POLICY SERIES

FRONTIER CENTRE FOR PUBLIC POLICY • POLICY SERIES NO. 128 • MARCH 2012

The Future of the Canadian Dairy Sector

In a Post Supply Management Era

By Sylvain Charlebois
and Tatiana Astray

FRONTIER CENTRE FOR PUBLIC POLICY

About the authors

Sylvain Charlebois is the Acting Dean and Professor in the College of Management and Economics at the University of Guelph in Ontario, Canada. His current research interest lies in the broad area of food distribution, security and safety, and has published many peer-reviewed journal articles in several publications. His research has been featured in a number of newspapers, including the *Globe & Mail,* the *National Post,* the *Toronto Star, MacLean's,* and *La Presse,* as well as on the Business News Network, CBC Radio and TV, Global, CTV, TVO and TVA. He is currently writing a fourth book on global food safety systems, to be published later this year. He conducts policy analysis, evaluation, and demonstration projects for government agencies and major foundations focusing on agricultural policies and community development both in Canada and in development settings. Dr. Charlebois is a member of the National Advisory Board of the Canadian Food Inspection Agency. He has testified on several occasions before parliamentary committees on food policy-related issues as an expert witness. He has been asked to act as an advisor on food safety policies in many Canadian provinces, in the United States, Italy, France, Belgium, Great Britain, Finland and the Netherlands.

Tatiana Astray holds a Master's of Science in Marketing and Consumer Studies from the University of Guelph, during which she completed her thesis on consumer purchasing decisions of genuine and counterfeit products. She has been involved in research projects with the University of Guelph, Trent University, Sunnybrook Hospital, and the Daily Food Bank, and she has also presented at the Association for Marketing Theory and Practice, the Society for Consumer Psychology and Graduate Student Conference on University Teaching. Tatiana is currently lecturing and working on research projects with the CME department at the University of Guelph. Her research interests are in the domain of decision theory and consumer trends, as well as applying marketing principles to public policy issues.

FRONTIER CENTRE FOR PUBLIC POLICY

www.fcpp.org

Email: newideas@fcpp.org

MB: 203-2727 Portage Avenue, Winnipeg, Manitoba Canada R3J 0R2 Tel: 204-957-1567

SK: 2353 McIntyre Street, Regina, Saskatchewan Canada S4P 2S3 Tel: 306-352-2915

AB: Ste. 1280–300, 5th Avenue SW Calgary, Alberta Canada T2P 3C4 Tel: 403-995-9916

The Frontier Centre for Public Policy is an independent, non-profit organization that undertakes research and education in support of economic growth and social outcomes that will enhance the quality of life in our communities. Through a variety of publications and public forums, the Centre explores policy innovations required to make the prairies region a winner in the open economy. It also provides new insights into solving important issues facing our cities, towns and provinces. These include improving the performance of public expenditures in important areas like local government, education, health and social policy. The authors of this study have worked independently and the opinions expressed are therefore their own, and do not necessarily reflect the opinions of the board of the Frontier Centre for Public Policy.

Date of First Issue: March 2012.

ISSN 1491-78

FCPP Policy Series No. 128 • March 2012

The Future of the Canadian Dairy Sector

In a Post Supply Management Era

By Sylvain Charlebois
and Tatiana Astray

Table of Contents

Note to reader: Some words in this document may appear in blue and are underlined.
Clicking on these words will direct the reader to relevant sites or documents using your associated web-browser.

Executive Summary

This paper reviews the current state of the Canadian dairy industry in order to highlight the potential effects of a liberalized global market on the domestic market. The authors argue that there is need for advanced discussion on a liberalized dairy market because domestic policies in foreign states are already positioning their dairy industries to function under a liberalized framework, and the international community is convening to discuss liberalized multilateral agreements with negligible support for continued supply management.

These international conditions point toward the possibility that the Canadian dairy industry will be forced into a framework for which the Canadian industry is ill-prepared. To investigate the competitiveness of the domestic dairy industry, the authors review influential domestic and international factors, in combination with anticipated industry scenarios to identify the likely consequences of a liberalized dairy environment. The paper finds that the Canadian dairy industry is not positioned to succeed if the dairy industry were to liberalize in short order. In this scenario, the U.S. dairy industry would likely devastate the Canadian dairy industry by flooding the market with low-cost dairy products. In addition, Canada would not be positioned to benefit from access to emerging markets due to an inability to offer cost-effective products. Finally, this paper provides a road map for future reform using domestic and international focused policies that work to increase Canada's competitive advantage in a liberalized dairy framework.

Introduction

The Canadian Dairy Industry— An Introduction to Supply Management

The Canadian dairy industry is run by supply management systems that control production quotas, administer prices and regulate imports by placing limits and tariffs (Canadian Dairy Commission, 2010; Drummond, 1960). Supply management is not unique to the dairy industry, as the Canadian poultry and egg industries are managed this way (Lang, 2011). Provincial and federal marketing boards that collaboratively manage prices, production quotas, subsidy payments, export programs, bookkeeping, and among other duties, run the dairy supply management systems.

Initially, supply management was applied to the dairy industry to stabilize prices for producers and consumer, and to secure supply for processors. However, the industry's ability to fulfill these measures is a contested issue, as critics argue that supply management is detrimental to consumers and market efficiencies (Tamilia & Charlebois, 2007). On a global scale, supply management contributes to trade distribution through domestic support programs, setting prices, and placing limits and tariffs on imports. International forces are currently working to liberalize the markets for agricultural products in an effort to stabilize prices. The Doha Round is an international agreement directed toward this objective; however, there is no sign of the agreement coming to a close.

The Doha Round would have many implications for the global dairy industry. In the Canadian context, it would mean the elimination of supply management and freer market access to and for Canadian consumers, with many implications for farmers, consumers and the agricultural sector at large. This paper will discuss the impact of the Doha Round on the Canadian dairy industry and present a broad policy framework that could enhance the industry's competitive advantages in a liberalized global market.

> ***International forces** are currently working to liberalize the markets for agricultural products...*

Canadian Dairy Farmers

The Canadian dairy industry is the third-largest domestic agricultural sector. It employs roughly 26,000 farm workers and 20,500 processing workers (Agriculture and Agri-Food Canada, 2009a). In 2008, $5.3-billion was generated from dairy production, which translated to $13.1-billion in sales. In 2008, the industry represented 15 per cent of the food and beverage sector in Canada, making it the third most-valuable agricultural sector (Agriculture and Agri-Food Canada, 2009b).

The majority of farms are located in Quebec (49 per cent) and Ontario (32 per cent), a statistic that has remained largely constant over the past decades. Since 1920, the number of herds has decreased while milk production has grown by 60 per cent, suggesting that industry efficiencies have improved over the past decades (Government of Canada, 2010a).

Compared with the average Canadian farmer, dairy farmers generally have more total assets and higher net worth (Statistics Canada, 2011a). In 2009, the average net worth of a cattle and milk production farm was $2.5-million, up by $0.5-million from 2005. The majority of dairy farm assets are tied up in long-term assets such as land, buildings, machinery, equipment and quotas. Assets generally outweigh liabilities. These figures suggest that the Canadian dairy farmer is well positioned to invest in farm operations and expand production should the market demand.

Canadian herds are primarily made up of Holsteins, a larger cow that produces optimal yields in mild temperatures (Jenness, Wong, Marth & Keeney, 1999). In 2009, compared with all dairy breeds, the Holstein represented 92 per cent of all milk lactations in Canada, produced the highest domestic milk yields (9,793 kg) and the lowest compositions of fat (3.76 per cent) and protein (3.19 per cent). Canadian Holsteins have a competitive milk yield when compared with international non-hormone-treated cows. This places Canada in a unique position to have a competitive advantage on fluid milk production and genetics design exportation (International Committee for Animal Recording, 2011).

Dairy Trade

In 2010, dairy exports amounted to over $225-million in revenue and dairy imports amounted to over $610-million in revenue; 74 per cent of trade was imports (Dairy Products Exports, 2011; Imports of Dairy Products, 2011). The disparity between export-import is slowly becoming more pronounced. In just one year (2009 to 2010), the value from dairy exports fell by $3-million and the value from imports rose by $37-million (Canadian Dairy Trade Bulletin, 2009 and 2010; Statistics Canada, 2011b). Of the total imports in 2010, 40 per cent of the profit came from cheese, followed by 15 per cent from milk protein substances and 4 per cent from butter, fats and oils derived from milk (Canadian Dairy Imports). Canada's most profitable exports in 2010 came from the "Others" category (50 per cent), which includes ice cream (48 per cent of the category) (Statistics Canada, 2011b). Cheese and whey were responsible for 21 per cent and 16 per cent, respectively, of the total export profits.

Canada's most profitable [dairy] exports in 2010 came from the "Others" category ... which includes ice cream...

Milk and creams made up only 5 per cent of the export profits, while skim milk powder represented 11 per cent. When considering the quantity to profit ratio, whey is the most profitable dairy commodity, providing an almost 1 to 1 ratio in kg to dollars (Statistics Canada, 2011b).

Canada exports cattle genetics through dairy cattle, embryos and semen. Genetic exports generally fluctuate between years; however there has been a general decline in the value of genetic exports. In 1998, Canadian genetics generated over $113-million in exports, compared to in 2010, when it generated $16-million (Canadian Exports of Dairy Genetics by Country 1998 to 2004—Genetics Total; Canadian Exports of Dairy Genetics 2005 to October 2011, 2011). This decline is not explained by import revenue, in 1998 Canada imported $650-thousand worth of genetics and in 2010 it imported $8-million worth of genetics (Government of Canada. Canadian Imports of Dairy Genetics by Country 1998 to 2004—Genetics Total; Canadian Imports of Dairy Genetics 2004 to 2010—Genetics Total). The decline is explained by other countries increased access to advanced technology, which allows them to import lower cost genetics (semen over live cattle) as well as improve domestic genetics. Dairy semen is the most profitable genetic export product due to its low transportation cost and attractive low price.

