impact world trade significantly and need to be considered in order to understand the effects of trade liberalization. The rest of this section provides an overview of the domestic and trade policies of select OECD countries.

2.4.1 Australian Dairy Policy

Since 1995, following the Uruguay Round Agreement, the Australian government has begun a systematic restructuring of the Australian dairy industry (Australian Dairy Corporation, 1997; Larivière, 1999). This restructuring called for the complete elimination of all export subsidies and a move toward more decoupled domestic support (Larivière, 1999).

The Australian dairy industry is divided into two separate markets: manufacturing milk and fluid milk. The manufactured milk market was structured as a competitive market with a domestic market support arrangement. The domestic market support arrangement provided support to manufacturing milk producers through transfers from domestic consumers. The transfer was carried out through a system of levies and payments. Levies are charged on manufacturing milk that are paid by the dairy processors and on fluid milk that are paid by the fluid milk producers. Payments are then made to manufacturing milk producers. The levies and payments are calculated based on the content of fat and protein in the milk. The domestic market support arrangement was eliminated in 2000 following the Uruguay Round Agreement (Larivière, 1999).

A second major change in the Australian dairy industry began in July 2000 with the deregulation of the fluid milk market. Prior to July 2000 state governments controlled both the farm gate supply and prices of fluid milk. They also restricted the interstate trade of fluid milk. The reforms have moved fluid milk's supply and price to an open market and removed the restrictions on interstate trade (ABARE, 2001).

Australia used border measures to support domestic programs. Prior to 1995 these included tariffs and quotas as import controls and export licenses for export enhancement. The border measures had little effect, as it does not matter if dairy products are sold domestically or exported, since Australia competes at world prices (Larivière, 1999). With the Uruguay Round Agreement, Australia converted the quotas to tariffs. Australia currently only restricts the entry of certain types of cheeses originating from all countries except those with special agreements (New Zealand, Papua New Guinea and South Pacific Forum Islands) (Larivière, 1999). All border measures are legislated to decrease by 2000 in accordance with agreement commitments.

Australia's commitments under the Uruguay Round Agreement are shown in Tables 2.6 to 2.8. These tables show the reductions in tariff rates and the quantity of exports subsidized and the increase in minimum access for dairy products.

Table 2.6 Tariff Commitments (Australia)

	1995		2000	
	in-quota	over-quota	in-quota	over-quota
Cheese	\$96/tonne	\$1.44/kg	\$96/tonne	\$1.22/kg

Table 2.7 Minimum Access Commitments (Australia)

	1995	2000
Cheese	11,500 tonnes	11,500 tonnes

Table 2.8 Export Subsidy Commitments (Australia)

	1995		2000	
	Volume	Budget (A\$)	Volume	Budget (A\$)
Butter	63,706 tonnes	24,390,000	38,828 tonnes	14,360,000
Cheese	71,997 tonnes	30,870,000	49,880 tonnes	21,740,000
SMP	106,308 tonnes	38,460,000	67,636 tonnes	23,780,000
WMP				

2.4.2 Canadian Dairy Policy

The administration of the Canadian dairy industry has undergone significant changes since 1995. The administration of the dairy industry in Canada is shared between the federal and provincial governments, with federal responsibilities being in the areas of milk processing and intra-provincial and international trade. The provincial governments control the allocation of fluid or market milk within the province. The federal and provincial governments have enacted legislation that permits the creation of the supply management system. Supply management acts to stabilize income through market price support mechanisms, production quotas, import restrictions, formula pricing and price subsidies. Canadians pay the cost of their dairy policy through higher prices in the market place and through taxes for the subsidies.

The control of production begins with the setting of the national production quota, which is based on market demand at the support prices. The market demand is based on estimates of domestic and exports demands. The goal of supply management is then to achieve a balance between the supply and demand for industrial and fluid milk. Once the national production levels are set, it is then divided among the provinces, which are responsible for allocating their production amount among their producers.

To further support supply management the Canadian government imposes measures that restrict the importation of milk and dairy products. Prior to 1995 these were generally import quotas but with the Uruguay Round Agreement these import

quotas were converted to tariff-rate-quotas. The over-quota tariffs were set at prohibitive levels but Canada has committed to increase minimum access on dairy products to at least 3 percent of domestic consumption (OECD, 1996; Larivière, 1999). The government also supports the dairy industry through a direct subsidy for industrial milk and through intervention purchasing for butter and skim milk powder. The Canadian government announced that the subsidy for industrial milk would be phased out over a five-year period beginning in 1998.

The pricing of fluid milk falls under the jurisdiction of the provinces. The price of fluid milk is set according to a cost of production formula. The system prior to August 1995 was that each province maintained their own price classes and price pooling system. After August 1995 all provinces, with the exception of Newfoundland, began using a common price class system and started revenue pooling for four of the five subclasses (Agriculture and Agri-Food Canada, 1996; Larivière, 1999). The new price classes are:

Class 1: Fluid milk and cream;

Class 2: Ice cream, yogurt and input into food preparations such as puddings, and infant formula;

Class 3: Cheese;

Class 4: Butter, milk powders, condensed milk and other related products;

Class 5a: Cheese ingredients for further processing for domestic and export markets;

Class 5b: All other dairy products for further processing for the domestic and export markets;

Class 5c: Domestic and export activities of the confectionery sector;

Class 5d: Specific negotiated exports including cheese under quota destined for the US and UK markets, evaporated milk, whole milk powder and niche markets;

Class 5e: Surplus removal.

Since 1996 six provinces (Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island) began price pooling all five subclasses of milk, except class 5e. The four western provinces set up a similar price pooling system in 1997. Manitoba is a member of both price-pooling systems.

However, in 1999 the United States and New Zealand challenged the pricing arrangement above and particularly classes 5d and 5e as illegal subsidies under the Uruguay Round Agreement. The Panel and the Appellate Body ruled that classes 5d and 5e constituted a subsidy-in-kind and was therefore in violation of the articles of the Agreement on Agriculture (WTO_a, 1999; WTO_b, 1999).

In response to the World Trade Organization ruling, Canada was forced to change its pricing system. To carry out these changes, Canada introduced the Optional Export Program in 2000. Though slightly different in each province, generally the Optional Export Program allows producers to directly contract with processors to supply milk for exported dairy products and is shipped to first and domestic production is filled afterwards. The United States and New Zealand have subsequently challenged the

Optional Export Programs and at the time of writing Canada appears to have lost this challenge.

In the Uruguay Round Agreement, Canada made a number of commitments in the area of tariff reduction, minimum access and export subsidies. Tables 2.9 to 2.11 summarize these commitments in the dairy sector.

Table 2.9 Tariff Commitments (Canada)

	1995		2000	
	in-quota	over-quota	in-quota	over-quota
Fluid Milk	17.5%	283.8% but not < \$40.6/hL	7.5%	241.3% but not < \$34.5/hL
Butter	\$64.60/tonne	351.4% but not < \$4.71/kg	\$113.80/tonne	298.7% but not < \$4.00/kg
Cheese	\$77.20/tonne	289.0% but not < \$5.31/kg	\$33.20/tonne	245.6% but not < \$4.52/kg
SMP	\$77.20/tonne	237.2% but not < \$2.36/kg	\$33.20/tonne	201.6% but not < \$2.01/kg
WMP	\$77.20/tonne	286.4% but not < \$3.32/kg	\$33.20/tonne	243.4% but not < \$2.82/kg

Table 2.10 Minimum Access Commitments (Canada)

	1995	2000
Fluid Milk	64,500 tonnes	64,500 tonnes
Butter	1,964 tonnes	3,274 tonnes
Cheese	20,412 tonnes	20,412 tonnes
SMP	908 tonnes	906 tonnes
WMP	11.7 tonnes	11.7 tonnes

Table 2.11 Export Subsidy Commitments (Canada)

	1995		2000	
	Volume	Budget (C\$)	Volume	Budget (C\$)
Fluid Milk				
Butter	9,464 tonnes	38,874,000	3,500 tonnes	11,025,000
Cheese	12,448 tonnes	28,852,000	9,076 tonnes	16,228,000
SMP	54,910 tonnes	45,750,000	44,953 tonnes	31,149,000
WMP				

2.4.3 European Union Dairy Policy

European Union members' national dairy policies are coordinated through the Common Agricultural Policy (CAP). With the removal of border controls on intra-union trade in 1993, the European Union has become the only major free trade area for dairy products in the world (Larivière, 1999). The European Union uses a combination of price supports and border measures to ensure domestic price levels. The European Union purchases surplus dairy product (butter and skim milk powder) at announced prices through national intervention boards. The intervention board must purchase all products that meet certain specified quality and packing criteria. The products are then either stored or disposed of through subsidized exports to non-European Union countries (Larivière, 1999, Meilke et al., 2001). To execute this program the European Union combines four main policy measures:

1. the imposition of tariffs on imports of dairy products;
2. the payment of subsidies on exports to bring prices of EU products down to the generally lower-priced international market level. Export levies may

however be applied in times of shortage, when world price levels are above EU prices;

3. the protection of the domestic market against disruption caused by seasonal and structural surpluses through the guaranteed purchase and/or storage of butter and spray-dried skim milk powder;
4. the payment of subsidies on skim milk used for the manufacture of casein and caseinates, and/or skim milk powder fed to livestock. (Larivière, 1999)

These policies allow the European Union to manage market prices for dairy products and thereby guarantee milk producers a target price for milk (Larivière, 1999, Meilke et al., 2001).

To reduce the cost of the dairy policy, the European Union introduced production quotas in an attempt to limit milk production (OECD, 1996, Larivière, 1999, Meilke et al., 2001). The elements that characterize the quota system are:

1. Production quotas are allocated to each country, which is responsible for domestic allocation between producers and processing plants. Quotas are not exchangeable across national boundaries but may be transferred from one farm to another through sale, lease or inheritance of the farm, the leasing of the quota itself, the purchase of quota by a member state or the allocation of quota from the national reserve. Rules for quota transfer are determined nationally. Leasing of quota independent of land is permitted in some countries. Outright sale of unattached quota is forbidden in all countries;

2. If the guaranteed quantity is exceeded, a levy is payable by individual milk producers;
3. Guaranteed total quantities are specified both for deliveries and sales from farms for direct consumption;
4. Countries can choose whether to collect a levy directly from producers or from the purchasers of milk who will deduct any amounts to individual producers through the price of milk or by any other appropriate means;
5. The levy is only payable to the Union if the quantity for country as a whole is exceeded;
6. Quotas are fixed on a fat basis. (Larivière, 1999)

The European Union has over the years reduced outstanding production quota through the purchase of quota rights, mandatory uncompensated quota reductions and mandatory compensated quota reductions.

The European Union's commitments under the Uruguay Round Agreement in the areas of tariff reduction, minimum access and export subsidies are summarized in Tables 2.12 to 2.14 for dairy products.

Table 2.12 Tariff Commitments (EU)

	1995		2000	
	In-quota	Over-quota	In-quota	Over-quota
Fluid Milk (1)	1,052 €/tonne	-----	673 €/tonne	-----
Butter (2)	948 €/tonne	3,288 €/tonne	948 €/tonne	2,105 €/tonne
Cheese (3)	789 €/tonne	2,456 €/tonne	789 €/tonne	1,572 €/tonne
SMP (4)	475 €/tonne	1,527 €/tonne	475 €/tonne	1,221 €/tonne
WMP (5)	2,325 €/tonne	-----	1,488 €/tonne	-----

(1) Average of (0401)

(2) Average of (0405 00 10; 0405 00 90)

(3) Average of all cheese (0406)

(4) Average of (0402 10 11; 0402 10 19)

(5) Average of (0402 21)

Table 2.13 Minimum Access Commitments (EU)

	1995	2000
Fluid Milk		
Butter	76,667 tonnes	86,667 tonnes
Cheese	104,000 tonnes	104,000 tonnes
SMP	41,000 tonnes	69,000 tonnes
WMP		

Table 2.14 Export Subsidy Commitments (EU)

	1995		2000	
	Volume	Budget (€)	Volume	Budget (€)
Fluid Milk				
Butter	447,200 tonnes	1,392,000,000	366,100 tonnes	947,800,000
Cheese	406,700 tonnes	594,100,000	305,100 tonnes	341,700,000
SMP	297,200 tonnes	406,200,000	243,100 tonnes	275,800,000
WMP				

The future direction of the Common Agricultural Policy reform process is laid out in Agenda 2000. The European Union has agreed to shift away from price supports and move towards direct payments (Meilke et al., 2001). The import elements for dairy are:

1. Intervention prices for butter and skim milk powder will be reduced by 15 percent in three equal steps starting 1 July 2005;
2. Compensation for the reduction in support prices will be provided through the introduction of annual direct payments and by an increase in milk production quota;
3. Milk production will be increased in each member state by 1.5 percent over a three year period beginning in 2005 (Meilke et al., 2001)

Analyses conducted by Fuller et al. (1999), Larivière and Meilke (1999) and Benjamin et al. (1999) indicates that implementing the Berlin Accord would cause European Union milk prices to fall between 9.5 and 14 percent (Meilke et al, 2001). Another change that will affect European dairy policy is European Union expansion to include the Czech Republic, Hungary and Poland. These countries have significant dairy sectors and currently there is a large price gap between them and the European Union for dairy products. The raising of prices in these countries would encourage milk production and increase trade with the European Union and the rest of the world (Fuller et al., 1999, Meilke et al., 2001).

2.4.4 Japanese Dairy Policy

Japanese dairy policy is designed to assist both milk producers and the dairy processing industry. Japan accomplishes this through three basic programs: classified pricing and revenue policy through prefectural¹¹ milk marketing boards, price supports for milk used to manufacture dairy products, and import quotas (Japan Dairy Council, 1998, Larivière, 1999).

To control market surpluses and to stabilize prices, Japan introduced mandatory production quotas. The annual production level is determined in two stages. First, the Ministry of Agriculture calculates the amount of manufacturing milk that will be needed for the year. Second, the amount of milk needed for fluid drinking milk is determined. These two amounts of milk are added to get the total milk production. The Japan Dairy Council on behalf of the Ministry of Agriculture does the administration of the global quota. The global quota is then allocated to each prefectural marketing board, which sets production quotas for each individual cooperative and dairy farmer in the prefecture (Suzuki and Kaiser, 1994, Larivière, 1999).

The second form of assistance by the government is a system of deficiency payments for manufacturing milk. The deficiency payment is equal to the difference between the guaranteed manufacturers' milk price and the actual price paid by the dairy processors. The deficiency payment has remained relatively stable at around 11.5 ¥/kg of

¹¹ A prefecture is a state or province in Japan. Currently there are 47 prefectures in Japan.

raw milk since 1991 (Larivière, 1999). The government also set an annual limit on the amount of milk that is eligible for the deficiency payment. Since 1995, this limit has been set at 2.3 million tons annually (Larivière, 1999).

Assistance to dairy processors is in the form of price stabilization programs. The government sets stabilization indicative prices. It then maintains market prices for dairy products in a range from +4 to -10 percent of the stabilization indicative prices through import control and stock management measures. In 1997, the stabilization indicative prices for designated products were: 1) butter = 965 ¥/kg; 2) SMP = 524 ¥/kg; 3) sugared condensed whole milk = 335 ¥/kg; 4) sugared condensed skim milk = 288 ¥/kg (Larivière, 1999). The stabilization indicative price can also be used to calculate the standard transaction price for milk. From a weighted average of the stabilization indicative prices, subtract an allowance for processing costs to get the standard transaction price for milk. The standard transaction price is then the price that the dairy industry can afford to pay for manufacturing milk (Boonekamp, 1995, Larivière, 1999).

The government enacts border measures to maintain domestic prices higher than the world prices for dairy products. Most important of these measures is the state import monopoly for designated dairy products. In addition, strict import quotas were imposed prior to 1995. The Uruguay Round Agreement transformed these import quotas into tariffs. Japan's tariffication resulted in very high levels of protection. Its in-quota tariffs are between 24 and 35 percent. These in-quota tariffs are relatively high even compared to other areas of high protection like the European Union and Canada. Japan also chose to

use a complex, combination tariff for its over-quota tariffs for dairy products. These tariffs combine an ad valorem tariff and a specific tariff that are summed to form the total tariff. In most cases, for dairy products, the specific tariff is prohibitive alone. For example the specific tariff portion of the over-quota tariff for butter is greater than the stabilization indicative price for butter. This means that even if butter were free on the world market it could not be imported. Japan's commitments under the Uruguay Round are summarized for select dairy products in Tables 2.15 to 2.16.

Table 2.15 Tariff Commitments (Japan)

	1995		2000	
	In-quota	Over-quota	In-quota	Over-quota
Fluid Milk (1)	25%	25% + 589 ¥/kg	25%	21.3% + 501 ¥/kg
Butter (2)	35%	35% + 1261 ¥/kg	35%	29.8% + 1072 ¥/kg
Cheese (3)	48%	-----	31%	-----
SMP (4)	25%	25% + 466 ¥/kg	25%	21.3% + 396 ¥/kg
WMP (5)	30%	30% + 962 ¥/kg	30%	25.5% + 817.5 ¥/kg

(1) Average of (0401)

(2) Average of (0405)

(3) Average of all cheese (0406)

(4) Average of (0402 10)

(5) Average of (0402 21)

Table 2.16 Minimum Access Commitments (Japan)

	1995	2000
Fluid Milk		
Butter	1,873	1,873
Cheese	-----	-----
SMP	230,344	230,344
WMP		

Japan does not export a significant amount of dairy product. Therefore, it does not have any export subsidy commitments.

2.4.5 New Zealand Dairy Policy

New Zealand is an exemption from the norm in OECD countries with respect to its dairy policy. The government has not directly supported its dairy sector since the mid 1980s (Larivière, 1999). New Zealand has seen its share of world milk production increase by 50 percent since 1992, while other milk producing nations have much smaller increases. For example, in Canada, the United States and the European Union milk production only rose 4, 3 and 6 percent respectively over the period 1992 – 1997 (Larivière, 1999). Also striking, is New Zealand's cost of production. New Zealand can produce milk at one-half the cost of Australia or the United States and less than a third of the cost of Holland (Larivière, 1999).

In New Zealand the milk market was totally deregulated and price controls eliminated over the period 1984 – 1993. These measures increased competition in both

the milk and dairy products markets. Processors compete for supplies of milk and to supply dairy products to the domestic and export markets. This has meant the producer prices for milk have risen in recent years while the prices of dairy products to consumers are close to world prices (Larivière, 1999). These reforms have given New Zealand's dairy sector a competitive advantage and enabled it to take advantage of trade liberalization in dairy products in the rest of the world.

An exception to New Zealand's competitive market for dairy products is its export market. New Zealand has a totally regulated export market through the New Zealand Dairy Board. The Dairy Board operates as a single deck exporter of dairy products. The Board is owned by the processor cooperatives, but the cooperatives compete to supply it. The Board purchases dairy products at the lowest price. This makes the marketing decision of the Dairy Board very important, as they can influence domestic prices. The New Zealand Dairy Board is the most important exporter of dairy products in the world (Larivière, 1999).

The low level of government involvement in the dairy sector meant that New Zealand had to make few commitments in the Uruguay Round with regard to dairy. Their only measure is a very low single stage tariff shown in Table 2.17.

Table 2.17 Tariff Commitments (New Zealand)

	Tariff
Fluid Milk	9.6%
Butter	9.4%
Cheese	18.8%
SMP	18.8%
WMP	18.8%

2.4.6 United States Dairy Policy

United States dairy policy has historically used three distinct but interrelated policy instruments to regulate milk marketing and distribution (Larivière, 1999; Meilke et al., 2001). First, is the Dairy Price Support Program, which is a program that purchases butter, skim milk powder and American cheese from processors at predetermined prices. The prices are set such that the price of milk used to produce the product is above the support price (Larivière, 1999; Meilke et al., 2001). This program was to have been gradually eliminated under the Federal Agriculture Improvement and Reform Act of 1996 but its elimination was been postponed several times. The 2002 Farm Bill or the Farm Security and Rural Investment Act has extended the Dairy Price Support Program to 2007 and created a new direct payment program. This new direct payment program pays farmers 45 percent of the difference between US\$16.94/cwt and the Boston Class I milk price. The payments are monthly from December 2001 to September 2005 and are capped at 2.4 million pounds annual marketing per farm (Jesse et al, 2002).

The other dairy support programs in the 2002 Farm Bill were simply carry-overs or extensions from the FAIR Act of 1996 and previous farm bill policies. The federal milk order system was one of these policies. This regulates regional milk prices paid by users and how these prices are translated into farm level prices (Meilke et al., 2001). The final form of assistance is that the government provides protection for the domestic dairy industry. It protects it in two ways. First, it restricts imports through tariff rate quotas and second, it disposes of surplus production by using export subsidies under the Dairy Export Incentive Program (Meilke et al., 2001). The 2002 Farm Bill extended the potential use of export subsidies to 2007.

Congress had implemented a number of policy reforms to increase the market orientation of the dairy industry since the Federal Agriculture Improvement and Reform Act was passed. This resulted in a threefold plan consisting of: 1) market consolidation; 2) basic formula price replacement; and 3) modification of the class I (fluid milk) price system (Meilke et al., 2001).

Market consolidation refers to changes in the federal milk order system. First, it would reduce the number of milk order from 31 to 11 (Bailey, 1999; Meilke et al., 2001). In the new system the milk order would set a minimum price for milk but the market would adjust prices above the minimum price in accordance with supply and demand. It would also allow price discrimination by end user, price pooling and regulations affecting the geographic distribution of milk (Meilke et al., 2001).

Replacing the basic formula price is intended to increase the dairy sector's price responsiveness. This resulted in changes in the classification of milk and in the formulas used to define class prices. The new formula is a multiple component pricing system that gives prices to individual milk components. This should make milk production and its allocation more market responsive (Meilke et al., 2001). Since the new pricing formula allows price discrimination based on end use, it ensures that the prices of dairy products are lower for those most likely to be traded (Summer, 1999; Meilke et al., 2001).

Changes in the Class I pricing structure mirror those in the Basic Formula Price above. Traditionally, the Class I price was based on adding the Class I price differential to the Basic Formula Price for fluid milk. Under the new system, Class I price is based on a multiple component price and a Class I price differential. The price differential, which ranges from US\$1.43/cwt to US\$4.25/cwt depending on the region, has been reduced in 9 out of the 11 marketing areas and raised in the others (Meilke et al., 2001). However, the direction of the United States dairy policy will not be fully known until the 2002 Farm Bill is finalized.

The United States' commitments under the Uruguay Round Agreement for dairy products are summarized in Tables 2.18 to 2.20. The United States made commitments in all three areas concerning trade in dairy products.

Table 2.18 Tariff Commitments (United States)

	1995		2000	
	In-quota	Over-quota	In-quota	Over-quota
Fluid Milk (1)	0.5¢/liter	1.7¢/liter	0.43¢/liter	1.5¢/liter
Butter (2)	12.3¢/kg	\$1.813/kg	12.3¢/kg	\$1.541/kg
Cheese (3)	12.5%	\$1.903/kg	11.6%	\$1.618/kg
SMP (4)	3.3¢/kg	\$1.018/kg	3.3¢/kg	86.5¢/kg
WMP (5)	6.8¢/kg	\$1.285/kg	6.8¢/kg	\$1.092/kg

(1) Average of (0401 20)

(2) Average of (0405 00 20; 0405 00 40)

(3) Average all cheese (0406)

(4) Average of (0402 10 10; 0402 10 50)

(5) Average of (0402 21 30; 0402 21 50)

Table 2.19 Minimum Access Commitments (United States)

	1995	2000
Fluid Milk		
Butter	4,020 tonnes	7,020 tonnes
Cheese	122,070 tonnes	141,941 tonnes
SMP	1,683 tonnes	5,683 tonnes
WMP	935 tonnes	3,885 tonnes

Table 2.20 Export Subsidy Commitments (United States)

	1995		2000	
	Volume	Budget (US \$)	Volume	Budget (US \$)
Butter	42,989 tonnes	44,792,000	21,097 tonnes	30,497,000
Cheese	3,829 tonnes	5,340,000	3,030 tonnes	3,636,000
SMP	108,227 tonnes	121,118,000	68,201 tonnes	82,464,000
WMP				

2.5 OECD AGRICULTURAL OUTLOOK

The OECD Agricultural Outlook (2000a) represents the baseline database for this study. Therefore, the assumptions used in calculating the outlook will affect the base against which all policy scenarios are evaluated. As such, understanding these assumptions is important when casting this study's results in a meaningful setting.

One of the important things about the baseline is when it was created. The OECD Agricultural Outlook 2000 was created in early 2000. It reports actual data for 1999 and earlier and projected estimates for 2000 to 2005.

The OECD Agricultural Outlook is calibrated using the World Agricultural Simulation Model or AGLINK. AGLINK is a non-spatial¹² model that simulates world prices of 23 agricultural commodities¹³ for 16 individual countries/regions¹⁴ and the rest of the world (OECD, 2000a). The model is closed using world market clearing identities. The model relies on three basic assumptions:

- 1) World and domestic markets are assumed perfectly competitive. World markets are composed of many sellers and buyers, none of whom can individually influence market prices significantly.

¹² Non-spatial means that there is no transportation or transaction costs in the model. All commodities clear at a single world price for each commodity.

¹³ The agricultural commodities are: wheat, barley, maize, oats, sorghum, rice, soybeans, rapeseed, sunflower seed, sugar, butter, cheese, skim milk powder, whole milk powder, whey powder, casein, oilseed meals, oilseed oils, poultry meat, eggs, beef, pork and sheep meat.

¹⁴ The countries / regions are: Australia, Canada, European Union (15), Hungary, Japan, Korea, Mexico, Poland, United States, Argentina, China, Czech Republic, New Zealand, Norway, Switzerland and Turkey.

- 2) Traded commodities are treated as homogeneous products, which preclude market segmentation on the basis of quality differences or on other grounds such as geographical location.
- 3) Non-agricultural markets and macroeconomic variables are treated as exogenous to the model. No feedback is established from changes in the agricultural market to macroeconomic variables. (Larivière, 1999)

2.5.1 Major Economic and Policy Assumptions

The model assumptions that non-agricultural markets and macroeconomic variables are exogenous mean that the model is dependent on the levels of these variables. Macroeconomic variables are in three areas: 1) GDP growth; 2) inflation rates; and 3) currency markets.

The GDP assumption in the 2000 AGLILNK model was that world average growth would be 3 percent in 1999, and increase to 3.5 percent in 2000, compared to actual growth rates of 2.8 percent in 1999 and 2.9 percent in 2000. After 2000, assumed GDP growth rates moderate to 2.6 percent for the OECD. In Asia, GDP growth is expected to remain strong and continue to grow to 2005. Latin America is expected to have positive growth in 2000 and beyond (OECD, 2000a). GDP growth for individual countries/regions is summarized in Table 2.21.

Table 2.21 Expected GDP Growth by Country/Region

Country/ Region	Units	1999	2000	2001	2002	2003	2004	2005
Australia	%	3.9	3.0	4.0	3.4	3.5	3.5	3.4
Canada	%	3.6	3.1	3.0	2.9	2.7	2.5	2.4
EU (15)	%	2.1	2.7	2.7	2.5	2.5	2.2	2.3
Hungary	%	3.8	3.5	3.7	4.1	4.5	4.6	4.6
Japan	%	1.4	1.4	1.2	2.1	2.2	1.7	1.8
Korea	%	9.0	6.5	5.7	5.5	5.3	5.0	5.0
Mexico	%	3.4	3.3	4.0	4.6	4.9	4.9	5.0
Poland	%	3.5	5.2	5.8	5.4	5.0	5.1	5.1
United States	%	3.8	3.1	2.3	2.0	3.0	3.4	3.4
Argentina	%	-1.1	1.7	3.0	4.7	4.1	4.1	4.1
China	%	7.0	6.8	7.0	7.5	7.6	7.6	7.6
New Zealand	%	2.7	3.5	3.3	2.8	2.7	2.6	2.6

Source OECD, 2000a; OECD, 2000c

The second macroeconomic assumption is the inflation rate. The OECD expects inflation to remain low in most of its member countries. The doubling of oil prices in 1999 was not expected to have much impact (OECD, 2000a). The inflation rates for individual countries/regions are given in Table 2.22.

Table 2.22 Expected Inflation by Country/Region

Country / Region	Units	1999	2000	2001	2002	2003	2004	2005
Australia	%	1.4	4.2	3.5	2.8	3.0	2.8	2.5
Canada	%	1.8	1.8	1.9	2.0	2.1	2.1	2.2
EU (15)	%	1.2	1.8	1.8	1.9	1.8	1.7	1.7
Hungary	%	9.9	8.0	6.0	5.2	4.0	3.5	3.2
Japan	%	-0.3	-0.3	-0.3	0.2	0.5	0.5	0.5
Korea	%	0.9	2.5	2.8	2.7	2.7	2.9	3.0
Mexico	%	16.5	10.7	8.7	7.6	7.0	6.6	6.3
Poland	%	7.0	7.1	5.4	4.5	4.1	3.7	3.6
United States	%	1.6	2.3	2.4	2.3	2.2	2.2	2.1
Argentina	%	8.1	2.3	2.5	2.7	3.1	3.6	3.9
China	%	-1.0	2.5	3.0	4.0	4.5	4.7	4.7
New Zealand	%	1.4	1.8	1.5	1.5	1.5	1.5	1.5

Source OECD, 2000a; OECD, 2000c

The third major macroeconomic assumption in AGLINK 2000 is exchange rates. Currency markets are assumed to be less volatile in the near future (OECD, 2000a). Stronger or weaker exchange rates will affect a country's export competitiveness so any change from the baseline will affect trade flows. Individual exchange rates relative to the US dollar for each country/region are listed in Table 2.23.

Table 2.23 Expected Exchange Rates by Country/Region

Country / Region	Units	1999	2000	2001	2002	2003	2004	2005
Australia	A\$/US\$	1.55	1.54	1.54	1.55	1.56	1.56	1.56
Canada	C\$/US\$	1.48	1.44	1.41	1.38	1.37	1.36	1.36
EU (15)	Euro/US\$	0.85	0.94	0.94	0.94	0.93	0.93	0.93
Hungary	Ft/US\$	236.0	247.6	251.0	260.2	266.4	271.5	275.9
Japan	¥/US\$	114.3	106.0	106.0	104.0	102.1	100.3	98.5
Korea	000won/US\$	1.19	1.20	1.20	1.20	1.21	1.22	1.23
Mexico	NM\$/US\$	9.59	9.61	9.61	10.14	10.65	11.17	11.69
New Zealand	NZ\$/US\$	1.89	1.95	1.95	1.94	1.93	1.93	1.92
Poland	Zl/US\$	3.95	4.24	4.37	4.48	4.57	4.65	4.72
Argentina	Pesos/US\$	1.00	1.00	1.00	1.00	1.00	1.00	1.00
China	Yuan/US\$	8.20	8.17	8.33	8.57	8.85	9.17	9.49

Source OECD, 2000a

The assumptions with respect to the macroeconomic variables, income and inflation, will have only a small or no influence on the policy analysis. These variables are internally consistent within the OECD outlook projections. This means that any change in income or inflation would cause corresponding changes in the OECD outlook projections and this nets out the effects in the policy analysis.

The exchange rate however can have significant impacts on the level of measured effective protection within the domestic markets. Therefore, the exchange rate will have a significant impact on the policy analysis. Nonetheless, if exchange rates are different then projected then all other macroeconomic variables will also change so it is difficult to know exactly how everything will work out in the end.

Another area involving major assumptions is national agricultural policy. The OECD Agricultural Outlook assumes the continuation of existing or announced agricultural policies in OECD member countries as of 1999. It does not account for any proposed policies that have not been implemented. It also assumes that all members comply with their Uruguay Round commitments and that these commitments are maintained until 2005. (OECD, 2000a)

2.5.2 Dairy Products

The OECD Agricultural Outlook also makes a number of assumptions that are specific to the dairy industry. There are five dairy specific assumptions in the 2000 OECD Agricultural Outlook:

- 1) The first stage of the dairy reforms under the Berlin Agreement with the increase in production quota in 2000/2001 has been included. The second stage in 2005/2006 has not been included.
- 2) The Australian domestic market support scheme to end on June 30/2001.
- 3) United States support prices to be decreased in 2001.
- 4) The new Japanese dairy policy announced in March 1999 is not included since implementation plans were not yet finalized.
- 5) Butter and cheese imports recover in 2000 and remain at an average per annum level of about 200,000 and 300,000 tonnes respectively in the New Independent States.

(OECD, 2000a)

Based on these dairy and general assumptions the AGLINK model makes the following projections. The world and OECD is expected to increase milk production between 1999 and 2005. The rate of increase is expected to be greater in the rest of the world than in the OECD. (Figure 2.2 and Table 2.1) The production growth of dairy products varies between the different products. Cheese production is expected to continue increasing and WMP production is expected to increase but by a lesser amount than cheese. Butter and SMP production is expected to remain relatively stable between 1999 and 2005 (Figure 2.3). World prices for all dairy products are expected to increase between 1999 to 2005 because of the recovering economies in Asia, Latin America and Russia (Figure 2.8) (OECD, 2000a).

2.6 SUMMARY

The first part of this chapter reviewed the evolution of production, consumption and trade in dairy products during the last three decades at the world level. The trend in dairy product production and consumption is a slight growth or relatively stable with the exception of cheese which has increased at a greater rate than the other dairy products. The first part also reviewed the distribution of dairy product production, consumption and trade amongst the major dairy producers in the OECD. Although it was shown that milk production is distributed across a large number of countries/regions, exports are dominated by four major exporters: EU(15), New Zealand, Australia and the United

States. While exports are concentrated into a few major exporters, imports are highly distributed among a large number of nations.

The second part reviewed the implication of WTO and GATT negotiations on the world dairy. It looked at these implications in three time periods: pre-Uruguay Round, the Uruguay Round and the post Uruguay Round. The treatment of agricultural trade from near exemption from GATT discipline in the pre-Uruguay Round period to full inclusion under the Uruguay Round Agreement can be followed by looking at these three time periods. The future treatment of agricultural trade by the current Doha Round of negotiations was dealt with in the post Uruguay Round period.

The third part reviewed the domestic dairy policies in select OECD countries/regions. A major feature that characterizes the dairy sector in all developed countries, except for New Zealand and to a lesser extent Australia, is the important role governments have played in shaping the industry. Dairy products remain highly protected from world markets and heavily supported in domestic markets. The result is the low levels of international trade seen in the first part of the chapter.

The final part of the chapter reviewed the OECD's AGLINK model and Agricultural Outlook based on the model. The importance of the Agricultural Outlook and the AGLINK model is that they form the base for the Guelph Dairy Trade Model discussed in Chapter 3. This is why it is important to understand the assumptions made in

the OECD Agricultural Outlook, since these are carried through to the Guelph Dairy Trade Model.

CHAPTER 3

THE GUELPH DAIRY TRADE MODEL

3.1 INTRODUCTION

This chapter presents a general overview of the Guelph Dairy Trade Model 1999 and a description of its problems and areas for further research. The chapter also reviews the structure of the current version of the Guelph Dairy Trade Model.

3.2 GUELPH DAIRY TRADE MODEL 1999

The 1999 model was a static, non-spatial, multi-sectoral, partial equilibrium model based on the OECD-AGLINK model. The principal change from the AGLINK model was in the treatment of the supply of dairy products. In AGLINK milk was allocated between dairy products through a hierarchical method where fluid milk, soft products and cheese were supplied enough milk to meet domestic demand and whatever milk was left over was made into butter or skim milk powder. Though somewhat arbitrary, this method appears to be consistent with the highly regulated dairy sector in the OECD. Profitability played little role in this allocation method, except through an assumed ranking of the products. The lack of emphasis on profitability made the model inadequate to study trade liberalization (Larivière, 1999). Under trade liberalization, especially free trade, profitability is what guides the allocation of milk to the various dairy products. To enable the study of trade liberalization, Larivière developed a model based on the dairy module of the OECD-AGLINK that incorporated milk allocation based on the profitability of processing different dairy products.

The AGLINK model was also inadequate in modeling the major aspects of trade liberalization, i.e., 1) tariff reductions; 2) expansion of minimum access; and 3) reduction in export subsidies. The effects of these trade liberalization policies had to be added to the model (Larivière, 1999).

The 1999 model has a three stage supply chain: “1) the farm level which determines raw milk production and milk component supply; 2) the processing level which determines the demand for milk components and the supply of processed dairy products; and 3) the retail level which determines the demand for dairy products” (Larivière, 1999). The model links the individual countries/regions at the world level. This is through price linkage equations, world price determination and trade flows.

The 1999 model simulates the demand for three traded dairy products (butter, cheese and skim milk powder) and two non-traded domestic products fat and solid non-fat. The demand for each domestic product is a function of its own price and income.

Though the 1999 model was an improvement over traditional dairy models, there were a number of problems and areas for further research required to refine and improve the Guelph Dairy Trade Model 1999.

3.2.1 Problems and Areas of Further Research

The problems and areas of further research were identified either by Larivière in his research (Larivière, 1999) or through a detailed review of the 1999 model. It is one of the goals of this research to address these points of concern. Each point of concern is addressed briefly in this section and then dealt with in subsequent sections of this chapter.

Problems and areas of research are:

- The static nature of the 1999 model and its inability to look at medium to long run outcomes of trade liberalization (Section 3.4)
- The treatment of different types of tariffs (Section 3.5)
- The 1999 model only allowed for single policy scenarios while real life scenarios have more complex policy arrangements (Sections 3.6 to 3.8)
- The 1999 model had only three traded dairy products. This does not represent all dairy trade and therefore an expansion in the number of traded products is necessary. It is also necessary to look at how the domestic commodities are treated (Section 3.9)
- The dairy product supply module of the model needs to be changed to allow for additional dairy products. Further research into the structure of this module is also needed (Section 3.10)
- The world market clearing identities were incomplete and needed to be corrected (Section 3.11)

The model also contained a number of minor arithmetic errors which were corrected during this research. The two main equations that were affected were the gross margin equation, for each product, and the milk supply equation in countries with supply management. These arithmetic errors were corrected but the basic structure of the theoretical model was left unchanged.

3.3 STRUCTURE OF THE GUELPH DAIRY TRADE MODEL

The generic structure of the Guelph Dairy Trade Model is illustrated in Figure 3.1. The general structure can be divided into three market levels, milk production, dairy processing and retail markets.

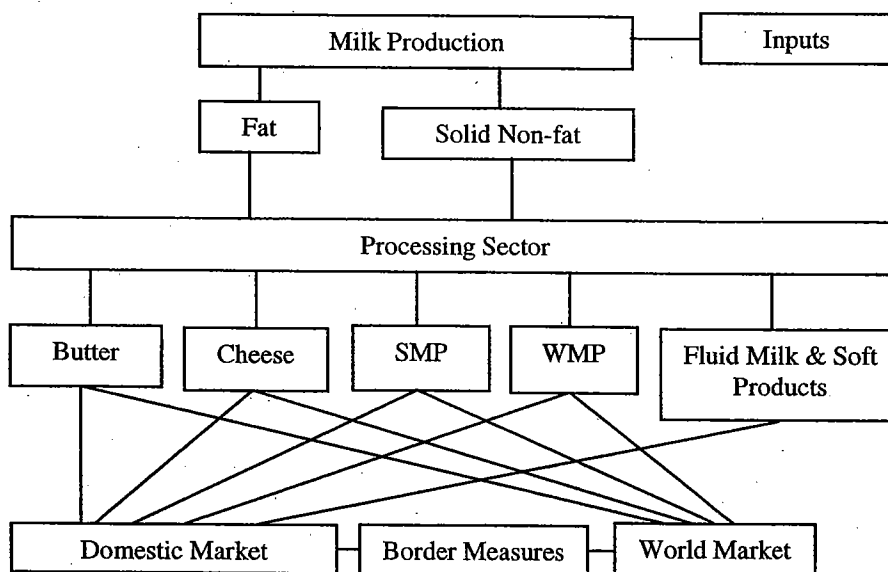
At the production level milk is produced and more specifically the milk components of fat and solid non-fat. The raw milk production level supplies fat and solid non-fat to the processing level based on information about fat and solid non-fat prices and demands from the processing level and exogenous input costs. The processing level converts the fat and solid non-fat into the dairy products butter, cheese, skim milk powder, whole milk powder and fluid milk¹⁵. Butter, cheese, skim milk powder and whole milk powder can be supplied to the domestic and world markets and fluid milk is only supplied to the domestic market. The processing level must also compete with the world market to supply the domestic market. The domestic and world markets provide price and demand information to the processing level. The domestic and world markets

¹⁵ The fluid milk category includes all fluid milk products such as fluid drinking milk, condensed and evaporated milk and soft dairy products such as ice cream and yogurt.

are linked through border measures that determine the difference in the domestic and world prices.

A general stylized version and a TROLL version¹⁶ of the model are found in Appendix 3 and Appendix 2 respectively. A list of all variables and their definitions and sources is in Appendix 1.

Figure 3.1: Generic Structure of the Guelph Dairy Trade Model



¹⁶ TROLL is the simulation software used in this study and the TROLL version of the model is the computer code used to simulate the model.

3.4 STATIC VS. DYNAMIC MODEL

The general nature of the 1999 model was that of a static model. This created a number of limitations. First, the effects of trade liberalization are not totally realized in the first year of the changes. The inability of the model to predict medium to long run outcomes was recognized as a shortcoming by Larivière (1999). Second, no multilateral trade agreement has ever been completely implemented in a single year. The phasing in of trade liberalization over an implementation period of several years is normal. The UR Agreement on Agriculture had an implementation period that started in 1995 and ended in 2001. For these reasons, a static, single year model is inadequate and a dynamic, multi-year model is needed.

The first thing required to facilitate the conversion of the model from a static model to a dynamic model is a multi-year baseline. This was obtained from the OECD Agricultural Outlook, which provided both historical and projected data. For the purposes of this study, the 2000 OECD Agricultural Outlook is used. It provides historical data back to 1970 and projects this data forward to 2005 for most agricultural commodities, including dairy products and milk.

The second thing that needed to be added to the model was the changes required to make the model dynamic. The equations changed were the milk production equations in each country/region. Inventories of dairy products were already dynamic and were left unchanged. The dairy product supply equations underwent substantial change, which is

discussed in Section 3.10, but were not made dynamic in this version of the model. This would be an area for further research and represents a current limitation of the model. A second limitation is that there are no forward expectations in the model and that all of the dynamics employ adaptive expectations. Since trade agreements are announced in advance of their implementation, it would be expected that producers and processors would develop expectations on future prices and quantities. Further research is needed in this area before rational expectations can be incorporated.

3.5 TYPES OF TARIFFS ON DAIRY PRODUCTS

One of the problems faced in modeling agricultural trade is the variety of tariff regimes employed by different countries and regions. This is definitely true in the case of dairy products. The six countries/regions discussed in Chapter 2 use a variety of different tariffs. Table 3.1 lists the types of tariffs employed in each case.

Table 3.1 Types of Tariffs Utilized by Country/Region

Australia	Specific Tariff (cheese only)
Canada	Ad valorem Tariff with specific minimum
EU(15)	Specific Tariff
Japan	Ad valorem Tariff plus a Specific Tariff
New Zealand	Ad valorem Tariff
United States	Specific Tariff, Butter Specific Tariff plus an Ad valorem Tariff

Australia has only a specific tariff on cheese, while allowing free trade in other dairy products. Canada uses ad valorem tariffs, but also has a minimum specific tariff.

The higher of the two tariffs is imposed. The European Union uses specific tariffs on all its dairy products. Japan has the most complex tariff system of all the countries above. It incorporates both an ad valorem and a specific tariff for each good. New Zealand uses an ad valorem tariff for dairy products. The United States has specific tariffs for dairy products except butter, where it uses a tariff similar to Japan. The problem that is created by these different tariffs is that domestic prices react differently to changes in the world price depending on the type of tariff in place.

The structure of each of these tariffs leads to a different price linkage equation. For simplicity two assumptions are made in the following calculations and the empirical model. First, the world and domestic prices are in the same currency. So, world prices must first be converted to the domestic currency before the tariff is added. Second, that transaction costs are zero. This is the greater of the two assumptions but since transaction costs are relatively small compared to the value of dairy products it can be made. The second reason for this assumption is that the empirical model is a non-spatial model so it cannot incorporate transaction costs by destination and origin. The one impact this assumption has is that the calculated tariff equivalents are higher than they would be if transfer costs were included and therefore the adjustments required by trade liberalization are likely overstated.

Therefore to understand the differences between the different tariffs it is necessary to look at both their form and responsiveness to changes in world price.

The ad valorem tariff structure is

$$(1) \quad P_d = P_w (1 + t_{av})$$

where

P_d = domestic price of the importing country

P_w = world price in domestic currency

t_{av} = percentage tariff.

The structure of the specific tariff is

$$(2) \quad P_d = P_w + t_s$$

where

P_d and P_w are the same as equation 1

t_s = a specific amount added to the world price.

The third type of tariff combines the structure of equations 1 and 2. The resulting structure is

$$(3) \quad P_d = P_w (1 + t_{av}) + t_s$$

Consider the responsiveness of the domestic price (P_d) to a change in world price (P_w) defined as.

$$(4) \quad \mathcal{E} = \frac{\partial P_d}{\partial P_w} * \frac{P_w}{P_d}$$

For the ad valorem tariff (equation 1)

$$(5) \quad \mathcal{E}_{av} = 1$$

This means that a 1 percent change in the world price (P_w) results in a one percent change in the domestic price. The results are different for the specific tariff. The response elasticity is

$$(6) \quad \epsilon_s = \frac{P_w}{P_w + t_s}$$

If the tariff and prices are positive, then $P_w + t_s > P_w$ and $\epsilon_s < 1$. Therefore, the response of the domestic price (P_d) to a one percent change in the world price (P_w) is less than one percent. The combination tariff produces an even more complex response to a change in world price

$$(7) \quad \epsilon_c = \frac{(1 + t_{av})P_w}{P_w(1 + t_{av}) + t_s}$$

Again, if positive tariffs and price are assumed, then $(1 + t_{av})P_w < P_w(1 + t_{av}) + t_s$ and $\epsilon_c < 1$. The effect of these different response elasticities is that the domestic prices of different countries will respond differently depending on the type of tariff they use. Therefore, the different responses of the specific and combination tariffs from the ad valorem tariff must be considered in modeling international trade.

3.5.1 Incorporating Ad Valorem and Specific Tariffs into the Model

In the Guelph '99 model (Larivière, 1999) all specific and combination tariffs were converted to their ad valorem equivalents exogenously and then held constant. This created problems in that the ad valorem equivalent gives the same response to a change in world prices as an ad valorem tariff. This means that the model increased the

responsiveness of countries with specific or combination tariffs. However, the use of ad valorem equivalent tariffs within the model is convenient for two reasons. First, the model uses effective tariffs, the actual difference between world and domestic prices, which were all calculated as ad valorem tariffs. In most cases the effective tariff is well below the bound over-quota tariffs. Since, it is necessary to compare the effective and over-quota tariffs in the model it is convenient to have them in the same form. The second reason is that some of the policy scenarios use a maximum tariff that is the same for all countries in the model. Again, this maximum tariff has to be compared to the effective and over-quota tariffs so it is convenient to have them all in the same form. Therefore the solution is to use ad valorem equivalent tariffs but to calculate the ad valorem equivalents endogenously in the model. This allows the ad valorem equivalent to adjust to each change in world price and thereby give the ad valorem equivalent the same response to changes in world price as the underlying specific or combination tariff.

To convert a specific tariff, the following equation was added for each traded good,

$$(8) \quad t_{ave} = \frac{t_{sp}}{P_w}$$

where

t_{ave} = ad valorem tariff equivalent of t_{sp} , the specific tariff

P_w = world price in domestic currency.

In the case of the combination tariff, the following equation is added,

$$(9) \quad t_{ave} = \frac{t_{sp}}{P_w} + t_{av}$$

where

t_{ave} , t_{sp} and P_w are the same as above

t_{av} = ad valorem tariff added to the specific tariff.

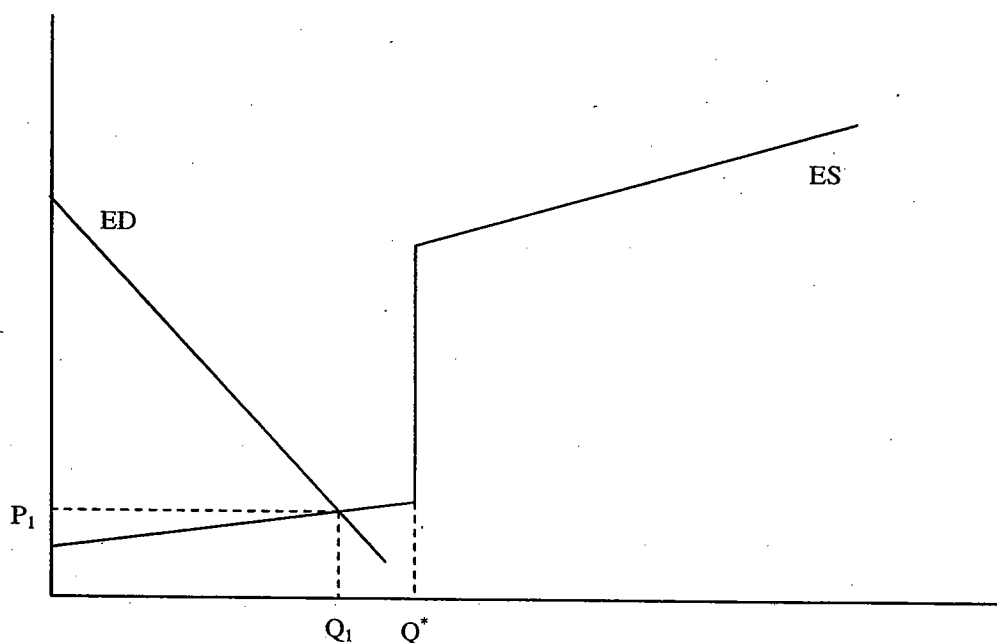
3.6 TARIFF RATE QUOTA

The technique for analyzing the economic implications of tariff rate quotas, using the partial equilibrium framework, has been established in the literature (Moschini, 1991; Hossain and Jensen, 1994; Abbott and Pearlberg, 1998; Morath and Sheldon, 1999; Meilke and Larivière, 1999; Larivière, 1999). A tariff rate quota is a complex tariff that incorporates two tariffs and a minimum access amount. The two tariffs are a lower or in-quota tariff¹⁷ and a higher or over-quota tariff. The way the tariff rate quotas work is that imports are assessed the lower, in-quota tariff until the quantity of import reaches the minimum access amount. At this point, the higher, over-quota tariff is assessed. The result is that the importing country faces a kinked excess supply curve (ES) shown in Figures 3.2 to 3.4.

Price is determined where the importing country's excess demand curve intersects the kinked excess supply curve. This produces three possible outcomes. The first is shown in Figure 3.2 and occurs when the excess demand curve (ED) intersects the excess supply

curve (ES) at a quantity less than the minimum access amount (Q^*). This is the simplest result, as the tariff rate quota acts as a simple tariff with a tariff rate equal to the in-quota tariff rate. It gives the resulting price and quantity, P_1 and Q_1 , which are both the domestic and world prices if the in-quota tariff is zero.

Figure 3.2 TRQ with Demand less than Minimum Access Amount

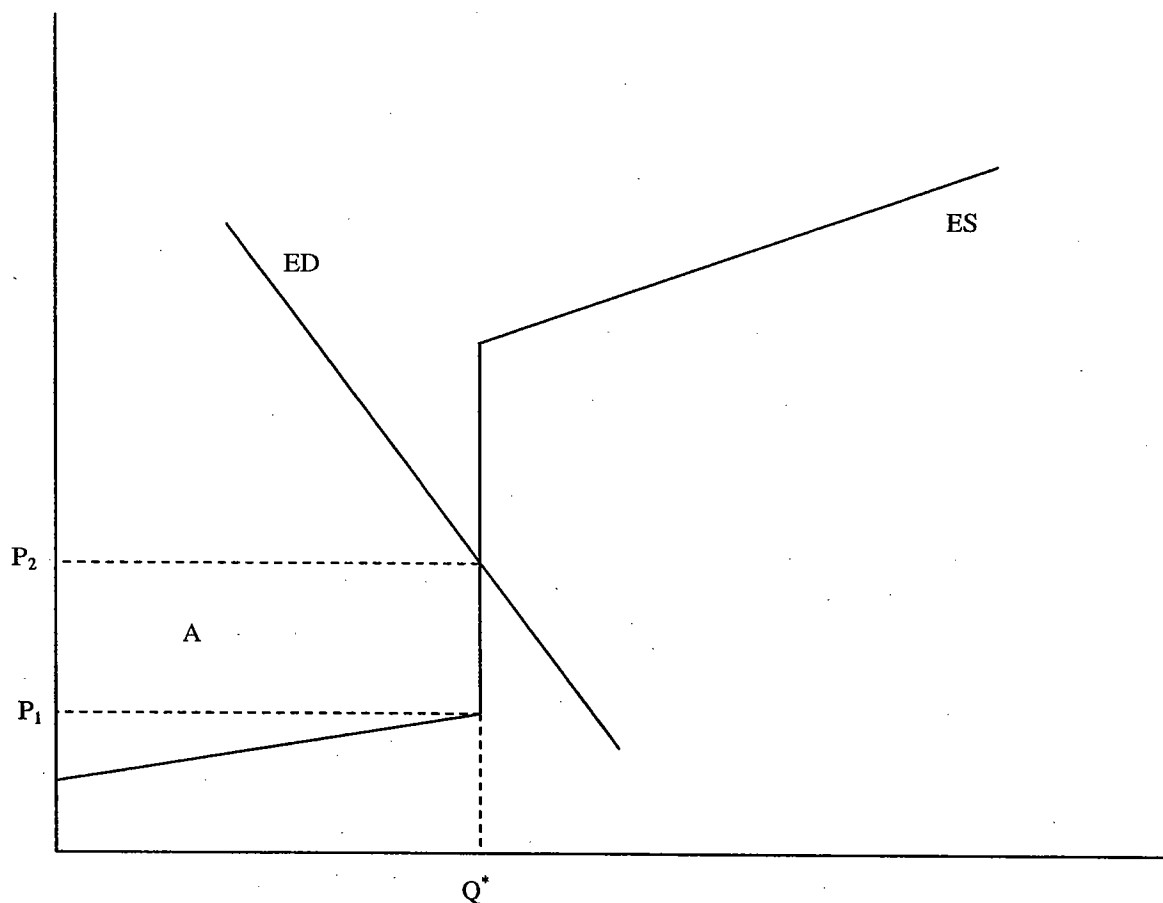


The second possible outcome is shown in Figure 3.3. Here, the excess demand curve (ED) intersects the excess supply curve (ES) at Q^* , in the vertical section of the excess supply curve. In this case, the tariff rate quota acts as an import quota, restricting imports to Q^* and generating domestic price P_2 and world price P_1 . This case produces an economic rent equal to area A, because the domestic price (P_2) is greater than the world price (P_1) necessary to import Q^* . The difference between these two prices, times the

¹⁷ For this study the in-quota tariff is assumed to be zero.

quantity imported is equal to the economic rent. The distribution of the economic rent depends on who holds the right to import and how the rights are allocated.

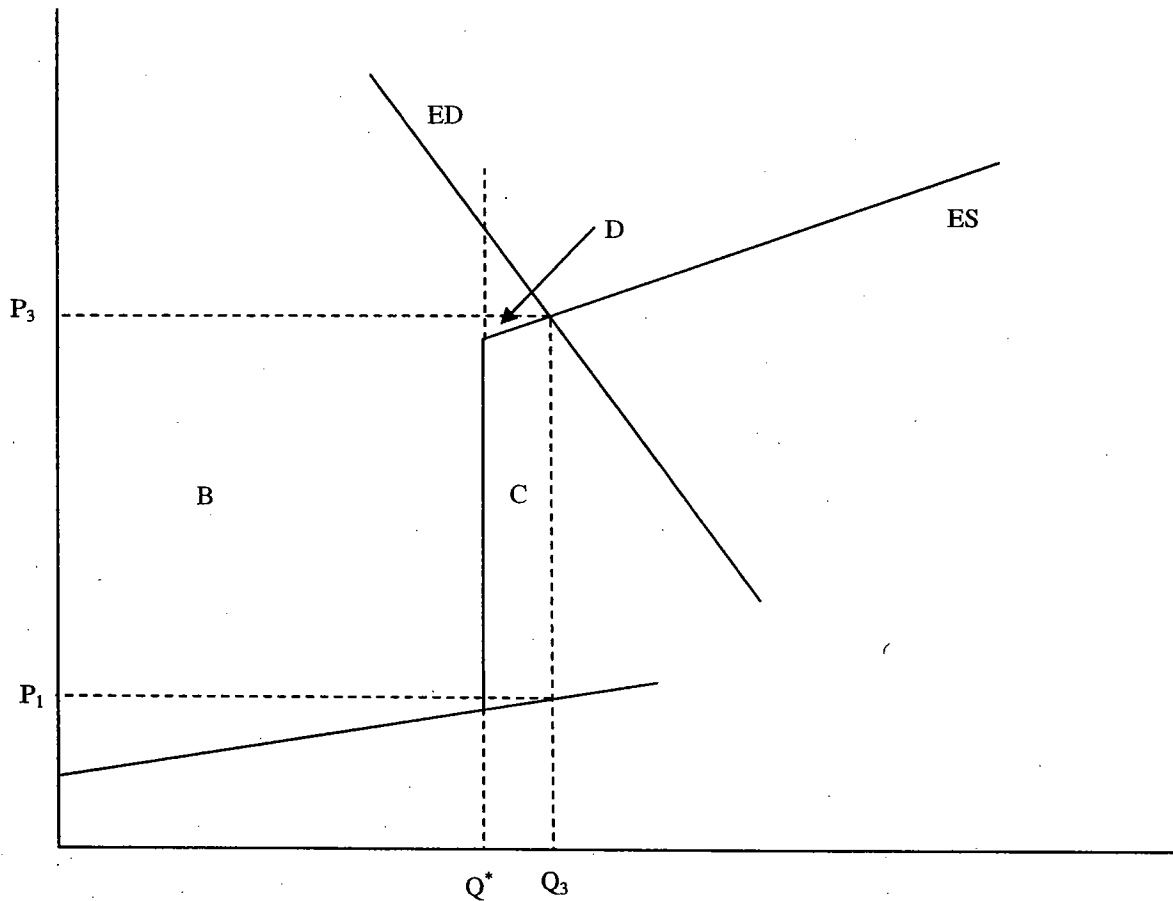
Figure 3.3 TRQ with Demand equal to Minimum Access Amount



The third outcome is where the excess demand curve (ED) intersects the excess supply curve (ES) at a quantity greater than the minimum access amount, Q^* , and is shown in Figure 3.4. In this case, imports are above the minimum access amount. Imports up to Q^* are assessed the in-quota tariff rate and all imports above Q^* are assessed the over-quota. The total quantity imported is Q_3 ; the domestic price is P_3 and the world price

(P_1). This case also produces an economic rent equal to area B and tariff revenue equal to C + D.

Figure 3.4 TRQ with Demand greater than Minimum Access Amount



3.6.1 Incorporating Tariff Rate Quotas into the Model

As shown in Figure 3.2 to Figure 3.4 tariff rate quotas are conceptually straightforward. However, how to incorporate TRQs into a dynamic commodity model is less obvious. Essentially, the task is to determine for a given level of minimum access, if the minimum access amount is binding. The job of determining if the TRQ is binding is

made easier when it is realized that for a given minimum access amount, i.e., net trade quantity, the country models can be solved individually for domestic market clearing prices.

Consider Figure 3.5 and a minimum access amount equal to Q_{\min} . Fixing the imports at Q_{\min} , three domestic price outcomes are possible in the importing country. First, if the excess demand curve is ED_1 , the domestic price consistent with Q_{\min} is P_1 , if the excess demand curve is ED_2 , the domestic price consistent with Q_{\min} is P_2 , and if the excess demand curve is ED_3 , the domestic price consistent with Q_{\min} is P_3 . Now, relaxing the assumption that imports are fixed, if the TRQ is binding, then the domestic price is P_2 . However, in case one the domestic price can never be below the world price plus the in-quota tariff (P_{IQ})¹⁸, so with ED_1 the importing country's price equals the world price and the quantity imported is Q_{w1} . Likewise, with ED_3 the importing country's price can never be above the world price, including the over-quota tariff. In this situation the domestic price is P_{OQ} and quantity Q_{w2} is imported. To reach the proper solution the following two-step procedure is used after specifying a minimum access quantity and solving the individual country models for the market clearing price consistent with the fixed import amount:

Step1: Select the minimum of P_{OQ} and the price generated at the minimum access quantity (P_{MA}), either P_1 , P_2 or P_3 .

Step 2: Select the maximum of P_{IQ} and the price selected above.

¹⁸ In the model the in-quota tariff is assumed to be zero so P_{IQ} becomes the world price.

This then determines the price that is seen in the domestic market. It enters the model as follows:

$$P_d = \text{MAX}\{\text{MIN}\{P_{MA}, P_{OQ}\}, P_{IQ}\}$$

where

P_d = domestic price

P_{MA} = either P_1 , P_2 or P_3 in Figure 3.5

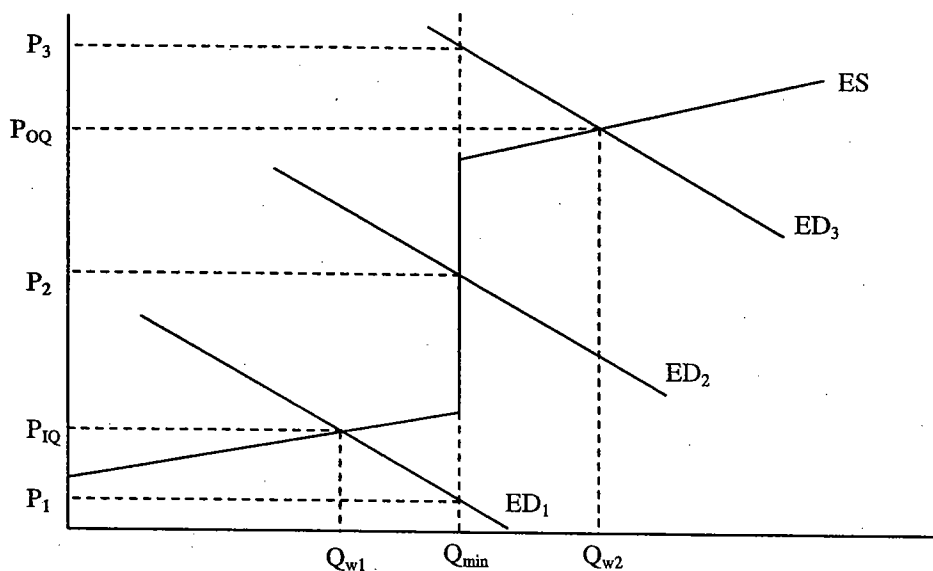
P_{OQ} = over-quota price

P_{IQ} = in-quota price

MAX = maximum value in the set

MIN = minimum value in the set

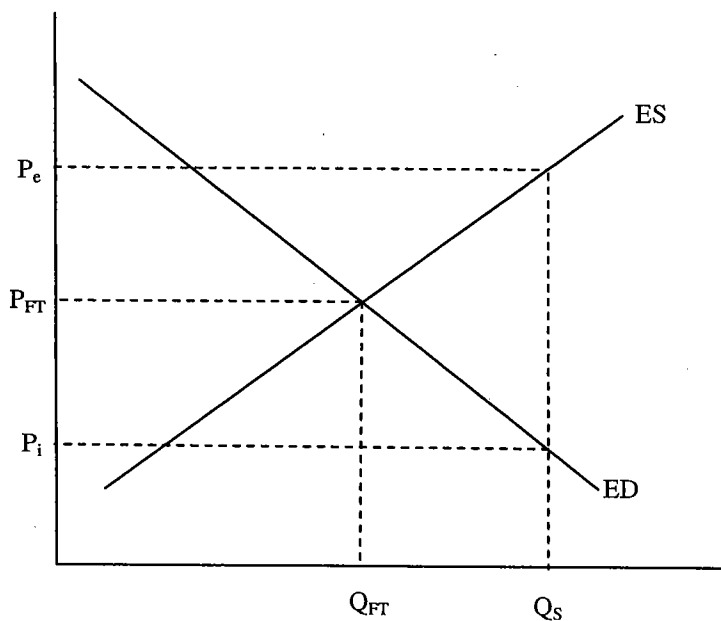
Figure 3.5 Modeling Tariff Rate Quotas



3.7 EXPORT SUBSIDIES

Accounting for export subsidies is somewhat simpler than for tariff rate quotas, but they have similar effects on the domestic market. The use of export subsidies, as shown in Figure 3.6, allows domestic exporters to receive a higher net price (P_e) and compete with a lower world price by supplying imports at a lower price (P_i) with the difference between P_i and P_e being the export subsidy. This also increases the quantity traded from Q_{FT} to Q_s .

Figure 3.6 Export Subsidies



3.7.1 Incorporating Export Subsidies into the Model

Export subsidies are incorporated into the model in the same way as tariff rate quotas. A decrease in the quantity of exports that are subsidized reduces the country's net exports. It is done as follows:

$$Q_{ES}^* = NT - (Q_{ES} R_{ES})$$

where

NT = net trade in the baseline

Q_{ES}^* = new net trade level, incorporating export subsidy reduction

Q_{ES} = total quantity of subsidized exports

R_{ES} = total percentage reduction.

Having determined Q_{ES}^* mathematically above, it can be illustrated as the shift from Q_{ES} to Q_{ES}^* in Figure 3.7. Figure 3.7 shows that for each level of Q_{ES} there is a unique domestic price (P_E) that is required to produce that level of excess supply. So, as the amount of subsidized exports decreases from Q_{ES} to Q_{ES}^* the domestic price will decrease from P_E to P_E^* . However there is a limit to these reductions. If the quantity of subsidized exports was reduced to Q_{ES}^o the resulting price is less than the free trade price P_{FT} . This situation is impossible since domestic producers can always sell at the free trade, unless a domestic export tax is levied and that is ruled out. This means that the

domestic price resulting from a reduction in subsidized exports (P_E^*) can never fall

below the free trade or world price (P_{FT}). This enters the model as:

$$P_d = \text{MAX}\{P_E, P_{FT}\}$$

where

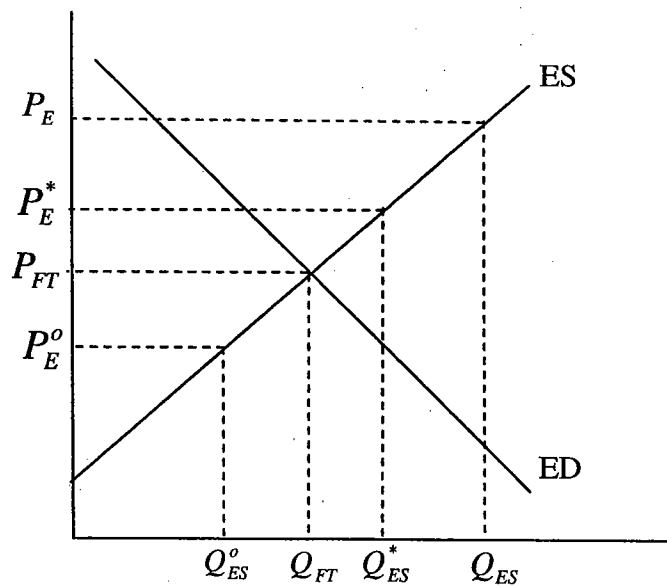
P_d = domestic price

P_E = export price

P_{FT} = free trade or world price

MAX = maximum value in the set.

Figure 3.7 Export Subsidy Reductions



3.8 DEALING WITH MULTIPLE POLICY SCENARIOS

Sections 3.6 and 3.7 present how you would deal with tariff rate quota and export subsidy liberalization individually. In order to handle multiple policy scenarios you must be able to combine changes in tariff rate quotas and export subsidies together. This is made easier by realizing that an increase in minimum access and a decrease in subsidized exports has the same effect on net trade and these effects are additive. This is best seen in an example. If a country's net trade is 3,000 tonnes of net exports and it must increase minimum access by 300 tonnes and decrease subsidized exports by 200 tonnes. The resulting net trade is as follows. An increase in imports, exports held constant, decreases net trade; therefore increasing minimum access by 300 tonnes will decrease net trade to 2,700 tonnes. A decrease in subsidized exports has the same effect of reducing net trade therefore a reduction in subsidized exports of 200 tonnes would reduce net trade a further 200 tonnes to 2,500 tonnes. Therefore the new net trade is calculated as:

$$NT_1 = NT_0 - \Delta MA - \Delta EX$$

where

NT_1 = the new net trade

NT_0 = the original net trade

ΔMA = the change in minimum access

ΔEX = the change in subsidized exports

With the new policy induced net trade calculated it is possible to calculate an internal domestic price that is consistent with the new calculated net trade. This is done

within each of the individual countries that are affected by these policy changes by inserting the new net trade into the country model and solving for the market clearing domestic prices. This then produces a domestic price that is internally consistent with the new net trade levels. However, this internal price is still subject to the price limits shown in Sections 3.6 and 3.7; it cannot be greater than the world price plus the over-quota tariff, or less than the world price. This means that if the internal price is greater than the world price plus the over-quota tariff then the domestic price is the world price plus the over-quota tariff. If the internal price is less than the world price then the domestic price is the world price. If the internal price is between the world price and the world price plus the over-quota tariff then the domestic price is the internal price. This enters the model as the following logic statement:

$$P_D = \text{MAX}\{\text{MIN}\{P_{NT}, P_{OQ}\}, P_W\}$$

where

P_D = the domestic price

P_{NT} = the internal price resulting from the new net trade level

P_{OQ} = the world price plus the over-quota tariff in domestic currency

P_W = the world price in domestic currency

This formula is then repeated for each of the traded dairy products in the model.

3.9 ADDITIONAL PRODUCTS ADDED TO THE MODEL

The expansion of the system of equations for the supply of dairy products in the 1999 model was seen as an important area for further research by Larivière (1999). The three disaggregate dairy products (butter, cheese and skim milk powder) in the 1999 model only accounted for 56 percent of the value of world dairy trade (Figure 2.9). Further dis-aggregation will increase the percentage of traded dairy products accounted for in the model. The logical product for inclusion is whole milk powder. It represents almost 24 percent of the value of dairy trade, the second highest after cheese (Figure 2.9), and has a significant amount of its world production traded, at 43 percent. Whole milk powder was excluded from the 1999 model due to incomplete data at the time. In 2000, a complete data set for whole milk powder was available from the OECD Agricultural Outlook, so its addition was possible.

The removal of whole milk powder from the residual product category means that fluid milk and soft dairy products now dominate the residual category. This means that the residual is “more” like a homogenous product because the general characteristic of the different products are similar. This becomes important, as the treatment of the residual needed to be re-examined.

The re-examination of the treatment of the residual product became necessary due to a result in the 1999 model. In the 1999 model, with the exception of total free trade, there was little price transmission from the processor level to the producer level. Price

changes of over 10 percent for dairy products resulted in less than a 1 percent change in the price of milk (Larivière, 1999). Upon closer inspection of the results, it was found that the residual fat and residual solid non-fat were acting as shock absorbers to the price changes. The two residuals were simply releasing or absorbing the amount of fat or solid non-fat that was needed to bring about equilibrium. This meant that only small adjustments in the price and quantity of milk were needed. A related problem was that the two residuals did not have to release or absorb fat and solid non-fat in any fixed ratio, resulting in a physical change in the composition of the residual.

The solution to the problem was to treat the residual as a single product with a price, quantity produced and a fixed composition¹⁹. The composition of the residual was calculated from the baseline for each year and held constant during the simulation. This means that the residual could only release or absorb milk components in a fixed ratio, preventing a change in the physical nature of the residual product and limiting changes in the total quantity produced. The total quantity of the residual was set at the sum of the mass of fat and solid non-fat in the residual. The price of this residual product was set somewhat arbitrarily, so that its processing margin was 150 percent of the average margin of butter and skim milk powder. The actual price of the residual is less important than its quantity reaction to changes in the price of other products. The demand elasticity was set at the elasticity of fluid milk because it represents the largest product in the residual. The residual then entered the 2001 model as a fifth product in the supply and demand sets or equations and was renamed fluid milk, but remained an un-traded product. Market

¹⁹ In order to do this it was necessary to assume that the residual products conformed to the composite commodity theorem.

clearing for it was determined domestically in each country/region by setting demand and supply equal.

The 2001 model has four traded products (butter, cheese, skim milk powder and whole milk powder) and one non-traded product (fluid milk), compared to the 1999 model which had three traded products (butter, cheese and skim milk powder) and two non-traded products (residual fat and residual solid non-fat).

3.10 DAIRY PRODUCT SUPPLY MODULE

The system of dairy product retail supply equations posed a different problem. In both the 1999 and 2001 models, the existing equation set was almost impossible to estimate using statistical tools and get results consistent with economic theory. It was also found that many of the cross effects in the equation set were not statistically significant and therefore being set to zero. The quantity of product supplied also seemed far more inelastic than seemed reasonable, especially compared to results from optimization models.

The next step was to replace the supply equations. It was decided to use a simpler set of supply equations where the production of a dairy product is dependent only on its own margin, with no cross effects. One of the concerns was whether the expected technical relationships that had existed in the previous set of supply equations would remain after removing cross effects. After repeated sensitivity testing, it was found that

the technical relationships did still remain. Thus, the production of butter and skim milk powder was complimentary in production and the production of all other dairy products was competitive in production. Therefore, the resulting equation for the supply of dairy products is

$$Q_j = \alpha + \beta(MG_j)$$

where

Q = quantity of the j^{th} good produced

MG = gross margin of the j^{th} good

j = butter, cheese, skim milk powder, whole milk powder and residual

The calculation of the parameters for each dairy product in each country/region will be dealt with in Chapter 4.

3.11 WORLD MARKET CLEARING IDENTITIES

The world market clearing identities in the 1999 model were incomplete. They set world consumption equal to world production, with no allowance for changes in world inventories or waste. This failure to recognize changes in world inventories in the 1999 model was also inconsistent with the net trade equations in the countries/regions, since the world market clearing identities are equivalent to setting world net trade to zero. Therefore, the new world market clearing identities for each commodity are

$$QC_i = QP_i - (ST_i - ST_{i-1}) + WA_i$$

where

QC_i = quantity of world consumption

QP_i = quantity of world production

ST_i = year end inventory level

WA_i = waste and statistical error

i = butter, cheese, skim milk powder, whole milk powder

3.12 WELFARE CALCULATIONS IN THE GUELPH DAIRY TRADE MODEL

The calculation of total welfare in the model occurs in four distinct parts. These are producer surplus, processor surplus, consumer surplus and welfare changes due to border measures.

3.12.1 Producer Surplus

The technique of measuring producer surplus is dependent on the nature of the market in which the producer operates. The calculation of producer surplus in a competitive market is different than in a regulated market.

3.12.1.1 Producer Surplus in a Competitive Market

The monetary change in producer surplus (PS) is defined as the area above the supply curve and below the price in Figure 3.8 or:

$$PS = PQ - \int_{Q_0}^{Q_1} P^q(Q) dQ$$

where

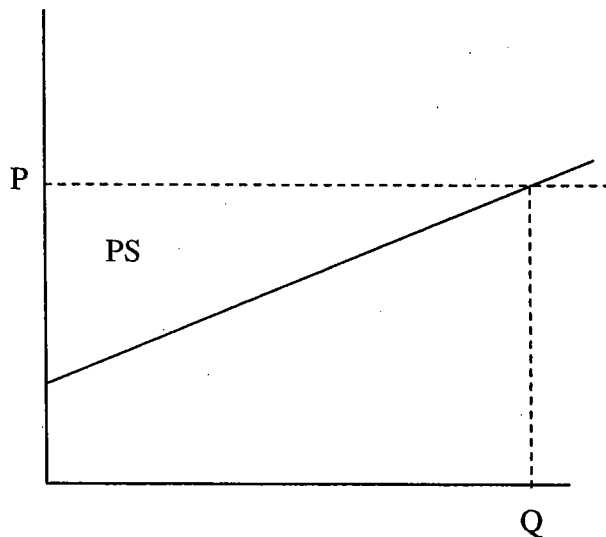
$P^q(Q)$ is the price dependent supply equation

P is the producer price

Q is the quantity supplied

Subtracting the producer surplus before the policy change from the producer surplus after the policy change gives the change in producer surplus caused by the policy change.

Figure 3.8: Producer Surplus, Competitive Market



3.12.1.2 Producer Welfare in a Quota Regulated Market

To calculate the producer welfare in a regulated market requires the calculation of two components. The first component is the quota rent (R)

$$R = (P_d - MC) * Q$$

where

R is the quota rent

P_d is the domestic price

MC is the marginal cost

Q is the quantity produced

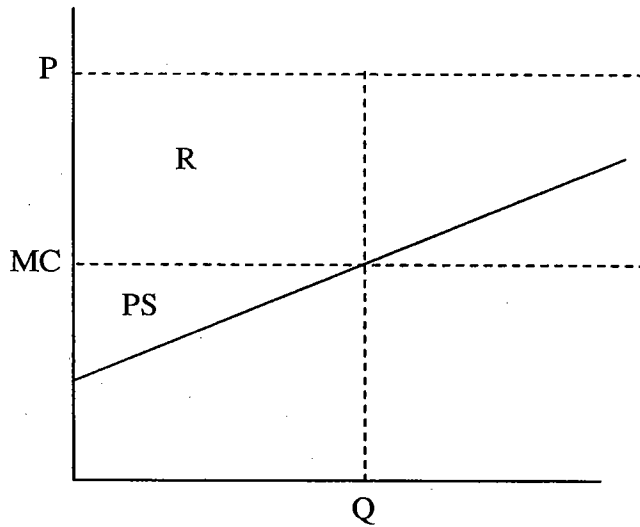
This can also be seen as the area R in Figure 3.9.

The second component of the producer welfare is the area above the supply curve and below the marginal cost (MC) in Figure 3.9 or $MC * Q - \int_0^{MC} P^q(Q) dQ$ or producer surplus. The total producer welfare is then the sum of these two components

$$PW = (P_d - MC) * Q + (MC * Q - \int_0^{MC} P^q(Q) dQ)$$

The change in producer welfare is the difference between the producer welfares before and after the policy change.

Figure 3.9: Producer Welfare, Regulated Market



3.12.2 Processor Surplus

The gross margin or marketing margin represents a per unit gross profit for the processor. Multiplying the per unit gross profit by the quantity produced provides a measure of total gross profit. Any change in the total gross profit is used as a proxy for the a change in the processor welfare. An increase in total profit is an increase in processor welfare and a decrease means a decrease in processor welfare.

$$\Delta PCS = [(M_1 * Q_1) - (M_0 * Q_0)]$$

where

M is the gross margin

Q is the quantity produced

The processor surplus for the entire dairy processing sector is arrived at by summing the processor surplus for all dairy products.

3.12.3 Taxpayer Welfare

The welfare change at the border equals changes in import quota rents and tariff revenue. It is calculated as the difference between the domestic and world prices multiplied by quantity of net trade

$$PSBM = (Q_{NT1} - Q_{NT0}) * [(P_{d1} - P_{w1}) - (P_{d0} - P_{w0})]$$

where

P_d is the domestic price

P_w is the world price

Q_{NT} is the quantity of net trade

The change in taxpayer welfare is the difference between before and after the change in policy. The total measure of welfare change at the border is the sum of the welfare change at the border for all dairy products.

3.12.4 Consumer Surplus

The measurement of consumer surplus is the area under the demand curve and above the domestic price. It is calculated as

$$CS = \int_{Q_0}^{Q_1} P^q(Q)dQ - PQ$$

where

P^q is the price dependent demand equation

P is the price

Q is the quantity demanded

DQ is the change in quantity produced

For the total change in consumer welfare, sum the changes in consumer surpluses over all dairy products.

3.13 Summary

This chapter looked at the development and changes in the Guelph Dairy Trade Model. The first part summarized the 1999 Guelph Dairy Trade Model developed in Larivière, 1999. This part also identified a number of problems and areas of further research in the model. The second part of the chapter looked at the general structure of the model and changes made to the model to address the problems and areas of further research identified in the first part of the chapter. The last part of the chapter looks at how to calculate welfare changes in the Guelph Dairy Trade Model.

Having looked at the general structure and changes to the model in Chapter 3, Chapter 4 will look at the specific parameters used in the model.

CHAPTER 4

2001 MODEL PARAMETERS AND TECHNICAL RELATIONSHIPS

4.1 INTRODUCTION

This chapter will present the parameters and technical relationships used in the Guelph Dairy Trade Model 2001 presented in Chapter 3. The chapter is divided into the following three major modules in each country section of the model: producer, processor and retail modules.

4.2 PRODUCER MODULE

The first major technical relationship that needs to be considered is the percentage of milk fat and solid non-fat in each country/region's milk. These percentages are important because the model uses a component pricing system to determine the price of milk. Since the percentage of the components can be different between countries/regions and even between years within a country/region, it was necessary to get a time series of component percentages for each country/region. The OECD Agricultural Commodities Outlook Database 1970 – 2005 (2000c) does provide a historical and projected timeline for milk fat percentage in all the countries/regions within the model, but it does not include a similar timeline for solid non-fat percentage. This problem can be solved by using a formula developed by Pratt et al. (1996) that links the percentage of fat to the percent of solid non-fat together. The calculation of the total milk solids and the amount of water in the milk can then be calculated. It is also the percentage fat and solid non-fat as a percentage of the useable components of milk. This is important as the price of milk

is based on the useable portion only, as the water has no value and the percentage of useable for fat and solid non-fat becomes the weighting for the final milk price.

Table 4.1 lists the percentage fat from the OECD baseline and the calculated solid non-fat as well as the other calculated percentages for each country/region and each year. From Table 4.1, it can be seen that Australia's fat and solid non-fat are expected to remain stable at 4.11 percent fat and 9.01 percent solid non-fat over the 5 year period. Similar stable conditions are seen in Japan, New Zealand and the Rest of the World with percentage fat of 3.70, 5.00 and 4.01 percent and solid non-fat of 8.77, 9.55 and 8.95 percent respectively. Canada and the EU(15) are expected to increase their percentage from 3.80 to 3.84 and 4.12 to 4.15 percent for fat and 8.83 to 8.85 and 9.02 to 9.04 percent for solid non-fat respectively. The US is the only country/region expected to see a decrease in the levels of fat and solid non-fat in their milk. The percentage of fat is to decrease from 3.69 to 3.65 percent and solid non-fat from 8.76 to 8.74 percent.

