Volume 2 Number 1, 2001/ p. 118-145 esteyjournal.com

The Estey Centre Journal of
International Law
and Trade Policy

Trade Liberalization in the Dairy Sector: An Overview[1]

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The world dairy industry is one of the most heavily protected in the agri-food sector. Exports of dairy products are dominated by the EU, the United States, New Zealand, and Australia. The major importers of dairy products are far less concentrated but include the EU, Japan, Mexico, Russia, the United States, and many others.

The Canadian dairy industry came out of the Uruguay Round of trade negotiations with the continued ability to practise supply management, thereby allowing it to: (1) maintain prices above world market levels and (2) control the allocation of output to the domestic market. In fact, the Agreement on Agriculture opened the door for Canada to become a more aggressive exporter of dairy products by practising price discrimination between domestic and export markets. The Canadian dairy export program introduced in 1995 was challenged by the United States and New Zealand, and the WTO appellate body ruled against Canada because of the involvement of government agencies in the export process. Recent changes in Canada's dairy export program remove the direct involvement of government agencies but Canada may face a new WTO challenge, one that would force the WTO to rule if price discrimination, at least in some situations, is an export subsidy.

Progress towards future trade liberalization in the dairy sector will involve reductions in export subsidies and over-quota tariffs, and increases in minimum access commitments. Reductions in explicit export subsidies will have the most effect on the EU. The effects of tariff reductions and increases in minimum access on domestic product prices, production, and consumption are commodity and country specific. Careful analysis of any proposed changes in these instruments will be required to fully understand their effects, both in Canada and on world markets.[2]

Keywords: dairy; dispute; export competition; price discrimination; processors; tariffication

Introduction

At the January 2000 Ontario Dairy Farmers' annual meeting, a European speaker argued that most countries in the world are happy supplying their domestic markets with dairy products and have no interest in trade. He went on to argue that there was no reason to change this generally happy state of affairs just to appease New Zealand. Presently, less than 10 percent of world cheese and butter production is traded internationally. Likewise, only one-third of the world's production of skim milk powder is traded. Within the European Union, however, a different story of trade emerges. Intra-EU trade in cheese, butter, and skim milk powder represent 26, 30 and 40 percent of domestic production levels, respectively. Indeed, intra-EU trade in dairy products exceeds the value of international dairy trade (i.e., all trade excluding intra-EU trade) by US $2.9 billion annually.

It can be argued that the EU countries only trade dairy products with each other because they are a large group of geographically close, generally small countries. However, New Zealand, which is geographically isolated, exports more than 80 percent of its dairy products. Hence, distance from market is not a major factor inhibiting trade in dairy products. The conclusion we draw from this is that there is little trade in dairy products internationally not because they couldn't or wouldn't be traded in the absence of trade barriers—but because they can't be traded because of international dairy policies. While New Zealand dairy producers suffer from this lack of trade, the biggest losers are developed country consumers, who have less variety at the dairy counter and pay too much for the dairy products they consume.

The Uruguay Round (UR) Agreement on Agriculture put into place a framework that should lead to the liberalization of trade in all agri-food commodity sectors—eventually (Rude and Meilke, 2000). However, the failure to launch a new round of comprehensive negotiations in Seattle dealt a serious blow to the prospects for world trade liberalization. Nonetheless, the mandated negotiations on agriculture began in March 2000, and a work plan and timetable have been put into place (Miner, 2000).

Canada faces much the same dilemma it faced in the UR: how to further its export interests while at the same time minimizing the effects of trade liberalization on the domestic

dairy sector. The objective of this paper is to discuss and analyze the potential effects of liberalization on the dairy sector resulting from decisions made under each of the following negotiating modalities: (1) export competition, (2) market access, and (3) domestic support. However, before starting that discussion it is helpful to review the current trading situation, recent policy developments, and the current level of subsidization and protection in the dairy sector. OECD projections over the next five years for dairy product prices, production, and consumption patterns (assuming a continuation of current agricultural policies) are also presented.

Trade in Dairy Products

While milk can be transported and traded in its raw form, it is expensive to do so. It is much cheaper to "get the water out" and trade processed dairy products. This discussion concentrates on three major dairy products, namely, butter, cheese, and skim milk powder. These three products account for 55 percent of world dairy product trade. Whole milk powder is the major "missing" product and it accounts for an additional 23 percent of world trade. Small quantities of evaporated and condensed milk are also traded.

Turning first to butter, only three countries (New Zealand, Australia, and the EU) accounted for 72.9 percent of butter exports in 1998, almost the same fraction they held in 1990, albeit of a slightly smaller amount of trade. Imports of butter are far less concentrated. The EU and the Russian Federation account for 25.3 percent of total butter imports. Only two other countries (Egypt and the United States) accounted for more than 5 percent of 1998 world butter imports. In fact, the top 15 importing regions accounted for less than 70 percent of total butter imports in 1998.

Exports of skim milk powder are only slightly less concentrated than those of butter, with New Zealand, Australia, and the EU accounting for 56.5 percent of total exports. These three countries plus Poland and the United States control nearly 75 percent of skim milk powder exports. The largest importers of skim milk powder are, not surprisingly, developing countries, including Algeria (7.7 percent), Mexico (9.1 percent), and the Philippines (6.9 percent). Three other countries accounted for more than 5 percent of 1998 world skim milk powder imports: the European Union (5.8 percent), Japan (5.1 percent), and Malaysia (5.3 percent). The top 15 importers account for about 70 percent of the world's skim milk powder imports.

Cheese has been one of the fastest growing sectors in international dairy trade, with exports increasing 52 percent from 1990 to 1999. Again, these exports are concentrated among a few countries. Australia, the EU, and New Zealand accounted for nearly 70 percent of total cheese exports in 1998. This is similar to the fraction of trade they held in 1990; but the shares of Australia and New Zealand have increased significantly, while the EU's

share of cheese trade has dropped from 54.7 percent in 1990 to 36.0 percent in 1998. The major importers of cheese are the European Union (11.6 percent), the United States (15.3 percent), and Japan (16.5 percent), whose imports have risen dramatically since 1990. The top 10 cheese importing countries accounted for about 70 percent of 1998 total imports.

The picture that emerges from current trading patterns is one of three to five major exporting nations and a much larger group of importers that differ across dairy products. Of the major dairy exporters, Australia and New Zealand are low-cost producers. This is less true for the United States and the EU. Among the important importers many have highly protected domestic dairy sectors.

Canada's Role

Canada has traditionally played a small role in international dairy trade. This is partly the result of its being a small milk producer, but it also reflects the country's domestic policy orientation. For about 20 years prior to the end of the Uruguay Round of trade negotiations, Canada justified its use of import quotas for dairy products under Article XI:2(c) of the GATT. Canada's GATT-legal import quotas allowed domestic dairy product prices to be well above world market levels, and in return Canada controlled domestic supplies and, indirectly, exports.

Canada argued during the Uruguay Round for a strengthened Article XI:2(c). However, at the end of the negotiations Canada agreed to the comprehensive tariffication of import quotas, and their replacement with tariff quotas. Domestic milk producers accepted the agreement with little turmoil when it became clear that the tariff quotas would provide complete protection from imports above the minimum access amount.

With the elimination of the requirements of Article XI:2(c), the domestic industry started to consider the possibility of exporting a larger quantity of dairy products. The expansion of production beyond the confines of a small domestic market was particularly attractive to a rapidly consolidating domestic dairy processing industry. Similarly, some low-cost milk producers were looking for ways to manage and expand output without having to purchase expensive domestic production quota. However, Canada was constrained in its ability to export dairy products by the export subsidy commitments contained in the UR Agreement on Agriculture (AoA). Consequently, when the AoA came into force in 1995, changes were made in Canada's milk pricing regime to create special classes of lower priced milk (5d and 5e) that could only be used to manufacture dairy products for export. This policy change resulted in Canada's exports of cheese growing rapidly and, to a somewhat lesser extent, its butter exports as well. Cheese exports as a percentage of domestic production increased from less than 3 percent in 1994 to more than 8 percent in 1998.

In 1998, the United States and New Zealand brought a complaint to the WTO arguing that the special milk classes created by Canada were an export subsidy, and as a result

Canada was violating its export subsidy commitments under the AoA (WTO, 1999 and 2000). As will be discussed in more detail later, Canada lost the export subsidy portion of this WTO case. As a result, Canada has recently created a new dairy export policy that it expects to be WTO legal.