This has translated to an increase in semen export, from $32-million in 1998 to over $100-million in 2010 (Canadian Exports of Dairy Genetics by Country 1998 to 2004—Genetics Total; Canadian Exports of Dairy Genetics 2005 to October 2011, 2011).In 2010, Canada exported its dairy genetics to North America (35 per cent, mainly the United States), Europe (31 per cent), Asia (11 per cent), South America (9 per cent) and the Middle East (8 per cent). While genetics represent lower revenues in the dairy industry, genetics is a Canadian advantage. In 2009, Canada supplied approximately 20 per cent of the global dairy genetics but less than 1 per cent of the global dairy market (Agriculture and Agri-Food Canada, 2009b).

Part I: External Forces Affecting the Canadian Dairy Industry

Political Environment

The Canadian Political Environment

Controlling production quotas, administering prices and managing imports are the basis of supply management systems. (Canadian Dairy Commission [CDC], 2010; Drummond, 1960). Provincial dairy marketing boards, the federally run Canadian Dairy Commissions and the Canadian Milk Supply Management Committee (CMSMC) work together to supply-manage the dairy sector.

Provincial marketing boards are given federal and provincial authority to administer supply quotas, market pooling, set prices, keep records, write reports and perform inspections (World Trade Organization [WTO], 1999). Under the Canadian Dairy Commissions Act (1966), the mandate of the CDC is to 1) provide producers with a fair return on labour and investment and 2) provide consumers with dairy products (Canadian Dairy Commissions). The mandate is carried out through managing price-support programs, subsidy payments and export programs as well as through mediating between provincial dairy marketing boards and CMSMC interests. The CMSMC is responsible for policy development, the supervision of the National Milk Marketing Plan (Market Sharing Quota), CDC's operations, market pooling and quota administration.

Supply management is a contested issue. Arguments in support of supply management in the dairy sector maintain that this practice provides a stable and steadily rising income in a volatile market (sensitive to seasonality, weather, perishability, etc.), greater equality in bargaining power between producer and processor/distributor and reduces the profit margin earned upstream in the supply chain (Tamilia & Charlebois, 2007). Critics of supply management, by contrast, argue that it limits and controls entry into the industry, restricts the individual producer's output and places boundaries on whom farmers can sell to. Critics contend that this practice is becoming monopolistic and is counter to free market ideology. As result, supply management is contributing to poor market efficiency, a lack of product innovation and product offerings, and a rise in retail prices (more concerning for low-income consumers) (Tamilia & Charlebois, 2007).

Two main groups take an interest in the policy that governs the dairy industry: farmers and consumers. Farmers arguably have more influence over policy, as they have greater representation on provincial dairy boards, the CDC and the CMSMC, which act as lobby groups. Farmers' interests lie in preserving the dairy industry as it stands, thereby guaranteeing a steadily rising income for themselves. In contrast, consumers have marginal influence over policy, as they have token representation on dairy governing bodies. Additionally, there is consumer ignorance regarding how the dairy industry operates and how Canadian prices compare in the world market (Tamilia & Charlebois, 2007).

Stanbury (2002) estimates that supply management costs Canadian consumers more than $2.5-billion a year through imposed retail prices and taxes. This is

equivalent to $320 per family per year, a significant cost when considering the impact on low-income households. In addition, consumer price indices show that in Canada from 2005 to 2010, the price of dairy products (fresh milk, butter, cheese) increased at a higher rate than all other food items (Consumer Price Indices for Canada). Canadian consumers pay an average of two to three times more for dairy products compared with international price standards (Organisation for Economic Co-operation and Development [OECD], 2004). Although prices remain high, most Canadian consumers do not consider price when purchasing dairy products, as they think that dairy prices are fair, consumers show a general willingness to pay more for their dairy products (Hart, 2005; Charlebois, Langenbacher & Tamilia, 2007). These results demonstrate that consumers have a persistent ignorance regarding the dairy industry.

Is it not surprising that farmers are the most organized and vocal group in the dairy industry debate, as they stand to gain the most from a continuing supply management system. As a result, there is little domestic pressure to change the industry's operating structure. However, the global political landscape is changing around agricultural policy, and, as a result, pressure to eliminate supply management is coming from the WTO and the international community in the form of the Doha Round agreement. If it passes, Canada may be forced to comply with the international community if it expects to continue as a trade-focused economy in the global competitive environment.

> ***Canadian consumers pay an average of two to three times more for dairy products compared with international price standards...***

The Global Political Landscape

International dairy markets are highly protected, and, as a result, the dairy sector is one of the most distorted sectors in the global agricultural trade (Gifford & Dymond, 2008). The WTO has tried several times to correct trade distortion through the Uruguay Round and the Doha Round. The former was successful at starting the discussion around trade in general, and the latter has yet to find success in controlling trade distortion in the agricultural sectors.

The WTO introduced the Uruguay Round (1986-1994) to increase liberalized trade by reducing trade-distorting domestic support as well as reducing import barriers and export subsidies. One problem with the Uruguay Round was that the reduction of government support for individual agricultural commodities was not addressed. The dairy markets continued to be distorted as a result.

In 2001, in the aftermath of the 9/11 terrorist attacks, the WTO introduced a new round of multilateral trade negotiations called the Doha Round, which are still continuing.

The objective of the Doha Round is to liberalize trade while accounting for the needs of developing countries. The Doha Round covers four areas of trade reform, with agriculture being one of them. There are three areas to be addressed within the agricultural agreement: 1) domestic agricultural support programs, 2) export competition, and, 3) market access (WTO, 2008). The Doha Round includes formulas (a.k.a. modalities) that all 153 members are to use to calculate the percentage of tariffs and subsidies that are to be cut for the products covered under the agreement. The Doha Round negotiations have not finished, as disagreements between developed and developing countries must still be resolved (Schnepf & Hanrahan, 2010).

The Canadian government has said that in the Doha Round negotiations it would be placing a priority on "achieving fundamental reform of world agricultural trade. Canada is seeking the elimination of all export subsidies; substantial reductions to, and disciplines on, trade-distorting domestic support; and real and significant market access improvements" (Foreign Affairs and International Trade Canada - Canadian Objectives in the WTO Negotiations). The country has acknowledged the need to create a "more level international playing field … while seeking to ensure that Canada's supply management system for certain agricultural products is not compromised" (Foreign Affairs and International Trade Canada, 2011). Nations such as Switzerland, Australia, New Zealand and Korea had once shared an interest in preserving supply management. However, all have begun to eliminate supply management in their domestic sectors, and, as a result, Canada stands alone in its interest to preserve supply management within the Doha Round agreement (Reguly, 2004).

It seems unlikely that the move toward greater market access will come with the preservation of supply management. It will likely be eliminated because the Doha Round passes agreements based on votes, and Canada will likely be outnumbered in its desire to preserve supply management (Reguly, 2004). Canada will also have to accept the Doha Round's demands so it can gain market access, a priority in the Canadian agenda, so that it can be successful in a liberalized market (Foreign Affairs and International Trade Canada—Canadian Objectives in the WTO Negotiations).

While the Doha Round is meeting resistance caused by global economic uncertainty, it is expected to pass eventually, as members are committed to increasing market access through trade. Even as the Doha Round negotiations continue, Canada is actively engaged in talks with the United States and the Asia-Pacific region regarding the Trans-Pacific Partnership and with the European Union regarding the Comprehensive Economic and Trade Agreement (CETA) (Fekete, 2011; Huffington Post, 2011). Canada's involvement in multinational free trade agreements has created speculation that supply management is on the table for negotiation, because the United States and Europe are not interested in negotiating with Canada under supply management's continued existence (Fekete, 2011; Huffington Post, 2011). As the international community convenes on the future of global trade and tackles the sensitive issue of the agricultural sector, Canada will have to participate in a more liberalized market environment if it plans to have an active trade relationship with other countries.

Various studies have analyzed how the global dairy industry will change because of the Doha Round. Shawn and Love (2001) observed that while a liberalized market would result in a lower global

supply of dairy, increased value from trade would offset this. For Canada, this would mean a price reduction for dairy production offset by the expansionary effect of removing production quotas. The U.S. dairy industry could stay stagnant if the decrease in price and production could be offset by efficiencies and productivity. Milk-production efficiencies are expected to shift, with Australia and Argentina becoming more efficient by 14 per cent; New Zealand and Brazil by 10 per cent; and Canada becoming less efficient by minus 1 per cent; the United States by minus 5 per cent; the European Union by minus 7 per cent; and Japan by minus 19 per cent (An Analysis of Dairy Policy Reforms and International Dairy Trade Liberalization: Analysis of Intenational Dairy Trade Liberalization, 2004).

Australia and New Zealand stand to gain the most from higher world prices and increased exports, while Japan and Korea stand to lose the most through decreased production value. For Canadian consumers, liberalized markets would decrease prices, which would translate into savings of 32 per cent on dairy products at retail. Cox, Coleman, Chavas and Zhu (1999) expect that liberalization will create global savings of up to $10-billion for dairy consumers. Shawn and Love's (2001) analysis predicts that the volume of world dairy trade will rise by $1.8-billion. The allocation is different across countries: Australia, New Zealand and Argentina are expected to see a higher increase (7 per cent to 9 per cent); the European Union and the United States expect to see a modest increase (1.2 per cent to 1.4 per cent); and Canada expects to see no impact on trade exports. The OECD issued an analysis of dairy commodities and found that liberalization would result in trade expansion for cheese (25 per cent) and non-fat dry milk (5 per cent) and trade reduction for butter (minus 1.3 per cent) and whole milk powder (minus 3 per cent).

"For Canadian consumers, liberalized markets would decrease prices, which would translate into savings of 32 per cent on dairy products at retail."

