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Centre for Food in Canada

REFORMING DAIRY SUPPLY MANAGEMENT

The Case for Growth.



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Reforming Dairy Supply Management: The Case for Growth

Michael Grant, Richard Barichello, Mark Liew, and Vijay Gill

Preface

Supply management is one of Canada's most contentious public policies. The policy is regularly challenged on equity and efficiency grounds. Yet farmers are wedded to supply management and have organized their operations around its continuation. This report focuses on dairy. In it, we show how a new paradigm, based on growth, can help reform supply management. We suggest an equitable way to compensate farmers for their quota investments. We also demonstrate how new growth can lead to more industry output and employment.

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About the Centre for Food in Canada

The Centre for Food in Canada (CFIC) is a three-year initiative of research and dialogue to help address one of the mega-issues facing our country today—food. Food impacts Canadians in an extraordinary range of ways. It affects our lives, our health, our jobs, and our economy.

The twin purposes of the Centre for Food in Canada are:

- to raise public awareness of the nature and importance of the food sector to Canada's economy and society; and
- to create a shared vision for the future of food in Canada—articulated in the Canadian Food Strategy—that will meet our country's need for a coordinated, long-term strategy for change.

The Centre is taking a holistic approach to food. It focuses on food in Canada through three interrelated but distinct lenses: safe and healthy food, food security, and food sustainability. These lenses ensure that the Centre focuses on the full range of important issues facing the food sector.

The work involves a combination of research and effective communications. The goal is to stimulate public understanding of the significance of the food sector and spur the demand for collaborative action. To achieve its goals, the Centre is working closely with leaders and partners from Canada's food sector, governments, educational institutions, and other organizations.

Launched in July 2010, CFIC actively engages private and public sector leaders from the food sector in developing a framework for a Canadian food strategy. Some 25 companies and organizations have invested in the project, providing invaluable financial, leadership, and expert support.

For more information about CFIC, please visit our website at www.conferenceboard.ca/cfic.

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EXECUTIVE SUMMARY

Reforming Dairy Supply Management: The Case for Growth

At a Glance

- Supply management is among Canada's most contentious public policies.
- The policy is often challenged on equity and efficiency grounds.
- Supply management policy protects Canada's dairy farmers from competition but limits access to growth opportunities.
- Dairy export growth opportunities are significant and the pursuit of these opportunities may lead to a growing dairy industry.
- This report makes the case for growth and suggests an equitable way to wind down dairy supply management.

Supply management is among Canada’s most contentious public policies. The policy is designed to manage the market risk faced by farmers of supply-managed commodities. But it does so by generating higher prices for consumers and closes off growth opportunities in domestic and international markets.

In this report, we highlight the case of dairy supply management to demonstrate these forces at play. We review the reform literature and offer some ideas for reform paths that create a win-win solution for dairy farmers, consumers, and Canada.

Strong interest in policy circles has resulted in numerous reports on supply management over the decades. This report’s unique contribution is that it links farm-level financial analysis—micro analysis—to macro policy. This allows us to show how different policy actions play out in terms of farm viability and transition paths for the industry. We clearly demonstrate that it is possible to grow Canada’s dairy sector by reorganizing assets under the most efficient producers. And Canada’s most efficient producers will provide Canadians and the world with low prices and high-quality dairy products.

Why Reform Supply Management?

The report evaluates dairy supply management against public policy criteria of equity (fairness) and efficiency, and it finds the current policy wanting on these criteria. Dairy supply management operates by setting target prices based largely on average costs of production. But since the average costs include many inefficient dairy farms, it generates prices that are higher than if Canada organized its dairy farm assets under the most efficient dairy farms. The Organisation for Economic Co-operation and Development (OECD) estimates that this market price support cost

Canadian dairy consumers an average of \$2.6 billion per year in the decade to 2011: roughly \$200 thousand per dairy farm per annum and around \$276 per family every year.¹

The policy is questioned on equity grounds because dairy farmers are generally wealthier than the average Canadian. The policy effectively transfers resources from poorer Canadians to wealthier Canadians. This is especially pertinent given concerns about food security, particularly among low-income Canadians. The 2008 National Nutritious Food Basket suggests a nutritious food basket should include “milk and alternatives” consumption of between 3.59 and 7.19 litres per week. Children and pregnant and lactating women are among those at the high end of the suggested consumption. Yet Canada’s highest rates of poverty are realized by families headed by a lone female parent. Unlike the harmonized sales tax (HST), the transfer engineered through supply management does not include any compensating low-income tax credit to assist low-income dairy consumers.

We estimate that 25 per cent of dairy farms produce almost half of Canada’s milk supply. Medium- and low-efficiency farmers produce the other half.

The policy is challenged on efficiency grounds because it constrains dairy assets from being organized under the most efficient dairy producers. We estimate that the top 25 per cent of dairy farms produce almost half of Canada’s milk supply. But the other half is produced by medium- and low-efficiency farmers, who drive milk target prices. These farmers rely less on operational efficiency and more on market restrictions. Supply management policies are valued in their quota, which resides on their balance sheet. The enterprise value of less-efficient producers is derived mostly from the value of quota restrictions.

The funding of quota results in annual debt-servicing costs of several hundred million dollars. Under the current system, there is an annual leakage from the industry to debt issuers of hundreds of millions of dollars that could otherwise be used to fund tangible dairy assets.

1 OECD, *Producer and Consumer Support Estimates*. There were roughly 9.4 million Canadian census families in 2011, according to Statistics Canada, “Distribution of Census Families.”

Moreover, the policy effectively cuts Canada off from a burgeoning world demand for dairy products. Global dairy export volumes have continued to grow by more than 7 per cent per annum over the past three years.² The most significant exporter is New Zealand, which exports around 97 per cent³ of its milk production and accounts for close to 30 per cent of dairy products traded globally. Australian students are hired to purchase hundreds of tins of milk powder to smuggle to China, where a \$24 tin sells for more than twice that amount (\$54) online on Taobao, the Chinese version of eBay.⁴ The Dutch government recently launched a probe into a nationwide shortage of baby formula after sales in early 2013 spiked 50 per cent over 2012 levels without a corresponding increase in births; most of the formula had allegedly been re-exported to China.⁵

Yet the Canadian dairy industry is unable to take advantage of global demand. A 2002 World Trade Organization (WTO) panel ruled that the price gap between Canadian and world prices was a subsidy.⁶ This limits Canada's exports to the WTO export subsidy limit. So instead of Canadian skim milk going to Chinese babies, it is converted into low-priced animal feed.⁷

Current global trade flows actually suggest that dairy could be shipped relatively cheaply from Canada to Asia. Westbound Pacific freight rates are 20 to 40 per cent less expensive than eastbound freight rates, depending on port location, which favours Canadian producers. Canadian producers are also favoured because competitor exporting countries, like New Zealand, are starting to see their production costs rise considerably.

2 Fonterra, *Global Dairy Update*.

3 Ministry for Primary Industries, New Zealand, *Dairy Facts and Figures*.

4 News.com.au, *Black Market*.

5 BBC News, *Dutch Government*.

6 Goldfarb, *Making Milk*, 29.

7 Dairy Farmers of Ontario, "Surplus Hits All-Time High."

As the policy limits Canadian producers to the domestic market, the Canadian dairy industry continues to shrink, consolidating into fewer and fewer farms serving a slow-growing Canadian market. At 12,500, the number of Canadian dairy farms is about half as many as 20 years ago.

Toward Reform

Canadians can define a new strategic vision for dairy based on growth and efficiency.

Canadians can define a new strategic vision for dairy based on growth and efficiency. This path has been trod by New Zealand and Australia and is starting to be realized by the United States.

For Canada's dairy industry to succeed internationally, the Canadian dairy market would have to look more like the dairy industry in competing jurisdictions. Farms would likely become somewhat larger, although by standard business definitions most would continue to be small businesses and would remain predominantly family-owned. We estimate that even with larger herd sizes and lower prices, dairy farms would realize sales of around \$1.4 million. To put this in a small business perspective, this is about the same revenue as a typical Tim Hortons franchise.

We summarize the growth potential in three scenarios—status quo, modest growth, and aggressive growth. The moderate growth scenario sees Canada grow at a cumulative annual growth rate (CAGR) of 5.8 per cent, while the aggressive growth sees Canada grow at a CAGR of 9.6 per cent. The moderate growth scenario would see Canada add around 6 billion more litres of milk annually by 2022 to meet international demand, whereas the aggressive growth scenario sees Canada produce about 12 billion more litres annually.

Should Canadian dairy achieve significant success in the export markets (over the next decade), reaching export volumes half that of New Zealand, Canada's annual production would grow from 8 billion litres to 20 billion litres. Canadians would benefit to the tune of \$1.3 billion from efficiency gains. Under this scenario, the number of dairy farms would actually *increase* by 2.1 per cent over 10 years, with the average herd size simultaneously increasing to 187.

Additionally, a harmonization of Canadian prices with world prices necessary for export trade would result in current excess profits of approximately \$2.39 billion transferring from producers to consumers. Low-income Canadians, in particular, would benefit disproportionately from lower prices because a higher portion of their income (along the lines of the National Nutritious Food Basket) is allocated to dairy products.

We estimate potential employment gains from these growth scenarios. The 150 per cent growth scenario, which we believe to be achievable, would see industry employment expand by around 14 per cent, with over 5,000 jobs created in primary production and around 3,000 in processing for a total gain of over 8,500 jobs.

We show that reform is possible by focusing on Canada's experience with for-hire trucking. This was an industry that was also supply-managed and comprehensively liberalized in 1987.

Approach to Transition: It's in the FEED

Any reform option must address issues of funding, efficiency, equity, and duration (FEED) in a comprehensive manner. The more funding available, the shorter the transition duration and the more opportunities for equitable redistribution. There are two issues: dealing with existing quota and reforming prices.

On quota, late entrants are exposed the most because they have yet to realize a return on their quota. Therefore, overnight liberalization with no buyout severely punishes late entrants (or anyone who holds recent vintage quota). Second, a market value buyout is extremely generous for all quota vintages. Book value⁸ buyouts, depending on how one depreciates the asset, are much more reasonable, especially when compared with the returns on alternative investments like 10-year Government of Canada bonds.

8 *Book value* is the value at the time of purchase. *Market value* is determined by valuing quota at current market prices.

A book value buyout program could, for instance, focus on quota acquired over the last 10 years and adjust buyout compensation according to the fraction of 10 years remaining. Based on values on provincial exchange transfers and different types of transfers (exchange, in-family, and consolidation) over the past 10 years, we estimate this type of buyout would cost between \$3.6 billion and \$4.7 billion. This could easily be funded through a temporary levy or even through public debt issuance.

The administrative realities of supply management point to using the price mechanism to gradually unwind quota. This would likely be matched by an unwinding of Canada's trade restrictions. The only problem with this gradual approach is that it continues to constrain the efficient producers from gearing up to service export demand. If Canada announces a long transition period of gradual price liberalization, our competitors are likely to take steps to secure their existing export market dominance.

In that event, Canada may be better off buying out quota under equitable terms and moving to a relatively quick reorganization of the industry.

RÉSUMÉ

Réformer la gestion de l'offre des produits laitiers : Plaidoyer pour la croissance

Aperçu

- La gestion de l'offre fait partie des politiques publiques les plus controversées du Canada.
- Son équité et son efficacité sont souvent contestées.
- La politique en matière de gestion de l'offre protège les producteurs laitiers canadiens face à la concurrence, mais elle limite les possibilités de croissance.
- Les possibilités de croissance des exportations laitières sont importantes et l'industrie laitière peut connaître une expansion si elle réussit à en profiter.
- Ce rapport plaide en faveur de la croissance et propose une façon équitable de réduire progressivement la gestion de l'offre en ce qui concerne les produits laitiers.

La gestion de l'offre fait partie des politiques publiques les plus controversées du Canada. La politique vise, en fait, à gérer les risques du marché auxquels sont confrontés les agriculteurs dont les produits sont soumis à la gestion de l'offre. Toutefois, elle y parvient en entraînant une hausse des prix pour les consommateurs et en éliminant les possibilités de croissance sur les marchés intérieurs et internationaux.

Dans ce rapport, nous utilisons le cas de la gestion de l'offre des produits laitiers pour montrer les forces en présence. Nous examinons la documentation relative à la réforme et avançons des pistes de solution pour une réforme où tout le monde serait gagnant, à savoir les producteurs laitiers, les consommateurs et le Canada.

Le vif intérêt que suscite la gestion de l'offre dans les milieux politiques nous a valu, depuis des décennies, de nombreux rapports sur la question. Le présent rapport a ceci d'unique qu'il fait le lien entre l'analyse financière sur le plan de l'exploitation agricole – micro-analyse – et la politique macroéconomique. Cela nous permet de montrer l'effet de différentes mesures sur la viabilité des exploitations agricoles et sur des scénarios de transition pour l'industrie. Nous démontrons clairement qu'il est possible d'assurer la croissance du secteur laitier canadien en permettant une réallocation des actifs aux producteurs les plus performants. Ceux-ci offriront aux Canadiens et au reste du monde des prix bas et des produits laitiers de qualité.

Pourquoi réformer la gestion de l'offre?

Dans ce rapport, nous évaluons la gestion de l'offre des produits laitiers par rapport aux critères des politiques publiques que sont l'équité (impartialité) et l'efficacité, et concluons que la politique actuelle laisse à désirer à cet égard. La gestion de l'offre des produits

Le quart supérieur des fermes laitières produit près de la moitié des approvisionnements en lait du Canada. L'autre moitié vient d'exploitations moyennement ou peu performantes.

laitiers consiste à fixer des prix indicatifs qui reposent dans une large mesure sur des coûts de production moyens. Mais comme les coûts moyens sont calculés en incluant beaucoup d'exploitations laitières peu performantes, on arrive à des prix plus élevés que si le Canada favorisait une réallocation de ses actifs en fonction des exploitations les plus performantes. L'Organisation de coopération et de développement économiques (OCDE) estime que ce soutien des prix du marché a coûté aux consommateurs canadiens de produits laitiers en moyenne 2,6 G\$ par an entre 2001 et 2011, soit environ 200 000 \$ par producteur laitier et 276 \$ par famille annuellement¹.

L'équité de la politique est contestée parce que les exploitants de ferme laitière sont généralement plus riches que le Canadien moyen et que cette politique transfère, en fait, des ressources de Canadiens plus démunis à des Canadiens mieux nantis. L'argument est particulièrement pertinent, étant donné les préoccupations exprimées au sujet de la sécurité alimentaire, notamment en ce qui concerne les Canadiens à faible revenu. Selon la version de 2008 du panier de provisions nutritif – Canada, celui-ci devrait comprendre du lait et des substituts à raison de 3,59 à 7,19 litres par semaine. Les enfants, les femmes enceintes et celles qui allaitent font partie des personnes qui devraient en consommer le plus. Cependant, au Canada, les familles monoparentales ayant une femme à leur tête sont celles où l'on retrouve les taux de pauvreté les plus élevés. Contrairement à ce qui se passe pour la taxe de vente harmonisée (TVH), le transfert réalisé par la gestion de l'offre ne comprend aucun crédit d'impôt compensateur pour aider les consommateurs de produits laitiers à faible revenu.

L'efficacité de la politique est contestée parce qu'elle empêche toute allocation des actifs laitiers aux producteurs les plus performants. Nous estimons que le quart supérieur des exploitations laitières produit près de la moitié de l'approvisionnement en lait du Canada, alors que l'autre moitié vient d'exploitations moyennement ou peu performantes qui

1 OCDE, *Estimations du soutien aux producteurs et consommateurs*. D'après la « Répartition des familles de recensement » de Statistique Canada, le Canada comptait environ 9,4 millions de familles de recensement en 2011.

déterminent le prix indicatif du lait. Or, ces agriculteurs comptent moins sur l'efficacité opérationnelle que sur des restrictions commerciales. La valeur des politiques de gestion de l'offre réside dans les quotas et leur incidence sur le bilan des exploitants. Au fond, la valeur d'entreprise des producteurs moins performants découle surtout de la valeur des restrictions contingentes.

Le financement des quotas entraîne des frais de service de la dette qui s'élèvent à des centaines de millions de dollars par an. Dans le système actuel, on assiste à une fuite des actifs de l'industrie au profit des émetteurs de titres de dette de centaines de millions de dollars par an, qui pourraient servir par ailleurs à financer des actifs matériels dans le secteur laitier.

De plus, la politique coupe de fait le Canada d'une demande mondiale de produits laitiers florissante. Les volumes d'exportations laitières ont continué d'augmenter de plus de 7 % par an dans le monde ces trois dernières années². La Nouvelle-Zélande, qui exporte environ 97 %³ de sa production et fabrique à elle seule près de 30 % des produits laitiers vendus dans le monde, se classe en tête des exportateurs. Des étudiants australiens sont embauchés pour acheter des centaines de boîtes de lait en poudre qu'ils font passer en contrebande en Chine, où une boîte de 24 \$ est revendue plus du double (54 \$) en ligne sur Taobao, la version chinoise de eBay⁴. Le gouvernement néerlandais a ouvert dernièrement une enquête sur une pénurie nationale de lait maternisé après avoir observé une hausse de 50 % des ventes au début 2013 par rapport aux niveaux de 2012, sans une augmentation correspondante du nombre de naissances. La majeure partie de ce lait maternisé aurait été réexporté vers la Chine⁵.

2 Fonterra, *Global Dairy Update*.

3 Ministry for Primary Industries, Nouvelle-Zélande, *Dairy Facts and Figures*.

4 News.com.au, *Black Market*.

5 BBC News, *Dutch Government*.

Les Canadiens peuvent définir une nouvelle vision stratégique du secteur laitier fondée sur la croissance et l'efficacité.

Cependant, l'industrie laitière canadienne est incapable de profiter de la demande mondiale. En 2002, un groupe spécial de l'Organisation mondiale du commerce (OMC) a statué que l'écart entre les prix canadiens et les prix mondiaux équivalait à une subvention⁶. Or, les exportations canadiennes ne peuvent dépasser la limite de subvention à l'exportation autorisée par l'OMC. Donc, au lieu que le lait écrémé canadien aille nourrir des bébés chinois, il est transformé en aliments pour animaux à bas prix⁷.

Les flux commerciaux mondiaux actuels donnent en fait à penser qu'il serait possible d'expédier des produits laitiers du Canada en Asie à relativement peu de frais. Pour ce qui est du Pacifique, les taux de fret en direction de l'ouest sont de 20 à 40 % inférieurs à ceux en direction de l'est, selon le port, ce qui est à l'avantage des producteurs canadiens. Ces derniers bénéficient aussi d'un autre avantage, à savoir que les pays exportateurs concurrents, comme la Nouvelle-Zélande, commencent à voir leurs coûts de production augmenter considérablement.

Comme la politique limite les producteurs canadiens au marché intérieur, l'industrie laitière continue de rétrécir, avec des exploitations de moins en moins nombreuses à force de regroupements qui alimentent un marché canadien à faible croissance. En fait, en 20 ans, le nombre de fermes laitières a été pratiquement divisé par deux et l'on n'en compte plus aujourd'hui que 12 500 au Canada.

Vers une réforme

Les Canadiens peuvent définir une nouvelle vision stratégique du secteur laitier fondée sur la croissance et l'efficacité. C'est le choix qu'ont fait la Nouvelle-Zélande et l'Australie et l'option qui commence à prendre forme aux États-Unis.

6 Goldfarb, *Making Milk*, 29.

7 Dairy Farmers of Ontario, "Surplus Hits All-Time High."

Pour que l'industrie laitière canadienne connaisse le succès à l'échelle internationale, le marché canadien des produits laitiers doit ressembler davantage à celui des pays concurrents. Les exploitations devront probablement s'agrandir, même si selon les définitions commerciales courantes, la plupart continueront d'être de petites entreprises et principalement des propriétés familiales. Nous estimons que même avec de plus gros troupeaux et des prix plus faibles, les exploitations laitières réaliseraient un chiffre d'affaires d'environ 1,4 M\$. Du point de vue d'une petite entreprise, cela représente à peu près le même revenu qu'une franchise Tim Hortons moyenne.

Nous résumons le potentiel de croissance en trois scénarios, soit le statu quo, une croissance modérée et une croissance dynamique. Dans le scénario de croissance modérée, le taux de croissance annuel cumulatif (TCAC) est de 5,8 %, tandis que dans celui d'une croissance dynamique, il atteint 9,6 %. Dans le premier scénario, le Canada produit quelque 6 milliards de litres de lait de plus par an d'ici 2022 pour répondre à la demande internationale, alors que dans le second, il en produit environ 12 milliards de plus par an.

Si le secteur laitier canadien remportait un franc succès sur les marchés d'exportation (dans les 10 prochaines années) et atteignait des volumes d'exportation équivalant à la moitié de ceux de la Nouvelle-Zélande, la production canadienne annuelle devrait passer de 8 à 20 milliards de litres. Les gains en efficacité rapporteraient 1,3 G\$ aux Canadiens. Dans ce scénario, le nombre d'exploitations laitières *augmenterait* en fait de 2,1 % sur 10 ans, la taille moyenne des troupeaux passant dans le même temps à 187 têtes.

De plus, une harmonisation des prix canadiens avec les prix mondiaux, nécessaire au commerce d'exportation, transférerait des producteurs aux consommateurs des bénéfices excédentaires immédiats d'environ 2,39 G\$. Les Canadiens à faible revenu, en particulier, profiteraient davantage des prix en baisse, car ils consacrent une part plus importante de leur revenu (selon le panier de provisions nutritif – Canada) aux produits laitiers.

Nous évaluons les gains possibles en matière d'emploi de ces scénarios de croissance. Celui qui prévoit une croissance de 150 %, et que nous croyons réalisable, se traduirait par une augmentation d'environ 14 % de l'emploi dans l'industrie, soit plus de 5 000 emplois créés dans la production primaire et quelque 3 000 dans la transformation, pour un gain total de plus de 8 500 emplois.

Nous montrons que la réforme est possible en nous penchant sur l'expérience du Canada dans le transport pour compte d'autrui. Cette industrie était également soumise à la gestion de l'offre et elle a été entièrement libéralisée en 1987.

Logique de la transition : financement, efficacité, équité, durée

Toute option en matière de réforme doit résoudre les problèmes de financement, d'efficacité, d'équité et de durée (FEED) de manière globale. Plus on dispose de fonds, plus courte est la transition et plus il y a d'occasions de redistribution équitable. Deux grandes questions se posent : celle des quotas existants et celle de la réforme des prix.

En ce qui concerne les quotas, les nouveaux exploitants sont les plus exposés parce qu'il leur faut encore réaliser un bénéfice sur le leur. Donc, une libéralisation du jour au lendemain sans rachat punira sévèrement les nouveaux exploitants (ou quiconque est titulaire d'un quota acheté récemment). Ensuite, un rachat à la valeur marchande est extrêmement généreux pour les quotas de tous âges. Un rachat à la valeur comptable⁸, selon la façon dont on déprécie l'actif, est beaucoup plus raisonnable, surtout en comparaison du rendement d'autres investissements, comme les obligations du gouvernement du Canada de 10 ans.

8 La *valeur comptable* est la valeur au moment de l'achat. La *valeur marchande* se calcule en évaluant les quotas aux prix courants du marché.