The next set of important parameters is the milk supply elasticities for each country and the regulator response elasticities for those countries with regulated markets. The milk supply function for all countries have current production dependent on two decision variables current price and the level of past milk production but past milk production is also dependent on past milk prices. This means there are two different price elasticities, the short-run and long-run elasticities. The short-run elasticity is the change in current production resulting from a change in the current price of milk. The long-run elasticity fully incorporates changes in the expected price of milk where the

expected price is a geometrically weighted average of current and past milk prices. The expected price weights the current price the highest and the weight decreases on past prices as the time between the past period and current period increases. This makes the long-run elasticity more elastic than the short-run elasticity since it allows producers time to fully adjust to the price changes.

Table 4.1: Milk Fat and Solid Nonfat Contents in Percentage by Country and Year

Region	Year	Raw Cow's Milk				%Usable in Milk	
		Water	Fat (1)	SNF (2)	Total	Fat	SNF
Australia	2001	86.88	4.11	9.01	13.12	31.32	68.68
	2002	86.88	4.11	9.01	13.12	31.32	68.68
	2003	86.88	4.11	9.01	13.12	31.32	68.68
	2004	86.88	4.11	9.01	13.12	31.32	68.68
	2005	86.88	4.11	9.01	13.12	31.32	68.68
Canada	2001	87.37	3.80	8.83	12.63	30.09	69.91
	2002	87.36	3.81	8.83	12.64	30.14	69.86
	2003	87.34	3.82	8.84	12.66	30.18	69.82
	2004	87.33	3.83	8.84	12.67	30.22	69.78
	2005	87.31	3.84	8.85	12.69	30.26	69.74
EU(15)	2001	86.86	4.12	9.02	13.14	31.36	68.64
	2002	86.84	4.13	9.03	13.16	31.39	68.61
	2003	86.84	4.13	9.03	13.16	31.39	68.61
	2004	86.83	4.14	9.03	13.17	31.43	68.57
	2005	86.81	4.15	9.04	13.19	31.47	68.53
Japan	2001	87.53	3.70	8.77	12.47	29.68	70.32
	2002	87.53	3.70	8.77	12.47	29.68	70.32
	2003	87.53	3.70	8.77	12.47	29.68	70.32
	2004	87.53	3.70	8.77	12.47	29.68	70.32
	2005	87.53	3.70	8.77	12.47	29.68	70.32
New Zealand	2001	85.45	5.00	9.55	14.55	34.36	65.64
	2002	85.45	5.00	9.55	14.55	34.36	65.64
	2003	85.45	5.00	9.55	14.55	34.36	65.64
	2004	85.45	5.00	9.55	14.55	34.36	65.64
	2005	85.45	5.00	9.55	14.55	34.36	65.64
USA	2001	87.55	3.69	8.76	12.45	29.64	70.36
	2002	87.57	3.68	8.75	12.43	29.60	70.40
	2003	87.61	3.65	8.74	12.39	29.47	70.53
	2004	87.60	3.66	8.74	12.40	29.51	70.49
	2005	87.61	3.65	8.74	12.39	29.47	70.53
Rest of the World	2001	87.04	4.01	8.95	12.96	30.93	69.07
	2002	87.04	4.01	8.95	12.96	30.93	69.07
	2003	87.04	4.01	8.95	12.96	30.93	69.07
	2004	87.04	4.01	8.95	12.96	30.93	69.07
	2005	87.04	4.01	8.95	12.96	30.93	69.07

(1) OECD, 2000c

(2) Pratt et al., 1996 (SNF = 6.535 + 0.6031 Fat)

The milk supply equation also contains a cross price elasticity with respect to the price of feed. In all cases, this elasticity is small with the highest being for the United States at -0.04 and the lowest being Australia and New Zealand that have no cross price elasticity because of their high reliance on grass for feed. However, the cross price elasticity with feed plays no role in the simulations because the dairy module is simulated separately from the crop module. If the dairy module was part of a larger agricultural trade model then there would be feedback between the dairy and feed markets. The supply elasticities for each country/region are listed in Table 4.2.

Table 4.2: Elasticities Used in the Milk Supply Equations

Region	Elasticities		
	Milk Price Short-run	Milk Price Long-run	Feed Price (1) Short-run
Australia	0.5	1	-
Canada	0.5	1	-0.02
EU(15)	0.3	0.6	-0.01
Japan	0.3	0.6	-0.01
New Zealand	0.3	0.6	-
USA	0.5	1	-0.04
Rest of the World	0.4	0.8	-0.02

(1) Larivière, 1999

For the three countries/regions that have regulated markets, the regulator response to changes in the milk price and the demand for milk fat must be taken into account. In all three cases, the demand for milk fat has a more elastic response. All three countries/regions have very inelastic price elasticities ranging from 0.12 to 0.24 while the elasticity of fat demand is much closer to unitary elasticity at 0.87 to 0.96 for the three

countries/regions. Individual regulator responses for each country/region are listed in Table 4.3 and the general form of the equation is presented below.

$$\ln(Q_M) = A + B_1 \ln(P_M) + B_2 \ln(Q_{FAT})$$

where

Q_M = quantity of milk

A = constant

B_1 = elasticity of milk price

P_M = milk price

B_2 = elasticity of fat demand

Q_{FAT} = quantity of fat demand

Table 4.3: Elasticities Used in Regulator Response Milk Supply Function

Region	Elasticities	
	Milk Price	Fat Demand
Canada	0.12	0.96
EU(15)	0.15	0.87
Japan	0.24	0.94

Larivière, 1999

4.3 PROCESSOR MODULE

The technical relationships and parameters in this section are the composition of fat and solid non-fat in the dairy products and the processor supply and inventory elasticities. The composition of fat and solid non-fat in dairy products plays two important roles in the processor module of the model. First, the percentage composition links the production of dairy products to the demand for milk components. For example, for each kilogram of butter produced 0.81 kilograms of fat and 0.029 kilograms of solid non-fat demand are required. The second area they are important is in the gross margin

impact on the cost of butter, but will have a large impact on skim milk powder and whole milk powder because the relative content of solid non-fat is higher.

The composition of butter, skim milk powder and whole milk powder is highly consistent across all countries/regions and they were set at the same level for all countries/regions. Butter is 81 percent fat and 2.9 percent solid non-fat. The remaining 16.1 percent is made up of other non-milk ingredients and water. Skim milk powder is 0.8 percent fat and 96 percent solid non-fat with the remainder being moisture. Whole milk powder is 27 percent fat, 70 percent solid non-fat and 3 percent moisture.

The composition of cheese varies significantly between countries/regions. The EU(15) has the highest fat and solid non-fat content at 35 percent for both fat and solid non-fat. Canada has the lowest fat content at 28.4 percent while New Zealand and Japan have the lowest solid non-fat content at 22.5 percent. The other countries/regions ranged between these countries/regions and are listed in Table 4.4.

Table 4.4: Dairy Products Fat and Solid Non-fat Content in Percent, by Country

Country	Butter		Cheese		SMP		WMP	
	Fat	SNF	Fat	SNF	Fat	SNF	Fat	SNF
Australia	81	2.9	30.3	26.1	0.8	96	27	70
Canada	81	2.9	28.4	26.1	0.8	96	27	70
EU(15)	81	2.9	35.0	35.0	0.8	96	27	70
Japan	81	2.9	30.3	22.5	0.8	96	27	70
New Zealand	81	2.9	30.3	22.5	0.8	96	27	70
USA	81	2.9	32.1	29.9	0.8	96	27	70
Rest of the World	81	2.9	32.1	29.9	0.8	96	27	70

Larivière, 1999

The composition of the fluid milk is more complex than the other four dairy products. In order to ensure that all of the fat and solid non-fat is utilized, the percentage fat and solid non-fat are set at the required levels for each. The percentage fat and solid non-fat were then fixed and were not allowed to change during the simulation. This meant that the ratio of fat and solid non-fat could not change for the residual product for each year. The percentage fat and solid non-fat for each country/region in each are listed in Table 4.5.

Table 4.5: Fluid Milk Fat and Solid Non-fat Content in Percent, by Country

Year	Australia		Canada		EU(15)		Japan		New Zealand		USA		Rest of the World	
	Fat	SNF	Fat	SNF	Fat	SNF	Fat	SNF	Fat	SNF	Fat	SNF	Fat	SNF
2001	22.3	77.6	20.0	80.0	10.7	89.3	30.1	69.9	11.4	88.6	18.2	81.8	24.5	75.5
2002	22.3	77.7	20.1	79.9	10.5	89.5	30.1	69.9	11.1	88.9	18.2	81.8	24.5	75.5
2003	22.2	77.9	20.2	79.8	10.1	89.9	30.2	69.8	10.7	89.3	18.1	81.9	24.5	75.5
2004	22.0	78.0	20.2	79.8	9.9	90.1	30.3	69.7	10.8	89.2	18.0	82.0	24.6	75.4
2005	22.0	78.0	20.3	79.7	9.7	90.3	30.7	69.3	10.6	89.4	17.8	82.2	24.6	75.4

The structure of the processor module allows for two different supply elasticities to be considered, price elasticity and margin elasticity. The price elasticity is with respect to a change in the price of the dairy product, with no change in the per unit cost of the inputs. The result is that the price elasticity tends to be relatively large compared to the margin elasticity which allows for changes in price and cost in the margin calculation. Since an increase in the price of a given product will cause a sharp increase in the willingness of the processor to supply more product, the technical linkages illustrated in Table 4.4 and 4.5 result in an increase in the demand for milk components. The increase in the demand for a milk product causes the price of fat and solid non-fat to increase thereby reducing the processing margin and offsetting some of the effects of the price

increase. This means that in the model, the margin elasticity is the more important to consider.

The estimation of these elasticities posed a serious problem. Econometric estimates yielded results that were often inconsistent with economic theory. It was decided to calculate the dairy product supply elasticities from estimates of the aggregate input demand elasticities and a number of assumptions necessary to get consistent supply elasticity results. First, the technical coefficients for each of the dairy products had to be known. We also had to assume that these technical coefficients would remain unchanged by trade liberalization. This is a relatively easy assumption for butter, skim and whole milk powder since their composition is uniform even between countries. This is a more troublesome assumption for cheese and fluid milk since these commodities are less homogeneous. We have to assume that the different varieties of cheese and the different fluid milk products would continue to be made in the same proportions before and after trade liberalization. The next assumption necessary to calculate the margin and price elasticities is the slope of the different dairy products supply curves. It was found that if the slope of the different product supply curves were equal, then a unique elasticity could be calculated based on the assumed input demand elasticities. This assumption means that the same margin increase will result in the same increase in the quantity of dairy product produced, regardless of which dairy product it is. The third and final assumption involves the input demand elasticities for fat and solid non-fat. Since, the input demand elasticities were not known, they were set at what was thought to be reasonable levels. The result of these calculations was a set of margin and price elasticities that given the

assumptions represents an internally consistent set of estimates. An example of this calculation is in Appendix 6.

For most of the dairy products, their margin elasticities are inelastic and their price elasticities are close to unitary or slightly elastic. There are exceptions to this general finding. In Canada and the United States, price and margin elasticities for whole milk powder are highly elastic. In both cases it results from an extremely low level of production in the countries. A similar situation occurs in Japan with cheese and in the Rest of the World in skim milk powder and whole milk powder. A summary of both price and margin elasticities for each dairy product, in each year and in each country/region is presented in Table 4.6.

Table 4.6: Elasticities Used in the Dairy Supply Equations

Country	Product	2001		2002		2003		2004		2005	
		Margin	Price	Margin	Price	Margin	Price	Margin	Price	Margin	Price
Australia	Butter	0.49	1.25	0.50	1.24	0.55	1.28	0.59	1.36	0.62	1.39
	Cheese	0.75	0.95	0.75	0.95	0.73	0.93	0.71	0.91	0.70	0.92
	SMP	0.21	0.81	0.24	0.81	0.30	0.87	0.33	0.93	0.36	0.95
	WMP	0.40	0.69	0.39	0.73	0.34	0.68	0.36	0.66	0.37	0.67
	Fluid Milk	0.25	0.47	0.26	0.47	0.27	0.48	0.28	0.50	0.30	0.52
Canada	Butter	0.77	2.10	0.73	2.09	0.68	2.08	0.65	2.09	0.59	2.06
	Cheese	0.53	0.71	0.54	0.73	0.55	0.75	0.55	0.76	0.55	0.78
	SMP	0.28	2.46	0.36	2.56	0.40	2.61	0.42	2.72	0.44	2.69
	WMP	1.44	9.23	1.59	9.56	1.66	9.85	1.67	10.06	1.71	10.33
	Fluid Milk	0.15	0.34	0.15	0.35	0.16	0.36	0.16	0.36	0.16	0.37
EU(15)	Butter	0.75	1.47	0.74	1.47	0.72	1.47	0.72	1.49	0.72	1.47
	Cheese	0.28	0.42	0.27	0.42	0.26	0.42	0.26	0.41	0.24	0.40
	SMP	0.17	1.30	0.17	1.34	0.16	1.40	0.15	1.49	0.10	1.57
	WMP	0.26	1.96	0.23	1.90	0.28	1.90	0.27	1.85	0.30	1.79
	Fluid Milk	0.10	0.31	0.09	0.31	0.10	0.32	0.10	0.32	0.10	0.32
Japan	Butter	0.59	1.35	0.59	1.35	0.58	1.34	0.58	1.34	0.61	1.41
	Cheese	3.99	4.88	3.80	4.64	3.63	4.52	3.48	4.34	3.34	4.18
	SMP	0.05	0.32	0.05	0.32	0.05	0.31	0.05	0.31	0.05	0.30
	WMP	0.32	1.72	0.32	1.72	0.32	1.72	0.32	1.72	0.32	1.72
	Fluid Milk	0.06	0.16	0.06	0.16	0.06	0.16	0.06	0.16	0.06	0.16
New Zealand	Butter	0.57	1.12	0.54	1.09	0.57	1.12	0.61	1.20	0.64	1.23
	Cheese	1.35	1.70	1.91	2.42	1.35	1.71	1.31	1.69	1.30	1.70
	SMP	0.76	2.07	0.78	2.07	0.92	2.31	1.08	2.61	1.19	2.77
	WMP	0.43	0.98	0.44	1.02	0.48	1.03	0.49	1.04	0.51	1.06
	Fluid Milk	0.58	0.98	0.58	0.98	0.60	1.01	0.63	1.05	0.66	1.09
USA	Butter	0.87	2.79	0.94	3.09	1.11	3.42	0.98	3.29	0.88	3.27
	Cheese	0.26	0.44	0.27	0.45	0.26	0.45	0.25	0.45	0.25	0.45
	SMP	0.12	2.45	0.36	2.93	0.25	3.01	0.21	2.93	0.13	2.97
	WMP	3.17	22.23	2.47	22.46	1.82	22.68	1.37	22.91	0.60	23.14
	Fluid Milk	0.13	0.37	0.15	0.37	0.14	0.39	0.13	0.41	0.12	0.43
Rest of the World	Butter	0.33	0.78	0.31	0.78	0.26	0.78	0.23	0.82	0.19	0.85
	Cheese	0.15	1.11	0.18	1.11	0.25	1.16	0.29	1.23	0.27	1.19
	SMP	2.51	2.99	2.48	3.24	2.13	3.36	1.91	3.48	1.77	3.69
	WMP	2.22	3.08	2.03	3.11	1.62	3.32	1.56	3.38	1.35	3.56
	Fluid Milk	0.03	0.13	0.02	0.13	0.01	0.13	0.01	0.13	0.00	0.14

The inventory equations respond to two different effects, transactions and speculative demand. Transactions demand is represented by the production of a given dairy product and is the inventory required to allow a smooth flow of dairy products from processors to consumers. Speculative demand represents the relationship between the current spot price and the expected future price for a given dairy product. The expected price is proxied by using a simple three year average of past prices. Therefore, changes in the quantity produced, as well as the current and past prices all affect the current inventory levels for a given dairy product.

The inventory equations were specified within the model as log-log functions and the inventory elasticities for butter, cheese and skim milk powder were taken from Larivière (1999) with a few minor adjustments. The elasticity for whole milk powder was set so it was similar to skim milk powder. The price elasticities were set at either -0.5 or -0.75 depending on how it was felt that the country/region would respond to a price change. The production elasticity in most cases were set at 0.2 or 0.5, again depending on how it was felt the country/region would respond. The exception to these production elasticities is Australia and Canada whose estimated elasticities were found to be close to these levels and they were left at the estimated values of 0.12 and 0.15 respectively. The EU (15), Japan and New Zealand all claim to have no inventories of whole milk powder and therefore no equations could be included in the model, and hence no reported elasticities in Table 4.7 below. The residual product was assumed to have no inventories since it is mainly fluid milk and it would only have pipeline inventories that would not significantly change over time.

Table 4.7: Elasticities Used in the Inventory Equations

Country	Price	Production
Australia		
Butter	-0.75	0.5
Cheese	-0.75	0.5
SMP	-0.5	0.2
WMP	-0.5	0.12
Canada		
Butter	-0.75	0.5
Cheese	-0.75	0.5
SMP	-0.5	0.2
WMP	-0.75	0.15
EU(15)		
Butter	-0.5	0.5
Cheese	-0.75	0.5
SMP	-0.5	0.2
WMP	-	-
Japan		
Butter	-0.75	0.5
Cheese	-0.75	0.5
SMP	-0.5	0.2
WMP	-	-
New Zealand		
Butter	-0.5	0.2
Cheese	-0.5	0.2
SMP	-0.5	0.2
WMP	-	-
USA		
Butter	-0.75	0.5
Cheese	-0.75	0.5
SMP	-0.75	0.5
WMP	-0.75	0.5
Rest of the World		
Butter	-0.5	0.2
Cheese	-0.5	0.2
SMP	-0.5	0.2
WMP	-0.5	0.2

Larivière, 1999

4.4 CONSUMER MODULE

The elasticities used in the demand for dairy products are shown in Table 4.8.

These elasticities were set synthetically in the model and originate from two sources.

The price elasticities were taken from Sullivan et al. (1989). The butter and cheese

elasticities are exactly as they reported them but they did not directly report elasticities for skim milk powder, whole milk powder and fluid milk. For skim milk powder and whole milk powder, I used the elasticity they reported for all powder products therefore skim and whole milk powder were given the same elasticity. Since the majority of the fluid milk category consists of fluid milk products it is a reasonable assumption that its demand elasticity is similar to fluid milk. There is no concrete pattern to describe these elasticities other than the elasticity of fluid milk is normally significantly lower than for the other dairy products. Butter and cheese elasticities are normally higher than for the powders but which of butter or cheese is higher depends on the country/region. Australia, EU (15) and New Zealand have similar demand elasticities and they are relatively inelastic. Canada, Japan and USA have relatively higher elasticities for butter, cheese and the powders but fluid milk is similar to the other countries/regions. The Rest of the World has high elasticities for butter and cheese and lower elasticities for the powders and fluid milk.

Comparing the elasticities calculated by Sullivan et al. (1989) for Canada with those calculated by Moschini and Moro (1993), we find similar results for fluid milk, butter and cheese. Moschini and Moro (1993) reported elasticities of -0.26, -0.55 and -0.88 for fluid milk, cheese and butter respectively. Moschini and Moro do not report elasticities for skim and whole milk powder but lump them together with the soft products, such as ice cream, yogurt, etc., into a category called other dairy products. The result of aggregating the powders with soft products in Canada is that the soft products dominate the other dairy products category and the resulting elasticity is close to unitary.

This means comparisons of Sullivan et al. and Moschini and Moro are not possible for the powdered products.

Income elasticities incorporated into the model have no effect on the demand for dairy products because there is no feedback from trade liberalization to consumer income. The model is also calibrated to the OECD baseline so we have accepted any assumptions the OECD has made on consumer incomes.

Table 4.8: Elasticities Used in the Demand for Dairy Product Equations

Country	Price
Australia	
Butter	-0.45
Cheese	-0.4
SMP	-0.45
WMP	-0.45
Residual	-0.17
Canada	
Butter	-0.7
Cheese	-0.72
SMP	-0.5
WMP	-0.5
Residual	-0.18
EU(15)	
Butter	-0.43
Cheese	-0.4
SMP	-0.4
WMP	-0.4
Residual	-0.13
Japan	
Butter	-0.54
Cheese	-0.68
SMP	-0.63
WMP	-0.63
Residual	-0.14
New Zealand	
Butter	-0.45
Cheese	-0.4
SMP	-0.45
WMP	-0.45
Residual	-0.2
USA	
Butter	-0.63
Cheese	-0.6
SMP	-0.65
WMP	-0.65
Residual	-0.17
Rest of the World	
Butter	-0.7
Cheese	-0.5
SMP	-0.3
WMP	-0.3
Residual	-0.25

Sullivan et al., 1989

4.5 Model Validation

The performance of a model is often measured by its ability to reproduce the actual data in a simulation without any external shocks (Larivière, 1999, Pindyck and Rubinfeld, 1991). However, in this case, this method of validating the model was of little use as the model was calibrated to the baseline data and therefore reproduced the baseline data exactly.

The model was tested to verify its responsiveness to policy shocks. These tests were performed at the country level and repeated for all countries/regions. There were six different tests performed on each country/region. They are:

- (1) Quantity of milk increased 10 percent,
- (2) Price of butter increased 10 percent with milk production held fixed,
- (3) Price of cheese increased 10 percent with milk production held fixed,
- (4) Price of skim milk powder increased 10 percent with milk production held fixed,
- (5) Price of whole milk powder increased 10 percent with milk production held fixed,
- (6) All prices of traded dairy products increased 10 percent with milk production held fixed.

The results of each test showed that the magnitude of the response to the shock varied across each country/region but that the direction of the change across each country/region was the same. It is the direction that is important and is reported in Table 4.9. Table 4.9 presents the effects of each shock on selected endogenous variables for each of the six tests.

Table 4.9 Verification of the Model Responsiveness to Policy Shocks

	Milk Quantity Increase	Butter Price Increase	Cheese Price Increase	SMP Price Increase	WMP Price Increase	All Prices Increase
Production						
Butter	+	+	-	+	-	-
Cheese	+	-	+	-	-	+
SMP	+	+	-	+	-	+
WMP	+	-	-	-	+	-
Price						
Fat	-	+	+	-	+	+
Solid Non-fat	-	-	+	+	+	+

The results in Table 4.9 are consistent with expectations. As the supply of milk increases the price of its components decrease and the production of dairy products increases. As the price of any single good increases its production increases along with any goods that are complimentary in production. The production of goods that are competitive in production decrease. This verifies that the model's behavior is consistent with economic theory and the technical relationships that are imposed on this model.

4.6 Summary

This chapter discusses the parameters and technical relationships used in the Guelph Dairy Trade Model. The first part of the chapter presented the parameters and technical relationships used in the producer module. These parameters and technical relationships effect the production of milk in each country/region. The second part deals with the parameters and technical relationships used in the production of dairy products in each country/region. This part also explained the method used to calculate the supply elasticities of dairy products in each country/region since they were un-estimable from

the data. The third part of the of the chapter deals with the consumer module which deals with the parameters and technical relationships that effect the demand for dairy products in each country/region. The last part of the chapter deals with model validation. It showed that the model behaves in ways that are consistent with economic theory when it is shocked.

Having looked at changes to the model in Chapter 3 and its parameters and technical relationships in Chapter 4, we will now look at the results that the model produced in Chapter 5.

CHAPTER 5

SIMULATION RESULTS AND POLICY ANALYSIS

5.1 INTRODUCTION

Chapter 3 discussed the changes made to the Guelph Dairy Trade Model and Chapter 4 specified its parameters and technical relationships. This chapter uses the model to assess the effects of seven trade liberalization scenarios on the international dairy market. The seven scenarios range from free trade to complex situations that include simultaneous tariff reductions, increases in minimum access and reductions in export subsidies.

Section 5.2 discusses the results for all countries/regions and the welfare impacts for Canada for each scenario. Section 5.3 summarizes the findings.

5.2 POLICY REFORM SCENARIO RESULTS

In both the Uruguay Round and the Doha Development Round, two central issues to trade liberalization are improvement in market access and export subsidy reductions (Larivière, 1999). Market access consists of two major components. The first is minimum access commitments which represent the quantity of imports that are allowed at the lower within-quota tariff rate. The second is the over-quota tariffs which are applied to imports above the minimum access amount. Export subsidies are defined as payments or quantifiable financial transfers to producers or exporters that are contingent on their product being exported. It is by combining these three aspects of the trade negotiations that the scenarios are developed.

Each of the following sections summarizes a single policy scenario. First, the policy change is described. Second, the results for the countries/regions are summarized. Finally, the welfare impacts for the Canadian dairy sector are presented²⁰. The detailed results for each scenario are shown in Appendix 4 and the full welfare calculations for Canada are given in Appendix 5.

5.2.1 Scenario 1A – Complete Free Trade

Scenario 1A introduces complete free trade in 2001. This is done by setting all tariffs to zero for the four traded dairy products. One result of setting all tariffs to zero is that minimum access commitments no longer have any meaning. Another result of zero tariffs is that domestic and export prices are the same, eliminating the use of explicit export subsidies. In the case of the three supply managed countries/regions, Canada, EU(15), and Japan, their markets change from a regulated market to a competitive market.

5.2.1.1 Scenario Results

Under complete trade liberalization the world prices for butter, cheese, skim milk powder and whole milk powder increase by 84, 86, 51 and 56 percent in 2001. As world production adjusts to these higher prices, prices decrease relative to the baseline such that

²⁰ Only Canada is presented because it poses the most interesting study in welfare effects but similar calculations could be done for the other countries/regions.

prices have increased by 71, 74, 40 and 42 percent in 2005. Even with these large increases in the price of dairy products, the production of milk increases by less than 1 percent over the baseline. The distribution of fat and solid non-fat among the different dairy products does result in larger changes in production of dairy products than for milk. The production of butter decreases in most years by less than 0.5 percent. The exception for butter was 2004 where it increased by 0.02 percent. While butter production was generally decreasing, cheese, skim milk powder and whole milk powder increased between 2.5 and 6.5 percent each year. Skim milk powder showed the largest increases in production with increases of a little over 6 percent for each year. Whole milk powder saw the smallest increase of between 2.5 to 4 percent each year. Cheese lay between the two powders with increases of 4 to 5 percent each year.

As noted above world milk production increased by less than 1 percent but the production of cheese, skim and whole milk powders have increases greater than 1 percent. This is possible since the production of fluid milk does not change and the amount of raw milk utilized for fluid milk production is a large portion of the world's total milk production. This means that the entire increase in milk production plus the milk freed up by the decrease in butter production is utilized in cheese, skim and whole milk powder production.

The change in the world consumption of dairy products is similar to their production changes, but they do not have to exactly mirror each other as world inventories are allowed to change. Cheese, skim milk powder and whole milk powder

tend to more closely mirror production than butter. Butter actually saw increases in consumption while production was decreasing.

Though these results represent world trends in supply, demand and prices of milk and dairy products, the allocation of milk and dairy products across countries/regions is expected to change due to different levels of support prior to the move to free trade.

On a country basis, Australia and New Zealand show sharp increases in the production of milk. New Zealand as expected increases milk production by 17.8 percent from the baseline and this increases to 25.2 percent by 2005. In 2005, New Zealand's increase in milk production represents 3.4 million tonnes of milk over the baseline projections. Similarly, Australia increases milk production by 23 to 30 percent, depending on the year, and like New Zealand, by 2005 this represents an increase of about 3.5 million tonnes of milk.

In supply managed countries/regions, Canada and EU(15) will increase in milk production by 2005 while Japan will decrease. In Canada, milk production is 2 percent above the baseline by 2005 and this represents an increase of 200 thousand tonnes per year. The EU(15) will have a similar percentage increase of 1.8 percent, but this represents a significantly larger increase of 2.1 million tonnes of milk. On the other hand, Japan is expected to decrease milk production by 5 to 6 percent. This translates into about 500 thousand tonnes of milk.

The United States has the largest loss in the actual amount of milk produced with a decrease of 1 to 2 million tonnes per year from the baseline. The Rest of the World had mixed results. Their milk production increases by a small amount during 2001 to 2003 but it also had a small decrease in 2004 and 2005.

In the area of dairy product production, Australia and New Zealand will have major increases in the level of all four products. Australia increases whole milk powder production to more than 2.5 times its baseline production, with smaller increases of 20 to 50 percent in the production of butter, cheese and skim milk powder. New Zealand had the largest increase in the production of cheese and skim milk powder with increases of 67 to 108 percent over the baseline. New Zealand's butter production increases between 5 and 16 percent and its whole milk powder production will increase by 11 to 21 percent.

Canada and the EU(15) also have similar trends in dairy product production. They will increase their production of butter, skim milk powder and whole milk powder and a decrease in their production of cheese.

The United States is the opposite of Canada and the EU(15) in that cheese is the only dairy product to increase in production and butter, skim milk powder and whole milk powder all decrease.

The Rest of the World increases its production of cheese in all years and skim milk powder in 2001 to 2003. They have small decreases in the production of butter in all

years and larger decreases in production in whole milk powder in all years and skim milk powder in 2004 and 2005.

Japan is the only country that decreases its production of all dairy products in all years. Cheese production has the smallest decrease in production with a percentage change of 0.2 to 16 percent. Whole milk powder production decreases by over 60 percent each year.

In Australia and New Zealand, the one segment of the economy that will not be happy with free trade is consumers. As both of these countries have little border protection, their domestic prices are the world prices. So, as world prices increase, so too do their domestic prices. In other words, foreign protectionism acts like a subsidy to Australia and New Zealand's consumers by maintaining domestic prices at a level lower than a competitive world market would allow. As domestic prices for dairy products increase, domestic consumption decreases for all products in all years.

The other countries/regions generally have increases in consumption while prices decrease for butter, cheese, skim milk powder and whole milk powder. Canada increases its consumption by 20 to 50 percent in each year for the different dairy products. The price of dairy products decreases in Canada by 30 to 42 percent.

Japan follows similar consumption and price patterns as Canada, although the magnitude of the changes are larger. Japan's consumption of cheese increases by almost

200 percent in each year. Increases in consumption in other dairy products are between 60 and 104 percent in each year.

The EU(15) and the United States increased their consumption of all dairy products except for skim milk powder in the EU(15) and cheese in the United States.

The Rest of the World decreases its consumption of butter and cheese and increases its consumption of skim and whole milk powders. This results from the prices of butter and cheese increasing and the prices of the powders decreasing.

The most important result for dairy farmers is the price of milk. The price of milk in Australia and New Zealand increases from 29 to 50 and 44 to 73 percent respectively, depending on the year. Canada, EU(15), Japan and United States all have decreases in the price of milk. The United States faces the smallest change in the price of milk, down 0.5 to 4 percent. Canada, the EU(15) and Japan have significantly larger decreases because not only do they face free trade, but must also deal with the loss of supply management at the same time. Canada's milk price drops by 44 to 49 percent while the EU(15)'s drops between 7 and 13 percent. Japan's milk price decreases between 36 and 40 percent.

One problem that arose out of a careful examination of the results was the differential between the Canadian and United States milk price. The milk price in Canada is about C\$32.00/hl and in the United States it is about US\$33.00/hl. When these prices are corrected for the exchange rate, Canadian milk producers would receive about a 30

percent premium by shipping their milk to the United States. In a completely free market this would be possible between Canada and the United States because of their geographic proximity. This led to the creation of Scenario 1B and will be dealt with in Section 5.2.2.

The results for 2005 are presented in Table 5.1 and a full set of results for all years are in Appendix 4, Scenario 1A.

Table 5.1 Simulation Results for Complete Trade Liberalization (Scenario 1A)

Supply (KT)	Australia		Canada		European Union		Japan		New Zealand		United States		Rest of the World		World	
	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change
Butter	190	29	86	28	1,812	4	80	-16	412	16	490	-10	4,152	-4	7,221	0
Cheese	438	25	360	-21	7,139	0.4	52	-15	394	71	4,201	0	3,556	8	16,141	4
Skim Milk Powder	280	43	65	7	966	15	213	-13	187	104	475	-21	971	-15	3,157	6
Whole Milk Powder	159	163	17	86	1,077	8	53	-64	527	21	60	19	1,063	-32	2,957	6
Residual Products ²	761	-1	717	4	7,714	-0.3	752	2	711	-1	6,213	0.1	38,621	0.2	-	-
Milk	12,135	29	8,390	2	120,800	2	8,860	-6	13,448	25	78,684	-1	332,448	-0.7	599,333	1
Demand (KT)																
Butter	70	-22	84	21	1,741	9	80	84	32	-22	502	1	4,673	-5	7,173	0
Cheese	232	-12	357	48	6,850	2	264	194	46	-17	4,294	-0.1	4,103	-4	16,146	4
Skim Milk Powder	38	-15	34	26	874	-7	264	61	8	-14	329	6	1,638	4	3,186	6
Whole Milk Powder	35	-45	18	21	555	-0.3	53	93	1	-14	49	-0.2	2,245	4	2,957	6
Price ³																
Butter	282	74	561	-24	356	-18	96,400	-68	351	72	321	-2	294	7	184	71
Cheese	429	39	896	-42	378	-6	183,956	-79	464	59	382	0.3	353	9	220	74
Skim Milk Powder	283	43	559	-37	203	19	54,564	-53	357	39	283	-8	297	-13	186	40
Whole Milk Powder	114	282	560	-32	258	0.7	77,960	-65	386	39	278	0.3	315	-11	197	42
Residual Products	425	6	839	-18	326	2	101,142	-12	535	5	435	-0.4	445	-1	-	-
Milk ⁴	24,74	29	62,93	-48	30,00	-7	8,387	-36	31,08	44	35,65	-0.5	59,67	-1	-	-
Gross Margins ⁵																
Butter	95	46	127	47	119	5	40,391	-27	137	25	63	-11	-48	20	-	-
Cheese	247	35	500	-39	174	2	145,244	-84	268	54	151	0.4	57	32	-	-
Skim Milk Powder	82	117	71	16	-8	-161	-8,401	276	116	88	9	-157	-103	8	-	-
Whole Milk Powder	-48	-437	73	50	30	28	14,192	-199	139	42	5	32	-87	23	-	-
Net Trade (KT)																
Butter	120	58	0.25	2,654	73	-101	-0.1	80,116	340	22	-12	459	-520	-12	-	-
Cheese	206	66	5	-5,237	290	-47	-212	245	347	83	-93	-8	-543	-87	-	-
Skim Milk Powder	242	52	29	-15	123	169	-51	370	179	110	146	-83	-667	32	-	-
Whole Milk Powder	124	223	-1	-772	522	17	0	(-83) ¹	527	21	10	102	-1,181	35	-	-

¹ This is the actual net trade in KT as the percentage change could not be calculated.

² The supply and demand of Residual Products are equal, therefore only supply is reported.

³ Units are local currency/100 kg for butter, cheese, skim milk powder, whole milk powder and residual products and local currency/hl for milk. World prices are in US dollars.

⁴ Milk Prices for Australia, Canada and United States is Industrial Milk Price and for European Union, Japan, New Zealand and the Rest of the World is the Blended Milk Price.

⁵ For products with negative margins, a negative percentage change means that the margin is getting less negative. If the percentage change is positive, then the margin is getting more negative.

5.2.1.2 Canadian Welfare Results

The effects of free trade are measured for four separate groups in the Canadian economy: producers, processors, taxpayers¹⁸ and consumers. The welfare changes for each year for each group and for the total economy are listed in Table 5.2. The full set of detailed calculations is in Appendix 5. The welfare change values were deflated to 1990 dollars so that welfare changes could be summed across years adjusting for inflation.

Under Scenario 1A, producers see a drop in welfare of between 1.1 and 1.7 billion dollars per year, for a total of 7.7 billion over 5 years. This decrease in total welfare can be broken into two different welfare effects. They are the change in the quota rent and producer surplus. Quota rents decline by between 1.6 and 1.9 billion dollars per year for a 5 year total of 8.5 billion dollars. Producer surplus actually increases over the baseline with annual gains of between 444 and 47 million dollars per year and a 5 year total of 888 million dollars. Therefore the gains in producer surplus do offset some of the losses in quota rent. This also shows that all of the loss in producer welfare is due to the loss of supply management and not changes in production levels.

Processors also have a loss in welfare but only at about one tenth of the level of producers. Processors' welfare decreases by between 100 and 170 million dollars per year for a total of 700 million dollars over five years.

¹⁸ The taxpayer category in the welfare analysis also includes the TRQ rents of the import rights holders. These may or may not be taxpayers.

Taxpayers encompass a number of different border policies, both export and import. It therefore measures the net change in all of these policies, for example, the loss of tariff revenue and import quota rents can be offset by no longer selling exports at a price lower than the domestic price. This coupled with small net trade values makes the change in taxpayer welfare very small and in this scenario, it ranges from about 70 to 80 million dollars gain per year for a total of 370 million over the five years.

Canadian consumers are by far the largest gainers in this scenario, with annual gains in welfare between 2.2 and 2.9 billion dollars per year and a five year total of almost 13 billion dollars. This large gain in consumer welfare means that the economy as a whole does see an annual net gain of about 1 billion dollars per year and over the five years, there is a net gain of almost 5 billion dollars. This does show that there are gains from trade for Canada under free trade.

Table 5.2 Change in Welfare in Constant 1990 Dollars (billions C\$)

	2001	2002	2003	2004	2005	5 Year Total
Producers						
Quota Rent	-1.640	-1.668	-1.710	-1.738	-1.792	-8.547
Producer Surplus	0.444	0.217	0.114	0.066	0.047	0.888
Total Welfare	-1.196	-1.451	-1.595	-1.671	-1.745	-7.659
Processors	-0.107	-0.138	-0.161	-0.151	-0.169	-0.726
Taxpayers	0.069	0.073	0.076	0.071	0.079	0.369
Consumers	2.228	2.471	2.608	2.741	2.938	12.985
Net Total	0.994	0.956	0.927	0.990	1.103	4.969

5.2.2 Scenario 1B – Complete Free Trade with North American Trade in Industrial Milk

Scenario 1B arose out of the results of Scenario 1A where it was noted that Canadian milk producers could receive a 30 percent premium by shipping their milk to the United States. Since Canada and United States represent the two countries within the model where raw milk trade would be technically possible, the model was adjusted to allow Canada and United States to trade industrial milk. This creates a single market for North American industrial milk and requires the Canadian and United States industrial milk price to be linked, with adjustments for the exchange rate and transfer costs. It also means that the supply and demand of fat and solid non-fat only have to clear at the North American level and not at the country level. The detailed changes to the general model are shown in Appendix 3.

5.2.2.1 Scenario Results

The results from letting Canada and United States trade industrial milk for Australia, EU(15), Japan, New Zealand and the Rest of the World are not significantly different from those in Scenario 1A. The percentage changes in supply, demand, price, gross margins and net trade for these countries/regions are within ± 1 percentage point of Scenario 1A results.

The United States and Canada however, do have some significant changes, especially in the areas of dairy product and milk production and the price of milk.

In the United States the production of butter, skim and whole milk powders decrease compared to the baseline, but they increase compared to the Scenario 1A simulation results. The production of cheese still increases but by a greater amount in Scenario 1B than in Scenario 1A. The production of milk decreases by a greater amount in Scenario 1B than in Scenario 1A. The price of dairy products does not change significantly since they are linked to world prices and the conditions outside the United States and Canada do not change. Since the prices of dairy products do not change, the consumption also does not change. The price of milk does change. In Scenario 1B it is about 2 to 3 percent lower than in Scenario 1A in the US. This decrease in price causes milk production in the United States to decrease by a further 1 to 3 percent from the Scenario 1A results.

The situation in Canada is quite different than in the United States. Where Canada had increases in the production of butter, skim and whole milk powders without trade in industrial milk, it now has decreases in production of all dairy products. The cause of these decreases is that milk supplied to Canadian processors in Scenario 1A is now shipped to the higher priced US market, reducing the supply of milk available to Canadian processors. Even though the quantity of milk available to Canadian processors decreases, the actual production of milk in Canada increases. Where milk production increased by about 2 percent in Scenario 1A, it increases by 13 percent in 2001 and

continues to increase until it reaches 33.5 percent above the baseline in 2005. The price of milk is also affected by the trade in industrial milk, since it is now linked to the higher US price. Where the Canadian price of milk is about C\$32.00 in Scenario 1A, it is now about C\$40.00 in Scenario 1B. The consumption and price of dairy products remains relatively unchanged from Scenario 1A as prices are linked to world prices and they change little.

The results for 2005 are listed in Table 5.3 and a complete set of results for all five years is in Appendix 4, Scenario 1B.

Table 5.3 Simulation Results for Complete Trade Liberalization with North American Trade in Industrial Milk (Scenario 1B)

Supply (KT)	Australia		Canada		European Union		Japan		New Zealand		United States		Rest of the World		World	
	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change
Butter	190	29	86	-4	1,812	4	80	-16	412	16	490	-2	4,152	-4	7,221	0
Cheese	438	24	360	-26	7,139	0.4	52	-16	394	71	4,201	1	3,556	8	16,141	4
Skim Milk Powder	280	43	65	-30	966	15	213	-13	187	104	475	-13	971	-16	3,157	6
Whole Milk Powder	159	163	17	-69	1,077	8	53	-64	527	21	60	87	1,063	-32	2,957	4
Residual Products ²	761	-1	717	2	7,714	-0.3	752	2	711	-1	6,213	0.3	38,621	0.2	-	-
Milk	12,135	29	8,390	33	120,800	2	8,860	-6	13,448	25	78,684	-4	332,448	-1	599,333	1
Demand (KT)																
Butter	70	-22	84	21	1,741	9	80	85	32	-22	502	1	4,673	-5	7,173	0
Cheese	232	-12	357	48	6,850	2	264	194	46	-17	4,294	-0.1	4,103	-4	16,146	4
Skim Milk Powder	38	-15	34	26	874	-7	264	62	8	-14	329	6	1,638	4	3,186	6
Whole Milk Powder	35	-45	18	22	555	0	53	93	1	-14	49	0	2,245	4	2,957	6
Price³																
Butter	282	74	561	-24	356	-18	96,400	-68	351	72	321	-2	294	7	184	71
Cheese	429	39	896	-42	378	-6	183,956	-79	464	59	382	0	353	9	220	74
Skim Milk Powder	283	42	559	-37	203	19	54,564	-53	357	39	283	-9	297	-13	186	39
Whole Milk Powder	114	281	560	-32	258	0.4	77,960	-65	386	38	278	0	315	-11	197	42
Residual Products	425	6	839	-12	326	2	101,142	-12	535	5	435	-2	445	-1	-	-
Milk ⁴	24,74	29	62,93	-31	30,00	-7	8,387	-36	31,08	44	35,65	-4	59,67	-1	-	-
Gross Margins⁵																
Butter	95	46	127	-7	119	5	40,391	-27	137	25	63	-2	-48	20	-	-
Cheese	247	35	500	-47	174	1	145,244	-84	268	54	151	3	57	32	-	-
Skim Milk Powder	82	117	71	-69	-8	-157	-8,401	276	116	87	9	-95	-103	9	-	-
Whole Milk Powder	-48	-436	73	-40	30	26	14,192	-199	139	42	5	145	-87	24	-	-
Net Trade (KT)																
Butter	120	58	0.25	-8,442	73	-105	-0.1	80,253	340	21	-12	149	-520	-10	-	-
Cheese	206	66	5	-5,579	290	-48	-212	245	347	83	-93	-35	-543	-86	-	-
Skim Milk Powder	242	51	29	-96	123	165	-51	372	179	109	146	-57	-667	33	-	-
Whole Milk Powder	124	222	-1	1,136	522	17	0	(-83) ¹	527	21	10	490	-1,181	36	-	-

¹ This is the actual net trade in KT as the percentage change could not be calculated.

² The supply and demand of Residual Products are equal, therefore only supply is reported.

³ Units are local currency/100 kg for butter, cheese, skim milk powder, whole milk powder and residual products and local currency/hl for milk. World prices are in US dollars.

⁴ Milk Prices for Australia, Canada and United States is Industrial Milk Price and for European Union, Japan, New Zealand and the Rest of the World is the Blended Milk Price.

⁵ For products with negative margins, a negative percentage change means that the margin is getting less negative. If the percentage change is positive, then the margin is getting more negative.

5.2.2.2 Canadian Welfare Results

The welfare in Canada is affected by the trade in industrial milk. Milk producers still face significant losses in welfare at 5 billion dollars over 5 years, but this is better than the loss of 7.7 billion dollars in Scenario 1A. They gain the 2.7 billion dollars between the two scenarios from higher prices and increased production. Dairy processors on the other hand fare significantly worse in Scenario 1B than in Scenario 1A. The higher priced milk under North American free trade in raw milk causes their welfare to decrease by 1.7 billion dollars from Scenario 1A to 1B, bringing their total 5 year welfare loss to 2.5 billion dollars. The welfare change for taxpayers decreases by only a 1 million dollar over the 5 years between Scenario 1A and 1B. This is because there was little change in the domestic and world prices and the net trade of dairy products. Canadian consumers also do not fare as well in this scenario since their welfare decreases by about 1.4 billion dollars over the 5 year period relative to Scenario 1A. The net effect for the economy of these changes in welfare is that total welfare decreases by about 200 million dollars more over the five years compared with Scenario 1A. The gains from trade are still very significant at 4.3 billion dollars over the 5 year period.

A summary of the welfare calculation is in Table 5.4 and the complete set of calculations is in Appendix 5.

Table 5.4 Change in Welfare in Constant 1990 Dollars (billions C\$)

	2001	2002	2003	2004	2005	5 Year Total
Producers						
Quota Rent	-1.640	-1.668	-1.710	-1.738	-1.792	-8.547
Producer Surplus	0.737	0.649	0.648	0.675	0.742	3.451
Total Welfare	-0.903	-1.019	-1.062	-1.062	-1.050	-5.096
Processors	-0.443	-0.472	-0.500	-0.508	-0.552	-2.476
Taxpayers	0.069	0.073	0.076	0.071	0.078	0.368
Consumers	2.011	2.245	2.310	2.414	2.545	11.524
Net Total	0.734	0.827	0.824	0.914	1.020	4.320

5.2.3 Scenario 2 – Free Trade Phased-In

Scenario 2 is similar to Scenario 1A but instead of all countries'/regions' tariffs being reduced to zero in 2001, they are reduced by 20 percent of the original tariff each year until in 2005 all tariffs are zero. Supply management in Canada, EU(15) and Japan is removed in 2001 and there is no trade in industrial milk in North America. Minimum access and export subsidies are not considered in this scenario and are meaningless in 2005 for the same reasons as in Scenario 1A.

5.2.3.1 Scenario Results

The phasing in of tariff reductions means that the effects of trade liberalization are not felt as quickly. This is especially the case in countries/regions where bound tariffs are well above the effective tariff rates in the baseline. For this reason it is possible for the prices of some dairy products to increase in the initial few years of the simulation. This is especially true in Canada, EU(15) and Japan where the immediate removal of supply management allows dairy processors to take advantage of a deregulated domestic market

and still be isolated from the world dairy product market. This situation is compounded by the fact that some markets are opened up in some countries to trade, causing world prices to rise, thereby allowing the domestic price in the still protected markets to rise even higher. This situation ends by 2003 when tariffs have been reduced by 60 percent and all markets face bound tariffs that limit the domestic price and additional trade is possible.

The largest increases in the domestic price of dairy products for the three supply managed regions is in Canada. All four dairy products in Canada face price increases in 2001 but by 2005 all four see their prices drop below the baseline prices. The price of milk decreases but not by as much as in Scenario 1A which allows for a greater increase in the quantity produced. Consumption decreases as the price of dairy products increases.

The EU(15) results are similar to those in Scenario 1A but the magnitude of the changes are less until the year 2005. Prices are generally a little higher in the EU(15) than in Scenario 1A. This results in an increase in production and a decrease in consumption.

In Japan the price of butter and whole milk powder increase while the price of cheese and skim milk powder decrease. The price decreases for cheese and skim milk powder are significantly less than in Scenario 1A where they were 80 to 56 percent in 2001 respectively compared to 3 and 7 percent in Scenario 2. The prices do reach their free trade levels by 2005.

New Zealand and Australia do receive some benefits from free trade even in the first year, but the magnitude of the benefits are smaller in the first year than in Scenario 1A but begin to approach Scenario 1A results by 2005. Their consumers continue to cut back on consumption as prices rise.

The United States trends in the production, consumption and price of butter, skim and whole milk powders are similar to Scenario 1A. The price of cheese declines in this scenario as opposed to an increase in Scenario 1A because of increased production elsewhere in the world especially in Canada where domestic prices have increased. This price decline causes US cheese production to decline and its consumption to increase relative to the baseline and Scenario 1A. A decline in the demand for United States raw milk especially from reduced cheese production causes its milk price to decline by a larger amount in 2001 to 2004 than in Scenario 1A, but as the world reaches free trade in 2005, the price actually increases which is something it does not do in Scenario 1A. Production decreases remain larger in all years than in Scenario 1A but the trend in prices and production improve towards 2005.

The results for the Rest of the World are generally similar to Scenario 1A but with smaller magnitudes of change in 2001 and approaching the levels of change in Scenario 1A by 2005. The 2005 results are summarized in Table 5.5 and a full set of results are in Appendix 4, Scenario 2.

Table 5.5 Simulation Results for Phased-in Complete Trade Liberalization (Scenario 2)

Supply (KT)	Australia		Canada		European Union		Japan		New Zealand		United States		Rest of the World		World	
	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change
Butter	190	26	86	32	1,812	4	80	-15	412	13	490	-10	4,152	-4	7,221	-0.1
Cheese	438	23	360	-21	7,139	0.4	52	-16	394	68	4,201	0	3,556	9	16,141	4
Skim Milk Powder	280	39	65	17	966	16	213	-12	187	93	475	-22	971	-14	3,157	6
Whole Milk Powder	159	157	17	120	1,077	9	53	-60	527	17	60	15	1,063	-31	2,957	4
Residual Products ²	761	-1	717	4	7,714	-0.3	752	2	711	-1	6,213	0	38,621	0.2	-	-
Milk	12,135	27	8,390	4	120,800	2	8,860	-5	13,448	22	78,684	-1	332,448	-1	599,333	1
Demand (KT)																
Butter	70	-22	84	21	1,741	9	80	84	32	-22	502	1	4,673	-5	7,173	-0.1
Cheese	232	-12	357	48	6,850	2	264	193	46	-17	4,294	-0.2	4,103	-4	16,146	4
Skim Milk Powder	38	-15	34	26	874	-7	264	61	8	-14	329	6	1,638	4	3,186	6
Whole Milk Powder	35	-45	18	21	555	-0.5	53	92	1	-14	49	-0.5	2,245	4	2,957	4
Price ³																
Butter	282	75	561	-23	356	-18	96,400	-68	351	73	321	-2	294	7	184	72
Cheese	429	40	896	-42	378	-6	183,956	-79	464	59	382	0.4	353	9	220	74
Skim Milk Powder	283	43	559	-37	203	20	54,564	-53	357	40	283	-8	297	-12	186	40
Whole Milk Powder	114	284	560	-32	258	2	77,960	-65	386	39	278	1	315	-11	197	43
Residual Products	425	9	839	-19	326	2	101,142	-13	535	8	435	-0.1	445	-1	-	-
Milk ⁴	24.74	36	62.93	-52	30.00	-7	8,387	-38	31.08	52	35.65	0.2	59.67	-1	-	-
Gross Margins ⁵																
Butter	95	41	127	54	119	6	40,391	-24	137	20	63	-12	-48	19	-	-
Cheese	247	34	500	-37	174	2	145,244	-83	268	53	151	0.1	57	32	-	-
Skim Milk Powder	82	107	71	39	-8	-171	-8,401	251	116	78	9	-161	-103	8	-	-
Whole Milk Powder	-48	-421	73	70	30	30	14,192	-186	139	35	5	25	-87	23	-	-
Net Trade (KT)																
Butter	120	53	0.25	1,564	73	-81	-0.1	83,605	340	11	-12	462	-520	-14	-	-
Cheese	206	63	5	-5,233	290	-43	-212	250	347	80	-93	-15	-543	-88	-	-
Skim Milk Powder	242	47	29	6	123	177	-51	363	179	98	146	-85	-667	30	-	-
Whole Milk Powder	124	215	-1	-1,196	522	19	0	(-81) ¹	527	17	10	77	-1,181	34	-	-

¹ This is the actual net trade in KT as the percentage change could not be calculated.

² The supply and demand of Residual Products are equal, therefore only supply is reported.

³ Units are local currency/100 kg for butter, cheese, skim milk powder, whole milk powder and residual products and local currency/hl for milk. World prices are in US dollars.

⁴ Milk Prices for Australia, Canada and United States is Industrial Milk Price and for European Union, Japan, New Zealand and the Rest of the World is the Blended Milk Price.

⁵ For products with negative margins, a negative percentage change means that the margin is getting less negative. If the percentage change is positive, then the margin is getting more negative.

5.2.3.2 Canadian Welfare Results

The welfare calculations produce an interesting set of results. Producers continue to experience losses of welfare but not at the levels shown for Scenario 1A. They end up losing 1 billion dollars less over the five year period, with losses of about 6 billion dollars.

Processors gain significantly in this scenario as opposed to the losses they experienced in Scenario 1A. Processors experience large gains of about 1 billion dollars in 2001 to 2003 and a small gain of 460 million in 2004, with only a small loss in welfare of 85 million dollars in 2005. The result is that over the five year period, they receive a welfare gain of almost 4 billion dollars.

The economic welfare impact of border measures is quite different than in Scenario 1A. Where taxpayers gain in all years in Scenario 1A, Scenario 2 has some negative welfare results. From 2001 to 2003, taxpayers faced welfare losses that resulted from increased domestic production and decreased domestic consumption due to high domestic prices. This increased excess production had to be exported using export subsidies. With domestic prices relatively higher than world prices, there was a net transfer from Canadian taxpayers to foreign consumers. The result is a net loss of 1.7 billion dollars in welfare over the five years.

Consumers take the biggest hit relative to Scenario 1A. In Scenario 2, Canadian consumers experience a 6.3 billion increase in welfare but this is about one-half of what they received in Scenario 1A because domestic prices are higher with the phased removal of tariffs. With about 5 billion dollars of this welfare gain occurring in 2004 and 2005, consumers must wait until almost free trade before seeing much in the way of welfare gains.

The net effect of these welfare changes is that the Canadian economy experiences about a 2.4 billion dollar increase in welfare over the five years. It must be noted though, in 2001 the economy actually experienced a 205 million dollar loss in welfare. This loss points to a concern that deregulating the domestic market while excessive border measures remain in place could cause economic welfare losses for Canada.

A summary of the results are in Table 5.6, with the full set of calculations in Appendix 5, Scenario 2.

Table 5.6 Change in Welfare in Constant 1990 Dollars (billions C\$)

	2001	2002	2003	2004	2005	5 Year Total
Producers						
Quota Rent	-1.640	-1.668	-1.710	-1.738	-1.792	-8.547
Producer Surplus	0.843	0.699	0.518	0.305	0.089	2.454
Total Welfare	-0.797	-0.969	-1.192	-1.433	-1.703	-6.093
Processors	1.300	1.265	0.945	0.460	-0.085	3.885
Taxpayers	-0.808	-0.700	-0.361	0.047	0.079	-1.741
Consumers	0.100	0.484	0.997	1.784	3.012	6.377
Net Total	-0.205	0.081	0.390	0.859	1.303	2.427

5.2.4 Scenario 3 – 50 Percent Tariff Cut with a Maximum Tariff of 50 Percent

Scenario 3 is the first scenario that involves less than complete trade liberalization. It is important to understand the world market conditions when trade liberalization results in less than the free trade since this is the most likely outcome of the Doha Round of negotiations.

Scenario 3 illustrates the effects of reducing all over-quota tariffs by 50 percent and placing a maximum of a 50 percent for each tariff line in 2001. In other words, if a tariff is reduced by 50 percent and it is still higher than 50 percent, it is reduced further by the amount necessary to bring it down to 50 percent. If the tariff is below 50 percent after the 50 percent reduction, there is no further tariff reduction. What this does is effectively remove all of the mega-tariffs that are present in many of the countries' dairy industries.

In this scenario, supply management is retained in Canada, the EU(15) and Japan, although it must operate within the constraints of the reduced tariffs. Export subsidies are not eliminated and minimum access commitments are not adjusted. The effects of adjusting export subsidies and minimum access commitments are looked at in Scenario 4.

5.2.4.1 Scenario Results

The tariff reductions are large enough to trigger world price increases of between 46 and 16 percent depending on the product and year. Cheese has the largest price gain relative to the baseline with increases between 46 and 37 percent. Butter is close behind with increases of 38 to 31 percent. The powders see the smallest price increases, with increases between 28 and 16 percent.

World production and consumption increase for cheese, skim and whole milk powder while for butter it decreases. World milk production increases by less than 0.5 percent.

Australia and New Zealand's domestic prices for dairy products increase and in the case of Australian whole milk powder, this is quite dramatic at about 100 percent higher than the baseline. This causes the expected increase in production and decrease in consumption. Milk production and price increase in both countries.

The United States experiences price decreases in all dairy products except butter in 2001 and whole milk powder in 2005. The supply of dairy products decreases for all products except whole milk powder in 2005. The price increase for butter in 2001 was too small to offset an increase in the price of fat that year, so production still decreased because its margin decreased. As expected, consumption increased in all years and all

products except butter in 2001 and whole milk powder in 2005, which had decreases. Milk price and production both dropped by 1 to 3 percent.

Canada and Japan's prices of all dairy products decline in all years. This leads to an increase in consumption and a decrease in the production of all dairy products. The price of milk also decreases, resulting in reduced production in Canada and Japan.

The EU(15) had mixed results in terms of the price of dairy products. Butter and cheese prices decrease while skim and whole milk powders prices increase. The price changes produced the expected results for dairy product consumption; butter and cheese consumption increased while skim and whole milk powder consumption decreased. Production results were a little different than the price changes alone would lead one to expect. Cheese and skim milk powder behaved as expected, with the production of cheese decreasing and skim milk powder increasing in all years. The major exception was butter, which saw its price decrease, while its production actually increased. This is because the price of fat dropped so significantly that the gross margin of butter actually increased. The second exception was with whole milk powder in 2001. Its price increase was too small to offset a large increase in the price of solid non-fat and therefore, reduced its margin and production. Whole milk powder returned to the expected increase in production for 2002 to 2004.

The net effect is that tariff reductions using the method in this scenario begin to produce some trade liberalization effects.

Table 5.7 Simulation Results for a 50% Tariff Cut with a Maximum Tariff of 50% (Scenario 3)

Supply (KT)	Australia		Canada		European Union		Japan		New Zealand		United States		Rest of the World		World	
	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change
Butter	190	10	86	-3	1,812	2	80	-29	412	6	490	-4	4,152	-2	7,221	-1
Cheese	438	17	360	-23	7,139	-0.2	52	-16	394	41	4,201	-2	3,556	12	16,141	3
Skim Milk Powder	280	20	65	-59	966	8	213	-22	187	50	475	-19	971	3	3,157	3
Whole Milk Powder	159	66	17	-88	1,077	11	53	-91	527	7	60	57	1,063	-17	2,957	2
Residual Products ²	761	-0.4	717	0.1	7,714	-0.5	752	0.2	711	-0.4	6,213	0.1	38,621	0.1	-	-
Milk	12,135	13	8,390	-9	120,800	1	8,860	-10	13,448	12	78,684	-1	332,448	0.2	599,333	0.4
Demand (KT)																
Butter	70	-12	84	10	1,741	5	80	71	32	-12	502	1	4,673	-4	7,173	-1
Cheese	232	-8	357	30	6,850	1	264	161	46	-10	4,294	3	4,103	-6	16,146	3
Skim Milk Powder	38	-8	34	12	874	-6	264	39	8	-7	329	5	1,638	1	3,186	3
Whole Milk Powder	35	-29	18	10	555	-3	53	69	1	-6	49	-1	2,245	2	2,957	2
Price ³																
Butter	282	32	561	-12	356	-11	96,400	-63	351	31	321	-1	294	6	184	31
Cheese	429	24	896	-31	378	-3	183,956	-76	464	32	382	-4	353	12	220	38
Skim Milk Powder	283	19	559	-20	203	18	54,564	-41	357	18	283	-7	297	-4	186	18
Whole Milk Powder	114	115	560	-17	258	8	77,960	-57	386	15	278	2	315	-5	197	16
Residual Products	425	3	839	-0.5	326	4	101,142	-1	535	2	435	-0.3	445	-0.3	-	-
Milk ⁴	24,74	13	62,93	-3	30,00	1	8,387	-3	31,08	19	35,65	-1	59,67	-0.1	-	-
Gross Margins ^{3,5}																
Butter	95	16	127	-6	119	3	40,391	-47	137	9	63	-5	-48	12	-	-
Cheese	247	24	500	-41	174	-1	145,244	-85	268	32	151	-8	57	46	-	-
Skim Milk Powder	82	55	71	-135	-8	-87	-8,401	466	116	42	9	-138	-103	-2	-	-
Whole Milk Powder	48	-175	73	-88	30	36	14,192	-299	139	15	5	95	-87	13	-	-
Net Trade (KT)																
Butter	120	23	0.25	-4,389	73	-57	-0.1	79,482	340	8	-12	211	-520	-20	-	-
Cheese	206	46	5	-4,018	290	-35	-212	205	347	48	-93	219	-543	-123	-	-
Skim Milk Powder	242	24	29	-144	123	109	-51	292	179	52	146	-73	-667	-2	-	-
Whole Milk Powder	124	93	-1	1,215	522	25	0	(-85) ¹	527	7	10	327	-1,181	19	-	-

¹ This is the actual net trade in KT as the percentage change could not be calculated.

² The supply and demand of Residual Products are equal, therefore only supply is reported.

³ Units are local currency/100 kg for butter, cheese, skim milk powder, whole milk powder and residual products and local currency/hl for milk. World prices are in US dollars.

⁴ Milk Prices for Australia, Canada and United States is Industrial Milk Price and for European Union, Japan, New Zealand and the Rest of the World is the Blended Milk Price.

⁵ For products with negative margins, a negative percentage change means that the margin is getting less negative. If the percentage change is positive, then the margin is getting more negative.

5.2.4.2 Canadian Welfare Results

The welfare impacts are not as great as under complete free trade (Scenario 1A). Milk producers still experience a loss in welfare but it is only 1.1 billion dollars over the five years as opposed to 7.7 billion dollars in Scenario 1A.

Processors experience an even greater loss than under free trade with a loss of almost 1 billion dollars over five years. This likely results from the fact that supply management is retained, and milk supply drops by nine percent.

Taxpayers give a higher welfare gain for the economy at 500 million dollars. This is the result of fewer exports needing to be subsidized because supply management has limited milk to processors. The continued presence of tariffs means tariff revenue and import quota rents are still being collected on an increasing amount of imports. The net effect is an increase in welfare for taxpayers.

Consumers do receive a welfare gain from lower prices and increased imports. The welfare gain is 5.4 billion dollars over five years but this is less than one-half of what they received in Scenario 1A. This means that consumers gain more than one-half of their welfare from the reduction of tariffs from 50 percent to 0.

The net effect for the Canadian economy is a gain of 3.8 billion dollars over five years. This is about 1.1 billion dollars less than under free trade. This partial trade liberalization brings considerable benefits.

Table 5.8 Change in Welfare in Constant 1990 Dollars (billions C\$)

	2001	2002	2003	2004	2005	5 Year Total
Producers						
Quota Rent	0.095	-0.051	-0.076	-0.088	-0.089	-0.210
Producer Surplus	-0.172	-0.191	-0.190	-0.179	-0.176	-0.908
Total Welfare	-0.077	-0.242	-0.266	-0.267	-0.265	-1.118
Processors	-0.611	-0.083	-0.089	-0.091	-0.101	-0.975
Taxpayers	0.341	0.044	0.047	0.048	0.055	0.536
Consumers	0.888	1.029	1.081	1.136	1.266	5.401
Net Total	0.541	0.749	0.773	0.826	0.955	3.844

5.2.5 Scenario 4 – Eliminate Export Subsidies and Increase Minimum Access Commitments to 7 Percent

Where Scenario 3 looked at the effects of tariff reduction on the world dairy markets, Scenario 4 looks at the effects of changing export subsidies and minimum access commitments. For this scenario, export subsidies are eliminated and minimum access is increased to 7 percent of domestic consumption. If minimum access in the baseline scenario is less than 7 percent, it is forced to 7 percent in this scenario regardless of the current access or TRQ fill situation. This means that the countries/regions cannot use TRQ administration as a non-tariff barrier to trade.

The changes to export subsidies and minimum access commitments are all imposed in 2001. Canada, the EU(15) and Japan retain supply management. Tariffs are left at their Uruguay Round commitments levels.

5.2.5.1 Scenario Results

The removal of export subsidies and the expansion of the minimum access commitments to 7 percent had very little effect on any of the world indicators. The smallest changes were to the price of butter, where prices increased by 6 to 8 percent. This is extremely small compared to price increases of over 70 percent for butter under free trade. The other dairy products saw larger price changes with increases of between 9 to 20 percent in any given year.

With such small price changes, it is not surprising that the production and consumption changes for dairy products and raw milk are also quite small, with all being within ± 1.7 percentage points of the baseline.

The results for the various countries/regions are not significantly different from the world market conditions.

Table 5.9 Simulation Results for the Elimination of Export Subsidies and Minimum Access Increased to 7% (Scenario 4)

Supply (KT)	Australia		Canada		European Union		Japan		New Zealand		United States		Rest of the World		World	
	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change
Butter	190	2	86	-1	1,812	-4	80	-2	412	1	490	-7	4,152	1	7,221	-0.7
Cheese	438	10	360	-3	7,139	-4	52	2	394	16	4,201	-2	3,556	12	16,141	1
Skim Milk Powder	280	8	65	-10	966	-20	213	-1	187	15	475	-22	971	27	3,157	0.2
Whole Milk Powder	159	4	17	0.1	1,077	-34	53	-5	527	7	60	-21	1,063	30	2,957	-0.5
Residual Products ²	761	-0.1	717	-0.03	7,714	-0.2	752	0.02	711	-0.5	6,213	0.2	38,621	-0.2	-	-
Milk	12,135	3	8,390	-1	120,800	-5	8,860	-0.6	13,448	5	78,684	-2	332,448	2	599,333	0
Demand (KT)																
Butter	70	-3	84	4	1,741	8	80	5	32	-3	502	-1	4,673	-4	7,173	-0.7
Cheese	232	-4	357	3	6,850	5	264	0.4	46	-4	4,294	2	4,103	-5	16,146	1
Skim Milk Powder	38	-4	34	1	874	3	264	-1	8	-4	329	8	1,638	-3	3,186	0.2
Whole Milk Powder	35	-5	18	0.1	535	10	53	2	1	-5	49	2	2,245	-3	2,957	-0.5
Price ³																
Butter	282	6	561	-5	356	-15	96,400	-9	351	6	321	1	294	6	184	6
Cheese	429	12	896	-4	378	-12	183,956	0.6	464	12	382	-4	353	12	220	12
Skim Milk Powder	283	9	559	-1	203	-7	54,564	2	357	9	283	-11	297	9	186	9
Whole Milk Powder	114	11	560	-0.1	238	-21	77,960	-3	386	11	278	-3	315	11	197	11
Residual Products	425	0.7	839	0.2	326	1.4	101,142	-0.1	535	2	435	-1	445	0.6	-	-
Milk ⁴	24,74	3	62,93	-0.4	30,00	-4	8,387	-0.1	31,08	8	35,65	-2	59,67	2	-	-
Gross Margins ⁵																
Butter	95	3	127	-2	119	-6	40,391	-4	137	2	63	-7	-48	-7	-	-
Cheese	247	14	500	-5	174	-12	145,244	0.6	268	13	151	-7	57	43	-	-
Skim Milk Powder	82	23	71	-22	-8	211	-8,401	28	116	12	9	-163	-103	-15	-	-
Whole Milk Powder	-48	-12	73	0.04	30	-112	14,192	-16	139	15	5	-35	-87	-22	-	-
Net Trade (KT)																
Butter	120	5	0.25	-1696	73	-291	-0.1	5689	340	2	-12	241	-520	-46	-	-
Cheese	206	26	5	-446	290	-195	-212	0	347	19	-93	177	-543	-117	-	-
Skim Milk Powder	242	10	29	-23	123	-181	-51	0	179	16	146	-90	-667	-46	-	-
Whole Milk Powder	124	7	-1	0	522	-80	0	(-4) ¹	527	7	10	-131	-1,181	-33	-	-

¹ This is the actual net trade in KT as the percentage change could not be calculated.

² The supply and demand of Residual Products are equal, therefore only supply is reported.

³ Units are local currency/100 kg for butter, cheese, skim milk powder, whole milk powder and residual products and local currency/hl for milk. World prices are in US dollars.

⁴ Milk Prices for Australia, Canada and United States is Industrial Milk Price and for European Union, Japan, New Zealand and the Rest of the World is the Blended Milk Price.

⁵ For products with negative margins, a negative percentage change means that the margin is getting less negative. If the percentage change is positive, then the margin is getting more negative.

There are some changes in the other dairy products but these are relatively small compared to Scenario 1A. The only ones that clearly benefit in this scenario are the Rest of the World milk producers and dairy processors. No longer having to compete with export subsidies, mainly from the EU(15), their prices increase for all dairy products.

This scenario does show that the removal of export subsidies and the expansion of minimum access commitments in the absence of tariff reductions will have some positive, albeit a small impact on the world dairy market. (Table 5.9)

The procedure used in modeling the minimum access and export subsidy reduction scenarios was explained in section 3.6 to 3.7. Essentially, the procedure requires finding the internal prices that are consistent with an individual countries trade commitment. This is done by simulating the individual country models with net trade given exogenously, at the commitment level, and then solving endogenously for the domestic prices consistent with the predetermined commitment level. These domestic prices, consistent with the commitment level, are then used to simulate the full model in such a way that the country either meets or exceeds its commitment level, or it is at world market prices.

This process worked well for Canada and Japan where all four traded dairy products net trade quantities are consistent with their commitments at the domestic prices calculated in the individual country models (Table 5.10).

The EU(15) presents a more complicated situation since internal skim and whole milk powder prices fall to the world market level and these prices are higher than the domestic prices that were calculated to be consistent with their access commitments. In and of itself this is not a problem. Even though the EU is not meeting its access commitments for skim milk and whole milk powder trade is not being inhibited by any border measure, ie. the effective tariff is zero. Unfortunately, from a modeling viewpoint, this situation effects the prices of butter and cheese required for the EU to meet its access commitments for these products. Higher prices for skim and whole milk powder influence the price of fat and non-fat which in turn effect the supply of all four processed dairy products. The result was that in the full model simulation the EU was not meeting its access commitments for butter and cheese. So, lower domestic prices for butter and cheese were needed for the EU(15) to meet its commitments. These lower prices were determined iteratively until the required net trade level was reached. The results of these manipulations are shown in Table 5.10. The second column shows the net trade quantity required for the country to meet its access commitment, the third column shows the prices calculated from the individual country models that are consistent with this access commitment, but in some scenarios might fall below world market prices. The fourth column shows the domestic equilibrium prices that either: 1) are equal to the world market price, in which case net imports are smaller than the access commitment; 2) the domestic price that will generate a level of net trade just equal to the countries access commitment; or 3) are equal to the world price plus over-quota tariff that will result in net imports above the access commitment. In Table 5.10 and in similar table to follow the domestic price calculated to be consistent with the countries access commitment from the

individual country models is called the “internal price” while the domestic price resulting from the full model simulations is called the “full model equilibrium price.”

Table 5.10 Net Trade and Internal Price Levels that are Consistent with Minimum Access and Export Subsidy Commitments in Scenarios 4 in 2005

Country/ Commodity	Net Trade (kt)	Initial Internal Price (nc)	Final Equilibrium Price (nc)
Canada			
Butter	-3.99	532.31	532.31
Cheese	-16.31	858.47	858.47
Skim Milk Powder	22.73	548.77	548.77
Whole Milk Powder	-1.38	558.80	558.80
EU (15)			
Butter	-133.38	322.35	299.79
Cheese	-272.92	337.02	333.65
Skim Milk Powder	-306.78	152.28	188.72
Whole Milk Powder	55.45	194.10	202.99
Japan			
Butter	-5.79	87721.65	87721.64
Cheese	-211.71	182917.30	182917.30
Skim Milk Powder	-51.34	55533.29	55533.29
Whole Milk Powder	-3.70	75756.54	75756.54
United States			
Butter	-40.37	327.55	324.27
Cheese	-199.59	373.89	368.78
Skim Milk Powder	20.02	251.02	251.03
Whole Milk Powder	-3.75	270.85	270.58

nc = national currency

Problems were also encountered in the United States because the equilibrium cheese price is the world price plus the over-quota tariff. This means the domestic price is higher than the world price but still lower than the calculated “internal price”. The result is more net imports than the minimum access amount. This price change causes input prices to change, initially resulting in trade in butter and whole milk powder not meeting there access commitments and skim milk powder exceeding its commitment.

Again the prices of butter and whole milk powder were lowered until the required net trade levels were reached as shown in Table 5.10.

5.2.5.2 Canadian Welfare Results

The Canadian dairy industry remains virtually unchanged in this scenario. The result is that the welfare impacts are relatively small. The Canadian economy's welfare actually experiences a net gain of 643 million dollars over the five years. Most of the gains are received by taxpayers and consumers. Consumers' welfare gains are 721 million dollars for the five years and taxpayers benefit by 157 million dollars. Producers and processors combine for a loss of 235 million dollars in welfare over the 5 years.

This shows that trade liberalization involving an elimination of export subsidies and modest minimum access increases has little effect on the Canadian dairy market (Table 5.10).

Table 5.11 Change in Welfare in Constant 1990 Dollars (billions C\$)

	2001	2002	2003	2004	2005	5 Year Total
Producers						
Quota Rent	0.050	0.023	0.018	0.013	0.010	0.113
Producer Surplus	-0.033	-0.037	-0.038	-0.037	-0.035	-0.181
Total Welfare	0.016	-0.015	-0.020	-0.024	-0.025	-0.068
Processors	-0.110	-0.013	-0.015	-0.014	-0.014	-0.167
Taxpayers	0.106	0.012	0.013	0.013	0.014	0.157
Consumers	0.128	0.141	0.147	0.152	0.153	0.721
Net Total	0.140	0.125	0.124	0.126	0.127	0.643

5.2.6 Scenario 5 – 50 Percent Tariff Cut with a Maximum Tariff of 50 Percent, Elimination of Export Subsidies and Minimum Access Increased to 7 Percent

Scenarios 5 and 6 represent two scenarios that include a level of complexity that would be expected in a WTO agreement. Scenario 5 is a larger move toward free trade, while Scenario 6 is a smaller liberalization initiative. Scenario 5 combines the policies in Scenarios 3 and 4 into a single scenario. Therefore, in Scenario 5, tariffs are cut by 50 percent and the tariffs that remain above 50 percent are reduced further until they reach 50 percent. Export subsidies are eliminated and minimum access is increased to 7 percent of domestic consumption. Supply management is retained for Canada, EU(15) and Japan and there is no trade in industrial milk in North America.

5.2.6.1 Scenario Results

The results for Scenario 5 are more like Scenario 3 than Scenario 4. This is more evidence that tariff reduction plays a bigger role in trade liberalization than does export subsidy removal or increased minimum access commitments. There are however, some minor differences between Scenario 5 and Scenario 3.

The world price for all four dairy products increase, but butter and cheese experiencing similar price increases and skim and whole milk powders have larger increases than in Scenario 3. Cheese and skim milk powder world production are higher in Scenario 5 than in Scenario 3. Whole milk powder is the opposite, and has a lower

world production level in Scenario 5 than in Scenario 3. Butter production in Scenarios 3 and 5 are almost identical. World consumption mirrors production with higher consumption for cheese and skim milk powder, lower consumption for whole milk powder and almost the same consumption for butter. World milk production is very close to being the same in Scenario 5 and Scenario 3.

Australia and New Zealand's price and production of all dairy products and milk increase and consumption decreases for all dairy products relative to the baseline. The Canadian price of dairy products and milk decreases relative to the baseline. The production of all dairy products and raw milk also decrease relative to the baseline. Consumption increases for all dairy products as prices fall.

In the EU(15), the prices of all dairy products and milk decrease except skim milk powder from 2003 to 2005. Production of all four dairy products and milk decreases relative to the baseline. Consumption in the EU(15) increases for all dairy products except skim milk powder from 2003 to 2005 relative to the baseline.

Table 5.12 Simulation Results for a 50% Tariff Cut with a Maximum Tariff of 50%, the Elimination of Export Subsidies and Minimum Access Increased to 7% (Scenario 5)

Supply (KT)	Australia		Canada		European Union		Japan		New Zealand		United States		Rest of the World		World	
	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change
Butter	190	13	86	-0.1	1,812	-2	80	-27	412	7	490	-8	4,152	-1	7,221	-1
Cheese	438	22	360	-20	7,139	-3	52	-16	394	49	4,201	-1	3,556	17	16,141	4
Skim Milk Powder	280	26	65	-45	966	-11	213	-21	187	59	475	-22	971	19	3,157	3
Whole Milk Powder	159	76	17	-74	1,077	-17	53	-90	527	15	60	-26	1,063	7	2,957	1
Residual Products ²	761	-0.6	717	0.1	7,714	-0.5	752	0.2	711	-0.8	6,213	0.2	38,621	-0.05	-	-
Milk	12,135	16	8,390	-8	120,800	-3	8,860	-10	13,448	16	78,684	-2	332,448	1	599,333	0.3
Demand (KT)																
Butter	70	-13	84	7	1,741	10	80	68	32	-13	502	-1	4,673	-6	7,173	-1
Cheese	232	-10	357	26	6,850	5	264	153	46	-12	4,294	1	4,103	-8	16,146	4
Skim Milk Powder	38	-10	34	8	874	-3	264	34	8	-10	329	8	1,638	-0.6	3,186	3
Whole Milk Powder	35	-32	18	5	555	4	53	60	1	-10	49	2	2,245	-1	2,957	0.8
Price³																
Butter	282	36	561	-10	356	-20	96,400	-62	351	36	321	1	294	10	184	35
Cheese	429	30	896	-27	378	-12	183,956	-74	464	38	382	-2	353	17	220	44
Skim Milk Powder	283	27	559	-15	203	7	54,564	-37	357	25	283	-11	297	2	186	25
Whole Milk Powder	114	135	560	-9	258	-10	77,960	-53	386	26	278	-3	315	3	197	27
Residual Products	425	3	839	-0.3	326	4	101,142	-1	535	4	435	-1	445	0.2	-	-
Milk ⁴	24.74	16	62.93	-2	30.00	-3	8,387	-3	31.08	26	35.65	-1	59.67	1	-	-
Gross Margins⁵																
Butter	95	20	127	-0.2	119	-3	40,391	-45	137	11	63	-9	-48	6	-	-
Cheese	247	31	500	-36	174	-11	145,244	-84	268	38	151	-5	57	65	-	-
Skim Milk Powder	82	71	71	-104	-8	112	-8,401	442	116	49	9	-163	-103	-11	-	-
Whole Milk Powder	-48	-204	73	-43	30	-55	14,192	-278	139	29	5	-44	-87	-5	-	-
Net Trade (KT)																
Butter	120	28	0.25	-2366	73	-283	-0.1	75753	340	10	-12	265	-520	-49	-	-
Cheese	206	57	5	-3514	290	-195	-212	194	347	58	-93	118	-543	-172	-	-
Skim Milk Powder	242	32	29	-110	123	-67	-51	260	179	62	146	-91	-667	-29	-	-
Whole Milk Powder	124	107	-1	978	522	-39	0	(-79) ¹	527	15	10	-158	-1,181	-9	-	-

¹ This is the actual net trade in KT as the percentage change could not be calculated.

² The supply and demand of Residual Products are equal, therefore only supply is reported.

³ Units are local currency/100 kg for butter, cheese, skim milk powder, whole milk powder and residual products and local currency/hl for milk. World prices are in US dollars.

⁴ Milk Prices for Australia, Canada and United States is Industrial Milk Price and for European Union, Japan, New Zealand and the Rest of the World is the Blended Milk Price.

⁵ For products with negative margins, a negative percentage change means that the margin is getting less negative. If the percentage change is positive, then the margin is getting more negative.

Japan follows its traditional pattern with the price and production of all dairy products and milk decreasing. The consumption of all dairy products increases.

The United States experiences a small price decreases for all dairy products and milk except butter in 2001 and 2005. The production of all dairy products except fluid milk and raw milk decreases relative to the baseline. The consumption of all dairy products increases in all years except butter in 2001 and 2005. The results are summarized in Table 5.12 and in Appendix 4.

Like in Scenario 4 it is interesting to look at which countries are meeting their expected access commitments and the domestic prices that are consistent with their minimum access and export subsidy commitments. The commitment levels are the same for Scenario 4 and 5 and are shown in Table 5.13. Again, Canada and Japan are similar in that both have lower net trade levels (more imports) than their commitments would require and their domestic prices are lower than the internal prices shown in Table 5.13. In both cases, the reduction of the over-quota tariff has put an upper limit on the domestic price and allowed more imports to enter these countries domestic markets.

The EU(15) again has some mixed results, domestic skim and whole milk powder are again at world prices and do not meet their expected net trade levels. Both butter and cheese did not meet their minimum access and export subsidy commitments even though the butter price was at the world price plus the over-quota tariff and the cheese price was

at the internal price. So, the domestic price of butter and cheese had to be lowered in order for the EU(15) to meet their minimum access and export subsidy commitments.

In the United States, cheese, skim and whole milk powder are all at their internal prices while butter is at the world price plus over-quota tariff which is lower than the internal price. The net trade levels are all lower than expected except initially for cheese which is slightly higher. Therefore, the domestic price of cheese was lowered until the net trade was consistent with their commitments.

Table 5.13 Net Trade and Internal Price Levels that are Consistent with Minimum Access and Export Subsidy Commitments in Scenarios 5 in 2005

Country/ Commodity	Net Trade (kt)	Initial Internal Price (nc)	Final Equilibrium Price (nc)
Canada			
Butter	-3.99	532.31	507.51
Cheese	-16.31	858.47	649.65
Skim Milk Powder	22.73	548.77	475.89
Whole Milk Powder	-1.38	558.80	509.93
EU (15)			
Butter	-133.38	322.35	285.28
Cheese	-272.92	337.02	331.96
Skim Milk Powder	-306.78	152.28	216.95
Whole Milk Powder	55.45	194.10	232.47
Japan			
Butter	-5.79	87721.65	36749.55
Cheese	-211.71	182917.30	47042.38
Skim Milk Powder	-51.34	55533.29	34460.12
Whole Milk Powder	-3.70	75756.54	36924.74
United States			
Butter	-40.37	327.55	325.83
Cheese	-199.59	373.89	373.52
Skim Milk Powder	20.02	251.02	251.02
Whole Milk Powder	-3.75	270.85	270.85

nc = national currency

5.2.6.2 Canadian Welfare Results

The welfare impacts for this scenario are smaller than for complete free trade. The total welfare change over the five years is 3.5 billion dollars. Most of these gains are received by consumers with total gains of 4.8 billion dollars over five years. Taxpayers also gain in this scenario with a five year total of 479 million dollars. Processors have total losses of 910 million dollars over the five years. Producers have total losses of 892 million dollars over five years with 761 million coming from production losses and 130 million coming from losses to quota rent. See Table 5.14 for Scenario 5.