In terms of the value for commodity trade, the European Union and the United States will expect to have higher returns on cheese, while Australia and New Zealand will have higher returns on butter and non-fat dry milk.

The analyses are generally consistent regarding the consequences of a liberalized global dairy market. The global value of dairy would increase and production would decrease, and the global markets would favour the more-efficient countries (e.g., Australia, New Zealand, etc.) that already have more-liberalized dairy industries. In the current state of affairs, the effect on Canada would translate into lower retail prices for consumers, and producers would see greater value for milk yields, while production would be lowered by a minimal volume. Since production is not expected to increase, Canada is not positioned to benefit from new markets and trade.

Consumer Trends

Canadian Consumers

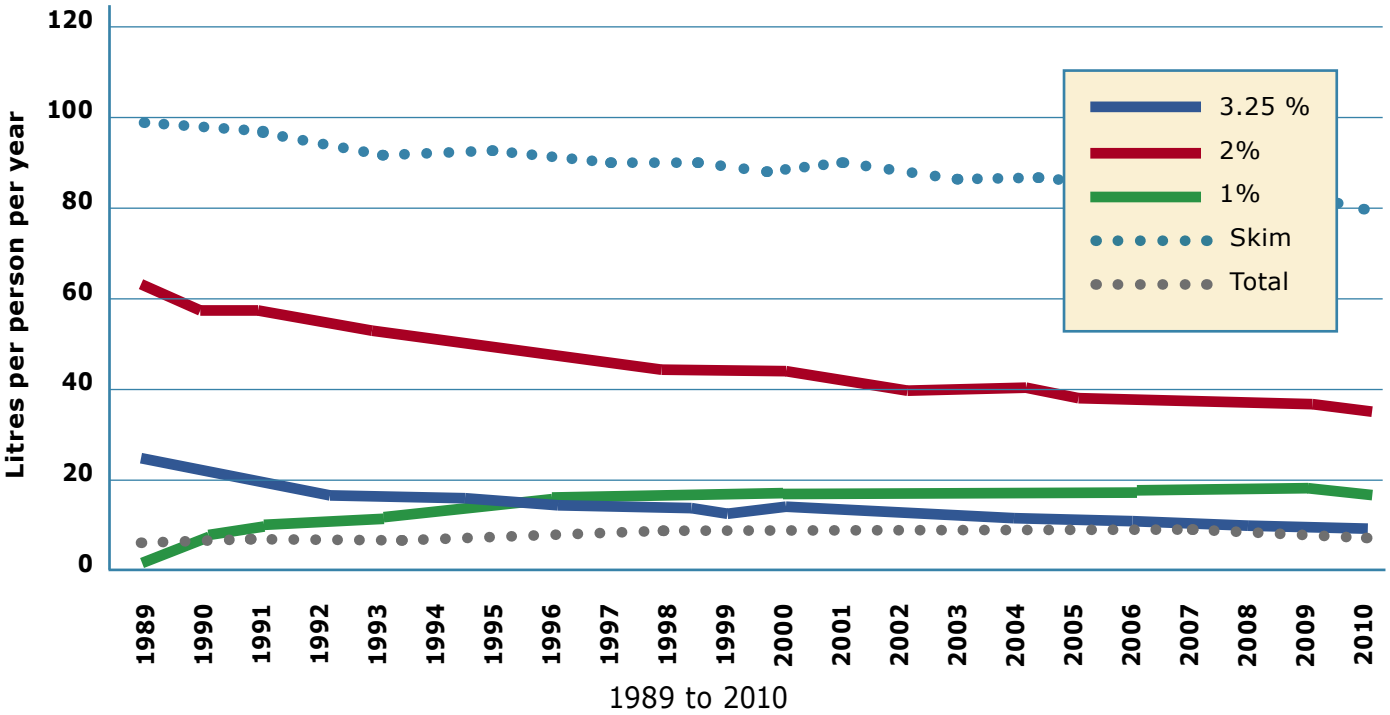
The examination of Canadian consumption patterns over the past two decades shows that the overall consumption of milk has been steadily decreasing since the end of the 1980s. A breakdown of milk topography shows a growing consumer trend toward "healthier milk." One per cent and skim milk have seen a steady increase over the past decades, while 2% milk, although in decline, continues to be the most consumed milk (Government of Canada, 2010b). Lower dairy consumption has been attributed to increased health consciousness, increased lactose intolerance, fewer children in the population and changing consumer preferences. See Chart 1 for a visual representation of milk trends.

With regard to dairy products, ice cream consumption has been steadily decreasing, while yogurt consumption has seen substantial growth (Government of Canada, 2010b; 2010c). Canadians are eating twice the amount of yogurt they did a decade ago. Cheese is a stable in consumers diets, seeing slight increases, it remains to be the most consumed dairy product. Butter and condensed/evaporated milk are seeing slight declines (Government of Canada, 2010c). "Less milk, more healthy milk products" sums up the Canadian dietary trend.

Agriculture and Agri-Food Canada commissioned an analysis of long-term consumer trends and found that 2020 expects to see further declines in ice cream (minus 50 per cent) and milk (minus 15 per cent) consumption as a consequence

CHART 1

Canadian Dairy Trends in Milk Consumption



Source: Government of Canada, 2010b

of an aging population, increased milk intolerance and increased availability of calcium and dairy substitutes (Agriculture and Agri-Food Canada, 2005). Commodities expected to increase in consumption are cheese (30 per cent), yogurt and cream (60 per cent). The report identified three possible growth markets in Canada: 1) flavoured milk sold to youth through advertisement and convenience placement in schools, 2) organic milk sold to expectant women and young mothers, and, 3) milk sold to an aging population as an osteoporosis-prevention product.

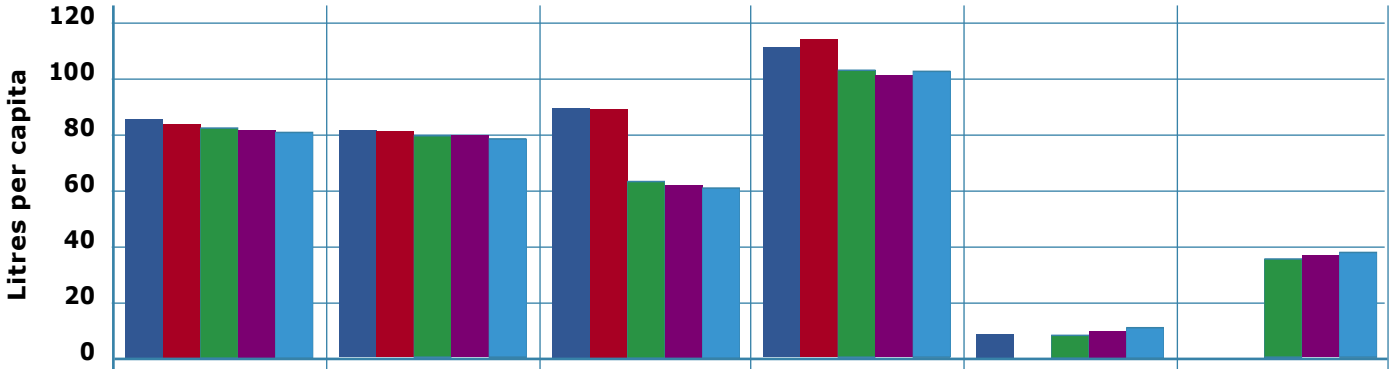
Global Consumers—Emerging Markets

The fulfillment of the dairy needs of global consumers is affected by a country's GDP, as milk products are generally more expensive than other food products, access is based on the availability of discretionary income (United States Department of Agriculture, [USDA] 2011a).[1] Generally speaking, high-income countries (e.g., the United States, the European Union, Japan) are shifting toward packaged foods and ready-made products. In addition, there is a growing niche for organic food, especially in the small wealthy segments of these populations. Middle-income countries (e.g., China and Mexico) are following high-income countries with regard to food systems (e.g., food chains) and diets. Greater urbanization is associated with higher income and education and with women in the workforce, which gives consumers greater discretionary income and access to food products. Urban populations in these countries are starting to outnumber rural populations, which also means an increase in refrigerators, and, as a result, an increased ability to purchase and store perishable foods. Lower-income countries are seeing shifts in their dietary habits as the average income rises. These consumers are moving away from grain/carbohydrate foods toward more-expensive calories, such as meat and dairy. Overall, global trends are creating an environment that is welcoming to dairy products. General trends show that processed dairy products should be developed for and sold in high-income countries. These products can then be passed down to middle-income countries, while the selling of raw dairy products can be focused primarily in low-income countries.

Chart 1 highlights the consumption of milk in Canada, the United States, Europe, Australia, China and India over five consecutive years (2005 to 2009). The chart illustrates that Canada, the United States, Europe and Australia have the largest numbers of consumers of milk; however, consumption in these countries is staying stagnant or slightly decreasing. China and India represent growing markets, with 34 per cent growth in China and 23 per cent in India. The growth in these emerging markets has to be interpreted cautiously, as the average consumption per person is still well below that of North American and European consumers. However, considering the population size of China and India and the increased consumer purchasing power, these emerging markets may still be of great interest even if consumers do not fully develop a taste for dairy products (Food and Agriculture Organization of the United Nations, 2008). Chart 3 takes into account each country's population and dairy consumption in 2009 to create a relative-consumption pie chart. From this, one can see that Europe and India represent the largest consumption volumes, the United States and China represent medium consumption volumes, and Australia and Canada represent minimal consumption volumes.

1. Dairy products cost more because of greater inputs (more land and feed needed to produce them) and their greater perishability.

