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Canada's Dairy Supply Management: Comprehensive Review and Outlook for the Future

Maurice Doyon (CIRANO et Université Laval)

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Maurice Doyon

Monsieur Maurice Doyon a obtenu son doctorat en Économie appliquée à l'Université Cornell en 1997. Il est professeur titulaire au Département d'économie agroalimentaire et sciences de la consommation de l'Université Laval et titulaire de la Chaire de recherche économique sur l'industrie des œufs. Monsieur Doyon est aussi membre régulier du Centre de recherche en économie agroalimentaire (CRÉA). Son programme de recherche est pluridisciplinaire et touche l'analyse de politiques agricoles, les structures de marché au niveau des filières bioalimentaires, le marketing stratégique, le comportement des agents économiques et l'économie expérimental. Mr Doyon est membre du CIRANO depuis 2004. Il est Fellow dans le groupe Économie expérimentale.

maurice.doyon@eac.ulaval.ca

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Preface

For discussion…

Since its inception in the Canadian agricultural policy landscape, supply management in the dairy sector has generated interest from various stakeholders. The system has been severely criticized by opponents and strongly defended by proponents, both within and outside of Canada. There is no doubt that changes to supply management may be difficult to achieve, especially from a political point of view.

Nevertheless, our assessment is that dairy supply management needs to take further steps to improve its flexibility and efficiency. The approach focuses on an examination of Canada's dairy policy from within which will hopefully initiate a constructive dialogue among stakeholders of the Canadian dairy industry and trigger positive changes.

Executive Summary

At a Glance

- The aim of this paper is to initiate a constructive dialogue among stakeholders in the industry that will enable the Canadian dairy value chain to improve its efficiency.
- Canada is not unique; characteristics of the dairy sector, notably coordination problems, have led many countries to intervene in their dairy industries to varying degrees.
- Supply management currently faces important internal and external pressures including access to quota, structural surpluses, the use of dairy ingredients and international trade negotiations.
- We propose three specific strategies to help stakeholders address some identified pressures: adapt provincial and regional structures to national ones, change processor's incentive in order to reduce solid non-fat surplus and identify export opportunities.

Since its inception in the Canadian agricultural policy landscape, supply management in the dairy sector has generated a great deal of debate. The system essentially limits the supply of dairy products to meet demand at a price based on cost of production and restricts imports of dairy products into Canada. Critics of supply management have argued that it should be dismantled in order to favour economies of scale, competitiveness and to reap the benefits from trade in Canada's dairy sector. Supporters contend that it reduces price volatility, increase farmers' benefits and lowers transaction costs – thereby ensuring that processors and consumers (taxpayers) are not worse off.

It is also important to note that numerous supporters of supply management recognize that the current system requires some changes to enable it to operate more efficiently. In fact, since its inception some forty years ago, supply management has evolved considerably. These facts, combined with the pressure on supply management created by factors such as the ongoing global trade discussions and the growing use of non-dairy substitutes imply that this is an appropriate time to move the discussion on Canadian dairy supply management forward.

This paper's objective is to enhance the debate on Canadian dairy supply management with facts and suggestions aimed at initiating a constructive dialogue among stakeholders in the industry that will enable the Canadian dairy value chain to better prepare for the changes that are on the horizon.

There is no doubt that changes to supply management may be difficult to achieve, especially from a political point of view. Nevertheless, our assessment is that dairy supply management needs to become more flexible and efficient. We are not recommending the dismantling of supply management. As a result, our recommendations might not satisfy some opponents of the system. However, one needs to recognize that while some stakeholders in the dairy supply chain are asking for changes, few are demanding a complete dismantling. Empirical evidences from recent world events (the 2009 dairy crisis), stress the need for the coordination of supply in the dairy sector. It appears to us that supply management can be a legitimate coordination tool.

Canada is not the only country that regulates its dairy industry

A combination of the fixed resources present in the dairy industry, the significant lags between the time a decision is made in response to market signals and the time it takes to alter production, the perishability of the product and the short run incentive of producers to increase production in order to maintain revenues when price are declining have led many other countries to intervene in their dairy industries to varying degrees.

Canada implemented a supply management program for the dairy industry in the early 1970s and has, therefore, significant intervention in its dairy sector with production quotas, import restrictions and a support price based on the cost of production. By its nature, Canada's dairy supply management is oriented towards the domestic market. Therefore, Canada does not export to a great degree and is a marginal player in international market. Supply is matched with demand at negotiated prices based on cost of production and price volatility is kept to a minimum.

The United States and Europe both intervene heavily in their respective dairy industries with a combination of price supports, subsidies, purchases of surpluses, import restrictions and export subsidies. New Zealand and Australian dairy sectors benefit from a production structure that makes them among the lowest cost producers in the world. The two countries are also major players on the international market. In fact, contrary to the vast majority of countries, their domestic consumption is much less important than their exports. Dairy sectors in both countries were also deregulated and receive little government support. However, free market does not completely rule New Zealand's industry since it has a co-operative processor that controls almost entirely the domestic market as well as New Zealand's exports. On the other hand, Australia does not have a single buyer and seller for dairy and this might explain why the Australian dairy sector has struggled since total deregulation in 2000, especially compared with the situation in New Zealand.

Canada's supply management system has enabled dairy farmers to avoid the dairy crisis that other countries faced in 2008-2009. Canadian dairy farmers have also benefitted from higher prices than most of their counterparts in other countries, as well as from lower price volatility. Moreover, the direct costs for governments in Canada are minimal compared with the situation in the United States and the EU. However, these advantages of supply management must be weighed against some of the disadvantages including the fact that dairy prices are, at least at some point in time, higher in Canada compared with the United States. This represents a cost born by consumers that is not captured in the direct cost of supply management. However, similar costs are born by taxpayers in the EU and the U.S. systems.

Internal and External Pressures

Supply management currently faces important internal and external pressures including access to quota, structural surpluses, the use of dairy ingredients and international trade negotiations.

In the past few years, dairy farmers have encountered increased difficulties in obtaining additional quota in part because the rate of exit of farmers from the industry has slowed down, as has the move towards greater consolidation. These developments have sharply increased the cost of acquiring quota. In response to this rising quota price, a price cap has been implemented in numerous provinces. Once the cap is reached, quota is allocated on a demand basis with the result that only small quantities can be acquired over time by a single producer.

Thus, it reduces dairy farmers' capability to reap the benefit from economies of scale. If this situation persists in the long run, it has the potential to affect the competitiveness of the whole dairy value chain.

Technological development in dairy processing has increased to the point where dairy ingredients can be substituted for milk in order to increase yield. These dairy ingredients were, for the most part, not produced in Canada and were imported free of tariffs at low prices. At the same time, this development contributed to an increase in solids non-fat (SNF) structural surplus inherent in the Canadian system. The main issue now is how to transform the roughly 60 million kg of SNF (issued from our structural surplus) from a dead weight cost to a return for the industry.

The most important external pressure that dairy supply management faces in Canada is the Doha trade talks. Current discussions involve various scenarios of greater market access and significant tariff reductions. A potential Doha outcome based on current draft modalities implies that foreign dairy products would have greater access to the Canadian market. In this situation, if farm prices are maintained, quota cuts would create important pressure on quota price. Another option would be to reduce farm milk prices, which might transpire in drops in quota prices. At this point, dairy farmers would be ill equipped to compete against European and Americans farmers that benefit from significant subsidies.

An Open Dialogue is needed to initiate changes

The challenges to supply management discussed above imply that, going forward, a constructive dialogue among stakeholders is crucial. Unfortunately, to date, this type of discussion has been difficult and the debate has often been dominated by rhetoric on both sides. To further support suggestions for change to the system, five points of view often presented to oppose supply management are discussed. This analysis sets the stage for some strategic suggestions to improve the effectiveness of the Canadian dairy sector going forward.

Issue1: Because of supply management, consumption of dairy products is declining in Canada.

It is a fact that milk consumption is declining in Canada. However, this is not unique to Canada and could be associated with a change in the mix of dairy products consumed by the public, which is influenced by income, demographics, culture and other factors. It is hard to blame supply management for a trend that is taking place throughout the developed world.

Issue 2: Retail dairy product prices more expensive in Canada

Statistical evidence suggests that dairy prices in Canada are less volatile compared with other countries. Although no exhaustive statistical analyses were performed, a spot survey of supermarkets indicates that in February 2011, dairy product prices were higher in Canada than in the United States. It should be noted that price differential between countries might also be affected by differences in processing and distribution structure, as well as by direct and indirect subsidies to dairy production in the US.

Issue 3: Supply management generates little incentive to reduce costs at the farm

Empirical evidence seems to indicate that dairy farmers in Canada currently have less incentive to lower costs compared with dairy farmers in non-supply managed countries like the United States.

Issue 4: Supply management is detrimental to dairy processors

It could be argued that supply management limits competition thereby making it easier for processors to operate effectively in Canada. Nevertheless, processors face constraints such a regional allocation of milk, which can result in sub-optimal use of their capital investment as well as limiting growth of value-added dairy products.

Issue 5: Canada is missing out on exports, especially on dairy consumption growth in developing countries

Critics of supply management contend that the system prevents dairy farmers in Canada from taking advantage of export opportunities because it is geared towards the domestic market. However, what some of the critics overlook is the fact that it will always be difficult for Canada to compete on international markets with dairy farmers from New Zealand and Australia, for instance. The cost structure for farmers from these countries is lower because of extensive pasture-based production and minimal investment in infrastructure compared to Canada.

While the opportunity to export commodity dairy products on the international market may be limited, there may be potential for products like higher value-added cheeses, especially to the U.S. market.

Strategies Going Forward

An understanding of the challenges and the evidence regarding some of the commonly held views on supply management have led us to put forward some strategies for the industry to consider going forward that would hopefully improve the efficiency of supply management.

We suggest the following strategies:

- <u>To adapt provincial and regional structures to a national market:</u>
    - The creation of a national board,
    - The creation of a national pool with a national allocation of milk on demand;
    - The creation of a national centralized quota exchange for partial share of the MSQ.
- <u>To change processors incentives toward SNF surplus:</u>
    - The creation of a mechanism to share the cost of SNF surpluses between producers and processors over and above a certain level of surplus;
    - To reduce processors margins for butter-powder and/or to create one for dairy ingredients;
    - To change class pricing so that the use of Canadian dairy ingredients would not be priced at class 3a but would be more competitive with the price of potential substitutes.
- <u>To see Canadian dairy exports differently:</u>
    - To identify and explore ways to exploit value added export markets where Canada might have a competitive advantage;
    - To coordinate and facilitate, in the short run, the effort of smaller fine cheese producers to penetrate the fine cheese market in the U.S., which is currently mostly deserved by French imports.

Introduction

At a Glance

- **The aim of this paper is to suggest strategies that we believe could help supply management operate more efficiently.**
- **Proponents and opponents of dairy supply management have used a great deal of rhetoric. In fact, the debate has not progressed much in the last 15 years.**
- **Recent events and structural issues suggest that this seems to be an appropriate time to move forward the discussion on Canadian dairy supply management.**

Since its inception in the Canadian agricultural policy landscape, supply management in the dairy sector has generated a lot of interest from various stakeholders such as academics, the media and economists. This was especially true in the early 1990's in the midst of global trade negotiations (Uruguay Round) that specifically targeted policies and trade protections that are the backbone of dairy supply management. Dairy has attracted most of the attention of academics and applied economists because of its importance, coupled with extensive data availability. Opponents have argued that the system should be dismantled in order to achieve economies of scale at the production level, lower prices for consumers and the enabling of farmers and processors to attain some of the benefits arising from international trade. Other economists in North America and Europe, as well as dairy producers, have argued in favor of supply management on the basis that it reduces price volatility, increases farmers' benefits and lowers transaction costs – thereby ensuring that processors and consumers (taxpayers) are not worse off.

The debate surrounding supply management has frequently involved a great deal of rhetoric, simplistic arguments and invalid and untested assumptions as highlighted in a recent paper by the George Morris Centre[1]. This type of intervention does not contribute to a dialogue between proponents and opponents of dairy supply management. In fact, the debate has not progressed much in the last 15 years, while both camps are claiming to defend the interests of the Canadian dairy value chain.

Given the discussions on global trade in the current World Trade Organization round of negotiations, bilateral trade agreements and the domestic challenges that dairy supply management faces in Canada, this seems to be an appropriate time to move the discussion on Canadian dairy supply management forward with some suggestions for changes to the system from within.

This paper's objective is to enhance the debate on Canadian dairy supply management with facts and suggestions aimed at initiating a constructive dialogue among stakeholders in the industry that will enable the Canadian dairy value chain to better prepare for the changes that are on the horizon.