Table 5.14 Change in Welfare in Constant 1990 Dollars (billions C\$)

	2001	2002	2003	2004	2005	5 Year Total
Producers						
Quota Rent	0.088	-0.019	-0.061	-0.069	-0.070	-0.130
Producer Surplus	-0.131	-0.166	-0.163	-0.153	-0.148	-0.761
Total Welfare	-0.044	-0.185	-0.223	-0.221	-0.217	-0.892
Processors	-0.579	-0.078	-0.082	-0.081	-0.090	-0.910
Taxpayers	0.304	0.041	0.042	0.043	0.048	0.479
Consumers	0.790	0.943	0.980	0.979	1.088	4.780
Net Total	0.471	0.721	0.717	0.719	0.829	3.457

If the welfare results are compared for Scenarios 3, 4 and 5, an interesting result is discovered. The welfare results for Scenarios 3 and 4 do not add up to Scenario 5. This implies that there is not a linear relationship between the welfare effects when they are modeled individually and when they are modeled simultaneously. In the case of Scenarios 3, 4 and 5, adding the welfare changes in Scenarios 3 and 4 would have overstated the welfare losses by producers and processors and the gains by consumers and taxpayers. This has implications not only for this study but for all studies that use single

policy scenarios in their evaluation of trade liberalization. See the 5 year total comparisons in Table 5.15.

Table 5.15 Welfare Comparisons for Scenario 3, 4 and 5

	Scenario 3	Scenario 4	Scenario 3 + 4	Scenario 5	Difference	% Difference
Producers						
Quota Rent	-0.210	0.113	-0.097	-0.130	0.033	-25
Producer Surplus	-0.908	-0.181	-1.089	-0.761	-0.328	43
Total Welfare	-1.118	-0.068	-1.186	-0.892	-0.294	33
Processors	-0.975	-0.167	-1.142	-0.910	-0.232	25
Taxpayers	0.536	0.157	0.693	0.479	0.214	45
Consumers	5.401	0.721	6.122	4.780	1.342	28
Net Total	3.844	0.643	4.487	3.457	1.030	30

5.2.7 Scenario 6 – 36 Percent Tariff Cut, Elimination of Export Subsidies and Minimum Access Increased to 5 Percent

While Scenario 5 represents a more aggressive move toward complete free trade, Scenario 6 represents a more moderate move toward free trade. In Scenario 6, tariffs are cut by 36 percent, export subsidies are eliminated and minimum access is increased to 5 percent of domestic consumption. Supply management is retained in Canada, EU(15) and Japan and there is no trade in industrial milk in North America.

5.2.7.1 Scenario Results

Scenario 6 does allow enough trade liberalization to open up the markets of some countries to trade in dairy products. The result is that world prices rise, but not by as

much as in Scenario 5, and significantly less than under free trade. World consumption and production increase for all dairy products except butter, which sees a small decline. World milk production remains virtually unchanged, with increases by about 0.1 percent each year.

In Australia and New Zealand prices and the production of dairy products increase and consumption decreases as in Scenario 5, but the changes are smaller.

The Canadian market remains heavily protected in this scenario, although the prices of all dairy products decrease. Production of all dairy products decreased. Consumption increased for all dairy products. The result for milk producers is that price and production of milk both decrease.

In the EU(15), Japan and United States' markets, prices decrease for all dairy products and milk, except for butter in the United States and skim milk powder in the EU(15). The corresponding changes in production and consumption occur in relation to the price changes. It is the opening up of these three markets that cause the world prices to change in this scenario (Table 5.16).

Similar to Scenarios 4 and 5 it is useful to compare the net trade and internal price levels calculated to fulfill the minimum access and export subsidy commitments with the simulation results. Table 5.17 lists the net trade and internal prices for Scenario 6. In Scenario 6, Canada is the only country that meets its net trade and internal price

Table 5.16 Simulation Results for a 36% Tariff Cut, the Elimination of Export Subsidies and Minimum Access Increased to 5% (Scenario 6)

Supply (KT)	Australia		Canada		European Union		Japan		New Zealand		United States		Rest of the World		World	
	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change	Base Units	% Change
Butter	190	10	86	-2	1,812	-2	80	-2	412	6	490	-6	4,152	-0.2	7,221	-0.6
Cheese	438	13	360	-2	7,139	-2	52	-16	394	30	4,201	-3	3,556	10	16,141	2
Skim Milk Powder	280	18	65	-8	966	-11	213	-4	187	40	475	-25	971	14	3,157	1
Whole Milk Powder	159	53	17	0.1	1,077	-24	53	-3	527	12	60	-22	1,063	12	2,957	-0.04
Residual Products ²	761	-0.4	717		7,714	-0.3	752	0.02	711	-0.7	6,213	0.2	38,621	-0.05	-	-
Milk	12,135	11	8,390	-1	120,800	-3	8,860	-1	13,448	11	78,684	-2	332,448	1	599,333	0.08
Demand (KT)																
Butter	70	-9	84	2	1,741	7	80	4	32	-9	502	-0.2	4,673	-4	7,173	-0.6
Cheese	232	-7	357	2	6,850	4	264	10	46	-8	4,294	4	4,103	-5	16,146	2
Skim Milk Powder	38	-8	34	1	874	-0.7	264	6	8	-8	329	9	1,638	-1	3,186	1
Whole Milk Powder	35	-26	18	0.1	555	6	53	1	1	-8	49	2	2,245	-1	2,957	0.01
Price ³																
Butter	282	22	561	-2	356	-15	96,400	-7	351	22	321	0.3	294	5	184	22
Cheese	429	18	896	-3	378	-9	183,956	-13	464	23	382	-6	353	10	220	27
Skim Milk Powder	283	20	559	-3	203	2	54,564	-8	357	19	283	-12	297	3	186	19
Whole Milk Powder	114	94	560	-0.2	258	-14	77,960	-2	386	20	278	-3	315	4	197	21
Residual Products	425	3	839		326	2	101,142	-0.2	535	4	435	-1	445	0.2	-	-
Milk ⁴	24.74	11	62.93	-0.3	30.00	-3	8,387	-0.4	31.08	18	35.65	-2	59.67	1	-	-
Gross Margins ⁵																
Butter	95	15	127	-3	119	-3	40,391	-4	137	9	63	-7	48	1	-	-
Cheese	247	19	500	-4	174	-9	145,244	-15	268	23	151	-11	57	39	-	-
Skim Milk Powder	82	49	71	-19	-8	116	-8,401	79	116	33	9	-186	-103	-8	-	-
Whole Milk Powder	-48	-142	73	0.1	30	-79	14,192	-10	139	24	5	-37	-87	-8	-	-
Net Trade (KT)																
Butter	120	21	0.25	-1056	73	-237	-0.1	5265	340	8	-12	228	-520	-30	-	-
Cheese	206	36	5	-305	290	-150	-212	16	347	35	-93	297	-543	-104	-	-
Skim Milk Powder	242	22	29	-20	123	-85	-51	44	179	42	146	-103	-667	-23	-	-
Whole Milk Powder	124	76	-1	0	522	-56	0	(-2) ¹	527	12	10	-136	-1,181	-13	-	-

¹ This is the actual net trade in KT as the percentage change could not be calculated.

² The supply and demand of Residual Products are equal, therefore only supply is reported.

³ Units are local currency/100 kg for butter, cheese, skim milk powder, whole milk powder and residual products and local currency/hl for milk. World prices are in US dollars.

⁴ Milk Prices for Australia, Canada and United States is Industrial Milk Price and for European Union, Japan, New Zealand and the Rest of the World is the Blended Milk Price.

⁵ For products with negative margins, a negative percentage change means that the margin is getting less negative. If the percentage change is positive, then the margin is getting more negative.

expectations for all dairy products. Japan experiences lower prices for butter, cheese and skim milk powder and the internal price for whole milk powder. Its net trade levels are all lower than expected for butter, cheese and skim milk powder and is slightly higher than expected for whole milk powder.

The EU(15) again has skim and whole milk powder at world prices and their net trade levels are higher than the minimum access and export subsidy commitment calculations. Butter operating at the world price plus the over-quota tariff and cheese at the internal price both initially did not meet their commitments. Therefore both butter and cheese domestic prices were lowered until they meet their commitments.

The United States exceeds its net trade levels for butter, cheese and skim milk powder but initially fell short for whole milk powder. The prices of butter and cheese are lower than their internal prices and the price of skim and whole milk powder are at their internal prices. So, the price of whole milk powder had to be lowered in order to meet the access commitments.

Table 5.17 Net Trade and Internal Price Levels that are Consistent with Minimum Access and Export Subsidy Commitments in Scenarios 6 in 2005

Country/ Commodity	Net Trade (kt)	Internal Price (nc)	Equilibrium Price (nc)
Canada			
Butter	-2.39	548.16	548.16
Cheese	-9.67	871.06	871.06
Skim Milk Powder	23.46	543.80	543.80
Whole Milk Powder	-1.38	558.50	558.50
EU (15)			
Butter	-98.38	335.50	301.95
Cheese	-144.70	346.83	342.32
Skim Milk Powder	-287.54	149.98	205.86
Whole Milk Powder	65.49	195.32	220.47
Japan			
Butter	-4.135	90155.97	89293.23
Cheese	-211.71	183208.15	159942.25
Skim Milk Powder	-51.34	55259.39	50114.87
Whole Milk Powder	-2.642	76383.83	76383.83
United States			
Butter	-29.58	338.41	322.51
Cheese	-126.04	381.36	359.36
Skim Milk Powder	27.52	248.60	248.60
Whole Milk Powder	-2.675	271.47	270.11

nc = national currency

5.2.7.2 Canadian Welfare Results

The welfare results for Canada in Scenario 6 are similar in direction to Scenario 5 but are of a smaller magnitude. Total welfare gains for Canada are only 464 million dollars over 5 years. Canadian consumers gain 505 million dollars and taxpayers gain an additional 117 million dollars over the 5 years. Processors losses are 122 million dollars over 5 years. Producers have an interesting set of results. Though producers' lose a total of 37 million dollars, they actually have an increase of 121 million dollars in quota rent.

Unfortunately this gain in quota rent is offset by 158 million dollar loss in producer surplus resulting in the net loss.

Table 5.18 Change in Welfare in Constant 1990 Dollars (billions C\$)

	2001	2002	2003	2004	2005	5 Year Total
Producers						
Quota Rent	0.048	0.025	0.020	0.015	0.013	0.121
Producer Surplus	-0.029	-0.033	-0.033	-0.032	-0.031	-0.158
Total Welfare	0.019	-0.008	-0.013	-0.017	-0.018	-0.037
Processors	-0.079	-0.010	-0.012	-0.010	-0.010	-0.122
Taxpayers	0.079	0.009	0.009	0.010	0.010	0.117
Consumers	0.090	0.099	0.103	0.106	0.107	0.505
Net Total	0.109	0.090	0.088	0.089	0.089	0.464

5.3 SUMMARY

Chapter 5 analyzed the impacts of seven trade liberalization scenarios on the world dairy market and the economic welfare implications for the Canadian dairy sector for the years 2001 to 2005. Of the seven scenarios, three were complete trade liberalization scenarios, free trade, free trade with North American trade in industrial milk and phased-in free trade. It also included two partial, single policy trade liberalization scenarios, tariff reduction and export subsidy elimination with increased minimum access. The last two scenarios were partial, multi-policy trade liberalization scenarios. The first combined the two partial, single policy scenarios and the second one is a less aggressive multi-policy trade liberalization scenario. The simulation results were reported as percentage change for supply, demand, price, gross margin and net trade in Chapter 5 with a complete set of percentage and unit changes reported in Appendix 4.

The simulation results for partial trade liberalization indicate that even relatively small amounts of trade liberalization, such as scenario 6, will result in sizable increases in world prices for dairy products. The world production and consumption of milk and dairy products are not projected to change much in volume. However, the allocation of dairy product production among regions is projected to change significantly.

The market oriented regions of Australia and New Zealand experience higher prices and levels of production but consumption decreases. The United States and the Rest of the World experience mixed results with some products increasing production while others decrease. The supply managed regions of Canada, EU(15) and Japan are the most affected with prices and production expected to decrease and consumption increasing. Japan is the most affected with Canada and EU(15) affected to a lesser extent.

However, the most important result from partial trade liberalization occurred when the welfare results from Scenarios 3, 4 and 5 were compared. This comparison showed that the welfare changes in Scenarios 3 and 4 could not be used to forecast the welfare changes in Scenario 5, even though Scenario 5 is a combination of the policies in Scenarios 3 and 4. This raises doubts about the usefulness of welfare calculations from partial, single policy trade liberalization simulations when trade liberalization will actually occur in a multi-policy framework.

In complete free trade world, the impact on prices in supply managed regions is quite significant. However, production has some mixed results and consumption is generally increasing. In the case of Canada, the impact of free trade on economic welfare would be negative for milk producers and dairy processors and positive for consumers and taxpayers.

CHAPTER 6

SUMMARY, RESEARCH CONTRIBUTIONS AND SUGGESTIONS FOR FUTURE RESEARCH

6.1 INTRODUCTION

The research problem that needed to be answered by this study was to provide quantitative information on the impacts of trade liberalization in six major OECD dairy producing countries/regions in a multi-policy, multi-year framework. The impacts were measured in terms of the changes in production, consumption, trade flows and prices in the world and domestic markets. The impacts were also measured in Canada in terms of the welfare changes of the participants in the domestic dairy industry.

In order to examine these issues, the trade model constructed by Larivière (1999) was adapted and expanded to become the Guelph Dairy Trade Model. The model was changed from a single-year static model to a multi-year dynamic model and expanded to include a fourth traded commodity, whole milk powder. The residual product was changed to fluid milk, which includes fluid drinking milk and other fresh or soft dairy products.

The impacts of various single-policy and multiple-policy scenarios were simulated over a five year period, 2001 to 2005 and the results calculated to determine the effect of the various policies.

This chapter is divided into three additional sections. Section 6.2 summarizes the thesis. Section 6.3 discusses the research contributions. Section 6.4 discusses the model limitations and provides suggestions for further research.

6.2 SUMMARY

In order to understand the impacts of trade liberalization in the world dairy market, it is necessary to understand the recent nature of the world dairy market and the domestic policies in various countries/regions. It was also necessary to adapt the existing model to better simulate the effects of a trade agreement. Finally, it was necessary to analyze the various trade liberalization scenarios to better understand their economic meaning. Chapter 1 specified the research problem and the specific research objectives.

Chapter 2 addressed the first objective by reviewing the evolution of production, consumption and trade in dairy products during the last three decades at the world level. The trend in dairy product production and consumption show slight growth with the exception of cheese which has increased at a greater rate than the other dairy products. The first part also reviewed the distribution of dairy product production, consumption and trade amongst the major dairy producers in the OECD. Although it was shown that milk production is distributed across a large number of countries/regions, exports are dominated by four major exporters: EU (15), New Zealand, Australia and the United States. While exports are concentrated, imports are highly distributed among a large number of nations.

Chapter 2 also reviewed the implications of the WTO and GATT negotiations on the world dairy markets. It looked at these implications in three time periods: pre-Uruguay Round, the Uruguay Round and the post Uruguay Round. The treatment of

agricultural trade from near exemption from GATT discipline in the pre-Uruguay Round period to full inclusion under the Uruguay Round Agreement can be followed by looking at these three time periods. The treatment of agricultural trade in the current Doha Round of negotiations is also discussed.

The third part of Chapter 2 addressed the second objective by reviewing the domestic dairy policies in selected OECD countries/regions. A major feature that characterizes the dairy sector in all developed countries, except for New Zealand and to a lesser extent Australia, is the important role governments have played in shaping the industry. Dairy products remain highly protected from world markets and heavily supported in domestic markets. The result is the low levels of international trade illustrated in the first part of the chapter.

Finally Chapter 2 reviewed the OECD's AGLINK model and Agricultural Outlook based on the model. This fulfilled the third objective as the OECD Agricultural Outlook forms the baseline for the Guelph Dairy Trade Model. This is why it is important to understand the assumptions made in the OECD Agricultural Outlook, since these are carried through to the Guelph Dairy Trade Model.

The fourth objective was to modify and expand the 1999 model. This was accomplished in Chapter 3 and 4.

Chapter 3 looked at the development and changes in the Guelph Dairy Trade Model. The first part summarized the 1999 Guelph Dairy Trade Model developed in Larivière (1999). This part also identified a number of problems and areas for further research. The second part of Chapter 3 looked at the general structure of the model and changes made to the model to address the problems and areas for improvement identified in the first part of the chapter. The last part of Chapter 3 looks at how to calculate welfare changes in the Guelph Dairy Trade Model.

Chapter 4 discussed the parameters and technical relationships used in the Guelph Dairy Trade Model. The first part of Chapter 4 presented the parameters and technical relationships used in the producer module. These parameters and technical relationships effect the production of milk in each country/region. The second part of Chapter 4 deals with the parameters and technical relationships used in the production of dairy products in each country/region. This part also explained the method used to calculate the supply elasticities of dairy products in each country/region since they were not estimated from econometrically. The third part of the of Chapter 4 deals with the consumer module which contains the parameters and technical relationships that effect the demand for dairy products in each country/region. The last part of Chapter 4 deals with model validation. It shows that the model behaves in ways that are consistent with economic theory when it is shocked.

The final objective was to draw implications of the results for six OECD countries/regions resulting from trade liberalization. This was done in Chapter 5.

Chapter 5 analyzed the impacts of seven trade liberalization scenarios on the world market and the economic welfare implications for the Canadian dairy sector for the years 2001 to 2005. Of the seven scenarios, three were complete trade liberalization scenarios, free trade, free trade with North American trade in industrial milk and phased-in free trade. The analysis also included two partial, single policy trade liberalization scenarios; 1) tariff reduction, and 2) export subsidy elimination with increased minimum access. The last two scenarios were partial, multiple-policy trade liberalization scenarios. The first combined the two partial, single policy scenarios and the second one is a less aggressive multi-policy trade liberalization scenario. The simulation results were reported as percentage changes from baseline values for supply, demand, price, gross margin and net trade in Chapter 5 with a complete set of percentage and unit changes reported in Appendix 4.

The simulation results from partial trade liberalization indicate that even relatively small amounts of trade liberalization, such as scenario 6, will result in sizable increases in world prices for dairy products (Table 6.1). The world production and consumption of milk and dairy products is not projected to change much in terms of total volume, however, the allocation of dairy product production among regions is projected to change significantly.

Table 6.1 World Dairy Product Prices in Scenarios 1, 3, 4, 5 and 6 in 2005 (% Change)

World Dairy Product Prices	Baseline US\$/100kg	Scenario 1	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Butter	315.04	71	31	6	35	22
Cheese	383.26	74	38	12	44	27
Skim Milk Powder	259.35	40	18	9	25	19
Whole Milk Powder	278.97	42	16	11	27	21

The market oriented regions of Australia and New Zealand experience higher prices and levels of production but consumption decreases. The United States and the Rest of the World experience mixed results with some products increasing production while others decrease. The supply managed regions of Canada, EU (15) and Japan are the most affected with prices and production expected to decrease and consumption increasing. Japan is the most affected with Canada and EU (15) affected to a lesser extent.

However, the most important result from partial trade liberalization occurred when the welfare results from Scenarios 3, 4 and 5 were compared. This comparison showed that the welfare changes in Scenarios 3 and 4 could not be used to forecast the welfare changes in Scenario 5, even though Scenario 5 is a combination of the policies in Scenarios 3 and 4. This raises doubts about the usefulness of welfare calculations from partial, single policy trade liberalization simulations when trade liberalization will actually occur in a multiple-policy change framework.

With complete free trade, the impact on prices in supply managed regions is quite significant. However, production has some mixed results and consumption is generally increasing. In the case of Canada, the impact of free trade on economic welfare would be

negative for milk producers and dairy processors and positive for consumers and taxpayers.

6.3 RESEARCH CONTRIBUTIONS

This research contributed in two areas: 1) methodology; and 2) policy analysis.

In terms of methodological contributions this research extended the rigorous conceptual framework developed by Larivière (1999) to analyze the economic implications of trade liberalization. The extension of the framework was to allow the analysis of the economic implications for simultaneous tariff rate quota and export subsidy reforms. This is important as it means the model is capable of simulating scenarios that are more like actual trade agreements. The second methodological contribution was the development of a method to calculate coefficient estimates in an internally consistent fashion that cannot be estimated using econometric methods. The method uses known technical relationships and a minimum number of assumptions to solve a set of equations and maintain economic consistency within the model. This was used to derive the set of dairy product supply equations that presented estimation problems in Larivière (1999) and the early stages of this research.

The research contribution in policy analysis is related to the methodological contribution. The ability to model multiple-policy scenarios meant that a multiple-policy scenario could be compared with single policy scenarios using the same policies. What

was discovered was that the welfare calculations of single policy scenarios could not be used to forecast the welfare effects of a multiple-policy scenario with the same policies. The importance of this is that most policy simulations are based on single policy scenarios.

6.4 MODEL LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Even though this is the second research study using the Guelph Dairy Trade Model, there are still a number of limitations and areas for further research that can be mentioned. The areas of further research are in three areas: 1) inventory and stock adjustments; 2) dairy product supply module; and 3) disaggregation of the Rest of the World region.

The economic understanding of the inventory and stock adjustments for dairy products within the model is weak. Further research into inventory adjustments would increase the economic rigor of the model.

The dairy product supply module still possesses some problems. The lack of the ability to estimate its functional form is still troubling. Also the continued existence of a residual product means that further disaggregation is possible within the module.

Another problem in the dairy product supply module is the continued presence of negative margins for some dairy products. One possible solution may be to allow price

discrimination in the supply of milk to the processing sector. This would more accurately model the actual milk supply market as several countries use explicit price discrimination according to end use in their domestic dairy policies. The problem with this solution is the availability of accurate data.

The third area of further research is the disaggregation of the Rest of the World region. The Rest of the World region is a collection of countries with a range of different domestic dairy policies, from the highly protectionist countries like Norway and Switzerland to poor developing countries with open market dairy policies. The OECD Agricultural Outlook has begun to add many of the European countries that are not members of the European Union as well as Korea, Mexico, Argentina and China. The main problem faced in adding these countries is the completeness of their data sets.

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APPENDIX 1

GUELPH DAIRY TRADE MODEL VARIABLE NAMES, DEFINITIONS, UNITS OF MEASUREMENT AND SOURCE

Australia	Dairy Products	Units	Source
AUSBTEFT_PC	Effective Tariff	%	Calculated
AUSBTMG	Manufacture's Gross Margin for Butter	A\$/100kg	Calculated
AUSBTNT	Trade balance	kt	OECD Outlook
AUSBTTP	Domestic Price	A\$/100kg	Calculated
AUSBTQC	Consumption	kt	OECD Outlook
AUSBTQCC8CON	Consumption Constant		Calibrated
AUSBTQP	Production	kt	OECD Outlook
AUSBTQP8CON	Production Constant		Calibrated
AUSBTST	Ending stocks	kt	OECD Outlook
AUSBTST8CON	Ending stocks Constant		Calibrated
AUSBTWA	Loss or Statistical Error	kt	Calculated
AUSCHEFT_PC	Effective Tariff	%	Calculated
AUSCHMG	Manufacture's Gross Margin for Cheese	A\$/100kg	Calculated
AUSCHNT	Trade balance	kt	OECD Outlook
AUSCHPP	Domestic Price	A\$/100kg	Calculated
AUSCHQC	Consumption	kt	OECD Outlook
AUSCHQCC8CON	Consumption Constant		Calibrated
AUSCHQP	Production	kt	OECD Outlook
AUSCHQP8CON	Production Constant		Calibrated
AUSCHST	Ending stocks	kt	OECD Outlook
AUSCHST8CON	Ending stocks Constant		Calibrated
AUSCHWA	Loss or Statistical Error	kt	Calculated
AUSCPI	Consumer Price Index		OECD Outlook
AUSDBTBTFE	Total Milk Fat in Butter	kt	Calculated
AUSDBTSNFE	Total Solid Non-Fat in Butter	kt	Calculated
AUSDCHBTFE	Total Milk Fat in Cheese	kt	Calculated
AUSDCHSNFE	Total Solid Non-Fat in Cheese	kt	Calculated
AUSDRESBTFE	Total Milk Fat in Residual Product	kt	Calculated
AUSDRESSNFE	Total Solid Non-Fat in Residual Product	kt	Calculated
AUSDSPMBTFE	Total Milk Fat in SMP	kt	Calculated
AUSDSPMSNFE	Total Solid Non-Fat in SMP	kt	Calculated
AUSDWMPBTFE	Total Milk Fat in WMP	kt	Calculated
AUSDWMPSNFE	Total Solid Non-Fat in WMP	kt	Calculated
AUSFATPP	Butterfat Price	Act/L of Milk	Calculated
AUSGDPD	Gross Domestic Product Deflator		OECD Outlook
AUSGDPI	Gross Domestic Product Index		OECD Outlook
AUSINFTFRATIO	Ratio of Residual Fat to Total Fat Produced		Calculated
AUSMKFAT	Butterfat content of milk	%	OECD Outlook
AUSMKPP_FL	Fluid milk price	Act/L	OECD Outlook
AUSMKPP_IM	Industrial milk price	Act/L	OECD Outlook
AUSMKPPRATIO	Ratio of Fluid to Industrial Milk Prices	Ratio	Calculated
AUSMKQP	Production	kt	OECD Outlook
AUSMKQP8CON	Production Constant		Calculated
AUSMKQPBTFE	Total Milk Fat Produced	kt	Calculated
AUSMKQPSNFE	Total Solid Non-Fat Produced	kt	Calculated
AUSMKS NF	Solid Non-Fat content of Milk	%	Calculated
AUSPOP	Population - 000	000	OECD Outlook
AUSRESBTFE8RATIO	Ratio of Fat in Residual Product		Calculated

Australia	Dairy Products	Units	Source
AUSRESMG	Manufacture's Gross Margin for Residual Product	A\$/100kg	Calculated
AUSRESPP	Domestic Price	A\$/100kg	Calculated
AUSRESQC	Consumption	kt	OECD Outlook
AUSRESQCC8CON	Consumption Constant		Calibrated
AUSRESQP	Production	kt	OECD Outlook
AUSRESQP8CON	Production Constant		Calibrated
AUSRESSNFE8RATIO	Ratio of Solid Non-fat in Residual Product		Calculated
AUSSMPEFT_PC	Effective Tariff	%	Calculated
AUSSMPMG	Manufacture's Gross Margin for SMP	A\$/100kg	Calculated
AUSSMPNT	Trade balance	kt	OECD Outlook
AUSSMPPP	Domestic Price	A\$/100kg	Calculated
AUSSMPQC	Consumption	kt	OECD Outlook
AUSSMPQCC8CON	Consumption Constant		Calibrated
AUSSMPQP	Production	kt	OECD Outlook
AUSSMPQP8CON	Production Constant		Calibrated
AUSSMPST	Ending stocks	kt	OECD Outlook
AUSSMPST8CON	Ending stocks Constant		Calibrated
AUSSMPWA	Loss or Statistical Error	kt	Calculated
AUSSNFPP	Solid Non-Fat Price	Act/L of Milk	Calculated
AUSWMPEFT_PC	Effective Tariff	%	Calculated
AUSWMPMG	Manufacture's Gross Margin for WMP	A\$/100kg	Calculated
AUSWMPNT	Trade balance	kt	OECD Outlook
AUSWMPPP	Domestic Price	A\$/100kg	Calculated
AUSWMPQC	Consumption	kt	OECD Outlook
AUSWMPQCC8CON	Consumption Constant		Calibrated
AUSWMPQP	Production	kt	OECD Outlook
AUSWMPQP8CON	Production Constant		Calibrated
AUSWMPST	Ending stocks	kt	OECD Outlook
AUSWMPST8CON	Ending stocks Constant		Calibrated
AUSWMPWA	Loss or Statistical Error	kt	Calculated
AUSXR	Exchange rate – A\$/US\$	A\$/US\$	OECD Outlook

Canada	Dairy Products	Units	Source
CANBTEFT_PC	Effective Tariff	%	Calculated
CANBTEFT1	Effective Tariff Choice Variable	%	Calculated
CANBTMG	Manufacture's Gross Margin for Butter	C\$/100kg	Calculated
CANBTNT	Trade balance	kt	OECD Outlook
CANBTOQTAR_PC	Over-Quota Tariff	%	
CANBTQC	Consumption	kt	OECD Outlook
CANBTQCC8CON	Consumption Constant		Calibrated
CANBTQP	Production	kt	OECD Outlook
CANBTQP8CON	Production Constant		Calibrated
CANBTST	Ending stocks	kt	OECD Outlook
CANBTST8CON	Ending stocks Constant		Calibrated
CANBTWA	Loss or Statistical Error	kt	Calculated
CANBTWP_CKG	Domestic Price	C\$/100kg	Calculated
CANBTWP_MA	Minimum Access Price	C\$/100kg	Calculated
CANBTWP_SUB	Export Subsidy Price	C\$/100kg	Calculated
CANCHEFT_PC	Effective Tariff	%	Calculated
CANCHEFT1	Effective Tariff Choice Variable	%	Calculated
CANCHMG	Manufacture's Gross Margin for Cheese	C\$/100kg	Calculated
CANCHNT	Trade balance	kt	OECD Outlook
CANCHOQTAR_PC	Over-Quota Tariff	%	
CANCHQC	Consumption	kt	OECD Outlook
CANCHQCC8CON	Consumption Constant		Calibrated
CANCHQP	Production	kt	OECD Outlook
CANCHQP8CON	Production Constant		Calibrated
CANCHST	Ending stocks	kt	OECD Outlook
CANCHST8CON	Ending stocks Constant		Calibrated
CANCHWA	Loss or Statistical Error	kt	Calculated
CANCHWP_CKG	Domestic Price	C\$/100kg	Calculated
CANCHWP_MA	Minimum Access Price	C\$/100kg	Calculated
CANCHWP_SUB	Export Subsidy Price	C\$/100kg	Calculated
CANCP	Consumer Price Index		OECD Outlook
CANDBTBTFE	Total Milk Fat in Butter	kt	Calculated
CANDBTSNFE	Total Solid Non-Fat in Butter	kt	Calculated
CANDCHBTFE	Total Milk Fat in Cheese	kt	Calculated
CANDCHSNFE	Total Solid Non-Fat in Cheese	kt	Calculated
CANDRESBTFE	Total Milk Fat in Residual Product	kt	Calculated
CANDRESSNFE	Total Solid Non-Fat in Residual Product	kt	Calculated
CANDSMPBTFE	Total Milk Fat in SMP	kt	Calculated
CANDSMPSNFE	Total Solid Non-Fat in SMP	kt	Calculated
CANDWMPBTFE	Total Milk Fat in WMP	kt	Calculated
CANDWMPSNFE	Total Solid Non-Fat in WMP	kt	Calculated
CANFATPP	Butterfat Price	Cct/L of Milk	Calculated
CANGDPD	Gross Domestic Product Deflator		OECD Outlook
CANGDPI	Gross Domestic Product Index		OECD Outlook
CANINFTFRATIO	Ratio of Residual Fat to Total Fat Produced		Calculated
CANMAPP	Price of Corn	C\$/t	OECD Outlook
CANMKFAT	Butterfat content of milk	%	OECD Outlook
CANMKPP_FM	Fluid milk price	Cct/L	OECD Outlook

Canada	Dairy Products	Units	Source
CANMKPP_IM	Industrial milk price	Cct/L	OECD Outlook
CANMKPPRATIO	Ratio of Fluid to Industrial Milk Prices	Ratio	Calculated
CANMKQP	Production	kt	OECD Outlook
CANMKQP8CON	Production Constant		Calculated
CANMKQPBTFE	Total Milk Fat Produced	kt	Calculated
CANMKQPSNFE	Total Solid Non-Fat Produced	kt	Calculated
CANMKRENT	Quota Rent	Cct/L of Milk	Calculated
CANMKRENT8CON	Quota Rent Constant		Calibrated
CANMKSNF	Solid Non-Fat content of Milk	%	Calculated
CANPOP	Population - 000	000	OECD Outlook
CANRESBTFE8RATIO	Ratio of Fat in Residual Product		Calculated
CANRESMG	Manufacture's Gross Margin for Residual Product	C\$/100kg	Calculated
CANRESQC	Domestic Price	C\$/100kg	Calculated
CANRESQCC8CON	Consumption	kt	OECD Outlook
CANRESQP	Consumption Constant		Calibrated
CANRESQP8CON	Production	kt	OECD Outlook
CANRESSNFE8RATIO	Production Constant		Calibrated
CANRESWP_CKG	Ratio of Solid Non-fat in Residual Product		Calculated
CANSMPFT_PC	Effective Tariff	%	Calculated
CANSMPFT1	Effective Tariff Choice Variable	%	Calculated
CANSMPMG	Manufacture's Gross Margin for SMP	C\$/100kg	Calculated
CANSMPNT	Trade balance	kt	OECD Outlook
CANSMPQQTAR_PC	Over-Quota Tariff	%	
CANSMPQC	Consumption	kt	OECD Outlook
CANSMPQCC8CON	Consumption Constant		Calibrated
CANSMPQP	Production	kt	OECD Outlook
CANSMPQP8CON	Production Constant		Calibrated
CANSMPST	Ending stocks	kt	OECD Outlook
CANSMPST8CON	Ending stocks Constant		Calibrated
CANSMPWA	Loss or Statistical Error	kt	Calculated
CANSMPWP_CKG	Domestic Price	C\$/100kg	Calculated
CANSMPWP_MA	Minimum Access Price	C\$/100kg	Calculated
CANSMPWP_SUB	Export Subsidy Price	C\$/100kg	Calculated
CANSNFPP	Solid Non-Fat Price	Cct/L of Milk	Calculated
CANWMPEFT_PC	Effective Tariff	%	Calculated
CANWMPEFT1	Effective Tariff Choice Variable	%	Calculated
CANWMPMG	Manufacture's Gross Margin for WMP	C\$/100kg	Calculated
CANWMPNT	Trade balance	kt	OECD Outlook
CANWMPOQTAR_PC	Over-Quota Tariff	%	
CANWMPQC	Consumption	kt	OECD Outlook
CANWMPQCC8CON	Consumption Constant		Calibrated
CANWMPQP	Production	kt	OECD Outlook
CANWMPQP8CON	Production Constant		Calibrated
CANWMPST	Ending stocks	kt	OECD Outlook
CANWMPST8CON	Ending stocks Constant		Calibrated
CANWMPWA	Loss or Statistical Error	kt	Calculated
CANWMPWP_CKG	Domestic Price	C\$/100kg	Calculated

Canada	Dairy Products	Units	Source
CANWMPWP_MA	Minimum Access Price	C\$/100kg	Calculated
CANWMPWP_SUB	Export Subsidy Price	C\$/100kg	Calculated
CANXR	Exchange rate - C\$/US\$	C\$/US\$	OECD Outlook

EU15	Dairy Products	Units	Source
E15BTEFT_PC	Effective Tariff	%	Calculated
E15BTEFT1	Effective Tariff Choice Variable	%	Calculated
E15BTMG	Manufacture's Gross Margin for Butter	Euro/100kg	Calculated
E15BTNT	Trade balance	kt	OECD Outlook
E15BTOQTAR	Over-Quota Tariff	Euro/100kg	
E15BTOQTAR_PC	Over-Quota Tariff	%	
E15BTQC	Consumption	kt	OECD Outlook
E15BTQCC8CON	Consumption Constant		Calibrated
E15BTQP	Production	kt	OECD Outlook
E15BTQP8CON	Production Constant		Calibrated
E15BTST	Ending stocks	kt	OECD Outlook
E15BTST8CON	Ending stocks Constant		Calibrated
E15BTWA	Loss or Statistical Error	kt	Calculated
E15BTWP	Domestic Price	Euro/100kg	Calculated
E15BTWP_MA	Minimum Access Price	Euro/100kg	Calculated
E15BTWP_SUB	Export Subsidy Price	Euro/100kg	Calculated
E15CHEFT_PC	Effective Tariff	%	Calculated
E15CHEFT1	Effective Tariff Choice Variable	%	Calculated
E15CHMG	Manufacture's Gross Margin for Cheese	Euro/100kg	Calculated
E15CHNT	Trade balance	kt	OECD Outlook
E15CHOQTAR	Over-Quota Tariff	Euro/100kg	
E15CHOQTAR_PC	Over-Quota Tariff	%	
E15CHPP	Consumption	kt	OECD Outlook
E15CHPP_MA	Consumption Constant		Calibrated
E15CHPP_SUB	Production	kt	OECD Outlook
E15CHQC	Production Constant		Calibrated
E15CHQCC8CON	Ending stocks	kt	OECD Outlook
E15CHQP	Ending stocks Constant		Calibrated
E15CHQP8CON	Loss or Statistical Error	kt	Calculated
E15CHST	Domestic Price	Euro/100kg	Calculated
E15CHST8CON	Minimum Access Price	Euro/100kg	Calculated
E15CHWA	Export Subsidy Price	Euro/100kg	Calculated
E15CPI	Consumer Price Index		OECD Outlook
E15DBTBTFE	Total Milk Fat in Butter	kt	Calculated
E15DBTSNFE	Total Solid Non-Fat in Butter	kt	Calculated
E15DCHBTFE	Total Milk Fat in Cheese	kt	Calculated
E15DCHSNFE	Total Solid Non-Fat in Cheese	kt	Calculated
E15DRESBTFE	Total Milk Fat in Residual Product	kt	Calculated
E15DRESSNFE	Total Solid Non-Fat in Residual Product	kt	Calculated
E15DSMPBTFE	Total Milk Fat in SMP	kt	Calculated
E15DSMPSNFE	Total Solid Non-Fat in SMP	kt	Calculated
E15DWMPBTFE	Total Milk Fat in WMP	kt	Calculated
E15DWMPSNFE	Total Solid Non-Fat in WMP	kt	Calculated
E15FATPP	Butterfat Price	Euro ct/L of Milk	Calculated
E15FECI	Feed Cost Index		Calculated
E15GDPD	Gross Domestic Product Deflator		OECD Outlook
E15GDPI	Gross Domestic Product Index		OECD Outlook

EU15	Dairy Products	Units	Source
E15MKFAT	Butterfat content of milk	%	OECD Outlook
E15MKPP	Milk price	Euro ct/L	OECD Outlook
E15MKQP	Production	kt	OECD Outlook
E15MKQP8CON	Production Constant		Calculated
E15MKQPBTFE	Total Milk Fat Produced	kt	Calculated
E15MKQPSNFE	Total Solid Non-Fat Produced	kt	Calculated
E15MKRENT	Quota Rent	Euro ct/L of Milk	Calculated
E15MKRENT8CON	Quota Rent Constant		Calibrated
E15MKS NF	Solid Non-Fat content of Milk	%	Calculated
E15POP	Population - 000	000	OECD Outlook
E15RESBTFE8RATIO	Ratio of Fat in Residual Product		Calculated
E15RESMG	Manufacture's Gross Margin for Residual Product	Euro/100kg	Calculated
E15RESQC	Consumption	kt	OECD Outlook
E15RESQCC8CON	Consumption Constant		Calibrated
E15RESQP	Production	kt	OECD Outlook
E15RESQP8CON	Production Constant		Calibrated
E15RESSNFE8RATIO	Ratio of Solid Non-fat in Residual Product		Calculated
E15RESWP	Domestic Price	Euro/100kg	Calculated
E15SMPEFT_PC	Effective Tariff	%	Calculated
E15SMPEFT1	Effective Tariff Choice Variable	%	Calculated
E15SMPMG	Manufacture's Gross Margin for SMP	Euro/100kg	Calculated
E15SMPNT	Trade balance	kt	OECD Outlook
E15SMPOQTAR	Over-Quota Tariff	Euro/100kg	
E15SMPOQTAR_PC	Over-Quota Tariff	%	
E15SMPQC	Consumption	kt	OECD Outlook
E15SMPQCC8CON	Consumption Constant		Calibrated
E15SMPQP	Production	kt	OECD Outlook
E15SMPQP8CON	Production Constant		Calibrated
E15SMPST	Ending stocks	kt	OECD Outlook
E15SMPST8CON	Ending stocks Constant		Calibrated
E15SMPWA	Loss or Statistical Error	kt	Calculated
E15SMPWP	Domestic Price	Euro/100kg	Calculated
E15SMPWP_MA	Minimum Access Price	Euro/100kg	Calculated
E15SMPWP_SUB	Export Subsidy Price	Euro/100kg	Calculated
E15SNFPP	Solid Non-Fat Price	Euro ct/L of Milk	Calculated
E15WMPEFT_PC	Effective Tariff	%	Calculated
E15WMPEFT1	Effective Tariff Choice Variable	%	Calculated
E15WMPMG	Manufacture's Gross Margin for WMP	Euro/100kg	Calculated
E15WMPNT	Trade balance	kt	OECD Outlook
E15WMPOQTAR	Over-Quota Tariff	Euro/100kg	
E15WMPOQTAR_PC	Over-Quota Tariff	%	
E15WMPQC	Consumption	kt	OECD Outlook
E15WMPQCC8CON	Consumption Constant		Calibrated
E15WMPQP	Production	kt	OECD Outlook
E15WMPQP8CON	Production Constant		Calibrated
E15WMPST	Ending stocks	kt	OECD Outlook

EU15	Dairy Products	Units	Source
E15WMPWA	Loss or Statistical Error	kt	Calculated
E15WMPWP	Domestic Price	Euro/100kg	Calculated
E15WMPWP_MA	Minimum Access Price	Euro/100kg	Calculated
E15WMPWP_SUB	Export Subsidy Price	Euro/100kg	Calculated
E15XR	Exchange rate - Euro/US\$	Euro/US\$	OECD Outlook

Japan	Dairy Products	Units	Source
JPNBTEFT_PC	Effective Tariff	%	Calculated
JPNBTEFT1	Effective Tariff Choice Variable	%	Calculated
JPNBTMG	Manufacture's Gross Margin for Butter	Yen/100kg	Calculated
JPNBTNT	Trade balance	kt	OECD Outlook
JPNBTOQTAR	Over-Quota Tariff	Yen/100kg	
JPNBTOQTAR_PC	Over-Quota Tariff	%	
JPNBTOQTAR_PL	Over-Quota Tariff Plus	%	
JPNBTQC	Consumption	kt	OECD Outlook
JPNBTQCC8CON	Consumption Constant		Calibrated
JPNBTQP	Production	kt	OECD Outlook
JPNBTQP8CON	Production Constant		Calibrated
JPNBTST	Ending stocks	kt	OECD Outlook
JPNBTST8CON	Ending stocks Constant		Calibrated
JPNBTWA	Loss or Statistical Error	kt	Calculated
JPNBTWP	Domestic Price	Yen/100kg	Calculated
JPNBTWP_MA	Minimum Access Price	Yen/100kg	Calculated
JPNCHCP_C	Domestic Price	Yen/100kg	Calculated
JPNCHCP_MA	Minimum Access Price	Yen/100kg	Calculated
JPNCHEFT_PC	Effective Tariff	%	Calculated
JPNCHEFT1	Effective Tariff Choice Variable	%	Calculated
JPNCHMG	Manufacture's Gross Margin for Cheese	Yen/100kg	Calculated
JPNCHNT	Trade balance	kt	OECD Outlook
JPNCHQC	Consumption	kt	OECD Outlook
JPNCHQCC8CON	Consumption Constant		Calibrated
JPNCHQP	Production	kt	OECD Outlook
JPNCHQP8CON	Production Constant		Calibrated
JPNCHST	Ending stocks	kt	OECD Outlook
JPNCHST8CON	Ending stocks Constant		Calibrated
JPNCHWA	Loss or Statistical Error	kt	Calculated
JPNCP1	Consumer Price Index		OECD Outlook
JPNDBTBTFE	Total Milk Fat in Butter	kt	Calculated
JPNDBTSNFE	Total Solid Non-Fat in Butter	kt	Calculated
JPNDCBTFE	Total Milk Fat in Cheese	kt	Calculated
JPNDCHSNFE	Total Solid Non-Fat in Cheese	kt	Calculated
JPNDRESBTFE	Total Milk Fat in Residual Product	kt	Calculated
JPNDRESSNFE	Total Solid Non-Fat in Residual Product	kt	Calculated
JPNDSMPBTFE	Total Milk Fat in SMP	kt	Calculated
JPNDSMPSNFE	Total Solid Non-Fat in SMP	kt	Calculated
JPNDWMPBTFE	Total Milk Fat in WMP	kt	Calculated
JPNDWMPSNFE	Total Solid Non-Fat in WMP	kt	Calculated
JPNFATPP	Butterfat Price	Yen/L of Milk	Calculated
JPNGDPD	Gross Domestic Product Deflator		OECD Outlook
JPNGDPI	Gross Domestic Product Index		OECD Outlook
JPNMAIMP	Import Price of Corn	Yen/t	OECD Outlook
JPNMKFAT	Butterfat content of milk	%	OECD Outlook
JPNMKPP	Milk price	Yen/L	OECD Outlook

Japan	Dairy Products	Units	Source
JPNMKQP	Production	kt	OECD Outlook
JPNMKQP8CON	Production Constant		Calculated
JPNMKQPBTFE	Total Milk Fat Produced	kt	Calculated
JPNMKQPSNFE	Total Solid Non-Fat Produced	kt	Calculated
JPNMKRENT	Quota Rent	Yen/L of Milk	Calculated
JPNMKRENT8CON	Quota Rent Constant		Calibrated
JPNMKSNF	Solid Non-Fat content of Milk	%	Calculated
JPNPOP	Population - 000	000	OECD Outlook
JPNRESBTFE8RATIO	Ratio of Fat in Residual Product		Calculated
JPNRESMG	Manufacture's Gross Margin for Residual Product	Yen/100kg	Calculated
JPNRESQC	Consumption	kt	OECD Outlook
JPNRESQCC8CON	Consumption Constant		Calibrated
JPNRESQP	Production	kt	OECD Outlook
JPNRESQP8CON	Production Constant		Calibrated
JPNRESSNFE8RATIO	Ratio of Solid Non-fat in Residual Product		Calculated
JPNRESWP	Domestic Price	Yen/100kg	Calculated
JPNSMPEFT_PC	Effective Tariff	%	Calculated
JPNSMPEFT1	Effective Tariff Choice Variable	%	Calculated
JPNSMPMG	Manufacture's Gross Margin for SMP	Yen/100kg	Calculated
JPNSMPNT	Trade balance	kt	OECD Outlook
JPNSMPOQTAR	Over-Quota Tariff	Yen/100kg	
JPNSMPOQTAR_PC	Over-Quota Tariff	%	
JPNSMPOQTAR_PL	Over-Quota Tariff Plus	%	
JPNSMPQC	Consumption	kt	OECD Outlook
JPNSMPQCC8CON	Consumption Constant		Calibrated
JPNSMPQP	Production	kt	OECD Outlook
JPNSMPQP8CON	Production Constant		Calibrated
JPNSMPST	Ending stocks	kt	OECD Outlook
JPNSMPST8CON	Ending stocks Constant		Calibrated
JPNSMPPWA	Loss or Statistical Error	kt	Calculated
JPNSMPPWP	Domestic Price	Yen/100kg	Calculated
JPNSMPPWP_MA	Minimum Access Price	Yen/100kg	Calculated
JPNSNFPP	Solid Non-Fat Price	Yen/L of Milk	Calculated
JPNWMPEFT_PC	Effective Tariff	%	Calculated
JPNWMPEFT1	Effective Tariff Choice Variable	%	Calculated
JPNWMPMG	Manufacture's Gross Margin for WMP	Yen/100kg	Calculated
JPNWMPNT	Trade balance	kt	OECD Outlook
JPNWMPOQTAR	Over-Quota Tariff	Yen/100kg	
JPNWMPOQTAR_PC	Over-Quota Tariff	%	
JPNWMPOQTAR_PL	Over-Quota Tariff Plus	%	
JPNWMPQC	Consumption	kt	OECD Outlook
JPNWMPQCC8CON	Consumption Constant		Calibrated
JPNWMPQP	Production	kt	OECD Outlook
JPNWMPQP8CON	Production Constant		Calibrated
JPNWMPST	Ending stocks	kt	OECD Outlook
JPNWMPWA	Loss or Statistical Error	kt	Calculated

Japan	Dairy Products	Units	Source
JPNWMPWP	Domestic Price	Yen/100kg	Calculated
JPNWMPWP_MA	Minimum Access Price	Yen/100kg	Calculated
JPNXR	Exchange rate - Yen/US\$	Yen/US\$	OECD Outlook

New Zealand	Dairy Products	Units	Source
NZLBTEFT_PC	Effective Tariff	%	Calculated
NZLBTEXP	Export Price	NZ\$/100kg	OECD Outlook
NZLBTMG	Manufacture's Gross Margin for Butter	NZ\$/100kg	Calculated
NZLBTNT	Trade balance	kt	OECD Outlook
NZLBTQC	Consumption	kt	OECD Outlook
NZLBTQC8CON	Consumption Constant		Calibrated
NZLBTQP	Production	kt	OECD Outlook
NZLBTQP8CON	Production Constant		Calibrated
NZLBTST	Ending stocks	kt	OECD Outlook
NZLBTST8CON	Ending stocks Constant		Calibrated
NZLBTWA	Loss or Statistical Error	kt	Calculated
NZLCHEFT_PC	Effective Tariff	%	Calculated
NZLCHEXP	Export Price	NZ\$/100kg	OECD Outlook
NZLCHMG	Manufacture's Gross Margin for Cheese	NZ\$/100kg	Calculated
NZLCHNT	Trade balance	kt	OECD Outlook
NZLCHQC	Consumption	kt	OECD Outlook
NZLCHQC8CON	Consumption Constant		Calibrated
NZLCHQP	Production	kt	OECD Outlook
NZLCHQP8CON	Production Constant		Calibrated
NZLCHST	Ending stocks	kt	OECD Outlook
NZLCHST8CON	Ending stocks Constant		Calibrated
NZLCHWA	Loss or Statistical Error	kt	Calculated
NZLCPI	Consumer Price Index		OECD Outlook
NZLDBTBTFE	Total Milk Fat in Butter	kt	Calculated
NZLDBTSNFE	Total Solid Non-Fat in Butter	kt	Calculated
NZLDCHBTFE	Total Milk Fat in Cheese	kt	Calculated
NZLDCHSNFE	Total Solid Non-Fat in Cheese	kt	Calculated
NZLDRESBTFE	Total Milk Fat in Residual Product	kt	Calculated
NZLDRESSNFE	Total Solid Non-Fat in Residual Product	kt	Calculated
NZLDSMPBTFE	Total Milk Fat in SMP	kt	Calculated
NZLDSMPSNFE	Total Solid Non-Fat in SMP	kt	Calculated
NZLDWMPBTFE	Total Milk Fat in WMP	kt	Calculated
NZLDWMPSNFE	Total Solid Non-Fat in WMP	kt	Calculated
NZLFATPP	Butterfat Price	NZct/L of Milk	Calculated
NZLGDPD	Gross Domestic Product Deflator		OECD Outlook
NZLGDP	Gross Domestic Product Index		OECD Outlook
NZLMKFAT	Butterfat content of milk	%	OECD Outlook
NZLMKPP	Milk price	NZct/L	OECD Outlook
NZLMKQP	Production	kt	OECD Outlook
NZLMKQP8CON	Production Constant		Calculated
NZLMKQPBTFE	Total Milk Fat Produced	kt	Calculated
NZLMKQPSNFE	Total Solid Non-Fat Produced	kt	Calculated
NZLMKSNF	Solid Non-Fat content of Milk	%	Calculated
NZLPOP	Population - 000	000	OECD Outlook
NZLRESBTFE8RATIO	Ratio of Fat in Residual Product		Calculated

New Zealand	Dairy Products	Units	Source
NZLRESMG	Manufacture's Gross Margin for Residual Product	NZ\$/100kg	Calculated
NZLRESQC	Consumption	kt	OECD Outlook
NZLRESQC8CON	Consumption Constant		Calibrated
NZLRESQP	Production	kt	OECD Outlook
NZLRESQP8CON	Production Constant		Calibrated
NZLRESSNFE8RATIO	Ratio of Solid Non-fat in Residual Product		Calculated
NZLRESWP	Domestic Price	NZ\$/100kg	Calculated
NZLSMPEFT_PC	Effective Tariff	%	Calculated
NZLSMPEXP	Export Price	NZ\$/100kg	OECD Outlook
NZLSMPMG	Manufacture's Gross Margin for SMP	NZ\$/100kg	Calculated
NZLSMPNT	Trade balance	kt	OECD Outlook
NZLSMPQC	Consumption	kt	OECD Outlook
NZLSMPQC8CON	Consumption Constant		Calibrated
NZLSMPQP	Production	kt	OECD Outlook
NZLSMPQP8CON	Production Constant		Calibrated
NZLSMPST	Ending stocks	kt	OECD Outlook
NZLSMPST8CON	Ending stocks Constant		Calibrated
NZLSMPWA	Loss or Statistical Error	kt	Calculated
NZLSNFPP	Solid Non-Fat Price	NZct/L of Milk	Calculated
NZLWMPEFT_PC	Effective Tariff	%	Calculated
NZLWMPEXP	Export Price	NZ\$/100kg	OECD Outlook
NZLWMPMG	Manufacture's Gross Margin for WMP	NZ\$/100kg	Calculated
NZLWMPNT	Trade balance	kt	OECD Outlook
NZLWMPQC	Consumption	kt	OECD Outlook
NZLWMPQC8CON	Consumption Constant		Calibrated
NZLWMPQP	Production	kt	OECD Outlook
NZLWMPQP8CON	Production Constant		Calibrated
NZLWMPST	Ending stocks	kt	OECD Outlook
NZLWMPWA	Loss or Statistical Error	kt	Calculated
NZLXR	Exchange rate - NZ\$/US\$	NZ\$/US\$	OECD Outlook

United States	Dairy Products	Units	Source
USABTEFT_PC	Effective Tariff	%	Calculated
USABTEFT1	Effective Tariff Choice Variable	%	Calculated
USABTMG	Manufacture's Gross Margin for Butter	US\$/100kg	Calculated
USABTNT	Trade balance	kt	OECD Outlook
USABTOQTAR	Over-Quota Tariff	US\$/100kg	
USABTOQTAR_PC	Over-Quota Tariff	%	
USABTQC	Consumption	kt	OECD Outlook
USABTQCC8CON	Consumption Constant		Calibrated
USABTQP	Production	kt	OECD Outlook
USABTQP8CON	Production Constant		Calibrated
USABTST	Ending stocks	kt	OECD Outlook
USABTST8CON	Ending stocks Constant		Calibrated
USABTWA	Loss or Statistical Error	kt	Calculated
USABTWP	Domestic Price	US\$/100kg	Calculated
USABTWP_MA	Minimum Access Price	US\$/100kg	Calculated
USABTWP_SUB	Export Subsidy Price	US\$/100kg	Calculated
USACHEFT_PC	Effective Tariff	%	Calculated
USACHEFT1	Effective Tariff Choice Variable	%	Calculated
USACHMG	Manufacture's Gross Margin for Cheese	US\$/100kg	Calculated
USACHNT	Trade balance	kt	OECD Outlook
USACHOQTAR	Over-Quota Tariff	US\$/100kg	
USACHOQTAR_PC	Over-Quota Tariff	%	
USACHQC	Consumption	kt	OECD Outlook
USACHQCC8CON	Consumption Constant		Calibrated
USACHQP	Production	kt	OECD Outlook
USACHQP8CON	Production Constant		Calibrated
USACHST	Ending stocks	kt	OECD Outlook
USACHST8CON	Ending stocks Constant		Calibrated
USACHWA	Loss or Statistical Error	kt	Calculated
USACHWP	Domestic Price	US\$/100kg	Calculated
USACHWP_MA	Minimum Access Price	US\$/100kg	Calculated
USACHWP_SUB	Export Subsidy Price	US\$/100kg	Calculated
USACPI	Consumer Price Index		OECD Outlook
USADBTBTFE	Total Milk Fat in Butter	kt	Calculated
USADBTSNFE	Total Solid Non-Fat in Butter	kt	Calculated
USADCHBTFE	Total Milk Fat in Cheese	kt	Calculated
USADCHSNFE	Total Solid Non-Fat in Cheese	kt	Calculated
USADRESBTFE	Total Milk Fat in Residual Product	kt	Calculated
USADRESSNFE	Total Solid Non-Fat in Residual Product	kt	Calculated
USADSMPBTFE	Total Milk Fat in SMP	kt	Calculated

United States	Dairy Products	Units	Source
USADSMPSNFE	Total Solid Non-Fat in SMP	kt	Calculated
USADWMPBTFE	Total Milk Fat in WMP	kt	Calculated
USADWMPSNFE	Total Solid Non-Fat in WMP	kt	Calculated
USAFATPP	Butterfat Price	USct/L of Milk	Calculated
USAFECI	Feed Cost Index		Calculated
USAGDPD	Gross Domestic Product Deflator		OECD Outlook
USAGDPI	Gross Domestic Product Index		OECD Outlook
USAINFTFRATIO	Ratio of Residual Fat to Total Fat Produced		Calculated
USAMKFAT	Butterfat content of milk	%	OECD Outlook
USAMKPP_FM_LT	Fluid milk price	USct/L	OECD Outlook
USAMKPP_IM_LT	Industrial milk price	USct/L	OECD Outlook
USAMKPPRATIO	Ratio of Fluid to Industrial Milk Prices	Ratio	Calculated
USAMKQP	Production	kt	OECD Outlook
USAMKQP8CON	Production Constant		Calculated
USAMKQPBTFE	Total Milk Fat Produced	kt	Calculated
USAMKQPSNFE	Total Solid Non-Fat Produced	kt	Calculated
USAMKSNF	Solid Non-Fat content of Milk	%	Calculated
USAPOP	Population - 000	000	OECD Outlook
USARESBTFE8RATIO	Ratio of Fat in Residual Product		Calculated
USARESMG	Manufacture's Gross Margin for Residual Product	US\$/100kg	Calculated
USARESQC	Consumption	kt	OECD Outlook
USARESQCC8CON	Consumption Constant		Calibrated
USARESQP	Production	kt	OECD Outlook
USARESQP8CON	Production Constant		Calibrated
USARESSNFE8RATIO	Ratio of Solid Non-fat in Residual Product		Calculated
USARESWP	Domestic Price	US\$/100kg	Calculated
USASMPEFT_PC	Effective Tariff	%	Calculated
USASMPEFT1	Effective Tariff Choice Variable	%	Calculated
USASMPMG	Manufacture's Gross Margin for SMP	US\$/100kg	Calculated
USASMPNT	Trade balance	kt	OECD Outlook
USASMPOQTAR	Over-Quota Tariff	US\$/100kg	
USASMPOQTAR_PC	Over-Quota Tariff	%	
USASMPQC	Consumption	kt	OECD Outlook
USASMPQCC8CON	Consumption Constant		Calibrated
USASMPQP	Production	kt	OECD Outlook
USASMPQP8CON	Production Constant		Calibrated

United States	Dairy Products	Units	Source
USASMPST	Ending stocks	kt	OECD Outlook
USASMPST8CON	Ending stocks Constant		Calibrated
USASMPWA	Loss or Statistical Error	kt	Calculated
USASMPWP	Domestic Price	US\$/100kg	Calculated
USASMPWP_MA	Minimum Access Price	US\$/100kg	Calculated
USASNFPF	Export Subsidy Price	US\$/100kg	Calculated
USAWMPEFT_PC	Solid Non-Fat Price	USct/L of Milk	Calculated
USAWMPEFT1	Effective Tariff	%	Calculated
USAWMPMG	Effective Tariff Choice Variable	%	Calculated
USAWMPNT	Manufacture's Gross Margin for WMP	US\$/100kg	Calculated
USAWMPOQTAR	Trade balance	kt	OECD Outlook
USAWMPOQTAR_PC	Over-Quota Tariff	US\$/100kg	
USAWMPQC	Over-Quota Tariff	%	
USAWMPQCC8CON	Consumption	kt	OECD Outlook
USAWMPQP	Consumption Constant		Calibrated
USAWMPQP8CON	Production	kt	OECD Outlook
USAWMPST	Production Constant		Calibrated
USAWMPST8CON	Ending stocks	kt	OECD Outlook
USAWMPWA	Loss or Statistical Error	kt	Calculated
USAWMPWP	Domestic Price	US\$/100kg	Calculated
USAWMPWP_MA	Minimum Access Price	US\$/100kg	Calculated
USAWMPWP_SUB	Export Subsidy Price	US\$/100kg	Calculated

Rest of the World	Dairy Products	Units	Source
RW1BTEFT_PC	Effective Tariff	%	Calculated
RW1BTMG	Manufacture's Gross Margin for Butter	US\$/100kg	Calculated
RW1BTNT	Trade balance	kt	OECD Outlook
RW1BTQC	Consumption	kt	OECD Outlook
RW1BTQC8CON	Consumption Constant		Calibrated
RW1BTQP	Production	kt	OECD Outlook
RW1BTQP8CON	Production Constant		Calibrated
RW1BTST	Ending stocks	kt	OECD Outlook
RW1BTST8CON	Ending stocks Constant		Calibrated
RW1BTWA	Loss or Statistical Error	kt	Calculated
RW1BTWP	Domestic Price	US\$/100kg	Calculated
RW1CHEFT_PC	Effective Tariff	%	Calculated
RW1CHMG	Manufacture's Gross Margin for Cheese	US\$/100kg	Calculated
RW1CHNT	Trade balance	kt	OECD Outlook
RW1CHQC	Consumption	kt	OECD Outlook
RW1CHQC8CON	Consumption Constant		Calibrated
RW1CHQP	Production	kt	OECD Outlook
RW1CHQP8CON	Production Constant		Calibrated
RW1CHST	Ending stocks	kt	OECD Outlook
RW1CHST8CON	Ending stocks Constant		Calibrated
RW1CHWA	Loss or Statistical Error	kt	Calculated
RW1CHWP	Domestic Price	US\$/100kg	Calculated
RW1DBTBTFE	Total Milk Fat in Butter	kt	Calculated
RW1DBTSNFE	Total Solid Non-Fat in Butter	kt	Calculated
RW1DCHBTFE	Total Milk Fat in Cheese	kt	Calculated
RW1DCHSNFE	Total Solid Non-Fat in Cheese	kt	Calculated
RW1DRESBTFE	Total Milk Fat in Residual Product	kt	Calculated
RW1DRESSNFE	Total Solid Non-Fat in Residual Product	kt	Calculated
RW1DSMPBTFE	Total Milk Fat in SMP	kt	Calculated
RW1DSMPSNFE	Total Solid Non-Fat in SMP	kt	Calculated
RW1DWMPBTFE	Total Milk Fat in WMP	kt	Calculated
RW1DWMPSNFE	Total Solid Non-Fat in WMP	kt	Calculated
RW1FATPP	Butterfat Price	USct/L of Milk	Calculated
RW1FECI	Feed Cost Index		Calculated
RW1MKFAT	Butterfat content of milk	%	OECD Outlook
RW1MKPP	Milk price	USct/L	OECD Outlook
RW1MKQP	Production	kt	OECD Outlook
RW1MKQP8CON	Production Constant		Calculated
RW1MKQPBTFE	Total Milk Fat Produced	kt	Calculated
RW1MKQPSNFE	Total Solid Non-Fat Produced	kt	Calculated
RW1MKS NF	Solid Non-Fat content of Milk	%	Calculated
RW1POP	Population - 000	000	OECD Outlook
RW1RESBTFE8RATIO	Ratio of Fat in Residual Product		Calculated
RW1RESMG	Manufacture's Gross Margin for Residual Product	US\$/100kg	Calculated
RW1RESQC	Consumption	kt	OECD Outlook
RW1RESQC8CON	Consumption Constant		Calibrated
RW1RESQP	Production	kt	OECD Outlook

Rest of the World	Dairy Products	Units	Source
RW1RESQP8CON	Production Constant		Calibrated
RW1RESSNFE8RATIO	Ratio of Solid Non-fat in Residual Product		Calculated
RW1RESWP	Domestic Price	US\$/100kg	Calculated
RW1SMPEFT_PC	Effective Tariff	%	Calculated
RW1SMPMG	Manufacture's Gross Margin for SMP	US\$/100kg	Calculated
RW1SMPNT	Trade balance	kt	OECD Outlook
RW1SMPQC	Consumption	kt	OECD Outlook
RW1SMPQC8CON	Consumption Constant		Calibrated
RW1SMPQP	Production	kt	OECD Outlook
RW1SMPQP8CON	Production Constant		Calibrated
RW1SMPST	Ending stocks	kt	OECD Outlook
RW1SMPST8CON	Ending stocks Constant		Calibrated
RW1SMPWA	Loss or Statistical Error	kt	Calculated
RW1SMPWP	Domestic Price	US\$/100kg	Calculated
RW1SNFPP	Solid Non-Fat Price	USct/L of Milk	Calculated
RW1WMPEFT_PC	Effective Tariff	%	Calculated
RW1WMPMG	Manufacture's Gross Margin for WMP	US\$/100kg	Calculated
RW1WMPNT	Trade balance	kt	OECD Outlook
RW1WMPQC	Consumption	kt	OECD Outlook
RW1WMPQC8CON	Consumption Constant		Calibrated
RW1WMPQP	Production	kt	OECD Outlook
RW1WMPQP8CON	Production Constant		Calibrated
RW1WMPST	Ending stocks	kt	OECD Outlook
RW1WMPST8CON	Production Constant		Calibrated
RW1WMPWA	Loss or Statistical Error	kt	Calculated
RW1WMPWP	Domestic Price	US\$/100kg	Calculated

World	Dairy Products	Units	Source
WLDBTEXP	World Price	US\$/100kg	OECD Outlook
WLDBTQC	World Consumption	kt	OECD Outlook
WLDBTQP	World Production	kt	OECD Outlook
WLDBTST	World Inventories	kt	OECD Outlook
WLDBTWA	Loss or Statistical Error	kt	OECD Outlook
WLDCHEXP	World Price	US\$/100kg	OECD Outlook
WLDCHQC	World Consumption	kt	OECD Outlook
WLDCHQP	World Production	kt	OECD Outlook
WLDCHST	World Inventories	kt	OECD Outlook
WLDCHWA	Loss or Statistical Error	kt	OECD Outlook
WLDMPKP	World Milk Production	kt	OECD Outlook
WLDMPEXP	World Price	US\$/100kg	OECD Outlook
WLDMPQC	World Consumption	kt	OECD Outlook
WLDMPQP	World Production	kt	OECD Outlook
WLDMPST	World Inventories	kt	OECD Outlook
WLDMPWA	Loss or Statistical Error	kt	OECD Outlook
WLDWMPXP	World Price	US\$/100kg	OECD Outlook
WLDWMPQC	World Consumption	kt	OECD Outlook
WLDWMPQP	World Production	kt	OECD Outlook
WLDWMPST	World Inventories	kt	OECD Outlook
WLDWMPWA	Loss or Statistical Error	kt	OECD Outlook
TAR_MAX	Maximum Tariff		
TAR_SC	Tariff Reduction		

APPENDIX 2

GUELPH DAIRY TRADE MODEL IN TROLL FORMAT

AUSBTMG AUSBTNT AUSBTPP AUSBTQC AUSBTQP AUSBSTST AUSCHMG AUSCHNT
AUSCHPP AUSCHQC AUSCHQP AUSCHST AUSDBTBTFE AUSDBTSNFE AUDSCHBTFE
AUDCHSNFE AUDRESBTFE AUDRESSNFE AUDSMPBTFE AUDSMPSNFE
AUDWMPBTFE AUDWMPSNFE AUSFATPP AUSMKPP_FL AUSMKPP_IM AUSMKQP
AUSMKQPBTFE AUSMKQPSNFE AUSMKS NF AUSRESMG AUSRESPP AUSRESQC AUSRESQP
AUSSMPMG AUSSMPNT AUSSMP PP AUSSMPQC AUSSMPQP AUSSMPST AUSSNFPP
AUSWMPMG AUSWMPNT AUSWMP PP AUSWMPQC AUSWMPQP AUSWMPST CANBTEFT1
CANBTMG CANBTNT CANBTQC CANBTQP CANBTST CANBTWP_CKG CANCEFT1
CANCHMG CANCHNT CANCHQC CANCHQP CANCHST CANCHWP_CKG CANDBTBTFE
CANDBTSNFE CANDCHBTFE CANDCHSNFE CANDRESBTFE CANDRESSNFE CANDSMPBTFE
CANDSMPSNFE CANDWMPBTFE CANDWMPSNFE CANFATPP CANMKPP_FM CANMKPP_IM
CANMKQP CANMKQPBTFE CANMKQPSNFE CANMKRENT CANMKS NF CANRESMG CANRESQC
CANRESQP CANRESWP_CKG CANSMP EFT1 CANSMPMG CANSMPNT CANSMPQC CANSMPQP
CANSMPST CANSMPWP_CKG CANSNFPP CANWMP EFT1 CANWMPMG CANWMPNT CANWMPQC
CANWMPQP CANWMPST CANWMPWP_CKG E15BTEFT1 E15BTMG E15BTNT
E15BTOQTAR_PC E15BTQC E15BTQP E15BTST E15BTWP E15CHEFT1 E15CHMG
E15CHNT E15CHOQTAR_PC E15CHPP E15CHQC E15CHQP E15CHST E15DBTBTFE
E15DBTSNFE E15DCHBTFE E15DCHSNFE E15DRESBTFE E15DRESSNFE E15DSMPBTFE
E15DSMPSNFE E15DWMPBTFE E15DWMP SNFE E15FATPP E15MKPP E15MKQP
E15MKQPBTFE E15MKQPSNFE E15MKRENT E15MKS NF E15RESMG E15RESQC
E15RESQP E15RESWP E15SMPEFT1 E15SMPMG E15SMPNT E15SMPOQTAR_PC
E15SMPQC E15SMPQP E15SMPST E15SMPWP E15SNFPP E15WMPEFT1 E15WMPMG
E15WMPNT E15WMPOQTAR_PC E15WMPQC E15WMPQP E15WMPWP JPNBTEFT1 JPNBTMG
JPNBTNT JPNBTOQTAR_PC JPNBTQC JPNBTQP JPNBTST JPNBTWP JPNCHCP_C
JPNCHEFT1 JPNCHMG JPNC HNT JPNCHQC JPNCHQP JPNCHST JPNDBTBTFE
JPND BTSNFE JPNDCHBTFE JPNDCHSNFE JPNDRESBTFE JPNDRESSNFE JPND S MPBTFE
JPND SMPSNFE JPND W MPBTFE JPND W MPSNFE JPNFATPP JPNMKPP JPNMKQP
JPNMKQPBTFE JPNMKQPSNFE JPNMKRENT JPNMKS NF JPNRESMG JPNRESQC
JPNRESQP JPNRESWP JPNSMPEFT1 JPNSMPMG JPNSMPNT JPNSMPOQTAR_PC
JPNSMPQC JPNSMPQP JPNSMPST JPNSMPWP JPNSNFPP JPNWMP EFT1 JPNWMPMG
JPNWMPNT JPNWMP OQTAR_PC JPNWMPQC JPNWMPQP JPNWMPWP NZLBTEXP NZLBTMG
NZLB T NT NZLB T QC NZLB T QP NZLB T ST NZLCHEXP NZLCHMG NZLCHNT NZLCHQC
NZLCHQP NZLCHST NZLDBTBTFE NZLDBTSNFE NZLDCHBTFE NZLDCHSNFE
NZLDRESBTFE NZLDRESSNFE NZLDSMPBTFE NZLDSMPSNFE NZLDWMPBTFE
NZLDWMP SNFE NZLFATPP NZLMKPP NZLMKQP NZLMKQPBTFE NZLMKQPSNFE
NZLMKS NF NZLRESMG NZLRESQC NZLRESQP NZLRESWP NZLSMPEXP NZLSMPMG
NZLSMPNT NZLSMPQC NZLSMPQP NZLSMPST NZLSNFPP NZLWMPEXP NZLWMPMG
NZLWMPNT NZLWMPQC NZLWMPQP RW1BTMG RW1BTNT RW1BTQC RW1BTQP RW1BTST
RW1BTWP RW1CHMG RW1CHNT RW1CHQC RW1CHQP RW1CHST RW1CHWP RW1DBTBTFE
RW1DBTSNFE RW1DCHBTFE RW1DCHSNFE RW1DRESBTFE RW1DRESSNFE RW1DSMPBTFE
RW1DSMPSNFE RW1DWMPBTFE RW1DWMP SNFE RW1FATPP RW1MKPP RW1MKQP
RW1MKQPBTFE RW1MKQPSNFE RW1MKS NF RW1RESMG RW1RESQC RW1RESQP RW1RESWP
RW1SMPMG RW1SMPNT RW1SMPQC RW1SMPQP RW1SMPST RW1SMPWP RW1SNFPP
RW1WMPMG RW1WMPNT RW1WMPQC RW1WMPQP RW1WMPST RW1WMPWP USABTEFT1
USABTMG USABTNT USABTOQTAR_PC USABTQC USABTQP USABTST USABTWP
USACHEFT1 USACHMG USACHNT USACHOQTAR_PC USACHQC USACHQP USACHST
USACHWP USADBTBTFE USADBTSNFE USADCHBTFE USADCHSNFE USADRESBTFE
USADRESSNFE USADSMPBTFE USADSMPSNFE USADWMPBTFE USADWMPSNFE USAFATPP
USAMKPP_FM_LT USAMKPP_IM_LT USAMKQP USAMKQPBTFE USAMKQPSNFE USAMKS NF
USARESMG USARESQC USARESQP USARESWP USASMPEFT1 USASMPMG USASMPNT
USASMP OQTAR_PC USASMPQC USASMPQP USASMPST USASMPWP USASNFP P
USAWMP EFT1 USAWMPMG USAWMPNT USAWMP OQTAR_PC USAWMPQC USAWMPQP
USAWMPST USAWMPWP WLDBTEXP WLDBTQC WLDBTQP WLDBTST WLDCHEXP WLDCHQP
WLDCHQP WLDCHST WLDMKQP WLD SMPEXP WLD SMPQC WLD SMPQP WLD SMPST
WLDWMP EXP WLDWMP OC WLDWMP OP WLDWMPST

EXOGENOUS:

AUSBTFT_PC AUSBTQCC8CON AUSBTQP8CON AUSBTST8CON AUSBTWA AUSCHEFT_PC
 AUSCHQCC8CON AUSCHQP8CON AUSCHST8CON AUSCHWA AUSCPPI AUSGDPD AUSGDPI
 AUSINFTFRATIO AUSMKFAT AUSMKPPRATIO AUSMKQP8CON AUSPOP
 AUSRESBTFE8RATIO AUSRESQCC8CON AUSRESQP8CON AUSRESSNFE8RATIO
 AUSSMPEFT_PC AUSSMPQCC8CON AUSSMPQP8CON AUSSMPST8CON AUSSMPWA
 AUSWMPFT_PC AUSWMPQCC8CON AUSWMPQP8CON AUSWMPST8CON AUSWMPWA AUSXR
 CANBTFT_PC CANBTOQTAR_PC CANBTQCC8CON CANBTQP8CON CANBTST8CON
 CANBTWA CANBTWP_MA CANCHEFT_PC CANCHOQTAR_PC CANCHQCC8CON
 CANCHQP8CON CANCHST8CON CANCHWA CANCHWP_MA CANCPI CANGDPD CANGDPI
 CANINFTFRATIO CANMAPP CANMKFAT CANMKPPRATIO CANMKQP8CON
 CANMKRENT8CON CANPOP CANRESBTFE8RATIO CANRESQCC8CON CANRESQP8CON
 CANRESSNFE8RATIO CANSMPFT_PC CANSMPQQTAR_PC CANSMPQCC8CON
 CANSMPQP8CON CANSMPST8CON CANSMPWA CANSMPWP_MA CANWMPFT_PC
 CANWMPQQTAR_PC CANWMPQCC8CON CANWMPQP8CON CANWMPST8CON CANWMPWA
 CANWMPWP_MA CANXR E15BTFT_PC E15BTOQTAR E15BTQCC8CON E15BTQP8CON
 E15BTST8CON E15BTWA E15BTWP_MA E15CHEFT_PC E15CHOQTAR E15CHPP_MA
 E15CHQCC8CON E15CHQP8CON E15CHST8CON E15CHWA E15CPI E15FECI E15GDPD
 E15GDPI E15MKFAT E15MKQP8CON E15MKRENT8CON E15POP E15RESBTFE8RATIO
 E15RESQCC8CON E15RESQP8CON E15RESSNFE8RATIO E15SMPEFT_PC E15SMPOQTAR
 E15SMPQCC8CON E15SMPQP8CON E15SMPST8CON E15SMPWA E15SMPWP_MA
 E15WMPFT_PC E15WMPQQTAR E15WMPQCC8CON E15WMPQP8CON E15WMPST
 E15WMPWA E15WMPWP_MA E15XR JPNBTFT_PC JPNBTOQTAR JPNBTQQTAR_PL
 JPNBTQCC8CON JPNBTQP8CON JPNBTST8CON JPNBTWA JPNBTWP_MA JPNCHCP_MA
 JPNCHFT_PC JPNCHQCC8CON JPNCHQP8CON JPNCHST8CON JPNCHWA JPNCPPI
 JPNGDPD JPNGDPI JPNMAIMP JPNMKFAT JPNMKQP8CON JPNMKRENT8CON JPNPOP
 JPNRESBTFE8RATIO JPNRESQCC8CON JPNRESQP8CON JPNRESSNFE8RATIO
 JPNSMPEFT_PC JPNSMPOQTAR JPNSMPOQTAR_PL JPNSMPQCC8CON JPNSMPQP8CON
 JPNSMPST8CON JPNSMPWA JPNSMPWP_MA JPNWMPFT_PC JPNWMPQQTAR
 JPNWMPQQTAR_PL JPNWMPQCC8CON JPNWMPQP8CON JPNWMPST JPNWMPWA
 JPNWMPWP_MA JPNXR NZLBTFT_PC NZLBTQCC8CON NZLBTQP8CON NZLBTST8CON
 NZLBTWA NZLCHEFT_PC NZLCHQCC8CON NZLCHQP8CON NZLCHST8CON NZLCHWA
 NZLCPI NZLGDPD NZLGDPPI NZLMKFAT NZLMKP8CON NZLPOP NZLRESBTFE8RATIO
 NZLRESQCC8CON NZLRESQP8CON NZLRESSNFE8RATIO NZLSMPEFT_PC NZLSMPQCC8CON
 NZLSMPQP8CON NZLSMPST8CON NZLSMPWA NZLWMPFT_PC NZLWMPQCC8CON
 NZLWMPQP8CON NZLWMPST NZLWMPWA NZLXR RW1BTFT_PC RW1BTQCC8CON
 RW1BTQP8CON RW1BTST8CON RW1BTWA RW1CHEFT_PC RW1CHQCC8CON RW1CHQP8CON
 RW1CHST8CON RW1CHWA RW1FECI RW1MKFAT RW1MKQP8CON RW1POP
 RW1RESBTFE8RATIO RW1RESQCC8CON RW1RESQP8CON RW1RESSNFE8RATIO
 RW1SMPEFT_PC RW1SMPQCC8CON RW1SMPQP8CON RW1SMPST8CON RW1SMPWA
 RW1WMPFT_PC RW1WMPQCC8CON RW1WMPQP8CON RW1WMPST8CON RW1WMPWA TAR_MAX
 TAR_SC USABTFT_PC USABTOQTAR USABTQCC8CON USABTQP8CON USABTST8CON
 USABTWA USABTW_MA USACHEFT_PC USACHOQTAR USACHQCC8CON USACHQP8CON
 USACHST8CON USACHWA USACHWP_MA USACPI USAFECI USAGDPD USAGDPI
 USAINFTFRATIO USAMKFAT USAMKPPRATIO USAMKP8CON USAPOP
 USARESBTFE8RATIO USARESQCC8CON USARESQP8CON USARESSNFE8RATIO
 USASMPEFT_PC USASMPOQTAR USASMPQCC8CON USASMPQP8CON USASMPST8CON
 USASMPWA USASMPWP_MA USAWMPFT_PC USAWMPQQTAR USAWMPQCC8CON
 USAWMPQP8CON USAWMPST8CON USAWMPWA USAWMPWP_MA WLDBTWA WLDCHWA
 WLDMPWA WLDWMPWA

Equations:

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1: AUSWMPPP = WLDWMPPEXP*AUSXR*(1+AUSWMPPEFT_PC*(1-TAR_SC))
2: AUSSMPPPP = WLDSPPEXP*AUSXR*(1+AUSSMPEFT_PC*(1-TAR_SC))
3: AUSBTPP = WLDDBTEXP*AUSXR*(1+AUSBTEFT_PC*(1-TAR_SC))
4: AUSCHPP = WLDCHEXP*AUSXR*(1+AUSCHEFT_PC*(1-TAR_SC))
5: AUSRESMG = AUSRESPP/AUSGDPD-(AUSRESBTFE8RATIO*AUSFATPP/AUSGDPD/
  (AUSMKFAT/100)/103+AUSRESSNFE8RATIO*AUSSNFPP/AUSGDPD/(AUSMKSNF/
  100)/103)*100
6: AUSWMPMG = AUSWMPPP/AUSGDPD-
  (0.27*AUSFATPP/AUSGDPD/(AUSMKFAT/100/103
  +0.7*AUSSNFPP/AUSGDPD/(AUSMKSNF/100)/103)*100
7: AUSSMPMG = AUSSMPPPP/AUSGDPD-
  (0.008*AUSFATPP/AUSGDPD/(AUSMKFAT/100)/
  103+0.96*AUSSNFPP/AUSGDPD/(AUSMKSNF/100)/103)*100
8: AUSCHMG = AUSCHPP/AUSGDPD-(0.303*AUSFATPP/AUSGDPD/(AUSMKFAT/100)/
  103+0.261*AUSSNFPP/AUSGDPD/(AUSMKSNF/100)/103)*100
9: AUSBTMG = AUSBTPP/AUSGDPD-(0.81*AUSFATPP/AUSGDPD/(AUSMKFAT/100)/
  103+0.029*AUSSNFPP/AUSGDPD/(AUSMKSNF/100)/103)*100
10: AUSWMPNT = AUSWMPQP-AUSWMPQC-(AUSWMPST-AUSWMPST(-1))+AUSWMPWA
11: AUSSMPNT = AUSSMPQP-AUSSMPQC-(AUSSMPST-AUSSMPST(-1))+AUSSMPWA
12: AUSCHNT = AUSCHQP-AUSCHQC-(AUSCHST-AUSCHST(-1))+AUSCHWA
13: AUSBNT = AUSBTPP-AUSBTPC-(AUSBTST-AUSBTST(-1))+AUSBTWA
14: LOG(AUSMKQP) = AUSMKQP8CON+0.5*LOG((1-
  AUSINFTFRATIO)*AUSMKPP_IM+
  AUSINFTFRATIO*AUSMKPP_FL)/AUSGDPD)+0.5*LOG(AUSMKQP(-1))
15: AUSMKS NF = 6.535+0.6031*AUSMKFAT
16: AUSMKQPBTFE = AUSMKQP*AUSMKFAT/100
17: AUSMKQPSNFE = AUSMKQP*AUSMKS NF/100
18: AUSMKQPBTFE =
  AUSSMPBTFE+AUSDBTBTFE+AUSDWMPBTFE+AUSDRESBTFE
19: AUSMKQPSNFE =
  AUSSMPBTFE+AUSDBTBTFE+AUSDWMPBTFE+AUSDRESBTFE
20: AUSMKPP_IM = AUSFATPP+AUSSNFPP
21: AUSMKPP_FL = AUSMKPP_IM*AUSMKPPRATIO
22: AUSDRESBTFE = AUSRESBTFE8RATIO*AUSRESQP
23: AUSSMPBTFE = 0.27*AUSWMPQP
24: AUSSMPBTFE = 0.008*AUSSMPQP
25: AUSDBTBTFE = 0.303*AUSCHQP
26: AUSDBTBTFE = 0.81*AUSBTPP
27: AUSDRESSNFE = AUSRESSNFE8RATIO*AUSRESQP
28: AUSSMPBTFE = 0.7*AUSWMPQP
29: AUSSMPBTFE = 0.96*AUSSMPQP
30: AUSDBTBTFE = 0.261*AUSCHQP
31: AUSDBTBTFE = 0.029*AUSBTPP
32: AUSWMPST = EXP(AUSWMPST8CON-0.5*LOG(AUSWMPPP/((AUSWMPPP(-1)+
  AUSWMPPP(-2)+AUSWMPPP(-3))/3))+0.10714*LOG(AUSWMPQP))
33: AUSSMPST = EXP(AUSSMPST8CON-0.5*LOG(AUSSMPPP/((AUSSMPPP(-1)+
  AUSSMPPP(-2)+AUSSMPPP(-3))/3))+0.2*LOG(AUSSMPQP))
34: AUSCHST = EXP(AUSCHST8CON-0.75*LOG(AUSCHPP/((AUSCHPP(-1)+
  AUSCHPP(-2)+AUSCHPP(-3))/3))+0.5*LOG(AUSCHQP))
35: AUSBTST = EXP(AUSBTST8CON-0.75*LOG(AUSBTPP/((AUSBTPP(-1)+
  AUSBTPP(-2)+AUSBTPP(-3))/3))+0.5*LOG(AUSBTPP))
36: AUSRESQP = AUSRESQP8CON+0.000123506698*AUSRESMG*10000
37: AUSWMPQP = MAX(AUSWMPQP8CON+0.000123506698*AUSWMPMG*10000,15)
38: AUSSMPQP = MAX(AUSSMPQP8CON+0.000123506698*AUSSMPMG*10000,26)
39: AUSCHQP = MAX(AUSCHQP8CON+0.000123506698*AUSCHMG*10000,36)

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40: AUSBTQP = MAX(AUSBTQP8CON+0.000123506698*AUSBTMG*10000,18)
41: AUSWMPQC/AUSPOP = EXP(AUSWMPQCC8CON-
    0.45*LOG(AUSWMPPP/AUSCPI)+0.1          *LOG(AUSGDPI/AUSCPI))
42: AUSRESQC/AUSPOP = EXP(AUSRESQCC8CON-0.17*LOG(AUSRESPP/AUSCPI)+
    0.035583*LOG(AUSGDPI/AUSCPI))
43: AUSSMPQC/AUSPOP = EXP(AUSSMPQCC8CON-0.45*LOG(AUSSMPPP/AUSCPI)+
    0.567745*LOG(AUSGDPI/AUSCPI))
44: AUSCHQC/AUSPOP = EXP(AUSCHQCC8CON-0.4*LOG(AUSCHPP/AUSCPI)+
    0.5*LOG(AUSGDPI/AUSCPI))
45: AUSBTQC/AUSPOP = EXP(AUSBTQCC8CON-0.45*LOG(AUSBTTP/AUSCPI)
    +1.513208*LOG(AUSGDPI/AUSCPI))
46: AUSRESQC = AUSRESQP
47: CANBTFT1 = MIN(CANBTFT_PC,CANBTOQTAR_PC*(1-TAR_SC),TAR_MAX)
48: CANCHFT1 = MIN(CANCHFT_PC,CANCHOQTAR_PC*(1-TAR_SC),TAR_MAX)
49: CANSMPFT1 = MIN(CANSMPFT_PC,CANSMPQQTAR_PC*(1-TAR_SC),TAR_MAX)
50: CANWMPFT1 = MIN(CANWMPFT_PC,CANWMPQQTAR_PC*(1-TAR_SC),TAR_MAX)
51: CANSMPWP_CKG =
    MAX(MIN(WLDSMPEXP*CANXR*(1+CANSMPFT1),CANSMPWP_MA),
    WLDSMPEXP*CANXR)
52: CANBTWP_CKG = MAX(MIN(WLDBTEXP*CANXR*(1+CANBTFT1),CANBTWP_MA),
    WLDBTEXP*CANXR)
53: CANCHWP_CKG = MAX(MIN(WLDCHEXP*CANXR*(1+CANCHFT1),CANCHWP_MA),
    WLDCHEXP*CANXR)
54: CANWMPWP_CKG =
    MAX(MIN(WLDWMPEXP*CANXR*(1+CANWMPFT1),CANWMPWP_MA),
    WLDWMPEXP*CANXR)
55: CANMKPP_IM = CANFATPP+CANSNFPP
56: CANMKPP_FM = CANMKPP_IM*CANMKPPRATIO
57: CANRESMG = CANRESWP_CKG/CANGDPD-(CANRESBTFE8RATIO*CANFATPP/
    CANGDPD/(CANMKFAT/100)/103+CANRESSNFE8RATIO*CANSNFPP/CANGDPD/
    (CANMKS NF/100)/103)*100
58: CANWMPMG = CANWMPWP_CKG/CANGDPD-(0.27*CANFATPP/CANGDPD/
    (CANMKFAT/100)/103+0.7*CANSNFPP/CANGDPD/(CANMKS NF/100)/103)*100
59: CANCHMG = CANCHWP_CKG/CANGDPD-(0.284*CANFATPP/CANGDPD/(CANMKFAT/
    100)/103+0.262*CANSNFPP/CANGDPD/(CANMKS NF/100)/103)*100
60: CANSMPMG = CANSMPWP_CKG/CANGDPD-(0.008*CANFATPP/CANGDPD/
    (CANMKFAT/100)/103+0.96*CANSNFPP/CANGDPD/(CANMKS NF/100)/103)
    *100
61: CANBTMG = CANBTWP_CKG/CANGDPD-(0.81*CANFATPP/CANGDPD/
    (CANMKFAT/100)/103+0.029*CANSNFPP/CANGDPD/(CANMKS NF/100)/103)
    *100
62: CANWMPNT = CANWMPQP-CANWMPQC-(CANWMPST-CANWMPST(-1))+CANWMPWA
63: CANSMPNT = CANSMPQP-CANSMPQC-(CANSMPST-CANSMPST(-1))+CANSMPWA
64: CANBTNT = CANBTQP-CANBTQC-(CANBTST-CANBTST(-1))+CANBTWA
65: CANCHNT = CANCHQP-CANCHQC-(CANCHST-CANCHST(-1))+CANCHWA
66: CANMKS NF = 6.535+0.6031*CANMKFAT
67: CANDRESBTFE = CANRESBTFE8RATIO*CANRESQP
68: CANDWMPBTFE = 0.27*CANWMPQP
69: CANDSMPBTFE = 0.008*CANSMPQP
70: CANDBTBTFE = 0.81*CANBTQP
71: CANDCHBTFE = 0.284*CANCHQP
72: CANDRESSNFE = CANRESSNFE8RATIO*CANRESQP
73: CANDWMP SNFE = 0.7*CANWMPQP
74: CANDSMP SNFE = 0.96*CANSMPQP
75: CANDCH SNFE = 0.262*CANCHQP
76: CANDBT SNFE = 0.029*CANBTQP

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77: LOG(CANMKQP) = CANMKRENT8CON+0.5*LOG(((1-CANINFTFRATIO)*
    CANMKPP_IM+CANINFTFRATIO*CANMKPP_FM)/CANGDPI-CANMKRENT/
    CANGDPI)-0.02*LOG(CANMAPP/CANGDPI)+0.5*LOG(CANMKQP(-1))
78: CANMKQP = EXP(CANMKQP8CON+0.119735*LOG((CANINFTFRATIO*
    CANMKPP_FM+(1-CANINFTFRATIO)*CANMKPP_IM)/CANGDPD)+0.962306*
    LOG(CANDSMPBTFE+CANDBTBTFE+CANDCHBTFE+CANDRESBTFE+CANDWMPBTFE))
79: CANMKQPBTFE = CANMKQP*CANMKFAT/100
80: CANMKQPSNFE = CANMKQP*CANMKSNF/100
81: CANMKQPBTFE = CANDSMPBTFE+CANDBTBTFE+CANDCHBTFE+CANDWMPBTFE
    +CANDRESBTFE
82: CANMKQPSNFE = CANDSMPSNFE+CANDBTSNFE+CANDCHSNFE+CANDWMPSNFE
    +CANDRESSNFE
83: CANWMPQP = MAX(CANWMPQP8CON+3.98751218e-005*CANWMPMG*10000,2)
84: CANRESQP = CANRESQP8CON+3.98751218e-005*CANRESMG*10000
85: CANSMPQP = MAX(CANSMPQP8CON+3.98751218e-005*CANSMPMG*10000,6)
86: CANCHQP = CANCHQP8CON+3.98751218e-005*CANCHMG*10000
87: CANBTQP = CANBTQP8CON+3.98751218e-005*CANBTMG*10000
88: CANWMPST = EXP(CANWMPST8CON-0.75*LOG(CANWMPWP_CKG/
    ((CANWMPWP_CKG(-1)+CANWMPWP_CKG(-2)+CANWMPWP_CKG(-3))/3))
    +0.15464*LOG(CANWMPQP))
89: CANSMPST = EXP(CANSMPST8CON-0.5*LOG(CANSMPWP_CKG/
    ((CANSMPWP_CKG(-1)+CANSMPWP_CKG(-2)+CANSMPWP_CKG(-3))/3))
    +0.2*LOG(CANSMPQP))
90: CANBTST = EXP(CANBTST8CON-0.75*LOG(CANBTWP_CKG/((CANBTWP_CKG(-1)
    + CANBTWP_CKG(-2)+CANBTWP_CKG(-3))/3))+0.5*LOG(CANBTQP))
91: CANCHST = EXP(CANCHST8CON-0.75*LOG(CANCHWP_CKG/((CANCHWP_CKG(-1)
    +CANCHWP_CKG(-2)+CANCHWP_CKG(-3))/3))+0.5*LOG(CANCHQP))
92: CANWMPQC = EXP(CANWMPQCC8CON-0.5*LOG(CANWMPWP_CKG/CANCPI)
    +0.1*LOG(CANGDPI/CANCPI)+0.0022014*LOG(CANPOP))
93: CANRESQC = EXP(CANRESQCC8CON-0.18*LOG(CANRESWP_CKG/CANCPI)+0.05*
    LOG(CANGDPI/CANCPI)+0.0059454*LOG(CANPOP))
94: CANSMPQC = EXP(CANSMPQCC8CON-0.5*LOG(CANSMPWP_CKG/CANCPI)
    +3.183921*LOG(CANGDPI/CANPOP)+LOG(CANPOP))
95: CANCHQC = EXP(CANCHQCC8CON-
    0.72*LOG(CANCHWP_CKG/CANCPI)+0.877018*LOG(CANGDPI/CANPOP)
    +LOG(CANPOP))
96: CANBTQC = EXP(CANBTQCC8CON-0.7*LOG(CANBTWP_CKG/CANCPI)+0.927329*
    LOG(CANGDPI/CANPOP)+LOG(CANPOP))
97: CANRESQP = CANRESQC
98: E15BTOQTAR_PC = E15BTOQTAR*(1-TAR_SC)/(WLDDBTEXP*E15XR)
99: E15CHOQTAR_PC = E15CHOQTAR*(1-TAR_SC)/(WLDCHEXP*E15XR)
100: E15SMPOQTAR_PC = E15SMPOQTAR*(1-TAR_SC)/(WLDSPMEXP*E15XR)
101: E15WMPOQTAR_PC = E15WMPOQTAR*(1-TAR_SC)/(WLDWMPEXP*E15XR)
102: E15BTEFT1 = MIN(E15BTEFT_PC,E15BTOQTAR_PC,TAR_MAX)
103: E15CHEFT1 = MIN(E15CHEFT_PC,E15CHOQTAR_PC,TAR_MAX)
104: E15SMPEFT1 = MIN(E15SMPEFT_PC,E15SMPOQTAR_PC,TAR_MAX)
105: E15WMPEFT1 = MIN(E15WMPEFT_PC,E15WMPOQTAR_PC,TAR_MAX)
106: E15SMPWP = MAX(MIN(WLDSPMEXP*E15XR*(1+E15SMPEFT1),E15SMPWP_MA),
    WLDSPMEXP*E15XR)
107: E15BTWP = MAX(MIN(WLDDBTEXP*E15XR*(1+E15BTEFT1),E15BTWP_MA),
    WLDDBTEXP*E15XR)
108: E15CHPP = MAX(MIN(WLDCHEXP*E15XR*(1+E15CHEFT1),E15CHPP_MA),
    WLDCHEXP*E15XR)
109: E15WMPWP = MAX(MIN(WLDWMPEXP*E15XR*(1+E15WMPEFT1),E15WMPWP_MA),
    WLDWMPEXP*E15XR)
110: E15MKPP = E15FATPP+E15SNFPP
111: E15WMPNT = E15WMPQP-E15WMPQC-(E15WMPST-E15WMPST(-1))+E15WMPWA

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112: $E15SMPNT = E15SMPQP - E15SMPQC - (E15SMPST - E15SMPST(-1)) + E15SMPWA$
113: $E15CHNT = E15CHQP - E15CHQC - (E15CHST - E15CHST(-1)) + E15CHWA$
114: $E15BTNT = E15BTQP - E15BTQC - (E15BTST - E15BTST(-1)) + E15BTWA$
115: $E15RESMG = E15RESWP/E15GDPD - (E15RESBTFE8RATIO * E15FATPP/E15GDPD / (E15MKFAT/100)/103 + E15RESSNFE8RATIO * E15SNFPP/E15GDPD / (E15MKS NF/100)/103) * 100$
116: $E15WMPMG = E15WMPWP/E15GDPD - (0.27 * E15FATPP/E15GDPD / (E15MKFAT/100)/103 + 0.7 * E15SNFPP/E15GDPD / (E15MKS NF/100)/103) * 100$
117: $E15SMPMG = E15SMPWP/E15GDPD - (0.008 * E15FATPP/E15GDPD / (E15MKFAT/100)/103 + 0.96 * E15SNFPP/E15GDPD / (E15MKS NF/100)/103) * 100$
118: $E15CHMG = E15CHPP/E15GDPD - (0.35 * E15FATPP/E15GDPD / (E15MKFAT/100)/103 + 0.312 * E15SNFPP/E15GDPD / (E15MKS NF/100)/103) * 100$
119: $E15BTMG = E15BTWP/E15GDPD - (0.81 * E15FATPP/E15GDPD / (E15MKFAT/100)/103 + 0.029 * E15SNFPP/E15GDPD / (E15MKS NF/100)/103) * 100$
120: $E15MKS NF = 6.535 + 0.6031 * E15MKFAT$
121: $E15DRESBTFE = E15RESBTFE8RATIO * E15RESQP$
122: $E15DWMPBTFE = 0.27 * E15WMPQP$
123: $E15DSMPBTFE = 0.008 * E15SMPQP$
124: $E15DBTBTFE = 0.81 * E15BTQP$
125: $E15DCHBTFE = 0.35 * E15CHQP$
126: $E15DRESSNFE = E15RESSNFE8RATIO * E15RESQP$
127: $E15DWMP SNFE = 0.7 * E15WMPQP$
128: $E15DSMP SNFE = 0.95 * E15SMPQP$
129: $E15DBT SNFE = 0.029 * E15BTQP$
130: $E15DCH SNFE = 0.312 * E15CHQP$
131: $LOG(E15MKQP) = E15MKRENT8CON + 0.3 * LOG(E15MKPP/E15GDPD - E15MKRENT/E15GDPD) - 0.01 * LOG(E15FECI/E15GDPD) + 0.5 * LOG(E15MKQP(-1))$
132: $E15MKQP = EXP(E15MKQP8CON + 0.152537 * LOG(E15MKPP/E15GDPD) + 0.872669 * LOG(E15DSMPBTFE + E15DBTBTFE + E15DCHBTFE + E15DWMPBTFE + E15DRESBTFE))$
133: $E15MKQPBTFE = E15MKQP * E15MKFAT/100$
134: $E15MKQPSNFE = E15MKQP * E15MKS NF/100$
135: $E15MKQPBTFE = E15DSMPBTFE + E15DBTBTFE + E15DCHBTFE + E15DWMPBTFE + E15DRESBTFE$
136: $E15MKQPSNFE = E15DSMP SNFE + E15DBT SNFE + E15DCH SNFE + E15DWMP SNFE + E15DRESSNFE$
137: $E15SMPST = EXP(E15SMPST8CON - 0.5 * LOG(E15SMPWP / ((E15SMPWP(-1) + E15SMPWP(-2) + E15SMPWP(-3)) / 3)) + 0.2 * LOG(E15SMPQP))$
138: $E15BTST = EXP(E15BTST8CON - 0.5 * LOG(E15BTWP / ((E15BTWP(-1) + E15BTWP(-2) + E15BTWP(-3)) / 3)) + 0.5 * LOG(E15BTQP))$
139: $E15CHST = EXP(E15CHST8CON - 0.75 * LOG(E15CHPP / ((E15CHPP(-1) + E15CHPP(-2) + E15CHPP(-3)) / 3)) + 0.5 * LOG(E15CHQP))$
140: $E15RESQP = E15RESQP8CON + 0.00108671223 * E15RESMG * 10000$
141: $E15WMPQP = E15WMPQP8CON + 0.00108671223 * E15WMPMG * 10000$
142: $E15SMPQP = E15SMPQP8CON + 0.00108671223 * E15SMPMG * 10000$
143: $E15CHQP = E15CHQP8CON + 0.00108671223 * E15CHMG * 10000$
144: $E15BTQP = E15BTQP8CON + 0.00108671223 * E15BTMG * 10000$
145: $E15SMPQC = EXP(E15SMPQCC8CON - 0.4 * LOG(E15SMPWP/E15CPI) + 0.5 * LOG(E15GDPI/E15POP) + LOG(E15POP))$
146: $E15BTQC = EXP(E15BTQCC8CON - 0.43 * LOG(E15BTWP/E15CPI) + 0.25 * LOG(E15GDPI/E15POP) + LOG(E15POP))$
147: $E15CHQC = EXP(E15CHQCC8CON - 0.4 * LOG(E15CHPP/E15CPI) + 0.152984 * LOG(E15GDPI/E15POP) + LOG(E15POP))$

184: JPNMKQP = EXP (JPNMKQP8CON+0.243698*LOG (JPNMKPP/JPNGDPD)
 +0.938725*LOG (JPND SMPBTFE+JPND BTBTFE+JPNDCHBTFE+JPNDWMPBTFE
 +JPNDRESBTFE))
 185: JPNMKQPBTFE = JPNMKQP*JPNMKFAT/100
 186: JPNMKQPSNFE = JPNMKQP*JPNMKS NF/100
 187: JPNMKQPBTFE = JPND SMPBTFE+JPND BTBTFE+JPNDCHBTFE+JPNDWMPBTFE
 +JPNDRESBTFE
 188: JPNMKQPSNFE = JPND SMP SNFE+JPND BT SNFE+JPNDCH SNFE+JPNDWMP SNFE
 +JPNDRESSNFE
 189: JPNSMPST = EXP (JPNSMPST8CON-0.5*LOG (JPNSMPWP / ((JPNSMPWP (-1)
 +JPNSMPWP (-2) +JPNSMPWP (-3)) / 3)) +0.2*LOG (JPNSMPQP))
 190: JPNBTST = EXP (JPNBTST8CON-0.75*LOG (JPNBTWP / ((JPNBTWP (-
 1) +JPNBTWP (-2) +JPNBTWP (-3)) / 3)) +0.5*LOG (JPNBTQP))
 191: JPNCHST = EXP (JPNCHST8CON-0.75*LOG (JPNCHCP_C / ((JPNCHCP_C (-1)
 +JPNCHCP_C (-2) +JPNCHCP_C (-3)) / 3)) +0.5*LOG (JPNCHQP))
 192: JPNWMPQC = EXP (JPNWMPQCC8CON-0.63*LOG (JPNWMPWP/JPN CPI) +0.2*
 LOG (JPNGDPI/JPN CPI) +0.17646*LOG (JPNPOP))
 193: JPNRESQC = EXP (JPNRESQCC8CON-0.14*LOG (JPNRESWP/JPN CPI) +0.2*
 LOG (JPNGDPI/JPN CPI) +0.020261*LOG (JPNPOP))
 194: JPNBTQC = EXP (JPNBTQCC8CON-0.54*LOG (JPNBTWP/JPN CPI) +0.295367*
 LOG (JPNGDPI/JPN CPI) +LOG (JPNPOP))
 195: JPNSMPQC = EXP (JPNSMPQCC8CON-0.63*LOG (JPNSMPWP/JPN CPI)
 +0.238896* LOG (JPNGDPI/JPN CPI) +LOG (JPNPOP))
 196: JPNCHQC = EXP (JPNCHQCC8CON-0.68*LOG (JPNCHCP_C/JPN CPI) +0.797933*
 LOG (JPNGDPI/JPN CPI) +LOG (JPNPOP))
 197: JPNRESQC = JPNRESQP
 198: JPNWMPQP = MAX (JPNWMPQP8CON+1.202591073e-007*JPNWMPMG*10000, 5)
 199: JPNRESQP = JPNRESQP8CON+1.202591073e-007*JPNRESMG*10000
 200: JPNSMPQP = JPNSMPQP8CON+1.202591073e-007*JPNSMPMG*10000
 201: JPNCHQP = MAX (JPNCHQP8CON+1.202591073e-007*JPNCHMG*10000, 44)
 202: JPNBTQP = MAX (JPNBTQP8CON+1.202591073e-007*JPNBTMG*10000, 8)
 203: NZLWMPNT = NZLWMPQP-NZLWMPQC- (NZLWMPST-NZLWMPST (-1)) +NZLWMPWA
 204: NZLBTNT = NZLBTQP-NZLBTQC- (NZLBTST-NZLBTST (-1)) +NZLBTWA
 205: NZLSMPNT = NZLSMPQP-NZLSMPQC- (NZLSMPST-NZLSMPST (-1)) +NZLSMPWA
 206: NZLCHNT = NZLCHQP-NZLCHQC- (NZLCHST-NZLCHST (-1)) +NZLCHWA
 207: NZLWMP EXP = WLDWMP EXP*NZLXR* (1+NZLWMP EFT_PC* (1-TAR_SC))
 208: NZLBT EXP = WLD BT EXP*NZLXR* (1+NZL BT EFT_PC* (1-TAR_SC))
 209: NZLSMPEXP = WLD SMPEXP*NZLXR* (1+NZLSMPEFT_PC* (1-TAR_SC))
 210: NZLCHEXP = WLD CHEXP*NZLXR* (1+NZLCHEFT_PC* (1-TAR_SC))
 211: NZLMKPP = NZLFATPP+NZLSNFPP
 212: NZLRESMG = NZLRESWP/NZLGDPD- (NZLRESBTFE8RATIO*NZLFATPP/NZLGDPD/
 (NZLMKFAT/100) / 103+NZLRESSNFE8RATIO*NZLSNFPP/NZLGDPD/ (NZLMKS NF/
 100) / 103) *100
 213: NZLWMPMG = NZLWMP EXP/NZLGDPD- (0.27*NZLFATPP/NZLGDPD/
 (NZLMKFAT/100) / 103+0.7*NZLSNFPP/NZLGDPD/ (NZLMKS NF/100) / 103) *100
 214: NZLSMPMG = NZLSMPEXP/NZLGDPD- (0.008*NZLFATPP/NZLGDPD/ (NZLMKFAT/
 100) / 103+0.96*NZLSNFPP/NZLGDPD/ (NZLMKS NF/100) / 103) *100
 215: NZLCHMG = NZLCHEXP/NZLGDPD- (0.303*NZLFATPP/NZLGDPD/
 (NZLMKFAT/100) / 103+0.225*NZLSNFPP/NZLGDPD/ (NZLMKS NF/100) / 103)
 *100
 216: NZLBTMG = NZLBT EXP/NZLGDPD- (0.81*NZLFATPP/NZLGDPD/
 (NZLMKFAT/100) / 103+0.029*NZLSNFPP/NZLGDPD/ (NZLMKS NF/100) / 103)
 *100
 217: NZLMKQP = EXP (NZLMKQP8CON+0.3*LOG (NZLMKPP/NZLGDPD) +0.5*
 LOG (NZLMKQP (-1)))
 218: NZLMKS NF = 6.535+0.6031*NZLMKFAT
 219: NZLDRESBTFE = NZLRESBTFE8RATIO*NZLRESQP

220: NZLDWMPBTFF = 0.27*NZLWMPQP
 221: NZLDSMPBTFF = 0.008*NZLSMPQP
 222: NZLDCHBTFF = 0.303*NZLCHQP
 223: NZLDBTBTFF = 0.81*NZLBTQP
 224: NZLDRESSNFE = NZLRESSNFE8RATIO*NZLRESQP
 225: NZLDWMPNSFE = 0.7*NZLWMPQP
 226: NZLDSMPNSFE = 0.96*NZLSMPQP
 227: NZLDCHSNFE = 0.225*NZLCHQP
 228: NZLDBTSNFE = 0.029*NZLBTQP
 229: NZLMKQPBTFE = NZLMKQP*NZLMKFAT/100
 230: NZLMKQPSNFE = NZLMKQP*NZLMKSNF/100
 231: NZLMKQPBTFE = NZLDSMPBTFF+NZLDCHBTFF+NZLDBTBTFF+NZLDWMPBTFF
 +NZLDRESSBTFF
 232: NZLMKQPSNFE = NZLDSMPNSFE+NZLDCHSNFE+NZLDBTSNFE+NZLDWMPNSFE
 +NZLDRESSNFE
 233: NZLBTST = EXP (NZLBTST8CON-0.5*LOG (NZLBTEXP/ ((NZLBTEXP (-1)
 +NZLBTEXP (-2)+NZLBTEXP (-3))/3)) +0.2*LOG (NZLBTQP))
 234: NZLCHST = EXP (NZLCHST8CON-0.5*LOG (NZLCHEXP/ ((NZLCHEXP (-1)
 +NZLCHEXP (-2)+NZLCHEXP (-3))/3)) +0.2*LOG (NZLCHQP))
 235: NZLSMPST = EXP (NZLSMPST8CON-0.5*LOG (NZLSMPEXP/ ((NZLSMPEXP (-1)
 +NZLSMPEXP (-2)+NZLSMPEXP (-3))/3)) +0.2*LOG (NZLSMPQP))
 236: NZLWMPQP = NZLWMPQP8CON+0.0001916727862*NZLWMPMG*10000
 237: NZLRESQP = NZLRESQP8CON+0.0001916727862*NZLRESMG*10000
 238: NZLSMPQP = NZLSMPQP8CON+0.0001916727862*NZLSMPMG*10000
 239: NZLCHQP = NZLCHQP8CON+0.0001916727862*NZLCHMG*10000
 240: NZLBTQP = NZLBTQP8CON+0.0001916727862*NZLBTMG*10000
 241: NZLSMPQC = EXP (NZLSMPQC8CON-0.45*LOG (NZLSMPEXP/NZLCPI) +0.5*
 LOG (NZLGDPI/NZLCPI) +LOG (NZLPOP))
 242: NZLCHQC/NZLPOP = EXP (NZLCHQC8CON-0.4*LOG (NZLCHEXP/NZLCPI) +0.1*
 LOG (NZLGDPI/NZLCPI))
 243: NZLBTQC/NZLPOP = EXP (NZLBTQC8CON-0.45*LOG (NZLBTEXP/NZLCPI)
 +0.098332*LOG (NZLGDPI/NZLCPI))
 244: NZLWMPQC/NZLPOP = EXP (NZLWMPQC8CON-0.45*LOG (NZLWMPEXP/NZLCPI)
 +0.0010314*LOG (NZLGDPI/NZLCPI))
 245: NZLRESQC/NZLPOP = EXP (NZLRESQC8CON-0.2*LOG (NZLRESWP/NZLCPI)
 +0.10125*LOG (NZLGDPI/NZLCPI))
 246: NZLRESQP = NZLRESQC
 247: USAWMPQOTAR_PC = USAWMPQOTAR*(1-TAR_SC)/WLDWMPEXP
 248: USABTOQTAR_PC = USABTOQTAR*(1-TAR_SC)/WLDDBTEXP
 249: USACHOQTAR_PC = USACHOQTAR*(1-TAR_SC)/WLDCHEXP
 250: USASMPOQTAR_PC = USASMPOQTAR*(1-TAR_SC)/WLDSPMEXP
 251: USAWMPFT1 = MIN (USAWMPFT_PC, USAWMPQOTAR_PC, TAR_MAX)
 252: USABTEFT1 = MIN (USABTEFT_PC, USABTOQTAR_PC, TAR_MAX)
 253: USACHEFT1 = MIN (USACHEFT_PC, USACHOQTAR_PC, TAR_MAX)
 254: USASMPEFT1 = MIN (USASMPEFT_PC, USASMPOQTAR_PC, TAR_MAX)
 255: USAWMPWP = MAX (MIN (WLDWMPEXP*(1+USAWMPFT1), USAWMPWP_MA),
 WLDWMPEXP)
 256: USASMPWP = MAX (MIN (WLDSPMEXP*(1+USASMPEFT1), USASMPWP_MA),
 WLDSPMEXP)
 257: USABTWP = MAX (MIN (WLDDBTEXP*(1+USABTEFT1), USABTWP_MA), WLDDBTEXP)
 258: USACHWP = MAX (MIN (WLDCHEXP*(1+USACHEFT1), USACHWP_MA), WLDCHEXP)
 259: USAMKPP_IM_LT = USAFATPP+USASNFPP
 260: USAMKPP_FM_LT = USAMKPP_IM_LT*USAMKPPRATIO
 261: USARESMG = USARESWP/USAGDPD- (USARESBTFF8RATIO*USAFATPP/USAGDPD/
 (USAMKFAT/100)/103+USARESSNFE8RATIO*USASNFPP/USAGDPD/ (USAMKSNF/
 100)/103)*100

262: $USAWMPMG = USAWMPWP/USAGDPD - (0.27*USAFATPP/USAGDPD / (USAMKFAT/100) / 103 + 0.7*USASNFPP/USAGDPD / (USAMKSNF/100) / 103) * 100$
 263: $USASMPMG = USASMPWP/USAGDPD - (0.008*USAFATPP/USAGDPD / (USAMKFAT/100) / 103 + 0.96*USASNFPP/USAGDPD / (USAMKSNF/100) / 103) * 100$
 264: $USACHMG = USACHWP/USAGDPD - (0.321*USAFATPP/USAGDPD / (USAMKFAT/100) / 103 + 0.299*USASNFPP/USAGDPD / (USAMKSNF/100) / 103) * 100$
 265: $USABTMG = USABTWP/USAGDPD - (0.81*USAFATPP/USAGDPD / (USAMKFAT/100) / 103 + 0.029*USASNFPP/USAGDPD / (USAMKSNF/100) / 103) * 100$
 266: $USAWMPNT = USAWMPQP - USAWMPQC - (USAWMPST - USAWMPST(-1)) + USAWMPWA$
 267: $USASMPNT = USASMPQP - USASMPQC - (USASMPST - USASMPST(-1)) + USASMPWA$
 268: $USACHNT = USACHQP - USACHQC - (USACHST - USACHST(-1)) + USACHWA$
 269: $USABTNT = USABTQP - USABTQC - (USABTST - USABTST(-1)) + USABTWA$
 270: $USAMKQP = EXP(USAMKQP8CON + 0.5*LOG((1 - USAINFTFRATIO) * USAMKPP_IM_LT + USAINFTFRATIO * USAMKPP_FM_LT) / USAGDPD) - 0.04 * LOG(USAFECI/USAGDPD) + 0.5*LOG(USAMKQP(-1))$
 271: $USAMKSNF = 6.535 + 0.6031 * USAMKFAT$
 272: $USADRESSNFE = USARESSNFE8RATIO * USARESQP$
 273: $USADWMPNFE = 0.7 * USAWMPQP$
 274: $USADSMPSNFE = 0.96 * USASMPQP$
 275: $USADCHSNFE = 0.299 * USACHQP$
 276: $USADBTNFE = 0.029 * USABTQP$
 277: $USADRESBTFE = USARESBTFE8RATIO * USARESQP$
 278: $USADWMPBTFE = 0.27 * USAWMPQP$
 279: $USADSMGBTFE = 0.008 * USASMPQP$
 280: $USADCHBTFE = 0.321 * USACHQP$
 281: $USADBTBTFE = 0.81 * USABTQP$
 282: $USAMKQPBTFE = USAMKQP * USAMKFAT / 100$
 283: $USAMKQPSNFE = USAMKQP * USAMKSNF / 100$
 284: $USAMKQPBTFE = USADSMGBTFE + USADCHBTFE + USADBTBTFE + USADWMPBTFE + USADRESBTFE$
 285: $USAMKQPSNFE = USADSMPSNFE + USADCHSNFE + USADBTNFE + USADWMPNFE + USADRESSNFE$
 286: $USACHQP = USACHQP8CON + 0.000687667449 * USACHMG * 10000$
 287: $USABTQP = USABTQP8CON + 0.000687667449 * USABTMG * 10000$
 288: $USASMPQP = MAX(USASMPQP8CON + 0.000687667449 * USASMPMG * 10000, 50)$
 289: $USAWMPQP = MAX(USAWMPQP8CON + 0.000687667449 * USAWMPMG * 10000, 6)$
 290: $USARESQP = USARESQP8CON + 0.000687667449 * USARESMG * 10000$
 291: $USAWMPST = EXP(USAWMPST8CON - 0.75*LOG(USAWMPWP / ((USAWMPWP(-1) + USAWMPWP(-2) + USAWMPWP(-3)) / 3)) + 0.5*LOG(USAWMPQP))$
 292: $USACHST = EXP(USACHST8CON - 0.75*LOG(USACHWP / ((USACHWP(-1) + USACHWP(-2) + USACHWP(-3)) / 3)) + 0.5*LOG(USACHQP))$
 293: $USASMPST = EXP(USASMPST8CON - 0.75*LOG(USASMPWP / ((USASMPWP(-1) + USASMPWP(-2) + USASMPWP(-3)) / 3)) + 0.5*LOG(USASMPQP))$
 294: $USABTST = EXP(USABTST8CON - 0.75*LOG(USABTWP / ((USABTWP(-1) + USABTWP(-2) + USABTWP(-3)) / 3)) + 0.5*LOG(USABTQP))$
 295: $USASMPQC/USAPOP = EXP(USASMPQCC8CON - 0.65*LOG(USASMPWP/USACPI) + 0.209297*LOG(USAGDPI/USACPI))$
 296: $USACHQC/USAPOP = EXP(USACHQCC8CON - 0.6*LOG(USACHWP/USACPI) + 1.25*LOG(USAGDPI/USACPI))$
 297: $USABTQC/USAPOP = -0.000168 + EXP(USABTQCC8CON - 0.63*LOG(USABTWP/USACPI) + 0.1*LOG(USAGDPI/USACPI))$
 298: $USAWMPQC/USAPOP = EXP(USAWMPQCC8CON - 0.65*LOG(USAWMPWP/USACPI) + 0.1*LOG(USAGDPI/USACPI))$
 299: $USARESQC/USAPOP = EXP(USARESQCC8CON - 0.17*LOG(USARESWP/USACPI) + 0.15*LOG(USAGDPI/USACPI))$

300: USARESQC = USARESQC
 301: RW1WMPWP = WLDWMPEXP*(1+RW1WMPFT_PC*(1-TAR_SC))
 302: RW1SMPWP = WLDSEMPEXP*(1+RW1SMPFT_PC*(1-TAR_SC))
 303: RW1CHWP = WLDCHEXP*(1+RW1CHEFT_PC*(1-TAR_SC))
 304: RW1BTWP = WLDTEEXP*(1+RW1BTEFT_PC*(1-TAR_SC))
 305: RW1MKPP = RW1FATPP+RW1SNFPP
 306: RW1WMPNT = RW1WMPQP-RW1WMPQC-(RW1WMPST-RW1WMPST(-1))+RW1WMPWA
 307: RW1SMPNT = RW1SMPQP-RW1SMPQC-(RW1SMPST-RW1SMPST(-1))+RW1SMPWA
 308: RW1BTNT = RW1BTQP-RW1BTQC-(RW1BTST-RW1BTST(-1))+RW1BTWA
 309: RW1CHNT = RW1CHQP-RW1CHQC-(RW1CHST-RW1CHST(-1))+RW1CHWA
 310: RW1RESMG = RW1RESWP/USAGDPD-(RW1RESBTFE8RATIO*RW1FATPP/USAGDPD/
 (RW1MKFAT/100)/103+RW1RESSNFE8RATIO*RW1SNFPP/USAGDPD/(RW1MKSNF
 /100)/103)*100
 311: RW1WMPMG = RW1WMPWP/USAGDPD-(0.27*RW1FATPP/USAGDPD/(RW1MKFAT/
 100)/103+0.7*RW1SNFPP/USAGDPD/(RW1MKSNF/100)/103)*100
 312: RW1SMPMG = RW1SMPWP/USAGDPD-(0.008*RW1FATPP/USAGDPD/(RW1MKFAT/
 100)/103+0.96*RW1SNFPP/USAGDPD/(RW1MKSNF/100)/103)*100
 313: RW1CHMG = RW1CHWP/USAGDPD-(0.321*RW1FATPP/USAGDPD/(RW1MKFAT/
 100)/103+0.299*RW1SNFPP/USAGDPD/(RW1MKSNF/100)/103)*100
 314: RW1BTMG = RW1BTWP/USAGDPD-(0.81*RW1FATPP/USAGDPD/(RW1MKFAT/100)
 /103+0.029*RW1SNFPP/USAGDPD/(RW1MKSNF/100)/103)*100
 315: RW1MKSNF = 6.535+0.6031*RW1MKFAT
 316: RW1MKQPBTFE = RW1MKQP*RW1MKFAT/100
 317: RW1MKQPSNFE = RW1MKQP*RW1MKSNF/100
 318: RW1DRESBTFE = RW1RESBTFE8RATIO*RW1RESQP
 319: RW1DWMPBTFE = 0.27*RW1WMPQP
 320: RW1DSMPBTFE = 0.008*RW1SMPQP
 321: RW1DBTBTFE = 0.81*RW1BTQP
 322: RW1DCHBTFE = 0.321*RW1CHQP
 323: RW1DRESSNFE = RW1RESSNFE8RATIO*RW1RESQP
 324: RW1DWMPNFE = 0.7*RW1WMPQP
 325: RW1DSMPNFE = 0.96*RW1SMPQP
 326: RW1DBTSNFE = 0.029*RW1BTQP
 327: RW1DCHSNFE = 0.299*RW1CHQP
 328: RW1MKQP = EXP(RW1MKQP8CON+0.4*LOG(RW1MKPP/USAGDPD)-0.02*
 LOG(RW1FECI/USAGDPD)+0.5*LOG(RW1MKQP(-1)))
 329: RW1MKQPBTFE = RW1DSMPBTFE+RW1DBTBTFE+RW1DCHBTFE+RW1DWMPBTFE
 +RW1DRESBTFE
 330: RW1MKQPSNFE = RW1DSMPNFE+RW1DBTSNFE+RW1DCHSNFE+RW1DWMPNFE
 +RW1DRESSNFE
 331: RW1WMPQP = RW1WMPQP8CON+0.001662707661*RW1WMPMG*10000
 332: RW1RESQP = RW1RESQP8CON+0.001662707661*RW1RESMG*10000
 333: RW1SMPQP = RW1SMPQP8CON+0.001662707661*RW1SMPMG*10000
 334: RW1CHQP = RW1CHQP8CON+0.001662707661*RW1CHMG*10000
 335: RW1BTQP = RW1BTQP8CON+0.001662707661*RW1BTMG*10000
 336: RW1WMPST = EXP(RW1WMPST8CON-0.5*LOG(RW1WMPWP/((RW1WMPWP(-1)
 +RW1WMPWP(-2)+RW1WMPWP(-3))/3))+0.2*LOG(RW1WMPQP))
 337: RW1BTST = EXP(RW1BTST8CON-0.5*LOG(RW1BTWP/((RW1BTWP(-1)
 +RW1BTWP(-2)+RW1BTWP(-3))/3))+0.2*LOG(RW1BTQP))
 338: RW1CHST = EXP(RW1CHST8CON-0.5*LOG(RW1CHWP/((RW1CHWP(-1)
 +RW1CHWP(-2)+RW1CHWP(-3))/3))+0.2*LOG(RW1CHQP))
 339: RW1SMPST = EXP(RW1SMPST8CON-0.5*LOG(RW1SMPWP/((RW1SMPWP(-1)
 +RW1SMPWP(-2)+RW1SMPWP(-3))/3))+0.2*LOG(RW1SMPQP))
 340: RW1SMPQC/RW1POP = EXP(RW1SMPQC8CON-0.3*LOG(RW1SMPWP/USACPI)
 +0.5*LOG(USAGDPI/USACPI))
 341: RW1CHQC/RW1POP = EXP(RW1CHQC8CON-0.5*LOG(RW1CHWP/USACPI)
 +1*LOG(USAGDPI/USACPI))

342: $RW1BTQC/RW1POP = \exp(RW1BTQC8CON - 0.7 * \log(RW1BTWP/USACPI) + 0.75 * \log(USAGDPI/USACPI))$
 343: $RW1WMPQC/RW1POP = \exp(RW1WMPQC8CON - 0.3 * \log(RW1WMPWP/USACPI) + 0.1 * \log(USAGDPI/USACPI))$
 344: $RW1RESQC/RW1POP = \exp(RW1RESQC8CON - 0.25 * \log(RW1RESWP/USACPI) + 0.1 * \log(USAGDPI/USACPI))$
 345: $RW1RESQC = RW1RESQP$
 346: $W1DBTQC = AUSBTQC + CANBTQC + E15BTQC + JPNBTQC + NZLBTQC + USABTQC + RW1BTQC$
 347: $W1DCHQC = AUSCHQC + CANCHQC + E15CHQC + JPNCHQC + NZLCHQC + USACHQC + RW1CHQC$
 348: $W1DSMPQC = AUSSMPQC + CANSMPQC + E15SMPQC + JPN S MPQC + NZLSMPQC + USASMPQC + RW1SMPQC$
 349: $W1DWMPQC = AUSWMPQC + CANWMPQC + E15WMPQC + JPNWMPQC + NZLWMPQC + USAWMPQC + RW1WMPQC$
 350: $W1DMKQP = AUSMKQP + CANMKQP + E15MKQP + JPNMKQP + NZLMKQP + USAMKQP + RW1MKQ$
 351: $W1DBTQP = AUSBTQP + CANBTQP + E15BTQP + JPNBTQP + NZLBTQP + USABTQP + RW1BTQP$
 352: $W1DCHQP = AUSCHQP + CANCHQP + E15CHQP + JPNCHQP + NZLCHQP + USACHQP + RW1CHQP$
 353: $W1DSMPQP = AUSSMPQP + CANSMPQP + E15SMPQP + JPN S MPQP + NZLSMPQP + USASMPQP + RW1SMPQP$
 354: $W1DWMPQP = AUSWMPQP + CANWMPQP + E15WMPQP + JPNWMPQP + NZLWMPQP + USAWMPQP + RW1WMPQP$
 355: $W1DBTST = AUSBTST + CANBTST + E15BTST + JPNBTST + NZLBTST + USABTST + RW1BTST$
 356: $W1DCHST = AUSCHST + CANCHST + E15CHST + JPNCHST + NZLCHST + USACHST + RW1CHST$
 357: $W1DSMPST = AUSSMPST + CANSMPST + E15SMPST + JPN S MPST + NZLSMPST + USASMPST + RW1SMPST$
 358: $W1DWMPST = AUSWMPST + CANWMPST + E15WMPST + JPNWMPST + NZLWMPST + USAWMPST + RW1WMPST$
 359: $W1DBTQC = W1DBTQP - (W1DBTST - W1DBTST(-1)) + W1DBTWA$
 360: $W1DCHQC = W1DCHQP - (W1DCHST - W1DCHST(-1)) + W1DCHWA$
 361: $W1DSMPQC = W1DSMPQP - (W1DSMPST - W1DSMPST(-1)) + W1DSMPWA$
 362: $W1DWMPQC = W1DWMPQP - (W1DWMPST - W1DWMPST(-1)) + W1DWMPWA$

APPENDIX 3

GENERAL MODEL

GENERAL MODEL

The general structure of the Guelph Dairy Trade Model is the following:

Farm Level

Domestic Price for Milk and Milk Components

Domestic Producer Price of Milk for Industrial Use (P_{\min})

$$P_{\min} = P_{nf} + P_f$$

Domestic Producer Price of Milk for Fluid Consumption (P_{mfl})

$$P_{mfl} = \gamma P_{\min}$$

Domestic Producer Blend Price of Milk (P_{bldm})

$$P_{bldm} = \beta(P_f) + \lambda(P_{nf}) + (1 - \beta)(\gamma P_f) + (1 - \lambda)(\gamma P_{nf})$$

Supply of Milk

Competitive Conditions

$$S_m = f(P_{bldm}, P_{feed}, S_{m-1})$$

Quota Regulated Conditions

Regulator Reaction Function (S_{mq})

$$S_{mq} = f(P_{bldm}, D_f)$$

Marginal cost Determination in Quota Regulated Market (M_c)

$$M_c = f(S_{mq}, P_{feed})$$

Producer Rent Determination in Quota Regulated Market (R_p)

$$R_p = P_{bldm} - M_c$$

Supply of Milk Components

Supply of Fat (S_f)

$$S_f = \mu_1 S_m \text{ or } S_f = \mu_1 S_{mq}$$

Supply of Solids Non-Fat (S_{nf})

$$S_{nf} = \mu_2 S_m \text{ or } S_{nf} = \mu_2 S_{mq}$$

Processing Level

Supply of Dairy Products

Domestic Supply of Butter

$$S_b = g(P_b - \mu_3 P_f - \mu_8 P_{nf})$$

Domestic Supply of Cheese

$$S_c = g(P_c - \mu_4 P_f - \mu_9 P_{nf})$$

Domestic Supply of Skim Milk Powder

$$S_{smp} = g(P_{smp} - \mu_5 P_f - \mu_{10} P_{nf})$$

Domestic Supply of Whole Milk Powder

$$S_{wmp} = g(P_{wmp} - \mu_6 P_f - \mu_{11} P_{nf})$$

Domestic Supply of Residual Products

$$S_r = g(P_r - \mu_7 P_f - \mu_{12} P_{nf})$$

Demand for Milk Components

Demand for Fat

For Butter

$$D_{f,b} = \mu_3 S_b$$

For Cheese

$$D_{f,c} = \mu_4 S_c$$

For Skim Milk Powder

$$D_{f,sm} = \mu_5 S_{sm}$$

For Whole Milk Powder

$$D_{f,wm} = \mu_6 S_{wm}$$

For Residual Products

$$D_{f,r} = \mu_7 S_r$$

Demand for Solid Non-Fat

For Butter

$$D_{nf,b} = \mu_8 S_b$$

For Cheese

$$D_{nf,c} = \mu_9 S_c$$

For Skim Milk Powder

$$D_{nf,sm} = \mu_{10} S_{sm}$$

For Whole Milk Powder

$$D_{nf,wm} = \mu_{11} S_{wm}$$

For Residual Products

$$D_{nf,r} = \mu_{12} S_r$$

Price of Milk Components

Domestic Price of Fat (Pf)

$$D_{f,b} + D_{f,c} + D_{f,smf} + D_{f,wmp} + D_{f,r} = S_f$$

Domestic Price of Solid Non-Fat (Pnf)

$$D_{nf,b} + D_{nf,c} + D_{nf,smf} + D_{nf,wmp} + D_{nf,r} = S_{nf}$$

Retail level

Retail Demand for Dairy Products

Butter Demand

$$D_b = h(P_b, Y)$$

Cheese Demand

$$D_c = h(P_c, Y)$$

Skim Milk Powder Demand

$$D_{smf} = h(P_{smf}, Y)$$

Whole Milk Powder Demand

$$D_{wmp} = h(P_{wmp}, Y)$$

Residual Product Demand

$$D_r = h(P_r, Y)$$

Demand for Inventories

Butter Inventory (IN_b)

$$IN_b = e(IN_{b,t-1}, S_b, E(P_b))$$

where

$$E(P_b) = P_b / \sum_{t=-1}^{-3} P_{b,t} / 3$$

Cheese Inventory (IN_c)

$$IN_c = e(IN_{c,t-1}, S_c, E(P_c))$$

where

$$E(P_c) = P_c / \sum_{t=-1}^{-3} P_{c,t} / 3$$

Skim Milk Powder Inventory (IN_{smp})

$$IN_{smp} = e(IN_{smp,t-1}, S_{smp}, E(P_{smp}))$$

where

$$E(P_{smp}) = P_{smp} / \sum_{t=-1}^{-3} P_{smp,t} / 3$$

Whole Milk Powder Inventory (IN_{wmp})

$$IN_{wmp} = e(IN_{wmp,t-1}, S_{wmp}, E(P_{wmp}))$$

where

$$E(P_{wmp}) = P_{wmp} / \sum_{t=-1}^{-3} P_{wmp,t} / 3$$

Domestic to World Relationship

Dairy Products Price Equations (P_i)

$$T_i = MIN(TE_i, T_{OQ,i})$$

$$P_{OQ,i} = (P_i^w)(XR) + T_i$$

$$P_i = \text{MAX}(\text{MIN}(P_{MA,i}, P_{OQ,i}), P_{ES,i}, P_i^w(XR))$$

where

i = butter, cheese, skim milk powder, whole milk powder

Price of Residual Products (P_r)

$$S_r = D_r$$

World Price Determination

Butter World Price (P_b^w)

$$S_{WLD,b} = D_{WLD,b} - (IN_{WLD,b} - IN_{WLD,b,t-1}) + WA_{WLD,b}$$

Cheese World Price (P_c^w)

$$S_{WLD,c} = D_{WLD,c} - (IN_{WLD,c} - IN_{WLD,c,t-1}) + WA_{WLD,c}$$

Skim Milk Powder World Price (P_{smp}^w)

$$S_{WLD,smp} = D_{WLD,smp} - (IN_{WLD,smp} - IN_{WLD,smp,t-1}) + WA_{WLD,smp}$$

Whole Milk Powder World Price (P_{wmp}^w)

$$S_{WLD,wmp} = D_{WLD,wmp} - (IN_{WLD,wmp} - IN_{WLD,wmp,t-1}) + WA_{WLD,wmp}$$

where

$$S_{WLD,i} = S_{AUS,i} + S_{CAN,i} + S_{EU15,i} + S_{JPN,i} + S_{NZL,i} + S_{US,i} + S_{RW,i}$$

$$D_{WLD,i} = D_{AUS,i} + D_{CAN,i} + D_{EU15,i} + D_{JPN,i} + D_{NZL,i} + D_{US,i} + D_{RW,i}$$

$$IN_{WLD,i} = IN_{AUS,i} + IN_{CAN,i} + IN_{EU15,i} + IN_{JPN,i} + IN_{NZL,i} + IN_{US,i} + IN_{RW,i}$$

$$WA_{WLD,i} = WA_{AUS,i} + WA_{CAN,i} + WA_{EU15,i} + WA_{JPN,i} + WA_{NZL,i} + WA_{US,i} + WA_{RW,i}$$

where

i = butter, cheese, skim milk powder, whole milk powder

Description of Variables

Farm Level

P_{min} = domestic producer price for industrial milk

P_{nf} = domestic component price for solid non-fat

P_f = domestic component price for milk fat

γ = industrial milk price, fluid milk price ratio

P_{mfl} = domestic producer price for fluid milk

P_{bldm} = domestic blended producer price for milk

β = the proportion of fat used by the processing sector

λ = the proportion of solid non-fat used by the processing sector

S_m = the supply of milk under competitive conditions

P_{feed} = domestic price of feed

S_{mq} = the supply of milk under regulated market conditions

M_c = the marginal cost

D_f = the demand for fat

S_{m-1} = previous year's supply of milk

R_p = producer rent determination in regulated markets

S_{mq-1} = previous year's supply of milk in regulated markets

S_f = supply of fat

μ_1 = proportion of fat in raw milk

S_{nf} = supply of solids non-fat

μ_2 = proportion of solids non-fat in milk

Processing Level

S_b = domestic supply of butter

S_c = domestic supply of cheese

S_{smp} = domestic supply of skim milk powder

S_{wmp} = domestic supply of whole milk powder

S_r = domestic supply of residual products

P_b = domestic price of butter

P_c = domestic price of cheese

P_{smp} = domestic price of skim milk powder

P_{wmp} = domestic price of whole milk powder

P_r = domestic price of residual products

μ_3 = proportion of fat in butter

μ_4 = proportion of fat in cheese

μ_5 = proportion of fat in skim milk powder

μ_6 = proportion of fat in whole milk powder

μ_7 = proportion of fat in residual products

μ_8 = proportion of solid non-fat in butter

μ_9 = proportion of solid non-fat in cheese

μ_{10} = proportion of solid non-fat in skim milk powder

μ_{11} = proportion of solid non-fat in whole milk powder

μ_{12} = proportion of solid non-fat in residual products

$D_{f,b}$ = demand for fat from butter

$D_{f,c}$ = demand for fat from cheese

$D_{f,smf}$ = demand for fat from skim milk powder

$D_{f,wmp}$ = demand for fat from whole milk powder

$D_{f,r}$ = demand for fat from residual products

$D_{nf,b}$ = demand for solid non-fat from butter

$D_{nf,c}$ = demand for solid non-fat from cheese

$D_{nf,smf}$ = demand for solid non-fat from skim milk powder

$D_{nf,wmp}$ = demand for solid non-fat from whole milk powder

$D_{nf,r}$ = demand for solid non-fat from residual products

Retail Level

D_b = retail demand for butter

D_c = retail demand for cheese

D_{smf} = retail demand for skim milk powder

D_{wmp} = retail demand for whole milk powder

D_r = retail demand for residual products

Y = per capita income

IN_b = butter inventory

IN_c = cheese inventory

IN_{smf} = skim milk powder inventory

IN_{wmp} = whole milk powder inventory

$E(P_b)$ = expected price of butter

$E(P_c)$ = expected price of cheese

$E(P_{smp})$ = expected price of skim milk powder

$E(P_{wmp})$ = expected price of whole milk powder

Domestic World Relationship

T_i = tariff of dairy product i

TE_i = effective tariff of dairy product i

$T_{OQ,i}$ = over-quota tariff of dairy product i

$P_{OQ,i}$ = over-quota price of dairy product i

P_i^w = world price of dairy product i

XR = exchange rate

P_i = domestic price of dairy product i

$P_{MA,i}$ = minimum access price of dairy product i

$P_{ES,i}$ = export subsidy price of dairy product i

$S_{WLD,i}$ = world supply of dairy product i

$D_{WLD,i}$ = world demand for dairy product i

$IN_{WLD,i}$ = world inventory of dairy product i

$IN_{WLD,i,t-1}$ = world inventory of dairy product i in previous year

$WA_{WLD,i}$ = world waste and statistical error for dairy product i

i = butter (b), cheese (c), skim milk powder (smp), whole milk powder (wmp)

In Scenario 1B, the general model was adapted to allow Canada and the United States to trade industrial milk. The adaptation was by adding the following equations:

North American Industrial Milk Relationships

North American Fat Relationship

$$S_{f,USA} + S_{f,CAN} = D_{f,USA} + D_{f,CAN}$$

North American Solid Non-Fat Relationship

$$S_{nf,USA} + S_{nf,CAN} = D_{nf,USA} + D_{nf,CAN}$$

North American Industrial Milk Price Relationship

$$P_{min,CAN} = (P_{min,USA} + \$2.27)XR_{CAN}$$

North American Relationship

$S_{f,USA}$ = supply of fat in United States

$S_{f,CAN}$ = supply of fat in Canada

$D_{f,USA}$ = demand for fat in United States

$D_{f,CAN}$ = demand for fat in Canada

$P_{min,CAN}$ = price of industrial milk in Canada

$P_{min,USA}$ = price of industrial milk in United States

XR_{CAN} = Canada, United States exchange rate

APPENDIX 4

SIMULATION RESULTS

SCENARIO 1A

**COMPLETE FREE TRADE WITHOUT NORTH AMERICAN TRADE IN
INDUSTRIAL MILK**

Australia

Free Trade without Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	180.45	212.91	17.99	185.24	234.50	26.59	184.50	238.24	29.13	183.09	238.05	30.02	189.77	244.31	28.74
Cheese	364.64	464.11	27.28	375.26	492.94	31.36	400.86	523.28	30.54	428.32	544.58	27.14	438.02	545.42	24.52
Skim Milk Powder	263.12	349.97	33.01	271.78	391.97	44.22	289.25	396.41	47.23	288.95	394.67	46.75	279.93	399.74	42.80
Whole Milk Powder	154.92	341.96	120.73	147.27	364.95	147.81	157.18	400.03	154.50	160.91	410.10	154.87	158.84	418.48	163.46
Milk	11079.68	13599.70	22.74	11267.58	14499.19	28.68	11594.49	15126.06	30.46	11890.82	15448.90	29.92	12135.09	15689.83	29.29
Fat	455.37	558.95	22.74	463.10	595.92	28.68	476.53	621.68	30.46	488.71	634.95	29.92	498.75	644.85	29.29
Solid Nonfat	998.69	1225.84	22.74	1015.63	1306.92	28.68	1045.10	1363.42	30.46	1071.81	1392.52	29.92	1093.83	1414.24	29.29
Demand (KT)															
Butter	68.10	51.70	-24.08	68.21	52.20	-23.47	69.34	53.17	-23.32	69.66	53.77	-22.81	70.08	54.60	-22.10
Cheese	197.06	169.32	-14.08	208.71	179.46	-14.01	216.73	186.64	-13.89	219.44	190.71	-13.09	232.03	203.18	-12.43
Skim Milk Powder	36.80	30.35	-17.52	37.19	30.64	-17.61	37.71	31.24	-17.17	37.87	31.83	-15.95	38.03	32.42	-14.75
Whole Milk Powder	33.22	19.38	-41.66	33.75	19.54	-42.09	34.25	19.26	-43.77	34.75	19.35	-44.32	35.24	19.29	-45.27
Fat	455.37	558.95	22.74	463.10	595.92	28.68	476.53	621.68	30.46	488.71	634.95	29.92	498.75	644.85	29.29
Solid Nonfat	998.69	1225.84	22.74	1015.63	1306.92	28.68	1045.10	1363.42	30.46	1071.81	1392.52	29.92	1093.83	1414.24	29.29
Price (local currency)															
Butter (00 kg)	240.28	443.16	84.43	244.02	442.10	81.17	252.68	455.92	80.44	266.52	473.73	77.75	282.17	491.46	74.17
Cheese (00 kg)	367.76	537.38	46.12	379.68	553.77	45.85	396.95	576.82	45.31	417.75	593.28	42.02	429.01	597.88	39.36
Skim Milk Powder (00 kg)	226.80	347.94	53.41	235.28	361.81	53.78	248.42	377.54	51.98	266.35	391.92	47.15	283.80	404.59	42.56
Whole Milk Powder (00 kg)	114.01	377.62	231.21	114.01	383.90	236.72	114.01	409.73	259.37	114.01	418.89	267.41	114.01	435.19	281.71
Fat (per hl of milk)	7.79	16.69	114.34	7.65	15.44	101.75	7.50	15.26	103.46	7.79	15.64	100.66	7.92	15.83	99.94
Solid Nonfat (per hl of milk)	16.55	19.98	20.70	16.27	16.83	3.44	15.94	15.74	-1.24	16.56	15.87	-4.15	16.82	16.00	-4.87
Fluid Milk (hl)	53.97	81.31	50.66	55.75	75.21	34.90	57.62	76.21	32.26	59.49	76.97	29.39	59.50	76.56	28.67
Industrial Milk (hl)	24.34	36.67	50.66	23.92	32.27	34.90	23.44	31.00	32.26	24.35	31.51	29.39	24.74	31.83	28.67
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	72.03	98.31	36.48	75.46	115.35	52.85	82.69	126.20	52.61	87.10	131.60	51.09	95.23	139.39	46.37
Cheese (00 kg)	222.15	302.69	36.25	227.79	323.08	41.83	236.90	336.02	41.84	244.74	338.88	38.46	246.78	333.74	35.24
Skim Milk Powder (00 kg)	45.34	115.66	155.09	53.56	150.88	181.68	65.24	168.19	157.82	72.68	174.47	140.07	82.26	179.27	117.93
Whole Milk Powder (00 kg)	-50.59	100.85	-299.35	-46.88	129.37	-375.99	-42.87	153.75	-458.68	-46.96	154.80	-429.61	-48.08	162.15	-437.27
Net trade (KT)															
Butter	120.76	177.45	46.95	117.04	177.89	51.99	115.15	181.19	57.35	113.42	180.70	59.32	119.69	189.68	58.48
Cheese	167.58	308.39	84.02	166.55	303.33	82.13	184.13	328.03	78.15	208.89	345.56	65.43	205.99	342.62	66.33
Skim Milk Powder	226.32	324.08	43.19	234.60	358.61	52.86	231.54	362.69	56.64	231.08	360.49	56.00	241.90	367.22	51.80
Whole Milk Powder	121.70	329.81	171.00	113.51	341.77	201.09	122.93	376.36	207.79	126.16	388.34	207.81	123.61	399.17	222.93

Canada

Free Trade without Trade in Industrial Milk Supply (KT)		2001			2002			2003			2004			2005		
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter		82.82	101.64	22.73	83.41	102.39	22.76	84.05	103.64	23.31	84.00	105.43	25.51	85.68	109.61	27.93
Cheese		346.87	287.22	-17.20	350.18	285.03	-18.61	353.14	285.38	-19.19	356.12	285.27	-19.89	359.75	282.95	-21.35
Skim Milk Powder		61.17	64.03	4.67	61.77	62.39	1.00	63.11	63.48	0.59	62.39	64.90	4.02	65.31	69.76	6.82
Whole Milk Powder		17.02	28.52	67.57	17.02	26.05	53.05	17.02	29.01	70.45	17.02	29.10	70.97	17.02	31.63	85.84
Milk		8150.86	8308.49	1.93	8200.59	8309.14	1.32	8259.37	8384.84	1.52	8312.98	8458.97	1.76	8390.43	8567.36	2.11
Fat		309.73	315.72	1.93	312.44	316.58	1.32	315.51	320.30	1.52	318.39	323.98	1.76	322.19	328.99	2.11
Solid Nonfat		719.46	733.37	1.93	724.34	733.93	1.32	730.03	741.12	1.52	735.27	748.18	1.76	742.63	758.29	2.11
Demand (KT)																
Butter		81.43	101.14	24.20	82.16	104.50	27.19	82.80	104.33	26.00	83.74	103.50	23.60	84.43	101.96	20.76
Cheese		340.48	474.43	39.34	343.99	491.79	42.97	348.50	500.73	43.68	353.18	511.46	44.81	356.93	527.21	47.71
Skim Milk Powder		33.02	40.49	22.62	33.26	41.56	24.96	33.53	42.15	25.71	33.85	42.52	25.60	34.17	43.02	25.89
Whole Milk Powder		18.41	22.13	20.21	18.41	22.65	23.04	18.41	22.41	21.73	18.41	22.48	22.11	18.41	22.36	21.44
Fat		309.73	315.72	1.93	312.44	316.58	1.32	315.51	320.30	1.52	318.39	323.98	1.76	322.19	328.99	2.11
Solid Nonfat		719.46	733.37	1.93	724.34	733.93	1.32	730.03	741.12	1.52	735.27	748.18	1.76	742.63	758.29	2.11
Price (local currency)																
Butter (00 kg)		553.00	405.75	-26.63	555.00	393.61	-29.08	557.00	400.39	-28.12	559.00	413.00	-26.12	561.00	428.46	-23.63
Cheese (00 kg)		780.00	492.01	-36.92	810.00	493.04	-39.13	838.00	506.56	-39.55	865.00	517.21	-40.21	896.00	521.23	-41.83
Skim Milk Powder (00 kg)		479.00	318.57	-33.49	503.00	322.13	-35.96	524.00	331.56	-36.73	539.00	341.67	-36.61	559.00	352.72	-36.90
Whole Milk Powder (00 kg)		499.57	345.74	-30.79	517.46	341.80	-33.95	533.17	359.83	-32.51	544.56	365.19	-32.94	559.56	379.40	-32.20
Fat (per hl of milk)		17.17	7.66	-55.41	17.55	7.27	-58.58	17.98	7.77	-56.78	18.35	8.30	-54.77	18.82	8.95	-52.44
Solid Nonfat (per hl of milk)		40.27	24.47	-39.23	41.16	24.04	-41.59	42.17	24.00	-43.07	43.03	23.76	-44.79	44.11	23.37	-47.02
Fluid Milk (hl)		63.49	35.51	-44.07	64.34	34.31	-46.67	65.42	34.56	-47.17	66.19	34.57	-47.77	67.44	34.64	-48.64
Industrial Milk (hl)		57.44	32.13	-44.07	58.71	31.31	-46.67	60.15	31.78	-47.17	61.38	32.06	-47.77	62.93	32.32	-48.64
Blended Milk Price (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)																
Butter (00 kg)		159.34	206.54	29.62	151.81	199.41	31.36	143.34	192.47	34.27	136.07	189.81	39.49	127.42	187.42	47.09
Cheese (00 kg)		465.22	315.64	-32.15	477.22	313.83	-34.24	485.34	315.41	-35.01	491.97	314.29	-36.12	499.90	307.30	-38.53
Skim Milk Powder (00 kg)		43.40	50.57	16.51	55.08	56.63	2.81	62.62	63.56	1.49	66.12	72.41	9.51	71.47	82.63	15.62
Whole Milk Powder (00 kg)		61.31	90.15	47.04	67.66	90.30	33.47	70.76	100.82	42.50	71.35	101.64	42.46	72.83	109.47	50.31
Net trade (KT)																
Butter		0.39	-8.44	-2265.09	0.25	-2.23	-990.97	0.25	0.57	127.10	0.25	4.54	1716.48	0.25	6.89	2654.33
Cheese		3.29	-206.26	-6369.18	3.91	-203.66	-5308.69	4.15	-208.08	-5113.87	4.18	-217.18	-5295.52	4.72	-242.44	-5236.35
Skim Milk Powder		28.44	22.82	-19.75	27.89	20.35	-27.04	28.50	20.52	-28.00	26.84	21.14	-21.23	29.44	25.02	-15.02
Whole Milk Powder		-1.38	6.25	-553.23	-1.38	3.44	-349.02	-1.38	6.65	-582.17	-1.38	6.67	-583.19	-1.38	9.28	-772.68

European Union

Free Trade without Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	1854.94	1909.73	2.95	1849.23	1896.42	2.55	1843.14	1895.57	2.84	1827.44	1894.22	3.65	1811.83	1882.49	3.90
Cheese	6826.19	6681.42	-2.12	6903.02	6816.86	-1.25	6963.91	6903.38	-0.87	7045.01	7029.86	-0.22	7139.67	7166.35	0.37
Skim Milk Powder	1144.38	1171.68	2.39	1105.67	1152.29	4.22	1072.50	1140.61	6.35	1020.39	1137.61	11.49	986.16	1115.14	15.42
Whole Milk Powder	968.44	983.02	1.51	989.41	1017.57	2.85	1018.78	1065.78	4.61	1049.94	1113.26	6.03	1077.19	1166.56	8.30
Milk	121300.00	12158.75	-0.03	121200.00	121575.25	0.31	120900.00	121718.38	0.68	120700.00	122289.08	1.32	120800.00	122965.63	1.79
Fat	4997.56	4995.87	-0.03	5005.56	5021.06	0.31	4993.17	5026.98	0.68	4996.98	5062.78	1.32	5013.20	5103.08	1.79
Solid Nonfat	10940.98	10937.28	-0.03	10939.27	10973.16	0.31	10912.20	10986.08	0.68	10901.42	11044.95	1.32	10917.74	11113.49	1.79
Demand (KT)															
Butter	1747.45	1982.11	13.43	1742.93	1984.20	13.84	1739.58	1967.52	13.10	1737.04	1935.27	11.41	1730.78	1882.43	8.76
Cheese	6559.30	6992.73	6.61	6633.04	7005.17	5.61	6688.00	7021.88	4.99	6752.30	7014.97	3.89	6849.60	7013.70	2.40
Skim Milk Powder	946.49	920.12	-2.79	934.40	897.01	-4.00	905.78	865.54	-4.44	889.41	839.83	-5.57	874.41	815.38	-6.75
Whole Milk Powder	523.13	542.96	3.79	524.94	540.88	3.04	535.15	547.61	2.33	547.14	555.35	1.50	555.23	553.73	-0.27
Fat	4997.56	4995.87	-0.03	5005.56	5021.06	0.31	4993.17	5026.98	0.68	4996.98	5062.78	1.32	5013.20	5103.08	1.79
Solid Nonfat	10940.98	10937.28	-0.03	10939.27	10973.16	0.31	10912.20	10986.08	0.68	10901.42	11044.95	1.32	10917.74	11113.49	1.79
Price (local currency)															
Butter (00 kg)	362.60	270.50	-25.40	362.46	268.11	-26.03	361.92	271.80	-24.90	363.11	282.42	-22.22	356.19	292.99	-17.74
Cheese (00 kg)	384.91	328.01	-14.78	384.94	335.84	-12.76	388.41	343.87	-11.47	389.09	353.68	-9.10	378.16	356.43	-5.75
Skim Milk Powder (00 kg)	197.89	212.38	7.32	198.12	219.42	10.75	200.90	225.07	12.03	202.43	233.65	15.42	202.53	241.20	19.09
Whole Milk Powder (00 kg)	252.96	230.49	-8.88	250.90	232.82	-7.21	258.73	244.26	-5.59	259.20	249.72	-3.66	257.69	259.44	0.68
Fat (per hl of milk)	9.64	4.44	-53.94	9.64	4.35	-54.91	9.64	4.53	-53.03	9.64	4.91	-49.11	9.33	5.47	-41.41
Solid Nonfat (per hl of milk)	21.36	22.53	5.48	21.36	22.95	7.44	21.36	22.94	7.42	21.36	22.98	7.60	20.67	22.56	9.16
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	31.00	26.97	-13.00	31.00	27.30	-11.95	31.00	27.47	-11.38	31.00	27.89	-10.04	30.00	28.03	-6.57
Gross Margin (local currency)															
Butter (00 kg)	127.66	132.70	3.95	125.51	129.85	3.46	122.78	127.60	3.93	121.76	127.90	5.05	119.35	125.86	5.45
Cheese (00 kg)	173.52	160.19	-7.68	170.48	162.55	-4.65	169.78	164.21	-3.28	167.43	166.03	-0.83	160.44	162.89	1.53
Skim Milk Powder (00 kg)	-18.29	-15.78	-13.73	-17.68	-13.39	-24.27	-15.36	-9.09	-40.81	-13.90	-3.12	-77.58	-8.54	5.17	-160.50
Whole Milk Powder (00 kg)	22.79	24.13	5.89	21.05	23.64	12.31	26.25	30.58	16.47	26.30	32.13	22.15	29.90	38.12	27.50
Net trade (KT)															
Butter	89.50	-145.95	-263.07	90.30	-90.61	-200.34	93.57	-92.03	-166.29	86.39	-21.45	-124.83	73.04	-0.99	-101.36
Cheese	266.87	-325.88	-222.11	269.89	-181.43	-167.22	275.90	-112.83	-140.89	292.64	20.91	-92.85	290.03	153.59	-47.04
Skim Milk Powder	162.89	225.93	39.70	159.28	243.69	53.00	169.72	273.11	60.92	159.99	322.59	101.63	122.75	329.81	168.68
Whole Milk Powder	445.31	440.06	-1.18	464.47	476.68	2.63	483.63	518.17	7.14	502.79	557.89	10.96	521.96	612.83	17.41

Japan

Free Trade without Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	83.38	69.74	-16.36	83.56	68.82	-17.64	83.78	69.40	-17.16	84.24	70.59	-16.21	79.78	66.73	-16.35
Cheese	44.09	44.00	-0.20	46.29	44.00	-4.95	48.33	44.00	-8.96	50.29	44.00	-12.51	52.27	44.00	-15.82
Skim Milk Powder	197.10	171.94	-12.77	201.09	172.78	-14.08	205.08	176.42	-13.97	209.05	180.86	-13.49	213.01	185.17	-13.07
Whole Milk Powder	53.00	20.50	-61.33	53.00	17.65	-66.69	53.00	18.36	-65.36	53.00	18.44	-65.21	53.00	19.04	-64.08
Milk	8888.61	8169.16	-4.88	8657.16	8164.38	-5.69	8724.24	8225.74	-5.71	8791.37	8233.56	-5.66	8859.83	8366.22	-5.57
Fat	317.78	302.26	-4.88	320.31	302.08	-5.69	322.80	304.35	-5.71	325.28	306.86	-5.66	327.81	309.55	-5.57
Solid Nonfat	752.92	716.15	-4.88	758.93	715.73	-5.69	764.81	721.11	-5.71	770.69	727.06	-5.66	776.69	733.43	-5.57
Demand (KT)															
Butter	83.48	155.40	86.15	83.66	158.12	89.00	83.88	157.98	88.34	84.34	157.15	86.32	79.88	147.34	84.45
Cheese	232.00	690.57	197.66	239.95	712.18	196.80	247.98	727.81	193.49	255.97	746.29	191.55	263.97	775.02	193.60
Skim Milk Powder	251.96	423.28	68.00	254.05	423.24	66.60	258.22	425.26	64.69	260.82	424.11	62.73	264.35	426.45	61.32
Whole Milk Powder	53.00	105.88	99.77	53.00	106.50	100.94	53.00	103.80	95.84	53.00	103.55	95.38	53.00	102.25	92.92
Fat	317.78	302.26	-4.88	320.31	302.08	-5.69	322.80	304.35	-5.71	325.28	306.86	-5.66	327.81	309.55	-5.57
Solid Nonfat	752.92	716.15	-4.88	758.93	715.73	-5.69	764.81	721.11	-5.71	770.69	727.06	-5.66	776.69	733.43	-5.57
Price (local currency)															
Butter (00 kg)	96400.00	30503.12	-68.36	96400.00	29655.14	-69.24	96400.00	29848.48	-69.04	96400.00	30449.62	-68.41	96400.00	31025.23	-67.82
Cheese (00 kg)	183955.50	36988.32	-79.89	183955.50	37145.71	-79.81	183955.50	37763.11	-79.47	183955.50	38133.17	-79.27	183955.50	37742.96	-79.48
Skim Milk Powder (00 kg)	54564.00	23948.82	-56.11	54564.00	24289.11	-55.52	54564.00	24716.72	-54.70	54564.00	25190.89	-53.83	54564.00	25541.15	-53.19
Whole Milk Powder (00 kg)	77960.00	25991.76	-66.66	77960.00	25751.30	-66.97	77960.00	26824.07	-65.59	77960.00	26924.59	-65.46	77960.00	27472.72	-64.76
Fat (per hl of milk)	2490.94	-52.21	-102.10	2490.94	-51.93	-102.08	2490.94	-56.76	-102.28	2490.94	-56.73	-102.28	2490.94	-53.04	-102.13
Solid Nonfat (per hl of milk)	5896.06	5075.74	-13.91	5896.06	5359.50	-9.10	5896.06	5436.23	-7.80	5896.06	5448.08	-7.60	5896.06	5458.85	-7.45
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	8387.00	5023.53	-40.10	8387.00	5307.58	-36.72	8387.00	5379.47	-35.86	8387.00	5391.34	-35.72	8387.00	5403.80	-35.57
Gross Margin (local currency)															
Butter (00 kg)	40715.40	29371.07	-27.86	40674.72	28416.75	-30.14	40553.06	28596.60	-29.48	40472.12	29120.68	-28.05	40391.34	29543.07	-26.86
Cheese (00 kg)	146409.88	24250.50	-83.44	146263.62	23686.11	-83.81	145826.14	24088.62	-83.50	145335.07	24351.97	-83.27	145244.58	23874.44	-83.56
Skim Milk Powder (00 kg)	-8468.63	-29392.70	247.09	-8460.17	-32002.38	278.28	-8434.87	-32284.86	282.52	-8418.03	-31861.40	278.50	-8401.23	-31548.82	275.53
Whole Milk Powder (00 kg)	14305.78	-12722.54	-188.94	14291.49	-15099.95	-205.66	14248.75	-14555.02	-202.15	14220.31	-14517.69	-202.09	14191.92	-14047.52	-198.99
Net trade (KT)															
Butter	-0.10	-118.47	118371.69	-0.10	-79.31	79210.62	-0.10	-76.54	76442.32	-0.10	-73.11	73008.84	-0.10	-80.22	80115.58
Cheese	-187.92	-681.49	262.65	-193.66	-656.76	239.13	-199.65	-671.86	236.52	-205.68	-689.55	235.25	-211.71	-730.97	245.27
Skim Milk Powder	-54.86	-262.88	379.18	-52.96	-246.59	365.62	-53.14	-244.68	360.44	-51.57	-238.62	362.72	-51.34	-241.34	370.07
Whole Milk Powder	0.00	-85.38	n/a	0.00	-88.85	n/a	0.00	-85.44	n/a	0.00	-85.11	n/a	0.00	-83.21	n/a

New Zealand

Free Trade without Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	391.52	409.93	4.70	405.66	454.17	11.96	406.11	464.30	14.33	401.62	466.61	16.18	411.95	478.48	16.15
Cheese	339.30	615.21	81.32	346.13	642.74	85.69	362.25	663.90	83.27	387.38	683.68	76.49	394.09	673.76	70.97
Skim Milk Powder	204.66	341.66	66.94	210.68	392.10	86.11	198.05	390.66	97.25	185.58	386.50	108.27	186.55	381.33	104.41
Whole Milk Powder	474.01	525.34	10.83	468.60	556.74	18.81	490.22	601.27	22.65	512.27	618.04	20.65	527.33	639.14	21.20
Milk	12467.91	14692.01	17.84	12718.05	15776.71	24.05	12900.76	16279.14	26.19	13147.02	16580.37	26.12	13447.53	16840.73	25.23
Fat	623.40	734.60	17.84	635.90	788.84	24.05	645.04	813.96	26.19	657.35	829.02	26.12	672.38	842.04	25.23
Solid Nonfat	1190.75	1403.16	17.84	1214.64	1506.76	24.05	1232.09	1554.74	26.19	1255.61	1583.51	26.12	1284.31	1608.37	25.23
Demand (KT)															
Butter	31.82	24.11	-24.24	31.89	24.45	-23.34	31.93	24.60	-22.94	31.85	24.70	-22.45	31.81	24.90	-21.73
Cheese	42.44	34.24	-19.31	44.54	36.16	-18.81	46.51	37.96	-18.38	46.42	38.24	-17.62	46.48	38.64	-16.87
Skim Milk Powder	8.01	6.66	-16.80	8.03	6.69	-16.66	8.04	6.74	-16.11	8.03	6.80	-15.26	8.01	6.90	-13.89
Whole Milk Powder	0.80	0.67	-16.32	0.80	0.68	-15.60	0.80	0.68	-15.52	0.80	0.69	-14.16	0.80	0.69	-13.69
Fat	623.40	734.60	17.84	635.90	788.84	24.05	645.04	813.96	26.19	657.35	829.02	26.12	672.38	842.04	25.23
Solid Nonfat	1190.75	1403.16	17.84	1214.64	1506.76	24.05	1232.09	1554.74	26.19	1255.61	1583.51	26.12	1284.31	1608.37	25.23
Price (local currency)															
Butter (00 kg)	302.80	561.14	85.32	306.50	553.34	80.54	316.06	564.06	78.47	333.07	586.10	75.97	350.92	604.88	72.37
Cheese (00 kg)	397.95	680.45	70.99	411.65	693.11	68.37	429.44	713.63	66.18	452.08	733.99	62.36	463.70	735.85	58.69
Skim Milk Powder (00 kg)	292.77	440.57	50.48	302.03	452.84	49.93	316.11	467.08	47.76	335.61	484.88	44.48	357.21	497.96	39.40
Whole Milk Powder (00 kg)	321.80	478.15	48.59	329.62	480.50	45.77	348.44	506.91	44.58	369.09	518.25	40.41	386.12	535.62	38.72
Fat (per hl of milk)	9.83	25.39	158.37	9.94	23.56	136.98	9.93	23.18	133.57	10.18	23.44	130.23	10.38	23.59	127.28
Solid Nonfat (per hl of milk)	19.59	25.46	29.93	19.82	22.88	15.41	19.79	21.87	10.51	20.30	21.39	5.37	20.70	21.10	1.95
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	29.42	50.85	72.83	29.76	46.43	56.02	29.72	45.06	51.61	30.48	44.83	47.07	31.08	44.70	43.81
Gross Margin (local currency)															
Butter (00 kg)	115.53	125.14	8.32	114.90	140.21	22.03	120.40	150.76	25.22	128.15	162.05	26.46	136.90	171.61	25.35
Cheese (00 kg)	239.47	383.42	60.11	245.09	399.83	63.14	254.53	411.90	61.83	265.37	419.95	58.25	267.91	413.82	54.46
Skim Milk Powder (00 kg)	81.11	152.59	88.12	85.24	179.89	111.04	94.85	195.34	105.94	104.32	209.15	100.48	115.82	217.44	87.74
Whole Milk Powder (00 kg)	106.11	132.89	25.24	108.65	154.63	42.32	121.53	179.47	47.67	131.45	186.63	41.98	139.05	197.39	41.95
Net trade (KT)															
Butter	319.71	358.28	12.06	333.77	384.13	15.09	334.19	394.78	18.13	329.77	387.77	20.62	340.14	413.51	21.57
Cheese	296.52	592.23	96.35	301.23	604.94	100.82	315.37	624.47	98.01	340.57	644.03	89.10	347.21	634.72	82.80
Skim Milk Powder	196.65	336.74	71.24	202.66	383.61	89.29	190.01	382.31	101.21	177.56	378.18	112.99	178.54	374.28	109.63
Whole Milk Powder	473.21	524.67	10.88	467.80	556.06	18.87	488.42	600.60	22.72	511.47	617.35	20.70	526.53	638.45	21.26