CHART 2 Total Dairy Consumption in Selected Countries

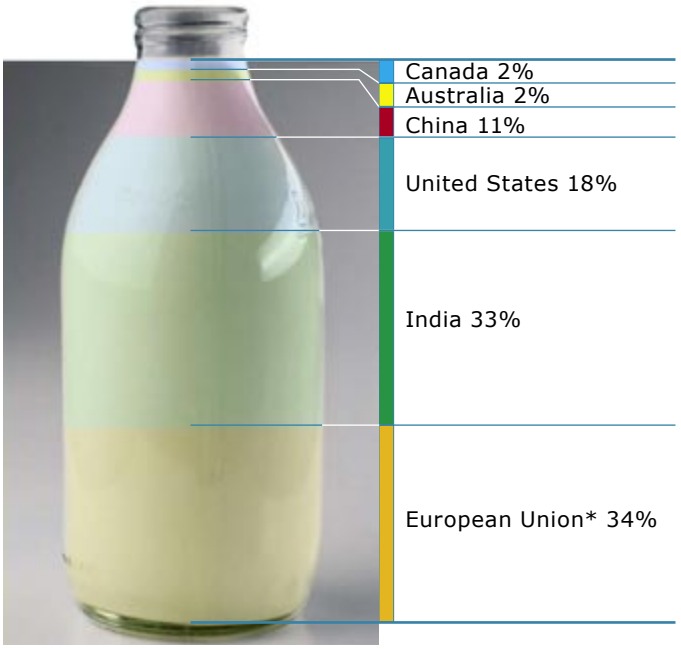


	Canada	United States	European Union*	Australia	China	India
2005	84.0	81.1	90.3	109.8	8.5	
2006	83.5	81.2	90.2	113.2		
2007	83.0	80.3	64.1	102.8	8.8	35.8
2008	81.9	79.7	63.4	102.4	9.2	37.0
2009	81.3	79.4	62.5	102.7	10.9	37.4

* European Union includes Austria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Slovakia, Spain, Sweden and the United Kingdom (Government of Canada, 2011).

Of the two emerging markets most often mentioned, India should be watched closely, as it is already three times larger than the Chinese consumer market. If Indian consumers keep increasing their dairy consumption, it will be an attractive market to engage. While the European Union and the United States represent large consumer markets, their large domestic production capabilities provide high competition for Canadian products. For these countries, Canada should focus on exporting value-added products and engaging in product differential strategies.

CHART 3 Total Dairy Consumption in Selected Countries Accounting for Population (2009)



* European Union consumption averages include Austria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Slovakia, Spain, Sweden and United Kingdom. This number was used to average with the population for all European Union countries (Government of Canada, 2011; Population Reference Bureau, 2009)

Macroeconomic Forces

Impact of the Canada-U.S. Relationship

The Canadian-U.S. trade relationship is a complex one, and although the countries are competitors, their economies are highly intertwined. The relationship as it stands is built around a strong U.S. dollar. This trend is changing, as the Canadian dollar has been gaining strength relative to its U.S. counterpart. In a liberalized environment, this will have a significant impact on the Canadian dairy industry.

U.S. farmers have leveraged a strong U.S. dollar to purchase Canadian goods such as machinery and dairy genetics, and they have used U.S. subsidies to lower the price of exported dairy products. U.S. farmers have also used their strong currency to secure low-cost farm labour (MacDonald, O'Donoghue, McBride, Nehring & Mosheim, 2007). With a decreasing U.S. dollar, U.S. farmers are less likely to import Canadian goods due to their higher costs. Farmers will have an incentive to export dairy products to Canada and make a greater profit.

This trend carries both positive and negative consequences for the Canadian dairy economy. In a liberalized market, a weaker U.S. dollar would drive up production costs and take away the United State's competitive advantage of being able to produce large quantities of low-cost milk. At the same time, Canada would have difficulty selling higher-priced milk to U.S. consumers and may see even lower-priced U.S. dairy products flooding the market.

Global Dairy Players

In a liberalized environment, the domestic dairy industry would experience foreign competition. Canada must understand where the competition lies in a liberalized market, so it can create effective reforms that position its dairy industry for success. This section describes possible scenarios in a liberalized market in order to effectively position the reforms.

Three sources of competition (the United States, Australia and India) are identified in order to present three different scenarios Canada will have to deal with: 1) external pressure and increased competition in the domestic market, 2) competition in emerging markets from developed dairy industries and 3) growing competition for emerging markets from the domestic dairy industry. The greatest competition for the Canadian domestic market will come from the United States, due to its high-volume production capabilities and proximity to the Canadian border. Australia is a potential competitor in emerging markets. It has high dairy efficiencies, low product costs and a liberalized market. Another source of competition in emerging markets could come from developing countries such as India. Although India is seeing the highest increases in consumer demand, it is also the second-largest producer of milk, and it is positioned to be an exporter should it be able to meet and surpass domestic demand. If this happened, it would eliminate any potential benefits Canada would gain from new market access.

The U.S. Dairy Industry

The U.S. farm industry far exceeds Canada's due to its large population and its production capabilities. Its dairy industry far outperforms Canada's based on the fact that it possesses more dairy cows, making the industry 14.5 times larger than Canada's and increasing (Government of Canada, 2011; USDA, 2011b). Under current Canadian-U.S. dairy trade relations, non-domestic milk is not allowed for retail sale within Canada; however, Canada is the largest importer of U.S. dairy products (U.S. Dairy Export Council, 2011).

To help exporters gain access to foreign markets that have high tariffs, such as the Canadian market, the U.S. government developed subsidy programs such as the Dairy Export Incentive Program (DEIP) (USDA, 2010). The USDA pays cash to exporters as a bonus, enabling them to sell products at lower-than-acquisition costs. Currently, the DEIP is offered for butterfat, cheese and non-fat dry milk. DEIP is a visible advantage as it allows U.S. products to be competitive in foreign markets that have heavy subsidies. The DEIP also gives the United States a way to cultivate foreign markets prior to the implementation of the Doha Round, when subsidy programs will be diminished, if not eliminated.

Table 1 illustrates the disparity between the Canadian and U.S. dairy industries. Note that the U.S. dairy industry outperforms the Canadian industry in the number of domestic cattle, in milk production and in dairy consumption as well as in revenue from exports. Additionally, the U.S. dairy industry produces almost twice as much milk as it consumes, which enables U.S. farmers to be international exporters. In contrast, the Canadian diary industry produces just slightly more milk than it consumes, which means that Canada has minimal export capabilities. It is important to note that Canada's true domestic product capability may be under-reported, as supply management limits production through quotas. Farmers who produce excess dairy end up getting rid of it and not reporting it, as this would result in penalties from the CDC.

TABLE 1

Comparing Canadian and U.S. Dairy Industry (2009)

	Canada	United States
Total Domestic Cattle (Million Cows)	1.4 Million	9.2 Million
Holstein Milk Yield per Cow (kg)	9,793 kg	10,403 kg
Total Milk Production (Billion Litres)	2.929 Billion	42.679 Billion
Total Domestic Dairy Consumption (Litres per Capita)	81.3 Lpc	79.4 Lpc
Domestic Consumption Population (Litres)	2.739 Billion	24.359 Billion
Export Value	$229.9-Million ($Cdn)	$3.71-Billion ($U.S.)

Sources: Agriculture and Agri-Food Canada, 2011; Government of Canada, 2011; International Committee for Animal Recording 2011; Population Reference Bureau, 2009; U.S. Dairy Export Council, 2011; Cattle Inventories, 2010.

In a liberalized market, the United States is positioned to be an exporting superpower, as it is already producing more dairy than its domestic demand, and it has greater cost efficiencies in its dairy industry (Government of Canada, 2011; International Committee for Animal Recording 2011; Jeffrey, 1992). U.S.-based dairy farmers could penetrate the Canadian market in an aggressive manner should liberalization occur. This would severely jeopardize the Canadian dairy industry overnight (Jeffrey, 1992). Canada is in a perilous position due to its proximity to the U.S. border and must position itself to protect its industry from such competitive strategies.

One significant difference between U.S. and Canadian production practices exists. In the United States, the use of BST, a growth hormone that increases milk yield, is legal, whereas in Canada, the use of BST on dairy cows has been banned since 1990. BST prevents mammary-cell death in the udders of dairy cows by increasing nutrients uptake (Bauman, 1992). Lactating cows receive BST during production peaks to preserve the milk-producing cells in the udder, thereby increasing milk yield (Bauman, 1992). There are disputes about its safety for humans and dairy cattle. Canada, Europe and the United Kingdom, among others, have banned BST use, citing animal safety as the leading reason for their decision. The continued ban on BST will help stave off the risk of importing potentially lower-priced milk products from the United States, 22.5 per cent of which are produced using BST (USDA, 2003).

To mitigate the risk of a sudden entrance of lower-priced U.S. milk products, Canada should continue its ban on BST, impose stricter traceability standards on products imported from countries using BST and seek to minimize the importation of U.S. milk products through increased domestic production.

"There are disputes about its [BST] safety for humans and dairy cattle. Canada, Europe and the United Kingdom, among others, have banned BST use..."

Imposing stricter standards on imports from countries using BST would effectively make it more difficult for U.S. milk producers to sell in the Canadian market. This may result in some reduction in total imports, but will more likely be effective in slowing down the entrance of more U.S. competitors after liberalization. Stricter standards could be set based on the argument that the milk production and distribution network in the United States is sizable and may not be designed to easily filter out BST-based products. Another added benefit from continued BST restrictions is that U.S. dairy farmers will not be encouraged to undercut Canadian dairy prices further with the use of unnatural milk-yield enhancers. Additionally, BST restrictions allow Canada to maintain strong food safety sovereignty.

Using the BST restriction policy is a strategy that can aid the Canadian dairy sector in the event of dairy saturation from the United States. It is important to note that BST use blocks only 22.5 per cent of the total available U.S. dairy. The restriction places additional costs on U.S. farmers, as they must keep track of their dairy production. This is not in itself a way to block multilateral trades, but a way to address public safety concerns and to help the domestic market through this transition.