We start the analysis by presenting how we believe dairy sectors fits into economic theory; a brief review of dairy policies in different countries follows. Then, we identify important issues faced by the Canadian dairy sector. A policy discussion focusing on the areas that have resulted in misunderstandings over the years as well as suggestions are considered in the final section of the report.

[1] Al Mussell (2010) Making Sense out of a Stale Debate: Milk Supply Management in Canada.

CHAPTER 2

The Origin of Supply Management: How Dairy Sectors Fit in the Economic Theory

At a glance

- **The historical perspective on the Canadian dairy sector is not unique.**
- **At first, government intervention in the dairy industry in the US, Canada and Europe resulted in overproduction and growing government support.**
- **In Canada, the answer to costly government support and overproduction has been the implementation of a supply management program for the dairy industry in the early 1970s.**

Historical perspective

To understand the origin and economic motivation for supply management policy, it is important to look at it from an historical perspective. This perspective, in fact, is not unique to Canada but applies to most dairy sectors in developed countries. Following World War II, dairy farms started to specialize, moving from self-sufficiency at the farm level to a market-oriented mindset. This resulted in a greater dependence on buyers, since dairy farmers' standard of living were now almost solely dependent on milk revenues. Dairy farmers were then at a market disadvantage since many of them were selling a highly perishable product to a few regional buyers. To partially counteract the market power of buyers, some dairy farmers decided to create dairy cooperatives and many dairy farmers subsequently joined these new initiatives. At the time, milk

production was highly seasonal, price variations at the farm were important and two neighbors delivering the same quality of milk could receive quite different prices, reflecting their relationship and their capability to negotiate with buyers.

At the end of the sixties, Canada started to lose its privileged access to the UK dairy market following the decision by the UK to join the European Economic Community (1973). This resulted in farm milk surpluses in Canada, low prices and the need for costly support from the federal government. At the same time, the Common Agricultural Policy (CAP) of the European Economic Community supported dairy production with subsidies, a development that resulted in overproduction and growing government support. It appears that dairy sectors need for coordination, that the market alone failed to provide, creates situations that result in government interventions in the form of budgetary support or a legislative support that favors coordination.

Canada's answer to the market coordination problem that generated costly government support and overproduction has been the implementation of a supply management program for the dairy industry in the early 1970s. Roughly ten years later Europe also implemented a similar system. It is also worth noting that in the U.S. a support price and Federal Milk Marketing Orders were put in place at the end of the 1930s, for similar reasons.

In the 1980s, Europe and the U.S. were in the midst of a protracted subsidy war in agriculture, mostly involving cash crops. It is in this context that, for the first time, agriculture was included in global trade negotiations (GATT-Uruguay Round). The inclusion of agriculture was motivated by government budgetary reasons, but also supported by a general trend towards market liberalization in developed countries (neoliberal economic school)[2]. Although dairy supply management has little or no budgetary direct cost on governments, it was nevertheless linked to trade talk

[2] Neoliberalism describes a market-driven approach to economic and social policy based on neoclassical theories of economics that stresses the efficiency of private enterprise, liberalized trade and relatively open markets, and therefore seeks to maximize the role of the private sector in determining the political and economic priorities of the state. (as defined by Golo et. al. International Journal of Social economics, 2009).

Neoclassical theory and dairy supply management

In the early 1990's the Uruguay Round negotiations generated much interest among academics regarding alternative trade scenarios for the dairy industry. Following the conclusion of the Uruguay Round in 1994, the interest level for dairy trade models decreased given that the agreement had a limited impact on the dairy industry. However, the negotiations currently under way with the World Trade Organization (WTO) may include several liberalization scenarios for agriculture that could greatly impact the dairy industry, a development that has renewed interest in dairy trade models. Those models can be classified in two broad categories, world trade models and regional trade models. The former have a high level of aggregation while the latter can be much more disaggregated and detailed. Moreover, each type of model is mostly static, although some have a proxy for supply and demand responses. Most of these models are, however, in a partial equilibrium setting (meaning that they do not take into account the impact on other sectors of the economy).

Modeling complex interlinked market structures implies numerous underlying assumptions as well as the use of proxies to compensate for less than perfect or unavailable data. A modeling exercise enables researchers to better understand an economic system and to assess the importance of various variables and links within the system. Thus, the exercise is often more important than the results given that a change of assumptions could drastically affect the results. Unfortunately, once model results are available, they are sometimes used by politicians, journalists and even academics as definite answers to complex questions instead of an indication of what might happen given a large set of assumptions. As an illustration, an interesting study published in the Canadian Journal of Agricultural Economics in 2008[3] presented a scenario[4] in which each Canadian could benefit from dairy trade liberalization and save roughly $35 in the first year that liberalization came into effect[5]. On the other hand, each Canadian dairy

[3] Abbassi, A., O. Bonroy, and Gervais, J-P., "Dairy Trade Liberalization Impacts in Canada". Canadian Journal of Agricultural Economics 56(2008):313-335.

[4] Scenario 1.

[5] The study has aggregated processors, retailers and consumers in «buyers». It is therefore the equivalent of $35 per Canadian consumers that would be captured by the buyers. It is unlikely that consumers would benefit from the total savings computed, since processors and/or retailers would have little incentives for total price transmission.

farmer would stand to lose roughly $175,000 in the short run. The net effect would be a societal gain of roughly $60 million. On the basis of these results, one could conclude that the government should work toward dairy trade liberalization. Such conclusion could be premature since the results of the study rely on numerous assumptions and are in a partial equilibrium setting. With a net gain of $60 millions (dairy processors' sales were roughly 15 billion dollars in Canada in 2010), it is likely that the impacts in rural areas in terms of economic activities and infrastructure losses, following the bankruptcy or disappearance of numerous dairy farms, might rapidly outweigh the slight gains computed by the analysis. Moreover, the numerous hypotheses used in the modeling exercise may change the real amplitude of the results. Again, this suggests that the exercise is more important than the results.

The use of neoclassical theory and how it relates to the dairy sector

Neoclassical theory relies on the work of marginalists such as Walras, Jevons and Pareto (1830-1930) who introduced sophisticated mathematics into economic theory. The important research by the marginalists was expanded upon by economists such as Marshall, Hicks, Solow, Samuelson and others in the 20th century. This resulted in a set of well defined mathematical models that described the interconnections of an economic system. The mathematics used in economics is for the most part inspired by the First Law of Thermodynamics of Physics (the mathematical tools of equilibrium analysis). However, the use of such mathematical tools necessitates important assumptions such as perfect rationality. This has been an old debate in economics that dates back to an exchange of letters between Walras and the mathematician Poincaré in 1901. Poincaré wrote to Walras «You regard men as indefinitely selfish and infinitely farsighted. The first hypothesis may perhaps be admitted in a first approximation, the second may call for some reservations». Poincarré was pointing out that, although the mathematical equations were correct, the assumptions needed to solve them were likely to generate conclusions «… devoid of all interest».[6] This also explains why the creation of wealth is not integrated in economics (the First Law of Thermodynamic states that energy is neither created nor destroyed). In fact, economics is being defined in traditional textbooks as the science that allocates scare resources in face of unlimited needs in the most efficient way. The notion of general equilibrium inherited from the

[6] E. Beinhocker (2006), The Origin of Wealth, Harvard Business School Press, p.49.

marginalists does not describe a permanent state, but a series of shocks generating temporary equilibrium. Nevertheless, the time between shocks is sufficient for equilibrium (even temporary) to be reached and can thus be predicted in a static analysis framework. Picture 1 illustrates the neoclassical equilibrium.

Picture 1: Illustration of a static equilibrium

The Second Law of Thermodynamic, which was discovered after the marginalists era, introduces the concept of entropy (disorder or randomness), which explains why perpetual movement cannot exist and, more importantly, focuses on the concept of closed and open systems that can limit the relevance of current economic theory. The notion of equilibrium in economics and its predictability is greatly affected by the «static» analysis.

> *«The economy is too complex, too nonlinear, too dynamic, and too sensitive to the twists and turns of chance to be amenable to prediction over anything but the very shortest terms. Even if we were as rational as possible and had all the information we could want, the computational complexity of the economy is such that the future would happen before we would have time to predict it» Beinhocker, (2006) p.323.*

On this basis, it appears that Picture 2 better illustrates the notion of equilibrium, that is a dynamic and unstable equilibrium state.

Picture 2: Illustration of a constantly changing (dynamic) equilibrium

This does not imply that neoclassical economic theory is not useful; it represents a starting point for understanding numerous economic situations that transpire in a modern economy. Neoclassical theory should not be seen as a final destination, economic theory keeps evolving and blocks (sometimes independent of current theory) such as game theory, experimental and behavioural economics are constantly added.

Thus, the reality of the dairy sector as well as other agricultural or non agricultural sector often does not match neoclassical theoretical prescriptions. Some of the reasons for this mismatch are the fixed resources present in the dairy industry and the significant lags between the time a decision is made in response to a market signal and the time it takes to alter production. The perishability of the product is another important characteristic of the dairy sector that limits the straightforward applicability of standard economic theory. This «problem» explains why some coordination devices are found in most countries' dairy value chains. This coordination takes numerous forms such as vertical integration (numerous steps along the value chain are controlled by a single entity), horizontal integration (extremely large dairy farms, one dairy farm that could supply a whole region or country) or supply management.[7]

[7] A country example of horizontal integration is Saudi Arabia where one farm (Almarai) in the desert milks more than 100 000 cows in two sites and cultivates 22 500 hectares under irrigation.

The need for coordination: Recent example

The period 2007-2009 is a good example that illustrates the coordination problems in the dairy sector. In 2007 and early 2008, milk prices reached unprecedented levels in international markets, including the U.S. and Europe (see Table 1). Dairy farmers reacted to these high prices by increasing production (see Table 2)

Table 1: Farm milk price in California and France and Skim milk powder price on the international market, 2007-2009

	2007				2008				2009			
	California	U.S.	France	International	California	U.S.	France	International	California	U.S.	France	International
Average price	17,27	19,16	31,39	4895	16,02	18,40	36,3	3526	10,81	12,82	28,91	2924
Max	20,23	21,81	n.a.	5768	17,44	20,70	n.a.	4156	14,47	16,37	n.a.	3803
Min	12,00	14,66	n.a.	3691	12,41	15,78	n.a.	2657	9,58	11,27	n.a.	2582

Note: U.S. and California prices are in US dollars per hundredweight, France prices are in Euros per 100 kg and international prices are Western Europe high weekly price for skim milk powder

Sources: California Department of Food and Agriculture, NASS milk production report, L'économie laitière en chiffres- Cniel 2010 and AAC Canadian Dairy Information Center; University of Wisconsin – Understanding dairy markets

Table 2: Production level in the U.S., California and France, 2007-2009

	California	Variation (t-1)	U.S.	Variation (t-1)	France	Variation (t-1)
2007	40 646		185 602		22 312 323	
2008	41 243	1,5%	189 992	2,4%	23 121 743	3,6%
2009	39 512	-4,2%	189 320	-0,4%	22 168 522	-4,1%

Note: U.S. and California volumes are in million pounds, France quantities are in 1000 litres

Sources: California Department of Food and Agriculture, NASS milk production report, L'économie laitière en chiffres- Cniel 2010

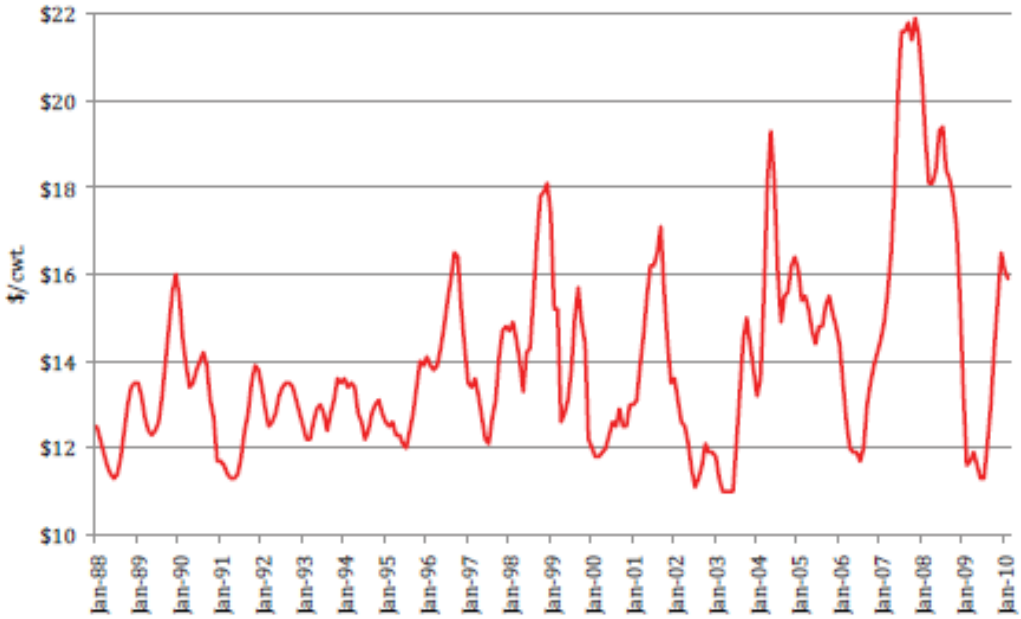
Unfortunately, at the same time the price of feed increased significantly while consumption of dairy products decreased due to rising prices at the retail level and the impact of the global economic crisis. Thus, in 2009 the dairy sector in the U.S. and Europe was in a state of overproduction that led to a major crisis in the industry. The crisis necessitated important government budgetary interventions in the U.S. as well as

in Europe. The ad hoc subsidy in Europe was € 280 million and an increase in the U.S. support price resulted in a estimated supplemental cost of federal dairy programs in 2009 of $350 million (*Pokononews.net November 2009, Grey et al. 2010*), for a total federal support of roughly $1 billion. Additional costs involved the elimination of over 226,000 dairy cows through the program Coop Working Together financed by U.S. dairy farmers on a voluntary basis (*CWT website*). To illustrate the importance of this crisis, the International Farm comparison Network (IFCN) has used three methods of comparing cost of production for a typical large dairy farm (2,200 cows) in New York State[8]. The result of this exercise was that with the average U.S. milk price in 2009, the typical farm did not cover its variable costs (input costs), independently of the method used.