United States

Free Trade without Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	523.24	470.76	-10.03	486.94	400.31	-17.79	469.31	377.73	-19.51	484.20	406.73	-16.00	489.87	440.58	-10.06
Cheese	3858.00	3910.46	1.36	3985.82	3994.29	0.21	4057.96	4088.50	0.75	4141.90	4193.55	1.25	4200.89	4204.56	0.09
Skim Milk Powder	512.70	429.99	-16.13	478.04	302.23	-36.78	460.58	288.87	-37.28	478.03	346.39	-27.54	474.81	374.22	-21.18
Whole Milk Powder	62.30	6.00	-90.37	61.88	6.00	-90.27	61.06	13.89	-77.25	60.45	26.63	-55.95	59.85	71.37	19.24
Milk	75044.94	73997.06	-1.40	75954.16	73779.66	-2.86	76982.66	74877.63	-2.73	77727.93	76216.09	-1.95	78683.62	77704.97	-1.24
Fat	2769.16	2730.50	-1.40	2795.11	2715.09	-2.86	2809.87	2733.03	-2.73	2844.84	2789.51	-1.95	2871.95	2836.23	-1.24
Solid Nonfat	6574.27	6482.48	-1.40	6649.34	6458.98	-2.86	6725.45	6541.55	-2.73	6795.24	6663.08	-1.95	6874.05	6788.55	-1.24
Demand (KT)															
Butter	542.46	549.72	1.34	515.77	537.10	4.14	502.78	538.01	7.01	502.12	520.22	3.61	502.15	509.16	1.40
Cheese	3950.99	3897.58	-1.35	4078.81	4100.94	0.54	4150.94	4151.38	0.01	4234.89	4176.53	-1.38	4293.86	4287.30	-0.15
Skim Milk Powder	376.01	404.51	7.58	341.05	385.18	12.94	321.70	352.40	9.54	335.33	360.70	7.57	329.22	348.72	5.92
Whole Milk Powder	51.87	56.31	8.56	51.25	55.28	7.86	50.63	52.56	3.82	50.02	51.19	2.34	49.41	49.33	-0.17
Fat	2769.16	2730.50	-1.40	2795.11	2715.09	-2.86	2809.87	2733.03	-2.73	2844.84	2789.51	-1.95	2871.95	2836.23	-1.24
Solid Nonfat	6574.27	6482.48	-1.40	6649.34	6458.98	-2.86	6725.45	6541.55	-2.73	6795.24	6663.08	-1.95	6874.05	6788.55	-1.24
Price (local currency)															
Butter (00 kg)	293.42	287.76	-1.93	302.59	285.23	-5.74	322.54	292.26	-9.39	319.71	303.68	-5.02	321.44	315.04	-1.99
Cheese (00 kg)	341.12	348.95	2.29	360.51	357.27	-0.90	369.82	369.76	-0.02	371.61	380.30	2.34	382.28	383.26	0.26
Skim Milk Powder (00 kg)	252.81	225.93	-10.63	281.48	233.43	-17.07	278.45	242.01	-13.09	281.06	251.23	-10.61	283.36	259.35	-8.47
Whole Milk Powder (00 kg)	278.25	245.21	-11.87	278.25	247.68	-10.98	278.25	262.65	-5.61	278.25	268.52	-3.49	278.25	278.97	0.26
Fat (per hl of milk)	9.47	9.68	2.18	9.75	9.72	-0.26	9.95	9.37	-5.84	10.18	10.15	-0.30	10.51	10.67	1.60
Solid Nonfat (per hl of milk)	22.48	21.39	-4.86	23.19	21.80	-6.01	23.83	23.53	-1.26	24.32	23.95	-1.50	25.14	24.79	-1.43
Fluid Milk (hl)	34.70	33.74	-2.77	35.77	34.23	-4.31	36.68	35.72	-2.61	37.47	37.04	-1.15	38.71	38.50	-0.54
Industrial Milk (hl)	31.95	31.06	-2.77	32.94	31.52	-4.31	33.78	32.90	-2.61	34.50	34.10	-1.15	35.65	35.46	-0.54
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	66.35	58.72	-11.50	66.82	54.22	-18.85	75.68	62.37	-17.60	68.77	57.50	-16.38	62.98	55.81	-11.38
Cheese (00 kg)	146.76	154.39	5.20	154.75	155.98	0.80	155.04	159.48	2.86	150.77	158.28	4.98	151.32	151.85	0.35
Skim Milk Powder (00 kg)	9.15	-2.88	-131.43	25.03	-0.54	-102.15	16.70	-8.27	-149.56	14.50	-4.65	-132.05	9.31	-5.31	-157.03
Whole Milk Powder (00 kg)	28.76	8.29	-71.17	22.14	7.08	-68.01	16.14	9.28	-42.49	12.02	7.10	-40.92	5.21	6.88	32.16
Net trade (KT)															
Butter	-19.22	-78.52	308.53	-28.83	-136.57	373.69	-33.47	-160.33	379.01	-17.92	-113.07	530.95	-12.28	-68.62	458.75
Cheese	-92.99	15.28	-116.43	-92.99	-112.29	20.75	-92.99	-61.34	-34.03	-92.99	20.59	-122.14	-92.99	-85.15	-8.44
Skim Milk Powder	136.69	25.71	-81.19	136.99	-76.00	-155.48	138.87	-58.73	-142.29	142.69	-15.23	-110.68	145.59	24.13	-83.43
Whole Milk Powder	10.43	-48.82	-568.04	10.43	-49.25	-572.21	10.43	-38.99	-473.82	10.43	-24.93	-339.07	10.43	21.12	102.45

Rest of the World

Free Trade without Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	3847.98	3759.06	-2.31	3930.35	3845.89	-2.15	4034.10	3943.24	-2.25	4091.38	3975.88	-2.83	4151.64	3994.59	-3.78
Cheese	3240.68	3723.33	14.89	3373.52	3829.64	13.52	3426.71	3810.29	11.19	3452.46	3727.88	7.98	3556.47	3858.22	8.48
Skim Milk Powder	980.45	1016.99	5.89	920.21	973.06	5.74	941.13	951.82	1.14	974.57	888.86	-8.79	971.30	826.06	-14.95
Whole Milk Powder	980.33	875.94	-10.65	1007.85	854.28	-15.24	1030.31	806.00	-21.77	1050.21	801.53	-23.68	1063.47	727.23	-31.62
Milk	322907.96	324291.39	0.43	332448.23	333527.88	0.32	340994.26	341024.00	0.01	349186.66	347785.28	-0.40	357016.04	354451.35	-0.72
Fat	12948.30	13003.77	0.43	13330.85	13374.15	0.32	13673.54	13674.73	0.01	14002.05	13945.86	-0.40	14316.00	14213.16	-0.72
Solid Nonfat	28911.15	29035.02	0.43	29765.33	29862.00	0.32	30530.49	30533.15	0.01	31263.98	31138.52	-0.40	31964.98	31735.36	-0.72
Demand (KT)															
Butter	4356.01	3945.36	-9.43	4444.77	4098.62	-7.79	4545.69	4221.32	-7.14	4605.41	4351.55	-5.51	4673.38	4456.20	-4.65
Cheese	3696.42	3424.91	-7.35	3831.25	3581.75	-6.51	3915.85	3706.43	-5.35	4002.76	3850.92	-3.79	4102.88	3935.95	-4.07
Skim Milk Powder	1656.58	1684.30	1.67	1628.67	1657.76	1.79	1646.69	1688.00	2.51	1661.17	1719.76	3.53	1638.00	1706.73	4.20
Whole Milk Powder	2029.59	2043.72	0.70	2062.68	2094.21	1.53	2135.33	2186.47	2.40	2199.68	2282.86	2.87	2244.61	2327.05	3.67
Fat	12948.30	13003.77	0.43	13330.85	13374.15	0.32	13673.54	13674.73	0.01	14002.05	13945.86	-0.40	14316.00	14213.16	-0.72
Solid Nonfat	28911.15	29035.02	0.43	29765.33	29862.00	0.32	30530.49	30533.15	0.01	31263.98	31138.52	-0.40	31964.98	31735.36	-0.72
Price (local currency)															
Butter (00 kg)	249.81	287.76	15.19	254.03	285.23	12.28	262.93	292.26	11.16	280.05	303.68	8.44	294.34	315.04	7.03
Cheese (00 kg)	299.57	348.95	16.48	312.26	357.27	14.42	331.26	369.76	11.82	352.00	390.30	8.04	352.70	383.26	8.66
Skim Milk Powder (00 kg)	238.78	225.93	-5.38	247.62	233.43	-5.73	262.85	242.01	-7.93	282.00	251.23	-10.91	297.44	259.35	-12.80
Whole Milk Powder (00 kg)	250.94	245.21	-2.29	260.53	247.68	-4.93	284.21	262.65	-7.59	295.10	288.52	-9.01	314.61	278.97	-11.33
Fat (per hl of milk)	17.04	19.35	13.55	17.15	19.10	11.41	17.04	18.93	11.15	17.47	19.19	9.86	17.72	19.48	9.94
Solid Nonfat (per hl of milk)	40.33	38.64	-4.20	40.59	38.79	-4.43	40.32	38.21	-5.25	41.35	39.04	-5.60	41.95	39.42	-6.04
Fluid Milk (hl)															
Industrial Milk (hl)															
Blended Milk Price (hl)	57.37	57.99	1.07	57.73	57.89	0.28	57.36	57.14	-0.38	58.83	58.23	-1.01	59.67	58.90	-1.29
Gross Margin (local currency)															
Butter (00 kg)	-76.29	-81.64	7.01	-73.13	-78.21	6.95	-63.22	-68.68	8.64	-55.83	-62.79	12.46	-48.09	-57.54	19.64
Cheese (00 kg)	28.61	57.63	101.47	36.48	63.91	75.20	51.36	74.43	44.92	60.65	77.21	27.31	57.15	75.30	31.76
Skim Milk Powder (00 kg)	-144.95	-141.55	-2.35	-137.18	-134.00	-2.32	-120.79	-120.14	-0.53	-112.16	-117.32	4.60	-103.30	-112.03	8.46
Whole Milk Powder (00 kg)	-130.97	-137.25	4.79	-122.88	-132.12	7.52	-100.45	-113.94	13.43	-98.23	-113.18	15.23	-86.64	-106.86	23.34
Net trade (KT)															
Butter	-511.04	-184.35	-63.93	-512.43	-253.30	-50.57	-509.59	-277.64	-45.52	-511.81	-375.37	-26.66	-520.74	-460.25	-11.62
Cheese	-453.35	307.73	-167.88	-454.93	245.87	-154.05	-486.91	101.61	-120.87	-547.61	-124.37	-77.29	-543.25	-72.34	-86.68
Skim Milk Powder	-696.13	-672.40	-3.41	-708.46	-683.66	-3.50	-705.50	-735.22	4.21	-686.59	-828.55	20.68	-666.88	-879.12	31.83
Whole Milk Powder	-1049.27	-1166.60	11.18	-1054.83	-1239.85	17.54	-1105.03	-1379.36	24.83	-1149.47	-1460.20	27.03	-1181.15	-1597.64	35.26

World

Free Trade without Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	6984.33	6933.77	-0.44	7024.39	7002.51	-0.31	7104.99	7092.12	-0.18	7156.17	7157.50	0.02	7220.52	7216.78	-0.05
Cheese	15019.77	15725.75	4.70	15380.22	16105.50	4.72	15613.16	16318.73	4.52	15861.48	16508.81	4.08	16141.16	16775.26	3.93
Skim Milk Powder	3343.58	3546.25	6.06	3249.24	3446.81	6.08	3209.70	3408.27	6.19	3198.96	3399.79	6.28	3157.07	3351.44	6.16
Whole Milk Powder	2710.02	2781.28	2.63	2744.83	2843.23	3.58	2827.57	2934.35	3.78	2903.80	3017.09	3.90	2956.70	3073.44	3.95
Milk	559539.96	564317.56	0.85	570445.77	575632.19	0.91	580355.78	585636.78	0.91	589756.78	595072.23	0.90	599332.54	604586.08	0.88
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand (KT)															
Butter	6910.75	6809.54	-1.46	6969.39	6859.19	-0.15	7056.00	7066.93	0.15	7114.16	7146.17	0.45	7172.51	7176.59	0.06
Cheese	15018.69	15883.79	4.43	15380.29	16107.46	4.73	15614.51	16332.82	4.60	15864.96	16529.13	4.19	16145.75	16781.02	3.93
Skim Milk Powder	3308.87	3509.72	6.07	3236.65	3442.09	6.35	3211.67	3411.34	6.22	3226.28	3425.54	6.18	3186.19	3379.62	6.07
Whole Milk Powder	2710.02	2791.06	2.99	2744.83	2839.74	3.46	2827.57	2932.80	3.72	2903.80	3015.48	3.85	2956.70	3074.69	3.99
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Price (local currency)															
Butter (00 kg)	156.13	287.76	84.31	158.77	285.23	79.65	164.33	292.26	77.85	175.03	303.68	73.50	183.96	315.04	71.25
Cheese (00 kg)	187.23	348.95	86.37	195.16	357.27	83.07	207.04	369.76	78.59	220.00	380.30	72.87	220.44	383.26	73.86
Skim Milk Powder (00 kg)	149.24	225.93	51.39	154.76	233.43	50.83	164.28	242.01	47.32	176.25	251.23	42.54	185.90	259.35	39.51
Whole Milk Powder (00 kg)	156.84	245.21	56.34	162.83	247.68	52.11	177.63	262.65	47.86	184.44	268.52	45.59	196.63	278.97	41.87
Fat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)															
Butter (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net trade (KT)															
Butter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SCENARIO 1B

**COMPLETE FREE TRADE WITH NORTH AMERICAN TRADE IN
INDUSTRIAL MILK**

Australia

Free Trade with Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
	Units	Units	%	Units	Units	%	Units	Units	%	Units	Units	%	Units	Units	%
Butter	180.45	212.72	17.88	185.24	234.27	26.47	184.50	238.01	29.00	183.09	237.72	29.84	189.77	243.91	28.53
Cheese	364.64	463.88	27.22	375.26	492.66	31.29	400.86	523.06	30.49	428.32	544.30	27.08	438.02	545.09	24.44
Skim Milk Powder	263.12	349.41	32.80	271.78	391.31	43.98	269.25	395.93	47.05	268.95	394.00	46.50	279.93	398.95	42.52
Whole Milk Powder	154.92	342.93	121.36	147.27	365.97	148.50	157.18	399.56	154.21	160.91	409.44	154.45	158.84	417.67	162.95
Milk	11079.68	13600.42	22.75	11267.58	14499.21	28.68	11594.49	15117.23	30.38	11890.82	15436.17	29.82	12135.09	15674.52	29.17
Fat	455.37	558.98	22.75	463.10	595.92	28.68	476.53	621.32	30.38	488.71	634.43	29.82	498.75	644.22	29.17
Solid Nonfat	998.69	1225.91	22.75	1015.63	1306.92	28.68	1045.10	1362.63	30.38	1071.81	1391.38	29.82	1093.83	1412.86	29.17
Demand (KT)															
Butter	68.10	51.74	-24.03	68.21	52.22	-23.44	69.34	53.18	-23.30	69.66	53.80	-22.77	70.08	54.62	-22.05
Cheese	197.06	169.36	-14.06	208.71	179.50	-13.99	216.73	186.68	-13.86	219.44	190.77	-13.07	232.03	203.25	-12.40
Skim Milk Powder	36.80	30.36	-17.49	37.19	30.67	-17.54	37.71	31.27	-17.08	37.87	31.86	-15.86	38.03	32.46	-14.64
Whole Milk Powder	33.22	19.36	-41.73	33.75	19.52	-42.16	34.25	19.28	-43.72	34.75	19.37	-44.27	35.24	19.31	-45.21
Fat	455.37	558.98	22.75	463.10	595.92	28.68	476.53	621.32	30.38	488.71	634.43	29.82	498.75	644.22	29.17
Solid Nonfat	998.69	1225.91	22.75	1015.63	1306.92	28.68	1045.10	1362.63	30.38	1071.81	1391.38	29.82	1093.83	1412.86	29.17
Price (local currency)															
Butter (00 kg)	240.28	442.54	84.18	244.02	441.77	81.04	252.68	455.64	80.32	266.52	473.29	77.58	282.17	490.88	73.97
Cheese (00 kg)	367.76	537.07	46.04	379.68	553.47	45.77	396.95	576.48	45.23	417.75	592.87	41.92	429.01	597.39	39.25
Skim Milk Powder (00 kg)	226.80	347.67	53.29	235.28	361.19	53.51	248.42	376.70	51.64	266.35	390.92	46.77	283.80	403.46	42.16
Whole Milk Powder (00 kg)	114.01	378.61	232.08	114.01	384.92	237.61	114.01	408.99	258.72	114.01	417.95	266.59	114.01	434.07	280.72
Fat (per hl of milk)	7.79	16.67	114.05	7.65	15.44	101.68	7.50	15.26	103.44	7.79	15.63	100.60	7.92	15.82	99.84
Solid Nonfat (per hl of milk)	16.55	20.00	20.86	16.27	16.83	3.47	15.94	15.71	-1.46	16.56	15.84	-4.33	16.82	15.98	-5.04
Fluid Milk (hl)	53.97	81.32	50.68	55.75	75.21	34.90	57.62	76.12	32.11	59.49	76.89	29.25	59.50	76.47	28.52
Industrial Milk (hl)	24.34	36.68	50.68	23.92	32.27	34.90	23.44	30.97	32.11	24.35	31.47	29.25	24.74	31.80	28.52
Blended Milk Price (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)															
Butter (00 kg)	72.03	98.15	36.27	75.46	115.16	52.61	82.69	126.02	52.39	87.10	131.33	50.79	95.23	139.07	46.03
Cheese (00 kg)	222.15	302.50	36.17	227.79	322.85	41.73	236.90	335.84	41.77	244.74	338.65	38.37	246.78	333.47	35.13
Skim Milk Powder (00 kg)	45.34	115.21	154.10	53.56	150.34	180.68	65.24	167.80	157.22	72.68	173.93	139.32	82.26	178.62	117.15
Whole Milk Powder (00 kg)	-50.59	101.64	-300.91	-46.88	130.20	-377.76	-42.87	153.38	-457.81	-46.96	154.26	-428.46	-48.08	161.49	-435.91
Net trade (KT)															
Butter	120.76	177.22	46.76	117.04	177.66	51.79	115.15	180.96	57.15	113.42	180.35	59.01	119.69	189.26	58.12
Cheese	167.58	308.10	83.85	166.55	303.03	81.95	184.13	327.77	78.01	208.89	345.24	65.27	205.99	342.22	66.13
Skim Milk Powder	226.32	323.51	42.94	234.60	357.91	52.56	231.54	362.18	56.42	231.08	359.79	55.70	241.90	366.39	51.46
Whole Milk Powder	121.70	330.82	171.83	113.51	342.81	202.01	122.93	377.85	207.37	126.16	387.65	207.27	123.61	398.35	222.26

Canada

Free Trade with Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	82.82	68.76	-16.98	83.41	69.12	-17.13	84.05	77.66	-7.60	84.00	77.48	-7.76	85.68	82.05	-4.24
Cheese	346.87	272.91	-21.32	350.18	270.34	-22.80	353.14	271.39	-23.15	356.12	270.27	-24.11	359.75	267.06	-25.77
Skim Milk Powder	61.17	53.13	-13.15	61.77	50.57	-18.13	63.11	44.65	-29.25	62.39	44.80	-28.20	65.31	45.73	-29.98
Whole Milk Powder	17.02	10.39	-38.96	17.02	7.17	-57.89	17.02	6.98	-59.01	17.02	5.50	-67.68	17.02	5.32	-68.75
Milk	8150.86	9220.24	13.12	8200.59	9794.80	19.44	8259.37	10313.20	24.87	8312.98	10730.04	29.08	8390.43	11201.15	33.50
Fat	309.73	350.37	13.12	312.44	373.18	19.44	315.51	393.96	24.87	318.39	410.96	29.08	322.19	430.12	33.50
Solid Nonfat	719.46	813.85	13.12	724.34	865.16	19.44	730.03	911.57	24.87	735.27	949.06	29.08	742.63	991.40	33.50
Demand (KT)															
Butter	81.43	101.24	24.32	82.16	104.56	27.26	82.80	104.37	26.05	83.74	103.57	23.68	84.43	102.05	20.87
Cheese	340.48	474.63	39.40	343.99	491.99	43.02	348.50	500.94	43.74	353.18	511.71	44.89	356.93	527.52	47.79
Skim Milk Powder	33.02	40.51	22.67	33.26	41.60	25.07	33.53	42.20	25.86	33.85	42.57	25.76	34.17	43.08	26.07
Whole Milk Powder	18.41	22.10	20.05	18.41	22.62	22.88	18.41	22.43	21.84	18.41	22.51	22.25	18.41	22.39	21.60
Fat	309.73	350.37	13.12	312.44	373.18	19.44	315.51	393.96	24.87	318.39	410.96	29.08	322.19	430.12	33.50
Solid Nonfat	719.46	813.85	13.12	724.34	865.16	19.44	730.03	911.57	24.87	735.27	949.06	29.08	742.63	991.40	33.50
Price (local currency)															
Butter (00 kg)	553.00	405.19	-26.73	555.00	393.32	-29.13	557.00	400.15	-28.16	559.00	412.62	-26.19	561.00	427.95	-23.72
Cheese (00 kg)	780.00	491.73	-36.96	810.00	492.77	-39.16	838.00	506.27	-39.59	865.00	516.86	-40.25	896.00	520.80	-41.87
Skim Milk Powder (00 kg)	479.00	318.32	-33.54	503.00	321.57	-36.07	524.00	330.82	-36.87	539.00	340.80	-36.77	559.00	351.73	-37.08
Whole Milk Powder (00 kg)	499.57	346.65	-30.61	517.46	342.70	-33.77	533.17	359.17	-32.63	544.56	364.37	-33.09	559.56	378.42	-32.37
Fat (per hl of milk)	17.17	12.21	-29.53	17.55	11.99	-31.70	17.98	11.51	-36.02	18.35	12.42	-32.33	18.82	13.10	-30.40
Solid Nonfat (per hl of milk)	40.27	27.36	-32.05	41.16	27.22	-33.87	42.17	29.28	-30.56	43.03	29.52	-31.40	44.11	30.46	-30.96
Fluid Milk (hl)	63.49	43.73	-31.12	64.34	42.97	-33.22	65.42	44.36	-32.20	66.19	45.22	-31.68	67.44	46.67	-30.79
Industrial Milk (hl)	57.44	39.57	-31.12	58.71	39.21	-33.22	60.15	40.78	-32.20	61.38	41.94	-31.68	62.93	43.55	-30.79
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	159.34	124.07	-22.13	151.81	115.97	-23.61	143.34	127.32	-11.18	136.07	119.72	-12.02	127.42	118.30	-7.15
Cheese (00 kg)	465.22	279.74	-39.87	477.22	276.99	-41.96	485.34	280.33	-42.24	491.97	276.68	-43.76	499.90	267.43	-46.50
Skim Milk Powder (00 kg)	43.40	23.24	-46.46	55.08	27.00	-50.98	62.62	16.34	-73.91	66.12	22.01	-66.72	71.47	22.36	-68.71
Whole Milk Powder (00 kg)	61.31	44.68	-27.12	67.66	42.95	-36.52	70.76	45.57	-35.60	71.35	42.46	-40.49	72.83	43.49	-40.29
Net trade (KT)															
Butter	0.39	-36.49	-9455.98	0.25	-35.49	-14297.14	0.25	-26.85	-10841.78	0.25	-23.62	-9549.81	0.25	-20.86	-8442.43
Cheese	3.29	-218.99	-6756.11	3.91	-218.55	-5689.53	4.15	-222.53	-5462.25	4.18	-232.55	-5663.30	4.72	-258.60	-5578.80
Skim Milk Powder	28.44	12.10	-57.46	27.89	8.54	-69.37	28.50	1.85	-93.50	26.84	1.10	-95.91	29.44	1.14	-96.13
Whole Milk Powder	-1.38	-11.78	753.29	-1.38	-15.40	1016.17	-1.38	-15.40	1016.05	-1.38	-16.95	1128.43	-1.38	-17.05	1135.57

European Union

Free Trade with Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	1854.94	1908.80	2.90	1849.23	1895.35	2.49	1843.14	1894.74	2.80	1827.44	1892.94	3.58	1811.83	1880.92	3.81
Cheese	6826.19	6880.38	-2.14	6803.02	6815.57	-1.27	6863.91	6902.61	-0.88	7045.01	7028.83	-0.23	7139.67	7165.12	0.36
Skim Milk Powder	1144.38	1169.10	2.16	1105.67	1149.13	3.93	1072.50	1138.57	6.16	1020.39	1134.75	11.21	986.16	1111.73	15.07
Whole Milk Powder	968.44	987.69	1.99	989.41	1022.48	3.34	1018.78	1063.83	4.42	1049.94	1110.42	5.76	1077.19	1163.07	7.97
Milk	121300.00	121261.25	-0.03	121200.00	121574.90	0.31	120900.00	121683.78	0.65	120700.00	122237.59	1.27	120800.00	122902.61	1.74
Fat	4997.56	4995.96	-0.03	5005.56	5021.04	0.31	4993.17	5025.54	0.65	4996.98	5060.64	1.27	5013.20	5100.46	1.74
Solid Nonfat	10940.98	10937.49	-0.03	10939.27	10973.11	0.31	10912.20	10982.94	0.65	10901.42	11040.30	1.27	10917.74	11107.77	1.74
Demand (KT)															
Butter	1747.45	1983.29	13.50	1742.93	1984.84	13.88	1739.58	1988.05	13.13	1737.04	1936.05	11.46	1730.78	1883.40	8.82
Cheese	6559.30	6994.35	6.63	6833.04	7006.71	5.63	6888.00	7023.52	5.02	6752.30	7016.90	3.92	6849.60	7015.99	2.43
Skim Milk Powder	946.49	920.40	-2.76	934.40	897.62	-3.94	905.78	866.31	-4.36	889.41	840.69	-5.48	874.41	816.30	-6.65
Whole Milk Powder	523.13	542.39	3.68	524.94	540.31	2.93	535.15	548.01	2.40	547.14	555.85	1.59	555.23	554.30	-0.17
Fat	4997.56	4995.96	-0.03	5005.56	5021.04	0.31	4993.17	5025.54	0.65	4996.98	5060.64	1.27	5013.20	5100.46	1.74
Solid Nonfat	10940.98	10937.49	-0.03	10939.27	10973.11	0.31	10912.20	10982.94	0.65	10901.42	11040.30	1.27	10917.74	11107.77	1.74
Price (local currency)															
Butter (00 kg)	362.60	270.12	-25.50	362.46	267.91	-26.09	361.92	271.63	-24.95	363.11	282.16	-22.29	356.19	292.64	-17.84
Cheese (00 kg)	384.91	327.82	-14.83	384.94	335.65	-12.80	388.41	343.67	-11.52	389.09	353.44	-9.16	378.16	356.14	-5.82
Skim Milk Powder (00 kg)	197.89	212.22	7.24	198.12	219.04	10.56	200.90	224.57	11.78	202.43	233.05	15.13	202.53	240.52	18.76
Whole Milk Powder (00 kg)	252.96	231.10	-8.64	250.90	233.43	-6.96	258.73	243.82	-5.76	259.20	249.16	-3.87	257.69	258.77	0.42
Fat (per hl of milk)	9.64	4.43	-54.08	9.64	4.34	-54.95	9.64	4.53	-53.06	9.64	4.90	-49.16	9.33	5.46	-41.49
Solid Nonfat (per hl of milk)	21.36	22.54	5.55	21.36	22.95	7.45	21.36	22.92	7.31	21.36	22.96	7.50	20.67	22.54	9.06
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	31.00	26.97	-13.00	31.00	27.29	-11.96	31.00	27.45	-11.46	31.00	27.86	-10.12	30.00	28.00	-6.66
Gross Margin (local currency)															
Butter (00 kg)	127.66	132.62	3.88	125.51	129.75	3.38	122.78	127.53	3.87	121.76	127.79	4.95	119.35	125.71	5.33
Cheese (00 kg)	173.52	180.10	-7.73	170.48	162.43	-4.72	169.78	164.14	-3.32	167.43	165.94	-0.89	160.44	162.78	1.46
Skim Milk Powder (00 kg)	-18.29	-16.02	-12.43	-17.68	-13.68	-22.63	-15.36	-9.28	-39.59	-13.90	-3.38	-75.68	-8.54	4.85	-156.82
Whole Milk Powder (00 kg)	22.79	24.56	7.78	21.04	24.09	14.46	26.25	30.40	15.79	26.30	31.87	21.16	29.90	37.80	26.43
Net trade (KT)															
Butter	89.50	-148.22	-265.61	90.30	-92.12	-202.01	93.57	-63.33	-167.69	86.39	-23.47	-127.17	73.04	-3.56	-104.88
Cheese	266.87	-328.58	-223.12	269.89	-184.24	-168.26	275.90	-115.22	-141.76	292.64	17.97	-93.86	290.03	150.06	48.26
Skim Milk Powder	162.89	223.09	36.96	159.28	239.85	50.59	169.99	270.25	59.23	159.99	318.98	99.37	122.75	325.55	165.21
Whole Milk Powder	445.31	445.31	0.00	464.47	482.17	3.81	483.63	515.83	6.66	502.79	554.55	10.30	521.96	608.77	16.63

Japan

Free Trade with Trade in Industrial Milk		2001			2002			2003			2004			2005		
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)																
Butter		83.38	69.72	-16.38	83.56	68.80	-17.67	83.78	69.38	-17.19	84.24	70.56	-16.24	79.78	66.70	-16.40
Cheese		44.09	44.00	-0.20	46.29	44.00	-4.95	48.33	44.00	-8.96	50.29	44.00	-12.51	52.27	44.00	-15.82
Skim Milk Powder		197.10	171.90	-12.79	201.09	172.73	-14.10	205.08	176.38	-13.99	205.05	180.80	-13.51	213.01	185.11	-13.10
Whole Milk Powder		53.00	20.57	-61.18	53.00	17.73	-66.54	53.00	18.32	-65.44	53.00	18.38	-65.32	53.00	18.97	-64.21
Milk		8588.61	8169.31	-4.88	8657.16	8164.46	-5.69	8724.24	8225.00	-5.72	8791.37	8292.51	-5.67	8859.83	8364.97	-5.59
Fat		317.78	302.26	-4.88	320.31	302.08	-5.69	322.80	304.33	-5.72	325.28	306.82	-5.67	327.81	309.50	-5.59
Solid Nonfat		752.92	716.16	-4.88	758.93	715.73	-5.69	764.81	721.04	-5.72	770.69	726.96	-5.67	776.69	733.31	-5.59
Demand (KT)																
Butter		83.48	155.51	86.29	83.66	158.18	89.08	83.88	158.03	88.40	84.34	157.22	86.42	79.88	147.43	84.57
Cheese		232.00	690.94	197.78	239.95	712.44	196.91	247.98	728.09	193.61	255.97	746.64	191.69	263.97	775.45	193.76
Skim Milk Powder		251.96	423.49	68.08	254.05	423.70	66.78	258.22	425.86	64.92	260.62	424.79	62.99	264.35	427.21	61.61
Whole Milk Powder		53.00	105.70	99.44	53.00	106.32	100.61	53.00	103.92	96.07	53.00	103.70	95.66	53.00	102.41	93.23
Fat		317.78	302.26	-4.88	320.31	302.08	-5.69	322.80	304.33	-5.72	325.28	306.82	-5.67	327.81	309.50	-5.59
Solid Nonfat		752.92	716.16	-4.88	758.93	715.73	-5.69	764.81	721.04	-5.72	770.69	726.96	-5.67	776.69	733.31	-5.59
Price (local currency)																
Butter (00 kg)		96400.00	30460.89	-68.40	96400.00	28632.81	-69.26	96400.00	28830.00	-69.06	96400.00	30421.31	-68.44	96400.00	30983.36	-67.85
Cheese (00 kg)		183955.50	36966.91	-79.90	183955.50	37125.30	-79.82	183955.50	37741.15	-79.48	183955.50	38106.89	-79.28	183955.50	37712.12	-79.50
Skim Milk Powder (00 kg)		54564.00	2930.71	-56.14	54564.00	24227.64	-55.60	54564.00	24661.66	-54.80	54564.00	25126.65	-53.95	54564.00	25469.53	-53.32
Whole Milk Powder (00 kg)		77960.00	2680.44	-66.57	77960.00	25819.31	-66.88	77960.00	26775.45	-65.65	77960.00	26864.02	-65.54	77960.00	27401.83	-64.85
Fat (per hl of milk)		2490.94	53.51	-102.15	2490.94	52.08	-102.09	2490.94	56.70	-102.28	2490.94	56.81	-102.28	2490.94	53.32	-102.14
Solid Nonfat (per hl of milk)		5896.06	5077.34	-13.89	5896.06	5359.65	-9.10	5896.06	5434.46	-7.83	5896.06	5446.69	-7.62	5896.06	5455.57	-7.47
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)		8387.00	5023.83	-40.10	8387.00	5307.58	-36.72	8387.00	5377.76	-35.88	8387.00	5389.87	-35.74	8387.00	5402.25	-35.59
Gross Margin (local currency)																
Butter (00 kg)		40715.40	29356.13	-27.90	40674.72	29397.90	-30.18	40553.06	28577.81	-29.53	40472.12	29095.12	-28.11	40391.34	29513.10	-26.93
Cheese (00 kg)		146409.88	24235.69	-83.45	146263.62	23666.91	-83.82	145826.14	24050.99	-83.51	145535.07	24330.35	-83.28	145244.58	23849.62	-83.58
Skim Milk Powder (00 kg)		8468.63	29426.84	247.48	8460.17	32044.49	278.77	8434.87	32300.26	282.94	8418.03	31909.54	279.06	8401.23	31605.12	276.20
Whole Milk Powder (00 kg)		14305.78	12658.44	-188.48	14291.49	15033.50	-205.19	14248.75	14589.53	-202.39	14220.31	14565.65	-202.43	14191.92	14104.93	-199.39
Net trade (KT)																
Butter		-0.10	-118.66	118560.42	-0.10	-79.36	79255.37	-0.10	-76.60	76504.23	-0.10	-73.21	73113.46	-0.10	-80.35	80252.78
Cheese		-187.92	-681.78	262.80	-193.66	-657.02	239.26	-199.65	-672.14	236.66	-205.68	-689.89	235.42	-211.71	-731.40	245.47
Skim Milk Powder		-54.86	-263.13	378.65	-52.96	-247.11	366.60	-53.14	-245.32	361.65	-51.57	-239.35	364.13	-51.34	-242.16	371.67
Whole Milk Powder		0.00	-85.13	n/a	0.00	-88.59	n/a	0.00	-85.60	n/a	0.00	-85.32	n/a	0.00	-83.44	n/a

New Zealand

Free Trade with Trade in Industrial Milk	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	391.52	409.54	4.60	405.66	453.74	11.85	406.11	464.04	14.27	401.62	466.16	16.07	411.95	477.92	16.01
Cheese	339.30	614.77	81.19	346.13	642.21	86.54	362.25	663.61	83.19	387.38	683.30	76.39	394.09	673.30	70.85
Skim Milk Powder	204.66	340.55	66.40	210.68	390.83	85.51	198.05	390.13	96.99	185.58	385.70	107.84	186.55	380.36	103.89
Whole Milk Powder	474.01	527.15	11.21	468.60	558.68	19.22	490.22	600.73	22.54	512.27	617.18	20.48	527.33	638.05	21.00
Milk	12467.91	14692.45	17.84	12718.05	15776.70	24.05	12900.76	16270.43	26.12	13147.02	16566.44	26.01	13447.53	16823.11	25.10
Fat	623.40	734.62	17.84	635.90	788.84	24.05	645.04	813.52	26.12	657.35	828.32	26.01	672.38	841.16	25.10
Solid Nonfat	1190.75	1403.20	17.84	1214.64	1506.75	24.05	1232.09	1553.91	26.12	1255.61	1582.18	26.01	1284.31	1606.69	25.10
Demand (KT)															
Butter	31.82	24.12	-24.19	31.89	24.45	-23.32	31.93	24.61	-22.92	31.85	24.71	-22.42	31.81	24.91	-21.69
Cheese	42.44	34.25	-19.29	44.54	36.17	-18.79	46.51	37.97	-18.37	46.42	38.25	-17.60	46.48	38.65	-16.84
Skim Milk Powder	8.01	6.67	-16.77	8.03	6.70	-16.60	8.04	6.75	-16.03	8.03	6.81	-15.16	8.01	6.91	-13.78
Whole Milk Powder	0.80	0.67	-16.42	0.80	0.67	-15.70	0.80	0.68	-15.45	0.80	0.69	-14.08	0.80	0.69	-13.59
Fat	623.40	734.62	17.84	635.90	788.84	24.05	645.04	813.52	26.12	657.35	828.32	26.01	672.38	841.16	25.10
Solid Nonfat	1190.75	1403.20	17.84	1214.64	1506.75	24.05	1232.09	1553.91	26.12	1255.61	1582.18	26.01	1284.31	1606.69	25.10
Price (local currency)															
Butter (00 kg)	302.80	560.37	85.06	306.50	552.93	80.40	316.06	563.71	78.36	333.07	585.55	75.80	350.92	604.16	72.16
Cheese (00 kg)	397.95	680.05	70.89	411.65	692.73	68.28	429.44	713.21	66.08	452.08	733.48	62.25	463.70	735.25	58.56
Skim Milk Powder (00 kg)	292.77	440.23	50.37	302.03	452.07	49.68	316.11	466.04	47.43	335.61	483.64	44.11	357.21	496.56	39.01
Whole Milk Powder (00 kg)	321.80	479.41	48.98	329.62	481.77	46.16	348.44	505.99	45.22	369.09	517.08	40.10	386.12	534.24	38.36
Fat (per hl of milk)	9.83	25.35	158.03	9.94	23.55	136.90	9.93	23.18	133.47	10.18	23.42	130.10	10.38	23.57	127.09
Solid Nonfat (per hl of milk)	19.59	25.50	30.13	19.82	22.88	15.44	19.79	21.80	10.15	20.30	21.32	5.01	20.70	21.03	1.59
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	29.42	50.85	72.85	29.76	46.43	56.01	29.72	44.98	51.34	30.48	44.74	46.79	31.08	44.60	43.51
Gross Margin (local currency)															
Butter (00 kg)	115.53	124.93	8.14	114.90	139.99	21.83	120.40	150.63	25.10	128.15	161.82	26.28	136.90	171.32	25.14
Cheese (00 kg)	239.47	383.19	60.02	245.09	399.56	63.03	254.53	411.75	61.77	265.37	419.75	58.18	267.91	413.58	54.37
Skim Milk Powder (00 kg)	81.11	152.01	87.41	85.24	179.23	110.27	94.85	195.07	105.65	104.32	208.73	100.08	115.82	216.94	87.30
Whole Milk Powder (00 kg)	106.11	133.83	26.13	108.65	155.65	43.25	121.53	179.19	47.44	131.44	186.18	41.64	139.05	196.82	41.54
Net trade (KT)															
Butter	319.71	357.86	11.93	333.77	383.71	14.96	334.19	394.52	18.05	329.77	397.31	20.48	340.14	412.92	21.40
Cheese	296.52	581.78	96.20	301.23	604.41	100.65	315.37	624.17	97.92	340.57	643.64	88.99	347.21	634.24	82.67
Skim Milk Powder	196.65	335.63	70.68	202.66	382.33	88.65	190.01	381.77	100.92	177.56	377.39	112.54	178.54	373.31	109.09
Whole Milk Powder	473.21	526.48	11.26	467.80	558.00	19.28	489.42	600.05	22.60	511.47	616.49	20.53	526.53	637.36	21.05

United States

Free Trade with Trade in Industrial Milk	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	523.24	508.30	-2.85	486.94	440.13	-9.61	469.31	410.62	-12.51	484.20	443.37	-8.43	489.87	479.05	-2.21
Cheese	3858.00	3931.90	1.92	3985.82	4017.68	0.80	4057.96	4110.16	1.29	4141.90	4218.00	1.84	4200.89	4231.71	0.73
Skim Milk Powder	512.70	452.15	-11.81	478.04	327.86	-31.42	460.58	317.70	-31.02	478.03	379.21	-20.67	474.81	413.51	-12.91
Whole Milk Powder	62.30	6.00	-90.37	61.68	6.00	-90.27	61.06	45.21	-25.96	60.45	61.93	2.44	59.85	111.80	86.81
Milk	75044.94	73118.62	-2.57	75954.16	72356.33	-4.74	76982.66	73175.80	-4.95	77727.93	74233.63	-4.50	78683.62	75417.68	-4.15
Fat	2769.16	2698.08	-2.57	2795.11	2662.71	-4.74	2809.87	2670.92	-4.95	2844.84	2716.95	-4.50	2871.95	2752.75	-4.15
Solid Nonfat	6574.27	6405.51	-2.57	6649.34	6334.37	-4.74	6725.45	6392.87	-4.95	6795.24	6489.76	-4.50	6874.05	6588.73	-4.15
Demand (KT)															
Butter	542.46	550.24	1.43	515.77	537.38	4.19	502.78	538.24	7.05	502.12	520.56	3.67	502.15	509.58	1.48
Cheese	3950.99	3898.93	-1.32	4078.81	4102.29	0.58	4150.94	4152.82	0.05	4234.89	4178.26	-1.34	4293.86	4289.41	-0.10
Skim Milk Powder	376.01	404.71	7.63	341.05	385.61	13.07	321.70	352.92	9.70	335.33	361.30	7.74	329.22	349.36	6.12
Whole Milk Powder	51.87	56.22	8.38	51.25	55.18	7.67	50.63	52.63	3.94	50.02	51.27	2.49	49.41	49.41	0.00
Fat	2769.16	2698.08	-2.57	2795.11	2662.71	-4.74	2809.87	2670.92	-4.95	2844.84	2716.95	-4.50	2871.95	2752.75	-4.15
Solid Nonfat	6574.27	6405.51	-2.57	6649.34	6334.37	-4.74	6725.45	6392.87	-4.95	6795.24	6489.76	-4.50	6874.05	6588.73	-4.15
Price (local currency)															
Butter (00 kg)	293.42	287.37	-2.06	302.59	285.01	-5.81	322.54	292.08	-9.44	319.71	303.39	-5.10	321.44	314.67	-2.11
Cheese (00 kg)	341.12	348.74	2.24	360.51	357.08	-0.95	369.82	369.54	-0.08	371.61	380.04	2.27	382.28	382.94	0.17
Skim Milk Powder (00 kg)	252.81	225.76	-10.70	281.48	233.03	-17.21	278.45	241.47	-13.28	281.06	250.59	-10.84	283.36	258.63	-8.73
Whole Milk Powder (00 kg)	278.25	245.85	-11.64	278.25	248.33	-10.75	278.25	262.17	-5.78	278.25	267.92	-3.71	278.25	278.25	0.00
Fat (per hl of milk)	9.47	9.34	-1.39	9.75	9.37	-3.90	9.95	9.08	-8.79	10.18	9.81	-3.63	10.51	10.31	-1.87
Solid Nonfat (per hl of milk)	22.48	20.99	-6.62	23.19	21.31	-8.10	23.83	22.96	-3.63	24.32	23.29	-4.22	25.14	23.98	-4.61
Fluid Milk (hl)	34.70	32.94	-5.07	35.77	33.32	-6.86	36.68	34.79	-5.15	37.47	35.95	-4.04	38.71	37.24	-3.80
Industrial Milk (hl)	31.95	30.33	-5.07	32.94	30.68	-6.86	33.78	32.04	-5.15	34.50	33.10	-4.04	35.65	34.29	-3.80
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	66.35	64.18	-3.27	66.82	60.01	-10.19	75.68	67.15	-11.28	68.77	62.83	-8.63	62.98	61.40	-2.50
Cheese (00 kg)	146.76	157.50	7.32	154.75	159.39	2.99	155.04	162.64	4.90	150.77	161.83	7.34	151.32	155.80	2.96
Skim Milk Powder (00 kg)	9.15	0.35	-96.21	25.03	3.19	-87.26	16.70	-4.08	-124.45	14.50	0.13	-99.13	9.31	0.40	-95.70
Whole Milk Powder (00 kg)	28.76	13.10	-54.45	22.14	12.43	-43.86	16.14	13.84	-14.28	12.02	12.23	1.79	5.21	12.76	145.08
Net trade (KT)															
Butter	-19.22	-41.95	118.27	-28.83	-97.11	236.82	-33.47	-127.60	281.24	-17.92	-76.76	328.33	-12.28	-30.56	148.82
Cheese	-92.99	34.62	-137.23	-92.99	-90.28	-2.92	-92.99	-41.03	-55.88	-92.99	43.28	-146.54	-92.99	-60.19	-35.27
Skim Milk Powder	136.69	46.00	-66.35	136.99	-51.58	-137.65	138.87	-30.58	-122.02	142.69	17.09	-88.02	145.59	62.46	-57.10
Whole Milk Powder	10.43	-48.72	-567.10	10.43	-49.16	-571.31	10.43	-8.60	-182.41	10.43	10.39	-0.35	10.43	61.63	490.94

Rest of the World

Free Trade with Trade in Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	3847.98	3757.52	-2.35	3930.35	3844.01	-2.20	4034.10	3941.61	-2.29	4091.58	3973.49	-2.89	4151.64	3991.70	-3.85
Cheese	3240.68	3721.47	14.84	3373.52	3827.38	13.45	3426.71	3808.74	11.15	3452.46	3725.88	7.92	3556.47	3855.86	8.42
Skim Milk Powder	960.45	1012.52	5.42	920.21	967.64	5.15	941.13	948.06	0.74	974.57	883.66	-9.33	971.30	819.87	-15.59
Whole Milk Powder	980.33	883.99	-9.83	1007.85	862.71	-14.40	1030.31	802.40	-22.12	1050.21	796.38	-24.17	1063.47	720.94	-32.21
Milk	322907.96	324296.15	0.43	332448.23	333527.71	0.32	340994.26	340993.76	-0.01	349186.66	347694.94	-0.43	357016.04	354340.50	-0.75
Fat	12948.30	13003.96	0.43	13330.85	13374.14	0.32	13673.54	13672.32	-0.01	14002.05	13942.23	-0.43	14316.00	14208.71	-0.75
Solid Nonfat	28911.15	29035.44	0.43	29765.33	29861.98	0.32	30530.49	30527.76	-0.01	31263.98	31130.42	-0.43	31964.98	31725.42	-0.75
Demand (KT)															
Butter	4356.01	3949.19	-9.34	4444.77	4100.77	-7.74	4545.69	4223.14	-7.10	4605.41	4354.38	-5.45	4673.38	4459.91	-4.57
Cheese	3696.42	3425.91	-7.32	3831.25	3582.74	-6.49	3915.85	3707.51	-5.32	4002.76	3852.25	-3.76	4102.88	3937.56	-4.03
Skim Milk Powder	1656.58	1684.69	1.70	1628.67	1658.62	1.84	1646.69	1689.13	2.58	1661.17	1721.07	3.61	1638.00	1708.17	4.28
Whole Milk Powder	2029.59	2042.11	0.62	2062.68	2092.56	1.45	2135.33	2187.67	2.45	2199.68	2264.39	2.94	2244.61	2328.85	3.75
Fat	12948.30	13003.96	0.43	13330.85	13374.14	0.32	13673.54	13672.32	-0.01	14002.05	13942.23	-0.43	14316.00	14208.71	-0.75
Solid Nonfat	28911.15	29035.44	0.43	29765.33	29861.98	0.32	30530.49	30527.76	-0.01	31263.98	31130.42	-0.43	31964.98	31725.42	-0.75
Price (local currency)															
Butter (00 kg)	249.81	287.37	15.04	254.03	285.01	12.20	262.93	292.08	11.09	280.05	303.39	8.34	294.34	314.67	6.91
Cheese (00 kg)	299.57	348.74	16.42	312.26	357.08	14.35	331.26	369.54	11.55	352.00	380.04	7.97	352.70	382.94	8.57
Skim Milk Powder (00 kg)	238.78	225.76	-5.45	247.62	233.03	-5.89	262.85	241.47	-8.13	282.00	250.59	-11.14	297.44	258.63	-13.05
Whole Milk Powder (00 kg)	250.94	245.85	-2.03	260.53	248.33	-4.68	284.21	262.17	-7.75	295.10	267.92	-9.21	314.61	278.25	-11.56
Fat (per hl of milk)	17.04	19.33	13.47	17.15	19.10	11.39	17.04	18.93	11.14	17.47	19.19	9.83	17.72	19.48	9.90
Solid Nonfat (per hl of milk)	40.33	38.65	-4.16	40.59	38.79	-4.42	40.32	38.18	-5.31	41.35	39.02	-5.65	41.95	39.40	-6.08
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	57.37	57.99	1.08	57.73	57.89	0.27	57.36	57.11	-0.43	58.83	58.21	-1.05	59.67	58.88	-1.34
Gross Margin (local currency)															
Butter (00 kg)	-76.29	-81.73	7.13	-73.13	-78.33	7.10	-63.22	-68.78	8.80	-55.83	-62.93	12.72	-48.09	-57.71	20.00
Cheese (00 kg)	28.61	57.52	101.08	36.48	63.78	74.83	51.36	74.33	44.74	60.65	77.09	27.11	57.15	75.16	31.51
Skim Milk Powder (00 kg)	-144.95	-141.82	-2.16	-137.18	-134.32	-2.08	-120.79	-120.37	-0.35	-112.16	-117.63	4.87	-103.30	-112.40	8.82
Whole Milk Powder (00 kg)	-130.97	-136.76	4.42	-122.88	-131.61	7.10	-100.45	-114.15	13.65	-98.23	-113.49	15.54	-86.64	-107.24	23.78
Net trade (KT)															
Butter	-511.04	-189.76	-62.87	-512.43	-257.30	-49.79	-509.59	-281.08	-44.84	-511.81	-380.59	-25.64	-520.74	-468.85	-10.35
Cheese	-453.35	304.84	-167.24	-454.93	242.64	-153.34	-486.91	98.99	-120.33	-547.61	-127.68	-76.68	-543.25	-76.33	-85.95
Skim Milk Powder	-696.13	-677.20	-2.72	-708.46	-689.94	-2.61	-705.50	-740.15	4.91	-686.59	-834.99	21.61	-666.88	-886.69	32.96
Whole Milk Powder	-1049.27	-1156.98	10.27	-1054.83	-1229.83	16.59	-1105.03	-1384.13	25.26	-1149.47	-1466.82	27.61	-1181.15	-1605.62	35.94

World

Free Trade with Trade In Industrial Milk Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	6964.33	6935.36	-0.42	7024.39	7005.42	-0.27	7104.99	7096.06	-0.13	7156.17	7161.72	0.08	7220.52	7222.25	0.02
Cheese	15019.77	15729.31	4.72	15380.22	16109.84	4.74	15613.16	16323.57	4.55	15861.48	16514.58	4.12	16141.16	16782.14	3.97
Skim Milk Powder	3343.58	3548.76	6.14	3249.24	3450.07	6.18	3209.70	3411.42	6.28	3198.96	3402.93	6.38	3157.07	3355.25	6.28
Whole Milk Powder	2710.02	2778.73	2.54	2744.83	2840.74	3.49	2827.57	2937.03	3.87	2903.80	3019.22	3.97	2956.70	3075.82	4.03
Milk	559539.96	564358.45	0.86	570445.77	575894.12	0.92	580355.78	585749.21	0.93	589756.78	595191.32	0.92	599332.54	604724.53	0.90
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand (KT)															
Butter	6910.75	6815.32	-1.38	6969.39	6962.40	-0.10	7056.00	7069.62	0.19	7114.16	7150.28	0.51	7172.51	7181.90	0.13
Cheese	15018.69	15688.27	4.46	15380.29	16111.84	4.76	15614.51	16337.53	4.63	15864.96	16534.77	4.22	16145.75	16787.83	3.98
Skim Milk Powder	3308.87	3510.81	6.10	3236.65	3444.50	6.42	3211.67	3414.43	6.31	3226.28	3429.09	6.29	3186.19	3383.48	6.19
Whole Milk Powder	2710.02	2788.54	2.90	2744.83	2837.19	3.36	2827.57	2934.60	3.79	2903.80	3017.77	3.92	2956.70	3077.37	4.08
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Price (local currency)															
Butter (00 kg)	156.13	287.37	84.06	158.77	285.01	79.51	164.33	292.08	77.74	175.03	303.39	73.34	183.96	314.67	71.05
Cheese (00 kg)	187.23	348.74	86.27	195.16	357.08	82.97	207.04	369.54	78.49	220.00	380.04	72.75	220.44	382.94	73.72
Skim Milk Powder (00 kg)	149.24	225.76	51.27	154.76	233.03	50.57	164.28	241.47	46.99	176.25	250.59	42.18	185.90	258.63	39.12
Whole Milk Powder (00 kg)	156.84	245.85	56.75	162.83	248.33	52.51	177.63	262.17	47.59	184.44	267.92	45.26	196.63	278.25	41.51
Fat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)															
Butter (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net trade (KT)															
Butter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SCENARIO 2

FREE TRADE PHASED-IN

Australia

Free Trade Phased-In Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	180.45	177.27	-1.76	185.24	190.03	2.58	184.50	201.07	8.98	183.09	215.12	17.49	189.77	238.55	25.70
Cheese	364.64	403.59	10.68	375.26	432.00	15.12	400.86	473.11	18.02	428.32	512.96	19.76	438.02	540.43	23.38
Skim Milk Powder	263.12	272.22	3.46	271.78	299.86	10.33	289.25	320.27	18.95	268.95	347.67	29.27	279.93	388.93	38.94
Whole Milk Powder	154.92	174.76	12.81	147.27	202.06	37.20	157.18	266.22	69.37	160.91	330.69	105.51	158.84	405.86	157.40
Milk	11079.68	11425.66	3.12	11267.58	12124.72	7.61	11594.49	13148.15	13.40	11890.82	14233.55	19.70	12135.09	15459.03	27.39
Fat	455.37	469.59	3.12	463.10	498.33	7.61	476.53	540.39	13.40	488.71	585.00	19.70	498.75	635.37	27.39
Solid Nonfat	998.69	1029.88	3.12	1015.63	1092.89	7.61	1045.10	1185.14	13.40	1071.81	1282.98	19.70	1093.83	1393.44	27.39
Demand (KT)															
Butter	68.10	64.65	-5.07	68.21	61.68	-9.57	69.34	59.58	-14.08	69.66	57.02	-18.15	70.08	54.53	-22.18
Cheese	197.06	187.37	-4.92	208.71	193.79	-7.15	216.73	197.20	-9.01	219.44	196.52	-10.45	232.03	203.04	-12.49
Skim Milk Powder	36.80	36.27	-1.45	37.19	35.34	-4.99	37.71	34.49	-8.54	37.87	33.35	-11.95	38.03	32.33	-14.98
Whole Milk Powder	33.22	30.01	-9.66	33.75	27.01	-19.98	34.25	23.86	-30.34	34.75	21.47	-38.23	35.24	19.24	-45.39
Fat	455.37	469.59	3.12	463.10	498.33	7.61	476.53	540.39	13.40	488.71	585.00	19.70	498.75	635.37	27.39
Solid Nonfat	998.69	1029.88	3.12	1015.63	1092.89	7.61	1045.10	1185.14	13.40	1071.81	1282.98	19.70	1093.83	1393.44	27.39
Price (local currency)															
Butter (00 kg)	240.28	269.71	12.25	244.02	305.18	25.06	252.68	354.02	40.11	266.52	415.91	56.05	282.17	492.69	74.61
Cheese (00 kg)	367.76	417.19	13.44	379.68	457.06	20.38	396.95	502.67	26.63	417.75	550.43	31.76	429.01	598.94	39.61
Skim Milk Powder (00 kg)	226.80	234.30	3.31	235.28	263.60	12.04	248.42	302.96	21.96	266.35	353.38	32.68	283.80	407.05	43.43
Whole Milk Powder (00 kg)	114.01	142.87	25.31	114.01	187.11	64.11	114.01	254.59	123.30	114.01	332.53	191.66	114.01	437.40	283.64
Fat (per hl of milk)	7.79	9.49	21.84	7.65	10.60	38.52	7.50	11.91	58.80	7.79	13.85	77.71	7.92	16.19	104.52
Solid Nonfat (per hl of milk)	16.55	16.39	-0.95	16.27	16.26	-0.06	15.94	16.10	1.01	16.56	16.92	2.19	16.82	17.35	3.13
Fluid Milk (hl)	53.97	57.39	6.34	55.75	62.60	12.29	57.62	68.86	19.50	59.49	75.17	26.35	59.50	80.67	35.57
Industrial Milk (hl)	24.34	25.88	6.34	23.92	26.86	12.29	23.44	28.01	19.50	24.35	30.77	26.35	24.74	33.54	35.57
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	72.03	69.46	-3.57	75.46	79.34	5.14	82.69	96.11	16.22	87.10	113.03	29.77	95.23	134.72	41.47
Cheese (00 kg)	222.15	253.69	14.20	227.79	273.74	20.17	236.90	295.40	24.69	244.74	313.27	28.00	246.78	329.70	33.60
Skim Milk Powder (00 kg)	45.34	52.71	16.26	53.56	76.30	42.44	65.24	106.54	63.32	72.68	136.41	87.70	82.26	170.51	107.29
Whole Milk Powder (00 kg)	-50.59	-34.53	-31.75	-46.88	-2.52	-94.63	-42.87	45.42	-205.96	-46.96	90.50	-292.70	-48.08	154.36	-421.07
Net trade (KT)															
Butter	120.76	123.31	2.11	117.04	129.04	10.25	115.15	141.37	22.77	113.42	157.15	38.56	119.69	183.24	53.10
Cheese	167.58	220.09	31.33	166.55	237.52	42.61	184.13	273.91	48.76	208.89	313.29	49.98	205.99	336.59	63.40
Skim Milk Powder	226.32	236.25	4.39	234.60	265.19	13.04	231.54	285.99	23.52	231.08	314.07	35.91	241.90	356.07	47.20
Whole Milk Powder	121.70	146.46	20.35	113.51	176.19	55.22	122.93	242.98	97.65	126.16	308.86	144.82	123.61	389.21	214.87

Canada

Free Trade Phased-In	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	82.82	105.06	26.86	83.41	123.03	47.51	84.05	125.45	49.26	84.00	120.61	43.58	85.68	112.98	31.86
Cheese	346.87	411.20	18.55	350.18	388.62	10.98	353.14	362.60	2.68	356.12	329.81	-7.39	359.75	285.84	-20.54
Skim Milk Powder	61.17	122.93	100.96	61.77	142.98	131.47	63.11	133.90	112.17	62.39	109.76	75.93	65.31	76.32	16.86
Whole Milk Powder	17.02	61.65	262.22	17.02	86.36	407.43	17.02	90.90	434.10	17.02	67.21	294.89	17.02	37.46	120.09
Milk	8150.86	9520.89	16.81	8200.59	9946.86	21.29	8259.37	9870.63	19.51	8312.98	9393.75	13.00	8390.43	8713.58	3.85
Fat	309.73	361.79	16.81	312.44	378.98	21.29	315.51	377.06	19.51	318.39	359.78	13.00	322.19	334.60	3.85
Solid Nonfat	719.46	840.39	16.81	724.34	878.59	21.29	730.03	872.45	19.51	735.27	830.87	13.00	742.63	771.23	3.85
Demand (KT)															
Butter	81.43	75.11	-7.76	82.16	70.42	-14.29	82.80	71.54	-13.60	83.74	81.41	-2.78	84.43	101.78	20.55
Cheese	340.48	301.20	-11.54	343.99	325.89	-5.26	348.50	359.74	3.23	353.18	417.40	18.18	356.93	526.54	47.52
Skim Milk Powder	33.02	32.53	-1.48	33.26	32.57	-2.08	33.53	34.80	3.77	33.85	37.68	11.31	34.17	42.89	25.51
Whole Milk Powder	18.41	18.19	-1.18	18.41	17.52	-4.86	18.41	17.70	-3.88	18.41	19.40	5.40	18.41	22.30	21.14
Fat	309.73	361.79	16.81	312.44	378.98	21.29	315.51	377.06	19.51	318.39	359.78	13.00	322.19	334.60	3.85
Solid Nonfat	719.46	840.39	16.81	724.34	878.59	21.29	730.03	872.45	19.51	735.27	830.87	13.00	742.63	771.23	3.85
Price (local currency)															
Butter (00 kg)	553.00	620.64	12.23	555.00	691.75	24.64	557.00	686.31	23.21	559.00	581.98	4.11	561.00	429.52	-23.44
Cheese (00 kg)	780.00	924.77	18.56	810.00	873.16	7.80	838.00	801.85	-4.31	865.00	685.87	-20.71	896.00	522.15	-41.72
Skim Milk Powder (00 kg)	479.00	493.52	3.03	503.00	524.60	4.29	524.00	486.57	-7.14	539.00	435.02	-19.29	559.00	354.86	-36.52
Whole Milk Powder (00 kg)	499.57	511.59	2.40	517.46	571.68	10.48	533.17	577.13	8.24	544.56	490.21	-9.38	559.56	381.32	-31.85
Fat (per hl of milk)	17.17	17.56	2.24	17.55	18.81	7.13	17.98	18.54	3.07	18.35	14.30	-22.06	18.82	8.51	-54.80
Solid Nonfat (per hl of milk)	40.27	24.63	-38.83	41.16	20.35	-50.55	42.17	18.25	-56.72	43.03	19.28	-55.20	44.11	21.60	-51.04
Fluid Milk (hl)	63.49	46.63	-26.55	64.34	42.91	-33.30	65.42	40.01	-38.84	66.19	36.21	-45.29	67.44	32.26	-52.16
Industrial Milk (hl)	57.44	42.19	-26.55	58.71	39.16	-33.30	60.15	36.79	-38.84	61.38	33.58	-45.29	62.93	30.11	-52.16
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	159.34	215.12	35.01	151.81	251.18	65.46	143.34	247.17	72.43	136.07	227.87	67.47	127.42	195.88	53.73
Cheese (00 kg)	465.22	626.55	34.68	477.22	573.62	20.20	485.34	509.06	4.89	491.97	426.00	-13.41	499.90	314.55	-37.08
Skim Milk Powder (00 kg)	43.40	198.28	356.84	55.08	258.74	369.76	62.62	240.15	283.48	66.12	184.93	179.67	71.47	99.08	38.64
Whole Milk Powder (00 kg)	61.31	173.23	182.57	67.66	241.56	257.04	70.76	256.05	261.87	71.35	197.22	176.41	72.83	124.09	70.38
Net trade (KT)															
Butter	0.39	28.29	7154.94	0.25	50.99	20295.82	0.25	51.12	20346.75	0.25	34.93	13870.89	0.25	4.16	1563.54
Cheese	3.29	109.23	3220.16	3.91	55.60	1322.10	4.15	-1.94	-146.67	4.18	-91.32	-2284.60	4.72	-242.27	-5232.93
Skim Milk Powder	28.44	90.13	216.90	27.89	109.56	292.82	28.50	97.51	242.14	26.84	69.82	160.15	29.44	31.33	6.43
Whole Milk Powder	-1.38	43.40	-3244.96	-1.38	68.86	-5089.73	-1.38	73.20	-5404.25	-1.38	47.47	-3561.36	-1.38	15.13	-1196.03

European Union

Free Trade Phased-In Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	1854.94	1935.91	4.37	1849.23	1949.86	5.44	1843.14	1947.60	5.67	1827.44	1923.05	5.23	1811.83	1887.36	4.17
Cheese	6826.19	6677.36	-2.18	6903.02	6789.61	-1.64	6963.91	6860.04	-1.49	7045.01	6986.63	-0.83	7139.67	7170.58	0.43
Skim Milk Powder	1144.38	1192.75	4.23	1105.67	1220.75	10.41	1072.50	1208.19	12.65	1020.39	1165.81	14.25	966.16	1125.35	16.48
Whole Milk Powder	968.44	1135.32	17.23	989.41	1112.73	12.46	1018.78	1110.15	8.97	1049.94	1133.68	7.98	1077.19	1175.67	9.14
Milk	121300.00	122771.26	1.21	121200.00	123052.24	1.53	120900.00	122685.83	1.48	120700.00	122633.67	1.60	120800.00	123157.33	1.95
Fat	4997.56	5058.18	1.21	5005.56	5082.06	1.53	4993.17	5066.92	1.48	4996.98	5077.03	1.60	5013.20	5111.02	1.95
Solid Nonfat	10940.98	11073.69	1.21	10939.27	11106.45	1.53	10912.20	11073.38	1.48	10901.42	11076.07	1.60	10917.74	11130.79	1.95
Demand (KT)															
Butter	1747.45	1852.93	6.04	1742.93	1891.21	8.51	1739.58	1918.84	10.30	1737.04	1921.77	10.63	1730.78	1880.42	8.65
Cheese	6559.30	6874.12	4.80	6633.04	6965.44	5.01	6688.00	7042.49	5.30	6752.30	7061.40	4.58	6849.60	7008.73	2.32
Skim Milk Powder	946.49	935.25	-1.19	934.40	895.66	-4.15	905.78	857.51	-5.33	889.41	836.81	-5.91	874.41	813.41	-6.98
Whole Milk Powder	523.13	521.21	-0.37	524.94	527.95	0.57	535.15	541.97	1.27	547.14	553.74	1.21	555.23	552.61	-0.47
Fat	4997.56	5058.18	1.21	5005.56	5082.06	1.53	4993.17	5066.92	1.48	4996.98	5077.03	1.60	5013.20	5111.02	1.95
Solid Nonfat	10940.98	11073.69	1.21	10939.27	11106.45	1.53	10912.20	11073.38	1.48	10901.42	11076.07	1.60	10917.74	11130.79	1.95
Price (local currency)															
Butter (00 kg)	362.60	316.39	-12.74	362.46	299.78	-17.29	361.92	288.11	-20.39	363.11	287.06	-20.95	356.19	293.72	-17.54
Cheese (00 kg)	384.91	342.34	-11.06	384.94	340.65	-11.51	388.41	341.36	-12.11	389.09	347.90	-10.59	378.16	357.06	-5.58
Skim Milk Powder (00 kg)	197.89	203.89	3.03	198.12	220.24	11.17	200.90	230.38	14.67	202.43	235.76	16.46	202.53	242.66	19.82
Whole Milk Powder (00 kg)	252.96	255.30	0.92	250.90	247.34	-1.42	258.73	250.67	-3.12	259.20	251.54	-2.95	257.69	260.76	1.19
Fat (per hl of milk)	9.64	6.69	-30.57	9.64	5.67	-41.20	9.64	5.04	-47.74	9.64	4.95	-48.62	9.33	5.47	-41.37
Solid Nonfat (per hl of milk)	21.36	21.41	0.25	21.36	22.17	3.78	21.36	22.61	5.84	21.36	22.83	6.88	20.67	22.57	9.21
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	31.00	28.11	-9.33	31.00	27.84	-10.21	31.00	27.64	-10.82	31.00	27.78	-10.38	30.00	28.04	-6.52
Gross Margin (local currency)															
Butter (00 kg)	127.66	135.11	5.84	125.51	134.77	7.38	122.78	132.39	7.83	121.76	130.56	7.23	119.35	126.30	5.82
Cheese (00 kg)	173.52	159.82	-7.89	170.48	160.04	-6.12	169.78	160.23	-5.63	167.43	162.06	-3.21	160.44	163.28	1.77
Skim Milk Powder (00 kg)	-18.29	-13.84	-24.33	-17.68	-7.09	-59.91	-15.36	-2.87	-81.30	-13.90	-0.52	-36.24	-8.54	6.11	-171.50
Whole Milk Powder (00 kg)	22.79	38.14	67.39	21.05	32.40	53.91	26.25	34.66	32.03	26.30	34.01	29.30	29.90	38.96	30.31
Net trade (KT)															
Butter	89.50	35.21	-60.66	90.30	37.33	-58.66	93.57	21.86	-76.63	86.39	11.06	-87.19	73.04	14.24	-80.50
Cheese	266.87	-206.84	-177.51	269.89	-173.03	-164.11	275.90	-179.22	-164.96	292.64	-69.35	-123.70	290.03	165.88	-42.81
Skim Milk Powder	162.89	224.56	37.86	159.28	319.99	100.90	169.72	351.52	107.12	159.99	352.24	120.16	122.75	340.33	177.25
Whole Milk Powder	445.31	614.11	37.91	464.47	584.78	25.90	483.63	568.18	17.48	502.79	579.93	15.34	521.96	623.06	19.37

Japan

Free Trade Phased-in	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	83.38	91.34	9.55	83.56	87.32	4.50	83.78	82.81	-1.16	84.24	78.00	-7.40	79.78	68.00	-14.76
Cheese	44.09	44.00	-0.20	46.29	44.00	-4.95	48.33	44.00	-8.96	50.29	44.00	-12.51	52.27	44.00	-15.82
Skim Milk Powder	197.10	212.08	7.60	201.09	206.03	2.46	205.08	200.62	-2.17	209.05	194.32	-7.05	213.01	187.62	-11.92
Whole Milk Powder	53.00	69.73	31.56	53.00	77.66	46.52	53.00	60.33	13.82	53.00	40.60	-23.40	53.00	21.22	-59.96
Milk	8588.61	8943.54	4.13	8657.16	8977.77	3.70	8724.24	8814.59	1.04	8791.37	8617.36	-1.98	8859.83	8419.13	-4.97
Fat	317.78	330.91	4.13	320.31	332.18	3.70	322.80	326.14	1.04	325.28	318.84	-1.98	327.81	311.51	-4.97
Solid Nonfat	752.92	784.03	4.13	758.93	787.03	3.70	764.81	772.73	1.04	770.69	755.44	-1.98	776.69	738.06	-4.97
Demand (KT)															
Butter	83.48	81.06	-2.90	83.66	90.49	8.17	83.88	103.35	23.22	84.34	122.68	45.46	79.88	147.14	84.20
Cheese	232.00	236.18	1.80	239.95	269.28	12.22	247.98	326.06	31.48	255.97	437.35	70.86	263.97	774.08	193.25
Skim Milk Powder	251.96	263.71	4.66	254.05	291.21	14.63	258.22	326.32	26.37	260.62	366.57	40.65	264.35	424.83	60.71
Whole Milk Powder	53.00	52.21	-1.49	53.00	50.97	-3.83	53.00	59.46	12.20	53.00	73.89	39.41	53.00	101.92	92.30
Fat	317.78	330.91	4.13	320.31	332.18	3.70	322.80	326.14	1.04	325.28	318.84	-1.98	327.81	311.51	-4.97
Solid Nonfat	752.92	784.03	4.13	758.93	787.03	3.70	764.81	772.73	1.04	770.69	755.44	-1.98	776.69	738.06	-4.97
Price (local currency)															
Butter (00 kg)	96400.00	101802.30	5.60	96400.00	83353.34	-13.53	96400.00	65489.36	-32.06	96400.00	48162.02	-50.04	96400.00	31102.44	-67.74
Cheese (00 kg)	183955.50	179185.27	-2.59	183955.50	155263.75	-15.60	183955.50	122997.50	-33.14	183955.50	83674.21	-54.51	183955.50	37809.87	-79.45
Skim Milk Powder (00 kg)	54564.00	50756.49	-6.98	54564.00	43933.25	-19.48	54564.00	37631.56	-31.03	54564.00	31750.59	-41.81	54564.00	25696.34	-52.91
Whole Milk Powder (00 kg)	77960.00	79835.85	2.41	77960.00	82945.03	6.39	77960.00	64942.94	-16.70	77960.00	46008.60	-40.98	77960.00	27612.06	-64.58
Fat (per hl of milk)	2490.94	2450.48	-1.62	2490.94	1747.46	-29.85	2490.94	1093.83	-56.09	2490.94	485.89	-80.49	2490.94	-97.79	-103.93
Solid Nonfat (per hl of milk)	5896.06	4343.37	-26.33	5896.06	4516.16	-23.40	5896.06	4688.31	-20.48	5896.06	4972.88	-15.66	5896.06	5275.10	-10.53
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	8387.00	6793.86	-19.00	8387.00	6263.62	-25.32	8387.00	5782.13	-31.06	8387.00	5458.77	-34.91	8387.00	5177.31	-38.27
Gross Margin (local currency)															
Butter (00 kg)	40715.40	47338.33	16.27	40674.72	43804.91	7.70	40553.06	39745.00	-12.81	40472.12	35286.23	-12.81	40391.34	30598.89	-24.24
Cheese (00 kg)	146409.88	145842.19	-0.39	146263.62	127335.00	-12.94	145826.14	100124.12	-31.34	145535.07	65649.45	-54.89	145244.58	24725.25	-82.98
Skim Milk Powder (00 kg)	8468.63	3981.05	-147.01	8460.17	4353.62	-48.54	8434.87	-12141.04	43.94	-8418.03	-20665.20	145.49	-8401.23	-29511.04	251.27
Whole Milk Powder (00 kg)	14305.78	28215.65	97.23	14291.49	34793.55	143.46	14248.75	20341.09	42.76	14220.31	3909.05	-72.51	14191.92	-12234.83	-186.21
Net trade (KT)															
Butter	-0.10	10.15	-10253.89	-0.10	-7.42	7318.13	-0.10	-24.66	24555.96	-0.10	-48.96	48857.81	-0.10	-83.70	83604.83
Cheese	-187.92	-192.48	2.42	-193.66	-226.49	16.96	-199.65	-284.03	42.26	-205.68	-396.89	92.96	-211.71	-740.94	249.98
Skim Milk Powder	-54.86	-52.92	-3.54	-52.96	-86.53	63.38	-53.14	-126.63	138.30	-51.57	-172.66	234.81	-51.34	-237.71	363.00
Whole Milk Powder	0.00	17.52	n/a	0.00	26.69	n/a	0.00	0.86	n/a	0.00	-33.29	n/a	0.00	-80.70	n/a

New Zealand

Free Trade Phased-in Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	391.52	383.15	-2.14	405.66	405.05	-0.15	406.11	418.17	2.97	401.62	433.59	7.96	411.95	463.72	12.57
Cheese	339.30	418.48	23.34	348.13	470.44	35.91	362.25	530.13	46.34	387.38	601.26	55.21	394.09	663.70	68.41
Skim Milk Powder	204.66	223.38	9.15	210.68	257.72	22.33	198.05	277.95	40.34	185.58	312.16	68.21	186.55	360.42	93.20
Whole Milk Powder	474.01	463.21	-2.28	468.60	471.57	0.63	490.22	522.51	6.59	512.27	567.43	10.77	527.33	619.36	17.45
Milk	12467.91	12755.49	2.31	12718.05	13478.62	5.98	12900.76	14289.01	10.76	13147.02	15261.83	16.09	13447.53	16422.48	22.12
Fat	623.40	637.77	2.31	635.90	673.93	5.98	645.04	714.45	10.76	657.35	763.09	16.09	672.38	821.12	22.12
Solid Nonfat	1190.75	1218.21	2.31	1214.64	1287.28	5.98	1232.09	1364.67	10.76	1255.61	1457.58	16.09	1284.31	1568.43	22.12
Demand (KT)															
Butter	31.82	30.19	-5.11	31.89	28.86	-9.52	31.93	27.52	-13.82	31.85	26.16	-17.85	31.81	24.87	-21.82
Cheese	42.44	39.91	-5.95	44.54	40.50	-9.07	46.51	41.05	-11.74	46.42	39.87	-14.10	46.48	38.61	-16.92
Skim Milk Powder	8.01	7.91	-1.28	8.03	7.66	-4.55	8.04	7.41	-7.84	8.03	7.12	-11.36	8.01	6.88	-14.12
Whole Milk Powder	0.80	0.80	-0.62	0.80	0.77	-3.66	0.80	0.74	-7.53	0.80	0.72	-10.40	0.80	0.69	-13.89
Fat	623.40	637.77	2.31	635.90	673.93	5.98	645.04	714.45	10.76	657.35	763.09	16.09	672.38	821.12	22.12
Solid Nonfat	1190.75	1218.21	2.31	1214.64	1287.28	5.98	1232.09	1364.67	10.76	1255.61	1457.58	16.09	1284.31	1568.43	22.12
Price (local currency)															
Butter (00 kg)	302.80	340.21	12.35	306.50	382.77	24.89	316.06	439.90	39.18	333.07	515.57	54.79	350.92	606.38	72.80
Cheese (00 kg)	397.95	464.02	16.60	411.65	522.09	26.83	429.44	586.73	36.63	452.08	661.07	46.23	463.70	737.15	58.97
Skim Milk Powder (00 kg)	292.77	301.29	2.91	302.03	334.96	10.90	316.11	379.02	30.74	335.61	438.77	30.74	357.21	500.98	40.25
Whole Milk Powder (00 kg)	321.80	326.27	1.39	329.62	358.09	8.64	348.44	414.65	19.00	369.09	471.35	27.71	386.12	538.33	39.42
Fat (per hl of milk)	9.83	12.55	27.77	9.94	14.81	49.02	9.93	17.27	74.00	10.18	20.37	100.11	10.38	24.31	134.14
Solid Nonfat (per hl of milk)	19.59	19.19	-2.07	19.82	19.96	0.70	19.79	20.66	4.36	20.30	21.89	7.84	20.70	22.88	10.55
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	29.42	31.74	7.90	29.76	34.77	16.84	29.72	37.93	27.62	30.48	42.26	38.66	31.08	47.19	51.83
Gross Margin (local currency)															
Butter (00 kg)	115.53	111.16	-3.78	114.90	114.58	-0.28	120.40	126.69	5.22	128.15	144.83	13.02	136.90	163.91	19.73
Cheese (00 kg)	239.47	280.79	17.25	245.09	309.94	26.46	254.53	342.11	34.41	265.37	376.95	42.05	267.91	408.57	52.50
Skim Milk Powder (00 kg)	81.11	90.88	12.04	85.24	109.78	28.79	94.85	136.54	43.94	104.32	170.36	63.30	115.82	206.53	78.32
Whole Milk Powder (00 kg)	106.11	100.47	-5.31	108.65	110.20	1.43	121.53	138.38	13.86	131.45	160.23	21.89	139.05	187.07	34.53
Net trade (KT)															
Butter	319.71	315.88	-1.20	333.77	337.52	1.12	334.19	351.01	5.03	329.77	366.93	11.27	340.14	398.52	17.16
Cheese	296.52	378.63	27.69	301.23	429.53	42.59	315.37	488.49	54.89	340.57	580.65	64.62	347.21	624.52	79.87
Skim Milk Powder	196.65	215.42	9.54	202.66	250.24	23.48	190.01	270.42	42.32	177.56	304.62	71.56	178.54	352.92	97.67
Whole Milk Powder	473.21	462.41	-2.28	467.80	470.80	0.64	489.42	521.77	6.61	511.47	586.71	10.80	526.53	618.67	17.50

United States

Free Trade Phased-in Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	523.24	514.05	-1.76	486.94	424.23	-12.88	469.31	387.62	-17.41	484.20	410.33	-15.26	489.87	438.92	-10.40
Cheese	3858.00	3756.36	-2.63	3985.82	3853.00	-3.33	4057.96	3969.53	-2.18	4141.90	4115.04	-0.65	4200.89	4202.56	0.04
Skim Milk Powder	512.70	438.88	-14.40	478.04	277.95	-41.86	480.58	247.75	-46.21	478.03	314.74	-34.16	474.81	371.41	-21.78
Whole Milk Powder	62.30	6.00	-90.37	61.68	6.00	-90.27	61.06	6.00	-90.17	60.45	13.53	77.62	59.85	68.93	15.17
Milk	75044.94	73637.67	-1.88	75954.16	73101.86	-3.76	76982.66	74010.95	-3.86	77727.93	75511.71	-2.85	78683.62	77615.62	-1.36
Fat	2769.16	2717.23	-1.88	2795.11	2690.15	-3.76	2809.87	2701.40	-3.86	2844.84	2763.73	-2.85	2871.95	2832.97	-1.36
Solid Nonfat	6574.27	6450.98	-1.88	6649.34	6399.64	-3.76	6725.45	6465.83	-3.86	6795.24	6601.50	-2.85	6874.05	6780.75	-1.36
Demand (KT)															
Butter	542.46	536.12	-1.17	515.77	530.59	2.87	502.78	541.02	7.61	502.12	526.15	4.79	502.15	508.29	1.22
Cheese	3950.99	4104.36	3.88	4078.81	4306.16	5.57	4150.94	4333.16	4.39	4234.89	4297.09	1.47	4293.86	4282.75	-0.26
Skim Milk Powder	376.01	408.00	8.51	341.05	395.70	16.03	321.70	363.01	12.84	335.33	366.39	9.26	329.22	347.35	5.51
Whole Milk Powder	51.87	55.90	7.77	51.25	55.61	8.50	50.63	53.30	5.26	50.02	51.72	3.41	49.41	49.16	-0.50
Fat	2769.16	2717.23	-1.88	2795.11	2690.15	-3.76	2809.87	2701.40	-3.86	2844.84	2763.73	-2.85	2871.95	2832.97	-1.36
Solid Nonfat	6574.27	6450.98	-1.88	6649.34	6399.64	-3.76	6725.45	6465.83	-3.86	6795.24	6601.50	-2.85	6874.05	6780.75	-1.36
Price (local currency)															
Butter (00 kg)	293.42	298.51	1.73	302.59	290.35	-4.05	322.54	289.89	-10.12	319.71	298.71	-6.57	321.44	315.82	-1.75
Cheese (00 kg)	341.12	320.14	-6.15	360.51	329.35	-8.64	369.82	344.27	-6.91	371.61	362.69	-2.40	382.28	383.93	0.43
Skim Milk Powder (00 kg)	252.81	222.97	-11.81	281.48	223.94	-20.44	278.45	231.22	-16.96	281.06	245.25	-12.74	283.36	260.93	-7.92
Whole Milk Powder (00 kg)	278.25	247.97	-10.88	278.25	245.41	-11.80	278.25	257.13	-7.59	278.25	264.27	-5.02	278.25	280.38	0.77
Fat (per hl of milk)	9.47	9.81	3.61	9.75	9.76	0.10	9.95	9.18	-7.79	10.18	9.89	-2.90	10.51	10.72	2.06
Solid Nonfat (per hl of milk)	22.48	20.95	-6.80	23.19	21.34	-7.99	23.83	23.26	-2.37	24.32	23.98	-1.38	25.14	24.98	-0.64
Fluid Milk (hl)	34.70	33.41	-3.72	35.77	33.77	-5.60	36.68	35.23	-3.97	37.47	36.78	-1.83	38.71	38.77	0.16
Industrial Milk (hl)	31.95	30.76	-3.72	32.94	31.10	-5.60	33.78	32.44	-3.97	34.50	33.87	-1.83	35.65	35.71	0.16
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	66.35	65.02	-2.01	66.82	57.70	-13.65	75.68	63.80	-15.70	68.77	58.02	-15.62	62.98	55.57	-11.76
Cheese (00 kg)	146.76	131.98	-10.07	154.75	135.44	-12.48	155.04	142.18	-8.29	150.77	146.86	-2.59	151.32	151.56	0.16
Skim Milk Powder (00 kg)	9.15	-1.58	-117.30	25.03	-4.07	-116.26	16.70	-14.25	-185.38	14.50	-9.25	-163.80	9.31	-5.72	-161.42
Whole Milk Powder (00 kg)	28.76	12.37	-56.97	22.14	7.90	-64.34	16.14	7.73	-52.13	12.02	5.20	-56.77	5.21	6.53	25.36
Net trade (KT)															
Butter	-19.22	-21.82	13.52	-28.83	-106.22	268.45	-33.47	-153.54	358.75	-17.92	-115.34	543.61	-12.28	69.03	462.14
Cheese	-92.99	-356.19	283.04	-92.99	-453.31	387.48	-92.99	-356.20	283.05	-92.99	-171.61	84.55	-92.99	-78.50	-15.58
Skim Milk Powder	136.69	29.80	-78.20	136.99	-108.69	-179.94	138.87	-108.38	-178.04	142.69	-52.58	-136.85	145.59	21.75	-85.06
Whole Milk Powder	10.43	-48.40	-564.05	10.43	-49.60	-575.62	10.43	-47.25	-553.02	10.43	-38.51	-469.25	10.43	18.51	77.49