The issue of dairy product exports is of economic importance to both Canada's dairy processors and milk producers. Processors have found foreign customers for Canada's dairy products in partnership with milk producers willing to provide raw milk at prices that are competitive with world market prices. Currently, bids for milk are being accepted for prices in the range of Cdn. $30-$35/hl. Prices in this range are consistent with academic work that has attempted, through a variety of approaches, to estimate the marginal cost of producing milk in Canada (Chen and Meilke, 1998).

Domestic milk producers like the extra flexibility of being able to produce milk for export and the additional returns this brings. The profit margins on these sales are smaller than for sales at domestic prices, at least for producers who have purchased their domestic production quota at prices well below the current level. It remains to be seen if a group of producers will emerge that produce only for the export market.

Historically, the question for dairy processors is whether they can consolidate production in plants large enough to capture economies of scale. With a small domestic market, an obvious avenue for expansion is through export sales. Once having developed these export markets and the plant capacity necessary to serve them, sharp reductions in output can be very expensive. If the WTO export subsidy commitments Canada made for 2000/01 were applied to 1998 export levels, Canada would have had to curtail more than 50 percent of its butter exports and nearly 70 percent of its cheese exports. Cuts of this size would require significant reductions in industrial milk production.

Policy Developments Outside of Canada

It is impossible in this short paper to review dairy policy changes in a large number of countries. To keep it manageable, changes in the European Union and the United States are highlighted. However, it is important to remember that protected dairy sectors exist in most industrialized countries, and that relatively small changes in dairy policy in a large number of these countries could have as much impact on world markets as changes in the EU and the United States.

European Union Dairy Policy

The EU dairy policy involves the management of markets to generate product prices that guarantee milk producers the target price for milk. The price supports for dairy products are implemented by having national intervention boards purchase product surpluses (butter and

skim milk powder) at announced prices. Products purchased by the intervention agencies are stored and disposed of through subsidized sales to non-EU countries.

In 1984, milk production quotas were introduced in an attempt to limit milk production and to reduce the budget cost of the EU dairy policy (OECD, 1996). Since the inception of supply management, the EU has operated several programs to reduce the total amount of outstanding production quota. These programs have involved the elimination of quota through the purchase of quota rights, and mandatory compensated and uncompensated quota reductions.

Several recent agricultural policy decisions will influence the EU dairy sector. The first is related to Agenda 2000, a policy package designed to extend and deepen the Common Agricultural Policy (CAP) reforms begun by Commissioner MacSharry in 1992 (European Commission, 1999a and 1999b). The details of the reform measures were formulated in the Berlin Accord, which reinforced shifts away from price supports to direct payments. The goal is to sharply reduce the need for the EU to export dairy products using export subsidies (Senior Nello and Smith, 1998). Briefly, the Berlin Accord includes the following elements: (1) intervention prices for butter and SMP will be reduced by 15 percent in three equal steps starting on 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; and (3) milk production quota will be increased in each member state by 1.5 percent over a three-year period beginning in 2005. In addition, four countries (Greece, Italy, Spain, and Ireland) will receive specific quota increases in two steps (2000/01 and 2001/02). This means the current quota regime will be extended to at least 2006/07 and the implementation of most reforms contained in the Berlin Accord won't begin until 2005.

Analyses conducted by Fuller et al. (1999), Larivière and Meilke (1999), and Benjamin et al. (1999) indicate that if the EU maintains the course it has set with the Berlin Accord, the EU milk price will fall between 9.5 and 14 percent over the implementation period. These results are roughly consistent with the legislated decline in the target price of milk from 30.98 euro/100 kg in 2005 to 25.72 euro/100 kg in 2007. In 2007, assuming an exchange rate of Cdn. $1.4/euro, the EU target price will equal Cdn. $37.16/hl. The second major change that will influence the EU dairy sector is the enlargement of the EU-15 to include the Czech Republic, Hungary, and Poland (Central and Eastern European Countries, or CEECs) to create the EU-18. Although the enlargement is a few years away, these three CEECs have significant dairy sectors. Currently, large price gaps exist between dairy products in the EU and the CEECs, with dairy product prices in the CEECs 45 percent below those in the EU (Agra Europe, 2000). If prices in the CEECs are increased to the EU level it will encourage milk production in the CEECs and increase their trade with the current EU member countries and with the rest of the world (Fuller et. al., 1999).

U.S. Dairy Policy

In the United States, the policy instruments that have been used historically to regulate milk marketing and distribution include three distinct but interrelated policy instruments. First, through the price support program, the government purchases butter, non-fat dry milk, and American cheese from processors at prices calculated to ensure that the farm price of milk used for these products remains above the legislated support price. However, the Federal Agricultural Improvement and Reform (FAIR) Act of 1996 called for the gradual elimination of the dairy price support program. The elimination of the program has been postponed several times and it is not yet clear whether it will be eliminated or not (Sumner, 1999; Bailey, 1999).

The second measure is the milk marketing order system, which regulates regional milk prices paid by users and how these prices are translated into farm level prices. Finally, the United States government provides protection to the domestic dairy industry by restricting imports through tariff quotas and disposes of its surpluses using export subsidies under the Dairy Export Incentive Program.

Since passage of the FAIR Act, Congress has been looking for dairy policy options that would result in a more market-oriented dairy industry. The Secretary of Agriculture responded to Congress with a threefold plan that consists of: (1) consolidation of marketing areas; (2) basic formula price replacement; and (3) modification of the class I (fluid milk) pricing system.

The *consolidation of marketing areas* involves a decision to reduce the number of milk marketing orders from 31 to 11 (Bailey, 1999). The new federal order system is responsible for setting minimum prices for milk used in dairy products, but the marketplace is expected to bid the prices of milk above the minimum price based on market supply and demand conditions for dairy products. The federal order system provides for price discrimination by end use, price pooling, and regulations affecting the geographic distribution of milk.

Basic formula price replacement involves a decision to make the dairy sector more price responsive. This resulted in changes in the classification of milk and in the formulas used to define class prices. The new pricing formulas are based on a multiple component pricing system to make milk production and its allocation more market responsive. The multiple component pricing system derives component values from surveyed prices of manufactured dairy products. The new pricing system replaces the “Basic Formula Price” with class prices defined on the basis of butterfat, protein, and other solids that are linked to commodity markets. The new formula pricing system ensures that end-use price discrimination lowers the United States’prices of dairy products most likely to be traded internationally (Sumner, 1999).

The changes to the *Class I (fluid milk) pricing structure* involve a new pricing formula. Historically, the minimum price for fluid milk in the United States was obtained by adding the Class I price differential to the Basic Formula Price for fluid milk. In the new formula price, the Class I price is based on a multiple component pricing system. It is difficult to tell in what direction the U.S. price of fluid milk will evolve under the component pricing system, given both domestic and trade policy reforms. The Class I price differentials, ranging from US $1.43/cwt. to US $4.25/cwt. depending on location, have been lowered in 9 out of 11 marketing areas and raised in three others.

Currently, the United States Basic Formula/Class III milk price is slightly below US $10.00/cwt. (Cdn. $34.50/hl) and the average price for all milk is around US $12.00/cwt. (Cdn. $41.40/hl). Although fluid milk price differentials have been reduced, on average they still provide a significant premium for fluid sales. In 1999, because of the concerns surrounding the elimination of the price support program, the program was extended for at least one year. Future program provisions remain uncertain at this time.

An Overview of Protection in OECD Milk Markets

Economists have not been able to develop the perfect measure of support and protection for a commodity sector (Meilke, 1999). Each measure has its strengths and weaknesses, but the Producer Support Estimate (PSE) calculated by the OECD (2000b) has the advantage of including most economic policies that influence production, consumption, and trade. It also has the advantage of having been calculated over the past 20 years, and therefore provides a consistent "yardstick" of changes in support and protection in agriculture over time.