Un programme de rachat à la valeur comptable pourrait, par exemple, se concentrer sur les quotas obtenus dans les 10 dernières années et rajuster l'indemnité de rachat en fonction de la fraction de 10 ans restante. D'après la valeur des transferts interprovinciaux par échange de quotas et la valeur de différents types de transfert (échange, familial et regroupement) sur les 10 dernières années, ce type de rachat coûterait, selon nos calculs, de 3,6 à 4,7 G\$, ce qui pourrait facilement se financer par un prélèvement temporaire ou même par un emprunt public.

Les réalités administratives de la gestion de l'offre incitent à utiliser le mécanisme des prix pour supprimer graduellement les quotas, et cette suppression se ferait probablement en parallèle avec celle des restrictions commerciales imposées par le Canada. Le seul problème de cette approche graduelle, c'est qu'elle continue de freiner les producteurs performants qui voudraient se préparer à répondre à la demande à l'exportation. Si le Canada annonce une longue période de transition pendant laquelle la libéralisation des prix sera progressive, il est probable que nos concurrents prendront des mesures pour préserver leur domination actuelle sur les marchés d'exportation.

Auquel cas, le Canada ferait peut-être mieux de racheter les quotas à des conditions équitables et d'opter pour une réorganisation assez rapide de l'industrie.

CHAPTER 1

Introduction

Chapter Summary

- Supply management is a contentious area of Canadian public policy.
- Interest is high because supply-managed commodities are widely consumed in Canada and high trade barriers on supply-managed products have led to disputes with Canada's trade partners.
- Given the structural changes in international markets and agri-food technology, there is an opportunity to reform supply management.
- This report is unique in linking farm-level financial data to macro policy scenarios, allowing us to map adjustment paths for the industry based on different scenarios.
- Under the right conditions, Canada can expand its dairy industry.

Agricultural supply management is a highly contentious area of Canadian public policy. Currently, there is a wide gap between researcher opinion and existing public policy.¹ The Canadian policy community takes a keen interest in supply management for two reasons. First, supply-managed commodities are widely consumed. Hence, policies that affect their prices have implications for the welfare of many Canadians. Second, in a world of rising food demand and falling trade barriers, supply management stands out as a notable exception to liberalized trade.² Current Canadian trade policy is geared toward opening foreign markets to Canadian goods, both agricultural and other types. By engendering trade disputes that hold up new trade agreements, the very high tariff and non-tariff barriers that are core to supply management regimes run headlong into Canadian efforts to expand global market access for Canadian goods.

In its current form, supply management dates back over 40 years. It is an entrenched policy supported by a well-organized producer constituency. The roots of the policy actually date much earlier, to just after the Second World War.³ The dairy industry, which is at the

- 1 The Conference Board of Canada has been an active participant in the policy debate. The current report is the fourth in a series of Conference Board publications on supply management that includes Goldfarb, *Making Milk*, and two briefings written by George Morris Centre researchers and published by The Conference Board of Canada in 2012. See Mussell, Seguin, and Sweetland, *How We Got Here* and *How Do We Compare?* The current research report draws on these earlier publications.
- 2 See the Centre for Food companion report: Audet, *Liberalization's Last Frontier*.
- 3 Mussell, Seguin, and Sweetland, *How We Got Here*, 3.

forefront of supply management, had built up primary and processing capacity to serve wartime demand in Great Britain, which was cut off from continental supply. In fact, Canada was a major exporter of cheese during the war years. At the war's conclusion, the Canadian dairy industry struggled with chronic excess capacity and low farm incomes. To deal with these problems, industry and government worked together to rationalize the dairy sector and organize it to serve what was, at the time, a growing domestic market. As we explain in this report, that policy involved protecting the industry through a combination of price setting, quotas (a form of production licence), and barriers to trade (both international and internal).

Much has changed in 40 years. Two trends are noteworthy—increasingly wealthy emerging markets and rapidly evolving technology.

The Canadian marketplace has matured, evolving from the rapid growth market of the 1950s and 1960s to a slow-growing market today. Indeed, as we point out in *The Sky's the Limit*, most of the incremental demand for food is expected to come from parts of the world with higher rates of population and income growth than Canada. Between 2010 and 2050, the world's population will increase by over 2 billion people, only a very small fraction of whom will be Canadians.⁴

According to OECD and FAO, dairy will show the strongest demand growth of all agricultural commodities.

Indeed, income growth in newly developing countries is a key driver. We know that as people become richer they change their diets to incorporate more protein. As the supply-managed commodities (milk, chicken, turkey, and eggs) are good sources of protein, they are likely to experience strong global demand. According to the Organisation for Economic Development and Co-operation (OECD) and the Food and Agriculture Organization (FAO), dairy will show the strongest demand growth of all agricultural commodities.⁵ Canada's market-orientated competitors have shown themselves adept at capturing this demand. For instance, in 2012,

4 Burt and others, *The Sky's the Limit*, 17.

5 New Zealand High Commission. Correspondence with Michael Grant, October 1, 2013.

New Zealand's dairy exports were \$10.6 billion.⁶ To put this in context, Canada's potash exports were \$6.7 billion and canola seed and canola oil exports were \$7.8 billion in that year.⁷ New Zealand's dairy exports to China grew by 30 per cent between 2010 and 2012.⁸

Another Centre for Food in Canada (CFIC) report reviews the tremendous changes in supply-chain technology that have led to considerable expansion in global food trade.⁹ Commodities that used to be considered perishable now trade over vast distances. As many newly developed countries experience growing pains in managing food safety, more advanced countries' products are positioned as premium brands favoured by an emerging middle class. At the same time, food technology has created competition for supply-managed commodities through numerous fat and protein substitutes. Hence, on the one hand, supply management limits farmers' access to emerging sources of demand, while on the other, it exposes them to market risks from non-supply-managed competition (e.g., butter oil/sugar blends and milk protein concentrates).

Canada's supply management systems continue to focus on allocating a relatively small market among fewer and fewer farms.

Canada's supply management systems constantly evolve in response to changes in market conditions. These adjustments have been made while largely preserving the system of price setting, quota, and trade barriers that are the key features of all supply-managed commodities. The systems continue to focus on allocating a relatively small market among fewer and fewer farms. In a world of globalized trade, where most of the demand growth is outside Canada, a policy that is designed to produce a higher domestic price for a limited market is regularly challenged. As export growth opportunities go wanting, international trading partners request access to Canadian consumers, and Canadian consumers question higher prices and less choice, supply management as a public policy will continue to face pressure for reform.

6 Ministry for Primary Industries, New Zealand, *Dairy Facts and Figures*. Converted from New Zealand dollars.

7 Foreign Affairs, Trade and Development Canada, *Canada's State of Trade*.

8 New Zealand High Commission. Correspondence with Michael Grant, October 1, 2013.

9 See Gill, *Fast and Fresh*.

Supply management has never stood still. In fact, “what is clear is that Canada’s long-standing policy will need to change—whether marginally, dramatically, or somewhere in between—in response to domestic and international pressures.”¹⁰ The question is in which direction and what pace of reform?

This report explores reform options for Canada’s supply-managed agricultural commodities. It analyzes supply management against standard public policy criteria such as equity and efficiency. It outlines reform options, from the existing literature as well as from some of our own ideas. It then works through the implications of the various proposals for equity, efficiency, and adjustment (including cost sharing).

About This Report

This report takes a balanced approach to the issue of supply management reform. It is an input into CFIC’s Canadian Food Strategy. (See box “Developing the Canadian Food Strategy.”) The Strategy is informed by our research and by the results of extensive consultations with a large and geographically diverse group of Canadians. While this report makes recommendations for reform, they are not made in isolation. The Strategy takes into consideration a wide variety of issues that concern Canadians, including supply management.

Each of Canada’s supply-managed systems, which include dairy, broiler hatching eggs, chickens, eggs, and turkey, is unique in the way it operates. To make this report as concrete and accurate as possible, we chose to focus on the dairy subsector, which is the largest and most well-established of the supply-managed commodities. Even though the supply management regimes differ in their specifics, they share similarities in their use of price setting, quota, and trade barriers to allocate domestic market shares. As such, our approach to dairy is broadly applicable to the other commodities.

10 Mussell, Seguin, and Sweetland, *How We Got Here*, 2.

Strong interest in policy circles has resulted in numerous reports on supply management over the decades. As we show below, many of these reports are focused on macro policy and pay relatively little attention to farm-level adjustments. This report's unique contribution is that it links farm-level financial analysis—micro analysis—to macro policy. This allows us to show how different policy actions play out in terms of farm viability and transition paths for the industry. We clearly demonstrate that it is possible to grow Canada's dairy sector by reorganizing assets under the most efficient producers.

Our analysis is based on an extensive literature review, primary data analysis, and on modelling. As with all CFIC reports, we benefited from the comments and perspectives of the CFIC investors, which include some of Canada's most important agricultural policy-making bodies and leading food companies. The report has also been extensively reviewed by external academic experts and internally by The Conference Board of Canada's top economists.

Our arguments are developed through a series of chapters. In Chapter 2, we place supply management within the context of broad public policy objectives. In particular, we consider the equity and efficiency implications of the policy. We continue in Chapter 3 by exploring the dynamics of the dairy industry and how they relate to supply management policy. We provide an illustrative example of supply management reform by considering transportation policy in Chapter 4. Then, in Chapter 5, we review options for supply management reform. The report concludes, in Chapter 6, with recommendations and a discussion of implications for the Canadian Food Strategy.

Developing the Canadian Food Strategy

This report is an important research input into the development of the Canadian Food Strategy. It is one of a series of 20 research reports that are being conducted by the Conference Board's Centre for Food in Canada (CFIC). Each report addresses an important issue or theme relating to food; the findings will figure in the completed Strategy when it is released in March 2014.

The principal goal of the Centre for Food in Canada is to engage stakeholders from business, government, academia, associations, and communities in creating the framework for the Canadian Food Strategy to meet the country's need for a coordinated long-term strategy.

The Strategy is taking a comprehensive approach to food. It covers the full range of themes relating to industry prosperity and competitiveness, healthy food, food safety, household food security, and environmental sustainability, encompassing both economic and social dimensions.

The Strategy will include a framework of outcomes that we want to achieve and actions that will solve the challenges facing the food sector and food stakeholders. It will also suggest which groups—businesses, governments, communities, and others—could lead on implementing them.

The process for creating, disseminating, and implementing the Strategy involves research, analysis, and synthesis; consultation and a high level of collaboration; the development of shared understanding and common goals among stakeholders; broad dissemination through many communication channels; and the commitment of key players to take action.

The Role of Research

The process to develop the Strategy starts with conducting research that develops empirical findings and potential solutions to the challenges facing the food sector. The research findings from the 20 research studies are a key input into the Canadian Food Strategy. The findings are used to develop the content of the draft Strategy, and are the basis for dialogue and consultation with CFIC investors and other major food stakeholders.

CFIC research aims to:

1. understand the current reality of Canada's food system, including its impact on GDP, health, trade, environment, and other major economic and social factors;
2. define a desired future state for food and the food system;
3. suggest workable solutions for moving Canada from its current reality to the desired state.

The solutions will take into consideration the realities of economic activity, market forces, the environment, policies, laws and regulations, and the social conditions and health needs of Canadians.

Key Steps and Timeline

1. Begin CFIC research studies—July 2010
2. Develop initial draft of Canadian Food Strategy—April 2012
3. Begin dialogue and consultations—May 2012
4. Review second draft of Canadian Food Strategy—April 2013
5. Release the Canadian Food Strategy—March 2014

Canadian Food Strategy Events—Launching the Canadian Food Strategy

CFIC is hosting three major food summits as part of the Strategy development process. Each summit brings together food system leaders and practitioners from business, government, academia, and communities to discuss the latest research, share insights, and consider how to address Canada's major food challenges and opportunities through a national strategy:

- The 1st Canadian Food Summit, in February 2012, focused on issues and challenges and explored international perspectives on how to address them.
 - The 2nd Canadian Food Summit, in April 2013, focused on moving from challenges to solutions.
 - The 3rd Canadian Food Summit, in March 2014, will feature the public launch of the Canadian Food Strategy and will focus on moving from strategy to action.
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CHAPTER 2

Achieving Equity Through Efficiency

Chapter Summary

- Supply management evolved in response to conditions of chronic excess capacity in the 1950s and 1960s.
- The policy has been challenged on efficiency and equity grounds.
- Reform options need to be considered in the context of dairy farm financial performance.
- Canada's top dairy farms are among the best in the world.
- Supply management policy restricts the reorganization of assets under the most efficient producers.
- The policy also limits Canadian producers to the stagnant domestic market.

In 2012, The Conference Board of Canada published two supply management briefs authored by researchers of the George Morris Centre, a leading Canadian agricultural policy think tank. The first brief, *How We Got Here*, reviews the history of supply management. The second, *How Do We Compare?*, contrasts Canada’s supply management approach with other farm support systems.

The first report, *How We Got Here*, shows that supply management was a response to challenges in the dairy market in the 1960s.¹ We have already alluded to the fact that, during the Second World War, the Canadian dairy industry had expanded capacity to service wartime demand. With the war’s conclusion, the sector had excess capacity that reflected itself in periods of oversupply resulting in low and highly variable farm incomes.

The approach was to support prices through supply limitation. Fluid milk policies moved toward limited access via quotas that started in British Columbia in 1955, which were then adopted by Ontario in the mid-1960s. Before this, prices were supported through offers to purchase. This system functioned through the industrial milk system. Around 1970, the national industrial milk market began with a type of quota to limit access to subsidies, but only in 1973–74 were production quotas firmly established.

The policy has been successful in stabilizing dairy farm incomes by raising milk prices and holding them roughly constant in real terms, even as the technology has undergone vast improvements. However, the policy achieved its goals by restricting growth: Canada has seen virtually no growth in milk volumes since the 1960s, despite rising population

1 Mussell, Seguin, and Sweetland, *How We Got Here*.

and income.² At the same time, the number of dairy farms in Canada has fallen hugely, from over 174,000 in 1967 to around 12,500 today.³ Significantly, large reductions in unit costs (through better technology) have not made their way into price declines for consumers as they have in most other countries.

The second report, *How Do We Compare?*, shows that most countries provide support for their dairy sectors. However, support schemes differ substantially in their market orientation. Of the jurisdictions considered in the study, New Zealand and Australia are the most market-oriented; Canada is the most protectionist; and the United States and the Netherlands/European Union sit between these extremes.

One fundamental market challenge that all support systems seek to address is the commodity cycle. When left alone, the commodity cycle always results in fluctuations in earnings as prices rise and fall. Countries differ in how far these market fluctuations are managed within companies or the industry compared with being underwritten by government through fiscal support (as in the United States and Europe) or market regulation (as in Canada).

Back to First Principles: Equity and Efficiency

In its supply management reform recommendations, a Christian Farmers Federation of Ontario report states:

Serving the public interest should be much more strongly promoted and the public interest should be the measuring stick against which all supply management systems, regulations and policies are assessed Efficiency should drive policies and programs.⁴

2 Mussell, Seguin, and Sweetland, *How We Got Here*, 9.

3 Canadian Dairy Information Centre, *Number of Farms*.

4 Wheeler, *Supply Management's Vulnerability*, 48.

There is a lack of consensus in Canada on how to weigh the various factors that determine the public interest.

These recommendations get to the crux of the public policy challenge that faces supply management. The Christian Farmers Federation report is broadly supportive of supply management. Other reports also claim to be concerned about the public interest, yet argue for fundamental change to supply management.⁵

Ideally, public policies should be evaluated against criteria such as the public interest, equity, and efficiency. The problem is that there is no straightforward way to apply such criteria. There is a lack of consensus in Canada on how to weigh the various factors that determine the public interest. Some advocates put a very high premium on supply-managed farmer security, while others suggest that market mechanisms would lead to a more efficient industry and better serve the many consumers of dairy products and the industry itself.

Supply management is, in effect, a social contract between supply-managed commodity producers and society. Society, through government policy, laws, and regulation, underwrites the business risk of supply-managed commodity producers.

Equity

Is supply management an equitable policy? Equity is about fairness. There are two types of equity. Horizontal equity holds that citizens in the same position should be treated equally. Vertical equity says that citizens who are better off should pay for a greater share of societal costs.

At its core, supply management is a business risk management policy that has implications for equity and efficiency. There is no market failure in that the commodity cycle is a well-known phenomenon. All commodity markets are characterized by volatile prices and boom/bust cycles. Producers that choose to go into commodity production, whether they are miners, fishers, or foresters, need to manage within a commodity cycle.

5 See, for example, Hall Findlay, *Supply Management*.

The vertical equity problem for the supply-managed commodity producers is that supply management mandated by laws and policies is limited to a small group of Canada's total commodity producers. Canada is a country that has been developed largely through resource industries that are subject to a commodity cycle—as a result, many citizens' fortunes are tied to commodity cycles.

Table 1 looks at business locations by industry. Canada has around 2.5 million businesses, half of which have employees. The table focuses on commodity-based businesses and highlights the supply-managed sectors. Supply-managed sectors are a small portion of all commodity-based business. Other commodity businesses have found a way to remain viable through a variety of firm-specific and industry strategies involving scale economies, innovation, growth, and diversification.

Table 1

Locations by Industry, Canada, December 2012

(number)

Beef cattle ranching and farming, including feedlots	24,574
Dairy cattle and milk production	14,482
Salt water fishing	8,954
Wheat farming	8,785
Contract logging	5,825
Conventional oil and gas extraction	4,740
Hog and pig farming	4,633
Corn farming	4,621
Soybean farming	3,706
Logging (except contract)	3,500
Broiler and other meat-type chicken production	2,285
Potato farming	1,303
Chicken egg production	1,183
Freshwater fishing	794

(continued ...)

Table 1 (cont'd)

Locations by Industry, Canada, December 2012

(number)

Freshwater fishing	794
Timber tract operations	340
Turkey production	299
Hunting and trapping	298
Forest nurseries and gathering of forest products	169
Mushroom production	168
Poultry hatcheries	122
Bituminous coal mining	70
Copper-zinc ore mining	26
Iron ore mining	12
Subbituminous coal mining	10
Lignite coal mining	8

Source: Statistics Canada, CANSIM Table 551-0003.

In the CFIC report *Seeds for Success*, we show that supply management is no guarantee of farm success.⁶ Although we note that milk production is highly profitable, it is no more likely to produce top-quartile margins than grain and oilseed farming. And a variety of farm types outperform the supply-managed poultry and egg sector by a wide margin.

The difference with supply management is that the strategy is executed through the force of special laws created for this purpose. This may be considered inequitable in that other commodity-based businesses are not accorded the same treatment in law. These businesses instead have to transition their industry to a viable business model under standard business law arrangements.

6 Butler and Stuckey, *Seeds for Success*, 18.

Another equity issue relates to the way supply management secures farmers' incomes. It operates (see box "Milk Supply Management: How it Works") through a target price that is based in large part on dairy farmers' cost of production. (As we will show later, individual dairy farmers differ significantly in their costs of production.) So the system starts with a target price that is designed to guarantee existing farmers a "fair" return based on a target price and then engineers the appropriate supply adjustments to clear the market at that price.

Milk Supply Management: How It Works

Milk supply management is a three-legged stool. The legs are production licences (quota), administered pricing, and import controls.

The system focuses on establishing a target price. Historically, target prices were based on the surveyed cost of production. Today, the price target draws on the cost of production and other market factors.

The Canadian Dairy Commission supports the price target by adjusting associated prices for butter and skim milk powder (SMP). Provincial marketing boards adjust prices for butterfat proportionally with the change in the butter support price, and they adjust protein/other solids prices proportional to the SMP support price.

In practice, the price target is implemented using classified prices in which marketing boards sell milk to processors at different prices according to end use. For the purpose of payment to farmers, these end-use class prices are a weighted average of different classes of milk.

Production limits (quota) are adjusted according to market conditions to ensure sales "clear the market" at the target price, subject to mandated imports and permitted exports. Since target milk prices are well above world prices, tariffs on dairy products are used to protect the domestic market.

There are two milk pools in Canada—the Western Milk Pool (WMP) (British Columbia, Alberta, Saskatchewan, and Manitoba) and the Eastern “All Milk Pool” called the P5 (Ontario, Quebec, New Brunswick, Nova Scotia, and Prince Edward Island). The milk pools help producers manage financial risks, allowing provinces to share revenues, transportation costs, and the like.

Sources: Mussell, Seguin, and Sweetland, *How We Got Here*, 8; The Conference Board of Canada.

A contentious issue is whether this target milk price acts as a hidden tax on consumers. Canadian politicians like to point out that there is no fiscal cost to supply management (unlike other support regimes). Although that is technically true, from a public welfare perspective it matters little whether a transfer operates through the fiscal system or through other legislated means. If Canadian consumers pay more for milk than they would on the open market, then they have effectively been “taxed” to underwrite dairy farmers’ business risk.

We know from *Seeds of Success* that Canadian dairy farms are among the most profitable farms, thanks to consumers. The OECD calculates that “market price supports” cost Canadian dairy consumers an average of \$2.6 billion per year in the decade to 2011: roughly \$200,000 per dairy farm per annum and around \$276 per family every year.⁷ This contributes to the healthy equity value of dairy farms, whose equity is generally greater than the average Canadian farm’s equity of over \$1.5 million.⁸ Farmers often describe themselves as both family operators and business enterprises. When we look at overall net worth of dairy farmers, it is more than \$2 million on average.

By comparison, according to Environics, the average household net worth in Canada in 2011 was \$363,202.⁹ Since dairy products are a staple of the average Canadian diet, less well-off Canadians assuredly

7 OECD, *Producer and Consumer Support Estimates*. There were roughly 9.4 million Canadian census families in 2011 according to Statistics Canada, “Distribution of Census Families.”

8 Calculated from Statistics Canada, “Table 002-0020.”

9 Adams, “Canadians Are Richer.”

Food-insecure households are more likely to substitute away from nutritional sources of food toward less nutritious and cheaper sources of food.

transfer resources to dairy farmers through the supply management price-setting mechanism. And unlike the harmonized sales tax (HST), this transfer does not include any compensating low-income tax credit to assist low-income dairy consumers. This explains why supply management is often challenged on horizontal equity grounds.

Engineering this sort of transfer is of particular concern to food security. In the CFIC report *Enough for All: Household Food Security in Canada*,¹⁰ we note that low-income Canadians are especially prone to food insecurity. The report also notes that food-insecure households are more likely to substitute away from nutritional sources of food toward less nutritious and cheaper sources of food. The 2008 National Nutritious Food Basket suggests a nutritious food basket should include “milk and alternatives” consumption of between 3.59 and 7.19 litres per week.¹¹ Pregnant and lactating women and children are among those at the high end of suggested consumption. Canada’s highest rates of poverty are realized by families headed by a lone female parent.¹²

When considering reform options, another equity issue arises. This pertains to adjustment costs. Statistics Canada shows the value of quota to be roughly \$30 billion (for all supply-managed commodities), about three-quarters of which (\$23 billion) can be ascribed to dairy.¹³ As we discuss later, many dairy farmers in particular have assumed sizeable debt to acquire quota. Clearly, any substantive change in supply management policy will affect the value of quota and, likely, quota loan default rates. Given that the policy has been in place for many years, it is not clear whether the cost of transition should rest with the farmers who, on good faith, purchased quota with full awareness of the risks, or whether the transition should be underwritten by the general public, or whether some combination of the two should be used.¹⁴

10 Howard and Edge, *Enough for All*.

11 Health Canada, *Food and Nutrition*.

12 Statistics Canada, “Persons in Low Income.”

13 Statistics Canada, “Table 002-0020.”

14 The Australian Dairy Adjustment Levy amounts to \$A 0.11 per litre.

On this question, one line of argument is that farmers, like any business, knew the policy risks when they acquired their quota. Therefore, they should bear the cost of that risk. This is analogous to the losses that Canadians assume in their registered retirement savings plans (RRSP) portfolios. For example, many Canadians realized significant losses to their RRSP portfolios without any special compensation when Nortel Networks' stock price crashed during the 2000s. Another line of argument is that society should bear the cost, as successive governments made the production quota a legal entry requirement for the dairy industry. In the final analysis, this is a decision for governments at the federal and provincial levels.