Rest of the World

Free Trade Phased-In Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	3847.98	3763.72	-2.45	3930.35	3825.28	-2.67	4034.10	3928.28	-2.62	4091.58	3981.57	-2.69	4151.64	4000.19	-3.65
Cheese	3240.68	3571.03	10.19	3373.52	3759.16	11.43	3426.71	3784.98	10.46	3452.46	3715.00	7.60	3556.47	3862.92	8.62
Skim Milk Powder	960.45	939.96	-2.13	920.21	906.47	-1.49	941.13	913.37	-2.95	974.57	894.45	-8.22	971.30	838.45	-13.68
Whole Milk Powder	980.33	826.59	-15.68	1007.85	823.04	-18.34	1030.31	820.48	-20.37	1050.21	822.88	-21.65	1063.47	738.27	-30.58
Milk	322907.96	322741.51	-0.05	332448.23	332313.50	-0.04	340994.26	340538.75	-0.13	349186.66	347864.35	-0.38	357016.04	354654.28	-0.66
Fat	12948.30	12941.62	-0.05	13330.85	13325.45	-0.04	13673.54	13655.27	-0.13	14002.05	13949.02	-0.38	14316.00	14221.29	-0.66
Solid Nonfat	28911.15	28896.25	-0.05	29765.33	29753.27	-0.04	30530.49	30489.70	-0.13	31263.98	31145.59	-0.38	31964.98	31753.52	-0.66
Demand (KT)															
Butter	4356.01	4243.33	-2.59	4444.77	4268.72	-3.96	4545.69	4317.27	-5.03	4605.41	4388.45	-4.71	4673.38	4448.45	-4.81
Cheese	3696.42	3529.72	-4.51	3831.25	3630.25	-5.25	3915.85	3725.25	-4.87	4002.76	3858.94	-3.59	4102.88	3932.47	-4.15
Skim Milk Powder	1656.58	1680.65	1.45	1628.67	1656.59	1.71	1646.69	1694.26	2.28	1661.17	1711.47	3.03	1638.00	1703.64	4.01
Whole Milk Powder	2029.59	2062.85	1.64	2062.68	2101.95	1.90	2135.33	2181.43	2.16	2199.68	2255.32	2.53	2244.61	2323.52	3.52
Fat	12948.30	12941.62	-0.05	13330.85	13325.45	-0.04	13673.54	13655.27	-0.13	14002.05	13949.02	-0.38	14316.00	14221.29	-0.66
Solid Nonfat	28911.15	28896.25	-0.05	29765.33	29753.27	-0.04	30530.49	30489.70	-0.13	31263.98	31145.59	-0.38	31964.98	31753.52	-0.66
Price (local currency)															
Butter (00 kg)	249.81	259.34	3.81	254.03	269.13	5.94	262.93	283.02	7.64	280.05	300.03	7.14	294.34	315.82	7.30
Cheese (00 kg)	299.57	328.53	9.67	312.26	347.79	11.38	331.26	366.03	10.49	352.00	378.73	7.59	352.70	383.93	8.85
Skim Milk Powder (00 kg)	238.78	227.57	-4.70	247.62	233.98	-5.51	262.85	243.81	-7.24	282.00	255.31	-9.47	297.44	260.93	-12.27
Whole Milk Powder (00 kg)	250.94	237.71	-5.27	260.53	244.65	-6.09	284.21	264.67	-6.87	295.10	271.53	-7.99	314.61	280.38	-10.88
Fat (per hl of milk)	17.04	17.91	5.09	17.15	18.36	7.05	17.04	18.52	8.70	17.47	18.98	8.63	17.72	19.50	10.03
Solid Nonfat (per hl of milk)	40.33	39.39	-2.34	40.59	39.36	-3.03	40.32	38.68	-4.08	41.35	39.39	-4.75	41.95	39.47	-5.91
Fluid Milk (hl)															
Industrial Milk (hl)															
Blended Milk Price (hl)	57.37	57.30	-0.13	57.73	57.71	-0.04	57.36	57.20	-0.28	58.83	58.37	-0.78	59.67	58.97	-1.18
Gross Margin (local currency)															
Butter (00 kg)	-76.29	-81.96	7.43	-73.13	-79.45	8.64	-63.22	-69.58	10.07	-55.83	-62.44	11.85	-48.09	-57.20	18.94
Cheese (00 kg)	28.61	48.47	69.45	36.48	59.67	63.58	51.36	72.90	41.96	60.65	76.44	26.04	57.15	75.58	32.25
Skim Milk Powder (00 kg)	-144.95	-146.18	0.85	-137.18	-138.00	0.60	-120.79	-122.46	1.38	-112.16	-116.98	4.30	-103.30	-111.29	7.73
Whole Milk Powder (00 kg)	-130.97	-140.22	7.06	-122.88	-134.00	9.05	-100.45	-113.07	12.56	-98.23	-111.90	13.92	-86.64	-106.20	22.57
Net trade (KT)															
Butter	-511.04	-491.03	-3.92	-512.43	-441.23	-13.89	-509.59	-387.16	-24.03	-511.81	-405.79	-20.72	-520.74	-447.42	-14.08
Cheese	-453.35	47.56	-110.49	-454.93	130.17	-128.61	-486.91	58.98	-112.11	-547.61	-144.77	-73.56	-543.25	-85.26	-87.99
Skim Milk Powder	-896.13	-743.24	6.77	-708.46	-749.76	5.83	-705.50	-770.43	9.20	-886.59	-815.51	18.78	-666.88	-864.69	29.66
Whole Milk Powder	-1049.27	-1235.50	17.75	-1054.83	-1277.71	21.13	-1105.03	-1359.74	23.06	-1149.47	-1431.47	24.53	-1181.15	-1583.88	34.10

World

Free Trade Phased-in Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	6964.33	6960.50	-0.05	7024.39	7004.80	-0.28	7104.99	7090.99	-0.20	7156.17	7162.27	0.09	7220.52	7209.72	-0.15
Cheese	15019.77	15282.03	1.75	15380.22	15736.83	2.32	15613.16	16024.39	2.63	15861.48	16304.71	2.79	16141.16	16770.04	3.90
Skim Milk Powder	3343.58	3402.20	1.75	3249.24	3311.76	1.92	3209.70	3302.06	2.88	3198.96	3338.91	4.37	3157.07	3348.52	6.06
Whole Milk Powder	2710.02	2737.26	1.01	2744.83	2779.41	1.26	2827.57	2876.60	1.73	2903.80	2976.02	2.49	2956.70	3069.77	3.82
Milk	559539.96	561796.02	0.40	570445.77	572995.57	0.45	580355.78	583357.91	0.52	589756.78	593516.23	0.64	599332.54	604441.46	0.85
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand (KT)															
Butter	6910.75	6883.40	-0.40	6969.39	6941.97	-0.39	7056.00	7039.12	-0.24	7114.16	7123.65	0.13	7172.51	7165.49	-0.10
Cheese	15018.69	15272.85	1.69	15380.29	15731.29	2.28	15614.51	16024.94	2.63	15864.96	16308.58	2.80	16145.75	16766.23	3.84
Skim Milk Powder	3308.87	3364.31	1.68	3236.65	3314.73	2.41	3211.67	3307.80	2.99	3226.28	3359.38	4.13	3186.19	3371.32	5.81
Whole Milk Powder	2710.02	2741.17	1.15	2744.83	2781.77	1.35	2827.57	2878.46	1.80	2903.80	2976.26	2.50	2956.70	3069.45	3.81
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Price (local currency)															
Butter (00 kg)	156.13	175.23	12.23	158.77	197.89	24.64	164.33	228.25	38.89	175.03	267.89	53.05	183.96	315.82	71.68
Cheese (00 kg)	187.23	221.98	18.56	195.16	255.73	31.04	207.04	295.19	42.57	220.00	338.15	53.70	220.44	383.93	74.17
Skim Milk Powder (00 kg)	149.24	153.77	3.03	154.76	172.04	11.17	164.28	196.62	19.69	176.25	227.95	29.34	185.90	260.93	40.36
Whole Milk Powder (00 kg)	158.84	160.61	2.41	162.83	179.89	10.48	177.63	213.45	20.16	184.44	242.43	31.44	196.63	280.38	42.59
Fat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)															
Butter (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net trade (KT)															
Butter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SCENARIO 3

50 PERCENT TARIFF CUT WITH A MAXIMUM TARIFF OF 50 PERCENT

Australia

50% Tariff Cut with 50% Max.		2001			2002			2003			2004			2005		
Supply (KT)		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter		180.45	188.86	4.66	185.24	201.83	8.96	184.50	203.26	10.17	183.09	203.27	11.02	189.77	208.77	10.01
Cheese		364.64	444.18	21.81	375.26	461.47	22.97	400.86	485.62	21.14	428.32	505.25	17.96	438.02	512.08	16.91
Skim Milk Powder		263.12	306.41	16.45	271.78	330.71	21.68	269.25	330.16	22.62	268.95	328.78	22.24	279.93	335.97	20.02
Whole Milk Powder		154.92	232.88	50.33	147.27	237.52	61.28	157.18	257.17	63.62	160.91	262.82	63.34	158.84	263.22	65.71
Milk		11079.68	12306.61	11.07	11267.58	12806.55	13.66	11594.49	13235.71	14.16	11890.82	13517.34	13.68	12135.09	13734.36	13.18
Fat		455.37	505.80	11.07	463.10	526.35	13.66	476.53	543.99	14.16	488.71	555.56	13.68	498.75	564.48	13.18
Solid Nonfat		998.69	1109.29	11.07	1015.63	1154.35	13.66	1045.10	1193.03	14.16	1071.81	1218.42	13.68	1093.83	1237.97	13.18
Demand (KT)																
Butter		68.10	58.75	-13.73	68.21	59.26	-13.11	69.34	60.34	-12.98	69.66	61.05	-12.36	70.08	61.86	-11.73
Cheese		197.06	177.15	-10.11	208.71	188.04	-9.90	216.73	196.13	-9.50	219.44	200.59	-8.59	232.03	212.78	-8.30
Skim Milk Powder		36.80	33.34	-9.41	37.19	33.57	-9.73	37.71	34.25	-9.17	37.87	34.63	-8.56	38.03	35.11	-7.67
Whole Milk Powder		33.22	24.36	-26.68	33.75	24.68	-26.87	34.25	24.62	-28.13	34.75	24.84	-28.51	35.24	24.99	-29.09
Fat		455.37	505.80	11.07	463.10	526.35	13.66	476.53	543.99	14.16	488.71	555.56	13.68	498.75	564.48	13.18
Solid Nonfat		998.69	1109.29	11.07	1015.63	1154.35	13.66	1045.10	1193.03	14.16	1071.81	1218.42	13.68	1093.83	1237.97	13.18
Price (local currency)																
Butter (00 kg)		240.28	333.65	38.86	244.02	333.50	36.67	252.68	344.12	36.19	266.52	357.34	34.08	282.17	372.32	31.95
Cheese (00 kg)		367.76	479.99	30.52	379.68	492.76	29.78	396.95	509.52	28.36	417.75	522.94	25.18	429.01	532.72	24.17
Skim Milk Powder (00 kg)		226.80	282.51	24.56	235.28	295.35	25.53	248.42	307.65	23.84	266.35	324.94	22.00	283.80	338.83	19.39
Whole Milk Powder (00 kg)		114.01	227.19	99.27	114.01	228.54	100.45	114.01	237.51	108.32	114.01	240.36	110.82	114.01	244.73	114.65
Fat (per hl of milk)		7.79	12.22	56.93	7.65	11.47	49.83	7.50	11.29	50.46	7.79	11.45	46.88	7.92	11.58	46.25
Solid Nonfat (per hl of milk)		16.55	17.81	7.58	16.27	16.35	0.52	15.94	15.59	-2.20	16.56	16.12	-2.64	16.82	16.30	-3.12
Fluid Milk (hl)		53.97	66.58	23.37	55.75	64.84	16.30	57.62	66.06	14.65	59.49	67.35	13.20	59.50	67.05	12.68
Industrial Milk (hl)		24.34	30.03	23.37	23.92	27.82	16.30	23.44	26.87	14.65	24.35	27.57	13.20	24.74	27.88	12.68
Blended Milk Price (hl)																
Gross Margin (local currency)																
Butter (00 kg)		72.03	78.84	9.46	75.46	88.90	17.81	82.69	97.88	18.37	87.10	103.44	18.76	95.23	110.61	16.15
Cheese (00 kg)		222.15	286.55	28.99	227.79	297.59	30.64	236.90	305.53	28.97	244.74	307.03	25.45	246.78	306.74	24.30
Skim Milk Powder (00 kg)		45.34	80.39	77.30	53.56	101.28	89.07	65.24	114.55	75.59	72.68	121.11	51.00	82.26	127.63	55.16
Whole Milk Powder (00 kg)		-50.59	12.54	-124.78	-46.88	26.20	-155.89	-42.87	38.09	-188.86	-46.96	35.55	-175.70	-48.08	36.44	-175.79
Net trade (KT)																
Butter		120.76	143.53	18.86	117.04	140.02	19.63	115.15	140.79	22.27	113.42	140.08	23.50	119.69	146.95	22.77
Cheese		167.58	275.69	64.51	166.55	266.49	60.01	184.13	283.38	53.90	208.89	298.78	43.03	205.99	300.20	45.74
Skim Milk Powder		226.32	275.42	21.69	234.60	295.83	26.10	231.54	294.48	27.18	231.08	292.94	26.77	241.90	300.74	24.32
Whole Milk Powder		121.70	213.20	75.19	113.51	210.71	85.63	122.93	231.03	87.93	126.16	236.35	87.34	123.61	238.21	92.71

Canada

50% Tariff Cut with 50% Max.		2001			2002			2003			2004			2005		
Supply (KT)		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter		82.82	76.38	-7.78	83.41	75.55	-9.43	84.05	76.45	-9.04	84.00	78.83	-6.16	85.68	82.79	-3.37
Cheese		346.87	285.06	-17.82	350.18	281.71	-19.55	353.14	282.61	-19.97	356.12	282.69	-20.62	359.75	278.70	-22.53
Skim Milk Powder		61.17	23.51	-61.56	61.77	18.64	-69.82	63.11	19.71	-68.77	62.39	22.64	-63.71	65.31	26.91	-58.80
Whole Milk Powder		17.02	2.00	-88.25	17.02	2.00	-88.25	17.02	2.00	-88.25	17.02	2.00	-88.25	17.02	2.00	-88.25
Milk		8150.86	7437.32	-8.75	8200.59	7408.24	-9.66	8259.37	7460.24	-9.68	8312.98	7548.97	-9.21	8390.43	7619.54	-9.19
Fat		309.73	282.62	-8.75	312.44	282.25	-9.66	315.51	284.98	-9.68	318.39	289.05	-9.21	322.19	292.59	-9.19
Solid Nonfat		719.46	656.48	-8.75	724.34	654.36	-9.66	730.03	659.40	-9.68	735.27	667.52	-9.21	742.63	674.40	-9.19
Demand (KT)																
Butter		81.43	92.86	14.04	82.16	95.56	16.31	82.80	95.16	14.93	83.74	94.14	12.41	84.43	92.69	9.78
Cheese		340.48	421.75	23.87	343.99	435.55	26.62	438.50	442.09	26.85	353.18	450.52	27.56	356.93	465.34	30.37
Skim Milk Powder		33.02	36.57	10.74	33.26	37.38	12.38	33.53	37.83	12.83	33.85	37.82	11.74	34.17	38.17	11.72
Whole Milk Powder		18.41	19.99	8.55	18.41	20.42	10.93	18.41	20.19	9.66	18.41	20.25	9.98	18.41	20.16	9.51
Fat		309.73	282.62	-8.75	312.44	282.25	-9.66	315.51	284.98	-9.68	318.39	289.05	-9.21	322.19	292.59	-9.19
Solid Nonfat		719.46	656.48	-8.75	724.34	654.36	-9.66	730.03	659.40	-9.68	735.27	667.52	-9.21	742.63	674.40	-9.19
Price (local currency)																
Butter (00 kg)		553.00	458.38	-17.11	555.00	447.27	-19.41	557.00	456.59	-18.03	559.00	472.94	-15.40	561.00	491.00	-12.48
Cheese (00 kg)		780.00	579.40	-25.72	810.00	583.62	-27.95	838.00	602.23	-28.13	865.00	616.85	-28.69	896.00	619.91	-30.81
Skim Milk Powder (00 kg)		479.00	390.56	-18.46	503.00	398.26	-20.82	524.00	411.57	-21.46	539.00	431.68	-19.91	559.00	447.88	-19.88
Whole Milk Powder (00 kg)		499.57	423.93	-15.14	517.46	420.47	-18.74	533.17	443.34	-16.85	544.56	450.23	-17.32	559.56	466.63	-16.61
Fat (per hl of milk)		17.17	13.48	-21.53	17.55	13.43	-23.50	17.98	14.20	-21.06	18.35	14.92	-18.71	18.82	15.83	-15.87
Solid Nonfat (per hl of milk)		40.27	42.33	5.13	41.16	43.43	5.53	42.17	44.06	4.49	43.03	44.62	3.70	44.11	45.22	2.51
Fluid Milk (hl)		63.49	61.69	-2.84	64.34	62.31	-3.15	65.42	63.36	-3.15	66.19	64.21	-3.00	67.44	65.42	-2.99
Industrial Milk (hl)		57.44	55.81	-2.84	58.71	56.86	-3.15	60.15	58.25	-3.15	61.38	59.54	-3.00	62.93	61.05	-2.99
Blended Milk Price (hl)																
Gross Margin (local currency)																
Butter (00 kg)		159.34	143.18	-10.14	151.81	132.09	-12.99	143.34	124.29	-13.29	136.07	123.10	-9.53	127.42	120.17	-5.69
Cheese (00 kg)		485.22	310.20	-33.32	477.22	305.52	-35.98	485.34	308.46	-36.45	491.97	307.82	-37.43	499.90	296.64	-40.66
Skim Milk Powder (00 kg)		43.40	-51.04	-217.61	55.08	-53.08	-196.37	62.62	-46.21	-173.79	66.12	-33.56	-150.75	71.47	-24.84	-134.75
Whole Milk Powder (00 kg)		61.31	4.35	-92.90	67.66	-5.16	-107.62	70.76	5.93	-91.62	71.35	4.25	-94.04	72.83	8.95	-87.71
Net trade (KT)																
Butter		0.39	-19.59	-5124.19	0.25	-20.38	-8252.51	0.25	-18.32	-7428.27	0.25	-14.01	-5703.72	0.25	-10.72	-4388.56
Cheese		3.29	-147.22	-4574.69	3.91	-152.73	-4006.24	4.15	-155.07	-3836.73	4.18	-161.94	-3974.21	4.72	-184.94	-4018.19
Skim Milk Powder		28.44	-12.41	-143.63	27.89	-19.02	-168.19	28.50	-18.91	-166.34	26.84	-16.47	-161.35	29.44	-12.82	-143.56
Whole Milk Powder		-1.38	-17.91	1197.91	-1.38	-18.41	1234.13	-1.38	-18.16	1216.01	-1.38	-18.23	1220.73	-1.38	-18.15	1214.99

European Union

50% Tariff Cut with 50% Max.	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	1854.94	1890.93	1.94	1849.23	1888.89	2.14	1843.14	1888.04	2.44	1827.44	1855.06	2.06	1811.83	1849.41	2.07
Cheese	6826.19	6623.33	-2.97	6903.02	6760.97	-2.06	6963.91	6847.12	-1.68	7045.01	6971.68	-1.04	7139.67	7125.93	-0.19
Skim Milk Powder	1144.38	1151.08	0.59	1105.67	1149.59	3.97	1072.50	1137.22	6.03	1020.39	1085.68	6.40	966.16	1046.67	8.33
Whole Milk Powder	968.44	955.27	-1.36	989.41	1002.21	1.29	1018.78	1042.46	2.32	1049.94	1103.34	5.09	1077.19	1193.25	10.77
Milk	121300.00	120065.16	-1.02	121200.00	120723.47	-0.39	120900.00	120822.91	-0.06	120700.00	121057.12	0.30	120800.00	122089.98	1.07
Fat	4997.56	4946.68	-1.02	5005.56	4985.88	-0.39	4993.17	4989.99	-0.06	4996.98	5011.76	0.30	5013.20	5066.73	1.07
Solid Nonfat	10940.98	10829.60	-1.02	10939.27	10896.26	-0.39	10912.20	10905.24	-0.06	10901.42	10933.68	0.30	10917.74	11034.33	1.07
Demand (KT)															
Butter	1747.45	1899.84	8.72	1742.93	1896.30	8.80	1739.58	1881.90	8.18	1737.04	1858.22	6.98	1730.78	1815.72	4.91
Cheese	6559.30	6884.44	4.96	6633.04	6901.61	4.05	6688.00	6924.49	3.54	6752.30	6928.96	2.61	6849.60	6938.55	1.30
Skim Milk Powder	946.49	886.86	-6.32	934.40	865.04	-7.42	905.78	836.76	-7.62	889.41	826.69	-7.05	874.41	818.11	-6.44
Whole Milk Powder	523.13	522.59	-0.10	524.94	520.62	-0.82	535.15	529.38	-1.08	547.14	537.92	-1.69	555.23	538.69	-2.98
Fat	4997.56	4946.68	-1.02	5005.56	4985.88	-0.39	4993.17	4989.99	-0.06	4996.98	5011.76	0.30	5013.20	5066.73	1.07
Solid Nonfat	10940.98	10829.60	-1.02	10939.27	10896.26	-0.39	10912.20	10905.24	-0.06	10901.42	10933.68	0.30	10917.74	11034.33	1.07
Price (local currency)															
Butter (00 kg)	362.60	298.52	-17.67	362.46	297.91	-17.81	361.92	301.43	-16.71	363.11	310.41	-14.51	356.19	318.64	-10.54
Cheese (00 kg)	384.91	341.06	-11.39	384.94	348.58	-9.45	388.41	356.09	-8.32	389.09	364.76	-6.25	378.16	366.16	-3.17
Skim Milk Powder (00 kg)	197.89	232.98	17.73	198.12	240.25	21.27	200.90	244.92	21.91	202.43	243.04	20.06	202.53	239.19	18.10
Whole Milk Powder (00 kg)	252.96	253.61	0.26	250.90	256.14	2.09	258.73	265.84	2.75	259.20	270.45	4.34	257.69	277.93	7.85
Fat (per hl of milk)	9.64	6.00	-37.82	9.64	5.93	-38.51	9.64	6.10	-36.69	9.64	6.56	-32.01	9.33	7.04	-24.52
Solid Nonfat (per hl of milk)	21.36	24.74	15.84	21.36	24.97	16.90	21.36	24.88	16.49	21.36	24.52	14.81	20.67	23.23	12.36
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	31.00	30.74	-0.85	31.00	30.90	-0.33	31.00	30.98	-0.05	31.00	31.08	0.25	30.00	30.27	0.89
Gross Margin (local currency)															
Butter (00 kg)	127.66	130.97	2.59	125.51	129.16	2.91	122.78	126.91	3.37	121.76	125.22	2.84	119.35	122.81	2.89
Cheese (00 kg)	173.52	154.85	-10.76	170.48	157.41	-7.67	169.78	159.04	-6.33	167.43	160.68	-4.03	160.44	157.18	-0.79
Skim Milk Powder (00 kg)	-18.29	-17.68	-3.37	-17.68	-13.63	-22.86	-15.36	-9.40	-38.78	-13.90	-7.90	-43.21	-8.54	-1.13	-86.73
Whole Milk Powder (00 kg)	22.79	21.57	-5.32	21.05	22.23	5.60	26.25	28.43	8.30	26.30	31.21	18.68	29.90	40.58	35.72
Net trade (KT)															
Butter	89.50	-62.75	-170.11	90.30	-14.87	-116.47	93.57	9.20	-90.17	86.39	19.52	-77.41	73.04	31.45	-56.94
Cheese	266.87	-271.02	-201.56	269.89	-135.34	-150.15	275.90	-73.22	-126.54	292.64	47.15	-83.89	290.03	188.06	-35.16
Skim Milk Powder	162.89	253.44	55.59	159.28	267.29	67.81	169.72	292.93	72.59	159.99	275.82	72.40	122.75	256.00	108.55
Whole Milk Powder	445.31	432.68	-2.84	464.47	481.59	3.69	483.63	513.08	6.09	502.79	565.41	12.45	521.96	654.56	25.40

50% Tariff Cut with 50% Max.		2001						2002						2003						2004						2005					
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %						
Supply (KT)																															
Butter		83.38	57.03	-31.60	83.56	57.82	-30.81	83.78	58.92	-29.68	84.24	60.54	-28.13	79.78	56.96	-28.61															
Cheese		44.09	44.00	-0.20	46.29	44.00	-4.95	48.33	44.00	-8.96	50.29	44.00	-12.51	52.27	44.00	-15.82															
Skim Milk Powder		197.10	147.22	-25.30	201.09	151.28	-24.77	205.08	155.97	-23.94	209.05	161.26	-22.86	213.01	165.97	-22.08															
Whole Milk Powder		53.00	5.00	-90.57	53.00	5.00	-90.57	53.00	5.00	-90.57	53.00	5.00	-90.57	53.00	5.00	-90.57															
Milk		8588.61	7659.44	-10.82	8657.16	7723.54	-10.78	8724.24	7793.62	-10.67	8791.37	7870.56	-10.47	8859.83	7943.66	-10.34															
Fat		317.78	283.40	-10.82	320.31	285.77	-10.78	322.80	288.36	-10.67	325.28	291.21	-10.47	327.81	293.92	-10.34															
Solid Nonfat		752.92	671.46	-10.82	758.93	677.08	-10.78	764.81	683.22	-10.67	770.69	689.97	-10.47	776.69	696.38	-10.34															
Demand (KT)																															
Butter		83.48	145.49	74.28	83.66	147.58	76.40	83.88	147.16	75.45	84.34	146.06	73.17	79.88	136.89	71.37															
Cheese		232.00	617.91	166.34	239.95	635.00	164.64	247.98	647.04	160.92	255.97	622.03	158.64	263.97	688.82	160.95															
Skim Milk Powder		251.96	372.29	47.76	254.05	370.29	45.75	258.22	371.11	43.72	260.62	366.02	40.44	264.35	366.88	38.78															
Whole Milk Powder		53.00	93.12	75.69	53.00	93.47	76.36	53.00	91.01	71.71	53.00	90.76	71.24	53.00	89.75	69.34															
Fat		317.78	283.40	-10.82	320.31	285.77	-10.78	322.80	288.36	-10.67	325.28	291.21	-10.47	327.81	293.92	-10.34															
Solid Nonfat		752.92	671.46	-10.82	758.93	677.08	-10.78	764.81	683.22	-10.67	770.69	689.97	-10.47	776.69	696.38	-10.34															
Price (local currency)																															
Butter (00 kg)		96400.00	34459.72	-64.25	96400.00	33697.25	-65.04	96400.00	34037.70	-64.69	96400.00	34868.93	-63.83	96400.00	35553.95	-63.12															
Cheese (00 kg)		183955.50	43557.68	-76.32	183955.50	43970.47	-76.10	183955.50	44894.72	-75.59	183955.50	45479.27	-75.28	183955.50	44888.95	-75.60															
Skim Milk Powder (00 kg)		54564.00	29361.27	-46.19	54564.00	30004.95	-45.01	54564.00	30681.81	-43.77	54564.00	31826.56	-41.67	54564.00	32431.82	-40.56															
Whole Milk Powder (00 kg)		77960.00	31870.12	-59.12	77960.00	31678.71	-59.37	77960.00	33049.91	-57.61	77960.00	33194.46	-57.42	77960.00	33789.35	-56.66															
Fat (per hl of milk)		2490.94	604.02	-75.75	2490.94	544.17	-78.15	2490.94	527.63	-78.82	2490.94	521.85	-79.05	2490.94	520.61	-79.10															
Solid Nonfat (per hl of milk)		5896.06	7544.97	27.97	5896.06	7605.60	28.99	5896.06	7624.84	29.32	5896.06	7635.05	29.49	5896.06	7639.34	29.57															
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
Blended Milk Price (hl)		8387.00	8148.99	-2.84	8387.00	8149.77	-2.82	8387.00	8152.47	-2.80	8387.00	8156.90	-2.74	8387.00	8159.94	-2.71															
Gross Margin (local currency)																															
Butter (00 kg)		40715.40	18806.85	-53.81	40674.72	19267.66	-52.63	40553.06	19879.32	-50.98	40472.12	20765.48	-48.69	40391.34	21413.93	-46.98															
Cheese (00 kg)		146409.88	19547.37	-86.65	146263.62	20249.61	-86.16	145826.14	21172.42	-85.48	145535.07	21719.34	-85.08	145244.58	21101.49	-85.47															
Skim Milk Powder (00 kg)		8468.63	49942.53	489.74	8460.17	49881.30	489.60	8434.87	49267.89	484.10	8418.03	48159.34	472.10	8401.23	47519.06	465.62															
Whole Milk Powder (00 kg)		14305.78	30270.44	-311.60	14291.49	30472.58	-313.22	14248.75	29074.71	-304.05	14220.31	28913.10	-303.32	14191.92	28301.06	-299.42															
Net trade (KT)																															
Butter		-0.10	-110.63	110528.27	-0.10	-82.46	82357.49	-0.10	-76.98	78883.39	-0.10	-75.22	75118.79	-0.10	-79.58	79482.25															
Cheese		-187.92	-603.07	220.92	-193.66	-581.18	200.10	-199.65	-592.92	196.98	-205.68	-607.54	195.38	-211.71	-644.85	204.59															
Skim Milk Powder		-54.86	-232.10	323.08	-52.96	-216.20	308.23	-53.14	-212.22	299.37	-51.57	-201.53	290.79	-51.34	-201.05	291.60															
Whole Milk Powder		0.00	-88.12	n/a	0.00	-88.47	n/a	0.00	-86.01	n/a	0.00	-85.76	n/a	0.00	-84.75	n/a															

New Zealand

50% Tariff Cut with 50% Max.	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	391.52	390.44	-0.28	405.66	420.27	3.60	406.11	425.84	4.86	401.62	425.69	5.99	411.95	435.16	5.63
Cheese	339.30	509.74	50.23	346.13	525.90	51.94	362.25	539.94	49.05	387.38	555.06	43.29	394.09	556.99	41.34
Skim Milk Powder	204.66	267.58	30.74	210.88	297.65	41.28	198.05	290.07	46.46	185.58	281.16	51.50	186.55	279.11	49.62
Whole Milk Powder	474.01	505.45	6.63	468.60	512.36	9.34	490.22	539.72	10.10	512.27	556.56	8.65	527.33	566.62	7.45
Milk	12467.91	13640.70	9.41	12718.05	14279.90	12.28	12900.76	14569.19	12.93	13147.02	14799.39	12.57	13447.53	15032.08	11.78
Fat	623.40	682.03	9.41	635.90	713.99	12.28	645.04	728.46	12.93	657.35	739.97	12.57	672.38	751.60	11.78
Solid Nonfat	1190.75	1302.75	9.41	1214.64	1363.80	12.28	1232.09	1391.43	12.93	1255.61	1413.42	12.57	1284.31	1435.64	11.78
Demand (KT)															
Butter	31.82	27.42	-13.83	31.89	27.73	-13.04	31.93	27.86	-12.76	31.85	27.98	-12.16	31.81	28.15	-11.52
Cheese	42.44	37.07	-12.66	44.54	39.08	-12.26	46.51	41.05	-11.74	46.42	41.38	-10.85	46.48	41.62	-10.47
Skim Milk Powder	8.01	7.29	-9.02	8.03	7.29	-9.21	8.04	7.35	-8.59	8.03	7.37	-8.18	8.01	7.43	-7.20
Whole Milk Powder	0.80	0.72	-9.43	0.80	0.73	-8.61	0.80	0.74	-8.04	0.80	0.74	-7.01	0.80	0.75	-6.11
Fat	623.40	682.03	9.41	635.90	713.99	12.28	645.04	728.46	12.93	657.35	739.97	12.57	672.38	751.60	11.78
Solid Nonfat	1190.75	1302.75	9.41	1214.64	1363.80	12.28	1232.09	1391.43	12.93	1255.61	1413.42	12.57	1284.31	1435.64	11.78
Price (local currency)															
Butter (00 kg)	302.80	421.47	39.19	306.50	418.15	36.43	316.06	428.08	35.44	333.07	444.30	33.40	350.92	460.62	31.26
Cheese (00 kg)	397.95	558.23	40.28	411.65	570.84	38.67	429.44	586.73	36.63	452.08	602.48	33.27	463.70	611.33	31.84
Skim Milk Powder (00 kg)	292.77	361.17	23.36	302.03	374.36	23.95	316.11	385.96	22.10	335.61	405.67	20.87	357.21	421.70	18.05
Whole Milk Powder (00 kg)	321.80	401.06	24.63	329.62	402.63	22.15	348.44	419.78	20.47	369.09	433.80	17.53	386.12	444.18	15.04
Fat (per hl of milk)	9.83	17.36	76.71	9.94	16.40	65.01	9.93	16.20	63.17	10.18	16.20	59.17	10.38	16.34	57.36
Solid Nonfat (per hl of milk)	19.59	22.34	13.99	19.82	21.29	7.41	19.79	20.55	3.85	20.30	20.73	2.10	20.70	20.65	-0.23
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	29.42	39.70	34.94	29.76	37.69	26.65	29.72	36.75	23.66	30.48	36.93	21.16	31.08	36.99	19.00
Gross Margin (local currency)															
Butter (00 kg)	115.53	114.97	-0.49	114.90	122.53	6.64	120.40	130.69	8.55	128.15	140.71	9.80	136.90	149.01	8.84
Cheese (00 kg)	239.47	328.40	37.13	245.09	338.88	38.27	254.53	347.23	36.42	265.37	352.85	32.97	267.91	325.90	31.72
Skim Milk Powder (00 kg)	81.11	113.94	40.47	85.24	130.61	53.23	94.85	142.86	50.61	104.32	154.19	47.80	115.82	164.11	41.69
Whole Milk Powder (00 kg)	106.11	122.51	15.46	108.65	131.48	21.01	121.53	147.36	21.25	131.44	154.55	17.58	139.05	159.55	14.74
Net trade (KT)															
Butter	319.71	330.38	3.34	333.77	349.32	4.66	334.19	355.22	6.29	329.77	355.14	7.69	340.14	367.00	7.90
Cheese	296.52	473.31	59.62	301.23	485.67	61.23	315.37	497.81	57.85	340.57	512.61	50.52	347.21	515.03	48.33
Skim Milk Powder	196.65	261.19	32.82	202.66	289.44	42.82	190.01	281.79	48.30	177.56	273.01	53.76	178.54	271.56	52.10
Whole Milk Powder	473.21	504.73	6.66	467.80	511.63	9.37	489.42	538.98	10.13	511.47	555.81	8.67	526.53	565.87	7.47

United States

50% Tariff Cut with 50% Max.	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	523.24	497.32	-4.95	486.94	428.42	-12.02	469.31	403.17	-14.09	484.20	435.14	-10.13	489.87	468.09	-4.44
Cheese	3858.00	3836.02	-0.57	3985.82	3916.73	-1.73	4057.96	4004.76	-1.31	4141.90	4108.83	-0.80	4200.89	4118.81	-1.95
Skim Milk Powder	512.70	446.36	-12.94	478.04	320.02	-33.06	460.58	296.93	-35.53	478.03	360.40	-24.61	474.81	386.20	-18.66
Whole Milk Powder	62.30	6.00	-90.37	61.68	11.18	-81.87	61.06	50.41	-17.45	60.45	58.53	-3.18	59.85	94.01	57.07
Milk	75044.94	73941.83	-1.47	75954.16	73767.07	-2.88	76982.66	74974.27	-2.61	77727.93	76334.99	-1.79	78883.62	77729.40	-1.21
Fat	2769.16	2728.45	-1.47	2795.11	2714.63	-2.88	2809.87	2736.56	-2.61	2844.84	2793.86	-1.79	2871.95	2837.12	-1.21
Solid Nonfat	6574.27	6477.63	-1.47	6649.34	6457.87	-2.88	6725.45	6549.99	-2.61	6795.24	6673.47	-1.79	6874.05	6790.69	-1.21
Demand (KT)															
Butter	542.46	542.01	-0.08	515.77	527.15	2.21	502.78	529.38	5.29	502.12	514.18	2.40	502.15	506.18	0.80
Cheese	3950.99	3992.01	1.04	4078.81	4200.34	2.98	4150.94	4258.34	2.59	4234.89	4289.71	1.29	4293.86	4413.04	2.78
Skim Milk Powder	376.01	402.22	6.97	341.05	382.82	12.25	321.70	350.98	9.10	335.33	357.36	6.57	329.22	345.74	5.02
Whole Milk Powder	51.87	54.89	5.82	51.25	53.87	5.11	50.63	51.59	1.89	50.02	50.37	0.69	49.41	48.83	-1.17
Fat	2769.16	2728.45	-1.47	2795.11	2714.63	-2.88	2809.87	2736.56	-2.61	2844.84	2793.86	-1.79	2871.95	2837.12	-1.21
Solid Nonfat	6574.27	6477.63	-1.47	6649.34	6457.87	-2.88	6725.45	6549.99	-2.61	6795.24	6673.47	-1.79	6874.05	6790.69	-1.21
Price (local currency)															
Butter (00 kg)	293.42	293.78	0.12	302.59	293.12	-3.13	322.54	299.24	-7.23	319.71	308.88	-3.39	321.44	317.73	-1.15
Cheese (00 kg)	341.12	335.30	-1.71	360.51	343.29	-4.78	369.82	354.41	-4.17	371.61	363.73	-2.12	382.28	365.23	-4.46
Skim Milk Powder (00 kg)	252.81	227.91	-9.85	281.48	235.64	-16.28	278.45	243.53	-12.54	281.06	254.86	-9.32	283.36	262.80	-7.26
Whole Milk Powder (00 kg)	278.25	255.04	-8.34	278.25	257.73	-7.37	278.25	270.34	-2.84	278.25	275.30	-1.06	278.25	283.34	1.83
Fat (per hl of milk)	9.47	9.73	2.74	9.75	9.85	0.99	9.95	9.47	-4.87	10.18	10.13	-0.49	10.51	10.54	0.33
Solid Nonfat (per hl of milk)	22.48	21.29	-5.30	23.19	21.69	-6.48	23.83	23.52	-1.28	24.32	24.03	-1.17	25.14	24.89	-1.03
Fluid Milk (hl)	34.70	33.69	-2.92	35.77	34.24	-4.27	36.68	35.82	-2.34	37.47	37.11	-0.97	38.71	38.47	-0.63
Industrial Milk (hl)	31.95	31.02	-2.92	32.94	31.53	-4.27	33.78	32.99	-2.34	34.50	34.17	-0.97	35.65	35.43	-0.63
Blended Milk Price (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)															
Butter (00 kg)	66.35	62.58	-5.68	66.82	58.30	-12.74	75.68	66.07	-12.71	68.77	61.63	-10.37	62.98	59.81	-5.03
Cheese (00 kg)	146.76	143.56	-2.18	154.75	144.71	-6.49	155.04	147.31	-4.99	150.77	145.96	-3.19	151.32	139.38	-7.89
Skim Milk Powder (00 kg)	9.15	-0.50	-105.42	25.03	2.05	-91.81	16.70	-7.10	-142.54	14.50	-2.61	-118.00	9.31	-3.57	-138.33
Whole Milk Powder (00 kg)	28.76	16.33	-43.20	22.14	14.80	-33.16	16.14	14.59	-9.60	12.02	11.74	-2.32	5.21	10.17	95.38
Net trade (KT)															
Butter	-19.22	-44.38	130.89	-28.83	-98.58	241.93	-33.47	-126.35	277.51	-17.92	-78.73	339.34	-12.28	-38.14	210.62
Cheese	-92.99	-158.37	70.31	-92.99	-286.84	208.46	-92.99	-249.96	168.80	-92.99	-175.33	88.54	-92.99	-296.95	219.33
Skim Milk Powder	136.69	43.58	-68.12	136.99	-56.44	-141.20	138.87	-48.59	-134.99	142.69	2.02	-98.59	145.59	39.17	-73.10
Whole Milk Powder	10.43	-47.37	-554.20	10.43	-42.93	-511.63	10.43	-2.20	-121.12	10.43	8.04	-22.91	10.43	44.59	327.48

Rest of the World

50% Tariff Cut with 50% Max.		2001			2002			2003			2004			2005		
Supply (KT)		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter		3847.98	3766.36	-2.12	3930.35	3869.94	-1.54	4034.10	3973.98	-1.49	4091.58	4027.44	-1.57	4151.64	4059.46	-2.22
Cheese		3240.88	3810.80	17.59	3373.52	3942.53	16.87	3426.71	3944.16	15.10	3452.46	3875.94	12.27	3556.47	3995.25	12.34
Skim Milk Powder		960.45	1067.19	11.11	920.21	1063.72	15.59	941.13	1062.74	12.92	974.57	1047.25	7.46	971.30	1004.39	3.41
Whole Milk Powder		980.33	1008.15	2.84	1007.85	1001.51	-0.63	1030.31	967.62	-6.08	1050.21	956.56	-8.92	1063.47	880.87	-17.17
Milk		322907.96	325726.29	0.87	332448.23	335639.52	0.96	340994.26	343544.92	0.75	349186.66	350766.91	0.45	357016.04	357619.36	0.17
Fat		12948.30	13061.31	0.87	13330.85	13458.82	0.96	13673.54	13775.82	0.75	14002.05	14065.41	0.45	14316.00	14340.19	0.17
Solid Nonfat		28911.15	29163.49	0.87	29765.33	30051.06	0.96	30530.49	30758.86	0.75	31263.98	31405.47	0.45	31964.98	32018.99	0.17
Demand (KT)																
Butter		4356.01	4004.17	-8.08	4444.77	4142.80	-6.79	4545.69	4256.22	-6.37	4605.41	4374.69	-5.01	4673.38	4477.62	-4.19
Cheese		3696.42	3390.19	-8.28	3831.25	3536.25	-7.70	3915.85	3651.46	-6.75	4002.76	3787.77	-5.37	4102.88	3876.79	-5.51
Skim Milk Powder		1656.58	1653.30	-0.16	1628.67	1623.77	-0.30	1646.69	1651.39	0.29	1661.17	1673.58	0.75	1638.00	1658.41	1.25
Whole Milk Powder		2029.59	2006.79	-1.12	2062.68	2054.35	-0.40	2135.33	2143.85	0.40	2199.68	2218.34	0.85	2244.61	2282.90	1.71
Fat		12948.30	13061.31	0.87	13330.85	13458.82	0.96	13673.54	13775.82	0.75	14002.05	14065.41	0.45	14316.00	14340.19	0.17
Solid Nonfat		28911.15	29163.49	0.87	29765.33	30051.06	0.96	30530.49	30758.86	0.75	31263.98	31405.47	0.45	31964.98	32018.99	0.17
Price (local currency)																
Butter (00 kg)		249.81	281.75	12.79	254.03	280.89	10.57	262.33	288.84	9.86	280.05	301.38	7.62	294.34	312.89	6.30
Cheese (00 kg)		299.57	356.13	18.88	312.26	366.53	17.38	331.26	380.97	15.01	352.00	393.09	11.67	352.70	395.04	12.00
Skim Milk Powder (00 kg)		238.78	240.06	0.53	247.62	250.11	1.01	262.85	260.36	-0.95	282.00	275.09	-2.45	297.44	285.41	-4.04
Whole Milk Powder (00 kg)		250.94	260.57	3.84	260.53	264.07	1.36	284.21	280.46	-1.32	295.10	286.91	-2.78	314.61	297.36	-5.48
Fat (per hl of milk)		17.04	19.00	11.49	17.15	18.77	9.47	17.04	18.62	9.30	17.47	18.85	7.87	17.72	19.08	7.67
Solid Nonfat (per hl of milk)		40.33	39.62	-1.73	40.59	39.72	-2.14	40.32	39.12	-2.98	41.35	40.10	-3.04	41.95	40.51	-3.44
Fluid Milk (hl)																
Industrial Milk (hl)																
Blended Milk Price (hl)		57.37	58.63	2.20	57.73	58.49	1.31	57.36	57.75	0.67	58.83	58.94	0.20	59.67	59.59	-0.14
Gross Margin (local currency)																
Butter (00 kg)		-76.29	-81.20	6.43	-73.13	-76.77	4.97	-63.22	-66.83	5.72	-55.83	-59.68	6.90	-48.09	-53.64	11.53
Cheese (00 kg)		28.61	62.89	119.86	36.48	70.70	93.81	51.36	82.48	60.60	60.65	86.12	42.00	57.15	83.54	46.18
Skim Milk Powder (00 kg)		-144.95	-138.53	-4.43	-137.18	-128.55	-6.29	-120.79	-113.47	-6.06	-112.16	-107.79	-3.90	-103.30	-101.31	-1.93
Whole Milk Powder (00 kg)		-130.97	-129.30	-1.28	-122.88	-123.27	0.31	-100.45	-104.22	3.75	-98.23	-103.86	5.73	-86.64	-97.62	12.68
Net trade (KT)																
Butter		-511.04	-236.56	-53.71	-512.43	-273.05	-46.71	-509.59	-281.55	-44.75	-511.81	-346.78	-32.24	-520.74	-416.95	-19.93
Cheese		-453.35	430.69	-195.00	-454.93	403.93	-188.79	-486.91	289.99	-159.56	-547.61	86.26	-115.75	-543.25	123.44	-122.72
Skim Milk Powder		-696.13	-589.12	-15.37	-708.46	-560.91	-20.83	-705.50	-589.48	-16.45	-686.59	-625.79	-8.85	-666.88	-653.59	-1.99
Whole Milk Powder		-1049.27	-997.21	-4.96	-1054.83	-1054.12	-0.07	-1105.03	-1176.71	6.49	-1149.47	-1261.63	9.76	-1181.15	-1400.32	18.56

World

50% Tariff Cut with 50% Max.	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	6964.33	6867.33	-1.39	7024.39	6942.72	-1.16	7104.99	7029.67	-1.06	7156.17	7095.96	-0.84	7220.52	7160.64	-0.83
Cheese	15019.77	15553.13	3.55	15380.22	15933.32	3.60	15613.16	16148.22	3.43	15861.48	16343.44	3.04	16141.16	16631.77	3.04
Skim Milk Powder	3343.58	3409.34	1.97	3249.24	3331.60	2.53	3209.70	3292.80	2.59	3198.96	3287.15	2.76	3157.07	3245.21	2.79
Whole Milk Powder	2710.02	2714.75	0.17	2744.83	2771.78	0.98	2827.57	2864.37	1.30	2903.80	2944.81	1.41	2956.70	3004.96	1.63
Milk	559539.96	560777.36	0.22	570445.77	572348.28	0.33	580355.78	582400.85	0.35	589756.78	591893.29	0.36	599332.54	601768.37	0.41
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand (KT)															
Butter	6910.75	6770.54	-2.03	6969.39	6896.39	-1.05	7056.00	6998.02	-0.82	7114.16	7076.30	-0.53	7172.51	7119.09	-0.74
Cheese	15018.69	15520.52	3.34	15380.29	15935.88	3.61	15614.51	16160.59	3.50	15864.96	16360.96	3.13	16145.75	16636.93	3.04
Skim Milk Powder	3308.87	3392.30	2.52	3236.85	3320.16	2.58	3211.67	3289.67	2.43	3226.28	3303.47	2.39	3186.19	3269.86	2.63
Whole Milk Powder	2710.02	2722.46	0.46	2744.83	2768.14	0.85	2827.57	2861.37	1.20	2903.80	2943.20	1.36	2956.70	3006.07	1.67
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Price (local currency)															
Butter (00 kg)	156.13	216.73	38.81	156.77	216.07	36.09	164.33	222.19	35.21	175.03	231.83	32.45	183.96	240.68	30.84
Cheese (00 kg)	187.23	273.95	46.32	195.16	281.94	44.47	207.04	293.06	41.55	220.00	302.38	37.44	220.44	303.88	37.85
Skim Milk Powder (00 kg)	149.24	184.66	23.73	154.76	192.39	24.32	164.28	200.28	21.91	176.25	211.61	20.06	185.90	219.55	18.10
Whole Milk Powder (00 kg)	156.84	200.44	27.80	162.83	203.13	24.75	177.63	215.74	21.45	184.44	220.70	19.66	196.63	228.74	16.33
Fat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)															
Butter (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net trade (KT)															
Butter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SCENARIO 4

**ELIMINATE EXPORT SUBSIDIES AND INCREASE MINIMUM ACCESS TO 7
PERCENT**

Australia

Eliminate ES and 7% MAC		2001			2002			2003			2004			2005		
	Supply (KT)	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
	Butter	180.45	187.43	3.87	185.24	191.51	3.39	184.50	190.84	3.44	183.09	188.53	2.97	189.77	193.07	1.74
	Cheese	364.64	406.39	11.45	375.26	422.22	12.51	400.86	444.83	10.97	428.32	467.37	9.12	438.02	479.95	9.57
	Skim Milk Powder	263.12	294.47	11.91	271.78	303.13	11.53	269.25	299.30	11.16	268.95	295.06	9.71	279.93	303.50	8.42
	Whole Milk Powder	154.92	160.96	3.90	147.27	156.51	6.27	157.18	166.31	5.81	160.91	170.35	5.87	158.84	165.95	4.47
	Milk	11079.68	11549.02	4.24	11267.58	11792.31	4.66	11594.49	12100.78	4.37	11890.82	12346.37	3.83	12135.09	1255.41	3.46
	Fat	455.37	474.66	4.24	463.10	484.66	4.66	476.53	497.34	4.37	488.71	507.44	3.83	498.75	516.03	3.46
	Solid Nonfat	998.69	1041.00	4.24	1015.63	1062.93	4.66	1045.10	1090.73	4.37	1071.81	1128.7	3.83	1093.83	1131.71	3.46
	Demand (KT)															
	Butter	68.10	65.91	-3.21	68.21	66.38	-2.69	69.34	67.55	-2.59	69.66	67.96	-2.44	70.08	68.27	-2.58
	Cheese	197.06	187.48	-4.86	208.71	198.26	-5.00	216.73	206.78	-4.59	219.44	210.62	-4.02	232.03	222.04	-4.31
	Skim Milk Powder	36.80	33.85	-8.03	37.19	34.71	-6.67	37.71	35.48	-5.91	37.87	36.06	-4.78	38.03	36.56	-3.87
	Whole Milk Powder	33.22	30.78	-7.34	33.75	31.62	-6.32	34.25	32.28	-5.74	34.75	32.83	-5.52	35.24	33.62	-4.59
	Fat	455.37	474.66	4.24	463.10	484.66	4.66	476.53	497.34	4.37	488.71	507.44	3.83	498.75	516.03	3.46
	Solid Nonfat	998.69	1041.00	4.24	1015.63	1062.93	4.66	1045.10	1090.73	4.37	1071.81	1128.7	3.83	1093.83	1131.71	3.46
	Price (local currency)															
	Butter (00 kg)	240.28	258.37	7.53	244.02	259.24	6.24	252.68	267.83	5.99	266.52	281.58	5.65	282.17	299.04	5.98
	Cheese (00 kg)	367.76	416.54	13.26	379.68	431.68	13.70	396.95	446.43	12.46	417.75	462.87	10.80	429.01	478.90	11.63
	Skim Milk Powder (00 kg)	226.80	273.14	20.43	235.28	274.30	16.59	248.42	284.44	14.50	266.35	296.98	11.50	283.80	309.76	9.16
	Whole Milk Powder (00 kg)	114.01	135.07	18.47	114.01	131.81	15.61	114.01	130.02	14.04	114.01	129.35	13.46	114.01	126.56	11.01
	Fat (per hl of milk)	7.79	8.36	7.28	7.65	8.11	5.98	7.50	7.95	5.93	7.79	8.28	6.23	7.92	8.61	8.80
	Solid Nonfat (per hl of milk)	16.55	18.09	9.29	16.27	17.02	4.65	15.94	16.45	3.20	16.56	16.88	1.92	16.82	16.89	0.41
	Fluid Milk (hl)	53.97	58.64	8.65	55.75	58.58	5.08	57.62	59.97	4.08	59.49	61.45	3.30	59.50	61.34	3.10
	Industrial Milk (hl)	24.34	26.45	8.65	23.92	25.14	5.08	23.44	24.395	4.08	24.35	25.15	3.30	24.74	25.51	3.10
	Blended Milk Price (hl)															
	Gross Margin (local currency)															
	Butter (00 kg)	72.03	77.68	7.85	75.46	80.54	6.73	82.69	87.83	6.21	87.10	91.50	5.06	95.23	97.91	2.81
	Cheese (00 kg)	222.15	255.96	15.22	227.79	265.81	16.69	236.90	272.50	15.03	244.74	276.37	12.92	246.78	280.73	13.76
	Skim Milk Powder (00 kg)	45.34	70.72	55.97	53.56	78.95	47.39	65.24	89.57	37.30	72.68	93.82	29.09	82.26	101.34	23.20
	Whole Milk Powder (00 kg)	-50.59	-45.70	-9.66	-46.88	-39.39	-15.96	-42.87	-35.47	-17.25	-46.96	-55.60	-16.51	-48.08	-42.32	-11.97
	Net trade (KT)															
	Butter	120.76	130.80	8.32	117.04	124.54	6.41	115.15	122.84	6.86	113.42	120.21	5.98	119.69	125.12	4.54
	Cheese	167.58	222.37	32.69	166.55	220.92	32.64	184.13	234.94	27.60	208.89	253.95	21.57	205.99	258.78	25.63
	Skim Milk Powder	226.32	262.71	16.08	234.60	266.98	13.80	231.54	262.78	13.49	231.08	258.05	11.67	241.90	267.09	10.41
	Whole Milk Powder	121.70	131.57	8.11	113.51	124.13	9.35	122.93	133.49	8.59	126.16	137.10	8.67	123.61	132.29	7.03

Canada

Eliminate ES and 7% MAC	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	82.82	81.56	-1.52	83.41	82.24	-1.41	84.05	82.87	-1.41	84.00	82.80	-1.43	85.68	84.47	-1.41
Cheese	346.87	337.44	-2.72	350.18	340.09	-2.88	353.14	343.00	-2.87	356.12	346.00	-2.84	359.75	349.83	-2.76
Skim Milk Powder	61.17	54.78	-10.45	61.77	55.31	-10.46	63.11	56.64	-10.25	62.39	55.91	-10.39	65.31	58.90	-9.81
Whole Milk Powder	17.02	17.04	0.10	17.02	17.03	0.08	17.02	17.03	0.07	17.02	17.03	0.07	17.02	17.03	0.07
Milk	8150.86	8051.26	-1.22	8200.59	8097.67	-1.25	8259.37	8156.11	-1.25	8312.98	8209.82	-1.24	8390.43	8289.09	-1.21
Fat	309.73	305.95	-1.22	312.44	308.52	-1.25	315.51	311.56	-1.25	318.39	314.44	-1.24	322.19	318.30	-1.21
Solid Nonfat	719.46	710.67	-1.22	724.34	715.25	-1.25	730.03	720.91	-1.25	735.27	726.15	-1.24	742.63	733.66	-1.21
Demand (KT)															
Butter	81.43	84.03	3.19	82.16	85.29	3.81	82.80	86.09	3.98	83.74	87.09	4.00	84.43	87.59	3.74
Cheese	340.48	351.06	3.11	343.99	355.44	3.33	348.50	360.06	3.32	353.18	364.73	3.27	356.93	368.10	3.13
Skim Milk Powder	33.02	33.39	1.12	33.26	33.55	0.88	33.53	33.81	0.83	33.85	34.14	0.85	34.17	34.49	0.93
Whole Milk Powder	18.41	18.43	0.09	18.41	18.42	0.07	18.41	18.42	0.07	18.41	18.42	0.06	18.41	18.42	0.07
Fat	309.73	305.95	-1.22	312.44	308.52	-1.25	315.51	311.56	-1.25	318.39	314.44	-1.24	322.19	318.30	-1.21
Solid Nonfat	719.46	710.67	-1.22	724.34	715.25	-1.25	730.03	720.91	-1.25	735.27	726.15	-1.24	742.63	733.66	-1.21
Price (local currency)															
Butter (00 kg)	553.00	528.76	-4.38	555.00	526.15	-5.20	557.00	526.80	-5.42	559.00	528.54	-5.45	561.00	532.31	-5.11
Cheese (00 kg)	780.00	747.54	-4.16	810.00	773.98	-4.45	838.00	800.88	-4.43	865.00	827.18	-4.37	896.00	858.47	-4.19
Skim Milk Powder (00 kg)	479.00	488.49	2.19	503.00	494.26	-1.74	524.00	515.41	-1.64	539.00	529.97	-1.68	559.00	548.77	-1.83
Whole Milk Powder (00 kg)	499.57	498.72	-0.17	517.46	516.72	-0.14	533.17	532.47	-0.13	544.56	543.85	-0.13	559.56	558.80	-0.14
Fat (per hl of milk)	17.17	16.17	-5.86	17.55	16.31	-7.09	17.98	16.68	-7.28	18.35	17.03	-7.19	18.82	17.59	-6.53
Solid Nonfat (per hl of milk)	40.27	41.05	1.95	41.16	42.17	2.46	42.17	43.24	2.54	43.03	44.11	2.51	44.11	45.10	2.24
Fluid Milk (hl)	63.49	63.24	-0.39	64.34	64.08	-0.40	65.42	65.16	-0.40	66.19	65.93	-0.39	67.44	67.18	-0.38
Industrial Milk (hl)	57.44	57.22	-0.39	58.71	58.48	-0.40	60.15	59.91	-0.40	61.38	61.14	-0.39	62.93	62.69	-0.38
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	159.34	156.18	-1.98	151.81	148.86	-1.94	143.34	140.38	-2.07	136.07	133.06	-2.21	127.42	124.39	-2.38
Cheese (00 kg)	465.22	441.57	-5.08	477.22	451.92	-5.30	485.34	459.90	-5.24	491.97	466.59	-5.16	499.90	475.02	-4.98
Skim Milk Powder (00 kg)	43.40	27.37	-36.94	55.08	38.88	-29.40	62.62	46.39	-25.92	66.12	49.87	-24.58	71.47	55.39	-22.49
Whole Milk Powder (00 kg)	61.31	61.35	0.07	67.66	67.69	0.05	70.76	70.79	0.04	71.35	71.38	0.04	72.83	72.86	0.04
Net trade (KT)															
Butter	0.39	-3.99	-1123.33	0.25	-3.99	-1696.40	0.25	-3.99	-1696.40	0.25	-3.99	-1696.40	0.25	-3.99	-1696.40
Cheese	3.29	-17.74	-639.17	3.91	-17.12	-537.82	4.15	-16.88	-506.72	4.18	-16.85	-503.08	4.72	-16.31	-445.53
Skim Milk Powder	28.44	21.73	-23.61	27.89	21.18	-24.08	28.50	21.79	-23.56	26.84	20.13	-25.02	29.44	22.73	-22.81
Whole Milk Powder	-1.38	-1.38	0.00	-1.38	-1.38	0.00	-1.38	-1.38	0.00	-1.38	-1.38	0.00	-1.38	-1.38	0.00

European Union

Eliminate ES and 7% MAC	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	1854.94	1728.84	-6.80	1849.23	1722.95	-6.83	1843.14	1729.26	-6.18	1827.44	1731.84	-5.23	1811.83	1733.17	-4.34
Cheese	6826.19	6590.68	-3.45	6903.02	6669.76	-3.38	6963.91	3.52	-3.31	7045.01	6820.86	-3.18	7139.67	6924.76	-4.34
Skim Milk Powder	1144.38	845.32	-26.13	1105.67	809.78	-26.76	1072.50	802.34	-25.19	1020.39	791.30	-22.45	966.16	770.22	-20.28
Whole Milk Powder	968.44	554.18	-42.78	989.41	574.29	-41.96	1018.78	597.99	-41.30	1049.94	625.33	-40.44	1077.19	712.89	-33.82
Milk	121300.00	114035.80	-5.99	121200.00	113960.35	-5.97	120900.00	113894.83	-5.79	120700.00	114098.14	-5.47	120800.00	115011.55	-4.79
Fat	4997.56	4698.27	-5.99	5005.56	4706.56	-5.97	4993.17	4703.86	-5.79	4996.98	4723.66	-5.47	5013.20	4772.98	-4.79
Solid Nonfat	10940.98	10285.77	-5.99	10939.27	10285.84	-5.97	10912.20	10279.92	-5.79	10901.42	10305.15	-5.47	10914.74	10394.59	-4.79
Demand (KT)															
Butter	1747.45	1891.29	8.23	1742.93	1890.45	8.46	1739.58	1880.89	8.12	1737.04	1874.89	7.94	1730.78	1863.95	7.69
Cheese	6559.30	6902.58	5.23	6633.04	6984.60	5.30	6688.00	7037.18	5.22	6752.30	7101.75	5.18	6849.60	7201.46	5.14
Skim Milk Powder	946.49	1008.28	6.53	934.40	994.33	6.41	905.78	957.34	5.69	889.41	926.53	4.17	874.41	899.47	2.87
Whole Milk Powder	523.13	583.29	11.50	524.94	587.08	11.84	535.15	597.91	11.73	547.14	612.07	11.87	555.23	610.83	10.01
Fat	4997.56	4698.27	-5.99	5005.56	4706.56	-5.97	4993.17	4703.86	-5.79	4996.98	4723.66	-5.47	5013.20	4772.98	-4.79
Solid Nonfat	10940.98	10285.77	-5.99	10939.27	10285.84	-5.97	10912.20	10279.92	-5.79	10901.42	10305.15	-5.47	10914.74	10394.59	-4.79
Price (local currency)															
Butter (00 kg)	362.60	301.67	-16.80	362.46	300.05	-17.22	361.92	301.81	-16.61	363.11	304.02	-16.27	356.19	299.79	-15.83
Cheese (00 kg)	384.91	338.82	-11.97	384.94	338.31	-12.11	388.41	342.01	-11.95	389.09	342.98	-11.85	378.16	333.65	-11.77
Skim Milk Powder (00 kg)	197.89	168.95	-14.62	198.12	169.60	-14.39	200.90	174.93	-12.93	202.43	182.76	-9.72	202.53	188.72	-6.82
Whole Milk Powder (00 kg)	252.96	192.69	-23.83	250.90	189.69	-24.40	258.73	196.08	-24.21	259.20	195.83	-24.45	257.69	202.99	-21.23
Fat (per hl of milk)	9.64	7.25	-24.76	9.64	7.19	-25.46	9.64	7.24	-24.91	9.64	7.17	-25.60	9.33	6.89	-26.19
Solid Nonfat (per hl of milk)	21.36	22.19	3.88	21.36	22.26	4.22	21.36	22.25	4.19	21.36	22.41	4.90	20.67	21.91	5.99
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	31.00	29.44	-5.02	31.00	29.45	-5.01	31.00	29.49	-4.86	31.00	29.58	-4.59	30.00	28.80	-4.02
Gross Margin (local currency)															
Butter (00 kg)	127.66	116.06	-9.09	125.51	113.89	-9.26	122.78	112.30	-8.54	121.76	112.96	-7.22	119.35	112.12	-6.06
Cheese (00 kg)	173.52	151.85	-12.49	170.48	149.02	-12.59	169.78	148.58	-12.49	167.43	146.80	-12.32	160.44	140.66	-12.33
Skim Milk Powder (00 kg)	-18.29	-45.81	150.43	-17.68	-44.90	154.04	-15.36	-40.22	161.88	-13.90	-34.99	151.61	-8.54	-26.57	211.09
Whole Milk Powder (00 kg)	22.79	-15.33	-167.29	21.05	-17.15	-181.49	26.25	-12.47	-147.48	26.30	-12.77	-148.57	29.90	-3.62	-112.12
Net trade (KT)															
Butter	89.50	-199.02	-322.37	90.30	-175.29	-294.12	93.57	-150.86	-261.23	86.39	-137.01	-258.59	73.04	-139.64	-291.18
Cheese	266.87	-322.15	-220.72	269.89	-311.06	-215.26	275.90	-299.33	-208.49	292.64	-276.75	-194.57	290.03	-276.81	-195.44
Skim Milk Powder	162.89	-203.76	-225.09	159.28	-187.67	-217.83	169.72	-142.59	-184.01	159.99	-97.69	-161.06	122.75	-100.30	-181.71
Whole Milk Powder	445.31	-29.12	-106.54	464.47	-12.78	-102.75	483.63	0.08	-99.98	502.79	13.24	-97.37	521.96	102.06	-80.45

Japan

Eliminate ES and 7% MAC		2001			2002			2003			2004			2005		
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)																
Butter		83.38	82.03	-1.62	83.56	81.88	-2.01	83.78	82.00	-2.13	84.24	82.42	-2.15	79.78	78.00	-2.23
Cheese		44.09	44.88	1.78	46.29	47.21	1.98	48.33	49.31	2.03	50.29	51.30	2.01	52.27	53.27	1.91
Skim Milk Powder		197.10	194.98	-1.08	201.09	198.38	-1.35	205.08	202.19	-1.41	209.05	206.11	-1.41	213.01	210.13	-1.35
Whole Milk Powder		53.00	50.28	-5.14	53.00	50.27	-5.16	53.00	50.26	-5.16	53.00	50.26	-5.16	53.00	50.27	-5.16
Milk		8588.61	8545.75	-0.50	8657.16	8608.12	-0.57	8724.24	8673.39	-0.58	8791.37	8740.09	-0.58	8859.83	8809.47	-0.57
Fat		317.78	316.19	-0.50	320.31	318.50	-0.57	322.80	320.92	-0.58	325.28	323.38	-0.58	327.81	325.95	-0.57
Solid Nonfat		752.92	749.16	-0.50	758.93	754.63	-0.57	764.81	760.35	-0.58	770.69	766.20	-0.58	776.69	772.28	-0.57
Demand (KT)																
Butter		83.48	86.59	3.73	83.66	87.76	4.90	83.88	88.30	5.27	84.34	88.87	5.37	79.88	84.05	5.23
Cheese		232.00	232.61	0.26	239.95	240.85	0.37	247.98	248.97	0.40	255.97	257.00	0.40	263.97	264.99	0.39
Skim Milk Powder		251.96	250.04	-0.76	254.05	251.36	-1.06	258.22	255.28	-1.14	260.62	257.61	-1.16	264.35	261.43	-1.10
Whole Milk Powder		53.00	53.98	1.84	53.00	53.96	1.82	53.00	53.96	1.82	53.00	53.96	1.82	53.00	53.97	1.82
Fat		317.78	316.19	-0.50	320.31	318.50	-0.57	322.80	320.92	-0.58	325.28	323.38	-0.58	327.81	325.95	-0.57
Solid Nonfat		752.92	749.16	-0.50	758.93	754.63	-0.57	764.81	760.35	-0.58	770.69	766.20	-0.58	776.69	772.28	-0.57
Price (local currency)																
Butter (00 kg)		96400.00	90077.32	-6.56	96400.00	88229.01	-8.48	96400.00	87652.40	-9.07	96400.00	87499.21	-9.23	96400.00	87721.65	-9.00
Cheese (00 kg)		183955.50	183247.18	-0.39	183955.50	182946.88	-0.55	183955.50	182876.82	-0.59	183955.50	182870.10	-0.59	183955.50	182917.30	-0.56
Skim Milk Powder (00 kg)		54564.00	55229.74	1.22	54564.00	55492.62	1.70	54564.00	55565.22	1.83	54564.00	55579.81	1.86	54564.00	55533.29	1.78
Whole Milk Powder (00 kg)		77960.00	75732.69	-2.86	77960.00	75759.21	-2.82	77960.00	75763.30	-2.82	77960.00	75762.72	-2.82	77960.00	75756.54	-2.83
Fat (per hl of milk)		2490.94	2243.70	-9.93	2490.94	2168.80	-12.93	2490.94	2145.85	-13.85	2490.94	2139.98	-14.09	2490.94	2149.43	-13.71
Solid Nonfat (per hl of milk)		5896.06	6132.76	4.01	5896.06	6206.23	5.26	5896.06	6228.83	5.84	5896.06	6234.70	5.74	5896.06	6225.56	5.59
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)		8387.00	8376.46	-0.13	8387.00	8375.03	-0.14	8387.00	8374.68	-0.15	8387.00	8374.67	-0.15	8387.00	8374.99	-0.14
Gross Margin (local currency)																
Butter (00 kg)		40715.40	39594.96	-2.75	40674.72	39281.36	-3.43	40553.06	39070.04	-3.66	40472.12	38962.72	-3.73	40391.34	38908.68	-3.67
Cheese (00 kg)		146409.88	147063.86	0.45	146263.62	147026.65	0.52	145826.14	146641.60	0.56	145535.07	146373.62	0.58	145244.58	146076.41	0.57
Skim Milk Powder (00 kg)		-8468.63	-10230.83	20.81	-8460.17	-10712.39	26.62	-8434.87	-10839.23	28.51	-8418.03	-10862.97	29.04	-8401.23	-10793.97	28.48
Whole Milk Powder (00 kg)		14305.78	12042.28	-15.82	14291.49	12018.09	-15.91	14248.75	11973.82	-15.97	14220.31	11945.59	-16.00	14191.92	11919.52	-16.01
Net trade (KT)																
Butter		-0.10	-5.79	5689.00	-0.10	-5.79	5689.00	-0.10	-5.79	5689.00	-0.10	-5.79	5689.00	-0.10	-5.79	5689.00
Cheese		-187.92	-187.92	0.00	-193.66	-193.66	0.00	-199.65	-199.65	0.00	-205.68	-205.68	0.00	-211.71	-211.71	0.00
Skim Milk Powder		-54.86	-54.86	0.00	-52.96	-52.96	0.00	-53.14	-53.14	0.00	-51.57	-51.57	0.00	-51.34	-51.34	0.00
Whole Milk Powder		0.00	-3.70	n/a	0.00	-3.70	n/a	0.00	-3.70	n/a	0.00	-3.70	n/a	0.00	-3.70	n/a

New Zealand

Eliminate ES and 7% MAC	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	391.52	397.47	1.52	405.66	413.78	2.00	406.11	415.55	2.32	401.62	409.98	2.08	411.95	417.48	1.34
Cheese	339.30	396.39	16.82	346.13	415.15	19.94	362.25	427.90	18.12	387.38	445.90	15.11	394.09	458.45	16.33
Skim Milk Powder	204.66	234.93	14.79	210.68	245.97	16.75	198.05	233.24	17.77	185.58	214.90	15.80	186.55	214.26	14.86
Whole Milk Powder	474.01	511.67	7.94	468.60	510.65	8.97	490.22	533.23	8.77	512.27	559.29	9.18	527.33	566.59	7.45
Milk	12467.91	13096.97	5.05	12718.05	13486.32	6.04	12900.76	13678.25	6.03	13147.02	13886.38	5.62	13447.53	14136.78	5.13
Fat	623.40	654.85	5.05	635.90	674.32	6.04	645.04	683.91	6.03	657.35	694.32	5.62	672.38	706.84	5.13
Solid Nonfat	1190.75	1250.83	5.05	1214.64	1288.01	6.04	1232.09	1306.34	6.03	1255.61	1326.22	5.62	1284.31	1350.13	5.13
Demand (KT)															
Butter	31.82	30.80	-3.21	31.89	31.03	-2.69	31.93	31.10	-2.59	31.85	31.07	-2.44	31.81	30.99	-2.58
Cheese	42.44	40.38	-4.86	44.54	42.31	-5.00	46.51	44.38	-4.59	46.42	44.55	-4.02	46.48	44.48	-4.31
Skim Milk Powder	8.01	7.37	-8.03	8.03	7.49	-6.67	8.04	7.56	-5.91	8.03	7.65	-4.78	8.01	7.70	-3.87
Whole Milk Powder	0.80	0.74	-7.34	0.80	0.75	-6.32	0.80	0.75	-5.74	0.80	0.76	-5.52	0.80	0.76	-4.59
Fat	623.40	654.85	5.05	635.90	674.32	6.04	645.04	683.91	6.03	657.35	694.32	5.62	672.38	706.84	5.13
Solid Nonfat	1190.75	1250.83	5.05	1214.64	1288.01	6.04	1232.09	1306.34	6.03	1255.61	1326.22	5.62	1284.31	1350.13	5.13
Price (local currency)															
Butter (00 kg)	302.80	325.60	7.53	306.50	325.62	6.24	316.06	335.01	5.99	333.07	351.89	5.65	350.92	371.90	5.98
Cheese (00 kg)	397.95	450.74	13.26	411.65	488.03	13.70	429.44	482.96	12.46	452.08	500.91	10.80	463.70	517.63	11.63
Skim Milk Powder (00 kg)	292.77	352.60	20.43	302.03	352.12	16.59	316.11	361.94	14.50	335.61	374.20	11.50	357.21	389.92	9.16
Whole Milk Powder (00 kg)	321.80	381.24	18.47	329.62	381.08	15.61	348.44	397.35	14.04	369.09	418.76	13.46	386.12	428.62	11.01
Fat (per hl of milk)	9.83	10.96	11.49	9.94	10.77	8.31	9.93	10.69	7.67	10.18	10.98	7.86	10.38	11.45	10.26
Solid Nonfat (per hl of milk)	19.59	23.71	21.01	19.82	22.57	13.87	19.79	22.07	11.50	20.30	22.20	9.36	20.70	22.07	6.62
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	29.42	34.67	17.83	29.76	33.34	12.02	29.72	32.76	10.22	30.48	33.18	8.85	31.08	33.51	7.83
Gross Margin (local currency)															
Butter (00 kg)	115.53	118.64	2.69	114.90	119.14	3.69	120.40	125.33	4.09	128.15	132.51	3.40	136.90	139.79	2.11
Cheese (00 kg)	239.47	269.26	12.44	245.09	281.10	14.69	254.53	288.78	13.46	265.37	295.90	11.51	267.91	301.49	12.53
Skim Milk Powder (00 kg)	81.11	96.90	19.47	85.24	103.65	21.60	94.85	113.21	19.35	104.32	119.62	14.66	115.82	130.28	12.48
Whole Milk Powder (00 kg)	106.11	125.76	18.52	108.65	130.59	20.19	121.53	143.97	18.46	131.45	155.98	18.66	139.05	159.54	14.73
Net trade (KT)															
Butter	319.71	328.26	2.67	333.77	341.87	2.43	334.19	343.85	2.89	329.77	338.41	2.62	340.14	346.78	1.95
Cheese	296.52	356.02	20.07	301.23	372.19	23.56	315.37	382.86	21.40	340.57	400.69	17.65	347.21	413.63	19.13
Skim Milk Powder	196.65	228.70	16.30	202.66	237.54	17.21	190.01	225.03	18.43	177.56	206.72	16.42	178.54	206.84	15.74
Whole Milk Powder	473.21	5510.93	7.97	467.80	509.90	9.00	489.42	532.48	8.80	511.47	558.53	9.20	526.53	565.83	7.46

United States

Eliminate ES and 7% MAC	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	523.24	489.55	-6.44	486.94	462.35	-5.05	469.31	432.37	-7.87	484.20	445.85	-7.92	489.87	457.49	-6.61
Cheese	3858.00	3817.27	-1.06	3985.82	3891.07	-2.38	4057.96	6.00	-1928.00	4141.90	4092.33	-1.20	4200.89	4132.30	-1.63
Skim Milk Powder	512.70	418.09	-18.45	478.04	375.51	-21.45	460.58	340.78	-26.01	478.03	371.29	-22.33	474.81	370.32	-22.01
Whole Milk Powder	62.30	48.79	-21.69	61.68	51.07	-17.21	61.06	52.28	-14.37	60.45	44.11	-27.03	59.85	47.13	-21.26
Milk	75044.94	73923.64	-1.49	75954.16	74568.70	-1.82	76982.66	75459.08	-1.98	77727.93	76363.84	-1.75	78883.62	77306.16	-1.75
Fat	2769.16	2727.78	-1.49	2795.11	2744.13	-1.82	2809.87	2754.26	-1.98	2844.84	2894.92	-1.75	2871.95	2821.67	-1.75
Solid Nonfat	6574.27	6476.04	-1.49	6649.34	6528.05	-1.82	6725.45	6592.34	-1.98	6795.24	6675.99	-1.75	6874.05	6753.71	-1.75
Demand (KT)															
Butter	542.46	538.66	-0.70	515.77	501.26	-2.81	502.78	496.70	-1.21	502.12	494.66	-1.49	502.15	499.12	-0.60
Cheese	3950.99	4010.05	1.49	4078.81	4190.86	2.75	4150.94	4250.15	2.39	4234.89	4289.84	1.30	4293.86	4387.51	2.18
Skim Milk Powder	376.01	410.99	9.30	341.05	372.47	9.21	321.70	353.18	9.79	335.33	364.57	8.72	329.22	356.19	8.19
Whole Milk Powder	51.87	53.14	2.44	51.25	52.24	1.93	50.63	51.56	1.83	50.02	50.95	1.85	49.41	50.32	1.83
Fat	2769.16	2727.78	-1.49	2795.11	2744.13	-1.82	2809.87	2754.26	-1.98	2844.84	2894.92	-1.75	2871.95	2821.67	-1.75
Solid Nonfat	6574.27	6476.04	-1.49	6649.34	6528.05	-1.82	6725.45	6592.34	-1.98	6795.24	6675.99	-1.75	6874.05	6753.71	-1.75
Price (local currency)															
Butter (00 kg)	293.42	296.45	1.03	302.59	315.41	4.24	322.54	328.28	1.78	319.71	326.72	2.19	321.44	324.27	0.88
Cheese (00 kg)	341.12	332.79	-2.44	360.51	344.59	-4.42	369.82	355.55	-3.86	371.61	363.71	-2.13	382.28	368.77	-3.53
Skim Milk Powder (00 kg)	252.81	220.48	-12.79	281.48	245.79	-12.68	278.45	241.20	-13.38	281.06	247.14	-12.07	283.36	251.03	-11.41
Whole Milk Powder (00 kg)	278.25	268.10	-3.65	278.25	270.20	-2.89	278.25	270.58	-2.76	278.25	270.50	-2.78	278.25	270.58	-2.76
Fat (per hl of milk)	9.47	9.93	4.81	9.75	10.59	8.62	9.95	10.57	6.20	10.18	10.88	6.84	10.51	10.95	4.28
Solid Nonfat (per hl of milk)	22.48	21.08	-6.24	23.19	21.64	-6.68	23.83	22.49	-5.62	24.32	23.09	-5.03	25.14	24.07	-4.26
Fluid Milk (hl)	34.70	33.67	-2.97	36.77	35.00	-2.15	36.68	35.90	-2.13	37.47	36.90	-1.53	38.71	38.03	-1.75
Industrial Milk (hl)	31.95	31.00	-2.97	32.94	32.23	-2.15	33.78	33.06	-2.13	34.50	33.97	-1.53	35.65	35.03	-1.75
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	66.35	61.45	-7.38	66.82	63.24	-5.35	75.68	70.31	-7.10	68.77	63.19	-8.11	62.98	58.27	-7.48
Cheese (00 kg)	146.76	140.84	-4.04	154.75	140.97	-8.90	155.04	143.66	-7.34	150.77	143.56	-4.78	151.32	141.34	-6.59
Skim Milk Powder (00 kg)	9.15	4.61	-150.33	25.03	10.12	-60.23	16.70	-0.73	-104.35	14.50	-1.02	-107.07	9.31	-5.88	-163.12
Whole Milk Powder (00 kg)	28.76	26.79	-6.83	22.14	20.60	-6.97	16.14	14.87	-7.91	12.02	9.64	-19.77	5.21	3.36	-35.53
Net trade (KT)															
Butter	-19.22	-48.63	153.02	-28.83	-38.76	34.43	-33.47	-64.48	92.66	-17.92	-48.82	172.43	-12.28	-41.85	240.79
Cheese	-92.99	-195.91	110.68	-92.99	-300.35	222.99	-92.99	-267.25	187.39	-92.99	-193.01	107.56	-92.99	-257.49	176.90
Skim Milk Powder	136.69	7.06	-94.83	136.99	6.46	-95.28	136.87	-8.92	-106.42	142.69	7.97	-94.42	145.59	14.21	-90.24
Whole Milk Powder	10.43	-4.15	-139.76	10.43	-1.20	-111.49	10.43	0.71	-93.22	10.43	-6.66	-163.87	10.43	-3.28	-131.42