Table 1 shows the PSEs for milk across countries. Support for milk producers in Canada (58 percent) is near the OECD average, as is true for the European Union (58 percent) and the United States (57 percent). To illustrate how the support provided to milk producers compares to the average level of support provided to all producers, across countries, table 1 shows the milk PSE divided by the all-commodity PSE. A number greater than one indicates that milk producers are getting more support than the average, and a number less than one shows lower support than the average. Milk producers in Australia, Canada, and Hungary are provided support 2.5 to 3.0 times greater than the average level of support. Comparable figures for the European Union and the United States are 1.8 and 2.37, respectively. Only in Poland are milk producers provided significantly less support than producers of other commodities.

The prospects for trade liberalization in any commodity sector depend crucially on developments in world markets. It is much easier for governments to sell trade liberalization when world commodity prices are buoyant than when prices are depressed. This is

especially true for commodity sectors where market price supports and tariff quotas are the primary policy instruments. When world market prices rise, the gap between the domestic price and the world market price declines. In effect, the "implied tariff" employed by the country declines.[3] These implied tariffs provide another measure of the protection provided to domestic producers and we will return to them in the market access section of the paper.

Table 1 Producer Support Estimates for Milk and All Products, 1999

Country	Producer support estimate (percent) 1999		
	Milk	All goods	Milk/all goods
Australia	18	6	3.00
Canada	58	20	2.90
European Union	58	49	1.18
Hungary	50	20	2.50
Japan	80	65	1.23
Korea	70	74	0.95
Mexico	46	22	2.09
New Zealand	0	2	0.00
Norway	75	69	1.09
Poland	9	25	0.36
Turkey	39	36	1.08
United States	57	24	2.37
OECD	57	40	1.42

Source: OECD, 2000b

The OECD has recently provided a comprehensive set of projections for agricultural markets from 2000 to 2005. While all economic projections are fraught with difficulties and assumptions, they are useful in providing an expected backdrop against which this round of trade negotiations will be conducted. The complete set of assumptions utilized by the OECD is contained in OECD (2000a). Three key ones are: (1) existing or announced national agricultural policies in OECD member countries continue; (2) commitments made in the AoA are implemented over the 1995–2000 period, and maintained until 2005; and (3) the provisions of the FAIR Act in the United States remain unchanged and no additional "emergency" payments are made to its producers.

Based on these assumptions, the following trends for butter, cheese, and skim milk powder can be observed in the OECD data and projections since 1990 (see figures 1 and 2).

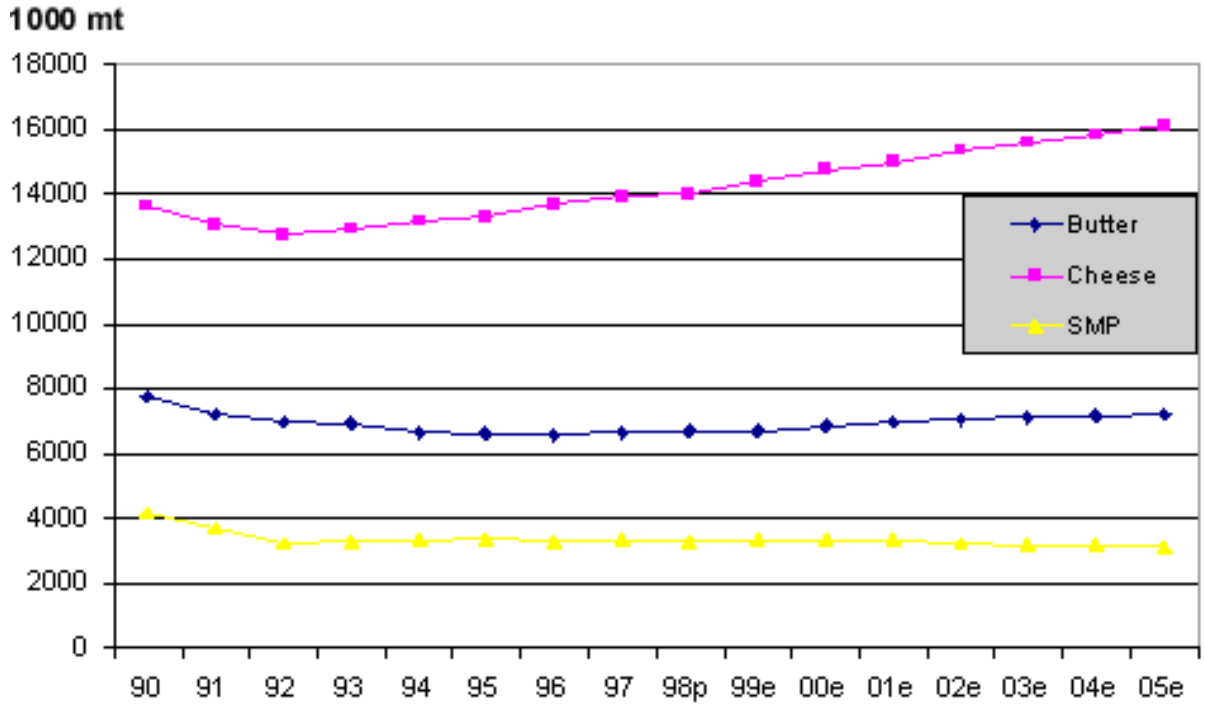

Figure 1 World dairy product production, 1999–2005

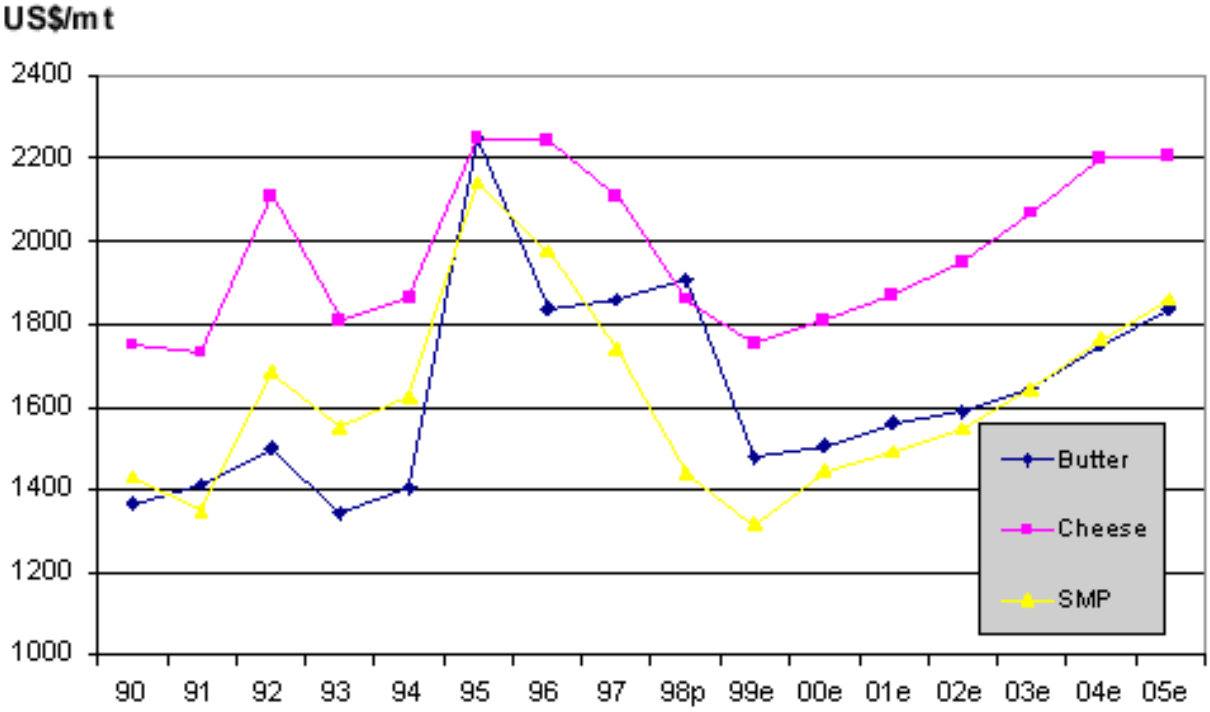

Figure 2 World dairy product prices, 1999–2005

Between 1990 and 1994 world butter production declined by 14.8 percent. Since then production has been quite stable, with output in 2000 at 3.2 percent above the 1994 level. The OECD projects butter production to continue increasing slowly, reaching 7,220 thousand metric tonnes (tmt) by 2005, 5.4 percent above the 2000 level but still well below the level of butter output in 1990.