In the US, the government appointed Dairy Industry Advisory Committee noted that the crisis lasted longer than it should have since in response to low farm prices, U.S. dairy farmers were very slow to reduce their production levels (why sacrifice myself for the good of the industry if the others do not?) (see Table 2, U.S. volumes). In fact, some dairy farmers increased their production (with a negative return) in reaction to low price. This counterintuitive (short term) behaviour is explained by the imperative to maintain cash flow in order to pay bank loans and remain in business long enough to pass the crisis. In this game, one hopes that other dairy farms will go out of business in order to reduce supply and bring prices back to more normal levels. This situation is not particularly efficient given that it is the lack of market coordination (adequate supply response) that results in a rationalization of the industry and not the relative competitiveness of players in the industry, like theory would suggest. This problem has been identified by U.S. legislators and Congress had been considering implementing policies that would address the lack of adequate supply response due to the coordination problem (*National Milk Producer Federation, July 2010*). The Committee also noted that price volatility has increased significantly over the years as dairy farms are increasing in size and further specialized, as illustrated by Figure 1. This is an illustration of the prevalence of fixed assets in the dairy sector, which magnifies the coordination problem and generates more price volatility.

[8] The three methods are full economic cost, family living cost method, cash cost method. For more information consult IFCN Dairy Report 2010.

Figure 1: Proportional Month to Month Change in the US All-Milk Price Series, 1988-2010



Source: Nicholson and Stephenson (2010) Analysis of proposed programs to mitigate price volatility in the U.S. dairy industry

The lack of coordination issue is illustrated in Table 2 where we observe an important discrepancy between US and California production responses in 2009. California dairy production dropped by an unprecedented 4.2%, while the decline in the rest of the country was less than one percent. The reason why California dairy producers reacted more quickly is due to the imposition by California cooperatives and other processors of a production basecaps, initiated in 2008. (California Dairy Statistics, 2009). The basecap imposed a strict limit (quota) on the quantity of milk that farmers could deliver to processors. The basecap meant that processors, who were already operating at capacity, did not want an excess supply of milk to deal with during a period of declining consumption. Thus, the basecap was a way to coordinate the value chain that was imposed by processors.

During the same period, the Canadian dairy sector was unaffected by the dairy crisis. Both dairy prices and production remained stable. Importantly, the Canadian government, unlike their counterparts in the United States and Europe, did not have to intervene in the dairy industry during this world dairy crisis. It appears that the supply

management system in Canada enabled the industry to avoid some of the difficulties that were encountered in other developed countries during the 2008-09 period. Supply management is an efficient coordination tool, since it coordinates the national supply (through production rules at the farm level) and demand. By nature, supply management also isolate most of the Canadian dairy sector from international markets, which also explains why Canada averted the 2009 dairy crisis.

Table 3: Average farm price of milk in and milk production in Canada, 2007-2009

	Canada farm milk price $/hl	Canada dairy production '000 hl
2007	68,63	76 587
2008	69,96	75 800
2009	71,25	76 736

Sources: AAC Canadian Dairy Information Centre, Statistic Canada, CANSIM, 003-0008 and 003-0011.

Is Dairy Production Unique?

Not all aspects of dairy production are unique. Other industries also have large fixed assets and major price cycles. Most commodity based industries such as in the natural resources sector would meet these criteria. However, natural resources have an important advantage in that their products are not perishable and can be left in their natural form for a considerable length of time before being extracted or harvested. In addition, most natural resources are exploited by large national or international firms unlike in the dairy farming industry. Natural resources production is usually greatly reduced by those firms when prices are not favourable, which facilitates coordination, as opposed to the highly disaggregated and perishable nature of production that characterizes the dairy industry. Nevertheless, even in the highly competitive crude oil industry, one could argue that coordination efforts are taking place as illustrated by OPEC's effort to control oil production. One could further add that when a CEO of a natural resource company decides to

CHAPTER 3

World Dairy Policies: Interventionism without Common Standards

At a Glance:

- **In most developed countries, a vast array of market coordination tools are used in shaping dairy policies;.**
- **Canada has significant intervention in its dairy sector with production quota, imports restriction and a support price based on cost of production;**
- **India and China are still at the early stage of the development of their dairy industry. Concerns for these countries are focused more on growth, specialization and technical gain in productivity.**

The world dairy industry is not a typical industry and Canada's intervention policies are not unique. The United States and the EU also regulate this sector. At the other end of the spectrum, New Zealand opted to completely deregulate its dairy industry as part of a sweeping reforms program for the economy undertaken in the 1980s. However, at the same time the government was heavily involved in the creation of Fonterra, a co-operative that processes most of the country's milk and is a near- monopoly[9]. More recently, Australia has also followed the New Zealand approach and has essentially let market forces determine outcomes in its dairy sector.

[9] In Summer 2011, Fonterra is under government investigation for non competitive raw milk pricing due to its monopoly position. (Andrea Fox, Stuff.co.nz, 26 June, 2011).

This section is by no means exhaustive; it dresses a rough picture of the different regulatory regimes covering the dairy industry in the countries previously mentioned. Also, to gain a different perspective on these issues, dairy policies in two emerging markets, India and China, are looked at as well.

Canada

Following World War II the Canadian dairy sector saw government intervention in the form of various floor price policies. At the end of the sixties, as previously mentioned, Canada started to lose its privileged access to the UK dairy market due to the future entrance of the UK in the European Economic Community (1973). This resulted in farm milk surpluses in Canada, low price and costly support from the federal government. In response, Canadian dairy policy evolved toward supply management.

Supply management relies on provincial and federal laws and has three major components:

1. An aggregate production quota that reflects total Canadian demand for butterfat;
2. An industrial milk price that reflects farmers' cost of production[10];
3. Import restrictions on dairy products.

Setting production levels: For fluid milk, the level of production is set at the provincial level and is on demand. For industrial milk, the aggregate production level is first set at the national level and reflects how much milk Canadian processors will require based on Canadian consumers demand at a target price. The target price is based on producers cost of production plus a processing margin. Since it would be difficult to monitor the large array of dairy products that exists and to put them in milk equivalent, in reality the stocks of butter is the indicator of demand. Since butter and skim milk powder are also buffer dairy products (produced when there is excess milk), when the stocks of these products increases over a certain level, it indicates excess production relative to

[10] Industrial is the farm milk that is processed into dairy products, while fluid milk is the farm milk dedicated to liquid milk and cream.

demand, similarly when the stocks are too low it indicates an excess demand relative to production.

The aggregate demand is then allocated to provinces on an historical basis as well as on population growth. Provinces then decide how the production quota would be allocated among producers. Initially, the quota was allocated on an historical basis and centralized auction markets were put into place at the provincial level for future exchanges. Quota is not traded between provinces. Following a much greater demand of quota (often at the margin) than the supply (often retiring producers) the price of quota have reached very high prices , up to $40 000 for the equivalent of a cow annual production. This problem has been partially addressed and current prices tend toward $25 000. Still, quota value represents roughly half of the value of a dairy farm (roughly 1.5 million dollars for the average dairy farm in Canada. The quota own by individual producers is a market share, therefore if quota is increased by 2%, all producers can produce 2% more milk. On the other hand, if quota is cut by 2%, all producers will have to reduce their production by 2%.

Since production level is set on a butterfat basis, and given the mix of dairy products consumed by Canadian, a structural surplus of solid non fat (snf) exists. This reflects the unbalance between the demand for butterfat and the quantity of snf in farm milk. Canadian dairy producers are financially responsible of the warehousing and disposal of this structural or any other type of surpluses.

Setting price level: As previously mentioned, a cost of production is used to fix a target price for industrial milk at the farm. In order to achieve that price, the Canadian Dairy Commission (CDC) establishes a support price at which it would purchase butter and skim milk powder. This support price is used by provincial board to negotiate sales convention with processors. Provincial boards are also responsible for milk allocation among processors based on predefined and negotiated rules. In a nutshell, farm milk is allocated on a class basis, the highest class getting allocation priority. Classes are from 1 to 5, class 1 being for fluid milk and cream, while class 4 is for butter. Fluid milk (class 1) is priced slightly differently. It is priced following changes in production costs, consumers' disposable income and inflation. Producers receive a pool price (weighted average of all classes) that also take into account their milk quality and components.

Canada's farm milk price is in the high end of prices received by dairy farmers worldwide, and price volatility is at a minimum.

Restricting imports: In order to maintain a domestic farm milk price higher than the international price and to have an effective production quota, imports must be restricted. Following the 1995 Uruguay Round agreement, Canada's import restrictions on dairy products were converted into tariffs, which are now in the 200% to 290% range, while a market access of 5% of domestic consumption was given. Canada dairy sector is domestically oriented. Therefore, Canada is a minor exporter of dairy products, mostly its structural surplus (skim milk powder) and some high end products. It is important to understand that dairy trade is concentrated on cheese, butter and milk powders, products that have import restrictions in most countries. In addition, the EU and the US do sell most of their dairy products below their cost of production on the international market and need exports subsidies to be competitive. This environment creates significant pressure on international trade negotiations since export subsidies are a major issue in the current WTO trade negotiations.

United States

The U.S. government's dairy policy is essentially composed of two regulation mechanisms: Federal Milk Marketing Orders that began in the 1930s and a price support program implemented by the Farm Bill of 1949. The price support program enables the federal government to purchase processed dairy products when the domestic market price drops below a pre-determined price. The Federal Milk Marketing Orders (FMMO) permits producers to benefit from a price discrimination mechanism that is paid for by dairy processors. Processors have to pay a higher price for fluid compared with industrial milk. This price discrimination mechanism also includes an equalization of prices (pool price) paid to producers.

The price support program combined with State (California) or Federal Orders result in a domestic price of milk above international prices. Thus, to avoid an over-supply of foreign dairy products from flooding the domestic market, the federal government established import controls. As for Canada, to comply with the Uruguay Round Agreement on global trade, the quota-based import controls were phased out and replaced by tariffs starting in 1995.

In the 1980s', the price support program had resulted in serious surpluses of milk in the domestic market and stocks of cheese, butter and skim milk powder. To address this issue, the government implemented a Milk Diversion Program in 1983. In a nutshell, the program forced producer to reduce their milk production from a base year and were paid not to produce that milk. The results of the program were mixed as milk production declined, but only on a temporary basis. This led the government to introduce the Dairy Termination Program (DTP) in 1985. This program paid participating farmers to eliminate their entire herds of dairy cows. Farmers who participated in the program weren't permitted to use their dairy facilities or start another dairy farm for five years. The program only managed to reduce the average size of the dairy herd by 2 per cent in 1986, since it did not prevent other dairy farmers to increase their production. In light of their important costs and their mixed results, these two programs are seen as a failure by US dairy stakeholders.

The 1996 Farm Bill questioned the utility of FMMO and of the support price. In fact, the Federal Milk Marketing Orders system was slightly reformed and consolidated, while the price support was maintained. The principles of price discrimination and equalization were essentially maintained. The 2002 Farm Bill introduced direct payments for class I based on a reference price and with a limit in terms of the volume that can be under the program (Milk Income Loss Contract).