The Australian Dairy Industry

One agricultural policy framework that has attracted considerable attention over the last decade is Australia's. According to the OECD, Australia's agricultural sector receives less government assistance than most other countries' agricultural industries. In 2002, government programs supported 4 per cent of the Australian agricultural sector; this is significantly lower than the global average of 31 per cent (Harris & Rae, 2004). The 2002 support figure is a great contrast to previous years when market milk received more than 200 per cent, and manufacturing milk received more than 19 per cent in government assistance (Productivity Commission, 2001). The Australian dairy industry is seen as being successfully deregulated.

Separate dairy industries once governed the Australian dairy sector, with one designated for each state, which was further broken down into market milk and manufacturing milk. State-operated Market Authorities ran the dairy industry. In this environment, the price for domestic milk was 21 per cent to 50 per cent higher than the global standards (Productivity Commission, 2001). Freebairn (1992) observed that the price structure was effectively an income transfer from consumers to farmers that was estimated at $311-million between 1999 and 2000 (an average of $25,000 for each Australian farmer).

> ***... the price structure was effectively an income transfer from consumers to farmers...***

Deregulation was done in two stages. The first stage, the Kerin Plan introduced in July 1986, gradually eliminated the regulation of prices beyond the farm-gate, such as wholesale and retail dairy prices. The second stage was the elimination of regulated farm-gate prices which took place in June 2000. Farmers received a warning eight years prior to the implementation of the second stage. The WTO and bilateral agreements were the key drivers for the reforms seen in stage one, and the push for the deregulation of farm-gate prices came from the Centre for International Economics, which represented the dairy industry and farmers' organizations, as well as milk exporters and processors (Edwards, 2003). The dairy industry pushed for deregulation because the gains were seen to outweigh the losses. Gains came in the form of reduced farming costs, value-added production and the opportunity to sell milk between states.

Deregulation came with transition packages for farmers, which were estimated at $1.8-billion. The package was for farmers to improve farm efficiencies and competiveness (Truss, 1999). Farmers received direct aid in the form of one-time grants for restructuring, business management training, adopting new technologies, etc. These packages were strictly controlled; farmers had to provide documentation to show that they would use the grant to improve the competiveness of their farms. They had the option of accepting exit packages if they wished to leave the dairy industry. Indirect aid was also given to farmers by improving the competitiveness of the industry as a whole.

In addition to the original package, the government developed the Dairy Regional Assistance (DRA) program, which was valued at $45-million and was to be spent over three years. The DRA was targeted at dairy-dependent communities and provided services such as retraining, business

advice and counselling. Both packages were financed over eight years and paid for by consumers at the checkout when they purchased milk. In total, consumers paid an additional 11 cents per litre to support the dairy industry in this transition.

Because of deregulation, the price of retail milk fell by 22 cents per litre in the first six months (Australian Competition and Consumer Commission, 2001). Farmers adjusted to the new market; 17 per cent of the farmers left the dairy industry, 22 per cent switched or diversified into other agricultural sectors, and of those who stayed, 80 per cent made changes to their farming practices to offset future net income losses (Focus, 2003). To increase competitiveness, farmers improved pasture (30 per cent of farmers), as well as increased herd (45 cent of farmers) and land size (33 per cent of farmers) (Harris, 2004). Farmers increased their scale of production, and productivity increased. They also focused on increasing the quality and yield of milk by means of feed supplement and pasture development. Following deregulation, output per farm increased by 6 per cent between 2000 and 2001, and then again by 14 per cent between 2001 and 2002 (Harris, 2004). The move toward deregulation provided a means to improve the Australian dairy industry, and it made Australia one of the countries with the most to gain from a liberalized global market.

Compared with Canada, the Australian dairy industry has more cattle, 1.6 million versus 1.2 million, and it has a greater export value, $2.4-billion versus $222.9-million (2009 statistics) (Cattle Inventories, 2010; Dairy Australia, 2010; Agriculture and Agri-Food Canada, 2011; Government of Canada, 2011). Australia's major dairy markets are, in order of size, domestic, Japan, Singapore, China, Indonesia and the Philippines (Dairy Australia, 2010).

They also focused on increasing the quality and yield of milk by means of feed supplement and pasture development.

Due to Australia's location, its dairy industry does not pose a great competitive threat to the Canadian domestic dairy market. However, it is a competitor in emerging markets, especially in China, due to its proximity and its established presence in the market. If Canada hopes to compete with Australia, it will have to find efficiencies and lower production costs to be able to offer enticing dairy products in emerging markets.

On a side note, Australia and New Zealand are often mentioned together when talking about winners of liberalized trade. New Zealand's ability to compete with the Canadian dairy industry should not be minimized, because while it is a small country, New Zealand's dairy cattle inventory is three times that of Canada's (Painter, 2007). Additionally, New Zealand uses an all-grass farming system, which makes its dairy industry cost competitive (Painter, 2007). While Australia and New Zealand are closer to their dairy product capacities, Canada must still improve dramatically if it hopes to be competitive in a liberalized market.

The Australian dairy reform experience illustrates the ways that deregulation can be successfully implemented. For the Canadian dairy industry, the Australian experience has three lessons. The first is to increase farmer awareness that the end of a regulated dairy market provides clear opportunities for growth. Australians farmers were able to see this in the early stages of dairy reform and as a consequence became a force for dairy reform.

> ***...policy needs to be in place to ensure that farmers have support and educational programs at their disposal, so that they can position themselves to be competitive in a liberalized market.***

Secondly, the Canadian government needs to set a date on which to end regulation and to work toward it in successive steps. The Canadian government has yet to set a date, and as a consequence cannot move towards deregulation with the foresight and planning needed to design successive reform. Lastly, policy needs to be in place to ensure that farmers have support and educational programs at their disposal, so that they can position themselves to be competitive in a liberalized market. This last step was critical to Australia's success because farmers were given the means to improve their dairy farms or get out of the business if they felt they were not able to adapt. In order for Canada to mimic Australia's achievement and successfully implementation deregulation, it will need to incorporate Australia's three lessons for dairy reform.

The Indian Dairy Industry

India once had chronic milk shortages, but it is now the second-largest milk producer. Indian consumers are creating a greater demand for dairy and dairy products due to increased urbanization and income, and changing diets (Saxena, 2000). India is an emerging dairy market and has the potential to become one of the biggest global consumers of dairy (see discussion on global consumer trends). Therefore, India poses both a potential opportunity for Canada to gain market access under a liberalized market and a threat if it is able to meet its domestic demand and surpass production quotas to become an exporter.

The infrastructure of the Indian dairy industry is minimal, as it is composed of millions of small producers, of which 72 per cent have only one or two cows (Vijay & Ashok, 2003). Milk yield is low primarily because of the poor quality of feed and the environmental predisposition to droughts that drive up feed costs (Vijay & Ashok, 2003). The transportation infrastructure of the dairy industry is also poor. Rural producers have only recently been connected to urban consumers. Most dairy farmers are poor and use dairy production as a means to earn money on the side. Therefore, most dairy farmers are unable to develop production capabilities, because they lack access to capital and industry-specific knowledge.

India's dairy industry development has been slow. Operation Flood was created in 1970 to connect farmers, processors and urban consumers. This initiative helped meet the increased domestic demand for dairy products. In 1992, the Milk and Milk Products Order (MMPO) was developed to regulate milk collection and created designated milk shed areas for farmers to use.

There were logistical issues, as not all milk sheds were near processing areas. This was complicated by the lack of storage/refrigeration infrastructure, which created food-safety issues, poor-quality milk and increased transportation costs (Vijay & Ashok, 2003). At first, India enacted import controls to restrict market access in order to protect the domestic dairy industry and to facilitate industry growth. In 2003, amendments were made to the MMPO in order to open up the dairy sector to world markets and to facilitate the entry of large international enterprises (Vijay & Ashok, 2003). The intention was to create increased competition for the domestic market, and, more importantly, to bring in technology, industry-specific knowledge and develop the infrastructure.

The state of the Indian dairy industry is such that it is not able to create economies of scale, because it lacks the infrastructure necessary to develop the industry.

"Canada needs to consider what role it wants to play in the developing countries and emerging markets."

India does, however, have a substantial, growing consumer market for dairy and dairy products. India's ability to meet this demand is seriously questionable. Canada needs to consider what role it wants to play in the developing countries and emerging markets. It should seek joint ventures and consider exporting dairy products that have lower transportation costs, need minimal refrigeration and have long-term expiration dates. In 2009, Canada entered into talks with India regarding the Comprehensive Economic Partnership Agreement (CEPA). CEPA is a forum to start bilateral trade discussions; however, CEPA is still in its initial stages and dairy market access should be part of the agreement (Foreign Affairs and International Trade Canada, 2009).

Part II: Pillars for a Competitive Canadian Dairy Industry

Thus far, this paper outlined the state of the Canadian dairy industry and the domestic political environment in which it operates. This paper identified external forces that affect the Canadian industry, such as the global political environment, consumer trends and macroeconomics. Furthermore, this paper identified three sources of competition that Canada will likely face in a liberalized market.