World cheese production also declined between 1990 and 1994 but by only 3.5 percent. Since then cheese production has grown to reach 14,751 tmt in 2000, up 12.0 percent from the 1994 level. The OECD projects continued rapid expansion of cheese production, with output in 2005 expected to be 9.4 percent above its level in 2000.

Skim milk powder production declined sharply between 1990 and 1992, and levels off at this lower level through the end of the projection period in 2005. Skim milk powder output in 2005 is projected to be 4.7 percent below the output in 2000 and 24 percent below the 1990 output level.

Given the "thinness" of international dairy markets it does not take much in the way of a supply shock to have a significant effect on prices. Figure 2 shows the world prices of butter, cheese, and skim milk powder between 1990 and 1997, and the OECD projections and estimates of prices from 1998 to 2005. The reductions in dairy product output between 1990 and 1994 led to sharp increases in the prices of all three dairy products. Between 1994 and 1995 the price of butter increased by 60.3 percent, cheese by 20.7 percent, and skim milk powder by 32 percent. However, prices have declined since then resulting in 1999 prices being similar to what they were in 1990. The OECD projects rising dairy product prices between 1999 and 2005. The price of cheese is projected to reach levels near its 1995/96 high. Butter and skim milk powder prices are also projected to rise to over US $1800/mt, but to remain below the highs they hit in the mid-1990s.

No one expects dairy product prices to move smoothly upward in the fashion illustrated in figure 2. In reality, supply and demand shocks will cause dairy product prices to fluctuate erratically. However, if the trend in dairy product prices is similar to the OECD's projected increases, there is hope for trade liberalization. It would not take much in the way of demand expansion to push the OECD's projected world prices well above the levels seen in the mid-1990s. With this introduction to the international dairy market we now turn to the negotiating modalities.

Export Competition

Most economists consider export subsides to be the most trade distorting of all border measures. The effect of an export subsidy is to raise the domestic market price, thereby reducing domestic consumption and encouraging domestic production and exports, which in turn lowers world market prices. For this reason, export subsidies on all goods

except agriculture are prohibited by the WTO. In the AoA, disciplines were imposed on export subsidies in agriculture. Existing export subsidies were to be cut by 21 percent in volume terms and 36 percent in value terms from a 1986–90 base over a six-year period. WTO member countries agreed not to introduce any new export subsidies.

Table 2 Exports and Export Subsidies for Dairy Products, 1995–1998

Year	Volume commitment (tmt)	Actual exports (tmt)	Notified exports (tmt)	Notified exports / volume commitment (percent)	Notified exports / actual exports (percent)
			Butter – all countries		
1995	631	734	155	25	21
1996	602	683	288	48	42
1997	573	754	187	33	25
1998	529	691	167	32	24
Average	584	715	199	34	28
			Cheese – all countries		
1995	557	1007	446	80	44
1996	526	1041	424	80	41
1997	500	1091	350	70	32
1998	460	1092	253	55	23
Average	511	1058	368	72	35
			Skim milk powder – all countries		
1995	754	1134	399	53	35
1996	720	862	361	50	41
1997	683	1054	295	43	28
1998	646	923	380	59	41
Average	700	993	359	51	36
			Other milk products – all countries		
1995	1563	–	1267	81	–
1996	1471	–	1248	84	–
1997	1405	–	1227	87	–
1998	1342	–	1060	79	–
Average	1445	–	1200	83	–

Source: WTO, 2000b

Note: In a few cases notified exports are larger than actual exports. This results from combining calendar-year data from the WTO (2000b) and dairy-year data from the OECD (2000a). The four-year average should eliminate most of this bias in the data.

Table 3 Exports and Export Subsidies for Dairy Products in the EU, 1995–1998

Year	Volume commitment (tmt)	Actual exports (tmt)	Notified exports (tmt)	Notified exports / volume commitment (percent)	Notified exports / actual exports (percent)
			Butter – EU		
1995	487.8	230	146.4	30	64
1996	470.1	203	276	59	136
1997	452.4	227	169.1	37	74
1998	434.7	175	165.3	38	94
Average	461	209	189	41	91
			Cheese – EU		
1995	426.5	529	422.3	99	80
1996	405.4	528	401.9	99	76
1997	384.4	512	324.1	84	63
1998	363.3	448	226.3	62	50
Average	395	504	344	87	68
			Skim milk powder – EU		
1995	335.0	370	241.2	72	65
1996	322.5	224	269.5	84	120
1997	310.0	283	175.5	57	62
1998	297.5	176	221.5	74	126
Average	316	263	227	72	86
			Other milk products –- EU		
1995	1,185.4	-	1,156.7	98	-
1996	1,140.0	-	1,140.0	100	-
1997	1,094.5	-	1,116.9	102	-
1998	1,049.0	-	951.1	91	-
Average	1117		1091	98	

Source: WTO, 2000b

Note: In a few cases notified exports are larger than actual exports. This results from combining calendar-year data from the WTO (2000b) and dairy-year data from the OECD (2000a). The four-year average should eliminate most of this bias in the data.

A picture of export subsidization in international dairy markets is provided in table 2. Table 3 reports the same picture of dairy product export subsidization for the EU. The column labelled "volume commitment" shows the total quantity of each product eligible for export subsidies from 1995 to 1998, and the average of these quantities. Of the total volume commitment, the EU holds more than 77 percent of the rights, except for skim milk powder where its share is 45 percent. Globally, notified exports (exports made with the aid of export subsidies) as a percentage of the volume commitment range, on average, from 34 percent for butter to 83 percent for other milk products. Of the notified exports, almost all originated in the EU, their smallest share being 88 percent for skim milk powder. More than 90 percent of the exported butter, cheese, and other milk products receiving export subsidies originated in the EU.

The fraction of global exports receiving export subsidies between 1995 and 1998 ranges from 28 percent for butter to 36 percent for skim milk powder. No total export data are available for other milk products, but a significant fraction of them are receiving export subsidies. The elimination of export subsidies would put considerable pressure on the EU dairy sector, requiring them to either tighten supply controls or reduce internal prices. An alternative would be to look for other marketing arrangements that could allow them to export dairy products at lower prices, while at the same time avoiding the disciplines on export subsidies. One option is to implement a price discrimination scheme. However, this is the issue on which Canada recently lost a WTO panel decision and to which we now turn.

Price Discrimination

Canada recently lost a WTO panel decision on the legality of its dairy product exports. The arguments were based on a legal interpretation of the AoA and various other WTO agreements. The purpose of this section is not to describe the panel findings in detail or to subject them to a careful review. Instead, the objective is to analyze the economics of price discrimination. However, it does help to examine the grounds upon which the appellate body found Canada in contravention of its WTO export subsidy obligations. The ruling hinged on the interpretation of Articles 9.1(a) and 9.1(c) of the AoA.

Article 9.1(a) says that export subsidies of the following form are subject to reduction commitments:

> The provision by governments or their agencies of direct subsidies, including payments-in-kind, to a firm, to an industry, to producers of an agricultural product, to a co-operative or other association of such producers, or to a marketing board, contingent on export performance.

With respect to Article 9.1(a) the appellate body found:

> …in view of our findings below on Article 9.1(c) of the Agreement on Agriculture, we do not find it necessary to examine in this Report whether export subsidies, as listed in Article 9.1(a), are conferred through Special Classes 5(d) and 5(e) and we, therefore, reserve our judgement on this question.

Article 9.1(c) says that export subsidies of the following form are subject to reduction commitments:

> Payments on the export of an agricultural product that are financed by virtue of government action, whether or not a charge on the public account is involved, including payments that are financed from the proceeds of a levy imposed on the agricultural product concerned or on an agricultural product from which the exported product is derived.

With respect to Article 9.1(c) the appellate body found:

> …we, therefore, agree with the Panel's findings that the "payments" made under Special Classes 5(d) and 5(e) are "financed by virtue of governmental action" within the meaning of Article 9.1(c) of the Agreement of Agriculture.