Another important initiative in the U.S. dairy industry is the Cooperatives Working Together (CWT) Herd Retirement Program that was started in 2003. This voluntary program perceives a fee per hundredweight of milk from cooperative members (more than 80% of milk in the U.S. is marketed through cooperatives). The program attempts to support milk prices in the United States through herd retirements and export subsidies. When market conditions are judged appropriate, dairy farmers are asked to submit bids to retire their entire herd for a minimum period of 12 months. The goal of this reverse auction is to retire a maximum of milk production for a given amount of money. From October 2008 to October 2009, CWT has retired over 256,000 cows and heifers. Given the uneasiness expressed by numerous producers regarding the slaughter of healthy cows, the modest success of the program and the free riding problems (producers who do not participate still get the benefit), the program will not further retire cows but will concentrate on export subsidies.

Following the 2008-2009 dairy crisis, US dairy policy effectiveness was questioned by some industry stakeholders. Therefore, the US Secretary of Agriculture, Tom Vilsack, created the Federal Dairy Industry Advisory Committee to "… work to find long term solutions to assist this struggling industry." (Cornell Chronicle online, January 7 2010). Two programs, whose goals are to better control milk price fluctuations and to address supply and demand imbalance, have been seriously studied. Those two programs have gathered at some point important stakeholders' support.

The first one is the Marginal Milk Pricing Program. In summary, each dairy farmer has a base level and would pay a penalty equal to the Class III price if he produces milk above and beyond his adjusted base level. The program would go into effect when net farm price falls below preset levels. Thus, it sends a strong economic signal to dairy farmers relative to the negative marginal value of excess milk production. Penalty revenue generated would be used to purchase cheese and thereby increase demand. The cheese would then be donated to charitable food programs.

The second one, Foundation for the Future would eliminate FMMO and the MILC program and the support price to replace them with a Dairy Producer Margin Protection Program (DPMPP) and a Dairy Market Stabilization Program (DMSP).The DPMPP is a margin insurance program designed to provide a floor for producer margins. It would provide all producers a base level of protection, along with a voluntary level of supplemental coverage. The DPMPP will pay an insurance indemnity when catastrophic losses occur on their dairy operation, such as in 2009. In parallel, the DMSP would send a strong signal to producers that milk production needs to be reduced. When the program would trigger, dairy producers will receive a 30-day notice that they will be paid for just 98% of their average milk production in the previous three months. Thus, any increase in production would be unpaid.

European Union

The six founding countries of the European Economic Community (EEC) have had a Common Agricultural Policy (CAP) since 1962. The CAP has been the major driver of the EEC (now the EU) ever since. At the time, a price support higher than world price, import control and funds to buy and stock surpluses made the bulk of EEC dairy policy.

This eventually led to important structural surpluses whose disposal and warehousing costs became prohibitive.

The problem was addressed with the implementation of production quota, for a 5 year period, in 1984. The quota was initially set at the 1981 level plus 1% on a country basis, for political reasons. This was still a surplus situation and the following years, quota was reduced by 1% to 2% a few times, while overquota production faced important penalties. The introduction of production quotas was able to achieve at least some of its goals. The stocks of dairy inventories have come down since the early 1980s and are currently at levels that are considered to be manageable.

The 2000 CAP reform led to the important Luxembourg agreement (June 2003). More specifically on the dairy sector, the agreement extended dairy quota until 2015. In order to smooth the quota elimination, quota volume has been increased at a faster rate than consumption (which reduces its effectiveness and its price) and butter price supports was reduced by 25% and maximum purchase of butter was cut by more than half over four years. Moreover, the official target price for milk was abolished. Other more general reforms that also affected dairy are:

- Income support measures are completely decoupled. Direct subsidies are aggregated in a unique payment, computed on a historical basis and linked to the number of hectares in production (thus a producer who before received subsidies for corn, milk and hog would receive one direct payment that would then be attached to his hectares of corn or whatever he sees fit to produce on his land. For example, one could stop producing hogs, milk and corn and instead only produce wheat. This change would still generate the same subsidy amount for the farmer the first year;
- Unique payments over 5000 Euros were reduced by 5% a year starting in 2006 (3% and 4% the two previous years).
- The unique payment is linked to the respect of best practices, environmental norms, animal welfare norms, etc

New Zealand

In the mid 1980s, the New Zealand government was faced with a budget crisis not unlike that currently gripping some EU countries. In response, the government at the time initiated a wave of deregulation that included the dairy sector. The New Zealand government focused on the dairy industry because it was considered to be a highly regulated sectors and because of its importance. The New Zealand Milk Board, at the time, regulated every phase of dairy production and consumption including home delivery, production quotas, and the establishment of exclusive market zones for processing plants that eliminated competition. The price of milk was set at every level of the supply chain from the farm to the retail store and, even home delivery routes, were specified. Consumers were only permitted to obtain milk via home delivery or at special dairy convenience stores.

As a result of deregulation, there are fewer dairy farms in New Zealand and the average farm size increased. In 1985, there were roughly 16,000 dairy herds in the country compared with less than 12,000 in 2009. At the same time, the average milking cow per farm has gone up from less than 150 to 375 by 2009... Although by 1993 the New Zealand dairy sector was mostly deregulated, the Dairy Board was still in place and was by then the world's largest dedicated dairy marketing network. In 1996 the Dairy Board Amendment Act transferred ownership of the Dairy Board's assets to the country's 12 co-operatives. Subsequent merger discussions, legislative changes and government involvement culminated in the formation of Fonterra Cooperative Group in 2001. Fonterra is New Zealand almost unique buyer of farm milk (more than 95% of the country's milk) and act has an almost unique seller of dairy products. Fonterra sells dairy products in more than 140 countries and is the world's leading exporter of dairy products. It is responsible for more than a third of international dairy trade.

In fact, more than 90 per cent of New Zealand's milk is exported. New Zealand milk production system differs from most other developed countries. It is a seasonal pasture base production, implying that buildings are minimal and almost no milk is produced during the winter months of June and July, with the exception of fluid milk. To compensate for the cost of producing milk year round, fluid milk producers receive an important premium. Thus, costs of production are very low, which allows New Zealanders to be price takers on the international market. Since almost all dairy

producers in New Zealand are members of Fonterra, New Zealand dairy structure offers similitude with vertical integration. New Zealand dairy farmers have two sources of revenues from their milk, the price paid by Fonterra and the dividend paid by the cooperative (Fonterra) to its member. The cooperative also use delivery rights to coordinate supply. This right has to be purchased if a producer wants to increase production. This amounts, to some extent, to a production quota.

Australia

Dairy policy in Australia can be defined in two distinct periods: the period with support (before the mid 1980s) and the policy reform period (starting in the mid 1980s). Before the reform, fluid milk, which represented roughly 20% of all farm milk, was regulated by quota and carried a premium over industrial milk. The industrial milk was characterized by domestic price supports, import controls, export subsidies and restriction of the marketing of substitute products. Price of industrial milk was based on the pooling of market returns for butter, cheddar type cheeses, casein; and two types of milk powder. For each of those products, a levy was imposed on domestic sales which raised the price paid by consumers. Levy funds were combined with export returns and manufacturers received an average pooled return based on the amount they produced. Thus, exports were subsidized by a tax on domestic consumers. Since all participants in the pool received the same average return, there was little incentive for market development (Harris et al. 2008).

From the mid eighties to 2000, numerous reforms took place in Australia dairy policies, each aiming at increasing the global competitiveness of the industry and gradually reduce the level of support. First the pooling of export returns was eliminated. Instead processors would receive the world price for their exports and a uniform payment under the *Market Support Payment* program (MSP). The MSP was funded by a farm gate levy on all milk production. Moreover, price support was also reduced.

Later in the nineties, the *Domestic Market Support Scheme* (DMS) was introduced. The new marketing arrangements did not link the level of support to exports and had levies on domestic sales of milk, as well as on manufactured dairy products. The combined levy revenue was used to fund a DMS payment to manufacturing milk producers, based on their output of manufacturing milk. Following these change, three States abolished

fluid milk quotas and replaced them with pooling arrangements. Farmers in these states received a fluid milk price premium for a fixed proportion of their total output. Other States maintained their fluid milk quotas until July 2000 (Harris et al. 2008).

In the late 1990s, strong growth in manufacturing milk supplies and import competition had diluted the farm gate value of the market support payments. Import protection had been reduced since the mid-eighties and New Zealand exporters were supplying more than 10% of the cheese market. Therefore the industry accepted full deregulation with adjustment assistance to manage the impact on the farm sector.

Thus, the federal government put together a restructuring package that provided Aus. $1.8 billion for the industry. The package had three main components:

- A *Dairy Structural Adjustment Program* (DSAP) of transitional assistance for all dairy farmers.
- A voluntary *Dairy Exit Program* (DEP) to assist farmers in financial distress, was provided as an alternative to the DSAP for producers who wanted to exit production;
- Dairy regional Adjustment Program to help communities who might suffer because of the importance of dairy in their community.

These programs were partially funded by a levy imposed on domestic sales of liquid milk which lasted several years following the reforms. Since States where fluid milk was more important were the most affected, by the end of the years 2000, the government created the Supplementary Dairy Adjustment program targeted at dairy producers in regions most affected by deregulation. More than $A122 million were given to 7750 dairy producers.

Australia dairy sector has suffered important droughts in 2006-2008, which distorts statistics, but exports between 2000 and 2007 have dropped by 10%, the number of dairy farms has dropped from 13,000 in 2000 to 8000 in 2007, while the average herd has increased from 170 to 225 during the same period.

India

Before the 1990s, India's government heavily protected dairy farmers from import competition by grouping them together in cooperatives. The policies included both domestic price support and high tariff protection. The dairy sector in India has always attracted the attention of government authorities that have viewed this sector as a means of increasing employment opportunities in rural parts of the country.

In the early 1990s, economic reforms started to take hold in India as government leaders realized that their country was falling behind some of the booming economies in the Asia Pacific region, notably China. The reform agenda also included the dairy industry. The industry was de-licensed, which meant that new entrance into the milk processing sector is now possible. The control of all dairy imports into India by the Indian Dairy Corporation was also relaxed and multinational corporations with milk processing plants were allowed into the dairy industry. The goal of these reforms was to encourage greater competition in the industry and lower prices paid by consumers. However, in 1992 worries about excessive milk capacity and growing sales of contaminated milk led to the introduction of limited controls under the auspices of the Milk and Milk Products Order.

In 1994, India became a member of the WTO and this development resulted in even more changes in the dairy industry. As part of India's commitment to the WTO, all non-tariff barriers on imports of dairy products were eliminated. Following the removal of quantitative restrictions on dairy products, imports and exports of dairy products were permitted under a lower tariff regime as long as dairy products complied with inspection requirements. As a result of these changes, imports of milk, butter and butter oil increased significantly in the late 1990s. Currently, India's tariffs on major dairy products such as milk powders and butter are very modest by international standards.

The reforms have been successful in increasing the overall competitiveness of India's dairy industry although some problems remain. India's dairy sector would benefit from the removal of protection in developed countries like Canada, the United States and EU members. The industry would also strengthen if more reforms were implemented to increase the productivity and efficiency of milk production and processing. Smaller dairy

farms in India should be linked to the domestic dairy market through cooperatives and contract farming in order to benefit from rising export demand for India's dairy products.

China

China's dairy production was only around 1 million tonnes per year in 1980, however, during the following 15 years, output started to increase at an average annual rate of close to 15 per cent. By the mid 1990s, China became the 20th overall milk producer in the world. Between 1997 and 2003, the pace of growth in the industry was even higher (20 per cent per year) and China is currently one of the top ten dairy producers in the world. One of the main factors behind the increase in production was the expansion of the dairy herd. In 1980, there were only around 640,000 dairy cows in China – a number that grew to 4.9 million by 2000. By 2004, there were close to 9 million dairy cows in China.

At the same time as the herd size was increasing, milk output per cow also expanded mainly because of better technology. Dairy technology has improved significantly since the government implemented its reform agenda in the late 1970s. Before 1980, there were few genetically improved dairy cows in the country and most of them were managed by state farms and collectives that used inefficient, labour intensive production methods. Also, feed mixes didn't include any vitamins or other supplements. After reforms took hold, improved genetic materials, feeding regimes and milk handling equipment have become available to dairy farmers in part because of development aid efforts undertaken by the EU, Canada and the World Bank. Also, the government lowered restrictions on the importing of dairy technology. In 2001, imports of breeding bulls increased to 14,000 from 3,200 in the mid to late 1990s while bull semen imports also rose sharply. This dramatic increase in imports of dairy technology has, not surprisingly, improved productivity in the dairy sector.