As the first allocation of quota was free, first-generation supply management farmers have benefited from an increase in the value of quota.

One fact that has a bearing on equity is the vintage of production quota. In this regard, early entrants are undoubtedly in a better position than late entrants. The first allocation of quota was free, so first-generation supply management farmers (some of whom sold over the years, while others passed the quota on to their children) have benefited from an increase in the value of quota as well as higher profits.¹⁵ Their political risk is behind them. Meanwhile, late entrants may have paid top price for their quota. As the value of the quota at any point in time reflects the expected discounted returns associated with the quota, a sudden reform of the system would make late entrants most vulnerable.¹⁶

This kind of policy risk is not unique to dairy. Canada has many policies that are effectively capitalized in enterprise value.¹⁷ As we show in Chapter 4, which looks at transportation policy, Canada maintains other production licensing schemes that have been reformed over the years, affecting the value of businesses that hold those licences.

15 Although the first allocation of quota was free, farmers were required to invest in milk storage and distribution facilities.

16 See Nogueira and others, "Policy Risk in the Canadian Dairy Industry."

17 A recent example demonstrates this point. The Government of Canada has moved to increase competition in regional telecommunication markets. This suggests that they would look favourably on new foreign entrants. When U.S.-based Verizon indicated an interest in acquiring Wind Mobile, the shares of Canadian incumbents Telus, BCE Inc., and Rogers Communications Inc. tumbled.

Efficiency

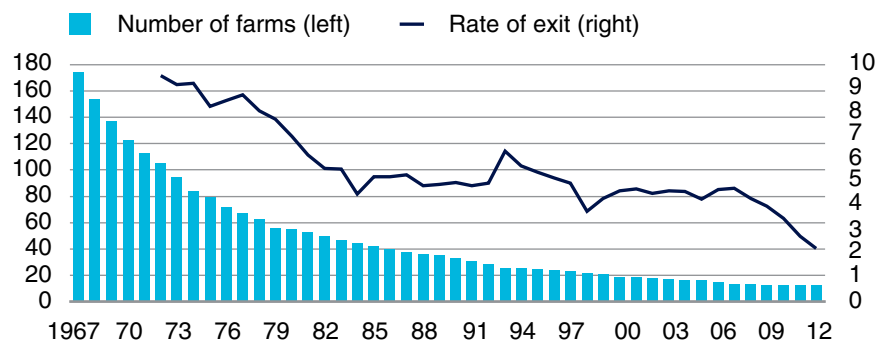
One challenge facing dairy reform is that dairy supply management locks in a certain amount of inefficiency. This is not to suggest that Canada has only inefficient dairy operations—in fact, as we show later, it has some of the world’s most efficient operations. But supply management helps less efficient operators remain viable because an average cost of production plays an important role in the target milk price. So less efficient producers are capitalized at a greater value than they would be in an open market.

This reality does not stop some dairy assets from being organized under very efficient producers. (See Chart 1.) This is clearly reflected in the significant decline in the number of dairy farms over the years as efficient producers have grown larger. But this consolidation has largely been within provinces, as the production quota is allocated on a province-by-province basis. Gradual intraprovincial consolidation still preserves the position of many less efficient producers. And, regardless of size, all producers have great difficulty realizing economies of scale because the system allocates an already small Canadian market into even smaller provincial submarkets. Therefore, even the best producers are not as efficient as they could be in a liberalized regime.

Chart 1

Fewer and Fewer Dairy Farms: Canadian Dairy Farms Consolidation, 1967–2011

(number of farms, 000s; annual rate of exit, five-year average, per cent)



Source: Canadian Dairy Commission.

From a reform perspective, equity and efficiency are two sides of the same coin. In any reform scenario, it becomes much more difficult to treat producers fairly (say, in terms of society bearing some of the transition costs) if there are no efficiency gains that can be used to help fund the transition. Consumers/taxpayers will be much more inclined to help fund the transition if it can be demonstrated that, on net, they are better off over the long term. That was the political case for the Australian Dairy Adjustment Levy, a taxpayer-supported adjustment tax.

Ideally, reform proposals should create a win-win situation for dairy producers and society at large. This is obviously much more difficult to do in a stagnating market than in a growing market. Hence the anticipated growth in world dairy demand provides an opportunity for reform if the Canadian industry can be positioned to capture a share of that demand, as both Australia and New Zealand have done post-reform. That involves a process of getting more dairy farm assets into the hands of the most efficient producers and giving them the opportunity to grow their production for the market.

Although supply management operates as an integrated market system there is, in fact, considerable variability in dairy farm performance.

The Dairy Farm Landscape

Not all dairy farms are created equal. Although supply management operates as an integrated market system, there is, in fact, considerable variability in dairy farm performance. The performance of existing dairy farms gives us an idea of the risk and potential returns from reform. The upside and downside of any reform is directly related to the relative strength of individual operations.

Dairy Farm Finances: High Cash/High Leverage

At first glance, Canadian dairy farms are financially sound. Both net cash farm income margins and net worth are among the highest compared with their agricultural peers in Canada. (See Table 2.)¹⁸ But book net

18 The farm financial survey is based on tax filing data. In the industry nomenclature, dairy farms are grouped with dairy cattle farms, although the net worth is mostly driven by dairy farms given their numbers and the value of quota on their balance sheets.

worth differs substantially from market net worth. For example, in a sample of Ontario dairy farms, the average farm market net worth was \$3.4 million, while book net worth was only \$1.1 million.¹⁹ Dairy farmers' net worth, shown below in Table 2, could be understated in Statistic Canada's 2011 farm financial survey, once market values for assets are taken into consideration.

Table 2

Average Net Cash Farm Income Margin and Book Net Worth, by Farm Type

(margin, per cent; net worth, \$)

	Margin	Net worth
Beef cattle ranching and farming, including feedlots	6.4	1,129,612
Dairy cattle and milk production farms	22.8	2,760,657
Fruit and nut farms	9.1	1,411,424
Grain and oilseed farms	21.0	1,870,312
Greenhouse, nursery, and floriculture farms	12.1	1,161,864
Hog and pig farms	12.7	1,867,279
Other animal production	6.7	1,169,127
Other crop farming	11.3	928,014
Other vegetable and melon farms	10.4	1,331,550
Potato farms	18.6	3,137,156
Poultry and egg farms	15.3	4,250,334
Total, all farms	16.4	1,667,335

Source: Statistics Canada, 2011 Farm Financial Survey.

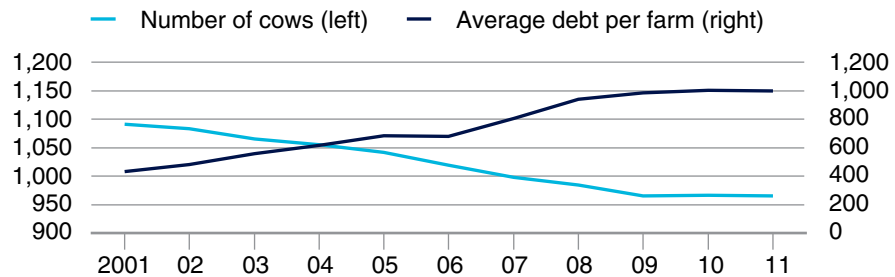
Yet closer examination of balance sheets reveals weakness. The debt-to-asset ratio has climbed for the 10-year period 2001–11. (See Chart 2.) This is unusual because the domestic industry is shrinking—domestic consumption per capita, the aggregate herd, and the number of farms

¹⁹ Dairy Farmers of Ontario, *Ontario Dairy Farm Accounting Project: Annual Report 2012*.

Chart 2

Fewer Cows, More Debt

(number of cows, 000s; debt per farm, \$ 000s)



Source: Statistics Canada, Farm Financial Survey.

are all declining. The overall industry, with high margins, generates substantial free cash flow for reinvestment. Some of this may fund technology and facility upgrades. But why would the industry need to increase leverage in a slow-growing market? An increase in leverage suggests a significant portion of incremental debt has gone toward the financing of quota between Canadian dairy farmers at ever-increasing prices. This trend has been persistent for more than a decade. Debt levels also more than doubled from 1995 to 2002.²⁰

On average, Farm Credit Canada (FCC) loans account for about a third of the total debt of dairy farms in the Ontario survey. The rest of the debt is non-government-sourced, likely credit union and bank loans. The average annual interest payment of Canadian dairy farms was \$38,000 in the 2011 Farm Financial Survey, and Ontario farmers paid \$48,000 in interest according to the 2011 survey. With 12,500 dairy farms, industry annual interest payments could be in the range of \$475 million to \$600 million, with two-thirds going to retail financial institutions.

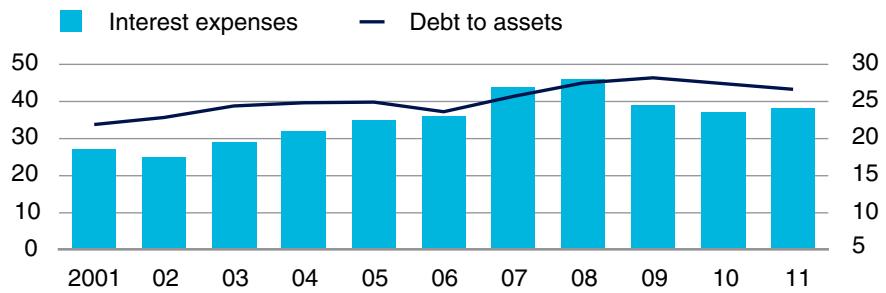
20 Barichello, Cranfield, and Meilke, "Options for the Reform of Supply Management."

Arguably, this leverage and the associated risk are unnecessary, since there have been few net tangible assets created. The modest tangible assets could easily have been internally funded within the industry or by Farm Credit Canada.

Chart 3

Leverage and Interest Payments, Average Dairy Farm

(debt to assets, per cent; interest expenses, \$ 000s)



Source: Statistics Canada, 2011 Farm Financial Survey.

If production quota could be rented, the more efficient producers could simply rent quota from the less efficient ones, effectively keeping all the extra profits within the dairy industry. Under the current system, there is an annual leakage from the industry of hundreds of millions of dollars that could be used to fund tangible dairy assets. (See Chart 3.)

This debt-servicing burden is not borne equally, but rather, more heavily by net buyers of quota—the most efficient (or ambitious) producers. The increasing debt load is one of the factors that encourage large producers to lobby to recover extra profit through even higher support prices and, perhaps more importantly, to resist, along with their funders, any price reductions in the industry.

Dealing With Indebtedness

In 2008, the P5 recognized that the existing quota market was causing problems with indebtedness and the costs of entering the industry. The P5 responded with quota policy reforms. These reforms included quota price caps (in 2009) at \$25,000, issuance of non-saleable quota, new allocation rules, and new entrant assistance programs.

These measures halted the upward march of quota prices and slowed debt accumulation. Yet these measures have had side effects. Holding prices constant leaves quantities to clear the market. Yet quantities were controlled through allocation rules. The volume of quota changing hands, itself a close proxy for the rate of consolidation, has fallen substantially, from 4 to 5 per cent annually in the 1980s through to the early 2000s to less than 2 per cent annually in the past three years. In 2012, a mere 1.7 per cent of quota changed hands through quota markets. (See Table 3.)

Table 3

Quota Liquidity

(quota, millions of kg of butterfat per year)

	2012 outstanding	2012 traded	Percentage traded	Value traded (\$ millions)
B.C.	25.75	0.41	1.6	46.8
Alta.	25.61	0.65	2.6	64.4
Sask.	8.93	0.11	1.3	9.6
Man.	12.46	0.40	3.2	34.7
Ont.	99.28	1.71	1.7	117.3
Que.	115.93	1.55	1.3	106.0
N.B.	5.25	0.15	2.8	10.9
N.S.	6.73	0.06	0.8	3.9
P.E.I.	3.97	0.06	1.5	4.1
N.L.	1.93	–	–	
Canada	305.82	5.10	1.7	397.7

Source: Canadian Dairy Commission.

As in the stock market, turnover is an indicator of liquidity. The low liquidity in the quota market is a reflection of the large barriers, both financial and structural, to inter-farm and interprovincial production transfers that would otherwise contribute to increased efficiency in Canada as well as to industry viability.

With a price cap, bids now regularly exceed offers in P5 quota auctions. The May 2013 auction in Ontario had 70 times more quota bids than offers (12,000 kg in bids versus 176 kg in offers).²¹ P5 farmers who previously had wished to exit now find it less compelling to do so, especially when Western Milk Pool quotas are trading near \$40,000, a significant premium to the P5 price cap of \$25,000.²²

There are clearly some fundamental structural problems in the quota market. There is likely strategic bidding taking place in an extremely thinly traded market. This distorts efficient prices and volumes and, ultimately, the use of market metrics to value quota. Hence, quota valuation that is based on this market is highly suspect.

As pertains to the quota market, supply management officials face a reform dilemma. They can operate a quota market that:

1. continues to transfer quota to the more efficient farmers, albeit while these farmers assume high leverage and greater policy risk;
2. caps quota prices and tolerates market imbalances that make it difficult to consolidate and transfer factors of production, yet gains incumbent producers some time to recapture rents from the financial sector by paying down debt.

By understanding performance variability, we can appreciate the dynamics of the sector and the upsides/downsides of reform options.

Understanding Performance Variability

Dairy farms are not all created equal. By understanding performance variability we can appreciate the dynamics of the sector and the upsides/downsides of reform options. Clearly, some dairy farms are in a better

21 Dairy Farmers of Ontario, "Quota Exchange Offers and Bids."

22 Canadian Dairy Information Centre, *Welcome*.

operational position to benefit from reforms targeted at sector growth, while others are exposed to more reform risk. The main difference between the two is the extent to which they depend on their income statement versus their balance sheet (especially quota value) for their enterprise viability.

An idea of the variability in dairy farm performance is provided through the *Ontario Dairy Farm Accounting Project Report (ODFAPR) for 2011*.

An idea of the variability in dairy farm performance is provided through the *Ontario Dairy Farm Accounting Project Report (ODFAPR) for 2011*. We limit our discussion to the data in this report. However, the analysis and implications derived are relevant to dairy farms across Canada. Ontario, with a third of the dairy herd and dairy farms in Canada, had an average herd size of just over 76 cows in 2012, very close to the Canadian average of 77.²³ As such, we believe that the Ontario numbers provide a sufficient basis for analyzing the Canadian industry writ large.

The report clearly demonstrates performance variability. (See Table 4.) Performance is measured by the cost of production: the top 15 farms are those with the lowest cost of production. The sample of Ontario dairy farms can be categorized in three groups:

Most efficient: Extrapolating from the Ontario numbers, we estimate that the top 25 per cent of dairy farms produce almost half of Canada's milk supply. These "best in class" are in a position to claim economic rents from the combination of price setting and limited competition, through low-cost production. Their large herd sizes are testament to their success. These farmers demonstrate how economies of scale create operating efficiencies. They use their operating efficiencies as the basis for capturing market share from other producers and acquiring additional production quota. But even relatively large and efficient producers are still small family-owned businesses by the standards of the rest of the Canadian economy, averaging only around \$1.4 million in annual revenues.

23 Canadian Dairy Information Centre, *Welcome*.

Table 4

Key Operating and Financial Metrics, Ontario Dairy Farms, 2011

(n = 61)

	Bottom 15	Middle 31	Top 15	All 61
Average Dairy Cows	47.0	68.1	162.8	86.2
Balance sheets				
Quota at market value (\$)	866,467	1,596,710	4,094,133	2,031,262
Quota at book value (\$)	114,862	432,023	1,478,945	611,473
Quota, book-to-market value (%)	13.3	27.1	36.1	30.1
Equity at market value (\$)	2,363,721	2,770,128	5,884,193	3,435,945
Equity at book value (\$)	745,947	897,173	2,042,383	1,141,595
Income statements (\$)				
Total farm revenue	360,855	549,802	1,351,239	700,416
Net farm income	74,876	124,878	389,317	177,612
Financial ratios (%)				
Net margin	30.1	33.8	40.3	34.4
Net return on total assets	2.8	4.4	6.2	4.7
Net return on total assets (less quota)	4.0	7.7	12.3	8.3
Return on equity (%)	3.4	5.9	8.6	6.3
Return on market value of equity, less quota (%)	5.4	13.9	28.2	15.3

Sources: Dairy Farmers of Ontario; The Conference Board of Canada.

Medium efficient: The farms in the middle two quartiles produce about 40 per cent of Canada's milk. Some of these farms may expand operations, while some could be scaling down, depending on their lifestyle choices. The bulk of these farmers are viable under the status quo.

Least efficient: Bottom-quartile performers produce slightly more than 10 per cent of Canada's milk. They generate a relatively low return on equity (3.4 per cent), which does not justify reinvestment into the business. These are the farms that are most likely to be consolidated

into top- and middle-performing farms, sometimes operationally but more commonly through sales of their quota to producers who can better use the quota.

Top-performing dairy farms are very good at managing their farming business. They are able to generate a return on real assets (excluding quota) of 12.3 per cent, more than three times that of their bottom peers at 4 per cent. The resulting high return on equity encourages them to reinvest their earnings into the business. In *Seeds of Success*, we show similar variability in the performance of all Canadian farming enterprises. The only way for these farms to expand, under the current regime, is to purchase quota from willing dairy farmers, effectively paying them to exit the industry. The quota value book-to-market ratio is significantly higher for the top tier (36 per cent) than the bottom tier (13 per cent). With quota values rising for the past 10 years, it is reasonable to assume that the top-tier farmers have been buyers of quota and the bottom-tier, sellers.

For the bottom-tier, small-scale farmers, often with less than 50-head herds, the payoff comes through capital gains on quota rather than efficient use of quota. Their big payday comes on quota sale day. Unable to justify reinvestment for years because of a low return on equity and unable to rent out their quota, these farmers continue to produce milk at relatively high cost. Meanwhile, they are comforted by the thought that they hold an asset whose value has risen steadily over the years. We estimate that their current quota value is, on average, worth 7.5 times the book value.²⁴ For these farmers, quota acts as a form of retirement saving. An average bottom-tier farmer can sell two cows' equivalent of quota (\$25,000 to \$40,000 per cow) per year and fund a 25-year retirement.

The admirable financial strength of Canadian dairy farms is best demonstrated by considering a scenario. If quota values suddenly went to zero, all the farms in the Ontario survey would still be financially solvent in the sense that they would have positive net equity, even the

24 Bottom-tier quota market value divided by book value ($866,467 \div 114,862 = 7.5$). This is based on traded quota. As we show later, off-exchange trading may vary this ratio.

bottom quartile.²⁵ The 34 per cent average net margin implicitly means that the average Canadian dairy farm is resilient to periods of falling milk prices—they have a buffer of approximately 35 per cent.

Farm consolidation continues in Canada, as it does elsewhere in the world. The pace in Canada is slower because of the supply management regime. The rate of consolidation was about 5 per cent annually from 1980 to 2006 and has since declined to less than 2 per cent annually. Supply management slows the pace of consolidation for two reasons. First, it improves the business viability of less efficient producers, reducing their willingness to exit. Second, it limits the ability of more efficient farmers to expand, because of high quota costs and interprovincial barriers to quota transfer.

Conclusion

All Canadians have a stake in supply management. As such, supply management policy should be subjected to careful analysis as with other important public policies. Public policies can be evaluated against equity and efficiency criteria. Supply management policy can be challenged fairly on equity grounds because it effectively transfers resources from all Canadian households to a shrinking number of dairy farmers. As a group, the latter are financially better off than the former. Canadians may choose to continue to make this transfer if they put great value on ensuring dairy farmers' business stability. However, that approach seems contrary to the main thrust of Canadian income redistribution policy, which focuses on transferring resources from the rich to the poor.

On efficiency grounds, our analysis indicates that dairy supply management improves the business viability of less efficient producers and limits the ability of more efficient farmers to expand. To be sure, the policy is successful in the sense that dairy farmers, as a group, do well. Still, other classes of farming, like grains and oilseeds, also do well without having supply management regimes. Moreover, supply

25 Owner equity at market value would still be positive for the farms in both surveys.

management has had some unintended consequences in terms of increasing financial and policy risk on the farm through the funding of production quota through debt. This has led to a steady stream of debt-servicing payments to financial institutions purely to finance quota, leaving less money to fund innovation or efficiency improvements. This puts the industry further behind global competition.

More importantly, from a reform perspective, supply management limits production from gravitating to dairy farmers who make the best use of new capital. We have argued that the possibility of a win-win scenario is much more likely in a growth context. For over 40 years, the assumption has been that the dairy sector should allocate income within a fixed market but not realize gains through significant growth—and in the process national production had actually declined. Any win-win reform package needs to be accompanied by a new vision for industry growth. In the next chapter, we review the case for industry growth before considering reform options.

CHAPTER 3

A New Strategic Vision: Industry Growth

Chapter Summary

- Canadians can define a new strategic vision for dairy based on growth and efficiency.
- There are two growth opportunities: a major international opportunity and a domestic opportunity.
- Grasping the opportunities depends on getting more dairy assets into the hands of the best dairy farmers.
- Canadian dairy farms, at similar scale, are as efficient as U.S.-based dairy farms.
- In the base case, the average farm would have the same revenue as an average Tim Hortons franchise.
- Shipping costs analysis shows that Canada can land dairy products competitively in growing Asian markets.

Reform is facilitated by a growing and efficient market rather than a stagnant and uncompetitive market. The reason is straightforward—growth and competitiveness generate resources to fund the costs of the inevitable transitional period that accompanies reform. With more resources to share among producers and consumers, it is easier to find efficient and equitable solutions to the many conundrums of supply management. The acrimonious national debate reflects the fact that Canadians have yet to develop a shared vision of an expanding dairy sector. We are left to fight over the spoils, so to speak.

Canadians can define a new strategic vision for dairy based on growth and efficiency. This path has been trod by New Zealand and Australia and is starting to be realized by the United States. There are, in fact, two potential sources of growth, international and domestic. However, until the industry is positioned to capture this growth, it will continue to tie itself to a profit creation and distribution system that results in stagnating dairy product sales, low employment, fewer dairy farms, higher debt, and fewer cows.

This chapter reviews the growth potential for dairy, analyzes Canada's competitive positioning, and suggests how reform would position the Canadian dairy sector to capture growth.

The International Growth Opportunity

Dairy in Demand

A key working assumption of supply management is that milk is a perishable product that trades over limited distances. This is true of fluid milk, but the milk commodity is actually a fairly flexible product

that is convertible into many traded forms. As we noted at the outset, Canada was a major trader in cheese during the Second World War. Today, international dairy markets are evolving to create shortages in dairy products comparable with wartime shortages.