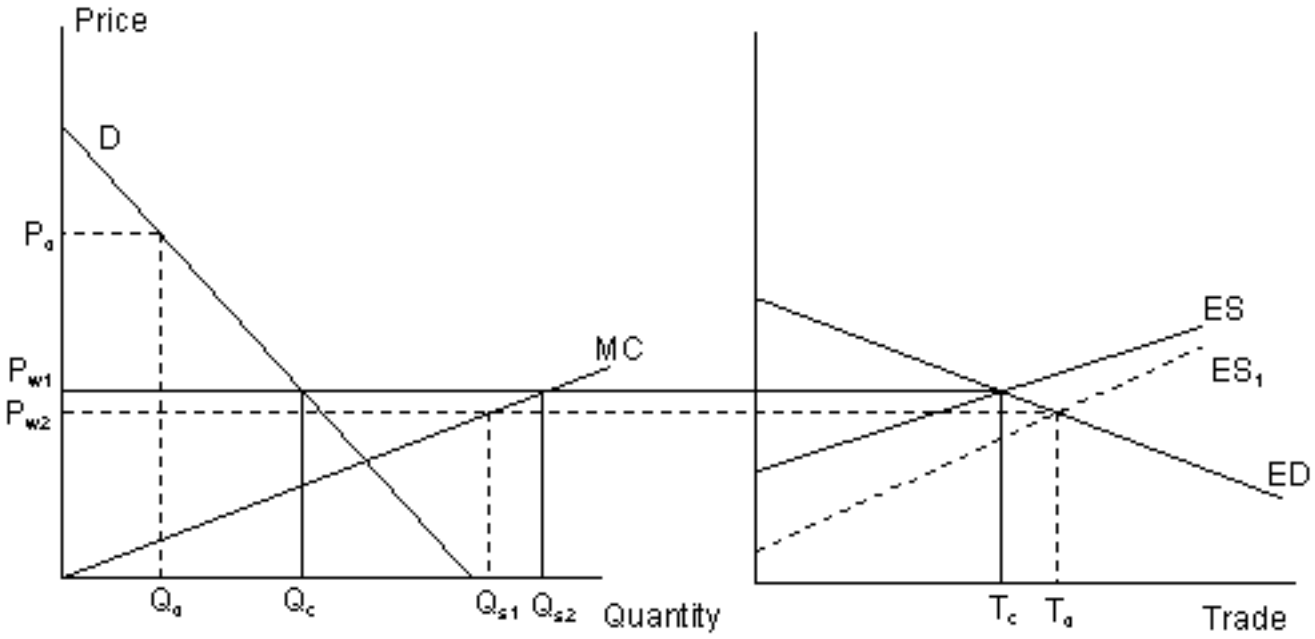

Figure 3 Market price discrimination

We interpret the appellate body's findings as saying Canada lost its case because of the involvement of government agencies in the exportation of dairy products, but the appellate body declined to rule if price discrimination of the type used by Canada is an export subsidy.

In our discussion of the issues surrounding price discrimination the focus is on the trade distortions that price discrimination entails and the potential WTO remedies.

Consider the first panel in figure 3, where D is the domestic demand curve, MC the domestic marginal cost (supply) curve and P_{w1} the world market price. The country illustrated is an exporter of dairy products at the world market price. This is an important assumption, since if the country is an importer at world market prices some of the remedies for the trade distortions created by price discrimination have different outcomes. In panel (b) (figure 3) the intersection of the exporter's excess supply curve ES with the excess demand curve it faces determines the free trade price P_{w1}. While the "importer" case is not illustrated, where the distinction between an exporter and an importer is important it is discussed.

If free trade prevails, the country illustrated in figure 3 will supply quantity Q_{s1}, consume domestically quantity Q_c and export quantity Q_{s1}-Q_c = T_c, all at the world market price of P_{w1}. Now assume that the country has the ability to price discriminate between the domestic and the export markets. A potential outcome is to sell quantity Q_d domestically at price P_d and to export Q_{s2}-Q_d = T_d at the new world market price P_{w2}. A number of important points are illustrated by this example:

- The trade distortion caused by price discrimination is T_d -T_c.
- As long as domestic producers determine their optimal output based on the world market price, output is lower than under free trade. The key to this outcome is to ensure that producers react to the world market price and not to the "blend" price, which would lead to a positive supply distortion.
- The ability to price discriminate requires two conditions: (1) the ability to keep the "cheap" exported product from flowing back to the domestic market, via a high import tariff or non-tariff barrier; and (2) the ability to allocate the product between the domestic and export markets. Whether the product is allocated between the domestic and export markets by a private firm, a marketing board, or a government agency is of no real consequence as far as the trade distortion is concerned.
- In terms of generating additional revenue for domestic producers, the key decision is the allocation of product to the domestic market. As the quantity supplied to domestic consumers increases, the domestic price approaches P_{w1} and the trade distortion becomes smaller.

Should the WTO discipline price discrimination, and if so how? One way would be to restrict the total quantity the country is allowed to produce. By restricting output to ((Q_{s2}-Q_d) - (Q_{s1}-Q_c)) the trade distortion is removed. However, this remedy requires knowledge of unknown economic parameters. The current WTO solution is to deal directly with exports. If export subsidies are eliminated, and price discrimination schemes are determined to be export subsidies, then the country illustrated in panel (a) is restricted to zero exports, far less than its free trade level of exports.[4] If the country is a net importer at the world market price, restricting exports to zero entails a positive trade distortion if the country supplies its own domestic demand.

Since supplies are lower than with free trade, the problem is the demand distortion. The easiest way to remove the demand distortion is to lower tariffs. With no tariff, there is no demand, supply, or trade distortion.

It is tempting to think that increases in minimum access could also be used to remove the trade distortion, but an increase in minimum access is a blunt instrument to use in this situation. If domestic regulators do not lower domestic prices in the face of increased imports, e.g., by increasing exports, then the trade distortion remains the same. Alternatively, if the domestic firm continues to price discriminate, domestic prices fall and part of the trade distortion is removed. This argument lends some support to the Canadian negotiating proposal that trade-offs between decreases in over-quota tariffs and increases in minimum access should be allowed.

Countries could also bring antidumping trade actions against the exporting country. However, many countries are happy to purchase "dumped" dairy products and it is unlikely that antidumping trade actions could be used to remove much of the trade distortion caused by price discrimination.

Finally, it could be argued that price discrimination does not result in trade distortions large enough for the WTO to worry about. No government money is involved, domestic demand is generally price inelastic, and some form of domestic supply management is required to make price discrimination work. In addition, the WTO does not discipline price discrimination in any other sector of the economy. However, since price discrimination is essentially a consumer-financed export subsidy it gives a tremendous export advantage to countries that have large domestic markets relative to their export markets. This is a complex issue that the WTO will have to address.

The contention that there is no positive supply distortion in a price discrimination scheme needs to be discussed further. It is often argued that producers who can sell a part of their output at a high domestic price will also produce more for the export market. Consider the firm illustrated in figure 4. At the world market price of P_w this firm's optimal output is Q_w, but because it is not covering its average total costs it will eventually go