In addition to improving domestic production of dairy products, China has also opened up the sector to global markets. Prior to joining the WTO in the early 2000s, the average tariff on dairy products was more than 50 per cent. By 2004, the average tariff plunged to 11 per cent and there are currently no tariff rate quotas. In response to lower tariffs, trade has increased for traditional dairy products including milk powder. Imports of

cheese and other higher value-added dairy products have expanded mainly because there is not much domestic production of these products in China.

It will be crucial for China's dairy industry to continue to increase production at a rapid clip because milk consumption is increasing. Rising incomes and a greater numbers of urban dwellers becoming more aware of the health benefits of dairy products are the main factors behind this increase in demand for dairy products. If the domestic industry hopes to succeed at keeping up with demand, it must continue to implement new technologies and improve efficiency. Expanding cow herds and increasing productivity will require huge increases in grain and protein feed consumption. Also, institutions within both the dairy industry and government need to better coordinate the expansion of milk production and processing. The dairy industry has managed to increase production despite ongoing inefficiencies in the industry. Changes in agricultural lending and capital markets as well as improved market information channels will be required to lift dairy production in the years ahead.

Dairy processors will face increasing competition from abroad as multinational firms have already entered dairy markets in China in line with lower barriers to trade in this sector. Also, the easing of foreign direct investment restrictions, a result of WTO membership, will lead to greater completion from foreign companies.

Conclusion on dairy policies

The various dairy policies presented indicate the use of a vast array of coordination tools. By its nature, Canada's supply management is oriented toward the domestic market. Therefore, Canada does not export much and is a marginal player on the dairy international market. Nevertheless, supply is matched with demand and price volatility is kept to a minimum.

US intervention in its dairy sector has historically generated numerous periods of overproduction and important cost for governments. Over the years the various programs that were set up to reduce supply were not effective. Moreover, price volatility became a major issue, as well as the lack of supply response to very low price. The US has acknowledged the price volatility issue of milk at the farm, as well as the lack of supply response to low prices (coordination). The US dairy sector is mostly oriented towards its domestic market, but exports are nevertheless significant.

Dairy policy in the European Union (EU) between 1960 and the mid-eighties was similar to US dairy policy with price support, purchase of surpluses, import restriction and export subsidies. However, given the more generous price support of the EU, problems of overproduction and of stocks of butter, cheese and powder were more acute than in the US. This created a major budgetary problem that eventually led to a change of dairy policy with the implementation of a supply management system similar to Canada's. It is interesting to note that EU dairy policy seems now to move toward deregulation, but not to the level of New Zealand or Australia. The total level of intervention, although decoupled, is likely to remain important. It will be interesting to see how dairy policy in the EU will evolve pass the end of production quota in 2015. In terms of coordination of the dairy value chain, it seems that the EU is taking a step backward.

The New Zealand and the Australian dairy sectors benefit from a production structure that makes them among the lowest cost of production region in the world. The two countries are also major players on the international market. In fact, their domestic consumption is much less important than their exports. The two countries also have in common the fact that their dairy sector is deregulated and receive little support. However, New Zealand has an almost unique buyer of farm milk and an almost unique seller of dairy products on international markets. Moreover, this (almost) unique buyer and seller is a cooperative (Fonterra) owned by most of New Zealand dairy farmers. This is a major source of coordination of the value chain. It amounts to vertical as well as horizontal integration. On the other hand, Australia does not have a «Fonterra» and this might explain why the Australian dairy sector has struggled since total deregulation in 2000, as opposed to New Zealand dairy farmers.

As for India and China, the two giants are still at the early stage of the development of their dairy industry. Concerns for these countries are more on growth, specialization and technical gain in productivity. The need for coordination is minimal in their current phase of development given the important growth in demand and the low level of sophistication of processing. However, this is likely to change in the next few decades as the dairy value chain of these countries will become more mature.

The case of Switzerland

Switzerland has eliminated its dairy quota in May 2009 and created a program to compensate expected lower price for farm milk. The result has been a 22% price reduction and increase in production with little demand response. Stocks of butter and powder have increased and it appears that the market was unable to reach a balance between supply and demand. Therefore, the Swiss government supported a new intervention to give each producer a reference volume. Production beyond this reference will be subject to a special levy. This is a legislative attempt at better coordinating the market.

Sources: swissmilk.ch and La Terre de chez nous, November 18, 2010.

CHAPTER 4

The Canadian Dairy Sector Faces Pressures

At a Glance:

- **The competitiveness of the dairy value chain could suffer if farmers have difficulty in obtaining additional quota**
- **Misaligned incentives contribute to Canada's large surplus of solid non-fat.**
- **The allocation of milk to provinces is currently a constraint for the three national processors and forces them to make sub-optimal investments to get access to milk. This also affects dairy farmers' revenues.**
- **Given current Doha trade talks that could potentially lead to tariff reductions and greater market access, Canadian dairy farmers need to differentiate their products, and agree to limited price increases.**

It has been previously mentioned that dairy supply management has contributed to Canadian dairy farmers avoiding the dairy crisis that other countries faced in 2008-2009. Canadian dairy farmers have also benefitted from higher prices than most of their counterparts in other countries, as well as from lower price volatility. Moreover, the direct costs to governments in Canada are minimal by contrast with the costs of dairy support programs in the United States and Europe. Although these are benefits from supply management for farmers themselves, this system also faces important challenges. In this section, important internal and external pressures that the system is facing will be discussed.

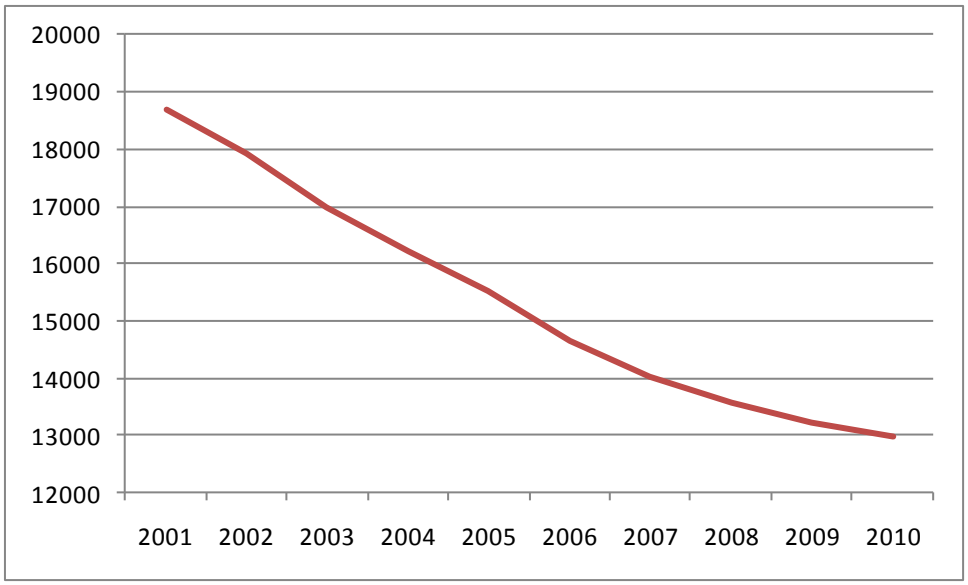
Internal pressures

Farmers' access to quota

Dairy production quotas at the national level match Canadian consumption. Quota has been initially allocated to provinces on a historical basis, while currently growth is allocated based on both population (90 per cent) and historical shares (10 per cent). Provinces then allocate the quota to their existing producers in proportion of their quota holdings and they also set some volume aside for new entrants into the industry. The dairy sector in Canada is mature with limited growth at the aggregate level. As a result, milk quota grew by less than 1 per cent a year for the period 2001-2010. Thus, most increases in production at the farm level must be bought from the market share (quota) of other dairy farmers.

The regular exit of dairy farmers has, in the past, permitted for such growth, as indicated by Figure 3. However, it also shows that the rate of exit from the industry has slowed down in the last few years. For instance, between 2001 and 2008, 4 per cent of producers were leaving production on an annual basis but this percentage has dropped to 2 per cent over the last few years. As a result, upward pressure on quota prices has transpired. In fact, quota prices have reached up to $40,000 per kg of butterfat in some provinces. High quota prices have been perceived as a serious problem since a large share of dairy investments has been captured by the quota (quota represents up to 60 per cent of the value of a dairy farm) and vast sums of money have been transferred from active farmers to exiting farmers. This problem has been partially addressed through the use of a price cap of $25,000 in numerous provinces. However, once the cap is reached (which is the case most of the time) quota is allocated administratively by giving small quantities of quota to farmers whose prices were equal to or over the cap. The result is that successful buyers have received very limited quantities of quota. This makes significant increases in production extremely difficult and likely restrains producers from moving along their cost curve or towards a more cost efficient technology that could improve economies of scale, potentially affecting the competitiveness of the dairy value chain.

Figure 3: Number of farms with shipments of milk, 2001-2010



Source: Canadian Dairy Commission and calculations done by AAFC-AID, Dairy Section.

Dairy ingredients and SNF structural surplus[11]

Technological developments in dairy processing allow for dairy ingredients to be substituted to milk in order to increase yield. For example, it takes about 10 units of milk to produce 1 unit of cheese. However, if protein enriched milk powder is used, this ratio can be reduced (for example to 8 to 1). These dairy ingredients are, for the most part, not produced in Canada and were – prior to the mid-2000s - imported free of tariffs at low prices. This contributed to the increased of Canada's surplus of solid non-fat (SNF). Then, in the mid 2000s, dairy farmers successfully lobbied the Federal government to apply article 28 of the GATT agreement, which permits restricting such imports free of tariffs to the level that existed at the time of the application of the article, plus an additional margin. The main issue now is how to transform the roughly 60 million kg of SNF (issued from the structural surplus and ingredients imports) from a dead weight cost to a return for the industry. To address this issue, special classes of milk with prices that reflect the international market are already in place. However, much more needs to be done, especially to service the growing specialized non-dairy

[11] Milk composition is water, butterfat and solid non fat (SNF). SNF is mostly made of proteins, lactose and minerals and is used as input in dairy products.

food market and to respond to the growing demand from the non-food market such as the pharmaceutical industry.

Fundamentally, incentives will need to change in order to resolve this issue. Currently, processors have a guaranteed margin for butter and skim milk powder which makes them reluctant to process different «residual» products (than butter and skim milk powder), such as dairy ingredients, for which margins are not guaranteed. Moreover, if a processor was to use Canadian dairy ingredients for cheese production instead of imports, he would have to pay, according to current rule, the class 3a price (the class 3a price is much higher than imports or special classes). This eliminates much of the incentive to use Canadian dairy ingredients and, as a result, does not help to reduce the structural surplus of SNF which is still not competitive relative to imported protein enriched milk powder.

National pooling, board and quota exchanges

Historically, each province had its own pooling[12], meaning that provinces were negotiating the price of milk with local processors based on a target price and according to the allocation of milk per classes. This is not surprising since, at the beginning of supply management, dairy producers were numerous and processors were local or provincial. However, starting in the 1990s, dairy processors started to concentrate and became national and eventually multinational processors. Today, three processors (Saputo, Parmalat and Agropur) of similar size (on the Canadian market) process roughly 80 per cent of Canadian milk. Thus, in response to potential pricing arbitrage between provinces by national processors, the need to rationalize operations (due to fewer dairy producers) and to better allocate resources, larger pools have appeared. For instance, the P5 pool regroups the Maritime provinces, Quebec and Ontario together. This agreement pools dairy farmer returns from all involved milk markets. The Western Milk Pool includes the provinces of British Columbia, Alberta, Saskatchewan and Manitoba in much the same way as the P5 does. Finally, the P10, or Special Class

[12] Farm milk is sold to processors based on the utilization for various usages of the milk in a final product. Each utilization, refers to a class of milk and associated to each class of milk is a specific price. The weighted average of the prices is the pool price that dairy farmers will receive, adjusted for the milk components of each dairy farms.

Pooling agreement, provides for the pooling of market returns from the special classes and animal feed class (4m) and is shared by all dairy farmers across the country.

Today, milk is allocated on a provincial basis but processors supply markets on a national basis. Thus, the need for a national board and a national pool system is apparent. A national board would allow for a Canadian allocation and transportation policy and reduce costs of raw milk quality programs, as well as of financing and other administrative costs. More importantly, it would allow the allocation of milk on a national basis (within the limits of transportation costs) and likely increase producer revenues. As an illustration, some provinces currently would not have much milk available for a cheese processor who would want to increase its production in its current processing plants. In those provinces, almost all the milk once used to produce butter and skim milk powder (low end products) is diverted to higher end products such as yogurt and cheese. On the other end, some other provinces are still running relatively small butter-powder plants. It might be more efficient to have only one or two large butter-powder plants in Canada and to divert the milk used in smaller regional plants to yogurt and cheese production elsewhere. This would increase the pool price for all dairy producers and allow for a better use of resources by processors. In other words, the provincial allocation of milk by provinces or by larger pools is currently a constraint for the three national processors and forces them to make sub-optimal investments to get access to milk. At the same time, sub-optimal allocations reduce dairy farmers' pool revenues.