There are two key trends in global dairy markets: increasing demand and more trade. The Organisation for Economic Co-operation and Development and the Food and Agriculture Organization (OECD/FAO) jointly project long-term trends in agricultural commodities.¹ In their most recent forecast for 2013–22, global butter demand (volumes) is expected to increase by 21 per cent, cheese by just over 11 per cent, and whole milk powder by 13 per cent over the forecast horizon. The OECD/FAO expects demand to be flat in most developed markets, meaning that most of the dairy demand growth is in emerging markets in Asia and Africa.

Most dairy products are exported in the form of dehydrated milk (milk powder or condensed/evaporated milk), butter, and cheese.

Trade markets are evolving to service this demand. Today, the major global dairy trade flows are from the temperate regions to the equatorial regions of the world. (See Exhibit 1.) Dairy products are exported from Oceania, Europe, North America, and South America, where there is comparative advantage of production, to the rest of the world. As milk consists mostly of water, processing usually involves removing water and adding value (through, for instance, fortification or product conversion) prior to shipping. Most dairy products are exported in the form of dehydrated milk (milk powder or condensed/evaporated milk), butter, and cheese.

Supply-chain and logistic improvements have facilitated a tremendous growth in net trade volumes² over the past four decades, from 11 million tonnes (Mt) (milk-equivalent) in 1961 to 54 Mt (milk-equivalent) in 2010.³ (See Chart 4.) The 54 Mt of exports in 2010 translates to a market size of US\$33 billion. In percentage terms, the trade share of world production

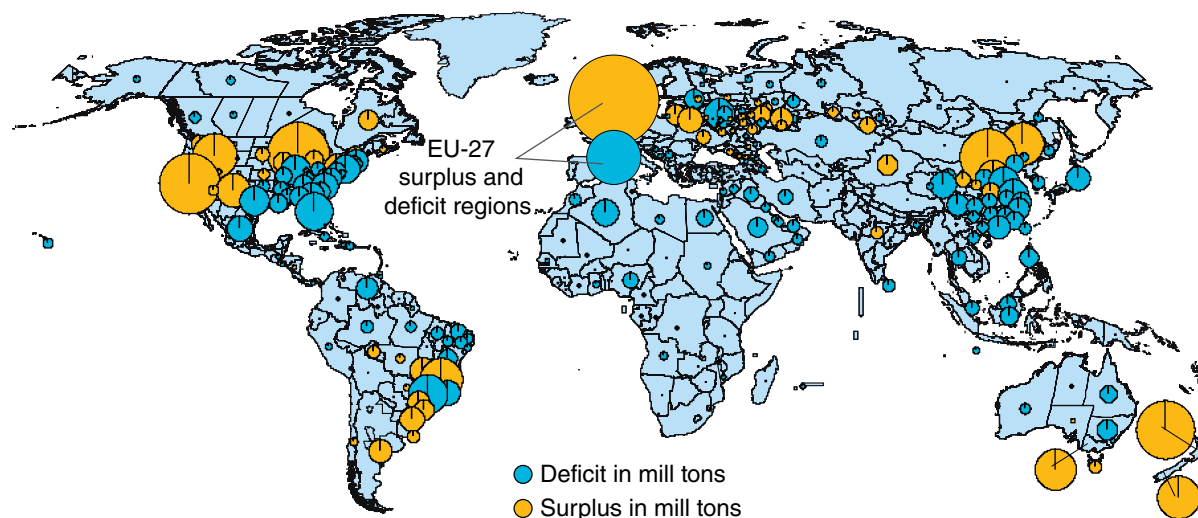
1 OECD-FAO, *Agricultural Outlook 2013–22, by Commodity*.

2 Net trade volume for each country is calculated as the net of dairy imports and exports.

3 FAOSTAT. Total global net trade volume is the sum of each country's net dairy trade volume.

Exhibit 1

World Milk Surplus and Deficit, 2010



Notes: Data 2008 in ECM. If not available, 2007 data was taken.
Calculation of surplus/deficit per country/region: milk production minus milk demand.
Source: International Farm Comparison Network Dairy Research Center.

has more than doubled from 3 per cent to 7 per cent. Still, at 7 per cent, dairy remains a relatively thinly traded commodity, with most production consumed domestically. For certain dairy products, however, the share of production traded is significantly higher than for milk overall—around 10 per cent for butter and 30 per cent for skim milk powder.⁴

Although the FAO data in Chart 4 ended in 2010, global dairy export growth did not. Global dairy export volumes have continued to grow by more than 7 per cent per annum over the past three years.⁵ The most significant exporter is New Zealand, which exports around 97 per cent⁶ of its milk production and accounts for close to 30 per cent of dairy products traded globally.

4 Dairy Australia, *Dairy Australia*.

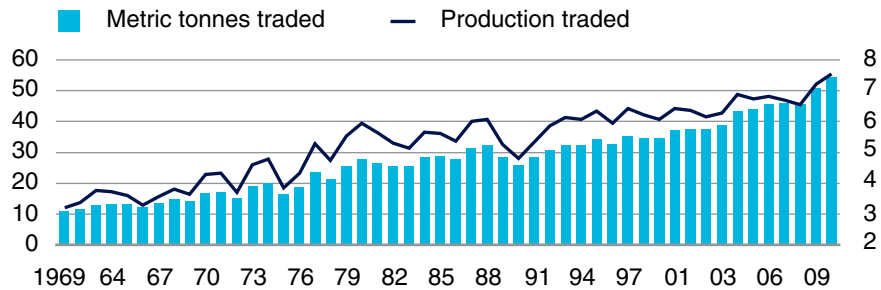
5 Fonterra, *Global Dairy Update*.

6 Ministry for Primary Industries, New Zealand, *Dairy Facts and Figures*.

Chart 4

World Trade in Dairy Products

(trade, metric tonnes; share of production traded, per cent)



Source: FAOSTAT.

In 2010, the top exporting regions were Oceania (mainly New Zealand and Australia), Europe, and the United States (within North America). (See Table 5.) The top importing regions are Asia and the northern half of Africa. Export values from Oceania have grown almost 50 per cent from US\$7.8 billion in 2010 to US\$11.7 billion in 2012, a function of both increased export volumes and rising prices. According to Fonterra, “robust growth in demand continued in China, rest of Asia and the MENA (Middle East and North Africa) region in calendar year 2012.”⁷ In 2012, net dairy exports from New Zealand, Australia, and the United States were in the billions of dollars—US\$9.4 billion, US\$2.3 billion, and US\$2.0 billion, respectively. (See Chart 5.)

Canada was a net importer of dairy overall, but still managed a net export of \$27 million dollars of milk powder. Still, the OECD/FAO’s forecast suggests Canada will continue to be a marginal player in traded dairy products. For instance, Canada has only 0.02 per cent of the world market in whole milk skim powder, 0.29 per cent of the world market in cheese, and 0.01 per cent of the world’s butter market. By contrast, by 2022, Canada is expected to have 9.7 per cent of the world market in

7 Fonterra, *Global Dairy Update*.

Table 5

Top Exporting and Importing Regions 2010, Net Dairy Trade

(US\$ billions)

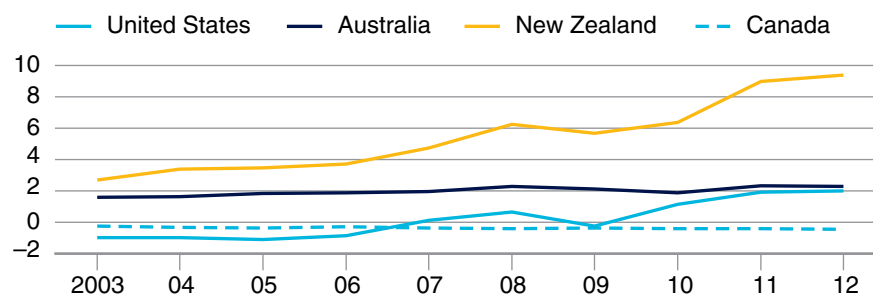
Top four exporting regions	Net trade value	Top seven importing regions	Net trade value
Oceania	8.2	Asia, East	4.7
Europe	4.7	Asia, Southeast	3.2
Americas, North	1.4	Asia, West	2.8
Americas, South	0.5	Africa, Northern	2.0
		Americas, Central	1.3
		Africa, Western	1.0
		Asia, South	0.6

Sources: FAOSTAT; authors' calculations.

Chart 5

New Zealand, United States, Australia, and Canada: Dairy Net Exports, 2003–12

(US\$ billions)



Sources: USDA; Statistics New Zealand; DAFF Australia; Canadian Dairy Information Centre.

oilseeds and 13.8 per cent of the world wheat market (by volume).⁸ Given that Canada has a strong track record of food exports and currently has a minimal share of the world's dairy market, it is highly plausible that

8 All calculations are based on data found in *OECD-FAO Agricultural Outlook 2013–2022, by Commodity*.

Canada could greatly increase production through relatively small gains in global market share and net exports. Our competitors have improved their net export position over the last few years. Even Australia, which has suffered from extended periods of drought, has a net export position in excess of US\$2 billion annually.

As milk consists mostly of water, it is far more economical to process milk into a dried form before transporting it long distances. Dried milk also has a much longer shelf life and does not require refrigeration. This explains why dehydrated milk constitutes such a high amount of traded milk products. (See Table 6.).

Table 6

Net Inter-Regional Dairy Trade, by Product Type

(value, US\$ billions; percentage of total)

	Value	Percentage of total
Dehydrated milk (includes milk powder and condensed and evaporated milk)	10.1	64.9
Butter	2.4	15.6
Cheese	1.5	9.3
Whey and yoghurt	0.9	6.2
Liquid milk	0.4	2.6
Cream	0.2	1.4
Total	15.5	100.0

Source: FAOSTAT.

East Asia and Central America are key export markets for Canada that are growing rapidly. GDP per capita is rising in these regions and with it, the consumption of protein per capita, including dairy. The New Zealand, Australian, and U.S. dairy industries have been able to capitalize on this opportunity very successfully.

Concerns about food safety in China have undermined trust in its locally produced milk—a trust that has yet to recover.

Concerns about food safety in China have undermined trust in its locally produced milk—a trust that has yet to recover. Chinese families willingly pay a premium for foreign-sourced milk powder. In May 2013, the Chinese premier, addressing plummeting consumer confidence in milk, vowed publicly to improve the safety of domestic baby milk powder.⁹ Foreign brands of milk powder have already gained more than 50 per cent market share in China, 60 to 70 per cent for the middle- and high-end markets.¹⁰

The New Zealand, Australian, and Dutch dairy farmers face a very different sort of supply management challenge—they struggle to produce enough to meet surging demand. The import demand from China has caused these governments, among others, to introduce export quotas to ensure sufficient domestic supply.

The export quotas have exacerbated supply shortages in China. Australian students are hired to purchase hundreds of tins of milk powder to smuggle to China, where a \$24 tin sells for more than twice that amount (\$54) online on Taobao, the Chinese version of eBay.¹¹ The Dutch government recently launched a probe into a nationwide shortage of baby formula after sales in early 2013 spiked 50 per cent over 2012 levels without a corresponding increase in births; most of the formula had allegedly been re-exported to China.¹²

To make matters worse, the recent widespread drought in New Zealand,¹³ its worst in 30 years, led to near-term whole milk powder (WMP) prices spiking to a record high of US\$6,255/MT.¹⁴ Assuming a WMP-to-milk recovery ratio of 13 per cent by weight, and disregarding

9 Xinhuanet, “Chinese Premier Vows to Boost Dairy Industry.”

10 Zeng, “Foreign Milk Powder Still Pricey.”

11 News.com.au., *Black Market*.

12 BBC News, *Dutch Government to Probe*.

13 Sedgman and Withers, “Milk Powder Climbs to Record as Drought Scorches New Zealand.”

14 Price history is available at Global Dairy Trade, www.globaldairytrade.info.

conversion costs, the implied value of liquid milk on that day was US\$0.81/litre. This is even higher than Canada's supply-managed milk support price, and close to twice that of the U.S. market price.

We see this phenomenon, too, in the difference in natural gas prices between North America and Asia. But unlike natural gas, milk exports do not require the building of expensive liquefied natural gas (LNG) terminals to prepare us to take advantage of the market. In August 2013, New Zealand faced a major challenge with concerns about whey protein concentrate safety, predicating a large recall. Although New Zealand eventually determined that the concentrate was safe, the incidence shows that competitors can steal market share when there is concern about product safety.

Export opportunities like these exist today. Yet the Canadian dairy industry is unable to take advantage of them. As Goldfarb explains in *Making Milk*, a 2002 WTO panel ruling declared the price gap between Canada and world prices to be a subsidy.¹⁵ This limits Canada's exports to the WTO export subsidy limit. So instead of Canadian skim milk going to Chinese babies, it is converted into low-priced animal feed.¹⁶

Domestic Growth Opportunity: Recapture Market From Substitutes

Higher domestic prices compared with imports and substitutes have cost the Canadian dairy industry market share. In 1980, Canada produced 14 per cent more milk per capita than the United States. By 2011, Canada produced 21 per cent less per capita.¹⁷ Persistent milk price differentials between Canada and the rest of the world have led to the substitution, by Canadian consumers and manufacturers, away

15 Goldfarb, *Making Milk*, 29.

16 Dairy Farmers of Ontario, "Surplus Hits All-Time High."

17 Estimated based on production data from the USDA and CDIC and population data from the U.S. Census Bureau and Statistics Canada.

The estimated market value lost to Canadian dairy farmers, at current support prices, is almost \$1 billion annually.

from dairy products. Meanwhile, Americans have kept the dairy market share through innovation—for instance by using milk solids in a variety of products.

U.S. consumption of milk fat-equivalent dairy is close to 10.14 kg per capita.¹⁸ The Canadian milk production quota for 2012 was 305.82 million kg of milk fat, or 8.77 kg per person. This difference of 1.37 kg per person is equal to 15.6 per cent of current production quota. It represents the share of Canadians' demand lost to (a) imported dairy substitutes and (b) non-dairy substitutes. The estimated market value lost to Canadian dairy farmers, at current support prices, is almost \$1 billion annually.¹⁹

Net dairy imports in Canada reached \$440 million in 2012. Informa Economics calculates the 2009 Canadian net dairy imports, on a milk-equivalent basis, to be 3.13 billion pounds of milk.²⁰ Against the 2009 domestic milk production of 7.6 billion litres (17.3 billion pounds), these imports represent 15.2 per cent of the market. This estimate by Informa Economics is close to our estimate based on U.S. and Canadian consumption levels. The import value is smaller compared with our estimate because imports are less expensive than domestic supply.

We acknowledge that estimates of milk-equivalent weights for the assortment of imported milk solids rely heavily on the underlying data and method. As Wheeler points out, depending on how one measures it, the gross import share number of 24 per cent (as calculated by Informa Economics) would be 6.8 per cent on a butterfat basis and 34.7 per cent on a solids (not fat) basis.²¹ An extremely conservative estimate for 2012 is a market loss of \$440 million to the Canadian industry through import competition.

18 United States Department of Agriculture, "Dairy Products: Per Capita Consumption."

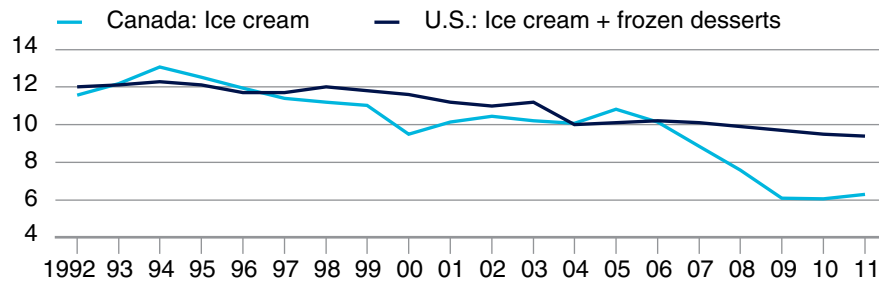
19 15.6 per cent of 2012 production of 7.96 billion litres at support price of C\$0.76/litre amounts to a loss of \$940 million.

20 Informa Economics, *An International Comparison*.

21 Wheeler, *Supply Management's Vulnerability*.

The ice cream market provides the best example of these forces at play. (See Chart 6.) According to the Canadian Dairy Information Centre (CDIC), Canadians consume only two-thirds as much ice cream as Americans. However, these estimates are based on the butterfat the dairy industry supplied to ice cream producers as opposed to the amount producers actually use for Canadians' ice cream consumption.

Chart 6
Lost Market Share to Substitutes: Ice Cream Consumption Per Capita
 (consumption, kg per capita)



Sources: Canadian Dairy Information Centre; USDA.

Manufacturers have increasingly used cheaper substitutes—butteroil/sugar blends that are essentially 49 per cent milk fat and 51 per cent sugar. The blend ratio circumvents import tariffs designed to keep domestic milk prices high, and as a butter substitute, does not show up in dairy trade. Ice cream producers such as Nestle are also increasing their use of vegetable oil substitutes to produce “frozen desserts” that very much look and taste like conventional, milk-based ice cream. Assuming an average of 10 per cent milk fat in ice cream, the 3 kg per capita loss works out to 10.5 million kg of butter Canada-wide, about 3 per cent of the market and worth \$77 million if valued at the industry support price of around \$7.34/kg.

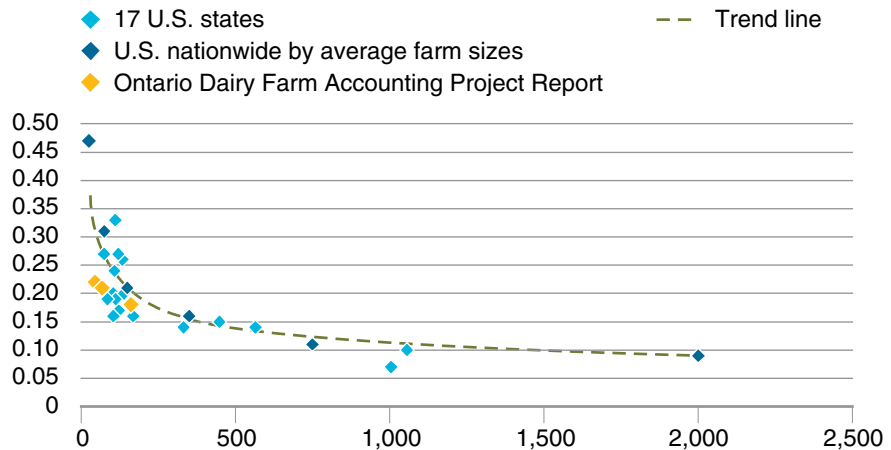
Scale and Efficiency

A key reform question relates to how large Canadian dairy farms would need to be in order to compete internationally. Our analysis suggests that average Canadian herd sizes would need to more than double, and there would be significant advantages to growing even larger. Larger dairy farms distribute overhead (fixed) costs over a larger production base, bringing down the average production cost per litre of milk. (See Chart 7.) Once investments in fixed assets have been undertaken, farmers have an incentive to increase production as long as they receive a price for their product above marginal cost. The United States Department of Agriculture (USDA) cost-of-production estimates, for 2011 fixed costs, account for 45 per cent of the production cost of milk for small herd sizes (50 to 99 head) but only 23 per cent of the production cost for large herd sizes of 1,000 head or more.

Chart 7

North America: Fixed Cost of Milk

(US\$/litre)



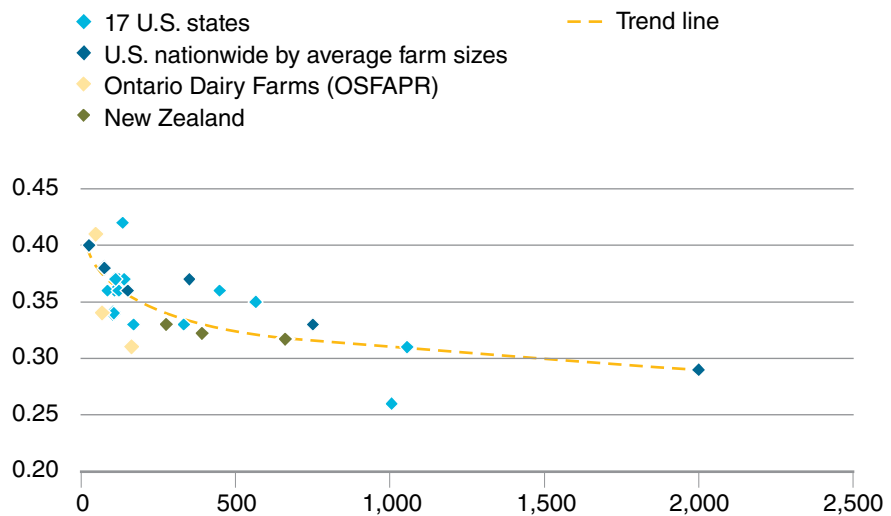
Sources: USDA ARMS; Dairy Farmers of Ontario; The Conference Board of Canada.

These scale economies are not limited to fixed production costs. Operating costs also exhibit scale advantages. (See Chart 8.) The most significant operating costs of milk production in the USDA classifications are feed costs, fuel costs, and veterinary care. An examination of USDA data (southern U.S. states were excluded) and Dairy Farmers of Ontario (DFO) data reveal operating economies of scale in North American dairy operations. Large farms do have an advantage in managing operating costs. Canadian dairy operations in the ODFAPR sample are certainly not inferior to their U.S. counterparts in this regard.

Chart 8

North America: Operating Cost of Milk Production

(US\$/litre; average herd size, number of cows)



Sources: USDA; Dairy Farmers of Ontario; DairyNZ; The Conference Board of Canada.

New Zealand's 2012 operating costs of production are also shown in Chart 8 for comparison purposes. Although New Zealand dairy farms used to have a significant cost advantage because of their pasture (as

opposed to feed) model, farming intensification over the past decade has led to significant cost inflation. The New Zealand cost curve is now similar to the North American cost curve.

A key conclusion here is that there is a significant advantage in increasing average herd sizes to *at least* 200 head. The short-term operating cost per litre drops \$0.05, from \$0.40 to \$0.35, as one moves from a herd size of 35 to 200. The next \$0.05 drop, to \$0.30, requires a move to a herd size of 1,500.

This important cost-size relationship has significant implications for Canada's current supply curve, its potential production, and the Canadian dairy industry's roadmap to international competition.

Canada's competitors' average herd sizes are already several times larger. (See Table 7.) Even when adjusted for milk yield, the average milk production per farm is two to three times larger in our major competitor countries. The larger milk production base and export base also means that the industries in these countries already have significant investments in processing capacity and infrastructure for export.

Table 7
Average Herd Size and Milk Production, 2011–12

	Average herd size	Milk per cow (litres)	Milk per farm (millions of litres)	Dairy cows (millions)	Milk produced (billions of litres)
New Zealand	393	4,128	1.62	4.63	19.13
Australia	240	5,926	1.42	1.63	9.48
United States	187	9,817	1.84	9.23	90.54
Canada	77	8,295	0.64	0.96	7.96

Sources: Statistics Canada; USDA; Dairy Australia; Statistics New Zealand.

