Price Fixing:

A Microeconomic Comparative Assessment Between Canadian Cartel Bread Industry and Supply-Managed Dairy Industry

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Introduction

[1] Colby Cosh asserts that bread cartel's dominant pricing is trivial compared to legalized dairy control.[2] In this paper, we argue that while Cosh rightly views private cartel practices as economically limited in harm, he overlooks the political inevitability underpinning dairy price control. First, we elucidate the rationale behind the market inefficiency of supply-managed dairy market.[3] Second, we explore the underlying political inevitability of dairy supply management. Through the application of the theoretical framework of a repeated game between government and the farmers, we demonstrate that the current structure of Canada's dairy industry is a stable outcome where no one has motivation to deviate. Third, we analyze the negative social impacts associated with cartel price-fixing in the bread industry. We conclude with an argument on the degree of detriments between bread cartel and dairy supply managed sector. The absence of innovation incentive in the dairy market as well as the loss of consumer surplus resulted from import controlled make dairy supply management more detrimental in the long run than even privately coordinated cartels. Though some theory suggests the triviality of private cartel practices, cartel indeed causes loss of social surplus. The regulation against such practice is not merely government's inconsistency. It is the social welfare subjected to social norm that has motivates the regulation in place.

The Inevitability of Supply Management

The dairy supply management system was introduced in 70s in response to volatile farm incomes, fluctuating prices, and disorganized provincial controls.[4] Through the three pillars discussed in appendix section, the system aligned farmer interests with political incentives: as a result, dairy farmers became a coordinated and reliable voting bloc, anchoring the system in Canada's agricultural and electoral landscape. This political anchor has created a political risk for government candidates in elections. Cardwell et al. identified a strong

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1. OpenAI, *ChatGPT*, Debuging Figure Printouts by Python and Grammer Editting, 2025, https://chat.openai.com.

2. Colby Cosh, "Why Is Price-Fixing a Crime for Bread, but Not for Dairy?," National Post, January 12, 2022, accessed August 2, 2025, https://nationalpost.com/opinion/colby-cosh-why-is-price-fixing-is-a-crime-for-bread-but-not-dairy. "So, very well, grocers: I guess if some people are angry with you about an extra 12 cents on a loaf of Wonder Bread, or however much you've been clipping off unlawfully, you have no choice but to suffer the abuse and present a defence in court. I consider us square ... When it comes to supply-managed dairy products, price-fixing is not an abomination crying to God for vengeance, but the official long-standing policy of a long series of Canadian governments."

3. This part is moved to the appendix.

4. Canadian Dairy Commission, *Forty Years of Leadership: 1966–2006* (Ottawa: Canadian Dairy Commission, 2006), 13–17, https://www.cdc-ccl.ca/sites/default/files/featured_images/CDCs-40th-Anniverary-Book.pdf.

political risk associated with the withdrawl of supply management support which translates to lost vote share and hence lost seats in House of Commons.[5]

If the government removes dairy supply management, then its loss is repeated until an alternative government promises to bring back supply management. Consider the following repeated game, with farmers in the first entry and government in the second:[6]

Farmers/Government	Supply Management	Removed Supply Management
Support	$(1, 0)$	$(0, 1)$
Do not support	$(1, -1)$	$(0, -1)$

Figure 3.

Initially we are at $(1, 0)$ where the farmers support the government and supply management is in implementation. Let the time of this null state be $t = 0$. Suppose the government removes dairy supply unexpectedly at $t = 1$, we thus have a new outcome $(0, 1)$ since farmers now lose profit due to market competitiveness and imports and the government can save cost from not implementing supply management. Now in the next periods of election, $t = 2...$, the interest groups of farmers cease to support the government, and so we arrive at $(0, -1)$. Eventually, say at $t = N$ the new candidate brings back supply management, then we arrive at $(1, -1)$. The farmers again support the government, hence we arrive back to $(1, 0)$ where farmers support the government and supply management is in implementation. Figure 4. below shows the relative gain compared to the initial equilibrium $(1, 0)$.[7]

Time	$t = 0$	$t = 1$	$t = 2$	$\ldots$	$t = N$	$t = N + 1$
Government Gain	0	$+1$	-1	-1	-1	0
Farmers Gain	0	-1	-1	-1	0	0

Figure 4.

As deviation from $(1, 0)$ results in mutual subsequent losses. The government has no motivation to remove dairy supply management in act. As the system reverts to the original equilibrium, the net incentive to defect vanishes–dairy supply is not merely a stable but a politically inevitable outcome.

Cartel Bread Industry: Lost Social Surplus

Here we proceed to examine Cosh's claim that bread cartel's dominant pricing is not as detrimental as legalized dairy control.[8] Starting November 2001, (Loblaw, Sobeys, Metro,

5. Ryan Cardwell, Chad Lawley, and Di Xiang, *Political Risk and the Persistence of Canada's Supply Management Regime*, technical report 5208444 (SSRN, 2025), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5208444.

6. The numbers here are ordinal and are used only to illustrate the degree of gains of both parties.

7. In this framework we assume adaptive expectations from the farmers, i.e., they look at the actual actions of the government and decide whether to support.