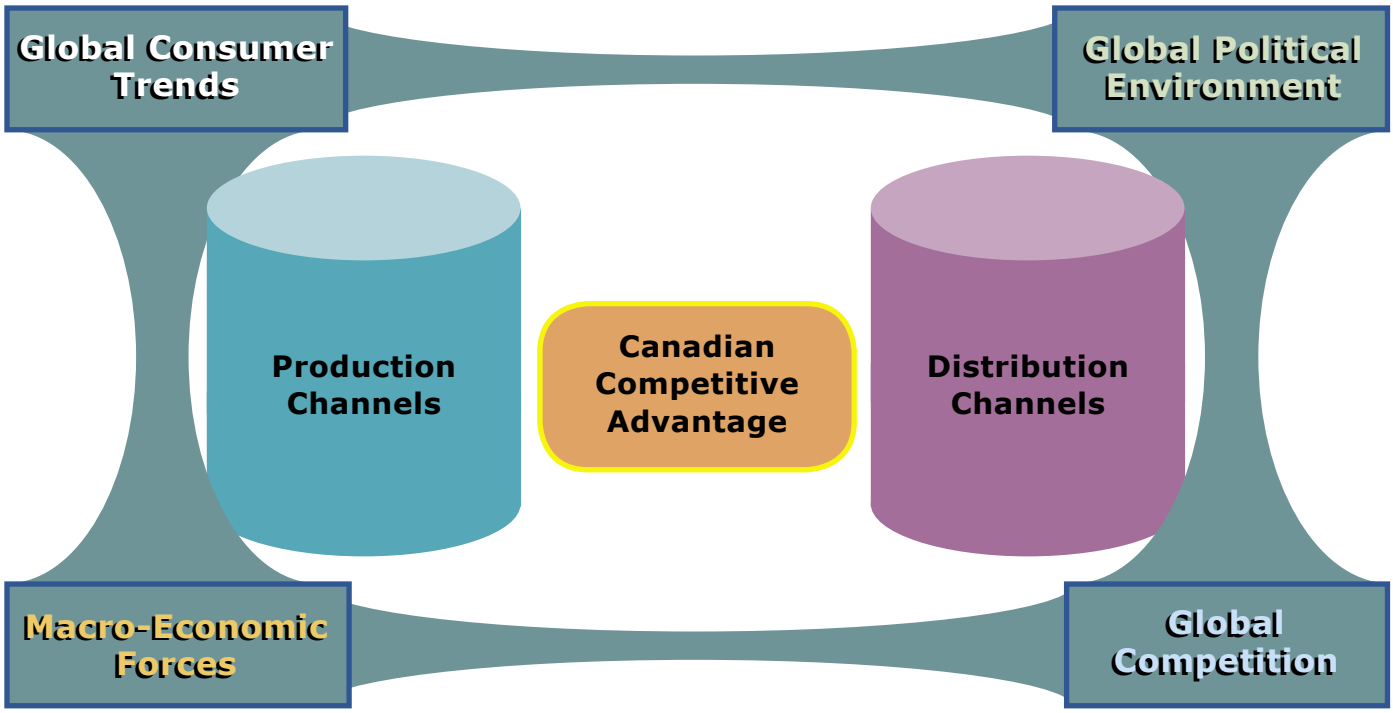
Canada's ability to be competitive in a liberalized market lies in being able to identify its competitive advantages and leverage them in the global market. The following section will outline its competitive advantages and the two pillars for success (production and distribution).

Chart 4 illustrates the entire environment in which the Canadian dairy industry operates. The teal border section represents the international environment, much of which has already been discussed, and the inside section represents the domestic environment, which will now be discussed.

The Canadian Competitive Advantage

Canada's geographical location brings several advantages to its dairy industry. Under its environmental conditions and land availably, most dairy farmers are able to produce their own feed, which

CHART 4 **The Canadian Dairy Industry**



lowers total production costs (Painter, 2007). Dairy farmers usually allocate approximately 65 per cent of their farmland to crop production. However, exact amounts used for supply feed are unknown (Painter, 2007). Canada has unused land to devote to the dairy industry, specifically in Nova Scotia, Newfoundland and Labrador (Farm Credit Canada, 2011). Where land is cheaper and more abundant, farmers have an opportunity to yield lower-cost feed; thereby allowing farmers to produce more product with increased economic efficiencies (Jeffrey, 1992).

By producing low-cost local feed, farmers are able to save further on transportation and storage costs. Innovations in genetics and feed positively affect dairy production (higher yields) and milk quality (greater fat and protein) (MacDonald, et al., 2007). Canada's abundance of good-quality land means that farmers would be able to scale their operations if there was a demand for it. This means that Canadian farmers have the competitive advantage of producing feed at the same or lower cost, thereby allowing them to have economies of scale. From a competitive standpoint, this translates into possible cost-management and cost-effective scalability (Richards, 1996).

More importantly, Canada's true domestic product capability may be understated and unknown, as supply management has capped dairy production for farmers and not given an economic incentive for farmers to find production efficiencies nor to increase production to economies of scale (Jeffrey, 1992; Richards, 1996). As such, the implementation of a liberalized market in progressive steps could lead to a flourishing industry if developed correctly. The industry has created advantages in the area of genetics and higher milk yields. These have given the industry fringe benefits such as high fertility and natural resistance to disease that have kept veterinary costs down (Cattle Genetics Decoded, 2011). These advantages can be used in economies of scale, thereby allowing Canadian dairy farmers to become more efficient (Richards, 1996).

Land availability, feed and genetics are important factors to dairy competitiveness because they allow farmers to reduce production costs by ensuring that fixed inputs are utilized to their full capacity. These interrelated variables affect one another, so efficiencies in one lead to a positive impact on another. For example, additional land availability allows for the growing of extra feed, which means farmers do not have to buy as much feed, and, consequently, this lowers their operational costs. Additionally, if farmers are able to grow better-quality feed than they can acquire, their milk yields will increase.

To summarize, the Canadian advantages lie in three areas: abundant land, low-cost good-quality feed and genetics. Individually, these competitive advantages are not unique to the Canadian environment and are probably replicable. However, the combination of these competitive advantages gives farmers the ability to scale their production (Richards, 1996). In a liberalized market, the Canadian dairy industry can take two routes to develop its competitiveness. The first is to focus on creating lower-cost structures through efficiencies, and the second is for farmers to focus on the production of dairy products and add value to their dairy. Both strategies can be implemented simultaneously through improvements made to production and distribution channels. The following section focuses on the enhancements that can be made.

Pillars for Success: Production and Distribution

For Canada to be competitive in a liberalized market, managerial strategies will need to use technology and innovation to improve current production and distribution practices. The ultimate goal of implementing technology and innovation is to create efficiencies, thereby enabling Canadian dairy products to be competitive from a cost and product differential standpoint. The following chart provides an overview of the possible strategies that can be adopted to improve current production and distribution channels.

Production

Technology

Canada has been successful in breeding cattle to be efficient in specific climates and more resistant to disease (Cattle Genetics Decoded, 2011). Canadian cattle have become an attractive commodity, as they are bred to have naturally high milk yields (Cattle Genetics Decoded, 2011).

Further research with cattle will be needed to ensure that Canada keeps its competitive advantage. If exporting products is not cost-effective in a liberalized market due to high oil prices or other variables, then Canada has the ability to focus on expanding its export of genetic design.

Milk is a perishable item and needs to be consumed quickly or made into a longer-lasting product. Technology can be used to improve dairy processes by extending expiration dates and by finding new uses for by-products. Milk naturally contains fats that can be made into butter and proteins (casein and whey) which have many commercial uses (e.g., nutritional supplement, food additive, aids in cheese production, wine, etc.) (Jenness, Wong, Marth & Keeney, 1999). Further research on dairy proteins could focus on identifying new market uses and minimizing by-products.

Innovation

Horizontal integration could benefit farmers by allowing them to enter new markets that have a similar organizational structure and use the same raw materials. For example,

TABLE 2 **Canada's Pilllars for Success in a Liberalized Market**

	Production	Distribution
Technology	**Dairy Products & By-products:** identify new market opportunities and by-product uses.	**Ultra-High Temperature (UHT) Pasteurization:** reduce cost of packaging, transportation and storing as well as eliminate the need for refrigeration at all stages.
	Genetics: improve milk yield, disease resistance, etc.	
Innovation	**Greater Horizontal Integration:** new dairy-related products.	**Greater Vertical Integration:** lower transaction costs, higher profit margin.
	Enhanced Vertical Integration: dairy production and processing done by the same farmer.	
	New Markets, New Products and Better Packaging	

farmers who specialize in selling only milk could benefit from producing butter and other milk products. Horizontal integration could be coupled with vertical integration. Vertical integration allows farmers to take control over more of the dairy sector (e.g., feed, processing, etc.) and enables them to make a greater profit margin. By having a stake in the production of milk products, farmers are able to add value to the dairy they sell. It should be noted that vertical integration could come at the cost of a farmer's core competencies if not executed correctly. For Canada to have proficient farmers and be competitive, policy will need to ensure that managerial skills and trade knowledge are transferred to dairy farmers.

In a liberalized environment, new markets will open up to Canadian farmers. However, an understanding of consumer needs will be necessary for farmers to be able to offer attractive products and develop convenient packaging. New markets will also allow farmers to sell larger quantities of a product, thereby opening up new channels of distribution and revenue. By having a higher production output, farmers will be able to allocate fixed costs over more units of output, thereby increasing their profit margin. Due to the perishability of milk, Canadian farmers should focus on exporting longer-lasting products such as dry goods and cheeses.

Distribution

Technology

From a distribution standpoint, milk presents many logistical challenges with regard to its expiration, refrigeration needs, weight, etc. Technology can be used to delay its expiration date and create lighter distribution containers. For example, Europe and China often use UHT pasteurization (Oupadissakoon, Chambers & Chambers, 2009).

"For Canada to have proficient farmers and be competitive, policy will need to ensure that managerial skills and trade knowledge are transferred to dairy farmers."

This eliminates all microorganisms in the milk, thereby eliminating the need for refrigeration, and it extends the shelf life of milk significantly compared with other methods (Fromm & Boor, 2004; Walstra, Wouters & Geurts, 2006). This reduces the cost of packaging, transporting and storing the milk. Canadian farmers could adapt similar technologies, thereby allowing them to gain greater control over distribution channels.

Innovation

Vertical integration can also be applied to the distribution process. Farmers could become involved in distribution channels, thereby lowering transaction costs. This would also allow them to move raw milk and production facilities closer together, thus reducing transportation costs even further. Logistic issues (e.g., non-existent long-term storage facilities) would need to be addressed.