New Zealand, Australia, and the United States have a significant head start in both milk production and exports. In order for Canada's dairy industry to succeed internationally, the Canadian dairy market would have to look more like the dairy industry in those jurisdictions. That involves adjusting the industry's cost curve. Farms would likely become somewhat larger, although by standard business definitions most would continue to be small businesses and would remain mostly family-owned. As we show in Table 4 above, the top quartile of farms now earn \$1.4 million in revenue. We estimate that even with larger herd sizes and lower prices, dairy farms would earn around this much revenue. To put this in a small business perspective, this is about the same revenue as a typical Tim Hortons franchise. (See box "Would Reform Spell the End of the Family Farm?")²²

Would Reform Spell the End of the Family Farm?

In any discussion of farm policy reform, social considerations are front and centre. A common concern is that reform may change the face of farming, ending the family farm and resulting in large corporately owned farming entities. In our view, this concern is overstated.

As we point out in *Seeds of Success*, Canada's farms are overwhelmingly family-owned.²³ The vast majority are sole proprietorships, with family members as the management team. There has been some movement toward family corporations, for succession planning and tax purposes. The family's choice of business organization does not change the fact that it is family-owned and operated.

Under our scenarios, the farms would indeed become larger. In one scenario, the farms would be no larger than a typical Tim Hortons franchise and in the other about the size of a McDonald's franchise. Essentially, reform would see a movement away from micro business farms toward small-business farms.

22 Friscolanti, "Tim Hortons."

23 Butler and Stuckey, *Seeds for Success*, 11.

Given the scale economies, there would be few advantages to large corporate entities engaging in dairy farming. It is difficult to consolidate many privately held businesses under a large corporate umbrella. The operations are simply too small and geographically dispersed. There are few synergies realized through large corporate organization. Rather, the larger corporate entities are likely to focus on the processing and distribution parts of the business, where they are today. The farms themselves are likely to remain family-owned and -operated, albeit more prosperous, businesses.

Somewhat larger dairy farms have substantial cost advantages over smaller farms, derived from scale economies.²⁴ Evidence of significant economies of scale in dairy farming is seen in the ongoing shift of production to larger operations worldwide. Scale economics suggests that beyond an optimal size (the maximum efficient scale), diseconomies set in and average costs stay flat or even increase.

The optimal scale varies from country to country. For countries where agricultural land is at a premium, there is a tendency to maintain very large herds. For instance, China Modern Dairy operates a 20,000-head farm in Feidong, Anhui Province, China.²⁵ TH Milk in Vietnam, with technology imported from Israel and cows from New Zealand, manages more than 20,000 head.²⁶ Likewise, some countries have to incur very high fixed costs, which also leads to larger herd sizes. For example, Al Safi Dairy, which operates an air-conditioned integrated dairy farm in the middle of the Saudi desert, has a 37,000-head herd.²⁷ There are also significant economies of scale in processing and marketing—which is the very reason co-operatives and milk pools were formed.

In the Canadian context such herd sizes are unlikely in the future. With abundant land resources, most of the economies of scale can be realized with considerably smaller herd sizes. Even California, which

24 MacDonald and others, *Profits, Costs and the Changing Structure of Dairy Farming*.

25 Frangos, "China Grows Its Dairy Farms."

26 TH Milk, *TH Farm*.

27 Taha, "Al-Safi in Talks to Acquire Azizia Dairy."

maintains North America’s largest herds (an average of 1,000 head), has small herds by Asian standards. This suggests that, even in the event of complete liberalization, most Canadian dairy farms would continue to be relatively small, family-run businesses.

Focus on Canada–U.S. Cost Competitiveness

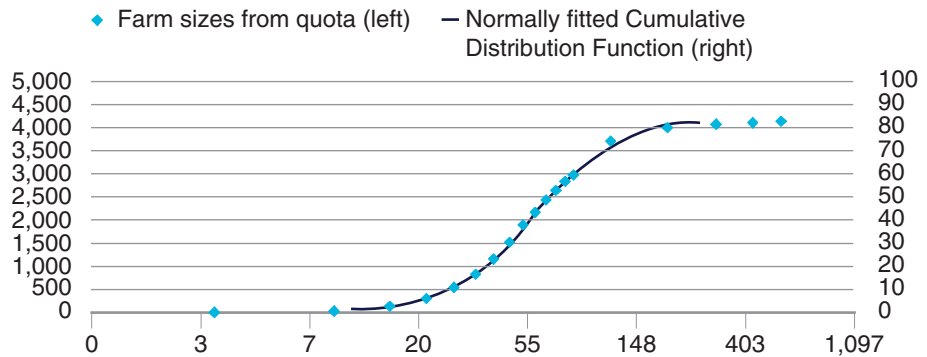
From a strategic perspective, most Canadians rightly focus on the United States as our natural competitor. In an open Canadian market, there would be more two-way trade in dairy products between Canada and the United States. So how do we compare with our neighbours to the south?

By examining butterfat quota distributions in Ontario, we are able to estimate the herd size distribution in Ontario. (See Chart 9.) This distribution pattern of herd sizes is not unique to Canada—New Zealand and the U.S. have similar distributions.

Chart 9

Distribution of Herd Sizes in Ontario

(number of farms*; CDF, per cent)



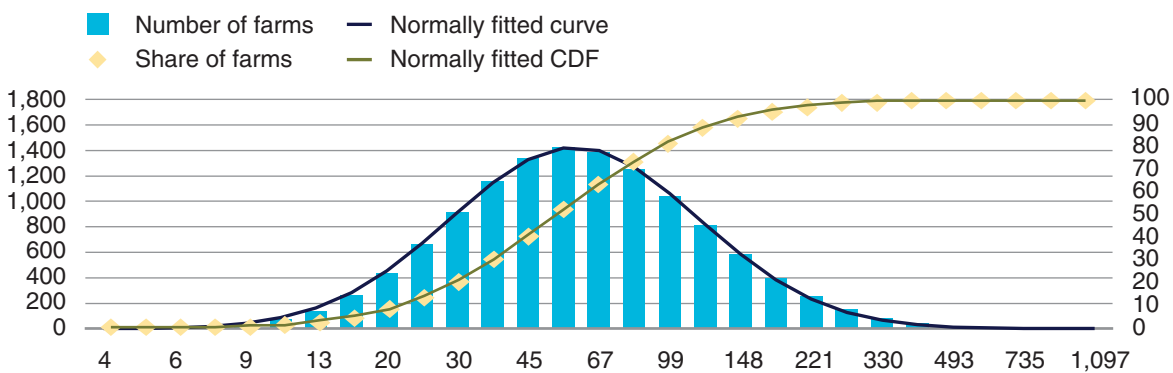
*as of July 2011

Sources: Dairy Farmer of Ontario; The Conference Board of Canada.

We noted that Ontario has about one-third of Canada’s cows and produces a similar amount of Canada’s milk. It has an average herd size very close to the national average. We applied this technique to provincial data and summed up the provincial distributions to estimate Canada-wide dairy farm size distribution. (See Chart 10.)

Chart 10
Estimated Distribution of Canadian Dairy Farms by Size

(number of farms; cumulative share of farms by size, per cent)



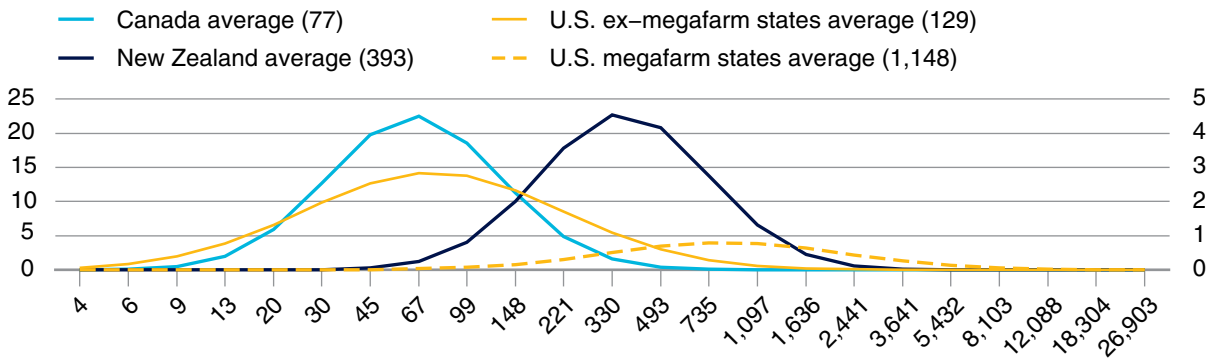
Source: The Conference Board of Canada.

We then examined the herd size distribution in the United States. The U.S. herd distribution is unique because of the presence of mega-sized dairy farms in a number of states. In five states, the average herd size exceeds 1,000 head. We term these “megafarm states.” Five states (New Mexico, Arizona, Nevada, California, and Idaho) account for only 5 per cent of the farms but 35 per cent of total milk production. The average herd size in these five states was 1,148 head in 2011, while the average for the rest of the U.S. was 129 head. In Chart 11, the distribution curve for the megafarm states is plotted on an enlarged axis (right axis). The New Zealand herd size distribution is also included for comparison purposes.

Chart 11

Dairy Herd Size Distributions and Average Herd Sizes: Canada vs. Peers

(share of farms by herd size, per cent; share of farms, U.S. megafarm states, per cent)

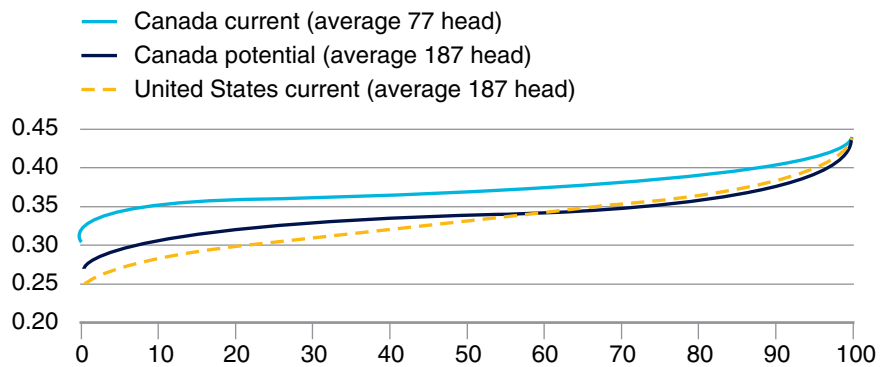


Sources: Dairy Farmers of Ontario; USDA; Dairy NZ; The Conference Board of Canada.

Chart 12

Canada-U.S. Supply Curve Comparison

(production cost, US\$ per litre; share of production, per cent)



Source: The Conference Board of Canada.

We apply the cost data from Chart 8 to the Canada and U.S. herd distribution curves in Chart 11. We then estimate and contrast the supply curves, which we show in Chart 12. We note that based on a scale

If Canada's dairy industry scaled up to the U.S. average of 187 head, the majority of the industry would realize \$0.05 per litre of extra net income.

economy comparison, the 20 per cent most efficiently produced milk in the U.S. is produced at approximately \$0.05 per litre cheaper than it is in Canada.

Canada has dairy farms that managerially and technically are among the most sophisticated in the world. There are few, if any, technical barriers to Canada enjoying similar scale economies. Should the Canadian dairy industry scale up to the U.S. average of 187 head, the majority of the industry would realize \$0.05 per litre of extra net income. For the average farm this would result in about \$32,000 in operating income. This could be deployed to capitalize the industry without recourse to external financing. Over time, the industry would become more competitive through internally funded capitalization.

It should be noted that at a 187-head average, dairy farms would continue to be mainly small, family-run businesses. This is not to say that a herd size of 187 cows is optimal. If farms grew to 400 cows on average, as many efficient farms now have done, the gains would be even larger. They would allow the industry to realize around \$0.07 per litre of extra net income, or about \$44,000 in operating income. Earlier, we indicated that an average herd size of 187 head would amount to an operation with revenues similar to a typical Tim Hortons franchise. At 400 head, the operation would be about the same as a typical McDonald's franchise—in other words, still a small business.

Processing Capacity

The United States, Australia, and New Zealand have built up significant processing capacity, geared toward export markets. Canada's current processing capacity is focused on the domestic market, and to a limited extent, the import for re-export (IREP) market. However, this does not present an insurmountable challenge. The physical capital may not yet be in place, but the human, technological, and financial capital exist. Saputo and Agropur, the two largest Canadian dairy processors, already operate on a large scale beyond Canada's borders.

In addition, New Zealand's pasture-led milk production model results in a high degree of seasonality in milk production—a disadvantage for processing. North American feed-based farming produces a more consistent year-round milk supply. As a result, processing capacity utilization in New Zealand is approximately half that in North America. New Zealand processing plants have to be twice as large as North American plants to handle the same annual milk volume. This affects their capacity utilization rates, a measure of capital efficiency.

Transporting Product to Desired Markets

As we show in another CFIC report, *Fast and Fresh: Canada's Food Supply Chains*, trade economics relate to landed (or delivered) costs.²⁸ That is related to transportation costs, which depend, in turn, on maintaining value in relationship to the weight of the product. Simply put, products with low value-to-weight ratios do not ship very far because the cost of shipping cannot be justified by the value of the product.

The primary export opportunities for Canada lie in higher value-added processed dairy products—dehydrated milk (especially milk powder), cheese, and butter. Average 2013 prices for bulk milk powder in Oceania and Europe are above US\$4,500/Mt.²⁹ Container freight costs from both the east and west coasts of Canada to China are less than US\$100/Mt, or less than 2 per cent of landed value.

Current global trade flows actually suggest that dairy could be shipped relatively cheaply from Canada to Asia. The reason is that North America imports about twice as much from Asia as it exports. So, on average, container ships on the transpacific route return westbound to Asia with only a 50 per cent load. This imbalance in the transpacific trade has led to westbound freight rates that are 20 to 40 per cent less expensive than eastbound freight rates, depending on port location.

28 See Gill, *Fast and Fresh*.

29 Canadian Dairy Information Centre, *Welcome*.

New Zealand, on the other hand, exports more than it imports and therefore ends up shipping product at higher rates. In 2012, New Zealand exported 10 million metric tonnes (Mt) of container cargo and imported only 5.4 Mt.³⁰ New Zealand hence receives no so-called backhaul discount. Simultaneously, freight times from both Canadian coasts to China are less than or similar to the freight time from New Zealand to China. A comparison of freight costs to one sample destination (Shanghai) from different ports of origin is presented in Table 8.

Table 8
Sample Relative Freight Costs

Shanghai–Los Angeles, May 31, 2013	US\$	Capacity (m ³)	Maximum payload (kg)	Maximum payload of MP (Mt)
1 FEU	2,008	67	28,800	28.8
1 TEU (implied, 1 FEU = 2 TEU)	1,004	33	28,200	14.8

Route	Relative freight cost	Transit time (days)	USD/TEU (\$)	USD/Mt of MP* (\$)
Shanghai–Los Angeles	1.00	18.50	1,004.0	67.76
Los Angeles–Shanghai	0.63	18.50	629.8	42.50
Shanghai–Vancouver	0.93	16.90	937.9	63.30
Vancouver–Shanghai	0.74	16.90	740.2	49.96
Shanghai–Montréal	1.41	20.00	1,411.2	95.25
Montréal–Shanghai	1.15	20.00	1,153.1	77.82
Auckland–Shanghai	0.99	20.85	996.1	67.23

*MP = milk product

Source: Shanghai Containerized Freight Index, Maersk Line, www.cargorouter.com.

Although a complete analysis of freight costs would include other costs such as port handling charges, demurrage, and insurance, there is good evidence that goods shipped from Canada's west coast are highly

30 Ministry of Transport, New Zealand, *Research and Statistics*.

competitive in Asian markets. Moreover, the east coast of Canada has only a slight freight disadvantage compared with New Zealand, and even then, the incremental shipping cost is relatively small compared with bulk milk powder product value of US\$4,500/Mt. In a growing market, where Canada could easily differentiate based on quality, such small differences would not greatly undermine our competitiveness.

Competitor Weakness

Clearly, Canada has the potential to be a player in global dairy markets. At equal scale, Canadian dairy farms are relatively efficient compared with their U.S. peers. Supply management has restricted trade, but not farmers' technical and managerial know-how.

Furthermore, the milk production capacities of Australia and New Zealand are limited and already show considerable strain. The Australian dairy industry is the highest water-consuming industry on the driest continent on earth, using 25 per cent of all surface irrigation water.³¹ Drought conditions over the past decade have hit the Australian dairy industry hard, forcing many dairy farmers to sell water allocations or exit the industry.³² The Australian government may be forced to continue water-rationing, diverting water resources away from agriculture to the cities.

Meanwhile, the New Zealand "shire" pastoral model also shows signs of being stretched to its limit. This is revealed in cost inflation. The U.S. Dairy Export Council points out about its largest dairy competitor:

As of June 2012, New Zealand already housed 6.5 million head of dairy cattle in an area the size of Colorado. Imagine having enough pastureland to feed them all, plus more than 31 million sheep and 3.7 million beef cattle.³³

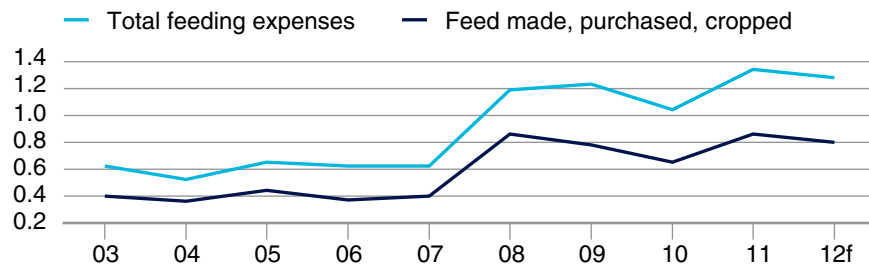
31 Kahn and others, *Dairy Water Use*.

32 National Water Commission, *Water Trading*.

33 U.S. Dairy Export Council, *Export Profile*.

This intensification of livestock farming means pasture is no longer sufficient—New Zealand farmers increasingly purchase feed supplements. The days of New Zealand producing 15 cents/litre milk are long gone. New Zealand milk is now produced at approximately the same cost as in North America. The New Zealand shire is running out of free grass. This results in escalating feed costs, which will ultimately affect its competitiveness. (See Chart 13.)

Chart 13
New Zealand Feed Costs
(NZ\$/kg milk solids)



Source: DairyNZ Economic Survey 2011/2012.

Grasping the Opportunity: Scenarios

There is a close connection between growth and efficiency. The reason is that growth provides an opportunity to exploit scale economies. Canada could transition to a dairy farm structure that looks much like the United States, with similar costs of production. But under the current system there are few incentives to move to this structure because farms are tied to a slow-growing domestic market.

The movement to a more efficient structure therefore depends on one's view of Canada's potential to generate net dairy exports. We have already noted that New Zealand, Australia, and the United States are net dairy exporters and that there is rising global dairy demand and

trade. The question is whether Canada can move to a competitive cost model (as it has done in other tradable agricultural goods like wheat) and capture global market share.

We summarize the potential in Charts 14a through 14c, in which we consider three scenarios—status quo, modest growth, and aggressive growth. The charts draw on the OECD/FAO forecast for dairy demand and focus on incremental (as opposed to total) demand. In the status quo scenario, Canada continues as a marginal player in global markets. The moderate growth scenario sees Canada grow at a cumulative annual growth rate (CAGR) of 5.8 per cent, while the aggressive growth sees Canada grow at a CAGR of 9.6 per cent. The moderate growth scenario would see Canada add around 6 billion more litres of milk annually by 2022 to meet international demand, whereas the aggressive growth scenario sees Canada produce about 12 billion more litres annually. It should be pointed out that since milk products are fairly thinly traded and Canada starts at a very low base, even the most aggressive growth forecast amounts to only a modest share of global dairy demand (2.2 per cent), which could easily be accommodated, most likely at the cost of slower growth in dairy output in importing countries where the demand is greatest. (Canada would trade based on higher quality.)

It is quite plausible that net exports will expand substantially in a liberalization scenario because Canada is a sophisticated producer of milk.

The current OECD/FAO forecast assumes that Canada will continue to operate largely outside of the global dairy market. To be sure, even in this scenario, demand will grow, albeit slowly, but the industry will get no additional growth through net exports. But it is quite plausible that net exports will expand substantially in a liberalization scenario because Canada is a sophisticated producer of milk products and has a good reputation for food safety, which would appeal to buyers in rapidly growing emerging markets.

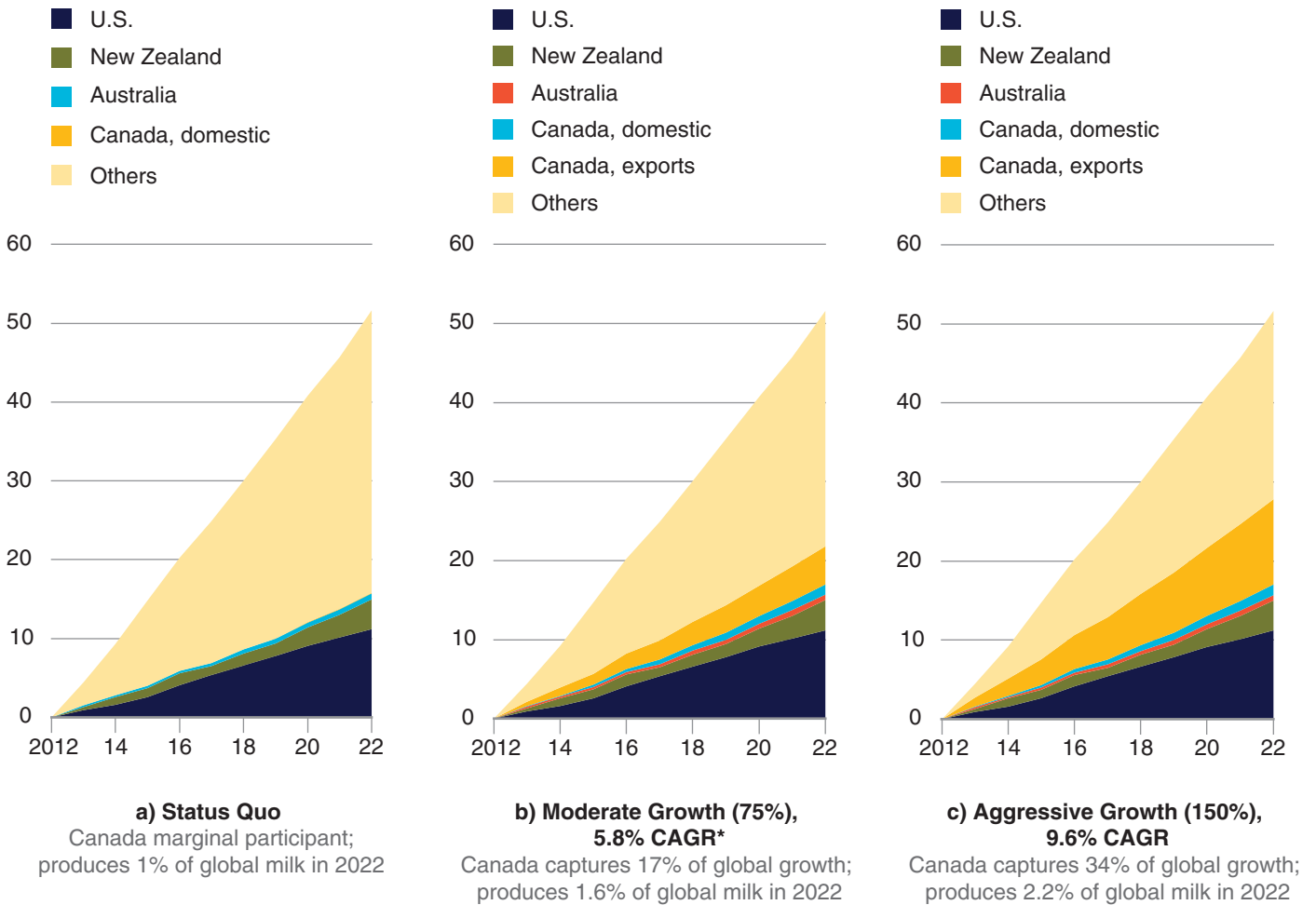
There are many dairy and non-dairy examples where agricultural commodities have followed an aggressive growth trajectory. We consider some of these in Chart 15. The moderate growth scenario

is very much the same as what New Zealand experienced between 1990 and 2000. Canada's position in canola followed the aggressive growth path in those same years.