Rest of the World

Eliminate ES and 7% MAC		2001			2002			2003			2004			2005		
Supply (KT)		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter		3847.98	3939.43	2.38	3930.35	4017.08	2.21	4034.10	4121.33	2.16	4091.58	4167.17	1.85	4151.64	4205.21	1.29
Cheese		3240.68	3610.36	11.41	3373.52	3822.74	13.32	3426.71	3859.32	12.82	3452.46	3841.05	11.26	3556.47	3988.96	11.60
Skim Milk Powder		960.45	1301.07	35.46	920.21	1270.82	38.10	941.13	1280.17	36.03	974.57	1267.48	30.06	971.30	1235.75	27.23
Whole Milk Powder		980.33	1322.11	34.86	1007.85	1364.62	35.40	1030.31	1394.65	35.36	1050.21	1423.40	35.53	1063.47	1383.04	30.05
Milk		322907.96	328993.92	1.88	332448.23	339591.63	2.15	340994.26	348183.28	2.11	349186.66	355933.44	1.93	357016.04	363225.42	1.74
Fat		12948.30	133192.34	1.88	13330.85	13617.29	2.15	13673.54	13961.81	2.11	14002.05	14272.59	1.93	14316.00	14564.99	1.74
Solid Nonfat		28911.15	29456.05	1.88	29765.33	30404.90	2.15	30530.49	31174.15	2.11	31263.98	31868.05	1.93	31964.98	32520.92	1.74
Demand (KT)																
Butter		4356.01	4140.17	-4.95	4444.77	4260.39	-4.15	4545.69	4364.16	-3.99	4605.41	4431.56	-3.77	4673.38	4487.20	-3.98
Cheese		3696.42	3473.23	-6.04	3831.25	3593.10	-6.22	3915.85	3692.49	-5.70	4002.76	3802.66	-5.00	4102.88	3883.28	-5.35
Skim Milk Powder		1656.58	1566.71	-5.43	1628.67	1555.39	-4.50	1646.69	1581.15	-3.98	1661.17	1607.80	-3.21	1638.00	1595.51	-2.59
Whole Milk Powder		2029.59	1928.96	-4.96	2062.68	1974.84	-4.26	2135.33	2052.82	-3.86	2199.68	2117.92	-3.72	2244.61	2175.39	-3.08
Fat		12948.30	133192.34	1.88	13330.85	13617.29	2.15	13673.54	13961.81	2.11	14002.05	14272.59	1.93	14316.00	14564.99	1.74
Solid Nonfat		28911.15	29456.05	1.88	29765.33	30404.90	2.15	30530.49	31174.15	2.11	31263.98	31868.05	1.93	31964.98	32520.92	1.74
Price (local currency)																
Butter (00 kg)		249.81	268.62	7.53	254.03	269.88	6.24	262.33	278.69	5.99	280.05	295.87	5.65	294.34	311.94	5.98
Cheese (00 kg)		299.57	339.30	13.26	312.26	355.02	13.70	331.26	372.55	12.46	352.00	390.02	10.80	352.70	393.72	11.63
Skim Milk Powder (00 kg)		238.78	287.58	20.43	247.62	288.68	16.59	262.85	300.96	14.50	282.00	314.43	11.50	297.44	324.67	9.16
Whole Milk Powder (00 kg)		250.94	297.30	18.47	260.53	301.20	15.61	284.21	324.10	14.04	295.10	334.82	13.46	314.61	349.23	11.01
Fat (per hl of milk)		17.04	14.61	3.33	17.15	17.59	2.58	17.04	17.47	2.54	17.47	17.95	2.75	17.72	18.39	3.74
Solid Nonfat (per hl of milk)		40.33	42.50	5.39	40.59	41.89	3.22	40.32	41.38	2.61	41.35	42.17	1.97	41.95	42.44	1.18
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)		57.37	60.11	0.78	57.73	59.48	3.03	57.36	58.85	2.59	58.83	60.12	2.20	59.67	60.83	1.94
Gross Margin (local currency)																
Butter (00 kg)		-76.29	-70.79	-7.21	-73.13	-67.92	-7.13	-63.22	-57.97	-8.30	-55.83	-51.28	-8.14	-48.09	-44.87	-6.70
Cheese (00 kg)		28.61	50.84	77.72	36.48	63.50	74.06	51.36	77.37	50.66	60.65	84.02	38.54	57.15	81.96	43.41
Skim Milk Powder (00 kg)		-144.95	-124.47	-14.13	-137.18	-116.09	-15.37	-120.79	-100.40	-16.88	-112.16	-94.54	-15.71	-103.30	-87.39	-15.40
Whole Milk Powder (00 kg)		-130.97	-110.41	-15.69	-122.88	-101.43	-17.46	-100.45	-78.54	-21.81	-98.23	-75.78	-22.85	-86.64	-67.42	-22.18
Net trade (KT)																
Butter		-511.04	-201.63	-60.55	-512.43	-242.59	-52.66	-509.59	-241.56	-52.60	-511.81	-263.01	-48.61	-520.74	-280.64	-46.11
Cheese		-453.35	145.33	-132.06	-454.93	229.08	-150.35	-486.91	165.30	-133.95	-547.61	37.65	-106.88	-543.25	89.90	-116.55
Skim Milk Powder		-696.13	-261.58	-62.42	-708.46	-291.53	-58.85	-705.50	-304.94	-26.78	-686.59	-343.61	-49.95	-666.88	-359.02	-46.16
Whole Milk Powder		-1049.27	-604.16	-42.42	-1054.83	-614.97	-41.70	-1105.03	-681.68	-40.12	-1149.47	-697.14	-39.35	-1181.15	-791.83	-32.96

World

Eliminate ES and 7% MAC		2001			2002			2003			2004			2005		
	Supply (KT)	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	6964.33	6906.32	6906.32	-0.83	7024.39	6971.79	-0.58	7104.99	7054.21	-0.71	7156.17	7108.59	-0.66	7220.52	7168.90	-0.71
Cheese	15019.77	15203.40	15203.40	1.22	15380.22	15608.23	1.48	15613.16	15837.56	1.44	15861.48	16064.81	1.28	16141.16	16367.52	1.40
Skim Milk Powder	3343.58	3343.63	3343.63	0.00	3249.24	3258.91	0.30	3209.70	3214.65	0.15	3198.96	3202.06	0.10	3157.07	3163.09	0.19
Whole Milk Powder	2710.02	2665.02	2665.02	-1.66	2744.83	2724.44	-0.74	2827.57	2811.77	-0.56	2903.80	2889.78	-0.48	2956.70	2942.91	-0.47
Milk	559539.96	558196.36	558196.36	-0.24	570445.77	570105.10	-0.06	580355.78	580145.73	-0.04	589756.78	589578.08	-0.03	599332.54	599333.88	0.00
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand (KT)																
Butter	6910.75	6837.45	6837.45	-1.06	6969.39	6922.56	-0.67	7056.00	7014.80	-0.58	7114.16	7076.11	-0.53	7172.51	7121.18	-0.72
Cheese	15018.69	15197.39	15197.39	1.19	15380.29	15605.43	1.46	15614.51	15840.00	1.44	15864.96	16071.16	1.30	16145.75	16371.85	1.40
Skim Milk Powder	3308.87	3310.62	3310.62	0.05	3238.65	3249.32	0.39	3211.67	3223.80	0.38	3226.28	3234.36	0.25	3186.19	3191.35	0.16
Whole Milk Powder	2710.02	2669.32	2669.32	-1.50	2744.83	2718.91	-0.94	2827.57	2807.72	-0.70	2903.80	2886.91	-0.58	2956.70	2943.31	-0.45
Fat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Price (local currency)																
Butter (00 kg)	156.13	167.89	167.89	7.53	158.77	168.68	6.24	164.33	174.18	5.99	175.03	184.92	5.65	183.96	194.96	5.98
Cheese (00 kg)	187.23	212.07	212.07	13.26	195.16	221.89	13.70	207.04	232.85	12.46	220.00	243.76	10.80	220.44	246.08	11.63
Skim Milk Powder (00 kg)	149.24	179.74	179.74	20.43	180.43	16.59	15.78	188.10	14.50	13.80	176.25	196.52	11.50	185.90	202.92	9.16
Whole Milk Powder (00 kg)	156.84	185.81	185.81	18.47	162.83	188.25	15.61	177.63	202.56	14.04	184.44	209.26	13.46	189.14	218.27	11.01
Fat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat (per hl of milk)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)																
Butter (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder (00 kg)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net trade (KT)																
Butter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SCENARIO 5

**50 PERCENT TARIFF CUT WITH A MAXIMUM TARIFF OF 50 PERCENT
ELIMINATE EXPORT SUBSIDIES AND INCREASE MINIMUM ACCESS TO 7
PERCENT**

Australia

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	180.45	197.75	9.59	185.24	209.98	13.35	184.50	211.65	14.71	183.09	208.74	14.01	189.77	213.69	12.61
Cheese	364.64	449.48	23.27	375.26	468.88	24.95	400.86	494.85	23.45	428.32	523.91	22.32	438.02	532.80	21.59
Skim Milk Powder	263.12	324.66	23.39	271.78	347.79	27.97	269.25	348.40	29.40	268.95	345.53	28.47	279.93	352.34	25.87
Whole Milk Powder	154.92	245.04	58.17	147.27	252.02	71.13	157.18	272.36	73.28	160.91	278.48	73.07	158.84	279.77	76.14
Milk	11079.68	12588.19	13.62	11267.58	13111.71	16.37	11594.49	13564.02	16.99	11890.82	13861.82	16.58	12135.09	14088.73	16.10
Fat	455.37	517.37	13.62	463.10	538.89	16.37	476.53	557.48	16.99	488.71	569.72	16.58	498.75	579.05	16.10
Solid Nonfat	998.69	1134.67	13.62	1015.63	1181.86	16.37	1045.10	1222.63	16.99	1071.81	1249.47	16.58	1093.83	1269.92	16.10
Demand (KT)															
Butter	68.10	58.42	-14.21	68.21	58.94	-13.59	69.34	59.96	-13.52	69.66	60.42	-13.26	70.08	60.95	-13.03
Cheese	197.06	175.99	-10.69	208.71	186.79	-10.50	216.73	194.54	-10.24	219.44	197.30	-10.09	232.03	208.83	-10.00
Skim Milk Powder	36.80	31.65	-14.01	37.19	32.31	-13.13	37.71	32.94	-12.65	37.87	33.55	-11.41	38.03	34.17	-10.15
Whole Milk Powder	33.22	23.34	-29.73	33.75	23.77	-29.56	34.25	23.70	-30.81	34.75	23.90	-31.23	35.24	24.01	-31.86
Fat	455.37	517.37	13.62	463.10	538.89	16.37	476.53	557.48	16.99	488.71	569.72	16.58	498.75	579.05	16.10
Solid Nonfat	998.69	1134.67	13.62	1015.63	1181.86	16.37	1045.10	1222.63	16.99	1071.81	1249.47	16.58	1093.83	1269.92	16.10
Price (local currency)															
Butter (00 kg)	240.28	337.81	40.59	244.02	337.63	38.36	252.68	348.98	38.11	266.52	365.61	37.18	282.17	384.84	36.39
Cheese (00 kg)	367.76	487.90	32.67	379.68	501.09	31.98	396.95	519.98	30.99	417.75	544.98	30.46	429.01	558.28	30.13
Skim Milk Powder (00 kg)	226.80	317.16	39.84	235.28	321.68	36.72	248.42	335.53	35.07	266.35	348.62	30.89	283.80	360.02	26.86
Whole Milk Powder (00 kg)	114.01	249.74	119.05	114.01	248.38	117.85	114.01	258.46	126.70	114.01	261.99	129.79	114.01	267.44	134.57
Fat (per hl of milk)	7.79	11.96	53.60	7.65	11.25	46.94	7.50	11.08	47.69	7.79	11.57	48.48	7.92	11.95	50.97
Solid Nonfat (per hl of milk)	16.55	19.46	17.54	16.27	17.26	6.12	15.94	16.49	3.46	16.56	16.72	0.96	16.82	16.65	-1.01
Fluid Milk (hl)	53.97	69.67	29.08	55.75	66.45	19.18	57.62	67.77	17.61	59.49	69.11	16.17	59.50	68.80	15.62
Industrial Milk (hl)	24.34	31.42	29.08	23.92	28.51	19.18	23.44	27.57	17.61	24.35	28.29	16.17	24.74	28.61	15.62
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	72.03	86.04	19.45	75.46	95.49	26.54	82.69	104.67	26.58	87.10	107.87	23.84	95.23	114.60	20.34
Cheese (00 kg)	222.15	290.85	30.92	227.79	303.59	33.28	236.90	313.00	32.12	244.74	322.14	31.62	246.78	323.36	31.03
Skim Milk Powder (00 kg)	45.34	95.17	109.89	53.56	115.11	114.90	65.24	129.32	98.24	72.68	134.68	85.32	82.26	140.88	71.27
Whole Milk Powder (00 kg)	-50.59	22.38	-144.24	-46.88	37.94	-180.93	-42.87	50.39	-217.54	-46.96	48.23	-202.70	-48.08	49.84	-203.67
Net trade (KT)															
Butter	120.76	152.47	26.26	117.04	148.44	26.83	115.15	149.47	29.80	113.42	146.43	29.11	119.69	152.96	27.80
Cheese	167.58	282.66	68.67	166.55	274.62	64.89	194.13	293.91	59.62	208.89	320.97	53.66	205.99	324.30	57.43
Skim Milk Powder	226.32	296.64	31.07	234.60	313.16	33.49	231.54	313.63	35.45	231.08	310.18	34.23	241.90	318.16	31.52
Whole Milk Powder	121.70	226.93	86.46	113.51	225.74	98.87	122.93	246.96	100.90	126.16	252.82	100.40	123.61	255.78	106.92

Canada

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Demand (KT)															
Butter	82.82	82.22	-0.73	83.41	79.71	-4.44	84.05	80.68	-4.01	84.00	81.85	-2.56	85.68	85.58	-0.12
Cheese	346.87	288.75	-16.76	350.18	285.27	-18.54	353.14	286.84	-18.77	356.12	290.67	-18.38	359.75	287.23	-20.16
Skim Milk Powder	61.17	36.38	-40.53	61.77	28.45	-53.95	63.11	29.83	-52.74	62.39	31.94	-48.80	65.31	35.77	-45.23
Whole Milk Powder	17.02	7.45	-56.25	17.02	2.00	-88.25	17.02	3.18	-81.31	17.02	2.55	-84.99	17.02	4.41	-74.07
Milk	8150.86	7627.24	-6.42	8200.59	7523.05	-8.26	8259.37	7589.57	-8.11	8312.98	7674.56	-7.68	8390.43	7759.27	-7.52
Fat	309.73	289.84	-6.42	312.44	286.63	-8.26	315.51	289.92	-8.11	318.39	293.94	-7.68	322.19	297.96	-7.52
Solid Nonfat	719.46	673.24	-6.42	724.34	664.50	-8.26	730.03	670.83	-8.11	735.27	678.81	-7.68	742.63	686.77	-7.52
Price (local currency)															
Butter (00 kg)	553.00	464.10	-16.08	555.00	452.80	-18.41	557.00	463.03	-16.87	559.00	486.89	-13.44	561.00	507.51	-9.54
Cheese (00 kg)	780.00	588.96	-24.49	810.00	593.49	-26.73	838.00	614.59	-26.66	865.00	642.85	-25.68	896.00	649.65	-27.49
Skim Milk Powder (00 kg)	479.00	438.47	-8.46	503.00	433.75	-13.77	524.00	448.88	-14.34	539.00	463.13	-14.08	559.00	475.89	-14.87
Whole Milk Powder (00 kg)	499.57	466.00	-6.72	517.46	456.98	-11.69	533.17	482.45	-9.51	544.56	490.75	-9.88	559.56	509.93	-8.87
Fat (per hl of milk)	17.17	12.92	-24.79	17.55	13.09	-25.43	17.98	13.88	-22.84	18.35	14.99	-18.32	18.82	16.20	-13.89
Solid Nonfat (per hl of milk)	40.27	43.34	7.62	41.16	44.05	7.02	42.17	44.69	5.99	43.03	44.86	4.27	44.11	45.20	2.45
Fluid Milk (hl)	63.49	62.18	-2.07	64.34	62.62	-2.68	65.42	63.70	-2.63	66.19	64.55	-2.48	67.44	65.80	-2.43
Industrial Milk (hl)	57.44	56.25	-2.07	58.71	57.14	-2.68	60.15	58.57	-2.63	61.38	59.86	-2.48	62.93	61.40	-2.43
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	159.34	157.83	-0.95	151.81	142.52	-6.12	143.34	134.89	-5.90	136.07	130.68	-3.96	127.42	127.16	-0.20
Cheese (00 kg)	465.22	319.45	-31.33	477.22	314.44	-34.11	485.34	319.08	-34.26	491.97	327.83	-33.36	499.90	318.03	-36.38
Skim Milk Powder (00 kg)	43.40	-18.77	-143.24	55.08	-28.49	-151.73	62.62	-20.85	-133.29	66.12	-10.23	-115.48	71.47	-2.62	-103.67
Whole Milk Powder (00 kg)	61.31	37.30	-39.16	67.66	23.68	-65.00	70.76	36.05	-49.05	71.35	35.07	-50.84	72.83	41.21	-43.41
Net trade (KT)															
Butter	0.39	-13.57	-3579.15	0.25	-15.25	-6199.30	0.25	-13.20	-5379.84	0.25	-9.23	-3792.03	0.25	-5.67	-2366.19
Cheese	3.29	-138.22	-4301.28	3.91	-144.15	-3786.63	4.15	-144.58	-3583.84	4.18	-140.60	-3463.53	4.72	-161.15	-3514.21
Skim Milk Powder	28.44	2.40	-91.55	27.89	-7.79	-127.94	28.50	-7.30	-125.60	26.84	-6.02	-122.42	29.44	-2.83	-109.63
Whole Milk Powder	-1.38	-11.58	799.11	-1.38	-17.53	1170.19	-1.38	-16.17	1071.65	-1.38	-16.81	1118.37	-1.38	-14.88	978.23

European Union

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC Supply (KT)	2001			2002			2003			2004			2005		
	Base	Simulation	Change	Base	Simulation	Change	Base	Simulation	Change	Base	Simulation	Change	Base	Simulation	Change
	Units	Units	%	Units	Units	%	Units	Units	%	Units	Units	%	Units	Units	%
Butter	1854.94	1771.04	-4.52	1843.23	1768.43	-4.37	1843.14	1775.96	-3.64	1827.44	1778.17	-2.70	1811.83	1779.27	-1.80
Cheese	6826.19	6609.90	-3.17	6903.02	6688.37	-3.11	6963.91	6751.18	-3.05	7045.01	6837.26	-2.95	7139.67	6941.07	-2.78
Skim Milk Powder	1144.38	940.40	-17.82	1105.67	908.92	-17.79	1072.50	900.98	-15.99	1020.39	884.76	-13.29	966.16	861.79	-10.80
Whole Milk Powder	968.44	640.69	-33.84	989.41	683.23	-30.95	1018.78	736.44	-27.71	1049.94	801.47	-23.67	1077.19	898.02	-16.63
Milk	121300.00	115552.33	-4.74	121200.00	115677.61	-4.56	120900.00	115820.54	-4.20	120700.00	116244.87	-3.69	120800.00	117207.59	-2.97
Fat	4997.56	4760.76	-4.74	5005.56	4777.49	-4.56	4993.17	4783.39	-4.20	4996.98	4812.54	-3.69	5013.20	4864.11	-2.97
Solid Nonfat	10940.98	10422.56	-4.74	10939.27	10440.83	-4.56	10912.20	10453.73	-4.20	10901.42	10499.04	-3.69	10917.74	10593.06	-2.97
Demand (KT)															
Butter	1747.45	1932.06	10.56	1742.93	1931.20	10.80	1739.58	1921.43	10.45	1737.04	1915.31	10.26	1730.78	1904.13	10.02
Cheese	6559.30	6916.57	5.45	6633.04	6998.76	5.51	6688.00	7051.44	5.43	6752.30	7116.15	5.39	6849.60	7216.06	5.35
Skim Milk Powder	946.49	952.32	0.62	934.40	936.58	0.23	905.78	901.77	-0.44	889.41	874.56	-1.67	874.41	850.68	-2.71
Whole Milk Powder	523.13	566.69	8.33	524.94	566.36	7.89	535.15	572.75	7.03	547.14	580.32	6.06	555.23	578.59	4.21
Fat	4997.56	4760.76	-4.74	5005.56	4777.49	-4.56	4993.17	4783.39	-4.20	4996.98	4812.54	-3.69	5013.20	4864.11	-2.97
Solid Nonfat	10940.98	10422.56	-4.74	10939.27	10440.83	-4.56	10912.20	10453.73	-4.20	10901.42	10499.04	-3.69	10917.74	10593.06	-2.97
Price (local currency)															
Butter (00 kg)	362.60	287.07	-20.83	362.46	285.54	-21.22	361.92	287.21	-20.64	363.11	289.31	-20.32	356.19	285.28	-19.91
Cheese (00 kg)	384.91	337.11	-12.42	384.94	336.61	-12.56	388.41	340.28	-12.39	389.09	341.25	-12.30	378.16	331.96	-12.22
Skim Milk Powder (00 kg)	197.89	194.88	-1.52	198.12	196.97	-0.58	200.90	203.14	1.12	202.43	211.13	4.30	202.53	216.95	7.12
Whole Milk Powder (00 kg)	252.96	207.11	-18.12	250.90	207.52	-17.29	258.73	218.34	-15.61	259.20	223.72	-13.69	257.69	232.47	-9.79
Fat (per hl of milk)	9.64	6.19	-35.77	9.64	6.10	-36.75	9.64	6.13	-36.40	9.64	6.05	-37.22	9.33	5.77	-38.15
Solid Nonfat (per hl of milk)	21.36	23.58	10.38	21.36	23.72	11.04	21.36	23.78	11.32	21.36	23.99	12.31	20.67	23.48	13.61
Fluid Milk (hl)															
Industrial Milk (hl)															
Blended Milk Price (hl)	31.00	29.77	-3.97	31.00	29.82	-3.82	31.00	29.91	-3.52	31.00	30.04	-3.09	30.00	29.25	-2.49
Gross Margin (local currency)															
Butter (00 kg)	127.66	119.94	-6.05	125.51	118.07	-5.92	122.78	116.60	-5.03	121.76	117.22	-3.72	119.35	116.36	-2.51
Cheese (00 kg)	173.52	153.62	-11.47	170.48	150.73	-11.59	169.78	150.21	-11.53	167.43	148.31	-11.42	160.44	142.16	-11.39
Skim Milk Powder (00 kg)	-18.29	-37.07	102.60	-17.68	-35.78	102.43	-15.36	-31.14	102.77	-13.90	-26.39	89.76	-8.54	-18.15	112.44
Whole Milk Powder (00 kg)	22.79	-7.37	-132.36	21.05	-7.13	-133.86	26.25	0.27	-98.96	26.30	3.44	-86.94	29.90	13.41	-55.14
Net trade (KT)															
Butter	89.50	-210.22	-334.89	90.30	-188.67	-286.79	93.57	-141.88	-251.63	86.39	-127.65	-247.76	73.04	-133.80	-283.19
Cheese	266.87	-317.64	-219.03	289.89	-306.43	-213.54	275.90	-295.74	-207.19	292.64	-274.55	-193.82	290.03	-275.09	-194.85
Skim Milk Powder	162.89	-37.26	-122.87	159.28	-37.02	-123.24	169.72	3.67	-97.84	159.99	39.98	-75.01	122.75	40.06	-67.36
Whole Milk Powder	445.31	73.99	-83.38	464.47	116.88	-74.84	483.63	163.70	-66.15	502.79	221.14	-56.02	521.96	319.44	-38.80

Japan

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)															
Butter	83.38	58.77	-29.51	83.56	59.13	-29.24	83.78	60.29	-28.04	84.24	61.78	-26.67	79.78	58.16	-27.11
Cheese	44.09	44.00	-0.20	46.29	44.00	-4.95	48.33	44.00	-8.96	50.29	44.00	-12.51	52.27	44.00	-15.82
Skim Milk Powder	197.10	150.72	-23.53	201.09	153.92	-23.46	205.08	158.73	-22.60	209.05	163.74	-21.67	213.01	168.34	-20.97
Whole Milk Powder	53.00	5.00	-90.57	53.00	5.00	-90.57	53.00	5.00	-90.57	53.00	5.00	-90.57	53.00	5.50	-89.63
Milk	8588.61	7698.00	-10.37	8657.16	7752.64	-10.45	8724.24	7824.04	-10.32	8791.37	7897.91	-10.16	8859.83	7973.73	-10.00
Fat	317.78	284.83	-10.37	320.31	286.85	-10.45	322.80	288.49	-10.32	325.28	292.22	-10.16	327.81	295.03	-10.00
Solid Nonfat	752.92	674.95	-10.37	758.93	679.63	-10.45	764.81	685.89	-10.32	770.69	692.37	-10.16	776.69	699.02	-10.00
Demand (KT)															
Butter	83.48	144.52	73.12	83.66	146.60	75.23	83.88	146.05	74.12	84.34	144.26	71.05	79.88	134.46	68.33
Cheese	232.00	611.08	163.40	239.95	627.81	161.64	247.98	638.16	157.34	255.97	643.71	151.48	263.97	667.22	152.76
Skim Milk Powder	251.96	346.12	37.37	254.05	350.90	38.12	258.22	351.37	36.07	260.62	350.15	34.35	264.35	353.12	33.58
Whole Milk Powder	53.00	87.73	65.52	53.00	88.69	67.35	53.00	86.29	62.81	53.00	85.96	62.19	53.00	84.87	60.13
Fat	317.78	284.83	-10.37	320.31	286.85	-10.45	322.80	288.49	-10.32	325.28	292.22	-10.16	327.81	295.03	-10.00
Solid Nonfat	752.92	674.95	-10.37	758.93	679.63	-10.45	764.81	685.89	-10.32	770.69	692.37	-10.16	776.69	699.02	-10.00
Price (local currency)															
Butter (00 kg)	96400.00	34889.64	-63.81	96400.00	34114.46	-64.61	96400.00	34518.02	-64.19	96400.00	35676.27	-62.99	96400.00	36749.55	-61.88
Cheese (00 kg)	183955.50	44276.10	-75.93	183955.50	44713.69	-75.69	183955.50	45816.48	-75.09	183955.50	47395.69	-74.24	183955.50	47042.38	-74.43
Skim Milk Powder (00 kg)	54564.00	32963.02	-39.59	54564.00	32679.22	-40.11	54564.00	33462.99	-38.67	54564.00	34145.87	-37.42	54564.00	34460.12	-36.84
Whole Milk Powder (00 kg)	77960.00	35032.81	-55.06	77960.00	34428.82	-55.84	77960.00	35965.66	-53.87	77960.00	36182.02	-53.59	77960.00	36924.74	-52.64
Fat (per hl of milk)	2490.94	553.78	-77.77	2490.94	510.63	-79.50	2490.94	494.52	-80.15	2490.94	509.89	-79.53	2490.94	528.65	-78.78
Solid Nonfat (per hl of milk)	5896.06	7605.50	28.99	5896.06	7646.85	29.69	5896.06	7665.94	30.02	5896.06	7654.12	29.82	5896.06	7639.05	29.56
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	8387.00	8159.28	-2.72	8387.00	8157.48	-2.74	8387.00	8160.46	-2.70	8387.00	8164.01	-2.66	8387.00	8167.70	-2.61
Gross Margin (local currency)															
Butter (00 kg)	40715.40	20254.95	-50.25	40674.72	20360.59	-49.94	40553.06	21021.70	-48.16	40472.12	21793.06	-46.15	40391.34	22409.73	-44.52
Cheese (00 kg)	146409.88	20494.66	-86.00	146263.62	21137.32	-85.55	145826.14	22228.69	-84.76	145535.07	23631.72	-83.76	145244.58	23132.73	-84.07
Skim Milk Powder (00 kg)	-8468.63	-47034.38	455.40	-8460.17	-47686.49	463.66	-8434.87	-46973.86	456.90	-8418.03	-46095.93	447.59	-8401.23	-45546.62	442.14
Whole Milk Powder (00 kg)	14305.78	-27283.31	-290.72	14291.49	-27861.67	-294.95	14248.75	-26311.83	-284.66	14220.31	-26065.48	-283.30	14191.92	-25307.31	-278.32
Net trade (KT)															
Butter	-0.10	-108.21	108105.31	-80.02	79923.47	80856.53	-0.10	-76.52	76417.56	-0.10	-72.09	71985.73	-0.10	-75.85	75753.21
Cheese	-187.92	-595.70	216.99	-193.66	-574.14	196.47	-199.65	-584.16	192.59	-205.68	-589.25	1886.49	-211.71	-623.27	194.40
Skim Milk Powder	-54.86	-200.79	266.01	-52.96	-195.06	268.31	-53.14	-190.14	257.80	-51.57	-183.88	256.57	-51.34	-184.85	260.05
Whole Milk Powder	0.00	-82.73	n/a	0.00	-83.69	n/a	0.00	-81.29	n/a	0.00	-80.96	n/a	0.00	-79.37	n/a

New Zealand

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC		2001			2002			2003			2004			2005		
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)																
Butter		391.52	400.93	2.40	405.66	431.45	6.36	406.11	437.77	7.79	401.62	432.65	7.73	411.95	441.56	7.19
Cheese		339.30	513.55	51.36	346.13	534.59	54.45	362.25	551.91	52.36	387.38	583.58	50.65	394.09	588.70	49.38
Skim Milk Powder		204.66	285.52	39.51	210.68	316.02	50.00	198.05	310.46	56.76	185.58	298.73	60.97	186.55	296.02	58.68
Whole Milk Powder		474.01	531.44	12.12	468.60	543.36	15.95	490.22	573.10	16.91	512.27	592.68	15.70	527.33	605.72	14.86
Milk		12467.91	13961.82	11.98	12718.05	14673.98	15.38	12900.76	15008.90	16.34	13147.02	15274.69	16.18	13447.53	15534.80	15.52
Fat		623.40	698.09	11.98	635.90	733.70	15.38	645.04	750.45	16.34	657.35	763.73	16.18	672.38	776.74	15.52
Solid Nonfat		1190.75	1333.42	11.98	1214.64	1401.44	15.38	1232.09	1433.43	16.34	1255.61	1458.81	16.18	1284.31	1483.65	15.52
Demand (KT)																
Butter		31.82	27.27	-14.31	31.89	27.58	-13.52	31.93	27.68	-13.31	31.85	27.69	-13.06	31.81	27.73	-12.83
Cheese		42.44	36.82	-13.23	44.54	38.82	-12.84	46.51	40.72	-12.45	46.42	40.70	-12.31	46.48	40.84	-12.13
Skim Milk Powder		8.01	6.92	-13.63	8.03	7.02	-12.63	8.04	7.07	-12.09	8.03	7.14	-11.04	8.01	7.23	-9.70
Whole Milk Powder		0.80	0.69	-13.21	0.80	0.70	-11.97	0.80	0.71	-11.47	0.80	0.72	-10.55	0.80	0.72	-9.78
Fat		623.40	698.09	11.98	635.90	733.70	15.38	645.04	750.45	16.34	657.35	763.73	16.18	672.38	776.74	15.52
Solid Nonfat		1190.75	1333.42	11.98	1214.64	1401.44	15.38	1232.09	1433.43	16.34	1255.61	1458.81	16.18	1284.31	1483.65	15.52
Price (local currency)																
Butter (00 kg)		302.80	426.73	40.93	306.50	423.32	38.12	316.06	434.12	37.35	333.07	454.59	36.48	350.92	476.11	35.68
Cheese (00 kg)		397.95	567.44	42.59	411.65	580.48	41.01	429.44	598.77	39.43	452.08	627.86	38.88	463.70	640.66	38.16
Skim Milk Powder (00 kg)		292.77	405.48	38.50	302.03	407.73	35.00	316.11	420.95	33.16	335.61	435.23	29.68	357.21	448.07	25.44
Whole Milk Powder (00 kg)		321.80	440.86	37.00	329.62	437.58	32.75	348.44	456.82	31.10	369.09	472.85	28.11	386.12	485.39	25.71
Fat (per hl of milk)		9.83	17.21	75.11	9.94	16.22	63.23	9.93	16.03	61.52	10.18	16.52	62.31	10.38	17.01	63.87
Solid Nonfat (per hl of milk)		19.59	25.69	31.14	19.82	23.48	18.45	19.79	22.75	14.92	20.30	22.53	10.96	20.70	22.14	6.98
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)		29.42	42.90	45.82	29.76	39.70	33.41	29.72	38.78	30.49	30.48	39.05	28.11	31.08	39.15	25.98
Gross Margin (local currency)																
Butter (00 kg)		115.53	120.44	4.25	114.90	128.36	11.71	120.40	136.92	13.72	128.15	144.34	12.63	136.90	152.35	11.28
Cheese (00 kg)		239.47	330.39	37.96	245.09	343.41	40.12	254.53	353.48	38.88	265.37	367.73	38.57	267.91	369.44	37.90
Skim Milk Powder (00 kg)		81.11	123.30	52.01	85.24	140.20	64.48	94.85	153.50	61.83	104.32	163.35	56.59	115.82	172.93	49.31
Whole Milk Powder (00 kg)		106.11	136.07	28.24	108.65	147.66	35.90	121.53	164.77	35.58	131.45	173.40	31.92	139.05	179.95	29.41
Net trade (KT)																
Butter		319.71	341.07	6.68	333.77	360.55	8.02	334.19	367.24	9.89	329.77	362.62	9.96	340.14	373.99	9.95
Cheese		296.52	477.43	61.01	301.23	494.56	64.18	315.37	510.09	61.74	340.57	541.84	59.10	347.21	547.47	57.68
Skim Milk Powder		196.65	280.25	42.51	202.66	307.46	51.71	190.01	302.20	59.04	177.56	290.45	63.58	178.54	288.73	61.72
Whole Milk Powder		473.21	530.75	12.16	467.80	542.66	16.00	489.42	572.39	16.95	511.47	591.97	15.74	526.53	604.99	14.90

United States

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC		2001			2002			2003			2004			2005		
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)																
Butter		523.24	489.91	-6.37	486.94	437.22	-10.21	489.31	398.73	-15.04	484.20	432.13	-10.75	489.87	452.56	-7.62
Cheese		3858.00	3815.49	-1.10	3985.82	3931.39	-1.37	4057.96	4032.41	-0.63	4141.90	4103.61	-0.92	4200.89	4150.87	-1.19
Skim Milk Powder		512.70	417.88	-18.49	478.04	345.48	-27.73	460.58	300.18	-34.82	478.03	350.00	-26.78	474.81	370.14	-22.04
Whole Milk Powder		62.30	50.15	-19.50	61.68	56.56	-8.30	61.06	57.33	-6.10	60.45	46.36	-23.32	59.85	44.21	-26.13
Milk		75044.94	73925.84	-1.49	75854.16	74388.06	-2.06	76982.66	75184.42	-2.34	77727.93	76159.28	-2.02	78883.62	77333.84	-1.72
Fat		2769.16	2727.86	-1.49	2795.11	2737.48	-2.06	2809.87	2744.23	-2.34	2844.84	2787.43	-2.02	2871.95	2822.69	-1.72
Solid Nonfat		6574.27	6476.23	-1.49	6649.34	6512.23	-2.06	6725.45	6568.35	-2.34	6795.24	6658.11	-2.02	6874.05	6756.13	-1.72
Demand (KT)																
Butter		542.46	538.62	-0.71	515.77	523.87	1.57	502.78	525.61	4.54	502.12	508.11	1.19	502.15	497.47	-0.93
Cheese		3950.99	4012.46	1.56	4078.81	4165.74	2.13	4150.94	4215.54	1.56	4234.89	4292.41	1.36	4293.86	4354.01	1.40
Skim Milk Powder		376.01	410.99	9.30	341.05	372.47	9.21	321.70	353.18	9.79	335.33	364.57	8.72	329.22	356.19	8.19
Whole Milk Powder		51.87	53.10	2.38	51.25	52.20	1.86	50.63	51.52	1.77	50.02	50.91	1.79	49.41	50.28	1.77
Fat		2769.16	2727.86	-1.49	2795.11	2737.48	-2.06	2809.87	2744.23	-2.34	2844.84	2787.43	-2.02	2871.95	2822.69	-1.72
Solid Nonfat		6574.27	6476.23	-1.49	6649.34	6512.23	-2.06	6725.45	6568.35	-2.34	6795.24	6658.11	-2.02	6874.05	6756.13	-1.72
Price (local currency)																
Butter (00 kg)		293.42	296.48	1.04	302.59	295.80	-2.25	322.54	302.37	-6.25	319.71	314.25	-1.71	321.44	325.83	1.37
Cheese (00 kg)		341.12	332.45	-2.54	360.51	348.06	-3.45	369.82	360.42	-2.54	371.61	363.35	-2.22	382.28	373.52	-2.29
Skim Milk Powder (00 kg)		252.81	220.48	-12.79	281.48	245.79	-12.68	278.45	241.20	-13.38	281.06	247.14	-12.07	283.36	251.03	-11.41
Whole Milk Powder (00 kg)		278.25	268.36	-3.55	278.25	270.47	-2.80	278.25	270.85	-2.66	278.25	270.77	-2.69	278.25	270.85	-2.66
Fat (per hl of milk)		9.47	9.92	4.79	9.75	9.89	1.40	9.95	9.66	-2.97	10.18	10.42	2.31	10.51	11.07	5.40
Solid Nonfat (per hl of milk)		22.48	21.08	-6.23	23.19	22.19	-4.32	23.83	23.24	-2.46	24.32	23.50	-3.38	25.14	24.07	-4.26
Fluid Milk (hl)		34.70	33.67	-2.96	35.77	34.83	-2.63	36.68	35.72	-2.61	37.47	36.83	-1.70	38.71	38.16	-1.41
Industrial Milk (hl)		31.95	31.00	-2.96	32.94	32.07	-2.63	33.78	32.90	-2.61	34.50	33.91	-1.70	35.65	35.15	-1.41
Blended Milk Price (hl)																
Gross Margin (local currency)																
Butter (00 kg)		66.35	61.51	-7.30	66.82	59.59	-10.82	75.68	65.42	-13.56	68.77	61.19	-11.01	62.98	57.55	-8.61
Cheese (00 kg)		146.76	140.58	-4.21	154.75	146.84	-5.11	155.04	151.33	-2.40	150.77	145.20	-3.69	151.32	144.04	-4.81
Skim Milk Powder (00 kg)		9.15	-4.64	-160.67	25.03	5.75	-77.02	16.70	-6.63	-139.71	14.50	-4.12	-128.42	9.31	-5.91	-163.41
Whole Milk Powder (00 kg)		28.76	26.99	-6.14	22.14	21.40	-3.36	16.14	15.60	-3.36	12.02	9.97	-17.05	5.21	2.93	-43.67
Net trade (KT)																
Butter		-19.22	-48.24	150.99	-28.83	-86.72	200.81	-33.47	-126.86	279.02	-17.92	-75.67	322.27	-12.28	-44.78	264.62
Cheese		-92.99	-200.22	115.32	-92.99	-234.15	151.80	-92.99	-180.23	93.81	-92.99	-186.44	100.50	-92.99	-203.18	118.49
Skim Milk Powder		136.69	6.86	-94.98	136.99	-21.08	-115.39	138.87	-48.46	-194.89	142.69	-15.23	-110.68	145.59	12.39	-91.49
Whole Milk Powder		10.43	-2.77	-126.58	10.43	4.25	-59.25	10.43	5.80	-44.37	10.43	-4.33	-141.53	10.43	-6.05	-158.01

Rest of the World

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC		2001			2002			2003			2004			2005		
Supply (KT)		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter		3847.98	3854.92	0.18	3930.35	3949.26	0.48	4034.10	4055.81	0.54	4091.58	4080.03	-0.28	4151.64	4106.87	-1.08
Cheese		3240.68	3843.30	18.60	3373.52	3999.33	18.55	3426.71	4018.22	17.26	3452.46	4099.88	17.01	3556.47	4173.25	17.34
Skim Milk Powder		960.45	1248.37	29.98	920.21	1228.24	33.47	941.13	1238.14	31.56	974.57	1205.18	23.66	971.30	1156.04	19.02
Whole Milk Powder		980.33	1213.51	23.79	1007.85	1219.38	20.99	1030.31	1201.16	16.58	1050.21	1199.37	14.20	1063.47	1141.68	7.35
Milk		322907.96	328619.99	1.77	332448.23	338863.67	1.93	340994.26	347062.22	1.78	349186.66	354497.95	1.52	357016.04	361501.45	1.26
Fat		12948.30	13177.34	1.77	13330.85	13588.10	1.93	13673.54	13916.86	1.78	14002.05	14215.02	1.52	14316.00	14495.86	1.26
Solid Nonfat		28911.15	29422.57	1.77	29765.33	30339.73	1.93	30530.49	31073.77	1.78	31263.98	31739.52	1.52	31964.98	32366.57	1.26
Demand (KT)																
Butter		4356.01	3969.57	-8.87	4444.77	4107.27	-7.59	4545.69	4214.68	-7.28	4605.41	4305.15	-6.52	4673.38	4375.14	-6.38
Cheese		3696.42	3382.57	-9.03	3831.25	3506.74	-8.47	3915.85	3614.54	-7.69	4002.76	3710.40	-7.30	4102.88	3787.02	-7.70
Skim Milk Powder		1656.58	1597.50	-3.57	1628.67	1582.71	-2.82	1646.69	1608.96	-2.29	1681.17	1638.64	-1.36	1638.00	1628.50	-0.58
Whole Milk Powder		2029.59	1950.63	-3.89	2062.68	2003.68	-2.86	2135.33	2090.16	-2.12	2199.68	2161.72	-1.73	2244.61	2222.93	-0.97
Fat		12948.30	13177.34	1.77	13330.85	13588.10	1.93	13673.54	13916.86	1.78	14002.05	14215.02	1.52	14316.00	14495.86	1.26
Solid Nonfat		28911.15	29422.57	1.77	29765.33	30339.73	1.93	30530.49	31073.77	1.78	31263.98	31739.52	1.52	31964.98	32366.57	1.26
Price (local currency)																
Butter (00 kg)		249.81	285.26	14.19	254.03	284.37	11.94	262.93	292.92	11.41	280.05	308.36	10.11	294.34	323.41	9.88
Cheese (00 kg)		299.57	362.01	20.84	312.26	372.72	19.36	331.26	388.79	17.37	352.00	409.66	16.38	352.70	413.99	17.38
Skim Milk Powder (00 kg)		238.78	289.51	12.87	247.62	272.41	10.01	262.85	283.96	8.03	282.00	295.13	4.66	297.44	303.26	1.96
Whole Milk Powder (00 kg)		250.94	286.43	14.14	260.53	286.99	10.16	284.21	305.20	7.39	295.10	312.73	5.97	314.61	324.95	3.29
Fat (per hl of milk)		17.04	18.81	10.38	17.15	18.62	8.58	17.04	18.48	8.48	17.47	18.97	8.59	17.72	19.41	9.52
Solid Nonfat (per hl of milk)		40.33	41.13	1.99	40.59	40.63	0.10	40.32	40.05	-0.68	41.35	40.78	-1.38	41.95	41.00	-2.26
Fluid Milk (hl)																
Industrial Milk (hl)																
Blended Milk Price (hl)		57.37	59.94	4.48	57.73	59.25	2.62	57.36	58.53	2.04	58.83	59.76	1.58	59.67	60.41	1.24
Gross Margin (local currency)																
Butter (00 kg)		-76.29	-75.87	-0.57	-73.13	-72.00	-1.55	-63.22	-61.91	-2.07	-55.83	-56.52	1.24	-48.09	-50.79	5.60
Cheese (00 kg)		28.61	64.88	126.70	36.48	74.12	103.17	51.36	86.93	69.27	60.65	95.98	58.25	57.15	94.24	64.91
Skim Milk Powder (00 kg)		-144.95	-127.63	-11.95	-137.18	-118.65	-13.50	-120.79	-102.92	-14.79	-112.16	-98.29	-12.37	-103.30	-92.19	-10.76
Whole Milk Powder (00 kg)		-130.97	-116.95	-10.71	-122.88	-110.16	-10.35	-100.45	-90.17	-10.23	-98.23	-89.26	-9.13	-86.64	-81.93	-5.43
Net trade (KT)																
Butter		-511.04	-113.30	-77.83	-512.43	-158.32	-69.10	-509.59	-158.25	-68.95	-511.81	-224.41	-56.15	-520.74	-266.86	-48.75
Cheese		-453.35	491.70	-208.46	-454.93	489.69	-207.64	-486.91	400.70	-182.29	-547.61	328.02	-159.90	-543.25	390.92	-171.96
Skim Milk Powder		-696.13	-348.11	-49.99	-708.46	-359.67	-49.23	-705.50	-373.61	-47.04	-686.59	-435.48	-36.57	-666.88	-471.65	-29.27
Whole Milk Powder		-1049.27	-734.59	-29.99	-1054.83	-788.59	-25.27	-1105.03	-891.39	-19.33	-1149.47	-983.82	-16.15	-1181.15	-1079.91	-8.57

World

50% Tariff Cut with 50% Max. Eliminate ES and 7% MAC		2001				2002				2003				2004				2005			
		Base Units	Simulation Units	Change %		Base Units	Simulation Units	Change %		Base Units	Simulation Units	Change %		Base Units	Simulation Units	Change %		Base Units	Simulation Units	Change %	
Supply (KT)																					
Butter		6964.33	6855.55	-1.56		7024.39	6935.17	-1.27		7104.99	7020.88	-1.18		7156.17	7075.35	-1.11		7220.52	7137.68	-1.15	
Cheese		15019.77	15564.47	0.63		15380.22	15951.82	3.72		15613.16	16179.43	3.63		15861.48	16422.91	3.54		16141.16	16717.72	3.57	
Skim Milk Powder		3343.58	3403.92	1.80		3249.24	3328.81	2.45		3209.70	3286.72	2.40		3198.96	3279.88	2.53		3157.07	3240.42	2.64	
Whole Milk Powder		2710.02	2693.28	-0.62		2744.83	2761.55	0.61		2827.57	2848.57	0.74		2903.80	2925.91	0.76		2956.70	2979.31	0.76	
Milk		559539.96	559973.40	0.08		570445.77	571990.72	0.27		580355.78	582053.70	0.29		589756.78	591611.09	0.31		598332.54	601399.42	0.34	
Fat		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Solid Nonfat		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Demand (KT)																					
Butter		6910.75	6762.52	-2.14		6989.39	6890.20	-1.14		7056.00	6989.64	-0.94		7114.16	7053.59	-0.85		7172.51	7090.45	-1.14	
Cheese		15018.69	15532.31	3.42		15380.29	15954.98	3.74		15614.51	16190.61	3.69		15864.96	16438.01	3.61		16145.75	16723.87	3.58	
Skim Milk Powder		3308.87	3380.01	2.15		3236.65	3317.80	2.51		3211.67	3291.50	2.49		3226.28	3305.13	2.44		3186.19	3266.93	2.53	
Whole Milk Powder		2710.02	2701.25	-0.32		2744.83	2755.00	0.37		2827.57	2844.48	0.60		2903.80	2922.92	0.66		2956.70	2980.68	0.81	
Fat		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Solid Nonfat		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Price (local currency)																					
Butter (00 kg)		156.13	219.43	40.54		158.77	218.75	37.78		164.33	225.32	37.11		175.03	237.20	35.52		183.96	248.78	35.24	
Cheese (00 kg)		187.23	278.47	48.73		195.16	286.71	46.91		207.04	299.07	44.45		220.00	315.12	43.24		220.44	318.46	44.46	
Skim Milk Powder (00 kg)		149.24	207.31	38.91		154.76	209.54	35.40		164.28	218.43	32.96		176.25	227.03	28.81		185.90	233.28	25.49	
Whole Milk Powder (00 kg)		156.84	220.33	40.48		162.83	220.76	35.58		177.63	234.77	32.17		184.44	240.56	30.43		196.63	249.96	27.12	
Fat (per hl of milk)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Solid Nonfat (per hl of milk)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Fluid Milk (hl)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Industrial Milk (hl)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Blended Milk Price (hl)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Gross Margin (local currency)																					
Butter (00 kg)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Cheese (00 kg)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Skim Milk Powder (00 kg)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Whole Milk Powder (00 kg)		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Net trade (KT)																					
Butter		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Cheese		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Skim Milk Powder		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	
Whole Milk Powder		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	

SCENARIO 6

36 PERCENT TARIFF CUT

**ELMINATE EXPORT SUBSIDIES AND INCREASE MINIMUM ACCESS TO 5
PERCENT**

Australia

36% Tariff Cut Eliminate ES and 5% MAC Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	180.45	194.71	7.91	185.24	204.44	10.36	184.50	205.59	1.43	183.09	203.75	11.29	189.77	207.99	9.60
Cheese	364.64	420.63	15.36	375.26	436.63	16.35	400.86	460.77	14.95	428.32	483.66	12.92	438.02	495.41	13.10
Skim Milk Powder	263.12	308.76	17.34	271.78	326.71	20.21	269.25	326.05	21.10	268.95	322.63	19.96	279.93	329.67	17.77
Whole Milk Powder	154.92	219.51	41.69	147.27	221.58	50.46	157.18	238.37	51.65	160.91	243.83	51.53	158.84	243.31	53.18
Milk	11079.68	12160.19	9.75	11267.58	12569.51	11.55	11594.49	12972.98	11.89	11890.82	13241.49	11.36	12135.09	13464.23	10.95
Fat	455.37	499.78	9.75	463.10	516.61	11.55	476.53	533.19	11.89	488.71	544.23	11.36	498.75	553.38	10.95
Solid Nonfat	998.69	1096.09	9.75	1015.63	1132.98	11.55	1045.10	1169.35	11.89	1071.81	1193.55	11.36	1093.83	1213.63	10.95
Demand (KT)															
Butter	68.10	61.72	-9.36	68.21	62.00	-9.11	69.34	63.00	-9.15	69.66	63.48	-8.87	70.08	63.98	-8.71
Cheese	197.06	182.44	-7.42	208.71	193.58	-7.25	216.73	201.75	-6.91	219.44	205.56	-6.32	232.03	216.95	-6.50
Skim Milk Powder	36.80	32.49	-11.71	37.19	33.21	-10.71	37.71	33.85	-10.22	37.87	34.45	-9.04	38.03	35.03	-7.88
Whole Milk Powder	33.22	25.16	-24.26	33.75	25.66	-23.96	34.25	25.69	-25.01	34.75	25.96	-25.31	35.24	26.16	-25.77
Fat	455.37	499.78	9.75	463.10	516.61	11.55	476.53	533.19	11.89	488.71	544.23	11.36	498.75	553.38	10.95
Solid Nonfat	998.69	1096.09	9.75	1015.63	1132.98	11.55	1045.10	1169.35	11.89	1071.81	1193.55	11.36	1093.83	1213.63	10.95
Price (local currency)															
Butter (00 kg)	240.28	298.94	24.41	244.02	301.70	23.64	252.68	312.70	23.76	266.52	327.61	22.92	282.17	345.52	22.45
Cheese (00 kg)	367.76	445.94	21.26	379.68	468.26	20.70	396.95	474.81	19.13	417.75	491.85	17.74	429.01	507.50	18.30
Skim Milk Powder (00 kg)	226.80	299.09	31.87	235.28	302.60	28.61	248.42	315.70	27.08	266.35	328.76	23.43	283.80	340.59	20.01
Whole Milk Powder (00 kg)	114.01	211.38	85.40	114.01	209.57	83.81	114.01	216.11	89.55	114.01	218.03	91.24	114.01	221.11	93.94
Fat (per hl of milk)	7.79	10.09	29.54	7.65	9.65	26.12	7.50	9.50	26.65	7.79	9.85	26.39	7.92	10.21	28.92
Solid Nonfat (per hl of milk)	16.55	19.23	16.18	16.27	17.47	7.39	15.94	16.81	5.44	16.56	17.14	3.51	16.82	17.14	1.90
Fluid Milk (hl)	53.97	65.01	20.46	55.75	63.21	13.39	57.62	64.66	12.22	59.49	65.93	10.83	59.50	65.78	10.55
Industrial Milk (hl)	24.34	29.32	20.46	23.92	27.12	13.39	23.44	26.31	12.22	24.35	26.99	10.83	24.74	27.35	10.55
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	72.03	83.58	16.04	75.46	91.01	20.60	82.69	99.77	20.65	87.10	103.83	19.21	95.23	109.99	15.49
Cheese (00 kg)	222.15	267.49	20.41	227.79	277.48	21.81	236.90	285.41	20.48	244.74	289.55	18.31	246.78	293.25	18.83
Skim Milk Powder (00 kg)	45.34	82.29	81.50	53.56	98.04	83.03	65.24	111.23	70.50	72.68	116.13	59.80	82.26	122.53	48.96
Whole Milk Powder (00 kg)	-50.59	1.71	-103.38	-46.88	13.29	-128.36	-42.87	22.87	-153.35	-46.96	20.17	-142.95	-48.08	20.32	-142.26
Net trade (KT)															
Butter	120.76	144.36	19.54	117.04	140.79	20.29	115.15	141.12	22.55	113.42	138.90	22.46	119.69	144.22	20.50
Cheese	167.58	244.54	45.93	166.55	237.94	42.86	164.13	254.61	38.78	208.89	273.97	31.15	205.99	279.45	35.66
Skim Milk Powder	226.32	279.36	23.44	234.60	291.53	24.27	231.54	290.70	25.55	231.08	286.69	24.07	241.90	294.66	21.81
Whole Milk Powder	121.70	198.63	63.21	113.51	193.91	70.83	122.93	211.31	71.89	126.16	216.39	71.52	123.61	217.17	75.69

Canada

36% Tariff Cut Eliminate ES and 5% MAC Supply (KT)		2001			2002			2003			2004			2005		
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter Cheese Skim Milk Powder Whole Milk Powder Milk Fat Solid Nonfat	82.82	81.47	-1.64	83.41	82.13	-1.54	84.05	82.76	-1.53	84.00	82.70	-1.55	85.68	84.37	-1.53	
	346.87	340.14	-1.94	350.18	342.96	-2.06	353.14	345.88	-2.06	356.12	348.88	-2.06	359.75	352.66	-1.97	
	61.17	55.66	-9.01	61.77	56.21	-9.00	63.11	57.54	-8.82	62.39	56.81	-8.94	65.31	59.78	-8.46	
	17.02	17.04	0.11	17.02	17.04	0.10	17.02	17.04	0.10	17.02	17.04	0.10	17.02	17.04	0.10	
	8150.86	8070.75	-0.98	8200.59	8118.41	-1.00	8259.37	8176.97	-1.00	8312.98	8230.62	-0.99	8390.43	8309.34	-0.97	
	309.73	306.69	-0.98	312.44	309.31	-1.00	315.51	312.36	-1.00	318.39	315.23	-0.99	322.19	319.08	-0.97	
	719.46	712.39	-0.98	724.34	717.08	-1.00	730.03	722.75	-1.00	735.27	727.99	-0.99	742.63	735.45	-0.97	
Demand (KT)																
Butter Cheese Skim Milk Powder Whole Milk Powder Fat Solid Nonfat	81.43	82.69	1.55	82.16	83.58	1.72	82.80	84.27	1.77	83.74	85.22	1.76	84.43	85.81	1.63	
	340.48	347.50	2.06	343.99	351.52	2.19	348.50	356.08	2.17	353.18	360.75	2.14	356.93	364.26	2.05	
	33.02	33.51	1.48	33.26	33.72	1.38	33.53	33.98	1.35	33.85	34.31	1.36	34.17	34.64	1.39	
	18.41	18.43	0.10	18.41	18.43	0.10	18.41	18.43	0.09	18.41	18.43	0.09	18.41	18.43	0.09	
	309.73	306.69	-0.98	312.44	309.31	-1.00	315.51	312.36	-1.00	318.39	315.23	-0.99	322.19	319.08	-0.97	
	719.46	712.39	-0.98	724.34	717.08	-1.00	730.03	722.75	-1.00	735.27	727.99	-0.99	742.63	735.45	-0.97	
Price (local currency)																
Butter (00 kg) Cheese (00 kg) Skim Milk Powder (00 kg) Whole Milk Powder (00 kg) Fat (per hl of milk) Solid Nonfat (per hl of milk) Fluid Milk (hl) Industrial Milk (hl) Blended Milk Price (hl)	553.00	541.00	-2.17	555.00	541.62	-2.41	557.00	543.19	-2.48	559.00	545.21	-2.47	561.00	548.16	-2.29	
	780.00	758.20	-2.79	810.00	786.00	-2.96	838.00	813.33	-2.94	865.00	839.89	-2.90	896.00	871.06	-2.78	
	479.00	465.15	-2.89	503.00	489.40	-2.70	524.00	510.14	-2.65	539.00	524.60	-2.67	559.00	543.80	-2.72	
	499.57	498.57	-0.20	517.46	516.46	-0.19	533.17	532.17	-0.19	544.56	543.54	-0.19	559.56	558.50	-0.19	
	17.17	16.78	-2.29	17.55	17.09	-2.67	17.98	17.50	-2.70	18.35	17.87	-2.61	18.82	18.39	-2.27	
	40.27	40.48	0.53	41.16	41.44	0.69	42.17	42.46	0.70	43.03	43.31	0.67	44.11	44.35	0.53	
	63.49	63.29	-0.31	64.34	64.14	-0.32	65.42	65.21	-0.32	66.19	65.98	-0.31	67.44	67.23	-0.31	
	57.44	57.26	-0.31	58.71	58.52	-0.32	60.15	59.96	-0.32	61.38	61.19	-0.31	62.93	62.74	-0.31	
Blended Milk Price (hl)																
Gross Margin (local currency)																
Butter (00 kg) Cheese (00 kg) Skim Milk Powder (00 kg) Whole Milk Powder (00 kg)	159.34	155.94	-2.13	151.81	148.59	-2.12	143.34	140.11	-2.25	136.07	132.80	-2.40	127.42	142.12	-2.58	
	465.22	448.34	-3.63	477.22	459.11	-3.80	485.34	467.13	-3.75	491.97	473.81	-3.69	499.90	482.11	-3.56	
	43.40	29.57	-31.86	55.08	41.15	-25.30	62.62	48.66	-22.30	66.12	52.13	-21.16	71.47	57.61	-19.39	
	61.31	61.35	0.08	67.66	67.70	0.07	70.76	70.80	0.06	71.35	71.39	0.06	72.83	72.87	0.06	
Net trade (KT)																
Butter Cheese Skim Milk Powder Whole Milk Powder	0.39	-2.39	-712.56	0.25	-2.39	-1055.60	0.25	-2.39	-1055.60	0.25	-2.39	-1055.60	0.25	-2.39	-1055.60	
	3.29	-11.10	-437.46	3.91	-10.48	-368.09	4.15	-10.24	-346.81	4.18	-10.21	-344.32	4.72	-9.67	-304.93	
	28.44	22.46	-21.04	27.89	21.91	-21.46	28.50	22.52	-21.00	26.84	20.86	-22.30	29.44	23.46	-20.33	
	-1.38	-1.38	0.00	-1.38	-1.38	0.00	-1.38	-1.38	0.00	-1.38	-1.38	0.00	-1.38	-1.38	0.00	

European Union

36% Tariff Cut Eliminate ES and 5% MAC Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	1854.94	1770.99	-4.53	1849.23	1757.46	-4.96	1843.14	1764.16	-4.29	1827.44	1767.18	-3.30	1811.83	1767.64	-2.44
Cheese	6826.19	6592.28	-3.43	6903.02	6726.51	-2.56	6963.91	6797.85	-2.38	7045.01	6883.12	-2.30	7139.57	6984.95	-2.17
Skim Milk Powder	1144.38	930.35	-18.70	1105.67	904.17	-18.22	1072.50	898.21	-16.25	1020.39	883.05	-13.46	986.16	858.13	-11.18
Whole Milk Powder	968.44	557.96	-42.39	989.41	604.14	-38.94	1018.78	658.95	-35.32	1049.94	723.57	-31.08	1077.19	820.70	-23.81
Milk	121300.00	114897.92	-5.28	121200.00	115310.61	-4.86	120900.00	115519.18	-4.45	120700.00	115950.34	-3.94	120800.00	116886.17	-3.24
Fat	4997.56	4733.79	-5.28	5005.56	4762.33	-4.86	4993.17	4770.94	-4.45	4996.98	4800.34	-3.94	5013.20	4850.78	-3.24
Solid Nonfat	10940.98	10363.53	-5.28	10939.27	10407.71	-4.86	10912.20	10426.53	-4.45	10901.42	10472.44	-3.94	10917.74	10564.01	-3.24
Demand (KT)															
Butter	1747.45	1890.55	8.19	1742.93	1884.76	8.14	1739.58	1873.98	7.73	1737.04	1867.65	7.52	1730.78	1858.19	7.36
Cheese	6559.30	6906.50	5.29	6633.04	6923.34	4.38	6688.00	6964.97	4.14	6752.30	7028.73	4.09	6849.60	7127.89	4.06
Skim Milk Powder	946.49	974.21	2.93	934.40	958.73	2.60	905.78	922.40	1.83	889.41	893.73	0.49	874.41	868.72	-0.65
Whole Milk Powder	523.13	580.68	11.00	524.94	579.68	10.43	535.15	585.44	9.40	547.14	593.14	8.41	555.23	590.97	6.44
Fat	4997.56	4733.79	-5.28	5005.56	4762.33	-4.86	4993.17	4770.94	-4.45	4996.98	4800.34	-3.94	5013.20	4850.78	-3.24
Solid Nonfat	10940.98	10363.53	-5.28	10939.27	10407.71	-4.86	10912.20	10426.53	-4.45	10901.42	10472.44	-3.94	10917.74	10564.01	-3.24
Price (local currency)															
Butter (00 kg)	362.60	301.95	-16.73	362.46	302.17	-16.63	361.92	304.40	-15.89	363.11	306.77	-15.52	356.19	301.95	-15.23
Cheese (00 kg)	384.91	338.34	-12.10	384.94	345.85	-10.16	388.41	350.94	-9.65	389.09	351.96	-9.54	378.16	342.32	-9.48
Skim Milk Powder (00 kg)	197.89	184.11	-6.96	198.12	185.79	-6.22	200.90	191.97	-4.44	202.43	199.99	-1.20	202.53	205.86	1.65
Whole Milk Powder (00 kg)	252.96	194.87	-22.96	250.90	195.80	-21.96	258.73	206.69	-20.11	259.20	211.83	-18.27	257.69	220.47	-14.44
Fat (per hl of milk)	9.64	6.99	-27.52	9.64	7.06	-26.76	9.64	7.13	-26.02	9.64	7.07	-26.72	9.33	6.75	-27.66
Solid Nonfat (per hl of milk)	21.36	22.64	6.00	21.36	22.68	6.17	21.36	22.71	6.33	21.36	22.91	7.28	20.67	22.44	8.55
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	31.00	29.63	-4.43	31.00	29.74	-4.07	31.00	29.84	-3.73	31.00	29.98	-3.30	30.00	29.19	-2.71
Gross Margin (local currency)															
Butter (00 kg)	127.66	119.94	-6.05	125.51	117.06	-6.73	122.78	115.51	-5.92	121.76	116.21	-4.55	119.35	115.29	-3.41
Cheese (00 kg)	173.52	151.99	-12.40	170.48	154.24	-9.53	169.78	154.50	-9.00	167.43	152.53	-8.90	160.44	146.20	-8.87
Skim Milk Powder (00 kg)	-18.29	-37.99	107.65	-17.68	-36.22	104.91	-15.36	-31.40	104.43	-13.90	-26.54	90.89	-8.54	-18.48	116.38
Whole Milk Powder (00 kg)	22.79	-14.99	-165.77	21.05	-14.41	-168.44	26.25	-6.86	-126.12	26.30	-3.73	-114.19	29.90	6.30	-78.94
Net trade (KT)															
Butter	89.50	-160.05	-278.83	90.30	-133.43	-247.76	93.57	-109.18	-216.69	86.39	-94.86	-209.80	73.04	-100.17	-237.15
Cheese	266.87	-324.63	-221.64	269.89	-191.24	-170.86	275.90	-163.23	-159.16	292.64	-142.30	-148.63	290.03	-143.88	-149.61
Skim Milk Powder	162.89	-77.20	-147.40	159.28	-61.86	-138.84	169.72	-16.44	-109.69	159.99	22.28	-86.07	122.75	18.53	-84.90
Whole Milk Powder	445.31	-22.72	-105.10	464.47	24.46	-94.73	483.63	73.50	-84.80	502.79	130.42	-74.06	521.96	229.72	-55.99

Japan

36% Tariff Cut Eliminate ES and 5% MAC		2001			2002			2003			2004			2005		
Supply (KT)		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter		83.38	78.78	-5.52	83.56	79.26	-5.15	83.78	80.29	-4.17	84.24	81.62	-3.12	79.78	77.88	-2.38
Cheese		44.09	44.00	-0.20	46.29	44.00	-4.95	48.33	44.00	-8.96	50.29	44.00	-12.51	52.27	44.00	-15.82
Skim Milk Powder		197.10	187.93	-4.65	201.09	191.37	-4.83	205.08	195.91	-4.47	209.05	200.60	-4.04	213.01	204.99	-3.77
Whole Milk Powder		53.00	51.20	-3.40	53.00	51.23	-3.35	53.00	51.22	-3.36	53.00	51.22	-3.36	53.00	51.22	-3.36
Milk		8588.61	8473.18	-1.34	8657.16	8530.47	-1.46	8724.24	8598.64	-1.44	8791.37	8668.87	-1.39	8859.83	8737.36	-1.38
Fat		317.78	313.51	-1.34	320.31	315.63	-1.46	322.80	318.15	-1.44	325.28	320.75	-1.39	327.81	323.28	-1.38
Solid Nonfat		752.92	742.80	-1.34	758.93	747.82	-1.46	764.81	753.80	-1.44	770.69	759.95	-1.39	776.69	765.96	-1.38
Demand (KT)																
Butter		83.48	87.94	5.34	83.66	88.28	5.52	83.88	88.31	5.28	84.34	88.32	4.72	79.88	83.25	4.22
Cheese		232.00	250.65	8.04	239.95	260.70	8.65	247.98	271.84	9.62	255.97	283.71	10.84	263.97	290.31	9.98
Skim Milk Powder		251.96	269.85	7.10	254.05	272.93	7.43	258.22	275.26	6.60	260.62	275.90	5.86	264.35	278.90	5.50
Whole Milk Powder		53.00	53.69	1.31	53.00	53.69	1.29	53.00	53.68	1.29	53.00	53.68	1.29	53.00	53.69	1.30
Fat		317.78	313.51	-1.34	320.31	315.63	-1.46	322.80	318.15	-1.44	325.28	320.75	-1.39	327.81	323.28	-1.38
Solid Nonfat		752.92	742.80	-1.34	758.93	747.82	-1.46	764.81	753.80	-1.44	770.69	759.95	-1.39	776.69	765.96	-1.38
Price (local currency)																
Butter (00 kg)		96400.00	87551.46	-9.18	96400.00	87267.79	-9.47	96400.00	87642.31	-9.08	96400.00	88502.82	-8.19	96400.00	89293.23	-7.37
Cheese (00 kg)		183955.50	164187.10	-10.75	183955.50	162831.96	-11.48	183955.50	160709.11	-12.64	183955.50	158124.23	-14.04	183955.50	159942.25	-13.05
Skim Milk Powder (00 kg)		54564.00	48935.86	-10.31	54564.00	48894.85	-10.76	54564.00	49300.02	-9.65	54564.00	49846.24	-8.65	54564.00	50114.87	-8.15
Whole Milk Powder (00 kg)		77960.00	76386.42	-2.04	77960.00	76385.72	-2.02	77960.00	76388.72	-2.02	77960.00	76388.29	-2.02	77960.00	76383.83	-2.02
Fat (per hl of milk)		2490.94	2255.18	-9.46	2490.94	2229.75	-10.49	2490.94	2215.26	-11.07	2490.94	2221.21	-10.83	2490.94	2229.43	-10.50
Solid Nonfat (per hl of milk)		5896.06	6103.33	3.52	5896.06	6126.21	3.90	5896.06	6141.21	4.16	5896.06	6136.25	4.07	5896.06	6128.27	3.94
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)		8387.00	8358.51	-0.34	8387.00	8355.97	-0.37	8387.00	8356.47	-0.36	8387.00	8357.46	-0.35	8387.00	8357.70	-0.35
Gross Margin (local currency)																
Butter (00 kg)		40715.40	36890.79	-9.39	40674.72	37098.03	-8.79	40553.06	37648.32	-7.16	40472.12	38289.54	-5.39	40391.34	38813.99	-3.91
Cheese (00 kg)		146409.88	128375.00	-12.32	146263.62	127062.62	-13.13	145826.14	124687.27	-14.50	145535.07	121887.37	-16.25	145244.58	123366.68	-15.06
Skim Milk Powder (00 kg)		9468.63	16092.20	90.02	9460.17	16544.84	95.56	9434.87	16057.52	90.37	9418.03	15443.44	83.46	9401.23	15070.76	79.39
Whole Milk Powder (00 kg)		14305.78	12806.86	-10.48	14291.49	12815.65	-10.33	14248.75	12766.96	-10.40	14220.31	12737.48	-10.43	14191.92	12711.28	-10.43
Net trade (KT)																
Butter		-0.10	-10.41	10313.71	-0.10	-8.47	8374.32	-0.10	-7.36	7263.09	-0.10	-5.97	5872.96	-0.10	-5.37	5265.09
Cheese		-187.92	-207.98	10.67	-193.66	-215.98	11.52	-199.65	-227.20	13.80	-205.68	-239.09	16.24	-211.71	-245.80	16.10
Skim Milk Powder		-54.86	-83.04	51.38	-52.96	-81.17	53.27	-53.14	-78.74	48.18	-51.57	-74.75	44.96	-51.34	-73.94	44.01
Whole Milk Powder		0.00	-2.50	n/a	0.00	-2.46	n/a	0.00	-2.47	n/a	0.00	-2.47	n/a	0.00	-2.47	n/a

New Zealand

36% Tariff Cut Eliminate ES and 5% MAC		2001			2002			2003			2004			2005		
		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)																
Butter		391.52	401.39	2.52	405.66	427.29	5.33	408.11	432.36	6.46	401.62	428.76	6.76	411.95	435.93	5.82
Cheese		339.30	451.71	33.13	346.13	467.97	35.20	362.25	482.34	33.15	387.38	502.47	29.71	394.09	512.99	30.17
Skim Milk Powder		204.66	261.73	27.89	210.68	285.11	35.33	198.05	277.37	40.05	185.58	263.70	42.10	186.55	260.88	39.84
Whole Milk Powder		474.01	528.27	11.45	468.60	533.19	13.78	490.22	559.39	14.11	512.27	580.11	13.24	527.33	590.92	12.06
Milk		12467.91	13579.91	8.92	12718.05	14146.93	11.24	12900.76	14423.27	11.80	13147.02	14649.35	11.43	13447.53	14901.15	10.81
Fat		623.40	679.00	8.92	635.90	707.35	11.24	645.04	721.16	11.80	657.35	732.47	11.43	672.38	745.06	10.81
Solid Nonfat		1190.75	1296.94	8.92	1214.64	1351.10	11.24	1232.09	1377.49	11.80	1255.61	1399.09	11.43	1284.31	1423.13	10.81
Demand (KT)																
Butter		31.82	28.82	-9.43	31.89	29.00	-9.05	31.93	29.06	-8.98	31.85	29.07	-8.72	31.81	29.09	-8.56
Cheese		42.44	38.50	-9.28	44.54	40.55	-8.96	46.51	42.54	-8.54	46.42	42.72	-7.97	46.48	42.73	-8.07
Skim Milk Powder		8.01	7.09	-11.43	8.03	7.20	-10.34	8.04	7.25	-9.81	8.03	7.33	-8.76	8.01	7.41	-7.54
Whole Milk Powder		0.80	0.71	-11.08	0.80	0.72	-9.88	0.80	0.73	-9.36	0.80	0.73	-8.53	0.80	0.74	-7.74
Fat		623.40	679.00	8.92	635.90	707.35	11.24	645.04	721.16	11.80	657.35	732.47	11.43	672.38	745.06	10.81
Solid Nonfat		1190.75	1296.94	8.92	1214.64	1351.10	11.24	1232.09	1377.49	11.80	1255.61	1399.09	11.43	1284.31	1423.13	10.81
Price (local currency)																
Butter (00 kg)		302.80	377.38	24.63	306.50	378.47	23.48	316.06	389.59	23.26	333.07	407.91	22.47	350.92	428.08	21.99
Cheese (00 kg)		397.95	507.67	27.57	411.65	520.59	26.47	429.44	536.83	25.01	452.08	556.37	23.07	463.70	572.18	23.40
Skim Milk Powder (00 kg)		292.77	383.41	30.96	302.03	384.91	27.44	316.11	397.83	25.79	335.61	411.49	22.61	357.21	435.22	19.04
Whole Milk Powder (00 kg)		321.80	417.75	29.82	329.62	415.33	26.00	348.44	433.44	24.39	369.09	449.98	21.92	386.12	461.80	19.60
Fat (per hl of milk)		9.83	14.06	43.11	9.94	13.55	36.32	9.93	13.43	35.33	10.18	13.72	34.80	10.38	14.20	36.80
Solid Nonfat (per hl of milk)		19.59	25.05	27.85	19.82	23.26	17.36	19.79	22.66	14.50	20.30	22.58	11.22	20.70	22.34	7.92
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)		29.42	39.11	32.95	29.76	36.81	23.68	29.72	36.10	21.46	30.48	36.30	19.09	31.08	36.54	17.56
Gross Margin (local currency)																
Butter (00 kg)		115.53	120.68	4.46	114.90	126.19	9.82	120.40	134.09	11.37	128.15	142.31	11.05	136.90	149.41	9.14
Cheese (00 kg)		239.47	298.12	24.49	245.09	308.65	25.94	254.53	317.18	24.62	265.37	325.41	22.63	267.91	329.94	23.15
Skim Milk Powder (00 kg)		81.11	110.89	36.71	85.24	124.07	45.56	94.85	136.24	43.63	104.32	145.08	39.07	115.82	154.60	33.48
Whole Milk Powder (00 kg)		106.11	134.42	26.68	108.65	142.35	31.01	121.53	157.62	29.69	131.45	166.84	26.93	139.05	172.23	23.86
Net trade (KT)																
Butter		319.71	337.38	5.53	333.77	356.18	6.71	334.19	361.42	8.15	329.77	357.99	8.56	340.14	366.98	7.89
Cheese		296.52	413.59	39.48	301.23	426.48	41.58	315.37	438.92	39.17	340.57	458.89	34.74	347.21	469.92	35.34
Skim Milk Powder		196.65	256.12	30.24	202.66	276.60	36.48	190.01	269.16	41.65	177.56	255.46	43.87	178.54	253.46	41.96
Whole Milk Powder		473.21	527.56	11.48	467.80	532.46	13.82	489.42	558.66	14.15	511.47	579.31	13.28	526.53	590.18	12.09

United States

36% Tariff Cut Eliminate ES and 5% MAC	2001			2002			2003			2004			2005		
	Simulation		Change %	Simulation		Change %	Simulation		Change %	Simulation		Change %	Simulation		Change %
	Base Units	Units		Base Units	Units		Base Units	Units		Base Units	Units		Base Units	Units	
Supply (KT)															
Butter	523.24	493.96	-5.60	486.94	450.05	-7.58	489.31	411.29	-12.36	484.20	433.61	-10.45	489.87	460.71	-5.95
Cheese	3858.00	3781.88	-1.97	3985.82	3858.47	-3.20	4057.96	3955.23	-2.53	4141.90	4067.71	-1.79	4200.89	4089.30	-2.65
Skim Milk Powder	512.70	408.91	-20.24	478.04	334.39	-30.05	480.58	286.38	-37.82	478.03	335.00	-29.92	474.81	355.41	-25.15
Whole Milk Powder	62.30	54.40	-12.68	61.68	60.51	-1.90	61.06	60.41	-1.07	60.45	45.58	-24.59	59.85	46.69	-21.99
Milk	75044.94	73754.91	-1.72	75954.16	74069.52	-2.48	76982.66	74811.70	-2.82	77727.93	75870.28	-2.39	78683.62	76993.07	-2.15
Fat	2769.16	2721.56	-1.72	2795.11	2725.76	-2.48	2809.87	2730.63	-2.82	2844.84	2776.85	-2.39	2871.95	2810.25	-2.15
Solid Nonfat	6574.27	6461.25	-1.72	6649.34	6484.35	-2.48	6725.45	6535.79	-2.82	6795.24	6632.84	-2.39	6874.05	6726.36	-2.15
Demand (KT)															
Butter	542.46	543.21	0.14	515.77	525.67	1.92	502.78	527.33	4.88	502.12	510.76	1.72	502.15	501.00	-0.23
Cheese	3950.99	409.70	3.00	4078.81	4280.23	4.94	4150.94	4335.29	4.44	4234.89	4350.21	2.72	4293.86	4456.13	3.78
Skim Milk Powder	376.01	412.23	9.63	341.05	374.78	9.89	321.70	355.84	10.61	335.33	367.10	9.47	329.22	358.45	8.88
Whole Milk Powder	51.87	53.13	2.43	51.25	52.29	2.03	50.63	51.62	1.95	50.02	51.01	1.97	49.41	50.37	1.95
Fat	2769.16	2721.56	-1.72	2795.11	2725.76	-2.48	2809.87	2730.63	-2.82	2844.84	2776.85	-2.39	2871.95	2810.25	-2.15
Solid Nonfat	6574.27	6461.25	-1.72	6649.34	6484.35	-2.48	6725.45	6535.79	-2.82	6795.24	6632.84	-2.39	6874.05	6726.36	-2.15
Price (local currency)															
Butter (00 kg)	293.42	292.83	-0.20	302.59	294.33	-2.73	322.54	300.93	-6.70	319.71	311.89	-2.45	321.44	322.51	0.33
Cheese (00 kg)	341.12	324.70	-4.81	360.51	332.68	-7.72	369.82	343.98	-6.99	371.61	355.34	-4.38	382.28	359.36	-6.00
Skim Milk Powder (00 kg)	252.81	219.46	-13.19	281.48	243.46	-13.51	278.45	238.43	-14.37	281.06	244.53	-13.00	283.36	248.60	-12.27
Whole Milk Powder (00 kg)	278.25	268.17	-3.62	278.25	269.77	-3.04	278.25	270.11	-2.93	278.25	270.00	-2.96	278.25	270.11	-2.92
Fat (per hl of milk)	9.47	9.72	2.60	9.75	9.70	-0.46	9.95	9.48	-4.77	10.18	10.29	1.10	10.51	10.84	3.21
Solid Nonfat (per hl of milk)	22.48	21.15	-5.94	23.19	22.17	-4.40	23.83	23.23	-2.48	24.32	23.53	-3.24	25.14	24.13	-4.04
Fluid Milk (hl)	34.70	33.52	-3.41	35.77	34.61	-3.24	36.68	35.52	-3.16	37.47	36.74	-1.96	38.71	37.97	-1.91
Industrial Milk (hl)	31.95	30.86	-3.41	32.94	31.87	-3.24	33.78	32.71	-3.16	34.50	33.82	-1.96	35.65	34.97	-1.91
Blended Milk Price (hl)															
Gross Margin (local currency)															
Butter (00 kg)	66.35	62.09	-6.26	66.82	61.45	-8.03	75.88	67.25	-11.15	68.77	61.41	-10.70	62.98	58.74	-6.73
Cheese (00 kg)	146.76	135.69	-7.54	154.75	136.23	-11.97	155.04	140.10	-9.64	150.77	139.98	-7.16	151.32	135.09	-10.72
Skim Milk Powder (00 kg)	9.15	-5.94	-164.92	25.03	4.14	-83.46	16.70	-8.64	-151.73	14.50	-6.30	-143.47	9.31	-8.05	-186.40
Whole Milk Powder (00 kg)	28.76	27.61	-3.99	22.14	21.97	-0.77	16.14	16.05	-0.59	12.02	9.86	-17.99	5.21	3.29	-36.76
Net trade (KT)															
Butter	-19.22	-48.94	154.63	-28.83	-75.71	162.60	-33.47	-116.01	246.61	-17.92	-76.69	327.95	-12.28	-40.27	227.94
Cheese	-92.99	-294.26	216.45	-92.99	-422.85	354.72	-92.99	-374.58	302.81	-92.99	-274.40	195.09	-92.99	-369.14	296.96
Skim Milk Powder	136.69	-2.87	-102.10	136.99	-34.35	-125.07	138.87	-64.53	-146.47	142.69	-32.64	-122.88	145.59	-4.53	-103.11
Whole Milk Powder	10.43	1.36	-96.95	10.43	8.12	-22.18	10.43	8.80	-15.60	10.43	-5.12	-149.11	10.43	-3.73	-135.77

Rest of the World

36% Tariff Cut Eliminate ES and 5% MAC Supply (KT)	2001			2002			2003			2004			2005		
	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Butter	3847.98	3879.19	0.81	3830.35	3971.97	1.06	4034.10	4081.09	1.16	4091.58	4120.92	0.72	4151.64	4143.96	-0.19
Cheese	3240.68	3637.67	12.25	3373.52	3787.06	12.26	3426.71	3801.53	10.94	3452.46	370.57	9.21	3556.47	3922.61	10.30
Skim Milk Powder	980.45	1197.47	24.68	920.21	1173.36	27.51	941.13	1186.16	26.04	974.57	1158.67	18.89	971.30	1111.04	14.39
Whole Milk Powder	980.33	1246.66	27.17	1007.85	1249.72	24.00	1030.31	1239.29	20.28	1050.21	1240.98	18.16	1063.47	1185.77	11.50
Milk	322907.96	327737.13	1.50	332448.23	337831.30	1.62	340994.26	346076.78	1.49	349186.66	353439.99	1.22	357016.04	360514.75	0.98
Fat	12948.30	13141.94	1.50	13330.85	13546.07	1.62	13673.54	13877.34	1.49	14002.05	14172.60	1.22	14316.00	14456.29	0.98
Solid Nonfat	28911.15	29343.53	1.50	29765.33	30247.29	1.62	30530.49	30985.54	1.49	31263.98	31644.80	1.22	31964.98	32278.23	0.98
Demand (KT)															
Butter	4356.01	4138.48	-4.99	4444.77	4249.70	-4.39	4545.69	4349.92	-4.31	4605.41	4439.03	-3.61	4673.38	4508.26	-3.53
Cheese	3696.42	3466.12	-6.23	3831.25	3609.78	-5.78	3915.85	3718.34	-5.04	4002.76	386.83	-4.15	4102.88	3908.43	-4.74
Skim Milk Powder	1656.58	1594.73	-3.73	1628.67	1580.73	-2.94	1646.69	1606.03	-2.47	1681.17	1634.51	-1.60	1638.00	1623.55	-0.88
Whole Milk Powder	2029.59	1949.65	-3.94	2062.68	2000.99	-2.99	2135.33	2085.27	-2.34	2199.68	2156.54	-1.96	2244.61	2216.50	-1.25
Fat	12948.30	13141.94	1.50	13330.85	13546.07	1.62	13673.54	13877.34	1.49	14002.05	14172.60	1.22	14316.00	14456.29	0.98
Solid Nonfat	28911.15	29343.53	1.50	29765.33	30247.29	1.62	30530.49	30985.54	1.49	31263.98	31644.80	1.22	31964.98	32278.23	0.98
Price (local currency)															
Butter (00 kg)	249.81	268.78	7.59	254.03	270.85	6.62	262.93	279.99	6.49	280.05	295.16	5.40	294.34	309.86	5.27
Cheese (00 kg)	299.57	340.70	13.73	312.26	351.75	12.65	331.26	367.39	10.91	352.00	383.10	8.84	352.70	388.67	10.20
Skim Milk Powder (00 kg)	238.78	271.08	13.52	247.62	273.55	10.47	262.85	285.69	8.69	282.00	297.63	5.54	297.44	306.36	3.00
Whole Milk Powder (00 kg)	250.94	286.91	14.33	260.53	288.28	10.65	284.21	307.59	8.23	295.10	315.25	6.83	314.61	328.10	4.29
Fat (per hl of milk)	17.04	17.86	4.84	17.15	17.83	3.98	17.04	17.71	3.96	17.47	18.12	3.71	17.72	18.55	4.67
Solid Nonfat (per hl of milk)	40.33	41.68	3.34	40.59	41.17	1.42	40.32	40.63	0.75	41.35	41.40	0.12	41.95	41.68	-0.65
Fluid Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)	57.37	59.54	3.78	57.73	59.00	2.18	57.36	58.34	1.71	58.83	59.52	1.18	59.67	60.23	0.93
Gross Margin (local currency)															
Butter (00 kg)	-76.29	-74.41	-2.46	-73.13	-70.63	-3.42	-63.22	-60.39	-4.47	-55.83	-54.06	-3.16	-48.09	-48.55	0.96
Cheese (00 kg)	28.61	52.48	83.47	36.48	61.35	68.18	51.36	73.90	43.89	60.65	79.78	31.55	57.15	79.17	38.53
Skim Milk Powder (00 kg)	-144.95	-130.70	-9.83	-137.18	-121.95	-11.10	-120.79	-106.05	-12.20	-112.16	-101.09	-9.87	-103.30	-94.89	-8.14
Whole Milk Powder (00 kg)	-130.97	-114.95	-12.23	-122.88	-108.34	-11.84	-100.45	-87.88	-12.51	-98.23	-86.75	-11.68	-86.64	-79.28	-8.49
Net trade (KT)															
Butter	-511.04	-259.95	-49.13	-512.43	-276.97	-45.95	-509.59	-267.59	-47.49	-511.81	-316.98	-38.07	-520.74	-363.00	-30.29
Cheese	-453.35	179.84	-139.67	-454.93	176.13	-138.72	-486.91	81.72	-116.78	-547.61	-66.85	-87.79	-543.25	19.11	-103.52
Skim Milk Powder	-696.13	-394.82	-43.28	-708.46	-412.65	-41.75	-705.50	-422.66	-40.09	-686.59	-477.90	-30.40	-666.88	-511.64	-23.28
Whole Milk Powder	-1049.27	-700.95	-33.20	-1054.83	-755.11	-28.41	-1105.03	-848.43	-23.22	-1149.47	-917.23	-20.20	-1181.15	-1029.50	-12.84

World

36% Tariff Cut		2001			2002			2003			2004			2005		
Eliminate ES and 5% MAC		Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %	Base Units	Simulation Units	Change %
Supply (KT)																
Butter		6064.33	6900.49	-0.92	7024.39	6972.60	-0.74	7104.99	7057.54	-0.67	7156.17	7118.54	-0.53	7220.52	7178.49	-0.58
Cheese		15019.77	15268.32	1.65	15380.22	15663.59	1.84	15613.16	15887.59	1.76	15861.48	16100.42	1.51	16141.16	16401.91	1.62
Skim Milk Powder		3343.58	3350.81	0.22	3249.24	3271.31	0.68	3209.70	3227.64	0.56	3198.96	3220.46	0.67	3157.07	3179.91	0.72
Whole Milk Powder		2710.02	2675.03	-1.29	2744.83	2737.40	-0.27	2827.57	2824.66	-0.10	2903.80	2902.32	-0.05	2956.70	2955.64	-0.04
Milk		559539.96	558673.97	-0.15	570445.77	570576.74	0.02	580355.78	580579.53	0.04	589756.78	59000.93	0.05	599332.54	59906.07	0.08
Fat		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demand (KT)																
Butter		6910.75	6833.41	-1.12	6989.39	6922.99	-0.67	7056.00	7015.86	-0.57	7114.16	7083.53	-0.43	7172.51	7129.58	-0.60
Cheese		15018.69	15261.41	1.62	15380.29	15659.71	1.82	15614.51	15890.81	1.77	15864.96	16108.53	1.54	16145.75	16406.71	1.62
Skim Milk Powder		3308.87	3324.11	0.46	3236.65	3261.30	0.76	3211.67	3234.62	0.71	3226.28	3247.32	0.65	3186.19	3206.70	0.64
Whole Milk Powder		2710.02	2681.45	-1.05	2744.83	2731.46	-0.49	2827.57	2820.85	-0.24	2903.80	2899.48	-0.15	2956.70	2956.86	0.01
Fat		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Price (local currency)																
Butter (00 kg)		156.13	194.20	24.38	158.77	195.70	23.26	164.33	202.31	23.11	175.03	213.27	21.85	183.96	223.89	21.70
Cheese (00 kg)		187.23	246.17	31.48	195.16	254.15	30.23	207.04	266.46	28.21	220.00	276.81	25.82	220.44	280.83	27.40
Skim Milk Powder (00 kg)		149.24	195.86	31.24	154.76	197.65	27.71	164.28	206.42	25.65	176.25	215.05	22.01	185.90	221.36	19.07
Whole Milk Powder (00 kg)		156.84	207.31	32.18	162.83	208.29	27.92	177.63	222.25	25.12	184.44	227.78	23.50	196.63	237.07	20.57
Fat (per hl of milk)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solid Nonfat (per hl of milk)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluid Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Milk (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blended Milk Price (hl)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gross Margin (local currency)																
Butter (00 kg)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese (00 kg)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder (00 kg)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder (00 kg)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net trade (KT)																
Butter		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheese		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skim Milk Powder		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whole Milk Powder		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX 5

WELFARE CALCULATION RESULTS FOR CANADA

Appendix 5 shows the Canadian welfare calculations for each year of each scenario in Chapter 5. The producer surplus calculation is by far the most complex since it is calculated in two different ways for the simulation results depending if supply management is retained or not. Scenario 1A, 1B and 2 have no supply management in the simulation while Scenarios 3 to 6 and the baseline retained supply management. With supply management, the total producer surplus is calculated in two steps. First, is the traditional producer surplus which is measured as the area above the producer's supply function and below the marginal cost. The calculation of marginal cost is made more complicated by the presents of adaptive expectation. This means that the marginal cost is the weighted average of the current and past marginal costs. This can be seen in the calculations below as the marginal cost times the weight then summed to get P_t^* . P_t^* is also deflated to constant 1990 dollars by dividing each marginal cost by the GDP Index (GDPI). The P_t^* is used to calculate the area above the producer supply function.