Another important point in favour of a national decision-making body is the possibility that import tariffs on dairy products could be eventually reduced significantly. The current structure is ill prepared to react to this possibility. A national board to allocate milk by province would allow for a uniform, quicker and more efficient reaction to changing market conditions.

This implies that some smaller plants are likely to close and that some provinces might lose processing facilities to other provinces. The political sensitivity of this issue seems currently detrimental to the dairy value chain. Of even greater sensitivity would be the establishment of a national centralised auction for a significant proportion of dairy production quota. The idea behind provincial quota exchanges was to get the best allocation of dairy production within a province. The assumption was that farmers who

value the most dairy production would bid higher prices and obtain more quota. The same logic could certainly apply within Canada. However, the current cap system would not allow for such an allocation of quota since once the cap is reached, quota is allocated based on administrative, instead of market rules. A centralized national quota exchange with demand revealing mechanisms should therefore be considered.

External pressures

Doha trade talks

The most important external pressure that dairy supply management faces in Canada is the WTO trade talks (Doha Round). Current discussions involve various scenarios of greater market access and significant tariff reduction for super tariffs (such as those currently limiting imports on the Canadian dairy market). To preserve supply management, Canada would have to negotiate to have supply managed production covered under the sensitive products provision[13] discussed in the Doha round. This could greatly reduce the pressure to lower tariffs, but would be in exchange of greater market access. However, the number of sensitive products that a country can designate is a major issue. At best, Canada would still need to increase access to its dairy market, which would reduce the domestic market share of Canadian farmers.

If the sensitive products provision is not applied or does not cover all dairy products, then foreign products would have even greater access to the Canadian market, especially if the Canadian dollars continues to trade at or above par with the greenback and if international prices are low. In such case, if dairy farmers choose to maintain the same production level, pressure to reduce farm prices will be important and significant drops in quota prices would likely follow. On the other hand, if dairy farmers choose to maintain current price, quota would need to be reduced, which would accentuate the pressure on quota access. One should note that even with current tariff levels, the level of protection is often minimal given the appreciation of the Canadian dollar in the past few years, which has reduced the cost of imports.

Canadian dairy farmers have no impact on international dairy prices and foreign exchange rates. As a result, their actions to mitigate the potential impact of tariff

[13] A sensitive product would be subject to lower import tariff cuts than other products.

reductions and greater market access would need to concentrate on product differentiation (e.g., the "100% Canadian Milk" brand program[14]), reduction of quota value (price cap) and limited price increases on regular farm milk classes, so that the gap between domestic and international prices does not widen further.

While Canadian dairy farmers have already started to work on product differentiation through the 100% Canadian Milk program, their greatest efforts to mitigate potential negative effects of the Doha Round has been through lobbying both provincial and federal governments together with poultry and egg farmer (SM5) . This SM5 also has a strong presence in Geneva and has been very successful on the national scene. In fact, largely due to the efforts of the provincial counterparts notably in Ontario, Quebec and the Atlantic provinces, the federal government official position in trade talks is to defend supply management. Nevertheless, if a global trade deal is made in Geneva to conclude the Doha round and supply management has to be modified to accommodate the new rules, there will be enormous pressure on Canada to sign a Doha deal that is negative for dairy and supply management. The reason is that Canada has a strong stake in better access to international markets. It also must be remembered that agriculture accounts for less than 2 per cent (4 per cent with the processing sector) of the Canadian economy in terms of GDP. Within the Canadian agriculture industry, numerous important sectors such as cash crop, beef and hog rely heavily on exports. As such, it is hard to imagine that Ottawa would put Canada's global economic interests at risk to favour dairy farmers.

This chapter has looked at a number of issues that supply management is likely to face in the future These issues will form the basis for the suggestions that are discussed in the last chapter of the report. However, before looking at the suggestions, it is important to look at some of the commonly held views about supply management. This will then leave us in a better position to make suggestions for supply management going forward.

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[14] The DFC-owned logo identifies, on a voluntary basis, dairy products made from 100% Canadian Milk. Some processors have expressed little interest with the program, concentrating their efforts on their brand name.

CHAPTER 5

Issues Raised About Supply Management: Myth or Reality?

At a Glance:

- **Milk consumption is declining in Canada and most other developed economies, so this is not necessarily a result of the supply management system;**
- **Canadian retail prices for dairy products , in February 2011, were higher than in the United States;**
- **In theory, the incentive to reduce costs at the farm level should be equivalent between a supply managed dairy sector and a non-supply managed system but evidence suggests that that supply management creates less incentive for farmers to reduce costs compared with a non-supply managed system;**
- **Canadian dairy processors may have difficulties reaching their full potential scale because of the regional structure of supply management;**
- **Canadian farmers can take advantage of existing opportunities in the U.S. fine cheese market and should engage with stakeholders to identify and target potential value added dairy markets.**

The previous chapter described some internal and external pressures the system currently faces. To further support our suggestions, we focus in this chapter on five points of view often presented to oppose supply management. We examine the evidence supporting or refuting each point of view, and try to put it into context. This analysis will then set the stage for some strategic suggestions likely to improve the effectiveness of the Canadian dairy sector going forward.

Issue 1:

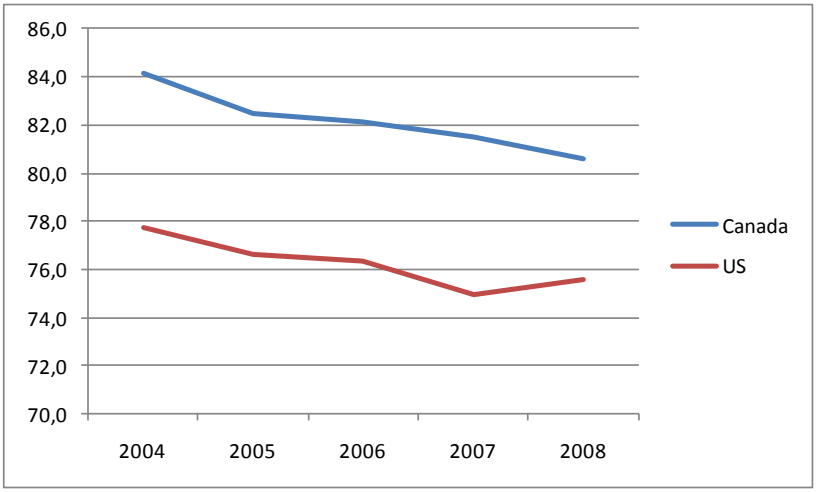
Because of supply management, consumption of dairy products is declining in Canada.

Facts:

It is a fact that fluid milk consumption is declining in Canada. However, this is not unique to Canada and could be associated with a change in the mix of dairy products consumed by the public, which is influenced by income, demographics, culture and other factors. Figure 4 shows the trend in fluid milk consumption in the United States and Canada

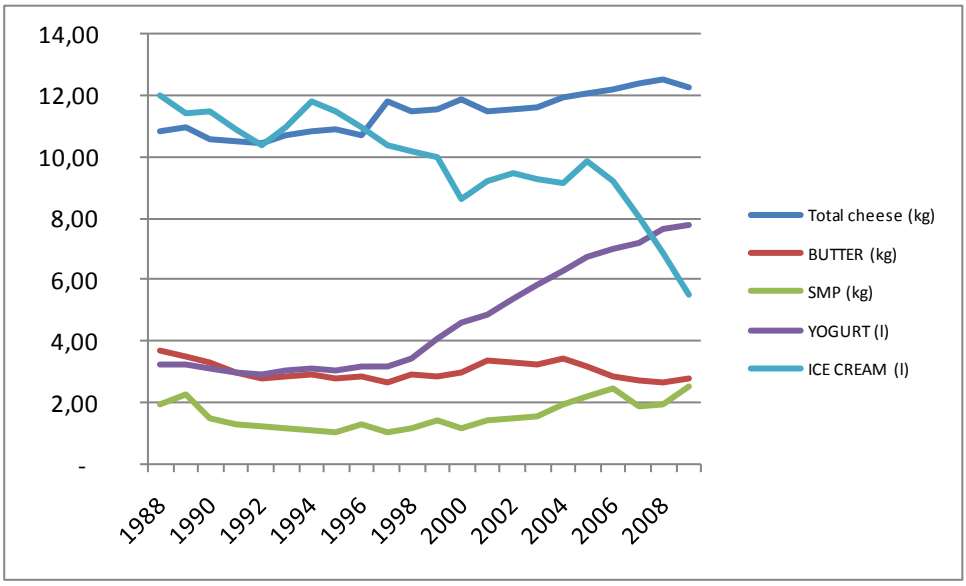
Figure 5 shows that in Canada, consumption of yogurt and cheese has been increasing in the last ten years while ice cream consumption and, to a lesser extent, butter consumption has been decreasing. A comparison with the United States shows that for the 2004-2008 period, per capita cheese consumption increased by 4.8 per cent in Canada compared with 3.5 per cent in the United States. For the same period, per capita yogurt consumption has increased by 22 per cent in Canada versus 28 per cent in the US; per capita ice cream consumption decreased by 24 per cent in Canada while it declined by 2 per cent in the US. Finally, per capita consumption of cream increased by over 5 per cent in Canada and 1.5 per cent in the United States during the 2004-2008 period. Thus, overall per capita consumption of dairy products has followed the same trend in Canada and the United States, but with different degrees – sometimes to the advantage of Canada, sometimes to the United States. In light of this data, it seems difficult to draw a firm conclusion or to establish a link between per capita consumption of dairy products and the presence of supply management.

Figure 4: Per capita consumption of all fluid milk (litre) in Canada and the US, 2004-2008



Sources: Statistics Canada, CANSIM, 003-0012 and USDA NASS Per capita consumption of major foods.

Figure 5: Per capita consumption of cheese, butter, SMP, yogurt and ice cream in Canada, 1988-2009



Source: Statistics Canada, Tables 002-0010, 051-0005 Calculations done by AAFC-AID, Dairy Section.

Issue 2:

Retail dairy product prices are more expensive in Canada

Facts:

Dairy farmer organizations have argued that dairy products in Canada are not more expensive than in the United States. " According to a survey conducted on 19 occasions by Dairy Farmers of Canada since May 1997 in Burlington Vermont and in Longueuil Québec, dairy products are 14,4% less expensive in Canada than in the United States" (GO5,http://www.go5quebec.ca/fr/gestion.php). Although a comparison between the cities of Longueuil and Burlington is limited in scope, more importantly the depreciation of the Canadian dollar vis-à-vis the U.S. dollar played an important part in these comparisons. Between 1997 and 2007, it was to the advantage of Canadian dairy products. The exchange rate adjusted comparison remains valid given that, if trade of dairy products between Canada and the United States was taking place, Canadian consumers would face U.S. prices but would pay in Canadian dollars. Dairy farmer organizations have also used price trends to make their point.

> *"Paradoxically, Canada's more favourable and stable farm gate prices do not mean unfavourable price trends for Canadian consumers. On the contrary, the oft-repeated argument that supply management means price increases and higher costs for consumers does not stand up to analysis. It is in the three countries with supply management - Canada, France and the Netherlands - where consumer prices increased the least during the period under review, to the benefit of their dairy consumers" Gouin 2004 in DFC website.*

Although this observation is correct, it does not indicate whether or not dairy retail prices in Canada are higher or lower compared with the United States.

To look at this issue, a spot survey was realized in supermarkets across Canada and the United States. This does not represent an exhaustive statistical analysis and a similar spot survey at another point in time might yield different results. Nevertheless, it indicates that dairy products are, at least sometimes, cheaper in the US than in Canada, as indicated by Table 4. More specifically, Table 4 presents retail store prices for national dairy brands in Canada and the United States, in their respective currency.