Chart 14

Growth Scenarios: Share of Incremental World Demand Growth, 2012–22

(billions of litres; share of growth, per cent)



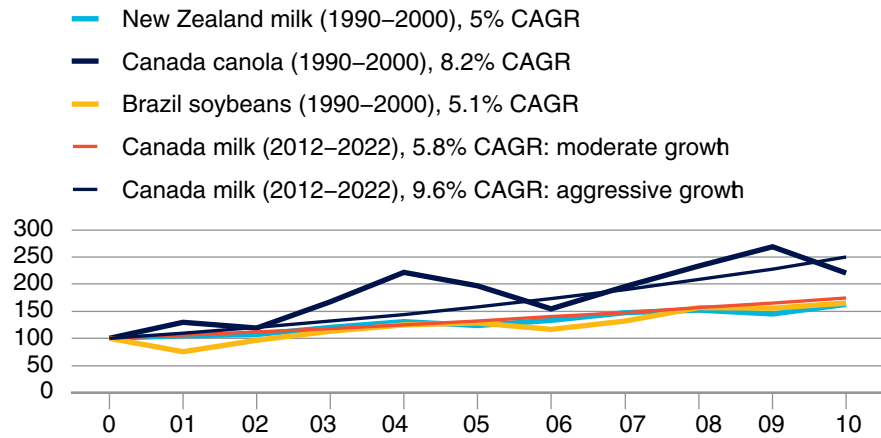
*CAGR = cumulative annual growth rate

Sources : OECD-FAO Agricultural Outlook 2013–2022; The Conference Board of Canada.

Chart 15

Examples of Growth Trajectories in Agricultural Commodities

(percentage of year zero production = 100; years)



Sources: OECD-FAO statistics; milk projections by The Conference Board of Canada.

Transitional Paths Under Different Scenarios

We have pointed out that the Canadian dairy sector has already seen much reduction in the number of dairy farms as it seeks operating efficiencies through consolidation. A growth scenario will impact both the size and number of dairy farms. We consider the implications of these in Chart 16.

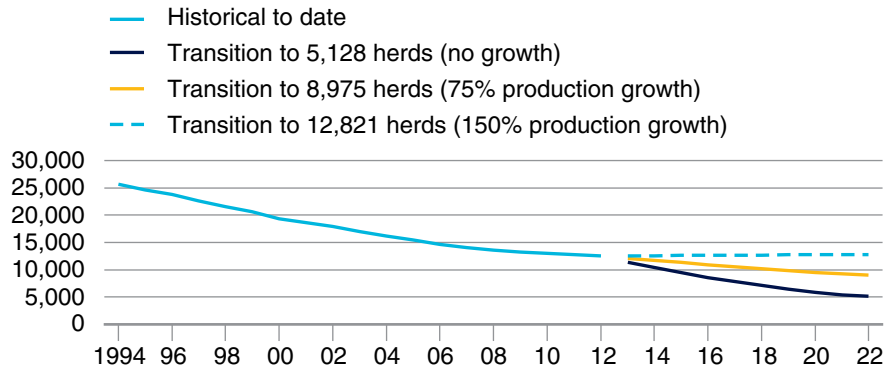
The average Canadian herd size was just over 76 cows in 2012. A 10-year transition to cost-parity with the U.S., by moving to an average herd size of 187 cows, but without production growth, would mean that roughly 60 per cent of dairy farmers would likely exit the industry under current market conditions, at a rate of about 9 per cent per annum. That explains why reform would be extremely challenging if Canada continues to focus on the domestic market.

However, if the Canadian industry can capture export share and expand production by 75 per cent, only 26 per cent of dairy farmers are likely to exit a 10-year transition, which is considerably less than the average percentage of firm exits in the broader Canadian economy. This is less

Chart 16

Evolution Scenarios to Scale Parity With the United States, 10-year Transition 2013–22

(number of dairy farms)



Source: The Conference Board of Canada.

than the 14 per cent rate per annum for the economy as a whole.³⁴ Over a decade, the rate of consolidation in dairy would be about 3.3 per cent annually, virtually indistinguishable from the historic rate under supply management.

Should Canadian dairy achieve significant success in the export markets (over the next decade), reaching export volumes half that of New Zealand, Canada's annual production would grow from 8 billion litres to 20 billion litres. Under this scenario, the number of dairy farms would actually *increase* by 2.1 per cent over 10 years, with average herd size simultaneously increasing to 187.

Welfare Implications of Scenarios

We note in Chapter 2 that all Canadians have an interest in supply management reform because it affects the prices they pay for a key dietary staple.

34 The average firm exits as a share of total private sector employing firms was 14.4 per cent from 2001–09. CANSIM Table 527-0001.

Chart 17 illustrates the welfare trade-offs for Canada under the status quo and a fully liberalized market with 75 per cent growth. This is based on farms reaching a scale distribution similar to the United States, with 75 per cent more cows and larger herd sizes. Assuming a conservative³⁵ world price of \$0.45/litre and Canada becoming an exporter only a quarter as large as New Zealand, Canadian dairy exports would be in excess of \$2 billion (farm gate milk value).

The estimated potential welfare gain for Canada from increased efficiency as well as export market gains would be \$1.23 billion, with \$180 million of this incremental surplus going to consumers and \$1.05 billion going to producers. Although liberalization is often expressed in terms of consumer benefits, which are significant, it is important to note that producers may gain significantly more (especially considering that there are a small number of producers sharing a large gain and a large number of consumers sharing a more modest gain).

Consumer gains have a disproportionate impact on low-income Canadians. Low-income Canadians, in particular, would benefit disproportionately from lower prices because a higher portion of their income (assuming they purchase dairy along the lines of the National Nutritious Food Basket) is allocated to dairy consumption.

The key point is that the dairy producers and all Canadians have a lot to gain from reform under a growth scenario.

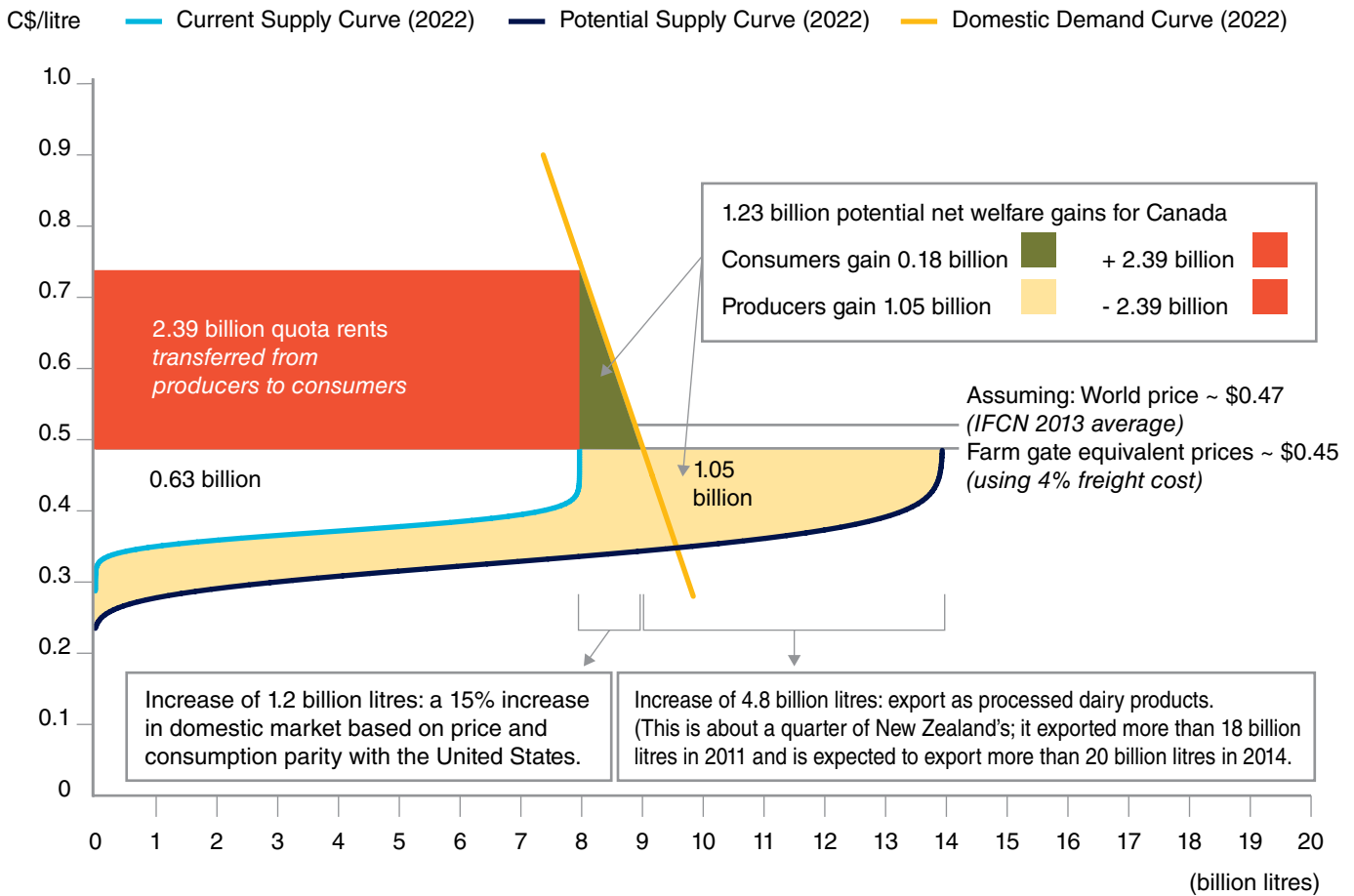
Additionally, a harmonization of Canadian prices with world prices necessary for export trade would result in current quota rents of approximately \$2.39 billion transferring from producers to consumers. Dairy processors would also benefit from improved economies of scale, and processor net gains would likely increase more than 75 per cent. If Canada is able to become a significant dairy exporter, and achieve the aggressive growth scenario (150 per cent), the net gains to dairy farmers (\$2.47 billion) and processors could easily be well in excess of current quota rents of \$2.39 billion. The key point is that the dairy producers and all Canadians have a lot to gain from reform under a growth scenario.

35 Fonterra just announced its 2014 farm gate forecast price to be NZ\$7/kg ms (milk solids) (about C\$0.50/litre of milk, assuming 8.8 per cent ms [milk solids] yield).

Chart 17

Welfare Implications of Growth (75% scenario)

(C\$/litre; billions of litres of milk)



Sources: The Conference Board of Canada.

At a competitive market price for milk, Canadian processors will have an incentive to use more Canadian milk and fewer vegetable oils and imported dairy ingredients. New uses for dairy ingredients will surface, as has happened in the United States. These factors would help reverse Canada's trade deficit in dairy products and increase domestic consumption.

The welfare calculations above do not include any surplus gains realized by the Canadian dairy processing industry and other related industries, extra trading profits from special market situations (e.g., drought in Australia), or efficiency gains from intra-Canada liberalization that are not related to scale. Further, the calculations do not take into account the positive impact from a likely significant increase in employment from a doubling of industry size. In sum, this is a conservative estimate based on our analysis of the efficiency gains on the farm. Actual benefits could be even larger.

In the aggressive growth scenario above, Canada exports only half as much as New Zealand. As we have shown, there is no inherent reason why Canada could not export significantly more, even overtaking New Zealand, which is rapidly running out of pastureland. Canada has an abundance of agricultural resources that could be put to service to meet global dairy demand. Under the current regime, producers have, in effect, relinquished the opportunity to realize sizeable export profits in exchange for extracting rents from domestic consumers—a pie that continues to shrink.

Although employment considerations feature prominently in non-agricultural policy discussions, such as mergers and acquisition policy discussions, we rarely hear of employment gains through agricultural liberalization. Yet an expanding dairy industry would create jobs at both the primary and processing levels of the industry.

We estimate these potential employment gains. (See Table 9.) The increasing output associated with capturing global dairy demand and reclaiming lost market share from substitutes results in rising employment on the farm and in the processing plant. To be sure, efficiencies raise labour productivity and therefore additional output creates fewer jobs at the margin. Still, the 150 per cent growth scenario, which we believe to be achievable, would see industry employment expand by around 14 per cent, with over 5,000 jobs created in primary production and around 3,000 in processing, for a total gain of over 8,000 jobs.

Table 9

Potential Employment Gains in Dairy Workforce

	Current (2012)	75 per cent growth	150 per cent growth
Head of dairy cattle	960,100	1,680,175	2,400,250
Milk produced (billions of litres per year)	8	14	20
Estimated farm labour hours per cow*	100	60	50
Workforce			
Dairy farm operations	22,055	23,158	27,569
Manufacturing sector**	24,487	25,099	27,548
Total	46,542	48,257	55,117
Percentage change		4	14

*Dairy Farmers of Ontario data indicate that the average farm currently allocates around 100 labour hours per cow, while the top-tier farms allocate about 60 hours per cow.

**Manufacturing sector employment gains here are assumed to be half that of farming.

Sources: Canadian Dairy Information Centre; Dairy Farmers of Ontario; The Conference Board of Canada.

Conclusion

Supply management was conceived under market and technological conditions that are very different from today. As the key mechanisms of supply management were being formed, China was in the throes of the Cultural Revolution. As New Zealand dairy farmers can attest, today China is a growing market hungry for quality dairy products. Supply management is a solution to an old problem.

Yet supply management reform will be exceptionally challenging unless dairy farmers and Canadians construct a new vision of its potential for growth. Pure liberalization without growth would increase the welfare of Canadian consumers, albeit at the cost of severe exits from the dairy sector. Yet under a reasonable growth scenario, where Canada becomes a player in the global dairy trade and innovates to reclaim domestic market share from substitutes, the industry would see no more attrition of farms than from the status quo under supply management, while achieving net employment growth.

As we consider reform options, it helps to keep in mind that Canada has non-agricultural supply management systems that also struggle with reform. In the next chapter we consider supply management in transportation that provides a good example of Canada's approach to supply management reform.

CHAPTER 4

Supply Management in Transportation

Chapter Summary

- Other sectors also use forms of supply management and have been reformed.
- Transportation policy provides good examples of supply management, both reformed and unreformed.
- For-hire trucking is an example of reformed supply management that has resulted in significant changes to the industry.
- Taxicabs represent a supply-managed industry that is largely unreformed.
- These case studies offer ideas about how to reform supply management, the transitional issues involved, and the ultimate benefits to consumers.

Introduction

Upon hearing the term “supply management,” Canadians are quick to think of agri-foods and particularly of dairy products. However, while the term itself may be unique to that sector, the practice of managing supply is by no means unique to agri-foods. In fact, many industries have taken a supply management approach and faced pressures to liberalize.

Supply Management in Transportation

There have been many examples of supply management in the transportation industry in Canada. (See Table 10.) Here we have a range of examples where entry into the marketplace (and therefore the supply of transportation services) has been or continues to be restricted to various degrees. To illustrate, we focus on two examples—one where there has been considerable deregulation (for-hire trucking) and another where there continue to be significant supply management controls (taxicabs).

Supply Management Liberalization: For-Hire Trucking

To make the connection between trucking reform and agricultural supply management reform, it helps to equate trucking supply management terminology with agriculture supply management terminology along the following lines:

- Quota/production licensing is equivalent to entry and exit control.
 - New carriers were for the most part not free to obtain a licence to operate. They were required to demonstrate public convenience and necessity.

Table 10

Canada's Approach to Reforming Transportation Supply Management

Subsector	Jurisdiction	Previous regulatory environment	Today's reformed environment
Motor carriers of freight (trucking)	Mostly provincial, some federal	Entry controls (analogous to production licences) in the domestic and transborder (U.S.) market in most provinces. Some price regulation. Deregulation of the market began in 1987 and was rapidly implemented.	Motor carriers are free to enter and operate in the domestic market. Safety standards are still regulated. Carriers are more or less free to operate in the transborder market with restrictions on moving freight within the United States.
Air transportation	Federal	Both price and entry controls in the domestic and international markets, as well as public ownership of the largest carrier. Deregulation of the domestic market in 1984 (privatization in 1987) and gradual deregulation of the transborder and international market since.	No price or entry controls in the domestic market. Transborder market is largely deregulated, with restrictions on passenger movements within the United States. International market continues to be deregulated under bilateral agreements.
Rail freight transportation	Mostly federal (Class I railways)	Price controls and national ownership of one of the two large railways. Various restrictions on rail line abandonments. Privatization of CN railway in 1995.	Some price control remains in the form of a revenue cap on the movement of specific grains in western Canada. Various remedies still exist for shippers (customers) to contest rates and levels of service. Entry is not controlled but there are natural barriers to entry.
Urban transit	Municipal, some provincial	Almost exclusively public ownership with entry controls (although entry is generally not considered to be feasible without an ongoing subsidy).	Largely the same, but some entry by the private sector for service delivery (no ownership or revenue risk).
Taxicab	Municipal	Varied by municipality, but price and entry controls were almost exclusively present.	Largely the same, with many relatively minor attempts at reforms.

Source: The Conference Board of Canada.

- Price setting is equivalent to price regulation and, to a lesser extent, rate filing.
 - Some provinces regulated prices. Most at least required carriers to file their prices with “rate bureaus.”
- Trade barriers are equivalent to route authorities.
 - Licences were required to operate between certain cities/provinces. Moreover, provincial jurisdiction meant that there were different regulations in different provinces, further increasing the cost of doing business across provincial borders.

The for-hire trucking industry¹ in Canada is large—over \$20 billion in annual GDP and \$40 billion in gross output. The trucking industry in both the United States and Canada had been subject to heavy regulation for decades prior to the 1980s. In both countries, entry controls prevented new entrants from operating new routes (such as between one city or province and another). While regulation of price existed in both countries, in Canada price regulation was effectively weaker. Moreover, the extent to which entry controls acted as barriers to entry varied considerably across the country, as the industry was (and continues to be) under provincial jurisdiction (although deregulation was eventually spurred by the federal government, which sought to engineer a consensus among the provincial governments).² This federal-provincial role is very similar to agricultural supply management.

Market regulation had been justified primarily to:³

- prevent the “oversupply” of transportation (similar to excess milk producing capacity)
- address the equality of regulation among modes (or commodities)
- address the interdependence of entry controls and other forms of regulation (primarily safety, an argument that is often used in support of supply management)

As transportation oversupply would be expected to decrease productivity, this concern appears to have been unfounded given that productivity levels have increased. Furthermore, other transportation modes have also undergone deregulation, which addresses the second point. Lastly, given the ongoing regulation of safety in the industry, it has become clear that safety regulations can continue without ongoing market regulation. The lesson from transportation is that food safety regulation can continue effectively while market liberalization proceeds.

1 The “for-hire” industry does not include private or in-house trucking services. Many large firms in industries such as the retail industry own and operate their own fleet of trucks.

2 GateWay Freight Systems Inc., *Industry Background*, 2.

3 Webb, “Legislative and Regulatory History,” 94–98.

The impact of deregulation was similar in both countries. Real prices fell while production was increased.

The shipping industry (retail and manufacturing businesses primarily) supported deregulation because it had already absorbed high costs resulting from market regulation. Deregulation occurred first in the U.S. with the *Motor Carrier Act* (MCA) of 1980. The MCA did not completely deregulate the industry, but it did make it significantly easier for carriers to obtain “certificates of public convenience and necessity” (operating rights). It also allowed carriers to price freely within a “zone of reasonableness.”⁴ Ultimately, this allowed anyone who met safety standards to carry goods anywhere in the country and price the services freely.

It is common for Canada to wait for other jurisdictions to take the lead in liberalization and then follow suit, much as New Zealand and Australia have taken the lead on dairy liberalization. In trucking, liberalization in Canada did not follow suit from the U.S. until 1987. However, leading up to the Canadian equivalent of the MCA—the *Motor Vehicle Transport Act* (MVTA) of 1987—motor carriers accepted the inevitability of reform because shippers were clearly under pressure to stay competitive with their U.S. counterparts. In fact, in February 1985, the Council of Transportation Ministers signed a memorandum of understanding that proposed broad market deregulation of the trucking industry.⁵

The impact of deregulation was similar in both countries. In general, prices fell (in real terms) while productivity increased. But there was also some market instability due to the entry of new carriers and increased levels of competition. We would expect the same if any similar widespread reform were applied to supply management in agriculture.

From 1986 to 2003, trucking industry total factor productivity (TFP) increased by an average 1.7 per cent per year. Meanwhile, prices increased by just 0.8 per cent per year on average in nominal terms,

4 Moore, *Trucking Deregulation*.

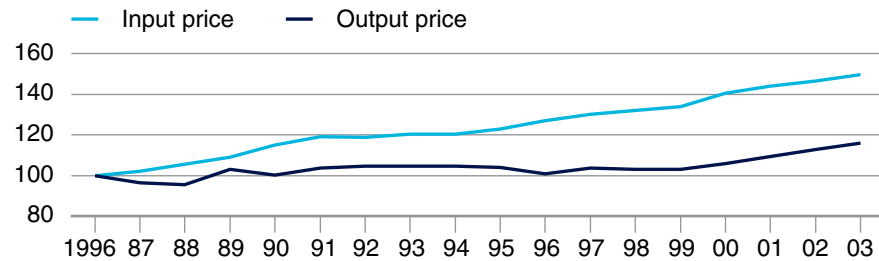
5 Monteiro, *Trucking Transportation in Canada*, 8.

while prices dropped in real terms. This adjustment occurred despite average increases in input prices (labour, fuel, capital, etc.) of 2.6 per cent per year.⁶ (See Chart 18.)

Chart 18

Input Price and Output Price Growth in the For-Hire Trucking Industry, 1986–2003

(per cent; 1986 = 100)



Source: Transport Canada.

In other words, carriers increased their productivity substantially. Competition ensured that a substantial portion of the savings from productivity gains were passed on to customers in the form of lower prices. The portion that benefited customers can be estimated by comparing the ratio of input to output price growth (29 per cent) to TFP growth over the same period (33 per cent). Since input prices actually grew 29 per cent faster than output prices, we estimate that 87 per cent of productivity gains were realized by customers (29/33). Put another way, 87 per cent of productivity gains have been used to hold down output prices in the face of rising fuel, capital, labour, and other costs, rather than to increase profit. As we show later, we would expect a similar dynamic to take hold under dairy supply management reform.

6 Transport Canada, *Transportation in Canada*.

In Canada, the total number of firms operating in the trucking industry grew from approximately 7,000 in 1990 to over 10,000 in 2004.