The second part is to calculate the quota rent. The quota rent is calculated as the difference between P_t^* and the deflated average price of milk times the quantity of milk produced. You then add the quota rent and the area above the supply function to get the total producer surplus.

In the scenarios where supply management is retained, both the simulations and the baseline are calculated in the same manor. However in those scenarios where supply management is removed a different method had to be used to calculate the producer surplus in the simulation. In this situation there is no quota rent so only the price of milk

matters. The method is similar to calculating the area above the supply function in the first method but instead of using the marginal cost you use the price of milk. Therefore, P_i^* in this method is the geometrically weighted average milk price in constant 1990 dollars and the total producer surplus is the area above the producer supply function and less than P_i^* . The change in the producer surplus is the total producer surplus from the simulation minus the total producer surplus from the baseline.

$$\Delta PS = PS_{SIM} - PS_{BASE}$$

where

ΔPS = change in producer surplus

PS_{SIM} = total producer surplus in the simulation

PS_{BASE} = total producer surplus in the baseline

The processor surplus is measured as the total gross margin for all dairy products. Therefore it is the product of the gross margin of each dairy product and the quantity of the of the product produced or:

$$MS = \sum_i MG_i * QP_i$$

where

MS = the total processor surplus

MG_i = the gross margin of the i^{th} product

QP_i = the quantity produced of the i^{th} product

i = butter, cheese, skim milk powder, whole milk powder and fluid milk

The change in processor surplus therefore is the difference between the simulation and baseline processor surpluses.

Calculating the welfare change for taxpayers is similar to the processor surplus changes. The change in taxpayers' welfare is measured as changes in welfare at the border. The taxpayers' welfare is measured as the negative sum product of the difference between the world and domestic prices and the net trade for each of the traded dairy products deflated to constant 1990 dollars or:

$$TW = - \sum_j (P_{dj} - P_{wj}) * NT_j$$

where

TW = the taxpayers welfare

P_{dj} = the domestic price of good j in 1990 dollars

P_{wj} = the world price in domestic currency of good j in 1990 dollars

NT_j = the net trade of good j

j = butter, cheese, skim milk powder and whole milk powder

Therefore the change in taxpayer welfare is the difference between the simulated and baseline calculations.

Consumer surplus is defined as the area under the consumer demand function and above the domestic price. Since the demand function is log-log, it does not intersect either axis. This makes the area under the demand function impossible since all area calculation would approach infinite. So, it was decided to calculate the area over a range

of prices with the upper price of \$10,000 / 100kg for all dairy products. It was felt that a price of \$10,000 / 100kg would in reality have a consumption level close to zero and since this assumption had no impact on the change in consumer surplus, it was reasonable to make the assumption. After the consumer surplus was calculated for each dairy product, they were summed to measure the total welfare and welfare changes between the simulation and baseline results. The years were then summed to get the 5 year total in constant 1990 dollars.

SCENARIO 1A

**COMPLETE FREE TRADE WITHOUT NORTH AMERICAN TRADE IN
INDUSTRIAL MILK**

PRODUCER SURPLUS

Year	SIMULATION					Pt	Weight	Quantity	a	Producer Surplus
	Price Industrial	Price Fluid	Ratio	GDPI	Pt					
2001	32.127648	35.511567	0.448944	1.307654	25.7306888	0.5	12.8653444	8308.492589	5.432465645	1462328449
2000	56.47	62.9	0.44218	1.269567	46.7192495	0.25	11.67981237			
1999	55.82	62.68	0.447917	1.231393	47.8260885	0.125	5.978261065			
1998	55.26	61.74	0.446326	1.188374	48.9342517	0.0625	3.058390734			
1997	54.6	60.82	0.425399	1.152642	49.6650146	0.031	1.539615453			
1996	53.77	60.71	0.449523	1.108843	51.3054505	0.0156	0.800365027			
1995	53.35	60.71	0.451761	1.090308	51.9806889	0.0078	0.405449373			
					Pt*		36.32723842			

BASELINE

	Marginal Cost	GDP	Weight	Quantity	a	Rent	Area	Producer Surplus
2001	33	1.307654	0.5	12.61801669	8150.86	5.755907462	169269.2872	105103.7043
2000	33	1.269567	0.25	6.498278547				
1999	33	1.231393	0.125	3.349864747				
1998	33	1.188374	0.0625	1.73556473				
1997	33	1.152642	0.031	0.887526222				
1996	33	1.108843	0.0156	0.46426771				
1995	33	1.090308	0.0078	0.23608008				
			Pt*	25.78959873				2658653025

PIM PFM

Welfare Change	-1196324576
% Change	-44.99739397

PROCESSOR SURPLUS

[illegible]

BORDER MEASURES

SIMULATION									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
-8.443955	405.748131	287.764632	-206.25588	492.014442	348.946413	22.822955	318.566163	225.933449	6.254861
								345.740376	245.2059
									-0.54124849
									Exchange Rate
									1.41
BASELINE									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
0.39	553	156.13	3.29	780	187.23	28.44	479	149.24	-1.38
								499.576	158.84
									-69448138.1
									Welfare Change
									69448137.59
									% Change
									-99.9999992

CONSUMER SURPLUS

SIMULATION			
Price	Quantity	CPI	a
Butter	405.748131	101.137557	1.228611
Cheese	492.014442	474.433856	1.228611
SMP	318.566163	40.489741	1.228611
WMP	345.740376	22.129829	1.228611
Residual	619.253777	717.350538	1.228611
			0.7 8.67637538
			0.72 10.4768114
			0.5 6.4800216
			0.5 5.91682836
			0.18 7.69563818
			2209544688
			11038268430
			1187380759
			669944023.5
			47604393030

BASELINE			
Price	Quantity	CPI	b
Butter	553	81.43	1.228611
Cheese	780	340.48	1.228611
SMP	479	33.02	1.228611
WMP	499.576	18.41	1.228611
Residual	740.721446	694.5922	1.228611
			0.7 8.67637537
			0.72 10.4768113
			0.5 6.48002161
			0.5 5.91683173
			0.18 7.69563818
			2076400590
			9890198621
			1129024376
			639027074.9
			46747352850
			Butter
			133144078
			Cheese
			1148069809
			SMP
			58356383
			WMP
			30916948.6
			Residual
			857040180
			Welfare Change
			2227527399
			% Change
			3.682959011
			Total Welfare Change
			993,592,207.55
			Total % Change
			1.50995471

SIMULATION										Exchange Rate		
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
-2.229077	393.613738	285.227346	-203.65992	493.037215	357.273344	20.349279	322.126508	233.425006	3.436671	341.79911	247.6805	0.49263233
1.38												
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	555	158.77	3.91	810	195.16	27.89	503	154.76	-1.38	517.456	162.83	-73323823.4
											Welfare Change	73323823.85
											% Change	-100.000001

	SIMULATION			a	b
	Price	Quantity	CPI		
Butter	393.613738	104.137557	1.252692	0.7	8.67076535
Cheese	493.037215	491.792351	1.252692	0.72	10.5002652
SMP	322.126508	421.65671	1.252692	0.5	6.50200313
WMP	341.79911	22.651949	1.252692	0.5	5.92471006
Residual	638.425765	723.31832	1.252692	0.18	7.7059173
					48125531670

	Price	Quantity	CPI	b	a	
Butter	555	82.16	1.252692		0.7	8.67423986
Cheese	810	343.99	1.252692		0.72	10.500265
SMP	503	33.26	1.252692		0.5	6.50200314
WMP	517.456	18.41	1.252692		0.5	5.92470883
Residual	770.153437	699.303065	1.252692		0.18	7.7059173
				Butter		141072708
				Cheese		1291426060
				SMP		66831330
				WMP		35679281.1
				Residual		936409690
				Welfare Change		2471419069
				% Change		4.034645775

Total Welfare Change	955,958,817.86
Total % Change	1.435058743

SIMULATION										Exchange Rate		
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.567291	400.394829	292.255899	-208.07689	506.56478	369.755314	20.521373	331.558076	242.013194	6.653957	359.826022	262.6467	-0.26477287
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	557	164.33	4.15	838	207.04	28.5	524	164.28	-1.38	533.174	177.63	-76005716.8
											Welfare Change	78005716.57
											% Change	-99.9999997

	SIMULATION			a
	Price	Quantity	CPI	
Butter	400.394829	104.325063	1.278623	0.7 8.67017882
Cheese	506.56478	500.728376	1.278623	0.72 10.5230091
SMP	331.558078	42.152117	1.278623	0.5 6.52029454
WMP	359.826022	22.410047	1.278623	0.5 5.92942785
Residual	658.547894	729.061663	1.278623	0.18 7.71572395

	Price	Quantity	CPI	b	a	
Butter	557	82.8	1.278623		0.7	8.67017513
Cheese	838	348.5	1.278623		0.72	10.523007
SMP	524	33.53	1.278623		0.5	6.52029454
WMP	533.174	18.41	1.278623		0.5	5.92942605
Residual	795.978241	704.608328	1.278623		0.18	7.71572395
						47647736760
						144956207
				Butter		1371168590
				Cheese		71875167
				SMP		35041266
				WMP		984522750
				Residual		2607563980
				Welfare Change		4.201933867
				% Change		

Total Welfare Change	927,456,153.07
Total % Change	1.374990334

PRODUCER SURPLUS

Year	SIMULATION					Pt	Weight	Quantity	a	Producer Surplus
	Price Industrial	Price Fluid	Ratio	GDPi	Pt					
2004	32.05619	34.56825	0.452639	1.416454	23.4340447	0.5	11.71702234	8458.967896	5.827670368	1020939432
2003	31.778375	34.562615	0.45018	1.381906	23.9030615	0.25	5.975765385			
2002	31.311521	34.314142	0.44917	1.345575	24.2723061	0.125	3.034038262			
2001	32.127648	35.511567	0.448944	1.307654	25.7306888	0.0625	1.60816805			
2000	56.47	62.9	0.44218	1.269567	46.7192495	0.031	1.448296734			
1999	55.82	62.68	0.447917	1.231393	47.8260885	0.0156	0.746086981			
1998	55.26	61.74	0.446326	1.188374	48.9342517	0.0078	0.381687164			
							24.91106492			

	Marginal Cost	GDP _I	Weight	Quantity	a	Rent	Area	Producer Surplus
2004	33	1.416454	0.5	11.64880752	8312.98	5.860008637	179336.1021	2692381361
2003	33	1.381906	0.25	5.970015327				
2002	33	1.345575	0.125	3.065603924				
2001	33	1.307654	0.0625	1.577252087				
2000	33	1.269567	0.031	0.80578654				
1999	33	1.231393	0.0156	0.41806312				
1998	33	1.188374	0.0078	0.216598478				
			P _t *	23.70212699				
P IM	61.38							-1671441929
P FM	66.19							-62.0804301

PROCESSOR SURPLUS

SIMULATION										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
189.80506	105.428177	314.290108	285.270299	72.414957	64.898414	101.640469	29.098831	340.454988	736.904083	2599507925

BASELINE										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
136.06885	84	491.969066	356.12	66.124282	62.39	71.348822	17.02	277.596583	711.839218	2750344343
									Welfare Change	-150836417.6
									% Change	-5.484273923

Year	SIMULATION					Pt	Weight	Quantity	a	Producer Surplus
	Price Industrial	Price Fluid	Ratio	GDP1	Pt					
2005	32.319353	34.635582	0.451808	1.450449	23.0034841	0.5	11.50174206	8567.361569	5.887515064	986436640.1
2004	32.05619	34.56825	0.452639	1.416454	23.4340447	0.25	5.858511171			
2003	31.778375	34.562615	0.45018	1.381906	23.9030615	0.125	2.987882693			
2002	31.311521	34.314142	0.44917	1.345575	24.2723061	0.0625	1.517019131			
2001	32.127648	35.511567	0.448944	1.307654	25.7306888	0.031	0.797651353			
2000	56.47	62.9	0.44218	1.269567	46.7192495	0.0156	0.728820292			
1999	55.82	62.68	0.447917	1.231393	47.8260885	0.0078	0.37304349			
						Pt*	23.76467019			

SIMULATION										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
187.42161	109.607365	307.2964	282.951014	82.630034	69.761273	109.467299	31.629658	346.114892	742.613695	2576781843
BASELINE										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
127.41586	85.68	499.895149	359.75	71.467001	65.31	72.82877	17.02	281.335707	716.782916	2746170010
									Welfare Change	-169388166.8
									% Change	-6.168160245

SIMULATION										Exchange Rate		
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP		Pd WMP	Pw WMP
6.885828	428.455622	315.040584	-242.43569	521.226877	383.255615	25.017447	352.720939	259.354322	9.282961	379.395751	278.9679	-1093.2793
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	561	183.96	4.72	896	220.44	29.44	559	185.9	-1.38	559.556	196.63	-79302647
											Welfare Change	79301553.7
											% Change	-99.998621

	SIMULATION			a	b	CPI
	Price	Quantity				
Butter	428.455622	101.961614	1.33328	0.7	8.66537798	2290502018
Cheese	521.226877	521.212285	1.33328	0.72	10.5649545	1262912780
SMP	352.720939	43.016519	1.33328	0.5	6.55060177	1312317090
WMP	379.395751	22.357814	1.33328	0.5	5.93264477	701325050.8
Residual	689.286988	742.613695	1.33328	0.18	7.7348168	49715497000

	BASELINE		CPI	a	b	
	Price	Quantity				
Butter	561	84.43	1.33328	0.7	8.66537797	2167864317
Cheese	896	356.93	1.33328	0.72	10.5649545	11021543890
SMP	559	34.17	1.33328	0.5	6.55060177	1233754381
WMP	559.556	18.41	1.33328	0.5	5.93264477	664946171.5
Residual	839.108991	716.782916	1.33328	0.18	7.73481876	48622594500
				Butter		122637701
				Cheese		1607568870
				SMP		78562709
				WMP		36378879.3
				Residual		1092502500
				Welfare Change		2937650659
				% Change		4.610892779

Total Welfare Change	1,102,506,558.09
Total % Change	1.595304727

SCENARIO 1B

**COMPLETE FREE TRADE WITH NORTH AMERICAN TRADE IN
INDUSTRIAL MILK**

	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	Exchange Rate	
SIMULATION													
NT Butter	-36.48834	405.187296	287.366877	-218.98608	491.729608	348.744403	12.098714	318.323606	225.761423	-11.775369	346.652977	245.8532	-0.481923
													1.41
BASELINE													
NT Butter	0.39	553	156.13	3.29	780	187.23	28.44	479	149.24	-1.38	499.576	156.84	-69448138
													Welfare Change
													69448137.6
												% Change	-99.999999

	Price	SIMULATION Quantity	CPI	b	a	
Butter	405.187296	101.235528	1.228611		0.7	8.67637537
Cheese	491.729608	474.631702	1.228611		0.72	10.4788113
SMP	318.323606	40.505165	1.228611		0.5	6.48002161
WMP	346.652977	22.100666	1.228611		0.5	5.91682772
Residual	649.890227	711.142422	1.228611		0.18	7.69553818
						47385582370
						2210112112
						11039618930
						1187478993
						669741780.7

	Price	Quantity	CPI	b	a
Butter	553	81.43	1.228611		0.7 - 8.67637537
Cheese	780	340.48	1.228611		0.72 10.4788113
SMP	479	33.02	1.228611		0.5 6.48002161
WMP	499.576	18.41	1.228611		0.5 5.91683173
Residual	740.721446	694.5922	1.228611		0.18 7.69563818
				Butter	133711522
				Cheese	1149420309
				SMP	58454617
				WMP	30714705.8
				Residual	638229520
				Welfare Change	2010530674
				% Change	3.324180016
				Total Welfare Change	
				Total % Change	

[illegible][illegible]

SIMULATION										Exchange Rate		
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
-26.85446	400.147908	292.078765	-222.53344	506.270225	369.54031	1.851895	330.818272	241.473191	-15.401543	359.17331	262.1703	0.5101993
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	557	164.33	4.15	838	207.04	28.5	524	164.28	-1.38	533.174	177.63	-76005717
											Welfare Change	
											% Change	
											-100	

	Price	SIMULATION		CPI	b	a	
		Quantity					
Butter	400.147908	104.369737	1.278623		0.7	8.67017513	2263989397
Cheese	506.270225	500.937054	1.278623		0.72	10.523007	11824913630
SMP	330.818272	42.199223	1.278623		0.5	6.52029455	1255866337
WMP	359.17331	22.43036	1.278623		0.5	5.92942605	689066067.6
Residual	699.843571	721.123771	1.278623		0.78	7.71572395	48332847720

	Price	Quantity	CPI	b	a
Butter	557	82.8	1.278623		0.7
Cheese	838	348.5	1.278623		0.72
SMP	524	33.53	1.278623		0.5
WMP	533.174	18.41	1.278623		0.5
Residual	795.978241	704.608328	1.278623		0.18
				Butter	145205498
				Cheese	1372618970
				SMP	72187178
				WMP	35186359.3
				Residual	685110460
				Welfare Change	2310308465
				% Change	3.72292433
				Total Welfare Change	
				Total % Change	

PRODUCER SURPLUS

Year	SIMULATION										Quantity	a	Producer Surplus		
	Price Industrial	Price Fluid	Ratio	GDPI	Pt	Wleight									
2004	41.935405	45.221643	0.452639	1.416454	30.6560499	0.5	15.32802494	7.669232927	3.799091407	1.980486291	1.448296734	0.746086981	0.381687164	5.835495512	1629931755
2003	40.784024	44.357288	0.45018	1.381906	30.6769317	0.25									
2002	39.206932	42.966683	0.44917	1.345575	30.3927313	0.125									
2001	39.565745	43.733098	0.448944	1.307654	31.6877807	0.0625									
2000	56.47	62.9	0.44218	1.269567	46.7192495	0.031									
1999	55.82	62.68	0.447917	1.231393	47.8260885	0.0156									
1998	55.26	61.74	0.446326	1.188374	48.9342517	0.0078									
						Pt*									
BASELINE															
	Marginal Cost	GDPI	Wleight		Quantity	a	Rent	Area							Producer Surplus
2004	33	1.416454	0.5	11.64880752	8312.98	5.860008637		179336.1021	98517.65382						2692381361
2003	33	1.381906	0.25	5.970015327											
2002	33	1.345575	0.125	3.065603924											
2001	33	1.307654	0.0625	1.577252087											
2000	33	1.269567	0.031	0.80578654											
1999	33	1.231393	0.0156	0.41806312											
1998	33	1.188374	0.0078	0.216598478											
			Pt*	23.70212699											
P IM	61.38													Welfare Change	-1062449606
P FM	66.19													% Change	-39.46133417

PROCESSOR SURPLUS

SIMULATION											
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus	
119.71807	77.480905	276.675437	270.271403	22.006621	44.798029	42.460648		5.500806	319.013021	728.354072	2242410816
BASELINE											
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus	
136.06685	84	491.969066	356.12	66.124282	62.39	71.348822		17.02	277.596583	711.839218	2750344343
										Welfare Change	-507933526.8
										% Change	-18.46799758

BORDER MEASURES

SIMULATION													Exchange Rate
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		1.36
-23.62453	412.615731	303.39392	-232.54593	516.858233	380.042818	1.098607	340.802266	250.589902	-16.952301	364.366882	267.9168	0.825935489	
BASELINE													
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		
0.25	559	175.03	4.18	865	220	26.84	539	176.25	-1.38	544.56	184.44	-71115334.4	
												Welfare Change	71115335.26
												% Change	-100.0000001

CONSUMER SURPLUS

SIMULATION											
Price	Quantity	CPI	a	Price	Quantity	CPI	a	Price	Quantity	CPI	a
Butter	412.615731	103.57124	1.305218	Butter	83.74	1.305218	0.7	Butter	135848280		
Cheese	516.858233	511.705711	1.305218	Cheese	353.18	1.305218	0.72	Cheese	1465044590		
SMP	340.802266	42.56982	1.305218	SMP	33.85	1.305218	0.5	SMP	74743803		
WMP	364.366882	22.506461	1.305218	WMP	18.41	1.305218	0.5	WMP	36494266.6		
Residual	717.122648	728.354072	1.305218	Residual	711.839218	1.305218	0.18	Residual	701539480		
								Welfare Change	2413670220		
								% Change	3.833812879		
								Total Welfare Change	914,402,422.04		
								Total % Change	1.338233877		

SIMULATION										Exchange Rate		
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
-20.85607	427.946506	314.666548	-258.5992	520.80103	382.941934	1.138214	351.731909	258.626403	-17.050912	384.368882	278.2477	-1651655
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	561	183.96	4.72	896	220.44	29.44	559	185.9	-1.38	559.556	196.63	-79302647
											Welfare Change	77650992
											% Change	-97.91728

	SIMULATION			a	b	CPI
	Price	Quantity				
Butter	427.946506	102.046509	1.33328	0.7	8.66537797	2291021298
Cheese	520.80103	527.522634	1.33328	0.72	10.5649545	12631358520
SMP	351.731909	43.076955	1.33328	0.5	6.55060176	1312742803
WMP	364.366882	22.386714	1.33328	0.5	5.91372726	691512793.8
Residual	741.611176	732.897371	1.33328	0.18	7.73481876	49329502750

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SCENARIO 2

FREE TRADE PHASED-IN

SIMULATION								Exchange Rate					
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		
28,294285	620,644937	175,22838	109,233399	924,774118	221,981357	90,125522	493,524285	153,76527	43,400388	511,592554	160,6138	-877224119	1.41
BASELINE													
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		
0.39	553	156.13	3.29	780	187.23	28.44	479	149.24	-1.38	499.576	156.84	-69448138	
											Welfare Change -807775980	% Change 1163.13555	

	SIMULATION			a	2023524274
	Price	Quantity	CPI		
Butter	620.644937	75.110694	1.228611	0.7	8.67637637
Cheese	924.774118	301.199357	1.228611	0.72	10.47881163
SMP	493.524285	32.530487	1.228611	0.5	6.48002161
WMP	511.592554	18.192431	1.228611	0.5	5.91682775
Residual	652.027481	710.722273	1.228611	0.18	7.89583818
					47370387940

	Price	Quantity	CPI	b	a
Butter	553	81.43	1.228611	0.72	8.67637637
Cheese	780	340.48	1.228611	0.72	10.4768113
SMP	479	33.02	1.228611	0.5	6.48002161
WMP	499.576	18.41	1.228611	0.5	5.91683173
Residual	740.721446	694.5922	1.228611	0.18	7.69593818
					2076400590
					9890198621
					1129024376
					639027074.9
					46747352850

Butter	-52876316
Cheese	-463106132
SMP	-4760306
WMP	-2201622.8
Residual	623035090
Welfare Change	100090713.2
% Change	0.165488422

Total Welfare Change	-205,236,032.83
Total % Change	-0.311895677

[illegible]

	SIMULATION			a	b
	Price	Quantity	CPI		
Butter	691.748154	70.420955	1.252692	0.7	8.67423986
Cheese	873.161306	325.886976	1.252692	0.72	10.500295
SMP	524.600332	32.568065	1.252692	0.5	6.50200314
WMP	571.677717	17.515191	1.252692	0.5	5.92470894
Residual	655.077951	719.973648	1.252692	0.18	7.70591773
					49005363280

	Price	Quantity	CPI	b	a
Butter	555	82.16	1.252692		0.7 8.67423986
Cheese	810	343.99	1.252692		0.72 10.500265
SMP	503	33.26	1.252692		0.5 6.50200314
WMP	517.456	18.41	1.252692		0.5 5.92470893
Residual	770.153437	699.303065	1.252692		0.18 7.7059173
				Butter	-103825652
				Cheese	-211428643
				SMP	-7108902
				WMP	-9733538.8
				Residual	816241300
				Welfare Change	484144564.2
				% Change	0.790376608
				Total Welfare Change	
				Total % Change	

[illegible]

Price	SIMULATION		CPI	a	b
	Quantity				
686.306154	71.542885	1.278623	0.7	8.67017513	2019335363
801.852102	359.7471549	1.278623	0.72	10.523007	10580275920
486.586128	34.7952	1.278623	0.5	6.52029455	1196456107
577.126174	17.695094	1.278623	0.5	5.92942602	645948341.7
661.466403	728.487597	1.278623	0.18	7.71572395	48610990250

Price	Quantity	CP1	a	b
557	82.8	1.278623	0.7	8.67017513
838	348.5	1.278623	0.72	10.523007
524	33.53	1.278623	0.5	6.52029454
533.174	18.41	1.278623	0.5	5.92942605
795.978241	704.608328	1.278623	0.18	7.71572395
				47647736760
				-99357536
			Butter	127981260
			Cheese	12776948
			SMP	-7931366.6
			WMP	963253490
			Residual	996722795.4
			Welfare Change	% Change
				1.606159351
			Total Welfare Change	Total % Change

SIMULATION										Exchange Rate		
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP		Pd WMP	Pw WMP
34.927234	581.976416	267.887714	-91.316295	685.867543	338.148297	69.824184	435.015247	227.953358	47.766757	490.212808	242.4338	-23723472
										1.36		
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	559	175.03	4.18	865	220	26.84	539	176.25	-1.38	544.56	184.44	-71115334
										Welfare Change	47391863	
										% Change	-66.64085	

	SIMULATION			a	b
	Price	Quantity	CPI		
Butter	581.976416	81.411818	1.305218	0.7	8.69956234
Cheese	685.867543	417.402185	1.305218	0.72	10.54435566
SMP	435.015247	37.679126	1.305218	0.5	6.53361176
WMP	490.212808	19.40369	1.305218	0.5	5.92969802
Residual	666.90897	737.93378	1.305218	0.18	7.72638512

	Price	Quantity	CPI	b	a	
Butter	559	83.74	1.305218		0.7	8.66956234
Cheese	865	353.18	1.305218		0.72	10.5443566
SMP	539	33.85	1.305218		0.5	6.53361175
WMP	544.56	18.41	1.305218		0.5	5.92969802
Residual	814.573613	711.839218	1.305218		0.18	7.72638512
						48204575560
					Butter	-18970326
					Cheese	686359470
					SMP	37082683
					WMP	10268186
					Residual	1069643620
					Welfare Change	1784383633
					% Change	2.834269942

Total Welfare Change	858,528,699.68
Total % Change	1.256462322

SIMULATION										Exchange Rate		
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
4.158852	429.521851	315.82489	-242.27428	522.150872	383.934465	31.333465	354.864143	260.929517	15.125146	381.32011	280.3824	-0.63439
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	561	183.96	4.72	896	220.44	29.44	559	185.9	-1.38	559.556	196.63	-79302647
											Welfare Change	79302646
											% Change	-100

	Price	SIMULATION			a	
		Quantity	CPI	b		
Butter	429.521851	101.784374	1.3328	0.7	8.66537798	2289415852
Cheese	522.150872	526.540393	1.3328	0.72	10.5649545	12624244510
SMP	354.864143	42.886423	1.3328	0.5	6.55060177	1311396594
WMP	381.32011	22.301327	1.3328	0.5	5.93264475	700895349.3
Residual	678.346394	744.755432	1.3328	0.18	7.73481876	49796858140

	Price	Quantity	CPI	b	a
Butter	561	84.43	1.3328	0.7	8.66537797
Chesse	896	356.93	1.3328	0.72	10.5649545
SMP	559	34.17	1.3328	0.5	6.55060177
WMP	559.556	18.41	1.3328	0.5	5.93264477
Residual	839.108991	716.782916	1.3328	0.18	7.73481876
					664946171.5
					48622994500

Total Welfare Change	1,303,011,114.80
Total % Change	1.885430772

SCENARIO 3

50 PERCENT TARIFF CUT WITH A MAXIMUM TARIFF OF 50 PERCENT

BORDER MEASURES

SIMULATION									
NT Butter	Pd Butter	458.379349	216.727825	-147.21718	579.399286	Pw Cheese	NT SMP	Pd SMP	390.560271
-19.59434						273.947643	-12.407669		184.662067
									-17.911163
									423.932726
									200.441
									272034847.1
									Exchange Rate
									1.41
BASELINE									
NT Butter	Pd Butter	553	156.13	3.29	780	Pw Cheese	NT SMP	Pd SMP	479
0.39						187.23	28.44		149.24
									-1.38
									499.576
									156.84
									-69448138.13
									Welfare Change
									341482985.2
									% Change
									-491.7093451

CONSUMER SURPLUS

SIMULATION									
Price	Quantity	CPI	a	b					
Butter	458.379349	92.861244	1.228611	0.7	8.67637537	2158569447			
Cheese	579.399286	421.750497	1.228611	0.72	10.4768113	10647784630			
SMP	390.560271	36.567965	1.228611	0.5	6.4800216	1159715354			
WMP	423.932726	19.98501	1.228611	0.5	5.91682775	653521526.1			
Residual	740.221436	694.676631	1.228611	0.18	7.69563818	46750826090			
BASELINE									
Price	Quantity	CPI	a	b					
Butter	553	81.43	1.228611	0.7	8.67637537	2076400590			
Cheese	780	340.48	1.228611	0.72	10.4768113	9890198621			
SMP	479	33.02	1.228611	0.5	6.48002161	1129024376			
WMP	499.576	18.41	1.228611	0.5	5.91683173	639027074.9			
Residual	740.721446	694.5922	1.228611	0.18	7.69563818	46747352850			
BASELINE									
Butter	82168857								
Cheese	757586009								
SMP	30690978								
WMP	14494451.2								
Residual	3473240								
Welfare Change	888413535.2								
% Change	1.468889064								
Total Welfare Change	541,266,583.67								
Total % Change	0.822556814								

[illegible]

	SIMULATION			a	b
	Price	Quantity	CPI		
Butter	447.265544	95.558585	1.252692	0.7	8.57423986
Cheese	583.622653	435.551877	1.252692	0.72	10.500285
SMP	398.257439	37.378708	1.252692	0.5	6.50200313
WMP	420.473375	20.423081	1.252692	0.5	5.92470894
Residual	769.417529	699.42341	1.252692	0.18	7.70591775
					47194288650

	Price	Quantity	CPI	b	a
Butter	555	82.16	1.252692		0.7
Cheese	810	343.99	1.252692		8.67423986
SMP	503	33.26	1.252692		101562794130
WMP	517.456	18.41	1.252692		1157292442
Residual	770.153437	699.303065	1.252692		647041426.7
				0.18	5.92470883
					7.7059173
					47189121980
				Butter	95289402
				Cheese	872639150
				SMP	36867939
				WMP	18779877.4
				Residual	5146670
				Welfare Change	1028723038
				% Change	1.679412898

Total Welfare Change	748,783,943.00
Total % Change	1.165349422

[illegible][illegible]

PRODUCER SURPLUS

[illegible]

PROCESSOR SURPLUS

SIMULATION										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
123.09725	76.375693	307.815954	282.608292	-33.560705	19.711663	4.251991		2	278.569891	712.227325
										280603039.2
BASELINE										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
136.06685	84	491.969066	356.12	66.124282	62.39	71.348822		17.02	277.596583	371638241.7
										-91035202.53
										-24.49564989
										% Change

BORDER MEASURES

SIMULATION										Exchange Rate				
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP			
-14.00931	472.940485	231.833571	-161.94186	616.852596	302.378723	-16.467552	431.675692	211.605731	-18.226134	450.229081	220.7005	38741778	1.36	
BASELINE														
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP			
0.25	559	175.03	4.18	865	220	26.84	539	176.25	-1.38	544.56	184.44	-9609407		
											Welfare Change	48351185		
											% Change	-503.1651		

CONSUMER SURPLUS

SIMULATION									
Price	Quantity	CPI	a	b					
Butter	472.940485	94.136203	1.305218	0.7	8.66956234	2222778176			
Cheese	616.852596	450.523131	1.305218	0.72	10.5443566	11726354410			
SMP	431.675692	37.824593	1.305218	0.5	6.53361176	1245188897			
WMP	450.229081	20.246963	1.305218	0.5	5.92969803	676908876.4			
Residual	812.110681	712.227325	1.305218	0.18	7.72638512	48222112460			
BASELINE									
Price	Quantity	CPI	a	b					
Butter	559	83.74	1.305218	0.7	8.66956234	2146451608			
Cheese	865	353.18	1.305218	0.72	10.5443566	10740844070			
SMP	539	33.85	1.305218	0.5	6.53361175	1206845494			
WMP	544.56	18.41	1.305218	0.5	5.92969802	658717441.3			
Residual	814.573613	711.839218	1.305218	0.18	7.72638512	48204575560			
	Butter				76326568				
	Cheese				985510340				
	SMP				38343403				
	WMP				18191435.1				
	Residual				17536900				
	Welfare Change				1135908646				
	% Change				1.804248634				
	Total Welfare Change				826,278,465.23				
	Total % Change				1.251712436				

PRODUCER SURPLUS

Year	Marginal Cost	GDPI	Wleight	Quantity	a	Rent	Area	Producer Surplus
2005	29.58045781	1.450449	0.5	10.19700031	7619.54273	5.908723558	175693.2231	2466328350
2004	29.69625065	1.416454	0.25	5.241301632				
2003	29.32846229	1.381906	0.125	2.652899536				
2002	29.00295807	1.345575	0.0625	1.347145183				
2001	26.96080408	1.307654	0.031	0.639148373				
2000	33	1.269567	0.0156	0.405492581				
1999	33	1.231393	0.0078	0.20903156				
			Pt*	20.69201918				
BASELINE								
Year	Marginal Cost	GDPI	Wleight	Quantity	a	Rent	Area	Producer Surplus
2005	33	1.450449	0.5	11.37578777	8390.43	5.894372113	184918.4602	2731494128
2004	33	1.416454	0.25	5.824403758				
2003	33	1.381906	0.125	2.985007663				
2002	33	1.345575	0.0625	1.532801962				
2001	33	1.307654	0.031	0.782317035				
2000	33	1.269567	0.0156	0.405492581				
1999	33	1.231393	0.0078	0.20903156				
			Pt*	23.11484233				
P IM	62.93							
P FM	67.44							
						Welfare Change		-265165778.3
						% Change		-9.70771914

PROCESSOR SURPLUS

Year	Marginal Cost	GDPI	Wleight	Quantity	a	Rent	Area	Processor Surplus
2005	29.58045781	1.450449	0.5	10.19700031	7619.54273	5.908723558	175693.2231	2466328350
2004	29.69625065	1.416454	0.25	5.241301632				
2003	29.32846229	1.381906	0.125	2.652899536				
2002	29.00295807	1.345575	0.0625	1.347145183				
2001	26.96080408	1.307654	0.031	0.639148373				
2000	33	1.269567	0.0156	0.405492581				
1999	33	1.231393	0.0078	0.20903156				
			Pt*	20.69201918				
BASELINE								
Year	Marginal Cost	GDPI	Wleight	Quantity	a	Rent	Area	Processor Surplus
2005	33	1.450449	0.5	11.37578777	8390.43	5.894372113	184918.4602	2731494128
2004	33	1.416454	0.25	5.824403758				
2003	33	1.381906	0.125	2.985007663				
2002	33	1.345575	0.0625	1.532801962				
2001	33	1.307654	0.031	0.782317035				
2000	33	1.269567	0.0156	0.405492581				
1999	33	1.231393	0.0078	0.20903156				
			Pt*	23.11484233				
P IM	62.93							
P FM	67.44							
						Welfare Change		-265165778.3
						% Change		-9.70771914

BORDER MEASURES

SIMULATION										Exchange Rate
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	
-10.72141	490.998665	240.684738	-184.9387	619.912427	303.878641	-12.824261	447.880483	219.549257	-18.146881	1.36
BASELINE										
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pw WMP
0.25	561	183.96	4.72	896	220.44	29.44	559	185.9	-1.38	559.556
										196.63 -11280224
										Welfare Change 55123690
										% Change -488.6755

CONSUMER SURPLUS

SIMULATION				BASELINE			
Price	Quantity	CPI	a	Price	Quantity	CPI	a
Butter	490.998665	92.686331	1.3328	Butter	561	84.43	1.3328
Cheese	619.912427	465.336343	1.3328	Cheese	896	356.93	1.3328
SMP	447.880483	38.174188	1.3328	SMP	559	34.17	1.3328
WMP	466.627866	20.159986	1.3328	WMP	559.556	18.41	1.3328
Residual	835.311407	717.368395	1.3328	Residual	839.108991	716.782916	1.3328
				Butter	61883309		
				Cheese	1119337550		
				SMP	40070706		
				WMP	17884168.7		
				Residual	27231540		
				Welfare Change	1266407274		
				% Change	1.98773402		
				Total Welfare Change	954,894,890.75		
				Total % Change	1.429014023		

SCENARIO 4

**ELIMINATE EXPORT SUBSIDIES AND INCREASE MINIMUM ACCESS TO 7
PERCENT**

PRODUCER SURPLUS

Year	SIMULATION		PRODUCER SURPLUS			
	Marginal Cost	GDP	Quantity	a	Rent	Area
2001	31.59568148	1.307654	0.5	12.08105565	8051.26222	5.764653542
2000	33	1.269567	0.25	6.498278547	174416.5769	101657.8038
1999	33	1.231393	0.125	3.349864747		
1998	33	1.188374	0.0625	1.73556473		
1997	33	1.152642	0.031	0.887526222		
1996	33	1.108843	0.0156	0.46426771		
1995	33	1.090308	0.0078	0.23608008		
			Pt*	25.25263768		
						Producer Surplus
						2675139354

BASELINE

	Marginal Cost	GDP	Quantity	a	Rent	Area
2001	33	1.307654	0.5	12.61801669	169269.2872	105103.7043
2000	33	1.269567	0.25	6.498278547		
1999	33	1.231393	0.125	3.349864747		
1998	33	1.188374	0.0625	1.73556473		
1997	33	1.152642	0.031	0.887526222		
1996	33	1.108843	0.0156	0.46426771		
1995	33	1.090308	0.0078	0.23608008		
			Pt*	25.78959873		
						Producer Surplus
						2658653025

P IM	57.44					
P FM	63.49					
					Welfare Change	16486329.24
					% Change	0.620100821

PROCESSOR SURPLUS

	SIMULATION		PROCESSOR SURPLUS					
	MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP
156.18107	81.560311	441.569591	337.44083	27.370604	54.777346	61.347615	17.03626	257.107845
								694.39373
								2621643681
								Processor Surplus
								2731573694
								-109930013.8
								-4.024420575

BASELINE

	MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP
159.34016	82.82	465.216339	346.87	43.402289	61.17	61.306838	17.02	257.605575
								694.5922
								2731573694
								-109930013.8
								-4.024420575

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	Price	SIMULATION		CPI	b	a	
		Quantity					
Butter	528.760341	84.025444	1.228611		0.7	8.67637637	2095488924
Cheese	747.543663	351.060037	1.228611		0.72	10.4788113	10002401570
SMP	468.49192	33.388259	1.228611		0.5	6.48002161	1132513114
WMP	498.717089	18.425773	1.228611		0.5	5.91682775	639182723.4
Residual	741.898388	694.39373	1.228611		0.18	7.69563818	467939779070

	Price	Quantity	CPI	a	b
Butter	553	81.43	1.228611	0.7	8.67637537
Cheese	780	340.48	1.228611	0.72	10.4768113
SMP	479	33.02	1.228611	0.5	6.480024376
WMP	499.576	18.41	1.228611	0.5	5.91683173
Residual	740.721446	694.5922	1.228611	0.18	7.69563818
				Butter	20048234
				Cheese	112202949
				SMP	3488738
				WMP	155648.5
				Residual	-8173780
				Welfare Change	127721789.5
				% Change	0.211173212
				Total Welfare Change	
				Total % Change	

[illegible]

PROCESSOR SURPLUS										
SIMULATION										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
148.85952	82.235234	451.916552	340.089485	38.883492	55.311755	67.687548	17.032964	268.839744	699.025578	300274979.7
BASELINE										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
151.80563	83.41	477.22184	350.18	55.079667	61.77	67.655037	17.02	269.535634	699.303065	313435186.1
									Welfare Change	-13160206.33
									% Change	-4.198701013

SIMULATION												Exchange Rate
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	Exchange Rate
-3.991	526.149983	165.034746	-17.1187	773.976413	221.116613	21.1753	494.264213	179.176691	-1.38	516.71503	187.84	3650260.01
BASELINE												
0.25	555	158.77	3.91	810	195.16	27.89	503	154.76	-1.38	517.456	162.83	-8294794.4
											Welfare Change	11945054.5
											% Change	144.00864

	SIMULATION			a	b	
	Price	Quantity	CPI			
Butter	526.149983	85.288176	1.252692	0.7	8.67423986	2122817574
Cheese	773.970413	355.443903	1.252692	0.72	10.500265	10288747470
SMP	494.264213	33.532637	1.252692	0.5	6.50200315	1160210495
WMP	516.71503	18.423195	1.252692	0.5	5.92470881	647177874.5
Residual	771.85343	699.025578	1.252692	0.18	7.7059173	47177238240

	Price	Quantity	CPI	b	a
Butter	555	82.16	1.252692	0.7	8.67423986
Chesse	810	343.99	1.252692	0.72	10.500265
SMP	503	33.26	1.252692	0.5	6.50200314
WMP	517.456	18.41	1.252692	0.5	5.92470883
Residual	770.153437	699.303065	1.252692	0.18	7.7059173
					47.189121980

Butter	24146870
Cheese	125953340
SMP	2918053
WMP	136447.8
Residual	-11885740
Welfare Change	141268970.8
% Change	0.23062469

Total Welfare Change	125,238,040.37
Total % Change	0.195006817

PRODUCER SURPLUS

Year	SIMULATION					Area	Producer Surplus
	Marginal Cost	GDPi	Wweight	Quantity	Rent		
2003	32.0704549	1.381906	0.5	11.60370347	8156.11274	5.841762093	2663297361
2002	32.00997164	1.345575	0.25	5.947266344			
2001	31.59568148	1.307654	0.125	3.020263912			
2000	33	1.269567	0.0625	1.624569637			
1999	33	1.231393	0.031	0.830766457			
1998	33	1.188374	0.0156	0.433196957			
1997	33	1.152642	0.0078	0.223313049			
			Pt*	23.68307983			

BASELINE

	Marginal Cost	GDP/L	Weight	Quantity	a	Rent	Area	Producer Surplus
2003	33	1.381906	0.5	11.94003065	8259.37	5.827081574	176449.6473	2683684333
2002	33	1.345575	0.25	6.131207848				
2001	33	1.307654	0.125	3.154504173				
2000	33	1.269567	0.0625	1.624569637				
1999	33	1.231393	0.031	0.830766457				
1998	33	1.188374	0.0156	0.433196957				
1997	33	1.152642	0.0078	0.223313049				
			Pt*	24.33758877				

	P IM	P FM
60.15	-20386972.25	-0.759663572
65.42		

PROCESSOR SURPLUS

SIMULATION										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
140.38019	82.868354	459.901434	342.997111	46.392815	56.638155	70.786521	17.032099	275.546911	704.319583	316523316.3
BASELINE										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
143.34356	84.05	485.33807	353.14	62.623097	63.11	70.756178	17.02	276.271035	711.839218	332012347.7
									Welfare Change	-15489031.46
									% Change	-4.665197414

SIMULATION												Exchange Rate
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
-3.991	526.800609	170.765667	-16.8787	800.876072	232.025579	21.7853	515.410226	186.952287	-1.38	532.465185	202.2063	3468803.49
												1.37
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	557	164.33	4.15	838	207.04	28.5	524	164.28	-1.38	533.174	177.63	-9051658.1
												Welfare Change 12520461.6
												% Change -138.3223

	Price	SIMULATION			a	b
		Quantity	CPI			
Butter	528.800609	86.047433	1.278623	0.7	8.67017512	2144186890
Cheese	800.876072	380.057156	1.278623	0.72	10.523007	10583788640
SMP	515.410226	33.808249	1.278623	0.5	6.52029454	1186571045
WWMP	532.465185	18.422225	1.278623	0.5	5.92942607	654010257.1
Residual	797.792835	704.319583	1.278623	0.18	7.7157239583	47634953610

	Price	Quantity	CPI	b	a
Butter	557	82.8	1.278623		0.7 8.67017513
Cheese	838	348.5	1.278623		0.72 10.523007
SMP	524	33.53	1.278623		0.5 6.52029454
WMP	533.174	18.41	1.278623		0.5 5.92942605
Residual	795.978241	704.608328	1.278623		0.18 7.71572395
				Butter	25493991
				Cheese	131493980
				SMP	2891886
				WMP	130548.8
				Residual	-12783150
				Welfare Change	147227255.8
				% Change	0.237247944
				Total Welfare Change	
				Total % Change	

PRODUCER SURPLUS

Year	Marginal Cost	SIMULATION GDP	Weight	Quantity	a	Rent	Area	Producer Surplus
2004	32.14349539	1.416454	0.5	11.34646638	8209.81557	5.874442946	180629.5053	2668024414
2003	32.0704549	1.381906	0.25	5.801851736				
2002	32.00997164	1.345575	0.125	2.973633172				
2001	31.59588148	1.307654	0.0625	1.510131956				
2000	33	1.269567	0.031	0.80578654				
1999	33	1.231393	0.0156	0.41806312				
1998	33	1.188374	0.0078	0.216598478				
			Pt*	23.07253138				

BASELINE

Year	Marginal Cost	SIMULATION GDP	Weight	Quantity	a	Rent	Area	Producer Surplus
2004	33	1.416454	0.5	11.64880752	8312.98	5.860008637	179336.1021	2692381361
2003	33	1.381906	0.25	5.970015327				
2002	33	1.345575	0.125	3.065603924				
2001	33	1.307654	0.0625	1.577252087				
2000	33	1.269567	0.031	0.80578654				
1999	33	1.231393	0.0156	0.41806312				
1998	33	1.188374	0.0078	0.216598478				
			Pt*	23.70212699				

P IM
P FM

Welfare Change
% Change

PROCESSOR SURPLUS

Year	Marginal Cost	SIMULATION GDP	Weight	Quantity	a	Rent	Area	Processor Surplus
2004	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2003	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2002	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2001	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2000	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
1999	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
1998	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
			Pt*	23.70212699				

BASELINE

Year	Marginal Cost	SIMULATION GDP	Weight	Quantity	a	Rent	Area	Processor Surplus
2004	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2003	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2002	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2001	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
2000	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
1999	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
1998	82.80057	466.591139	346.000521	49.870067	55.908612	71.378506	17.031836	329164014.2
			Pt*	23.70212699				

P IM
P FM

Welfare Change
% Change

BORDER MEASURES

SIMULATION									
NT Butter	Pd Butter	528.535071	180.874312	-16.848762	827.182965	242.748273	20.1253	529.969136	195.176127
NT Cheese	Pd Cheese	827.182965	242.748273	20.1253	529.969136	195.176127	-1.38	543.853518	208.9246
NT SMP	Pd SMP	543.853518	208.9246	-1.38	543.853518	208.9246	3998522.7	1.36	Exchange Rate
BASELINE									
NT Butter	Pd Butter	0.25	559	175.03	4.18	865	220	26.84	539
NT Cheese	Pd Cheese	865	220	26.84	539	176.25	-1.38	544.56	184.44
NT WMP	Pd WMP	544.56	184.44	-8877795	Welfare Change	12876317	% Change	-145.0396	

CONSUMER SURPLUS

SIMULATION									
Butter	Price	528.535071	Quantity	87.090253	CPI	1.305218	a	0.7	8.66956233
Cheese	Price	827.182965	Quantity	364.732582	CPI	1.305218	a	0.72	10.5443566
SMP	Price	529.969136	Quantity	34.13719	CPI	1.305218	a	0.5	6.53361175
WMP	Price	543.853518	Quantity	18.421954	CPI	1.305218	a	0.5	5.92969804
Residual	Price	816.368075	Quantity	711.557318	CPI	1.305218	a	0.18	7.72638512
BASELINE									
Butter	Price	559	Quantity	83.74	CPI	1.305218	a	0.7	8.66956234
Cheese	Price	865	Quantity	353.18	CPI	1.305218	a	0.72	10.5443566
SMP	Price	539	Quantity	33.85	CPI	1.305218	a	0.5	6.53361175
WMP	Price	544.56	Quantity	18.41	CPI	1.305218	a	0.5	5.92969802
Residual	Price	814.573613	Quantity	711.839218	CPI	1.305218	a	0.18	7.72638512
BASELINE									
Butter	Price	26012818	Quantity	135718420	CPI	1.305218	a	0.7	8.66956234
Cheese	Price	135718420	Quantity	3069714	CPI	1.305218	a	0.72	10.5443566
SMP	Price	3069714	Quantity	130118.2	CPI	1.305218	a	0.5	6.53361175
WMP	Price	130118.2	Quantity	-12771150	CPI	1.305218	a	0.5	5.92969802
Residual	Price	-12771150	Quantity	15215920.2	CPI	1.305218	a	0.18	7.72638512
Welfare Change	Price	15215920.2	Quantity	0.241686978	CPI	1.305218	a	0.18	7.72638512
% Change	Price	0.241686978	Quantity		CPI	1.305218	a		
Total Welfare Change	Price	126,499,737.12	Quantity		CPI	1.305218	a		
Total % Change	Price	0.191711927	Quantity		CPI	1.305218	a		

[illegible]

	Price	SIMULATION		a	b
		Quantity	CPI		
Butter	532.312743	87.589891	1.3328	0.7	8.66537797
Cheese	858.469704	368.097475	1.3328	0.72	10.5849545
SMP	548.769491	38.427039	1.3328	0.5	6.55060178
WMP	558.797651	16.482488	1.3328	0.5	5.93264477
Residual	840.67304	716.542039	1.3328	0.18	7.79481876
					2192530778
					11157570480
					1237266181
					665085830.4
					48611754990

	BASELINE		CPI	a	b
	Price	Quantity			
Butter	561	84.43	1.33328	0.7	8.66537797
Cheese	896	356.93	1.33328	0.72	10.5649545
SMP	559	34.17	1.33328	0.5	6.55060177
WMP	559.556	18.41	1.33328	0.5	5.93264477
Residual	839.108991	716.782916	1.33328	0.18	7.73481876
					48622994500
				Butter	24666461
				Cheese	136026590
				SMP	3511800
				WMP	139658.9
				Residual	-11239510
				Welfare Change	153104999.9
				% Change	0.24031133

Total Welfare Change	127,133,462.92
Total % Change	0.190344388

SCENARIO 5

**50 PERCENT TARIFF CUT WITH A MAXIMUM TARIFF OF 50 PERCENT
ELIMINATE EXPORT SUBSIDIES AND INCREASE MINIMUM ACCESS TO 7
PERCENT**

PRODUCER SURPLUS

Year	SIMULATION							Producer Surplus
	Marginal Cost	GDPi	Wweight	Quantity	a	Rent	Area	
2001	28.35530986	1.307654	0.5	10.84205373	7627.23812	5.760859257	178228.4262	91578.85908
2000	33	1.269567	0.25	6.498278547				
1999	33	1.231393	0.125	3.349864747				
1998	33	1.188374	0.0625	1.73556473				
1997	33	1.152642	0.031	0.887526222				
1996	33	1.108843	0.0156	0.46426771				
1995	33	1.090308	0.0078	0.23608008				
			Pt*	24.01363577				

BASELINE

	Marginal Cost	GDP	W/ieght	Quantity	a	Rent	Area	Producer Surplus
2001	33	1.307654	0.5	12.61801669	8150.86	5.755907462	105103.7043	26586653025
2000	33	1.269567	0.25	6.498278547				
1999	33	1.231393	0.125	3.349864747				
1998	33	1.188374	0.0625	1.73556473				
1997	33	1.152642	0.031	0.887526222				
1996	33	1.108843	0.0156	0.46426771				
1995	33	1.090308	0.0078	0.23608008				
			Pt*	25.78959873				

PIM
PFM

Welfare Change	-44241340.64
% Change	-1.66405094

PROCESSOR SURPLUS

SIMULATION											
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus	
157.82632	82.216355	319.449818	285.26919	-18.768877	36.379172	37.299815		7.44709	256.123796	694.001339	2152330281
BASELINE											
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus	
159.34016	82.82	485.216339	346.87	43.402289	61.17	61.306838		17.02	257.605575	694.5922	2731573694
										Welfare Change	-579243413.7
										% Change	-21.20548367

BORDER MEASURES

SIMULATION									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
-13.56869	464.09043	219.431699	-138.22215	588.955673	278.466039	2.40206	438.470362	207.314592	-11.579711
BASELINE									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
0.39	553	156.13	3.29	780	187.23	28.44	479	149.24	-1.38
Exchange Rate									
1.41									
Pw WMP									
220.3321									
Pd WMP									
466.002428									
Welfare Change									
304084262.7									
% Change									
-437.858049									
Pw WMP									
156.84									
Pd WMP									
-69448138.13									

CONSUMER SURPLUS

SIMULATION									
Price	Quantity	CPI	a	b	0.7	0.72	0.5	0.5	0.18
Butter	464.09043	92.058779	1.228611	1.228611	8.67637537	10.4768113	6.4802162	5.91682771	7.59563818
Cheese	588.955673	416.812026	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
SMP	438.470362	34.512364	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
WMP	466.002428	19.061573	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
Residual	744.231789	694.001339	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
BASELINE									
Price	Quantity	CPI	a	b	0.7	0.72	0.5	0.5	0.18
Butter	553	81.43	1.228611	1.228611	8.67637537	10.4768113	6.4802162	5.91682771	7.59563818
Cheese	780	340.48	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
SMP	479	33.02	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
WMP	499.576	18.41	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
Residual	740.721446	694.5922	1.228611	1.228611	10.4768113	11.42702624	6.4802162	5.91682771	7.59563818
Butter									
76881543									
Cheese									
717519114									
SMP									
13678247									
WMP									
6285736.9									
Residual									
-24372180									
Welfare Change									
789992460.9									
% Change									
1.306161197									
Total Welfare Change									
470,591,969.21									
Total % Change									
0.715155126									

BORDER MEASURES

SIMULATION										Exchange Rate				
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP			
-15.24825	452.8032	218.431699	-144.14735	593.487508	286.708941	-7.792483	433.753222	209.54262	-17.528576	456.975794	220.7613	31947152.2	1.38	
BASELINE														
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP			
0.25	555	158.77	3.91	810	195.16	27.89	503	154.76	-1.38	517.456	162.83	-9104185.1		
											Welfare Change		41051337.3	
											% Change		-450.90622	

CONSUMER SURPLUS

SIMULATION									
Price	Quantity	CPI	a	b					
Butter	452.8032	94.739018	0.7	8.67423986	2188691296				
Cheese	593.487508	430.327095	0.72	10.500265	10992725890				
SMP	433.753222	35.816643	0.5	6.50200314	1181175924				
WMP	456.975794	19.590427	0.5	5.92470882	658521607.9				
Residual	771.888437	699.019871	0.18	7.7059173	47176991530				
BASELINE									
Price	Quantity	CPI	a	b					
Butter	555	82.16	0.7	8.67423986	2098670704				
Cheese	810	343.99	0.72	10.500265	10162794130				
SMP	503	33.26	0.5	6.50200314	1157292442				
WMP	517.456	18.41	0.5	5.92470883	647041426.7				
Residual	770.153437	699.303065	0.18	7.7059173	47189121980				
					Butter	90020592			
					Cheese	829931760			
					SMP	23883482			
					WMP	11480181.2			
					Residual	-12130450			
					Welfare Change	943185565.2			
					% Change	1.539771099			
					Total Welfare Change	720,774,120.03			
					Total % Change	1.121789604			

BORDER MEASURES

SIMULATION									
NT Butter	Pd Butter	463.034216	225.320786	-144.57922	614.594916	Pw Cheese	NT SMP	Pd SMP	Exchange Rate
-13.19959							-7.295652	448.881759	1.37
								218.433946	
								-16.168753	
								482.453301	
								234.7705	
								32684263.1	
BASELINE									
NT Butter	Pd Butter	557	164.33	4.15	838	Pw Cheese	NT SMP	Pd SMP	
0.25							207.04	28.5	
								524	
								164.28	
								-1.38	
								533.174	
								177.63	
								-9711677.1	
								Welfare Change	42395940.3
								% Change	-436.54602

CONSUMER SURPLUS

SIMULATION									
Price	Quantity	CPI	a	b					
Butter	463.034216	94.232305	1.278623	0.7	8.67017513	2201585312			
Cheese	614.594916	435.666756	1.278623	0.72	10.523007	11319593960			
SMP	448.881759	36.227071	1.278623	0.5	6.52029455	1209839781			
WMP	482.453301	19.35355	1.278623	0.5	5.92942607	662870949.2			
Residual	796.731446	704.488381	1.278623	0.18	7.71572395	47642430070			
BASELINE									
Price	Quantity	CPI	a	b					
Butter	557	82.8	1.278623	0.7	8.67017513	2118692899			
Cheese	838	348.5	1.278623	0.72	10.523007	10452294660			
SMP	524	33.53	1.278623	0.5	6.52029454	1183679159			
WMP	533.174	18.41	1.278623	0.5	5.92942605	653879708.3			
Residual	795.978241	704.608328	1.278623	0.18	7.71572395	47647736760			
Butter									
Cheese									
SMP									
WMP									
Residual									
Welfare Change									
% Change									
Total Welfare Change									
Total % Change									
716,703,944.00									
1.101156448									

PRODUCER SURPLUS

Year	SIMULATION					Quantity	a	Rent	Area	Producer Surplus
	Marginal Cost	GDP	Wright	Weight						
2004	30.18556876	1.416454	0.5	10.6553297	7674.55956	5.874462301	172257.808	82761.88315	2471121043	
2003	29.89090223	1.381906	0.25	5.407549831						
2002	29.16418445	1.345575	0.125	2.709267827						
2001	28.35530986	1.307654	0.0625	1.355256716						
2000	33	1.269567	0.031	0.80578654						
1999	33	1.231393	0.0156	0.41806312						
1998	33	1.188374	0.0078	0.216598478						
			Pt*	21.56785221						
BASELINE										
	Marginal Cost	GDP	Wright	Weight	Quantity	a	Rent	Area	Producer Surplus	
2004	33	1.416454	0.5	11.64880752	8312.98	5.860008637	179336.1021	98517.65382	26923381361	
2003	33	1.381906	0.25	5.970015327						
2002	33	1.345575	0.125	3.065603924						
2001	33	1.307654	0.0625	1.577252087						
2000	33	1.269567	0.031	0.80578654						
1999	33	1.231393	0.0156	0.41806312						
1998	33	1.188374	0.0078	0.216598478						
			Pt*	23.70212699						
P IM	61.38								Welfare Change	-221260317.8
P FM	66.19								% Change	-8.218015509

PROCESSOR SURPLUS

SIMULATION											
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus	
130.68297	81.853172	327.825704	290.667635	-10.233503	31.94224	35.072786		2.554866	277.907031	711.963009	284934768.1
BASELINE											
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus	
136.06685	84	491.969066	356.12	66.124282	62.39	71.348822		17.02	277.596583	711.839218	365613862.2
										Welfare Change	-80679094.14
										% Change	-22.06674923

SIMULATION												Exchange Rate
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	1.36
-9.230086	483.890728	237.201337	-140.39558	642.845659	315.120421	-6.018836	463.133346	227.02615	-16.813542	490.750457	240.5639	33124702.7
BASELINE												
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP	
0.25	559	175.03	4.18	865	220	26.84	539	176.25	-1.38	544.56	184.44	-9453635.2
												Welfare Change 42578337.9
												% Change 450.39117

	Price	SIMULATION		a
		Quantity	CPI	
Butter	483.890728	927.639907	1.305218	0.7
Cheese	642.845659	431.31565	1.305218	0.72
SMMP	463.133346	36.517415	1.305218	0.5
WWMP	490.750457	19.393058	1.305218	0.5
Residual	813.787077	711.963009	1.305218	0.18

	Price	BASELINE		b	a
		Quantity	CPI		
Butter	559	83.74	1.305218	0.7	8.66956234
Cheese	865	353.18	1.305218	0.72	10.5443566
SMP	539	33.85	1.305218	0.5	6.53611175
WWMP	544.56	18.41	1.305218	0.5	5.92969802
Residual	814.573613	711.893218	1.305218	0.18	7.72838512
					49204575560

Butter	66101051
Cheese	870139540
SMP	26654017
WMP	10163885
Residual	5599360
Welfare Change	9786637853
% Change	1.554475442

Total Welfare Change	719,296,778.90
Total % Change	1.089744937

SCENARIO 6

36 PERCENT TARIFF CUT

**ELIMINATE EXPORT SUBSIDIES AND INCREASE MINIMUM ACCESS TO 5
PERCENT**

[illegible]

PROCESSOR SURPLUS										
SIMULATION										
MG Buffer	QP Buffer	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
155.94385	81.46572	448.340228	340.14063	29.574029	55.655964	61.354687	17.03908	257.640358	694.60607	2652481168
BASELINE										
MG Buffer	QP Buffer	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
159.34016	82.82	465.216339	346.87	43.402289	61.17	61.306838	17.02	257.605575	694.5922	2731573694
									Welfare Change	-79092526.44
									% Change	-2.895493048

BORDER MEASURES

SIMULATION									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
-2.389	541.002559	193.866353	-11.1025	758.20283	245.182804	22.4559	485.152322	195.801141	-1.38
BASELINE									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
0.39	553	156.13	3.29	780	187.23	28.44	479	149.24	-1.38
Pw WMP									
Pd WMP									
Welfare Change									
% Change									
Exchange Rate									
1.41									

CONSUMER SURPLUS

SIMULATION									
Price	Quantity	CPI	a	b	a	b	a	b	a
Butter	541.002559	82.689907	1.228611	0.7	8.67637537	2086244616	0.7	8.67637537	2086244616
Cheese	758.20283	347.499538	1.228611	0.72	10.4768113	9965172063	0.72	10.4768113	9965172063
SMP	465.152322	33.507901	1.228611	0.5	6.4802159	1133630108	0.5	6.4802159	1133630108
WMP	498.569061	18.428508	1.228611	0.5	5.91682774	639209994.2	0.5	5.91682774	639209994.2
Residual	740.63928	694.60607	1.228611	0.18	7.69563818	46747923580	0.18	7.69563818	46747923580
BASELINE									
Price	Quantity	CPI	a	b	a	b	a	b	a
Butter	553	81.43	1.228611	0.7	8.67637537	2076400589	0.7	8.67637537	2076400589
Cheese	780	340.48	1.228611	0.72	10.4768113	9890198616	0.72	10.4768113	9890198616
SMP	479	33.02	1.228611	0.5	6.4802161	1129024377	0.5	6.4802161	1129024377
WMP	499.576	18.41	1.228611	0.5	5.91683173	639027074.9	0.5	5.91683173	639027074.9
Residual	740.721446	694.5922	1.228611	0.18	7.69563818	46747923580	0.18	7.69563818	46747923580
Butter									
Cheese									
SMP									
WMP									
Residual									
Welfare Change									
% Change									
Total Welfare Change									
108.857,281.39									
Total % Change									
0.165429603									

[illegible]

PROCESSOR SURPLUS										
SIMULATION										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
148.59112	82.128209	459.108072	342.957113	41.145026	56.213545	67.699071	17.037559	269.511877	694.60607	302120534.1
BASELINE										
MG Butter	QP Butter	MG Cheese	QP Cheese	MG SMP	QP SMP	MG WMP	QP WMP	MG Residual	QP Residual	Processor Surplus
151.80563	83.41	477.22184	350.18	55.079687	61.77	67.655037	17.02	269.535634	699.303065	312590931.5
									Welfare Change	-10470397.39
									% Change	-3.349552508

SIMULATION												Exchange Rate	
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		
-2.389	541.624911	195.202735	-10.4825	786.000657	254.180904	21.9059	489.401979	197.529382		-1.38	516.459075	208.0389	653810.545
BASELINE													
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		
0.25	555	158.77	3.91	810	195.16	27.89	503	154.76		-1.38	517.456	162.83	-8272452
											Welfare Change	8926262.51	
											% Change	-107.90347	

	Price	SIMULATION		a
		Quantity	CPI	
Butter	541.624911	83.575018	1.252692	0.7
Cheese	786.000657	351.520402	1.252692	0.72
SMP	489.401979	33.718898	1.252692	0.5
WWMP	516.459075	18.42776	1.252692	0.5
Residual	770.211401	699.293591	1.252692	0.18

	Price	Quantity	GPI	b	a	
Butter	555	82.16	1.252692		0.7	8.67423986
Cheese	810	343.99	1.252692		0.72	10.500265
SMP	503	33.26	1.252692		0.5	6.50200314
WMP	517.456	18.41	1.252692		0.5	5.92470883
Residual	770.153437	699.303065	1.252692		0.18	7.70591173
				Butter		11082346
				Cheese		83450860
				SMP		4553457
				WMP		183621.4
				Residual		-405340
				Welfare Change		98864944.4
				% Change		0.161399188

Total Welfare Change	89,516,442.88
Total % Change	0.139386882

PRODUCER SURPLUS									
Year	SIMULATION			Wleight	Quantity			Rent	Area
	Marginal Cost	GDPI			a				
2003	32.15239146	1.381906	0.5	11.63334969	8176.97346	5.841771719	178538.9285	97074.67803	Producer Surplus 2670674488
2002	32.09642509	1.345575	0.25	5.963328892					
2001	31.74879624	1.307654	0.125	3.03490031					
2000	33	1.269567	0.0625	1.624569637					
1999	33	1.231393	0.031	0.830766457					
1998	33	1.188374	0.0156	0.433196957					
1997	33	1.152642	0.0078	0.223313049					
			Pt*	23.74342499					
PRODUCER SURPLUS									
Year	SIMULATION			Wleight	Quantity			Rent	Area
	Marginal Cost	GDPI			a				
2003	33	1.381906	0.5	11.94003065	8259.37	5.827081574	176449.6473	100506.5753	Producer Surplus 2683684333
2002	33	1.345575	0.25	6.131207848					
2001	33	1.307654	0.125	3.154504173					
2000	33	1.269567	0.0625	1.624569637					
1999	33	1.231393	0.031	0.830766457					
1998	33	1.188374	0.0156	0.433196957					
1997	33	1.152642	0.0078	0.223313049					
			Pt*	24.33758877					
P IM	60.15								Welfare Change -13009845.24 % Change -0.484775541
P FM	65.42								

PROCESSOR SURPLUS									
Year	SIMULATION			Wleight	Quantity			Rent	Area
	Marginal Cost	GDPI			a				
2003	32.15239146	1.381906	0.5	11.63334969	8176.97346	5.841771719	178538.9285	97074.67803	Processor Surplus 319608624.4
2002	32.09642509	1.345575	0.25	5.963328892					
2001	31.74879624	1.307654	0.125	3.03490031					
2000	33	1.269567	0.0625	1.624569637					
1999	33	1.231393	0.031	0.830766457					
1998	33	1.188374	0.0156	0.433196957					
1997	33	1.152642	0.0078	0.223313049					
			Pt*	24.33758877					
PROCESSOR SURPLUS									
Year	SIMULATION			Wleight	Quantity			Rent	Area
	Marginal Cost	GDPI			a				
2003	32.15239146	1.381906	0.5	11.63334969	8176.97346	5.841771719	178538.9285	97074.67803	Processor Surplus 331166253.6
2002	32.09642509	1.345575	0.25	5.963328892					
2001	31.74879624	1.307654	0.125	3.03490031					
2000	33	1.269567	0.0625	1.624569637					
1999	33	1.231393	0.031	0.830766457					
1998	33	1.188374	0.0156	0.433196957					
1997	33	1.152642	0.0078	0.223313049					
			Pt*	24.33758877					
P IM	60.15								Welfare Change -13009845.24 % Change -0.484775541
P FM	65.42								

BORDER MEASURES

SIMULATION										Exchange Rate
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	
-2.389	543.190937	201.448178	-10.2425	813.330838	264.701375	22.5159	510.137133	206.207051	-1.38	1.37
BASELINE										
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	
0.25	557	164.33	4.15	838	207.04	28.5	524	164.28	-1.38	
										533.174
										177.63
										-9028590.99
										Welfare Change
										9410237.42
										% Change
										-104.227087

CONSUMER SURPLUS

SIMULATION				a
Price	Quantity	CPI	b	
Butter	543.190937	84.267908	1.278623	2130226836
Cheese	813.330838	356.078756	1.278623	10539193240
SMP	510.137133	33.982532	1.278623	1188368382
WMP	532.170096	18.427356	1.278623	654064593.7
Residual	796.051441	704.596666	1.278623	47647221000

BASELINE				a
Price	Quantity	CPI	b	
Butter	557	82.8	1.278623	2118692899
Cheese	838	348.5	1.278623	10452294660
SMP	524	33.53	1.278623	1183679159
WMP	533.174	18.41	1.278623	653879708.3
Residual	795.978241	704.608328	1.278623	47647736760

Butter	11533937
Cheese	86898580
SMP	4679223
WMP	184885.4
Residual	-515760
Welfare Change	102780865.4
% Change	0.16562536
Total Welfare Change	87,623,628.34
Total % Change	0.134676903

BORDER MEASURES

SIMULATION									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
-2.389002	545.208977	211.049059	-10.212559	839.887701	275.189724	20.8559	524.597471	214.541161	-1.38
							543.539066	227.3446	738266.2179
									Exchange Rate
									1.36
BASELINE									
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP
0.25	559	175.03	4.18	865	220	26.84	539	176.25	-1.38
							544.56	184.44	-8855571.14
									Welfare Change 9593837.362
									% Change -108.336743

CONSUMER SURPLUS

SIMULATION				
Price	Quantity	CPI	a	b
Butter	545.208977	85.217173	1.305218	0.7
Cheese	839.887701	360.751728	1.305218	0.72
SMP	524.597471	34.31152	1.305218	0.5
WMP	543.539066	18.427282	1.305218	0.5
Residual	814.609143	711.833629	1.305218	0.18
				2158100756
				10830478180
				1211753592
				658905495.9
				48204322650

BASELINE				
Price	Quantity	CPI	a	b
Butter	559	83.74	1.305218	0.7
Cheese	865	353.18	1.305218	0.72
SMP	539	33.85	1.305218	0.5
WMP	544.56	18.41	1.305218	0.5
Residual	814.573613	711.839218	1.305218	0.18
				2146451608
				10740844070
				1206845494
				658717441.3
				48204575560

Butter	11649148
Cheese	89634110
SMP	4908098
WMP	188054.6
Residual	-252910
Welfare Change	106126500.6
% Change	0.16856656

Total Welfare Change 88,631,557.62
Total % Change 0.134323934

SIMULATION										Exchange Rate			
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		
-2.389002	548.164804	219.243684	-9.67259	871.056252	279.38145	23.4559	543.799323	220.321052	-1.38	558.499531	236.4961	-47450.62	1.36
BASELINE													
NT Butter	Pd Butter	Pw Butter	NT Cheese	Pd Cheese	Pw Cheese	NT SMP	Pd SMP	Pw SMP	NT WMP	Pd WMP	Pw WMP		
0.25	501	183.96	4.72	896	220.44	29.44	559	185.9	-1.38	559.556	196.63	-10344348	
												Welfare Change	10296897
												% Change	-99.54129

	SIMULATION			a	b	CPI
	Price	Quantity				
Butter	548,164804	85,809029	1,33328	0.7	8.66537797	2178788414
Cheese	871,056252	364,260059	1,33328	0.72	10.5649545	111114822240
SMP	543,799323	34,644281	1,33328	0.5	6.55060177	1238984124
WWMP	558,499531	18,427404	1,33328	0.5	5.93264476	665140752
Residual	839,014749	716,797408	1,33328	0.18	7.73481876	48623670020

	Price	Quantity	CPI	a	b
Butter	561	84.43	1.33328	0.7	8.66537797
Cheese	896	356.93	1.33328	0.72	10.5649545
SMP	559	34.17	1.33328	0.5	6.5060177
WMP	559.556	18.41	1.33328	0.5	5.93264477
Residual	839.108991	716.782916	1.33328	0.18	7.73481876
					48622994500
				Butter	10924097
				Cheese	89938350
				SMP	5229743
				WMP	194580.5
				Residual	675520
				Welfare Change	106962290.5
				% Change	0.16788642
				Total Welfare Change	Total % Change

APPENDIX 6

DAIRY PRODUCT SUPPLY FUNCTION CALCULATIONS

Appendix 6 gives a step by step explanation of the method used to calculate the dairy product supply function's co-efficient.

The method starts stating the set of supply functions:

$$(1) S_b = H*(P_b - k_0*P_f - k_1*P_n)$$

$$(2) S_c = H*(P_c - k_2*P_f - k_3*P_n)$$

$$(3) S_{smp} = H*(P_{smp} - k_4*P_f - k_5*P_n)$$

$$(4) S_{wmp} = H*(P_{wmp} - k_6*P_f - k_7*P_n)$$

$$(5) S_r = H*(P_r - k_8*P_f - k_9*P_n)$$

where

S_b = the supply of butter

S_c = the supply of cheese

S_{smp} = the supply of skim milk powder

S_{wmp} = the supply of whole milk powder

S_r = the supply of residual product

P_b = the price of butter

P_c = the price of cheese

P_{smp} = the price of skim milk powder

P_{wmp} = the price of whole milk powder

P_r = the price of residual product

P_f = the price of butter fat

P_n = the price of solid non-fat

k_0 to k_9 = technical relationships

H is the variable to be solved for

Now set the supply of residual product equal to its demand and solve for its price.

$$(6) P_r = (H \cdot k_8 \cdot P_f + H \cdot k_9 \cdot P_n + a) / (H - B)$$

where

a = the intercept of the demand function

B is calculated from the demand function exogenously

The next step is to define the demands for fat and solid non-fat.

$$(7) D_f = k_0 \cdot S_b + k_2 \cdot S_c + k_4 \cdot S_{smp} + k_6 \cdot S_{wmp} + k_8 \cdot S_r$$

$$(8) D_n = k_1 \cdot S_b + k_3 \cdot S_c + k_5 \cdot S_{smp} + k_7 \cdot S_{wmp} + k_9 \cdot S_r$$

where

D_f = the demand for fat

D_n = the demand for solid non-fat

Next define the supply of fat and solid non-fat.

$$(9) S_f = wf \cdot Q_m$$

$$(10) S_n = wn \cdot Q_m$$

where

S_f = the supply of fat

S_n = the supply of solid non-fat

wf = the percentage of fat in milk

wn = the percent age of solid non-fat in milk

Q_m = the quantity of milk produced

The next step is to set (7) = (9) and substitute in equations (1) to (6) then solve for P_f .

Repeat this step by setting (8) = (10) and substituting in equations (1) to (6) then solving for P_n . Next you substitute P_n into P_f and solve again for P_f . The resulting equation is:

$$(11) P_f = f(k_0 \text{ to } k_9, H, w_f, w_n, B, Q_m, P_b, P_c, P_{smp}, P_{wmp}, P_r, a)$$

Take the first order conditions of equation (11) with to each of the following: Q_m , P_b , P_c , P_{smp} , and P_{wmp} . The first order conditions are:

$$(12) \frac{\delta P_f}{\delta Q_m} < 0$$

$$(13) \frac{\delta P_f}{\delta P_b} > 0$$

$$(14) \frac{\delta P_f}{\delta P_c} > 0$$

$$(15) \frac{\delta P_f}{\delta P_{smp}} < 0$$

$$(16) \frac{\delta P_f}{\delta P_{wmp}} > 0$$

Substitute in all known variables. This leaves H as the only unknown variable.

An additional restriction is imposed that H must be positive. This means as the gross margin increases the quantity produced increases.

$$(17) H > 0$$

Simultaneously solve equations (12) to (17) to find H .