Most prices were accessed through the Internet and discounts or sales were not taken into account. Prices were effective on February 25, 2011. Prices are in US $ for American cities and in Canadian $ for Canadian cities.[15]

Table 4: A comparison of selected dairy product prices in some Canadian and American cities, February 2011

	Canada ($Can)				USA ($US)		
	Montreal	Toronto	Victoria	Calgary	New York upstate	San Francisco	Atlanta
2% milk (base 4 l)	5.81	5.59	5.19	4.49	3.16	4.64	3.54
Cheddar (base 300 g)	6.99	7.89	7.44	6.39	4.76	4.76	5.29
Butter (454 g)	5.69	5.99	5.99	6.69	3.99	5.49	4.59
Yogurt Yoplait (base 4x100g)	2.49	3.12	3.49	3.12	1.41	2.12	1.76

Sources: Montréal: http://www.iga.net/; Atlanta: http://www.publix.com/; San Francisco: http://www.safeway.com; New York: http://www.wegmans.com/; Toronto: Foodatitsbest@metro.ca, Victoria: www.thriftyfoodsonline.com; Calgary: visit of a Safeway

Table 4 indicates that retail prices for the dairy products selected are higher in our group of Canadian cities than in our selected U.S. cities for all dairy products, at the time of the survey. This price differential seems to draw little attention from Canadian consumers. One reason can be linked to the fact that dairy products' relative importance in the basket of consumer goods is small. According to Mussell (2010), food expenditures represent roughly 10 per cent of household income. Also, according to the 2001 food expenditure survey, dairy products represent less than 15 per cent of food expenditures spent in store. Thus, dairy comprises less than 1.5 per cent of household disposable income. This means that if dairy products prices were, for example, 30 per cent more expensive in Canada than in the United States, this would represent an impact of less than 0.5 per cent on an average consumer budget. In addition, as pointed out by Mussell (2010), one can argue that this differential cannot be completely attributed to supply management, which further diminishes the incentive by consumer groups to lobby against supply management. Price differential between countries can also be affected by differences in processing and distribution structure, as

[15] For indicative purpose, in February 25, 2011 the exchange rate for cash transactions, which reflects the exchange rate applied on business and consumer transactions, was if you buy us$1 = can $1.003 (http://www.desjardins.com/fr/taux/change/tableau_billets.jsp)

well as by the direct and indirect subsidies to dairy production that exists in the US. While dairy purchases comprise a relatively small portion of total consumption in the average Canadian household, this does not exclude the possibility that higher prices would generate greater effects on low income households that spend proportionally more on food than wealthier Canadians.

Milk Prices in New Zealand

It is interesting to note that in the Spring 2011, in New Zealand the price of milk has created public outraged due to huge price differential for essentially the same milk, which is all coming from Fonterra. Retail prices are going from nz$2.89 to nz$5.25 for a 2-litre of the same milk, mostly distributed by two major retail chains. Most prices appears to be between nz$4.50 to nz$4.90, which is the range of prices paid in Montreal for the same format, once adjusted for the exchange rate.

Issue 3

Supply management generate little incentive to reduce costs at the farm

Facts:

In theory, without supply management, individual dairy farmers set the level of output that maximizes profits. To maximize profits, it is necessary to minimize costs. With supply management, dairy farmers minimize their costs under a level of production constraint. If the level of output constrained by supply management is the same as the level of output that maximizes profits, than the two solutions are equivalent (duality). The duality argument implies that dairy farmers can easily make adjustments to their output level. This means that the incentive to reduce costs would be the same with or without supply management. One can therefore argue that high acquisition costs of production quota, and more recently the difficulty to access quota due to the price cap policy, negatively affects the capability to adjust (increase) output levels in order to reduce costs.

It should be noted that numerous factors other than supply management could also impact the capacity of a dairy farm to increase (or adjust) dairy output in order to attain optimal output levels. Interest rates, labour availability, environmental regulation, land and or feed availability, climate and other factors influence the profit maximizing output level and the capability to reach it (for a given output price). This explains why the average number of cows per dairy farms is 1,500 in Arizona and only 100 in Wisconsin, for example.

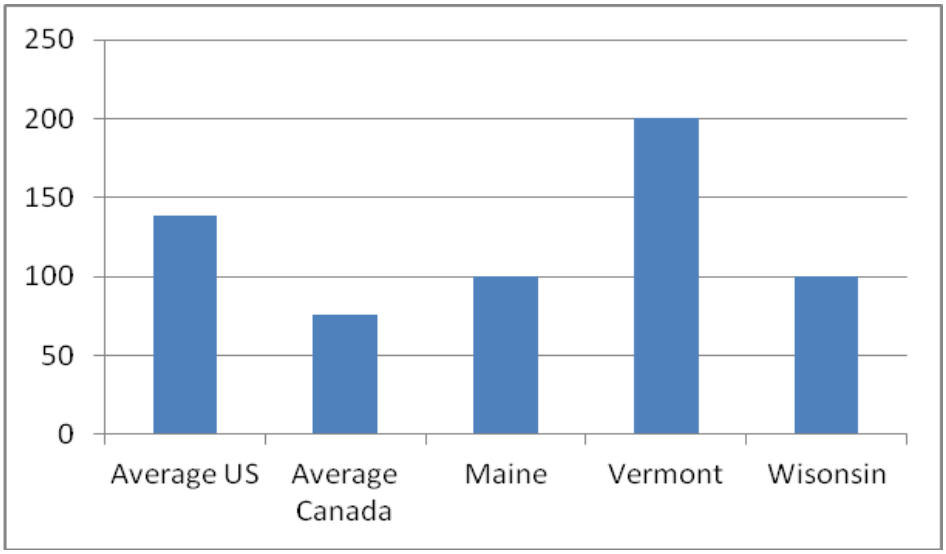
In addition to the difficulties of making output adjustments that Canadian dairy farmers might have, they might also have lower incentive to pursue economies of scale[16]. According to Mosheim and Lovell (2009), economies of scale are more important than technical and allocative efficiencies[17], and higher output price reduces the need to reach higher economies of scale. On this account, a relationship seems to exist between higher prices for farm milk in Canada and smaller dairy farms. The average dairy farm size in the United States is 139 cows versus 76 in Canada. Average farm size in smaller dairy states close to Canada are, for instance, 100 cows in Maine and over 200 in Vermont. Wisconsin has an average of 100 dairy cows per farm. More importantly, averages mask the fact that larger dairy farms account for an increasing percentage of total milk production in the United States. For instance, 23 per cent of the dairy farms in the US produce 85 per cent of the milk[18]. The distribution of dairy farm size within Canadian regions seems much more uniform in terms of distribution around the mean than in the United States.

[16] Economies of scale represent the cost advantage (reduction) associated with an expansion of production.

[17] Technical efficiency is to obtain the most production from available resources with a given technology, while allocative efficiency is the best mixed of inputs to produce an optimal level of output given input and output prices. One needs to be technically efficient to reach allocative efficiency.

[18] Jim Salfer, University of Wisconsin.

Table 5: Average Cow per Farm: US and Canada



In summary, although in theory the incentive to reduce costs at the farm should be equivalent between a supply managed dairy sector and a non-supply managed system, the current difficulties to access quota that prevails in some provinces is unlikely to lead to this result; while higher milk price reduces the incentive to pursue economies of scale. Based on this partial analysis, it appears plausible that current rules in the Canadian dairy sector create less possibilities and incentives for farmers to reduce costs compared with a non-supply managed system.

Issue 4:

Supply management is detrimental to dairy processors

Facts:

Dairy processing is concentrated among three large companies in Canada: Parmalat Canada, an affiliate of the Italian multinational Parmalat SpA, Saputo, a Montreal-based multinational company and the Quebec-based Agropur, a cooperative that operates mainly in Canada, the United States and South America.

Saputo and Agropur have both made acquisitions in the United States and South America over the last decade. Informa Economic[19]s concluded that «*(supply management) limited growth coupled with restriction on export volumes has limited opportunities to grow their dairy industry within Canadian borders and has led to mass investment in US dairy companies*». Although the facts reported by Informa Economics are accurate, the relationship with supply management is debatable. The most visible example, Fonterra, which exports 95 per cent of New Zealand's milk production, has invested in dairy farms, processing, and research and distribution facilities in more than 140 countries[20]. The relationship between lack of growth, supply management and international investment implied by Informa Economics, appears to be weak, at best.

Nevertheless, Saputo's CEO often mentions that growth possibilities are greater in the United States and contends that supply management is responsible for the lower growth potential in Canada. The fact is that Saputo's growth in the United States is mostly through acquisitions. Dairy processing in Canada is very concentrated with three major players processing roughly 80% of the milk. Thus, possibilities for acquisitions in Canada are very limited. On the other hand, some financial analysts[21] suggest that because of supply management, dairy processors in Canada are a good investment.

Standards for cheese (Canada) and yogurt (Quebec), which set a minimum amount of fresh milk that can be used in some dairy products, seem to be an irritant for processors. In fact, Saputo and Kraft are currently challenging federal cheese standards in court. These standards are likely to affect profitability rather than growth, since the use of cheaper dairy ingredient imports (instead of fresh milk) does not appear to be reflected in retail prices[22].

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[19] Informa Economics, Inc. is an established consulting group specialized in broad-based domestic and international agricultural and commodity/product market research, analysis, evaluation. http://www.informaecon.com/default.asp

[20] http://www.fonterra.com/wps/wcm/connect/fonterracom/fonterra.com/our+business/fonterra+at+a+glance/about+us/key+facts

[21] According to the American financial analyst Brian Yarbrough: «The supply management system shelters the dairy industry from competition. There's not a lot of risk on the pricing side and it's a good margin business, so this is a good deal» The Gazette, October 23 2008.

[22] It is difficult to observe a price differentials between cheeses made with or without imported dairy ingredients at the retail level. However, a different pricing strategy might exist at the wholesale level.

Given the absence of a national system of milk allocation and average price setting (national pooling system), it is likely that Canadian dairy processors currently have difficulties to reach a level of production that would maximize economies of scale. It is also likely that provincial instead of national milk allocation results in sub-optimal resources utilizations by processors[23]. The current system of milk allocation by specific plant for butter-powder, for instance, might also be resulting in a sub-optimal allocation of milk for more innovative or growth potential dairy products. Thus, the problem is not that there is not enough milk being produced, but is instead one of not having the right volume at the best possible place.

One also has to recognize the greater difficulty for Canadian processors to make profits out of product innovation. Given the limited size of the Canadian domestic market and export restrictions, the important costs of product innovation have to borne by much lower quantities.

Despite these challenges, Canadian processors have over the past few years reported solid financial results[24]. This might be explained by the fact that supply management protects them from subsidized and non-subsidized international competition. The high market concentration (three major players) probably also contributes to this favorable performance.

Issue 5:

Canada is missing out on exports, especially on dairy consumption growth in developing countries

Facts

Critics of supply management contend that the system prevents dairy farmers in Canada from taking advantage of export opportunities because it is geared towards the domestic market. The facts seem to be consistent with this view as Canada's exports are mostly linked to the structural surplus of SNF, currently in the form of skim milk powder.

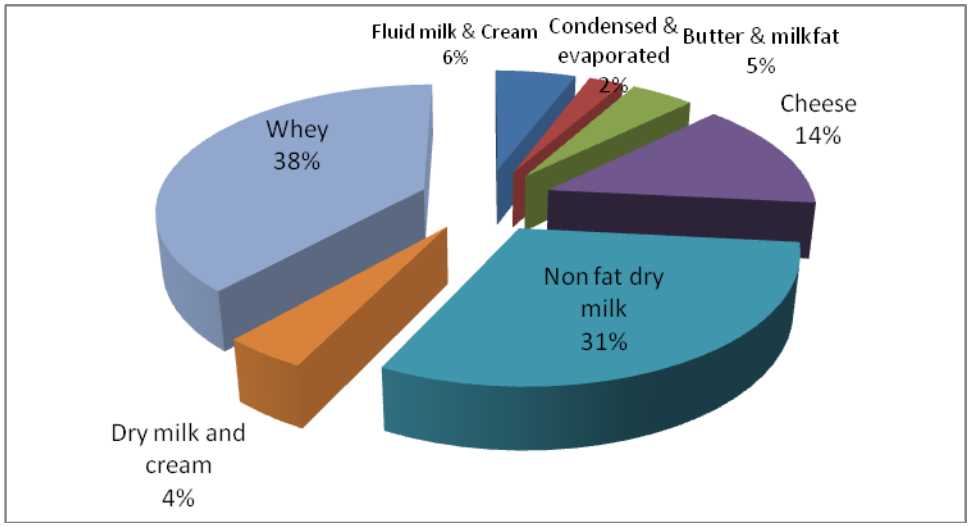
[23] Plants need to be built to access milk in some provinces instead of increasing processing in provinces where plants already exist and could be optimized.

[24] Saputo and Agropur recently declared record high profits.

The question is to assess what opportunities Canada could really have on the international market if the market was liberalized. World dairy trade represents roughly less than ten per cent of global dairy production and the vast majority of dairy trade comprises dairy commodities such as butter, milk powder, cheese and dairy ingredients. For instance, dairy consumption in China (mostly in the form of fluid milk and milk powders) is growing quickly with gains of 10 per cent per year in its major cities. A look at U.S. dairy exports (Figure 6) confirms that. The exception is fluid milk and cream exported to Mexico by bordering states.