Deregulation brought with it many new entrants as well as exits from the trucking industry. In Canada, the total number of firms operating in the industry grew from approximately 7,000 in 1990 to over 10,000 in 2004.⁷ Total revenues increased from about \$9 billion to nearly \$30 billion (in nominal terms) over the same period. Meanwhile, bankruptcies in the industry were consistently in the 500 to 700 range (roughly 5 per cent of all business bankruptcies in Canada) until finally settling down to 200 or fewer after 2010. We would expect the same with supply management reform as we foresee industry growth from exports and domestic expansion.

Along with deregulation and the signing of NAFTA, north–south traffic became more important. The transborder share of Canadian carriers' operating revenue increased from 25 per cent in 1988 to 36 per cent in 2003,⁸ suggesting that Canadian carriers were able to take advantage of growing cross-border commerce. Their ability to compete in the transborder market could be partially attributed to the weak Canadian dollar over that period as well as the increased level of industry productivity.

Deregulation had two important effects on the trucking industry. First, it unexpectedly (in the U.S., less so in Canada) changed the competitive environment for carriers. Second, it increased the leverage of existing firms by sharply decreasing the value of operating certificates (so same debt levels but significantly lower equity). As a result, over 4,500 trucking companies shut down between 1980 and 1985.⁹

Route authorities were not allowed to be bought and sold on the open market. However, they were purchased indirectly through acquisitions, very much as processor milk quota in Ontario and Quebec is based on a historical allocation that can be acquired through mergers and

7 From Transport Canada annual reports. These totals do not include owner-operators (drivers who own their own truck and lease out their services to other carriers). Including owner-operators, there were 46,000 carriers in 2004. Data for earlier years are not available.

8 Monteiro, *Trucking Transportation in Canada*, 11.

9 Baker and Martin, *Capital Structure and Corporate Financing Decisions*, 63.

acquisitions. Prior to deregulation in Canada, in a high percentage of the acquisitions that were made in the industry, the most valuable asset of the acquired company had been the route authority (the right to operate a certain route). Due to the restrictions on entry, the only expedient way for carriers to expand had been to purchase additional route authorities indirectly through acquisitions of smaller firms.¹⁰

There are few data on the value of route authorities in Canada prior to deregulation. In the United States, the cumulative market value of these route authorities was estimated to be \$6 billion (in 1995 dollars) in 1979, the year prior to the MCA.¹¹ Although it is generally accepted that there have been large aggregate benefits from deregulation overall, there were certainly winners and losers. As one observer describes it:

Two groups lost from trucking deregulation: the owners of the certificates of public convenience and necessity, and the members of the Teamsters Union. Both had profited significantly from the suppression of competition under ICC [Interstate Commerce Commission] regulation. The ICC grants of operating authority were bought and sold for hundreds of thousands or even millions of dollars, reflecting the value of the monopoly franchise. Truck drivers and their helpers earned wages that I estimated, in 1978, to be 50 percent above the competitive level.

With the advent of partial deregulation and the ICC's liberal policies in granting new certificates of public convenience and necessity came a surge of entrants: the number of firms with operating rights has almost doubled. Consequently, the value of the operating rights has fallen to close to zero.¹²

10 Frier, *Acquisition Activity in the Western Canadian Trucking Industry*, 51.

11 Hirsch, Macpherson, and Alexis, "Earnings and Employment in Trucking," 3.

12 Moore, *Transportation Policy*.

There have been winners and losers in the Canadian industry as well. But the sheer magnitude of productivity gains and lower prices since deregulation suggests that there have been more winners and the overall size of the transport pie has grown. The same could follow in dairy supply management.

Status Quo: Taxicabs

The taxicab industry in Canada (and elsewhere) is subject to heavy market regulation. For the most part, the industry falls under the jurisdiction of local governments. In addition, airports often issue licences that allow for the pickup of airport passengers. As a result, there is significant variation in the degree of regulation across the country. The common regulatory characteristics are:

- Production licences (taxicab “plates” or permits)
 - These are initially issued by the local government; a secondary market in which plates are bought and sold usually exists.
- Price setting
 - Local governments set the “drop” (the starting fare), the distance charge, and the waiting charge.
- Trade barriers
 - Taxicabs are generally allowed to drop off passengers in neighbouring municipalities. However, they are sometimes not allowed to pick up passengers in neighbouring municipalities or at the airport.

A key area where local governments vary in their degree of economic regulation is the extent to which they issue new licences each year. Some municipalities issue licences each year according to a pre-defined formula that considers various factors such as population growth, economic growth, transit ridership, etc. Other municipalities have few if any new licences over time.

The value of taxicab licences in Canada is only partly a function of the size of the local market. Instead, the values are primarily affected by the extent to which the local municipality has restricted the supply of new licences. For example, the City of Winnipeg has not issued new taxicab

licences in decades.¹³ As a consequence, the value of a taxicab licence approached \$300,000 as of 2007, surpassing the value of a licence in larger municipalities such as Toronto and Montréal. (See Table 11.) Also notable is the City of Vancouver, which had few licences in circulation relative to its municipal or metropolitan area population compared with other large cities and, unsurprisingly, by far the highest licence values.

Table 11
Taxi and Estimated Transfer Values of Licences, 2007

	2006 CMA* population	2006 core municipality population	Core municipality taxi licences	Core municipality taxis per 1,000 CMA population	Core municipality taxis per 1,000 CSD** population	Licence value (\$000s)
Vancouver	2,116,581	578,041	475	0.22	0.82	500
Calgary	1,079,310	988,193	1,411	1.31	1.43	80
Edmonton	1,034,945	730,372	1,185	1.14	1.62	55
Saskatoon	233,923	202,340	160	0.68	0.79	90
Regina	194,971	179,246	120	0.62	0.67	135
Winnipeg	694,668	633,451	410	0.59	0.65	280
Windsor	323,342	216,473	211	0.65	0.97	80
Toronto	5,113,149	2,503,281	4,073	0.80	1.63	114
Ottawa	1,130,761	812,129	1,066	0.94	1.31	185
Montréal	3,635,571	1,620,693	4,445	1.22	2.74	220

*CMA = census metropolitan area

**CSD = census subdivision

Sources: Prentice, Mossman, and van Schijndel; Statistics Canada; The Conference Board of Canada.

Examples of true market liberalization of the taxicab industry in Canada are few. However, in recent years local governments have dabbled with new approaches to licence issuance in part due to the concern that licences often fall into the hands of non-drivers as they are exchanged over time. Drivers are then required to lease licences from the current owners.

13 Prentice, Mossman, and van Schijndel, "Taxi Fares," 4.

Toronto provides an example of limited liberalization. After an extensive review in 1998, a second tier of licence—the Ambassador plate—was created in addition to the Standard plate.¹⁴ An Ambassador plate differs from a Standard plate in a number of respects:

- It cannot be bought and sold in the open market.
- It cannot be leased to other drivers.
- A taxicab carrying an Ambassador plate can only be in service for up to 12 hours per day.

Since 1999, the City of Toronto has issued only Ambassador plates. (See Table 12.) In the meantime, Standard plates continue to be bought and sold in the open market. Despite the fact that Ambassador plates cannot be sold or leased, the issuance of new Ambassador plates still has an impact on the value of Standard plates as they increase the supply of taxicab service in the city. As we will see later, this is akin to the two-quota reform proposals in agriculture supply management.

An Ambassador plate is roughly the equivalent of 0.65 Standard plates in supply terms. While an Ambassador plate can only be on the road for 12 hours a day versus 24 hours a day for a Standard plate, it contributes to more than 50 per cent of the supply of a Standard plate because the owner will naturally choose the more productive hours of the day to be on the road.

The impact of new Ambassador plate issuance on Standard plate values is quite apparent through an observation of plate values over time. Table 12 shows the value of Standard plates in Toronto since 1998, along with the number of new Ambassador plates issued each year.

In the year that Ambassador plates were introduced, 260 new Ambassador plates were issued. Using the 0.65 Standard plate equivalent figure, this represented an increase in supply of 4 per cent. In response, the value of a Standard plate dropped by 12 per cent (although plate values can fluctuate for other reasons, such as interest

14 In addition to Standard and Ambassador plates, there are Accessible plates in circulation.

Table 12

Taxicab Plate Values in Toronto, 1998–2011

(selling price, \$ 000s)

	Taxicab plates sold	Average Standard plate selling price (\$ 000s)	New Ambassador plates issued
1998	118	81	0
99	72	63	260
00	158	75	0
01	11	91	150
02	121	84	150
03	166	91	420
04	51	97	210
05	115	97	125
06	102	116	0
07	108	115	0
08	99	134	0
09	127	164	0
10	118	176	0
11	91	210	0

Source: City of Toronto.

rates, changes in fares, and general economic conditions). With approximately 4,000 plates in circulation, this represented a cumulative drop in value of about \$68 million.

Plate values held relatively steady over the 2001 to 2005 period as new Ambassador plates were regularly issued. Since that time, no new plates have been issued. The result has been predictable, with Standard plate values increasing from under \$100,000 to over \$200,000 in a span of six years. In cumulative terms, this represents an increase of more than \$400 million in value.

Recently, the City of Toronto has undertaken an industry review. In June 2013, the City of Toronto proposed a number of reforms to its taxicab industry. The reforms would end the multi-tiered licensing

system through the creation of a single licence that would replace all existing licences. New licences would only be granted to accessible vehicles. But, in the meantime, Ambassador plate owners would be allowed to lease their cabs to second drivers as well as transfer their plates.¹⁵

If the reforms are implemented, the short-term impact will be an increase in supply of taxicab service, and a likely decrease in the value of Standard plates as well as an increase in value of Ambassador plates. The decrease in the value of Standard plates will come not only as a result of increased taxicab availability but also due to the fact that all future plate owners will be required to be drivers, thereby limiting potential buyers of all plates. Of course, plate values may rise regardless, depending on the rate of new plate issuance and future increases in regulated fares.

Consequences of Continued Market Regulation

There are several consequences of continued stringent market regulation in the taxicab industry. The high capitalized values of the licences reflect the economic rents that are collected by plate owners. These rents are ultimately paid by customers. According to the 2007 data, the cumulative value of taxicab licences in the 10 Canadian cities was over \$2.2 billion. If capitalized at a rate of 5 per cent, this works out to annual rents in excess of \$100 million (or at a rate of 10 per cent, in excess of \$200 million).

The border barriers (restrictions on picking up passengers in neighbouring municipalities) contribute to higher empty taxicab miles. This in turn contributes to:

- ongoing higher prices
- higher environmental costs
- higher levels of traffic congestion

15 City of Toronto, *Toronto's Taxicab Industry Review*.

High licence values also encourage the creation of a black market very much as it has in dairy with its allegations of cheese smuggling.

Higher overall prices reduce demand for taxicab trips. Taxicabs are complementary to transit services more than they are competitors. Cheap and efficient taxicab services make it easier to live without a car, as regular transit commuters do require the services of a car on occasion. As a result, restriction of taxicab output likely hurts transit demand.

High licence values also encourage the creation of a black market very much as it has in dairy with its allegations of cheese smuggling.¹⁶ The higher the value of a taxicab licence, the more incentive for unlicensed cabs (known as “scoopers” or “bandit taxis”) to pick up passengers. This results in arbitrary transfers of wealth (the average taxicab fare has a lease payment for the licence built in so the scooper captures this value with each trip) as well as increased regulatory/enforcement costs.

For example, in Vancouver it is difficult to find a taxicab in the downtown core on Friday and Saturday nights, partly because of the very low number of licences in circulation. Much of this demand comes from suburban residents who require a taxi back to their residence in a neighbouring municipality after frequenting the downtown entertainment district. City officials are caught on the horns of a dilemma—on the one hand, public authorities support “drive sober” campaigns, but on the other, they are reluctant to liberalize the taxicab sector, which would go a long way to achieving this end.

Vancouver has responded by issuing weekend temporary operating permits on a trial basis. This has not stopped many suburban taxicabs from illegally picking up passengers from the downtown core. A recent study has recommended issuing between 100 and 154 more weekend permits in response to the excess demand.¹⁷ However, removing the border barriers to begin with might allow excess capacity from neighbouring jurisdictions to serve this demand without requiring the added capital cost associated with additional new taxis for the region as a whole.

¹⁶ See Goldfarb, *Cheese Smuggling*.

¹⁷ Passenger Transportation Board, *Licence Application Decision*, 13.

Conclusion

The trucking industries in Canada and the U.S. have undergone major economic deregulation with little or no compensation for the incumbent firms. Although we do not have precise estimates, incumbent for-hire trucking firms certainly lost hundreds of millions in the capitalized value of the licences. There was no special compensation scheme for incumbent firms in the case of for-hire trucking.

The result in for-hire trucking has been higher productivity and lower prices, although there have been winners and losers through the process.

The result in for-hire trucking has been higher productivity and lower prices, although there have been winners and losers through the process. In the case of trucking, policy-makers effectively took the position that incumbents had benefited from a lengthy period of excess rents, had been exposed all along to policy risk, and therefore paid the price when the policy changed.

The taxicab sector provides another good example of a largely unreformed supply management regime. Many of the operational challenges that face the industry are analogous to the trucking industry (such as managing capacity, reducing empty miles, and operating across jurisdictional borders), albeit on a smaller spatial scale. The extent to which supply is managed varies considerably, with the capitalized value of excess profit streams more or less varying proportionately. Attempts at deregulation have been relatively few and far between. In Toronto a gradual approach had been implemented that initially helped to avoid rapid transfers in wealth from licence owners.

In taxicabs, politics favour the status quo. Taxi companies are fragmented across many jurisdictions and, unlike shippers', consumers' voices are relatively weak. Many taxicab consumers are merely visitors who have no stake in the local politics. This is more akin to the politics of supply management in the sense that consumers' voices are relatively weak in relationship to industry players.

The implications for agricultural supply management reform are clear. Policies that create producer rents encourage inefficiency. As trucking shows, when these schemes are deregulated, competitive forces will

deliver higher productivity and lower prices to consumers. But politics matter. Unlike many shippers, Canada's dairy processors are able to avoid the limitations of supply management by situating more capital in countries with more liberalized regimes. Canadian dairy processors have done this. Therefore, processors are not at the forefront of advocating for change in supply management the way they were in trucking.

We now return to the specific case of dairy supply management reform options.

CHAPTER 5

Options for Reform

Chapter Summary

- This chapter considers reform options for supply management.
- Reform options vary considerably in their degree of liberalization, their mechanisms, and their timing.
- Any reform proposal must coordinate the three major aspects of supply management: price setting, quota, and trade barriers.
- A book value buyout of quota offers a fair and efficient way to reform dairy supply management.

Having reviewed Canada’s experience with non-agricultural supply management, we now turn to options for reforming dairy supply management. In this chapter, we develop a framework for understanding agricultural supply management reform options. We reflect on key policy research and position this research within our framework and then suggest possible reform paths.

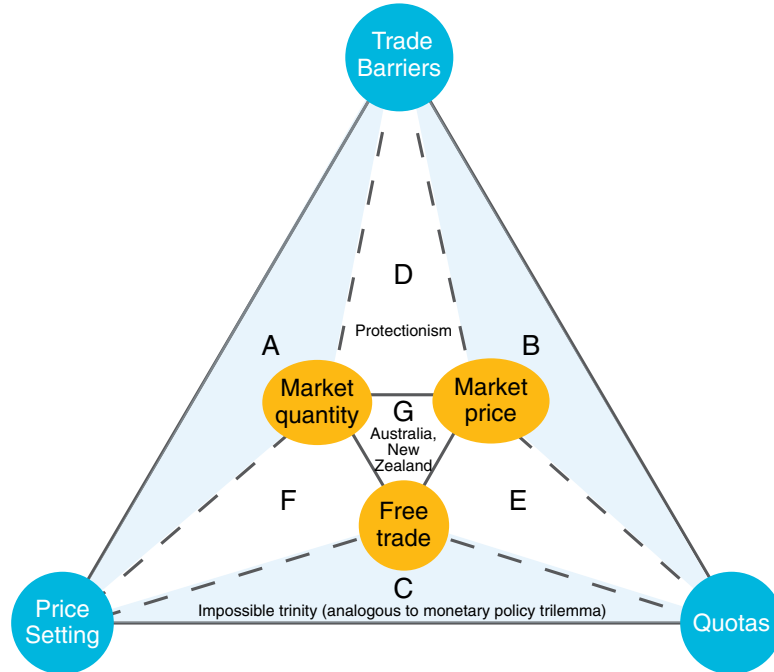
Understanding Reform Options: A Framework

Supply management is a three-legged stool consisting of price setting, quota, and trade barrier legs. As with a stool, cutting out any one leg makes the entire system unstable. As such, responsible reform of supply management has to address how to maintain some degree of equilibrium among the three legs of the supply management stool. Reform proposals that do not do this are, in our view, not feasible.

In Exhibit 2, we organize these three elements into a transition triangle, which helps us define different policy options depending on which leg (or legs) of the stool are being reformed. The outer reaches of the triangle represent the status quo, whereas inner positions represent various degrees of liberalization. We move toward liberalization by shifting nodes inward, which culminates in the blue nodes in the centre that represent laissez-faire conditions where industry players compete freely, domestically and internationally. These are represented by Australia and New Zealand, which have the most liberalized environment. We create eight different inner triangles to reflect eight reform options.

In this scheme, status quo is represented by the outer nodes in blue, with price-setting, production quotas, and trade barriers. The six triangles (A–F) within broadly represent the possible intermediate policy positions that governments may choose. Three of the positions are anchored by

Exhibit 2
The Transition Triangle



Source: The Conference Board of Canada.

two managed nodes and one market node (A, B, and C), while the other three positions are anchored by two market nodes and one managed node (D, E, and F).

Reforms Under the Current System

A series of reforms are possible under essentially the same supply management operating model. These reform options take aim at incremental efficiency gains yet still redistribute within a static or shrinking pie. That requires ongoing transfers from the Canadian dairy purchasing public to dairy farmers in the form of what the OECD calls “market price support.” Current reform options within this broad category include:

- trade import concessions (expansion of tariff rate quotas [TRQ's]) with corresponding decreases in domestic production quota, either on a voluntary or mandatory basis;¹
- improved governance and caps on further support price increases;²
- improved efficiency through a national quota market and interprovincial transfer of milk production;³
- allowing producers to operate outside of supply management if they produce for export only.⁴

Allowing producers to produce for export only is unlikely to be successful on its own account without substantial processor investment and a change in trade policy. Processors need a sufficiently large supply base, and importing countries would need to remove their trade barriers on Canadian products. These barriers have been deemed legal by a World Trade Organization panel and would require a change in Canada's trade position in order to be removed. As such, export encouragement would necessarily involve corresponding liberalization of the Canadian market share without necessarily dealing with fundamental cost competitiveness issues.

One-Legged Reforms: The Falling Stool

The one-legged reform positions (A, B, and C, highlighted in light blue in Exhibit 2), are either economically inferior or impractical. The supply management “stool” easily tips over with any aggressive reform of a single one of the legs in isolation.

Moving to free trade conditions while attempting to control both price and quantity represents an impossible trinity. This position is akin to the so-called monetary policy trilemma, whereby the world's central

1 Gifford, “Canada's Dairy Industry.”

2 Busby and Schwanen, *Putting the Market Back*.

3 Doyon, *Canada's Dairy Supply Management*; Mussell, Seguin, and Sweetland, *Canada's Supply Managed Dairy Policy*.

4 Busby and Schwanen, *Putting the Market Back*.

Liberalization
of supply, prices,
and trade barriers
needs to be
coordinated.

banks attempt to simultaneously achieve the three desired policy goals of a freely convertible currency, fixed exchange rate, and monetary sovereignty (control of interest rates and the money supply). Sudden trade liberalization would place the industry in the “death triangle” C, instantly rendering existing supply management efforts ineffective.⁵ Charlebois and Mussell have rightly argued that this is why aggressive liberalization would lead to the industry reorganizing itself, simply out of necessity, in the face of foreign competition.⁶

Liberalized supply with trade barriers and price controls (position A) or liberalized prices with trade barriers and supply control (position B) are similarly self-defeating. These positions would be even more ineffective than the current system at balancing producer and consumer interests. We would be back in the world of chronic excess supply and shortages.

Two-Legged Approach: More Viable

The two-legged liberalization positions (D, E, and F) are somewhat more realistic intermediate paths en route to a fully liberalized market (i.e., in the end, balance among the three legs). Most reform proposals in the literature fall within these three broad option categories. (See Table 13.)⁷

Dismantling Supply Management (position D) is the position of choice for the opponents of supply management, based on an assessment of its equity and efficiency. They believe that national welfare is raised simply by dismantling supply management. They see supply management as prohibitively expensive and having few constraints on meeting dairy needs through trade.

5 Charlesbois and Astray, *The Future of the Canadian Dairy Sector*.

6 Mussell, *Does Canada Need to Dismantle Supply Management*.

7 We have endeavoured to categorize the existing literature against our framework. Some papers cut across the categories in subtle ways. We encourage readers to refer to these papers directly. The full reference for the papers is noted in the bibliography.

Table 13
Policy Positions/Paths: Organizing the Current Literature

Policy position	Position in transition triangle	Trade	Price	Production	Discussion of options under current literature
Supply management	Status quo	Managed	Managed	Managed	Gifford, 2005 Doyon, 2011 Wheeler, 2012 Busby and Schwanen, 2013 Mussell, Seguin, and Sweetland, 2013
One market node	A	Managed	Managed	Free	
	B	Managed	Free	Managed	
	C	Free	Managed	Managed	Mussell, 2012 Charlebois and Astray, 2012
Two market nodes	D	Managed	Free	Free	
	E	Free	Free	Managed	Robson and Busby, 2010 Mussell, Seguin, and Sweetland, 2013
	F	Free	Managed	Free	Barichello, Cranfield, and Meilke, 2009; Hall Findlay, 2012
Full liberalization	G	Free	Free	Free	

Source: The Conference Board of Canada.

This option is actively opposed by the industry. They know that this action will disperse milk producer market power and remove the CDC from any role in the future of the industry. Industry advocates see this decentralization as regressive. The dairy industry would likely want to see some way of preserving collective market power of the individual producers. For example, post-deregulation, the New Zealand dairy farmers eventually merged their two largest co-ops into the Global Dairy Company (today's Fonterra).

Expanding quota (E) is another option that adds new quota to the system and allows prices to fluctuate. Proposals that take this approach generally call for production and quota expansion via some allocation mechanism, such as annual new quota auctions, as well as liberalized pricing.

This approach is trying to ensure the equitable treatment of existing farmers. Farmers fear that swift and full liberalization would have a disproportionate effect on small farmers, many of whom, as we have demonstrated, would be forced out of the industry, as larger farms and imports expanded rapidly.

As we discuss later, a quota-based approach would require an overhaul of the current system, for which prices are the starting point. The starting trade position also complicates the need for incremental annual production to be marketed both at home and abroad. As we previously estimated, domestic consumption of dairy may increase up to 15 per cent with import price parity. Any further increase in production would likely need to be marketed internationally.

Targeting prices (F) is another option that explicitly targets price levels to manage the transition. This approach would prioritize efficiency over equity, choosing to use prices as the main driver of production allocation. In these proposals, trade barriers (and in particular tariff rate quotas) and domestic prices are adjusted to world price levels based on a predetermined schedule in accordance with trade agreements. Production allocation systems adjust to these gradual price changes in order to clear the market.