Part III: Policy Implications

This paper examined the possibility of a liberalized market in the Canadian dairy sector in order to identify areas of competition and competitive advantage. Furthermore, this paper reviewed production and distribution practices that are likely to create efficiencies through technology and innovation. This section contains a series of policy recommendations that will best situate the dairy sector in the event of an imposed liberalized market.

To position the dairy industry for success in a liberalized market, various policies will need to be implemented in a series of progressive steps in all areas that affect the industry. This section will first focus on policies with international implications and then focus on policies with domestic repercussions. All purposed policies work toward leveraging the existing competitive advantages and positioning Canada for success in a liberalized market.

International Policy

1) **Multilateral Agreements:** Canada should support the Doha Round by seeking a realistic resolution. For Canada, this would mean not protecting supply management. It should also join the Trans-Pacific Partnership negotiations and show evidence that supply management is no longer immune to international trade negotiations. Canada should collaborate with other countries with common interests, specifically those involved in increased access to emerging markets. International policy should work to secure the time needed to convert the domestic dairy industry from supply management to a liberalized system before forced to open the dairy industry.

2) **Canadian-U.S. Trade Relationships:** In a liberalized market, import barriers must not be utilized to protect the domestic dairy market. The United States poses a threat with its ability to saturate the dairy market. With lower-priced U.S. products, Canada would have to utilize other methods to ensure that the domestic market is not undercut. Canada would need to implement trade policy that utilizes food-safety issues as a barrier. For example, the continued ban on BST use, origin labelling, processing transparency and accountability could all be used for this purpose.

3) **Bilateral Ventures:** Canada should seek individual partnerships with emerging markets such as India and China (e.g., CEPA). These partnerships need to be entered into carefully, as the political environment in these countries could lead to problems. For example, they could use foreign investment to set up dairy infrastructure and bring in industry-specific knowledge in order to change domestic policy and remove foreign power. Policy should also seek to promote the export of low-cost dairy products suitable for these markets (e.g., dry milk powders).

Domestic Policy

1) **Liberalize the Domestic Market:** Policy needs to focus on transforming the dairy industry from supply management to a liberalized system by investing money to help farmers with the transition. Funding would help farmers adopt new technologies, learn new business models, improve managerial skills and provide exit packages if desired. This policy needs to be carried out with strict protocol to ensure that funding is used to effectively position farmers to be competitive in a liberalized market. Policy should be implemented in a series of progressive steps, whereby industry control is given back to farmers and they are rewarded for production efficiencies.

2) **Research and Development:** Government-funded research and development is not considered a subsidy, so it is an acceptable way for the government to support the domestic dairy industry in a liberalized environment. Policy should aid research and development in the dairy sectors to facilitate Canada's continuing competitive advantages in the areas of genetics, land fertility and lower-cost feed. Research and development could also focus on consumer trends, and advance technologies to support the demand for healthy milk products. Canada's pursuit of policy that focus on promoting research and development should be coupled with concentration on international intellectual property laws that protect domestic investment.

Conclusions

In the agricultural sector, there is a global trend toward deregulation. Many countries are changing their domestic dairy industries, and the international community is convening to discuss liberalized multilateral agreements. Canada currently maintains supply management, and therefore its dairy industry is not compatible with a liberalized global environment. This paper sought to investigate a what-if scenario and found that Canada would not be positioned to succeed if the dairy industry were to liberalize overnight. In this scenario, the U.S. dairy industry would most likely devastate the Canadian dairy industry by flooding the market with low-cost dairy products. In addition, Canada would not be positioned to offer cost-effective products to emerging markets.

Having examined influential domestic and international factors, this paper suggested that to prepare for a liberalized environment, Canada would need to implement policies that use its competitive advantages. Canada would need to instigate international policy that seeks a realistic resolution in the Doha Round, protects food sovereignty and gains access to emerging markets. Domestic policy should focus on removing supply management in progressive steps and supporting dairy research and development—initiatives that will positively affect both farmers and consumers. International policy that focuses on foreign market access has to be coupled with increasing domestic industry efficiencies, otherwise Canadian farmers will not be able to compete with foreign cost-efficient products.

"Canada currently maintains supply management, and therefore its dairy industry is not compatible with a liberalized global environment."

With enough foresight and planning, moving toward a liberalized market could benefit the domestic dairy industry (Jeffrey, 1992). This paper sought to provide a balanced debate on the current situation, as well as highlight the issues surrounding supply management and the international dairy environment. The hope is that the debate on the future of the dairy industry will continue and will be followed with action. Time is limited and the dairy industry requires direction before the international community enforces a framework for which the Canadian industry is ill-prepared.

References

Australian Competition and Consumer Commission (ACCC) (2001). "Dairy Deregulation and the Australian Milk Market." *ACCC Journal,* 33, pp. 18-20.

Agriculture and Agri-Food Canada (2005). Canadian Food Trends to 2020 - A Long-range Consumer Outlook. Retrieved July 2011 from Agriculture and Agri-Food Canada: http://www4.agr.gc.ca/resources/prod/doc/agr/pdf/ft-ta_eng.pdf.

Agriculture and Agri-Food Canada (September 17, 2009a). The Canadian Dairy Industry at a Glance. Retrieved June 2011 from Agriculture and Agri-Food Canada: http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1182522993907&lang=eng.

Agriculture and Agri-Food Canada (February 18, 2009b). News Release: All about Canada's Dairy Industry. Retrieved June 2011 from Agriculture and Agri-Food Canada: http://www.agr.gc.ca/cb/index_e.php?s1=n&s2=2001&page=n11203b.

Agriculture and Agri-Food Canada (2010). Canadian Dairy Trade Bulletin: 2009. Retrieved December 2011 from Statistics Canada: http://publications.gc.ca/collections/collection_2010/agr/A71-17-2009-eng.pdf.

Bauman, D.E. (1992). "Bovine Somatotriophin: Review of an Emerging Animal Technology." *Journal of Diary Science*, 72(12), pp. 3432-3451.

Canadian Dairy Commission (July 7, 2010). The Industry. Retrieved May 2011 from the Canadian Dairy Commission: http://www.cdc-ccl.gc.ca/CDC/index-eng.php?id=3796.

Charlebois, S., Langenbacher, W. & Tamilia, R.D. (2007). "The Canadian Dairy Commission: An Empirical Survey on its Relevance in Today's Civil Society." *International Food and Agribusiness Managment Review,* 10(1), pp. 81-99.

Cox, T.L., Coleman, J.R., Chavas, J.-P. & Zhu, Y. (1999). "An Economic Analysis of the Effects on the World Dairy Sector of Extending Uruguay Round Agreement to 2005." *Canadian Review of Agricultural Economics,* 47(5), pp.169-183.

Dairy Australia (2010). Dairy at a Glance. Retrieved December 2011: http://www.dairyaustralia.com.au/Statistics-and-markets/Farm-facts/Dairy-at-a-glance.aspx.

Drummond, W. (1960). "The Role of Agricultural Marketing Boards." *Royal Commissions of Food Products in Canada,* 3, pp. 36-49.

Edwards, G. (2003). "The Story of Deregulation in the Dairy Industry." *The Australian Journal of Agriculture and Resource Economics,* 47(1), pp. 75-98.

Farm Credit Canada (November 14, 2011). Fall 2011 Farmland Values Report. Retrieved December 2011: http://www.fcc-fac.ca/en/Products/Property/FLV/Fall2011/index.asp.

Food and Agriculture Organization of the United Nations (2008). The State of Food Insecurity in the World 2008. Retrieved May 2011 from Food and Agriculture Organization of the United Nations: ftp://ftp.fao.org/docrep/fao/011/i0291e/i0291e00.pdf.

Foreign Affairs and International Trade Canada (November 17, 2009). Canada and India Advance Comprehensive Economic Partnership Agreement. Retrieved December 2011: http://www.international.gc.ca/media_commerce/comm/news-communiques/2009/348.aspx?lang=eng&view=d.

Foreign Affairs and International Trade Canada (July 5, 2011). Chapter 4: Getting the International Rules Right - The Doha Round and Canada's Objectives. Retrieved July 2011 from Foreign Affairs and International Trade Canada: http://www.international.gc.ca/trade-agreements-accords-commerciaux/cimar-rcami/2009/04_doha.aspx.

Fromm, H.I. & Boor, K.J. (October, 2004). "Characterization of Pasteurized Fluid Milk Shelf-life Attributes." *Journal of Food Science,* 69(8), pp. M207-M214.

Gifford, M. & Dymond, B. (2008). The Doha Round of WTO Negotiations: Impliciations for the Canadian Dairy Processing Sector. Centre for Trade Policy and Law.

Government of Canada. Canadian Imports of Dairy Genetics by Country 1998 to 2004 – Genetics Total. Retrieved January 2012 from Canadian Dairy Information Centre (appropriate information needs to be filled out): http://www3.agr.gc.ca/apps/aimis-simia-cdic-ccil/rp/index-eng.cfm?action=pR&r=172&pdctc=.

Government of Canada. Canadian Imports of Dairy Genetics 2004 to 2010 – Genetics Total. Retrieved January 2012 from Canadian Dairy Information Centre (appropriate information needs to be filled out): http://www3.agr.gc.ca/apps/aimis-simia-cdic-ccil/rp/index-eng.cfm?action=pR&r=172&pdctc=.

Government of Canada (December 2011). Canadian Exports of Dairy Genetics 2005 to October 2011. Retrieved January 2012 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/pdf/exp_gen_CY_YTD_e.pdf.

Government of Canada. Canadian Exports of Dairy Genetics by Country 1998 to 2004 – Genetics Total. Retrieved January 2012 from Canadian Dairy Information Centre (appropriate information needs to be filled out): http://www3.agr.gc.ca/apps/aimis-simia-cdic-ccil/rp/index-eng.cfm?action=pR&r=172&pdctc=.