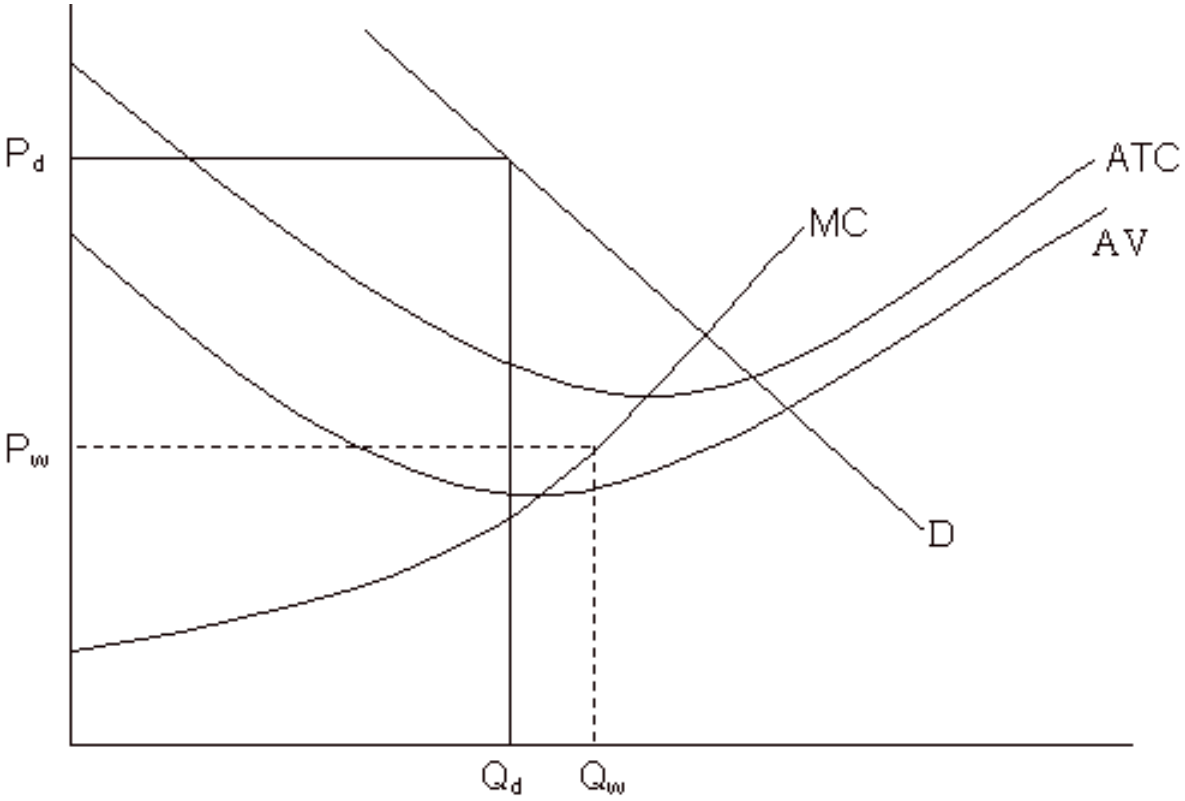

Figure 4 Firm-level supply conditions

out of business. Suppose, however, that the firm is paid P_d for domestic sales of Q_d. The price P_d covers the firm's average total cost and the firm continues to produce quantity Q_d.[5] In this situation, is there an incentive to expand output to Q_w? If the firm's fixed plant and equipment is designed to produce quantity Q_d, then the answer is "no" if the producer gets P_w for the additional output. There is no incentive to incur the fixed costs to move to Q_w when the marginal revenue from these sales won't cover the average total cost of these sales. However, if the firm's fixed plant and equipment is designed for output Q_w or larger, then there is an incentive to expand production to Q_w. The marginal revenue on the additional sales is greater than the average variable cost of these sales, i.e., they contribute to covering the fixed costs on what would otherwise be unused capacity. At any time, with supply management, some dairy farms are in the position of having unused capacity, and hence there can be a positive supply-side distortion—even when there is no pooling of returns between the export and domestic markets.

The elimination of trade distortions is a goal of the WTO but almost all economic policies and border measures involve some trade distortion. Even import tariffs, the transparent border instrument favored by the WTO, create trade distortions. Hence, there is always a tariff that is equivalent to a price discrimination scheme in terms of its trade-distorting

effect. In the forthcoming negotiations, Canada has to decide whether it wants other countries to imitate its use of unregulated price discrimination in the dairy market and potentially other markets. Alternatively, price discrimination in agriculture could be allowed by the WTO, but disciplined. For example, a simple rule could be that countries using price discrimination schemes with tariffs below some fixed percentage (e.g., 20 percent) can export up to some fixed percentage of their production (e.g., 5 percent) without it counting as an export subsidy.

Market Access

The key issues in the market access negotiations involve: (1) single-stage tariffs, (2) two-stage tariffs, (3) minimum access commitments, (4) tariff quota administration, and (5) tariff escalation. None of these issues is unique to the dairy sector, but some are of greater importance to the dairy sector than to others.

Dairy products in many countries are protected through the use of tariff quotas. Tariffs on over-quota dairy product imports are large, ranging from as "small" as 30 percent to as high as 2000 percent. Even massive cuts in over-quota tariffs will leave many of these tariffs high enough to prevent imports above the minimum access amount. Nevertheless, over-quota tariff reductions that do not result in immediate improvement in market access can be an important stepping stone towards further reductions. Tariff peaks will receive a great deal of attention in the WTO negotiations. A formula that reduces high tariffs by more than it reduces low tariffs, a maximum tariff for over-quota products, or a maximum average over-quota tariff could be used to sharply reduce these tariffs.

In terms of trade distortions, it is necessary to determine how much "water" there is in the over-quota tariffs.[6] The OECD domestic and world price projections help in making this assessment. Table 4 shows the average (2003–2005) *ad valorem* over-quota tariff and the implied tariff based on the OECD domestic and world price projections. In five cases the implied tariff is higher than the over-quota tariff. There are three possible explanations for this unexpected outcome. First, the world and domestic prices have not been adjusted for differences in quality or transfer costs. This could easily explain the small differences in implied tariffs and over-quota tariffs in two cases. Second, there may be non-tariff barriers keeping out imports. This is almost certainly the case for cheese in Japan. Third, the OECD may not have completely incorporated the over-quota tariffs in making their projections. The reason for the discrepancies in the data needs to be explored but they do not invalidate one simple point: the exact fashion in which over-quota tariffs are lowered matters. Consider butter, where a 50 percent tariff cut implies a 40.2 percentage point cut in the United States' implied tariff, but no cut in Canada's implied tariff. Conversely, a 100 percent maximum tariff allows the United States to maintain its implied protection, but

would require Canada to cut its protection by 35.5 percentage points. A 100 percent maximum tariff on cheese leaves both the EU's and United States' implied protection unchanged, but requires a significant drop in Canada's implied protection. However, a 50 percent reduction in over-quota cheese tariffs would require significant adjustments in the EU and the United States, with much less adjustment required in Canada than with the 100 percent maximum tariff. Hence, the details matter, and matter a lot. Each over-quota tariff reduction plan has different implications for both countries and products.

Table 4 Implied Protection and Over-Quota Tariffs, 2003–2005

Country and commodity	Over-quota tariff (percent)	Implied tariff (percent)	Implied tariff reduction (percentage point change)	
			50% over-quota tariff cut	100% maximum tariff
Butter				
Canada	298.7	135.5	0.0	35.5
EU	117.1	122.7	64.1	22.7
Japan	593.7	451.9	155.1	341.9
US	88.5	84.5	40.2	0
Cheese				
Canada	245.7	194.5	71.6	94.5
EU	83.3	92.1*	50.5*	0
Japan	29.8	750.4*	-	-
US	57.0	73.6*	45.1*	0
Skim milk powder				
Canada	201.6	126.3	25.5	26.3
EU	73.0	24.0	0	0
Japan	246.8	220.0	96.6	120.0
US	49.0	60.5*	36.0*	0

Source: OECD, 2000a

* The implied tariff should normally be below the over-quota tariff but in this case it is not. Hence, if the over-quota tariff is lowered to zero it may not lower the implied tariff to zero if "quality" or non-trade barriers allow implied tariffs to remain above the over-quota tariff.

Expansion of the minimum access amount seems the most direct way to ensure improved market access. The Uruguay Round guidelines for minimum access suggested that countries commit themselves to imports equal to 5 percent of domestic consumption

by the end of the implementation period. However, many countries' final offers fell short of the 5 percent level, and in other cases quota underfill has lessened market access even further. Canada proposes that countries should grant similar access, as a percentage of domestic consumption, for all commodities. Although not specified, 5 percent would seem to be a starting point for the negotiations, and 10 percent is probably an upper bound for any acceptable expansion in minimum access during this round of negotiations.