The key feature of these proposals is to facilitate a process whereby domestic prices move toward parity to world prices, at a pace that gives farmers time to adjust. This usually involves gradually phasing out protectionist trade barriers and may include one or more compensation or transitional schemes.⁸ The Australia model of deregulation essentially followed this transition path through a special Dairy Adjustment Levy for eight years, first introduced in 2000 and ended in 2009. The levy funded transition assistance for farmers and progressive reductions in price support levels to parity with New Zealand imports.⁹

8 Hall Findlay, *Supply Management*; Barichello, Cranfield, and Meilke, "Options for the Reform of Supply Management."

9 Edwards, "The Story of Deregulation."

Administrative Considerations

Current supply management administrative realities provide a context for evaluating these reform options. Current policies and procedures within the milk industry focus on price levels with trade barriers and quota being set at levels to support these prices. Prices are the starting point of current industry policies and management. Once prices are determined, quota is set at a level that equates supply to the demand forthcoming at those prices.

Reform options that start with changes in quotas may put the cart before the horse.

Reform options that start with changes in quotas may put the cart before the horse. The current pricing formulas would become largely irrelevant. So the reform would both change the marketplace and the fundamental mechanisms by which prices are determined.

Given the importance of prices to farmers and processors, a requirement under a quantity-first policy would be price forecasts based upon predetermined quota levels and any increase in quota. In other words, there would be some uncertainty about prices, rather than the uncertainty on quota. This requires a different set of skills and instruments than currently are in place. For example, in the current regime, there is no need for price insurance mechanisms or price forecasting, but there would be some demand for these under quantity-first management. The scale of this problem is not clear, given that the dairy industry has not tried to manage quantity to achieve specific price levels. On the other hand, there would continue to be a need to manage supplies. Current procedures to enforce quota levels would still be required.

There is also some risk of over-shooting with a focus on quota levels. As quota levels are increased, prices would decline. But as prices decline, at some point some producers will choose to reduce production or even exit the industry. Careful management would be required to avoid the situation where quota levels are increased beyond what producers are willing to produce, thereby requiring a subsequent reduction in quota

An obvious starting point would be to set the U.S. price, plus some allowance for transportation, handling, and quality, as the price target level.

levels. At the very least, quota transfer mechanisms would be important to ensure minimal barriers to the reallocation of quota from those wishing to contract to those wishing to expand.

The alternative reform approach focuses on prices. Prices are gradually lowered to achieve a level closer to that of Canada's major trading partners. The ultimate price level and the pace of price reductions are two details that would be critical in this particular approach. An obvious starting point would be to set the U.S. price, plus some allowance for transportation, handling, and quality, as the price target level. Policy-makers would then choose some time frame within which this could be achieved.

This price-first type of reform would be relatively easy to implement with the existing procedures and institutions of Canada's dairy policy, given that existing policy processes begin with a target price and then set quotas at levels that clear the market. As the quantity of dairy products demanded will increase as milk prices decline, quota levels would be gradually increased.

This price-reduction approach is administratively easier to implement than a quantity-increase approach. It not only utilizes the existing administrative processes but also does not introduce new uncertainties around how much prices are likely to decline after a quota increase. Nor does it introduce a need for modified institutions or policies.

Of course, once prices begin to fall under either approach, there will be common elements to anticipate. For example, some producers will choose to reduce production or exit the industry in response to the price reductions, but others will choose to expand production, with the latter effect very likely to dominate for a lengthy period of price declines. The increased need for a well-functioning, barrier-free quota transfer system in all provinces is the same under this price approach as it is for the quantity approach. Quota values can also be expected to decline over this period of declining prices.

Approach to Transition: It's in the FEED

Any reform option must address issues of funding, efficiency, equity, and duration (FEED) in a comprehensive manner. The more funding that is available, the shorter the transition duration and the more opportunities for equitable redistribution.

The current national dialogue is very much based on a defensive strategy. Politicians wish to limit the impact on public finances (i.e., funding transitions). Producers attempt to minimize disruptions in the system. Yet these positions result in a stagnating Canadian dairy industry. Through growth comes funding. An export market allows additional resources to flow into the industry to, effectively, fund transition. More efficient producers, in particular, are more likely to see an upside to reform given that they are the ones that may realize gains in business value through export sales.

Funding and duration are linked because the status quo is, in effect, a form of funding. It funds dairy farmers through consumer surplus transfers. So any reform package that maintains aspects of the current system does indeed help fund the transition to the new system by maintaining above-free-market profits. Shorter-term transitions inevitably lead to calls for extra funding arrangements because producers' quotas purchases have been predicated on the notion of maintenance of these producer gains.

Equity and efficiency are also linked. In any reform scenario, Canada is likely to see more dairy assets shift to more efficient operators. Some producers will benefit from transition and indeed grow their operations. This will mean that Canada, overall, will become a more efficient dairy-producing country. But less efficient producers are likely to exit the industry and there will be calls for them to be treated fairly, especially given that they will see their quota asset value diminished.

The existing literature varies considerably in terms of reform approach and, by implication, transition approach. (See Table 14.) The literature can be broadly classified in terms of two key parameters—the period of

Table 14
Transition Approaches

	Points on transition period and assistance
Gifford, 2005	Program to guarantee loans on quota, continue system for at least 10 years Decrease production quota while increasing tariff rate quotas
Barichello, Cranfield, and Meilke, 2009	Book value-based compensation Transition plan based on Australian model, funded with 8-year consumer levy Two-quota option Full quota buyout
Busby, 2010	Auction of new quota over 20 years; quota sales would generate transition funding
Doyon, 2011	Focused on improving efficiency
Mussell, Seguin, and Sweetland, 2012	Identified challenges facing supply management
Hall Findlay, 2012	Plan transition based on Australian model, funded with 8–10 year consumer levy
Charlebois, 2012	Focused on how Canada dairy should be positioned post-supply management
Mussell, Seguin, and Sweetland, 2013	Focus on growth and efficiency, then liberalize pricing and trade
Busby, 2013	Focused on improving supply management efficiency

Source: The Conference Board of Canada.

transition and the funding. (See Exhibit 3.) The remaining parts of FEED, namely equity and efficiency, are usually derived from the approach to funding and duration and are not treated apart from this. Equity and efficiency are simply after-the-fact results of various funding choices.

Modest reform proposals target efficiency gains within substantially the same system (e.g., Mussell). Even though these efficiencies would, in fact, have a differential impact on producers' market share and farm valuation, such proposals generally are not overly concerned with transitional issues because the essence of the system is maintained. Typically, as a proposal becomes more ambitious in terms of liberalization, it is more likely to be more concerned with transitional issues. The authors of these reports understand that transitional funding is a necessary political quid pro quo for a liberalized market.

Exhibit 3

Options on Transition Period and Funding

Time frame	Rapid (0–5 years)	Intermediate (5–10 years)	Gradual (10 years or more)
Intra-Canada rent distribution			
Proposals	<ol style="list-style-type: none"> 1. Full quota buyout <i>Barichello, Cranfield, and Meilke, 2009</i> 2. Book value-based assistance <i>Barichello, Cranfield, and Meilke, 2009</i> 	<ol style="list-style-type: none"> 1. Two-quota model <i>Barichello, Cranfield, and Meilke, 2009</i> 2. Australian model adjustment levy <i>Barichello, Cranfield, and Meilke, 2009; Hall Findlay, 2012</i> 	<ol style="list-style-type: none"> 1. Quota loan guarantees <i>Gifford, 2005</i> 2. New quota auctions over 20 years <i>Robson and Busby, 2010</i>
Funded by	<ol style="list-style-type: none"> 1. Taxpayers 2. Taxpayers or consumers or both 	<ol style="list-style-type: none"> 1. Taxpayers 2. Consumers 	<ol style="list-style-type: none"> 1. Taxpayers 2. Producers

Source: The Conference Board of Canada.

Funding Options

Whatever the vision of Canada’s dairy sector, it is important for the elements of policy to be internally consistent. For instance, Canada cannot pursue export opportunities while maintaining high trade barriers. It is unlikely to pursue those opportunities when its best producers are constrained or discouraged from expanding. Therefore the trade barrier, price support, and quota elements of the system need to work together to achieve a coherent and effective dairy policy.

A critical issue is the funding of existing quota. Quota values simply reflect the discounted value of the economic rents associated with quota, which are already a form of transfer from consumers to farmers. If these rents are cut short through transition policy, then issues of equity arise and there will be calls for various sorts of buyout of quota.

By considering the rates of return on quota assets for different farmers, we are able to illustrate the equity and efficiency issues of different transitional funding regimes. In Table 15, we consider three kinds of dairy farmers based on their quota purchase date. We calculate the internal rate of return on quota assets for different entrants in 1998, 2005, and 2012.

Table 15
Internal Rates of Return* by Entrant Stage Under Quota Buyout Scenarios

	Entrant 1	Entrant 2	Entrant 3
Entrant stage	<i>Early</i>	<i>Mid</i>	<i>Late</i>
Year of purchase	1998	2005	2012
Years of operation	15	8	1
Quota purchase price (typical P5 farmer) (\$)	12,000	29,000	25,000
Estimated annual return on quota for average farm (%)		12	
Buyout scenarios (%)			
IRR with no buyout and overnight liberalization in 2013	15	-2.3	-88.0
IRR with buyout at full market value	17	11.5	12.3
IRR with buyout at book value, depreciated over 10 years	15	2.1	2.3
IRR with buyout at book value, depreciated over 15 years	15	6.1	5.6
Government of Canada bond, 10-year yield at time of quota entry	8	4.5	1.7

*IRR

Source: The Conference Board of Canada.

Several key points come across. First, late entrants are exposed the most because they have yet to realize a return on their quota. Therefore, overnight liberalization with no buyout severely punishes late entrants (or anyone who holds recent vintage quota). Second, a market value buyout is extremely generous for all quota vintages. Book value¹⁰

10 *Book value* is the value at the time of purchase. *Market value* is determined by valuing quota at current market prices.

buyouts (depending on how one depreciates the asset) are much more reasonable, especially when compared with the returns on alternative investments like 10-year Government of Canada bonds.

Clearly, one of the things holding back reform is the concern that farmers will expect an expensive market value quota buyout. The current market value of dairy quota is around \$23 billion.¹¹ This explains why some proposals focus on a book value buyout, which is substantially less costly and easier to justify on equity grounds. Based on the Ontario data in Table 4 above, we know that the book value of quota is around a third of the market value. That makes it much easier to fund a book value quota buyout. And the policy can be justified because, as a matter of law, new entrants were required to buy quota as a condition of entry into the business whereas the initial quota allocation was issued at no cost.¹² This approach takes the position that farmers should not need to realize a capital gain on their quota asset funded by taxpayers or consumers.

Such a program could, for instance, focus on quota acquired over the last 10 years, and adjust buyout compensation based on quota vintage. The buyout terms could also be further adjusted depending on the nature of the quota acquisition, given that farmers will have acquired quota through exchanges, business consolidation (ongoing operations), and in-family exchanges. We can impute a value to the off-exchange transfers through the exchange transfers.

Quota acquired through exchange and business consolidation would be depreciated over 10 years, while family transfers would be adjusted to reflect the pre-transfer vintage of the quota.¹³

11 The sum of each province's December 2012 quota price multiplied by quota allocation. Data are from the Canadian Dairy Information Centre.

12 Although initial quota entrants were required to make investments in milk refrigeration and storage facilities.

13 Provincial rules typically limit in-family quota transfers to quota that has operated for at least five years prior to the transfer. Sources for our calculation are Fédération des producteurs de lait du Québec (FPLQ), *2012 Annual Report*; Dairy Farmers of Ontario, *Dairy Statistical Handbook 2011–2012*; Alberta Milk, *Annual Report 2011–2012*; BC Milk Marketing Board, *Annual Report for the 2011/2012 Dairy Year*.

By examining the value of quota transferred through provincial exchanges, as well as through direct off-exchange transfers, we estimate this type of buyout would cost between \$3.6 billion and \$4.7 billion. (See Table 16.) The range reflects the relative importance of off-exchange transfers. If we assume that other provinces have as high a rate as Ontario, then we calculate the program may cost \$4.7 billion. But we know that other provinces (particularly in the West) rely more on exchange markets. The lower estimate simply assumes that half of the recent quota transfers happened off exchanges. So \$4.7 billion is a high estimate because off-exchange transfers accounted for 80 per cent of Ontario's quota transfers in dairy year 2011–12, whereas they were smaller for the other three main producing provinces: Quebec (60 per cent), Alberta (51 per cent), and British Columbia (59 per cent).

Table 16
Hypothetical Buyout Cost in 2014 Based on Depreciated Book Value
(\$ millions)

2004–13 (estimated)	Exchange-traded total value	Depreciated book values (depreciation period)			Total buyout
		Exchange-traded (10 years)	Within family (5 years)	Ongoing (10 years)	
Ontario	1,932	805	456	200	1,461

2004–13 (estimated)	Exchange-traded total value	Exchange-traded (10 years)	Private transfers		Total buyout
			(high estimate)	(low estimate)	
Canada-wide	5,598	2,603	2,121 (high estimate)	1,000 (low estimate)	4,725 (high estimate) 3,603 (low estimate)

Sources: Canadian Dairy Information Centre; Dairy Farmers of Ontario; authors' estimates.

The specific terms and rules of transfer vary by province. An equitable buyout compensation scheme would have to consider the specifics of these terms. The provincial marketing boards have the best idea of their transfer terms and can take these into account if they choose to focus

The advantage of a long transition period is that it makes the cost of explicit quota buyout less expensive and, in the extreme, zero.

compensation on recently acquired quota. As such, they can design book value-based compensation schemes that best suit their provincial markets within these broad policy parameters. An added advantage is that a book value-based buyout would act as a sort of loan guarantee, insuring minimal financial fallout from this reform option.

A buyout of this magnitude could easily be funded through a temporary levy. New taxes to fund transitional programs can be a tough political sell. Yet the advantage of hidden tax levy programs (very much like excise taxes) is that they can be buried in the price of dairy products and geared toward having little or no impact on retail dairy prices. Australia has shown that taxpayers may accept such temporary buried levies when the policy is clearly explained.

Another version of buyout (e.g., Gifford, 2005) focuses on the debt overhang from quota. We have shown this is a real issue that threatens the solvency of some dairy farms and could prevent them from participating in the growth phase of industry expansion. Debt guarantees are less expensive than any quota buyout schemes and recognize that, indeed, not all dairy farmers will do poorly in a liberalized regime.

Dual quota proposals along the lines discussed by Robson and Busby have the advantage of actually raising funds from the more efficient producers, which makes them even more cost-effective from a taxpayer's perspective. We do note that welfare gains are shared between select producers (both primary and processing) and consumers. Some producers will effectively fund transition through higher business income taxes. Yet dual quota proposals generate some additional revenue directly from the producers that are most likely to benefit.

The advantage of a long transition period is that it makes the cost of explicit quota buyout less expensive and, in the extreme, zero. As we have argued, the market value of quota is merely the discounted income stream associated with the quota. As the vintage of quota varies, each allotment will have generated a different return on investment (ROI) for its owners. Discounted income streams associated with quota

approach zero over time. That means that consumers could continue to fund transition merely by continuing to pay higher dairy prices over the transitional period.

This reality is highlighted in an analysis of the net present value (NPV) associated with quota purchases at different prices. (See Table 17.) The table assumes a discount rate of 6 per cent and clearly shows that recent vintage and/or expensive quotas are particularly exposed to the risk of a sudden change in policy. But the table also shows that most of the returns on quota are positive over eight years. That suggests that a book buyout that assumes a 10-year depreciation rate (as outlined in Table 15) is a reasonable option.

Table 17

Net Present Value Scenario Estimates

(annual profit stream per unit quota \$4,056; discount rate 6%)

Original quota purchase price	Years of operation							
	0	2	4	6	8	10	12	14
\$0	\$0	\$7,015	\$13,257	\$18,814	\$23,759	\$28,160	\$32,077	\$35,563
\$10,000	-\$10,000	-\$2,419	\$3,824	\$9,380	\$14,325	\$18,726	\$22,643	\$26,129
\$20,000	-\$20,000	-\$11,853	-\$5,610	-\$54	\$4,891	\$9,292	\$13,209	\$16,695
\$25,000	-\$25,000	-\$16,570	-\$10,327	-\$4,771	\$174	\$4,575	\$8,492	\$11,978
\$30,000	-\$30,000	-\$21,287	-\$15,044	-\$9,488	-\$4,543	-\$142	\$3,775	\$7,261

Source: The Conference Board of Canada.

We have argued that the administrative realities of supply management point to using the price mechanism to gradually unwind quota. This would likely be matched by a gradual unwinding of Canada's trade restrictions. The only problem with this approach is that it continues to constrain the efficient producers from gearing up to service export demand. If Canada announces a long transition period of gradual price liberalization, our competitors are likely to take steps to secure their existing export market dominance. Canada would be better off

Farmers would be wise to use any transitional period to reorganize and position themselves for downstream profits.

buying out quota under equitable terms and moving to a relatively quick reorganization of the industry. Given the natural industry cycle, it would take no more than two or three seasons for dairy herds to reach their optimal scale under the most efficient producers.

Farmers would be wise to use any transitional period to reorganize and position themselves for downstream profits. One option is a co-op model like Agropur, a good example of a farmer-owned primary/processing integration. Agropur is an international company with revenues of over \$3.6 billion and annual dividends of over \$100 million.¹⁴ It employs over 6,000 people. Once these co-op business models are mature, they may also consider demutualization, which would provide them with access to a deep pool of capital for growth. We see no barriers to farmers organizing themselves to forward integrate through co-operatives. Indeed, there are many different organizational forms that would allow Canadian producers to get the most of dairy-producing assets.

Conclusion

This chapter has considered options for reforming supply management. These options essentially fall into two camps.

The first camp supports substantial maintenance of the current system, albeit with improved efficiencies. These efficiencies would be realized through existing administrative mechanisms, namely price setting and quota allocation. This would continue to change the face of dairy farming, resulting in fewer dairy farms and more dairy assets in the hands of the more efficient producers. However, it would maintain the system of excess profit generation and allocation. Essentially, this is a regulated utility approach to dairy. And like a utility, rents are concentrated in fewer and fewer operators over time. Although this system definitely manages business risk, it exposes the industry to significant policy risk. The reason is that dairy would continue to stand out as an exception to a general pro-liberalization Canadian agricultural and trade policy.

¹⁴ Agropur Cooperative, *2012 Annual Report*.

The second camp supports substantial reform of the current system. This would expose Canadian dairy producers to the risks and opportunities of a liberalized market. Dairy assets would be organized under fewer, more efficient producers. How disruptive this would be is an open question, given that some of our scenarios show little change, and possibly even growth, in consolidation. Based on our analysis, we believe that the second camp's position is better for Canada.

With trade restrictions removed, efficient dairy producers would be able to realize greater economies of scale; therefore, the entire system would be considerably more efficient than under supply management. Specific proposals within this camp differ in terms of duration and funding. And the approach to duration and funding effectively determines efficiency and equity. As the current policy engineers a transfer from consumers to dairy farmers, it is possible to fund transition through the current system with no need to introduce supplementary measures. This is merely a matter of the duration of transition and how quickly prices are adjusted to the world level.

We now draw out implications of our analysis for the Canadian Food Strategy.

CHAPTER 6

Implications

Chapter Summary

- Our analysis shows that Canada would significantly benefit from fundamental reform to supply management.
- The industry needs to embrace a new growth paradigm.
- International trade is crucial to industry growth and has to be a key part of any reform package.
- Existing quota should be dealt with equitably through some form of book value buyout. This could possibly be funded through a temporary levy.
- Dairy farmers should reorganize to maximize their gains from future growth.

This report has shown that there are several reform options for Canada's supply management system for agricultural commodities. As dairy supply management is by far the largest of the supply-managed regimes, approaches to dairy market reform are relevant to the whole supply-managed sector. Our analysis shows that Canada would significantly benefit from fundamental reform to supply management. We draw the following implications for the Canadian Food Strategy:

1. Dairy Industry Should Embrace a Growth Paradigm

Supply management reform clearly depends on one's view of the industry's growth prospects. Current policy treats the dairy market as a zero-sum game between Canadian consumers and the Canadian dairy industry. But if Canada can capture a relatively modest portion of the expected growth in international dairy market, the policy calculus changes. The reason is that some dairy producers will realize increasing profits through expanded volumes. So the industry benefits from growth and consumers benefit from a movement to world prices. We have made the case that Canada can indeed capture part of the growing dairy market. Before reform options can be considered, there is a need for the dairy industry to embrace a growth paradigm. The Canadian dairy industry can realize significant gains in output and employment if it grasps growth opportunities.

2. Domestic Supply Management Reform Should Be Linked to International Trade

The worst-case scenario is one where the Canadian market is opened to dairy imports before fundamental structural reforms have taken place that allow the Canadian industry to compete in international markets. As such, price and quota reform have to be tied to Canada's trade policy. Canada's trade policy negotiators need to negotiate international market access for Canadian dairy products. This will involve allowing foreign products to enter the Canadian market and capture market share. However, if dairy assets are organized under the more efficient Canadian operators, Canada will be a net exporter of dairy products as its production grows.

3. Quota Should Be Unwound Equitably and Efficiently

Some form of book value buyout is the most equitable and efficient way to unwind existing quota. This is fair in that it recognizes that quota has already transferred rents to quota holders. Typically, quota investments have paid for themselves within eight years. A book value buyout that assumes a 10-year depreciation rate still generates a return to quota holders comparable with (or better than) government bonds, depending on quota vintage.

A market value quota buyout, in our view, is unfair because the current quota market is not a good indicator of the realized value of existing quota. The current quota market is a highly regulated and thinly traded market. Moreover, current market values reflect only the expected future returns and do not take into consideration returns that have already been made on quota. A book value-based buyout is not only fair but also efficient and more affordable, as it would cost between \$3.6 billion and \$4.7 billion to buy out existing quota at book value.

Yet a book value buyout is relatively generous compared with the reform approaches used in non-agricultural supply-managed sectors. We note that for-hire trucking supply management was reformed virtually overnight with no compensation scheme for the many small for-hire trucking firms that had acquired route licences. There are several other examples of sudden changes to government policy with little or no compensation.

4. Reform Should Be Funded Through Dairy Levy

Given that consumers would see declines in dairy prices, a book value buyout could be funded through a special levy on dairy products geared to the movement to world prices. This is the approach that Australia took. The levy could be designed so that consumers would not see any short-term change in dairy prices. In the long term, however, consumers would realize significant and permanent dairy price decreases.

5. Farmers Should Reorganize to Realize Gains

Another aspect of the zero-sum approach to dairy reform is that some farmers think that gains from trade will be captured mostly by the processing sector. Yet farmer-owned co-operatives like Agropur have shown that farmers can forward-integrate into dairy-processing assets and thereby realize gains at both the farm and processing levels of the supply chain. With sufficient time to reorganize, we expect that farmers would participate in the anticipated buildup of processing assets, as they have in New Zealand through Fonterra.

This package of reforms would lead to the industry restructuring itself under the most efficient operators. We have shown that these operators are well-placed to explore export opportunities. The dairy industry can be a source of income and employment growth under the right conditions. But to do so, it must transform itself to embrace a strategy of growth.

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APPENDIX A

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