Government of Canada (2010a). Canadian Milk Production from 1920 to 2009. Retrieved May 2011 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/pdf/1920-2009.pdf.

Government of Canada (October 17, 2011). Dairy Genetic Material Trade. Retrieved December 2011: http://www.dairyinfo.gc.ca/index_e.php?s1=dff-fcil&s2=imp-exp&page=imp_exp.

Government of Canada (December 29, 2011) Dairy Product Exports. Retrieved January 2012 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/index_e.php?s1=dff-fcil&s2=imp-exp&page=exp.

Government of Canada (December 29, 2011) Imports of Dairy Products. Retrieved January 2012 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/index_e.php?s1=dff-fcil&s2=imp-exp&page=imp.

Government of Canada (2010b). Per Capita Consumption of Dairy Products. Retrieved May 2011 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/pdf/dpconsumption.pdf.

Government of Canada (February 4, 2011). Total and Retail Milk Consumption 2005-2009 Fluid Milk. Retrieved May 2011 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/pdf/consumption_global_and_retail_milk.pdf.

Government of Canada (2010c). Per Capita Consumption of Milk and Creams. Retrieved May 2011 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/pdf/camilkcream.pdf.

Harris, D. (2004). Producer Adjustment to Policy Reform: A Case Study on the Australian Dairy Industry. Presented to the annual conference of the Australian Agricultural and Resource Economics Society, Melbourne.

Harris, D. & Rae, A. (2004). Agricultural Policy Reform and Industry Adjustment in Australia and New Zealand, pp. 1-23. Presented to the International Agricultural Trade Research Consortium.

Hart, M. (2005). Great Wine, Better Cheese - How Canada Can Escape the Trap of Agricultural Supply Managment. CD Howe Institute.

Huffington Post (October 17, 2011). "Canada Trade Deal with European Union: CETA May Benefit EU Over Canada, Officials Say." Retrieved December 2011: http://www.huffingtonpost.ca/2011/10/17/canada-may-get-short-end-of-stick-in-economic-and-trade-agreement-with-eu_n_1014707.html.

International Committee for Animal Recording (April 20, 2011). 2009 Average Production per Cow and Breed - Selected Countries (Milk Recording). July 2011. Retrieved from the Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/pdf/production_per_breed_of_select_countries.pdf.

Fekete, J. (November 14, 2011). "Harper Puts It All On the Table." Retrieved December 2011 from National Post: http://www.nationalpost.com/news/Harper+puts+table/5705338/story.html.

Jeffrey, S.R. (December, 1992). "Efficiency in Milk Production: A Canada-U.S. Comparison." *Canadian Journal of Agricultural Economics,* 40(4), pp. 653-662.

Jenness, R., Wong, N.P., Marth, E.H. & Keeney, M. (1999). *Fundamentals of Dairy Chemistry 3rd Edition*. Springer-Verlag.

Lang, L. (April, 2011). Supply Managment Systems Fact Sheet. Retrieved June 2011 from Ontario Ministry of Agriculture, Food and Rural Affairs: http://www.omafra.gov.on.ca/english/farmproducts/factsheets/supply.htm.

Lead, J.I. (1996). Positioning Your Dairy Farm Business for a Profitable Future - An Australasian Perspective. Western Canadian Dairy Seminar, University of Alberta. Retrieved December 2011: http://www.wcds.ca/proc/1996/wcd96151.htm.

MacDonald, J.M., O'Donoghue, E.J., McBride, W.D., Nehring, R.F., Sandrette, C.L. & Mosheim, R. (2007). USDA Profit, Cost, and the Changing Structure of Dairy Farming. Economic Research Report, ERR 47, pp. 1-35. Retrieved December 2011 from USDA: http://www.ers.usda.gov/publications/err47/err47.pdf.

Ministry of Agriculture, Food and Rural Affairs (April 7, 2011). Cattle Genetics Decoded. Retrieved December 2011: http://www.omafra.gov.on.ca/english/livestock/dairy/facts/gendecoded.htm.

Organisation for Economic Co-operation and Development (2004). Milk - Market Price Support and Consumer Price Support (Canada). Retrieved July 2011 from the Organisation for Economic Co-operation and Development: http://www.oecd.org/dataoecd/33/18/32360855.xls.

Oupadissakoon, G., Chambers, D.H. & Chambers, E. IV (2009). "Comparison of the Sensory Properties of Ultra-high-temperature (UHT) Milk from Different Countries." *Journal of Sensory Studies,* 24(3), pp. 427-440.

Reguly, E. (August 10, 2004). "Dairy Farmers Win at Geneva, but Canadian Consumers Lose." *The Globe and Mail.*

Richards, T. J. (1996). Positioning your Dairy Farm Business for a Profitable Future - A Western Canadian Perspective. Western Canadian Dairy Seminar, University of Alberta. Retrieved December 2011: http://www.wcds.ca/proc/1996/wcd96175.htm.

Saxena, R. (2000). Dynamics of Demand for Milk in this Millennium. Dairy Industry Conference, Calcutta.

Schnepf, R. & Hanrahan, C.E. (2010). WTO Doha Round: Implications for U.S. Agriculture. Congressional Research Service.

Shawn, I. & Love, G. (2001). Impacts of Liberalising World Trade in Dairy Products. Canberra: ABARE Research Report.

Stanbury, W. (2002). The Politics of Milk in Canada. Vancouver: The Fraser Institute.

Statistics Canada (July 19, 2010). Cattle Inventories. Retrieved December 2011 from Statistics Canada: http://www.statcan.gc.ca/pub/23-012-x/2010001/t089-eng.htm.

Statistics Canada (2011a). Farm Financial Survey 2009. Retrieved May 2011 from Government of Canada Publications: http://publications.gc.ca/collections/collection_2011/statcan/21F0008X/21f0008x2010001-eng.pdf.

Statistics Canada (June 21, 2011b). Dairy Product Exports - Overview of Canadian Dairy Product Exports. Retrieved June 2011 from Canadian Dairy Information Centre: http://www.dairyinfo.gc.ca/pdf/exp_CY_YTD_e.pdf.

Tamilia, R.D. & Charlebois, S. (2007). "The Importantce of Marketing Boards in Canada: A Twenty-first Centry Perspective." *British Food Journal,* 109(2), pp. 119-144.

Truss, W. (1999). Dairy Industry Restructure Package. Media Release, September 28.

Painter, M.J. (2007). "A Comparison of the Dairy Industries in Canada and New Zealand." *Journal of International Farm Management,* 4(1). Retrieved December 2011: http://www.ifmaonline.org/pdf/journals/Vol4Ed1_Painter.pdf.

Population Reference Bureau (2009). 2009 World Population Data Sheet. Retrieved July 2011 from Population Reference Bureau: http://www.prb.org/pdf09/09wpds_eng.pdf.

Productivity Commission (2001). Trade and Assistance Review 2000-01. Retrieved May 2011 from Australian government: http://www.pc.gov.au/__data/assets/pdf_file/0020/9029/tar0001.pdf.

U.S. Dairy Export Council. Export Trade Data. Retrieved July 2011 from U.S. Dairy Export Council: http://www.usdec.org/Why/Export.cfm?ItemNumber=82452&navItemNumber=82562.

United States Department of Agriculture (May, 2003). Bovine Somatotropin. Retrieved July 2011 from United States Department of Agriculture - Animal and Plant Health Inspection Service: http://www.aphis.usda.gov/animal_health/nahms/dairy/downloads/dairy02/Dairy02_is_BST.pdf.

United States Department of Agriculture (August 3, 2010). Dairy Export Incentive Program (DEIP). Retrieved July 2011 from United States Department of Agriculture: http://www.fas.usda.gov/excredits/deip/deip-new.asp.

United States Department of Agriculture (February 3, 2011a). Global Food Markets: International Consumer and Retail Trends. Retrieved July 2011 from United States Department of Agriculture: http://www.ers.usda.gov/Briefing/globalfoodmarkets/consumer.htm.

United States Department of Agriculture (March 18, 2011b). Milk Production. Retrieved July 2011 from United States Department of Agriculture: http://usda.mannlib.cornell.edu/usda/nass/MilkProd//2010s/2011/MilkProd-05-18-2011.pdf.

Sharma, V.P. & Ashok, G. (2003). Trade Liberalization, Market Reforms and Competitiveness of the Indian Dairy Sector. MTID Discussion Paper No. 61, Markets, Trade and Institutions Division, International Food Policy Research Institute, Washington, D.C., April 2003.

Walstra, P., Wouters, J.T.M. & Geurts, T.J. (2006). *Dairy Science and Technology.* CRC/Taylor & Francis, Boca Raton.

World Trade Organization (1999). Canada - Measures Affecting the Importation of Milk and the Exportation of Dairy Products. Retrieved June 2011 from the World Trade Organization: http://docsonline.wto.org/GEN_highLightParent.asp?qu=%28%40meta%5FSymbol+WT%FCDS103%FCR%2A+and+not+RW%2A%29&doc=D%3A%2FDDFDOCUMENTS%2FT%2FWT%2FDS%2F103R%2EDOC%2EHTM&curdoc=3&popTitle=WT%2FDS103%2FR%3Cbr%3EWT%2FDS113%2FR.

World Trade Organization (December 6, 2008). Revised Draft Modalities for Agriculture. Retrieved May 2011 from the World Trade Organization: http://www.wto.org/english/tratop_e/agric_e/agchairtxt_dec08_a_e.pdf.

Further Reading

April 2010

Is Our Food Safety System Broken?

By Sylvain Charlebois

http://www.fcpp.org/publication.php/3238

November 2010

Beyond Potash

By Sylvain Charlebois

http://www.fcpp.org/publication.php/3489

July 2011

Removal of the Canadian Wheat Board Monopoly

By Milton Boyd

http://www.fcpp.org/publication.php/3848