Figures 5 to 8 show dairy product imports as a percentage of domestic consumption in Canada, the EU, the United States and Japan. The data for 1990 to 1997 are actual numbers, and the data for 1998 to 2005 are OECD estimates and projections. For Canada, cheese imports are well above 5 percent of consumption but never reach 10 percent. Butter imports rise from nothing early in the period to about 4 percent of consumption between 1998 and 2005. Skim milk powder imports reach 20 percent of domestic consumption in 1994 but drop to almost nothing between 1997 and 2005. In the EU, 1997 imports equal 7 percent of consumption for skim milk powder, 5.2 percent for butter, and only 2 percent for cheese. Japan imports most of its cheese and it is forecast to import about 20 percent of its skim milk powder consumption between 1997 and 2005. However, Japanese butter

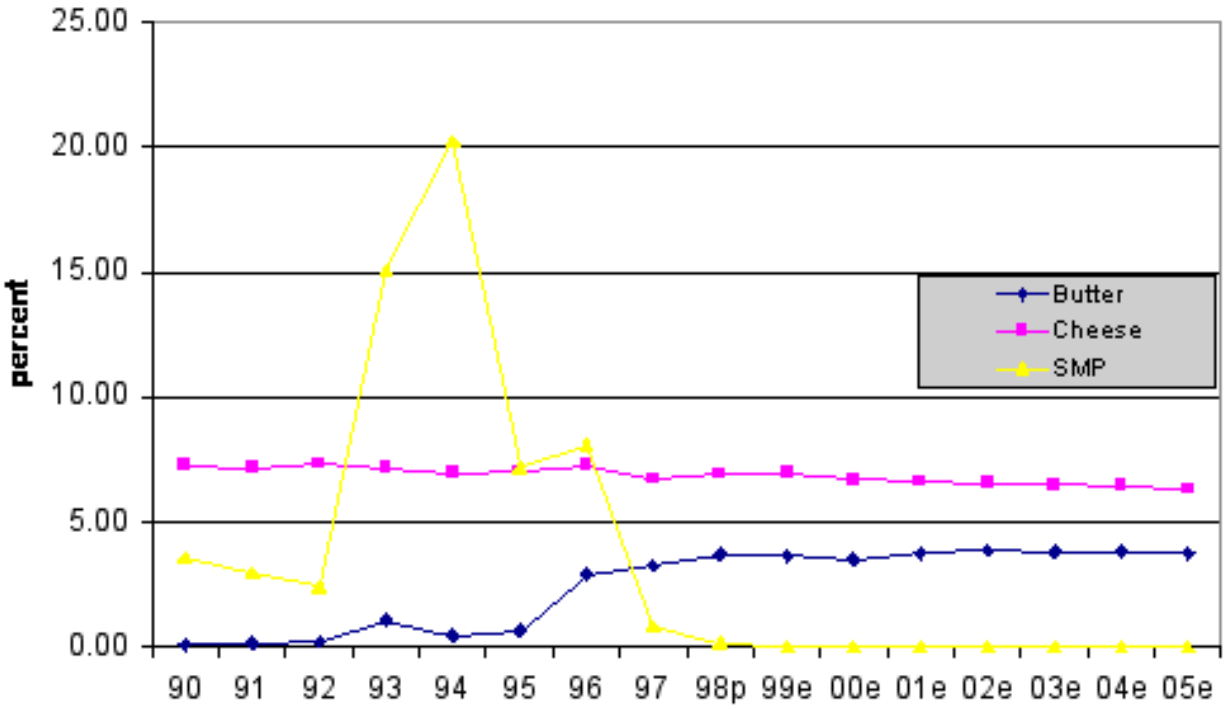

Figure 5 Canada: Imports of dairy products as a percentage of domestic consumption, 1990–2005

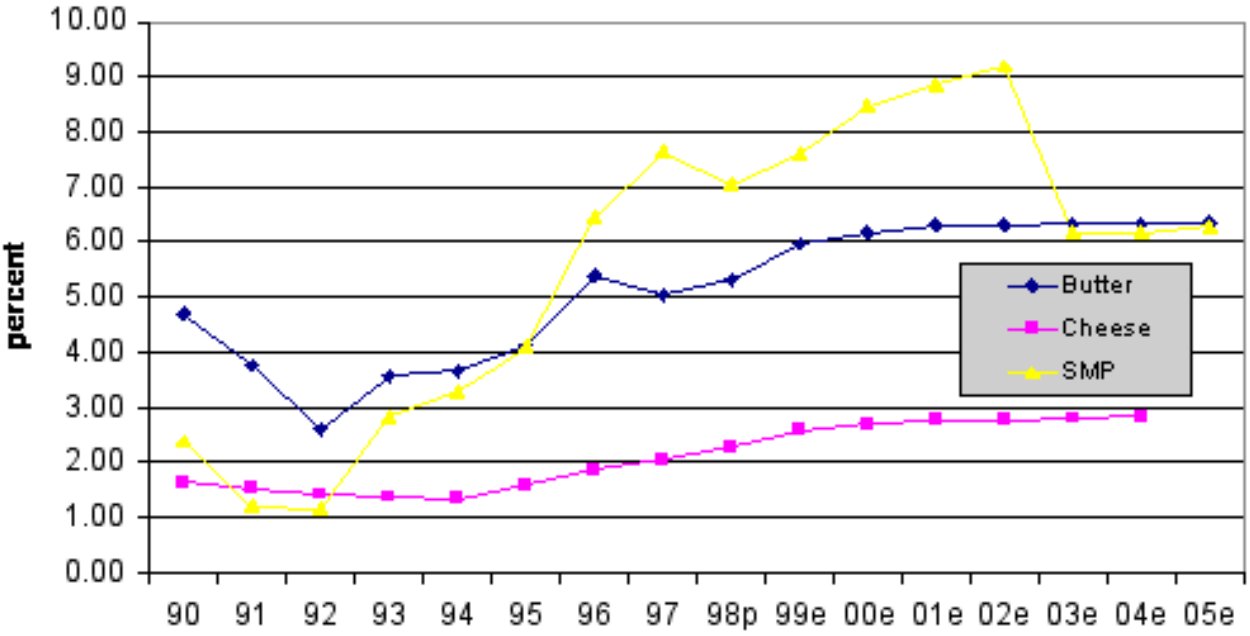

Figure 6 EU: Imports of dairy products as a percentage of domestic consumption, 1990–2005

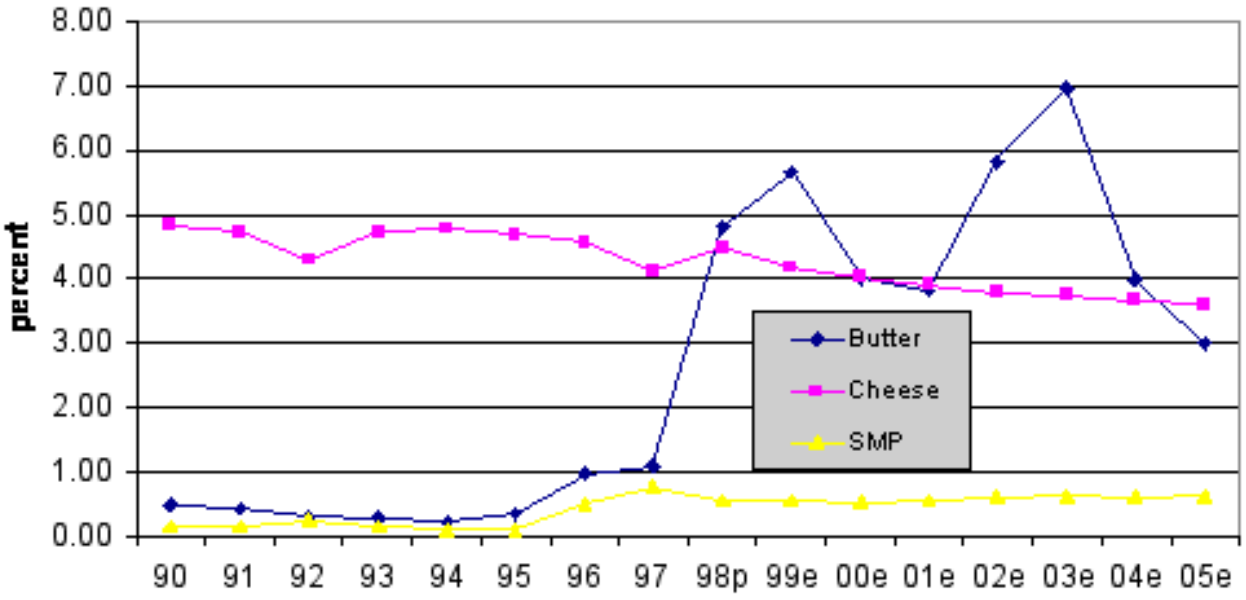

Figure 7 United States: Imports of dairy products as a percentage of domestic consumption, 1990–2005

imports are forecast to equal zero between 1996 and 2005. In the United States, cheese imports are forecast to equal about 4 percent between 1998 and 2005, and skim milk powder imports account for less than 1 percent of consumption.