Given that the competitive advantage in commodity markets is based on cost rather than differentiation, Canada's potential in this market is not obvious. Canada cannot achieve the cost structure of New Zealand and Australia, which is based on extensive production (pasture based) and minimal infrastructure (capital investment). Similarly, Canada cannot compete with the cost structure of California, Arizona, New Mexico and Texas that can harvest alfalfa, a major feedstock, 10 to 12 times a year as opposed to two to three times in Canada. Moreover, Canada cannot use export subsidies like the United States and Europe given current trade rules.

Figure 6: Breakdown of US dairy products exports, 2010



Source: US Dairy Exports Council "U.S. Exports of Dairy Products - Volume - Mixed Units".

Currently, supply management does not prevent dairy exports but it limits our subsidized exports and increases the price of farm milk, making commodity exports less

competitive. Canada has a special access to the U.S. cheese market for cheddar, swiss, emmental and other cheese, subject to a tariff rate quota (TRQ). Moreover, no constraint exists to export soft-ripened cheese such as Brie. It is interesting to look at how Canada has taken advantage of these opportunities. In 2009, Canada exported 2.8 million kg of cheese to the US in this category[25]. In the same category, the EU (that does not benefit from a special access) exported 85.7 million kg of cheese for the same year. Therefore, it seems that Canada is not taking advantage of the fine cheese market potential that exists in the United States even within the confines of supply management. This might be attributable to the fact that major processors such as Saputo and Agropur do not appear to be interested in exporting fine cheeses given that they can produce them in their U.S. facilities. Smaller processors, which are at the center of the fine cheese development in Canada, are likely to find exports difficult given the administrative hurdles and the difficulties involved with exporting relatively small volumes. However, despite these drawbacks, Canada should explore more strategies to penetrate the U.S. market for high end value specialty cheese.

In practice, these strategies would have to be geared around product differentiation and directed towards the U.S. where transportation costs are low relative to other distant markets. Specialty cheese seems to be a good candidate. It has a low transportation cost relative to its value and given that it is a high value-added product, the relative importance of farm milk prices in the final cost of the product is smaller.

In summary, dairy export opportunities would probably be limited even in the absence of supply management. The highly commoditized nature of dairy products traded and the higher production costs Canadian farmers naturally face are reasons suggesting that Canada's export potential would be restrained. Nevertheless, Canadian producers can start by taking advantage of existing opportunities in the U.S. fine cheese market and could develop strategies that target value-added dairy markets.

[25] Formal category H3-040690 (cheese except fresh, grated, processed or blue-veined).

CHAPTER 6

Proposed Strategies to Explore

At a Glance

- **There is no doubt that changes to supply management may be difficult to achieve, especially from a political point of view. Nevertheless, our assessment is that dairy supply management would gain in becoming more flexible and efficient.**
- **A national centralized quota sale system would generate more transaction and also reallocate milk production within Canada more efficiently**
- **A national (pool) price for milk, coupled with allocation of quota based on demand, could also increase revenues for producers without raising prices**
- **To reduce the surplus of solid non-fat, we propose to change current incentives and make the change a shared responsibility between processors and producers.**
- **Canadian dairy stakeholders should explore ways to penetrate the fine cheese U.S. market and other potential value added markets.**

The previous section reveals that misconceptions surrounding the impact of supply management on the Canadian dairy value chain exist. Nevertheless, some changes to supply management should be considered to meet the challenges that the Canadian dairy industry must currently contend with. In this section a number of potential changes or strategies that could make supply management operate more efficiently are proposed.

Proposed Strategy: National Structures

Limited access to quota is an important issue for dairy farmers in that it reduces their ability to grow and possibly reduce costs in the longer run. At the root of this problem is a provincial supply of quota that is inferior to provincial demand. This is true in all provinces and could be interpreted as an indication that dairy farm size is not optimal (given the important demand for quota, which amount to a demand for growth).

Within the constraint of supply management, we recommend the creation of a national centralized quota sale system for a significant share of the national quota (market sharing quota)[26]. A national centralized quota sale system would generate more volume to be traded and also reallocate milk production within Canada more efficiently.

A national average milk price (national pool for all classes of milk), coupled with allocation of quota based on demand, could also increase revenues for producers without raising prices[27]. This might also improve the overall efficiency of processors since they will be in a better position to allocate milk between their processing plants across Canada. As a result, the fastest growing markets in Canada would be served better as milk and capitals would move more freely. Moreover, as mentioned previously, a national pool would require a national board that could also oversee transportation policy and reduce the costs of raw milk quality programs as well as financing and other administrative costs.

Proposed Strategy: Shared responsibility processors-producers to reduce SNF surplus.

Another key issue that was raised in the previous section was the existence of a structural surplus of SNF. On one hand, dairy and non-dairy processors are importing dairy ingredients, contributing to the SNF structural surplus. On the other hand, dairy farmers receive very little for their SNF surpluses sold in special classes at low price.

[26] If a k-double auction, an auction that simultaneously mediate among multiple buyers and seller, was to be used, it is possible that quota prices would start rising again. Therefore, different alternatives for a centralized quota sales system should be studied. This is beyond the scope of this paper.

[27] For example, if more milk is directed in the more lucrative class 2 instead of class 4, then the pool price is increased even if the price of each class remains the same.

Currently, it seems that processors have little incentive to reduce the SNF surplus for many reasons. First, the SNF surplus is the financial responsibility of Canadian milk producers. Second, processors have a guaranteed margin for butter and skim milk powder that makes them reluctant to process different «residual» products, such as ingredients, since, for those products, margins are not guaranteed. Third, if a processor was to use Canadian dairy ingredients for cheese production, that processor would have to pay, according to current rules, the cheese class (3a) price[28]. Fourth, these dairy ingredients imports are cheaper.

Options to correct these disincentives should be explored. One option might be to share the responsibility among processors and producers of the SNF surplus over a certain level. Another one would be to reduce the processors butter-powder guaranteed margin and/or to create a guaranteed margin for dairy ingredient processing. A third option would be to price Canadian dairy ingredient use for cheese production more competitively with imports. Given that the use of dairy ingredients in cheese is limited by Canadian standards, favoring Canadian ingredients makes even more sense. Those options could be applied in combination or simultaneously.

It appears to be in the best interest of dairy farmers to work with processors to develop Canadian dairy ingredients. This has the potential to raise prices for special classes and thus increase farm price (pool price) without increasing the price of the major classes. Moreover, given that dairy farmers receive very little for a certain milk volume (special classes of milk) and that the SNF surplus represents a cost for them, it seems that there is currently room for improvement and negotiations with processors that import dairy ingredients.

[28] As previously mentioned, cheese yield can be increased by substituting fresh milk by high protein milk powder (a dairy ingredient). Those high protein milk powder can be imported free of tariffs at low price. If a processor was to use Canadian high protein milk powder instead of imports, (which would help reducing Canada's SNF surplus) it would have to pay them at the class 3a price, under current rule, which is roughly equivalent in terms of price to using fresh milk. This makes the use of Canadian dairy ingredients quite disadvantageous.

Proposed Strategy: Identify Export Opportunities in value added dairy products.

A potential Doha outcome based on current draft modalities would result in greater dairy imports in Canada. To prepare for this possibility, the dairy industry could concentrate its efforts on Canadian dairy products differentiation in order to set them apart from the more intense competition. Steps should also be taken to limit price increases for regular farm milk classes to ensure that the gap between domestic and international dairy prices does not widen further. It is worth noting that the larger the price gap between world and domestic price for dairy products, the greater the incentive to flood the Canadian market with imported goods especially if the Doha Round results is sharply lower import tariffs on dairy products.

It will be difficult for Canada to compete effectively in global dairy markets because of a higher structural cost of producing milk. Canadian dairy stakeholders should therefore explore ways to penetrate the fine cheese U.S. market and other value-added markets south of the border, even if these markets would not represent, at the time, great volumes of milk. The fine cheese industry in Canada is currently characterized by smaller processors that need to coordinate their efforts. The need to reduce the administrative costs of exporting and to add volume suggests that they would benefit by working together. This would also allow better access to distributors in the United States. Processors and producers should explore possible collaboration on this front. Researching and exploiting export markets where Canada has a competitive advantage should be a priority, especially in the current context where the Canadian market is mature and offers limited opportunity for growth.

Summary of Proposed Strategies to Explore

In summary, strategies that should be explored include

- To adapt provincial and regional structures to a national market:
    - The creation of a national board,
    - The creation of a national pool with a national allocation of milk on demand;
    - The creation of a national centralized quota exchange for partial share of the MSQ.

- To change processors incentives toward SNF surplus:
    - The creation of a mechanism to share the cost of SNF surpluses between producers and processors over and above a certain level of surplus;
    - To reduce processors margins for butter-powder and/or to create one for dairy ingredients;
    - To change class pricing so that the use of Canadian dairy ingredients would not be priced at class 3a but would be more competitive with the price of imports.
- To see Canadian dairy exports differently:
    - To identify and explore ways to exploit value added export markets where Canada might have a competitive advantage;
    - To coordinate and facilitate, in the short run, the effort of smaller fine cheese producers to penetrate the fine cheese market in the U.S., which is currently partially deserved by French imports.
- To increases dairy farmers revenues through an increase in pool price and volumes, instead of an increase in regular milk classes (class 1 to 4). This could be achieved through different combinations of the previous suggestions and would limit the increase in the farm price differential between Canada and other countries.

Conclusion

Dairy supply management system has been severely criticized by many observers both within and outside of Canada and strongly defended by proponents. Although some of the criticisms are founded, others do not stand up to the facts. At the same time, dairy supply management faces important issues. These include access to quota, dairy ingredients and a solid non-fat structural surplus, a need for national allocation of milk and trade negotiation such as the Doha round.

We propose a number of strategies to be explore, that we believe would improve the flexibility and efficiency of dairy supply management in Canada. The development of a national pool and the allocation of milk on demand, for instance, could improve the efficiency of the industry by enabling a better allocation of milk. This could potentially improve plant utilization, processors efficiency and raise dairy farmers' revenues without increasing the price of the major classes of milk. Other suggestions are a national board, a national centralized quota exchange, changes in processors incentives to favour the development of Canadian dairy ingredients as well as exploring export opportunities for value added dairy products. These suggestions also have the potential to improve dairy supply management in Canada and to reinforce the competitiveness of the Canadian value chain, which would help the industry meet the increased competition from dairy imports.

Hopefully, this report will move the discussion on Canadian dairy supply management forward and help initiate a constructive dialogue among stakeholders that will lead to a more efficient Canadian dairy value chain.

Bibliographie

Abbassi, A., Bonroy,O and J-P.Gervais, (2008) "Dairy Trade Liberalization Impacts in Canada". *Canadian Journal of Agricultural Economics* 56:313-335.

APEC (2008), “Sharing Experience of Structural Adjustment Policies in the Agricultural Sector”, Seminar Report, Sydney, Australia.

ERS (2009) “*Profits, Costs, and the Changing Structure of Dairy Farming*” *ERR-47* Economic Research Service, USDA.

Fuller, F.; Huang, J. Ma, H. and S. Rozelle (2005), “The Rapid Rise of China’s Dairy Sector: Factors Behind the Growth in Demand and Supply”, Centre for Agricultural and Rural Development Iowa State University.

Gouin, D-M. (2004), “Supply Management in the Dairy Sector: Still an Appropriate Regulation Method”, Department of Agri-Food Economics and Consumer Services, Laval University.

Grey, Clark, Shih and Associates, Limited (2010), "Farming the Mailbox: U.S. Federal And State Subsidies to Agriculture".

Harris and Asssociates (2008), "Industry plans and dairy support policies in Australia", FAO Workshop, Bangkok.

Mosheim, R. and C.A. Knox Lovell (2009), "Scale Economies and Inefficiency of U.S. Dairy Farms", *American Journal of Agricultural Economics*. 91(3): 777–794.

IDFA (2010), “An International Comparison of Milk Supply Control Programs and Their Impacts”, International Dairy Foods Association report.

Mosheim, R. (2009) "Increasing Size of Dairy Farms Driven by Declining Production Costs" Amber waves, December, p.9.

Mussell, A. (2010), “Making Sense Out of a Stale Debate: Milk Supply Management in Canada”, Georges Morris Centre, November 2010.

Nicholson, C. and M. Stephenson (2010), “Analysis of proposed programs to mitigate price volatility in the U.S. dairy industry", Cal Poly research report.

Rakotoarisoa, M and A Gulati (2006), “Competitiveness and Trade Potential of India’s Dairy Industry”, International Food Policy Research Institute.

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