Considering just these four countries, it is obvious that some countries are "safe" on some dairy products, but face significant access issues on others. Table 5 shows the increase in imports, as a percentage of domestic consumption, required for each product if the minimum access commitment was set at 5 percent, 7 percent or 10 percent in 2005, assuming the OECD projections are correct. To meet a target of 7 percent minimum access in butter, cheese, and skim milk powder would require the four countries, in total, to import an additional 1.6 percent, 3.7 percent, and 2.0 percent of domestic consumption. However, the additional required imports vary considerably across commodities and countries. For butter, the EU would only have to import an additional 0.6 percent of its domestic consumption to meet the 7 percent requirement while the United States would have to increase imports by 4 percent of its domestic consumption. For cheese, the EU would have to increase its imports by 4.2 percent of consumption, and the United States 3.4 percent to have imports equal 7 percent of domestic consumption. Canada and the United States would have to increase imports of skim milk powder substantially to meet any minimum access requirement, while the EU and Japan would face little adjustment.

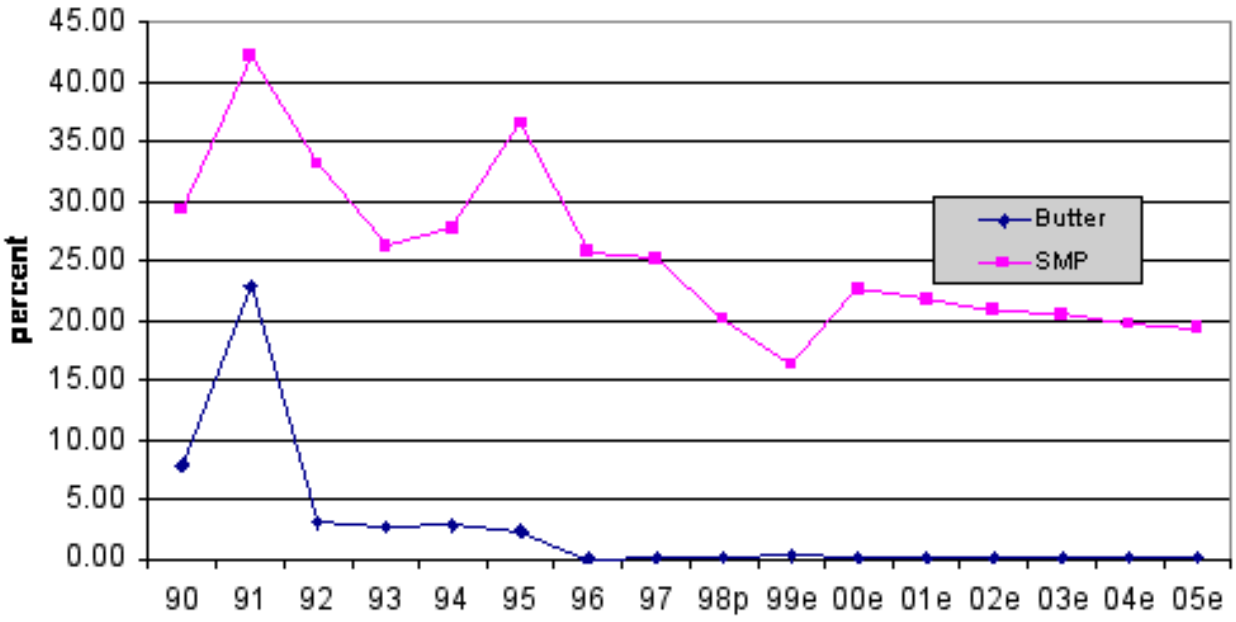

Figure 8 Japan: Imports of dairy products as a percentage of domestic consumption, 1990–2005

Table 5 Dairy Products and Various Minimum Access Conditions

Country and commodity	Additional imports, as a percent of domestic consumption, required to meet minimum access commitments of:		
	5%	7%	10%
Butter			
Canada	1.2	3.2	6.2
EU	0.0	0.6	3.6
Japan	4.9	6.9	9.9
US	2.0	4.0	7.0
4-Country Total	0.6	1.6	4.6
Cheese			
Canada	0.0	0.7	3.7
EU	2.2	4.2	7.2
Japan	0.0	0.0	0.0
US	1.4	3.4	6.4
4-Country Total	1.8	3.7	6.6
Skim milk powder			
Canada	5.0	7.0	10.0
EU	0.0	0.7	3.7
Japan	0.0	0.0	0.0
US	4.4	6.4	9.4
4-Country Total	1.1	2.0	4.4

Source: OECD, 2000a

However, these figures may overstate the liberalization that can be achieved in these countries from minimum access enlargements alone, when many countries in the world practise supply management in the dairy sector. With supply management, an increase in imports can be "accommodated" by maintaining domestic prices and increasing exports. Hence, increases in minimum access also require tight controls on export subsidies to be effective in lowering domestic prices and truly liberalizing markets.

Tariff quota administration and bilateral quota allotments can also be used to limit quota fill rates. The Canadian negotiating proposal to eliminate all in-quota tariffs is a sound one, to make sure in-quota tariffs are not a source of quota underfill.

Domestic Subsidies

The AoA required countries to reduce their total trade-distorting domestic support, aggregated across all commodities, by 20 percent over 6 years, from a 1986–88 base. The creation of the "green" and "blue" boxes for support exempt from reduction, plus generally high levels of support during the base period, left most countries comfortably under their ceilings in 1996, the last year for which complete data exist (WTO, 2000a). In 1996, domestic support as a percentage of the ceiling level equalled 12 percent in Canada, 67 percent in the EU, 72 percent in Japan, and 26 percent in the United States. However, with the decline in commodity prices since 1996 and substantial increases in support in the United States, that country is expected to be much closer to its ceiling in 1999 and 2000.

The negotiations on domestic support will be difficult and there are already several negotiating proposals on the table. Blandford provides a comprehensive review of domestic support issues, and it is sufficient to say that as long as the disciplines apply at the aggregate commodity level they will have only indirect implications for dairy production. Canada is so far under its domestic support ceiling that no conceivable change could cause problems. However, if the level of domestic support is capped, by commodity, then the Canadian dairy sector would face new disciplines.

Conclusions

The world dairy industry remains one of the most heavily protected in the agri-food sector. Exports of dairy products are dominated by the European Union, the United States, New Zealand, and Australia. The European Union is a heavy user of export subsidies in the dairy sector, and recently announced reforms of the EU dairy policy seem unlikely to change this situation. The major importers of dairy products are far less concentrated but include the European Union, Japan, Mexico, Russia, the United States, and many others.

The Canadian dairy industry came out of the UR with the continued ability to practise supply management, thereby allowing it to: (1) maintain prices above world market levels and (2) control the allocation of output to the domestic market. In fact, the AoA opened the door for Canada to become a more aggressive exporter of dairy products by practising price discrimination. The Canadian dairy export program was challenged by the United States and New Zealand, and the WTO appellate body ruled against Canada because of the involvement of government agencies in the export process. Recent changes in Canada's dairy export program remove the direct involvement of government agencies, but Canada may face a new WTO challenge, one that would force the WTO to rule if price discrimination, at least in some situations, is an export subsidy.

Progress towards future trade liberalization in the dairy sector will involve reductions in export subsidies and over-quota tariffs, and increases in minimum access commitments. Reductions in explicit export subsidies will have the most effect on the European Union. The effects of tariff reductions and increases in minimum access on domestic product prices, production, and consumption are commodity and country specific. Careful analysis of any proposed changes in these instruments will be required to fully understand their effects, both in Canada and on world markets.

Endnotes

1. Funding for this project was provided by the Canadian Agri-Food Trade Research Network, the Canadian Donner Foundation and the Ontario Ministry of Agriculture, Food and Rural Affairs. The authors appreciate helpful comments by Karen Huff and GianCarlo Moschini. The views expressed in this paper are those of the authors and should not be attributed to the funding agencies.
2. An earlier version of this paper was presented at the Canadian Agri-Food Trade Research Network Workshop on Agricultural Trade Liberalization: Can We Make Progress? Quebec City, Quebec, October 2000.
3. The implied tariff is calculated as the ratio of the domestic price minus a world reference price, all divided by the world reference price.
4. This assumes that the country does not lower its domestic price.
5. As pictured, the firm is in disequilibrium. In the long run it would want to expand its output to the point where average total costs are minimized.
6. The “water” in the tariff ($/unit) is equal to the cost of the imported product after paying the over-quota tariff minus the domestic price for the same product.

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