8. Cosh, "Why Is Price-Fixing a Crime for Bread, but Not for Dairy?"

Giant Tiger, Wal-Mart Canada) and suppliers (Weston Bakeries and Canada Bread) engaged in a long-running conspiracy to fix the wholesale and retail prices of packaged bread.[9] The parties implemented a "7/10 Convention," where a seven-cent wholesale increase corresponded to a ten-cent retail increase, enforced across the industry via direct communication among senior executives and indirect coordination through supplier-retailer relationships.[10] This is an example of rotational price leadership. One firm signals a price increment followed by others.

Now we provide a theoretical framework that explains the process of dominant pricing. Suppose linearity of curves. Let the market demand for package bread be D. Let the fringe supply be $S_F = MC_F$, i.e., the supply that has no pricing power. Let the dominant supply be $S_D = MC_D$. Then, we define the dominant demand curve to be D_D s.t. $D_D := D - S_F$. We can thus derive MR_{D_D}, i.e., the marginal revenue of dominant demand curve. As the cartel has a lower MC_D, then maximize profit by choosing Q_D^* s.t. $MR_{D_D} = MC_D$, the resulting price reflects on D_D and is denoted as P^*. As S_F is price taker they produce at Q_F s.t. $MC_F = P^*$. We have also the total market quantity $Q_T = Q_F + Q_D^*$. Graphically, we have figure 5. below.

Now to show the loss of social surplus, we define the market aggregate supply as the horizontal summation of S_F and S_D with respect to Q, then we invert the function to get $MC_T = S_T = S_F + S_D$. The equilibrium thus results is that of the competitive one, Q_c with price P_c. The highlighted region represents the deadweight loss, see figure 6. below.

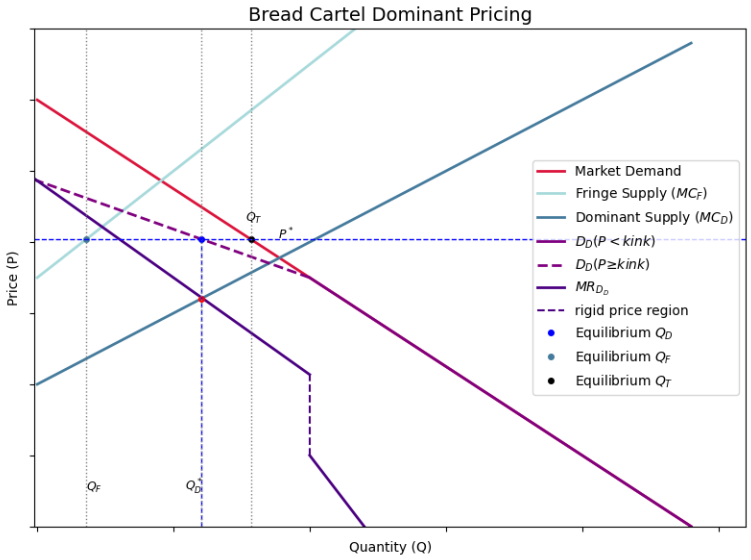

Figure 5.

9. Ontario Superior Court of Justice, *David v. Loblaw Certification Judgment*, technical report 2018 ONSC 7331 (Ontario Superior Court of Justice, 2021), https://www.mapleleaffoods.com/wp-content/uploads/sites/6/2024/09/David-v.-Loblaw-certification-judgment.pdf.

10. Ibid.

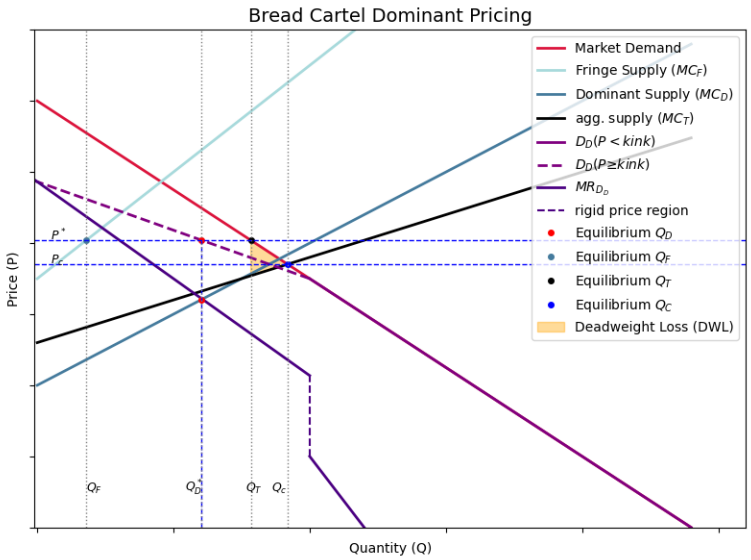

Figure 6.

Figure 7. removes demand side mechanism of cartel dominant pricing and shows the original outcome had the supply been aggregated. Note that however, if the marginal cost of dominant firms, MC_D is sufficiently low compared to MC_F, then the cartel becomes an entity similar to a natural monopoly. Figure 8. adjusts the cost structure of S_F such that MC pricing and the allowance of such cartel-monopoly will result in yet lower price P_{MC} and greater quantity Q_{MC} compared to the competitive outcome. Figure 9. simplifies Figure 8. removing dominant demand and marginal revenue.

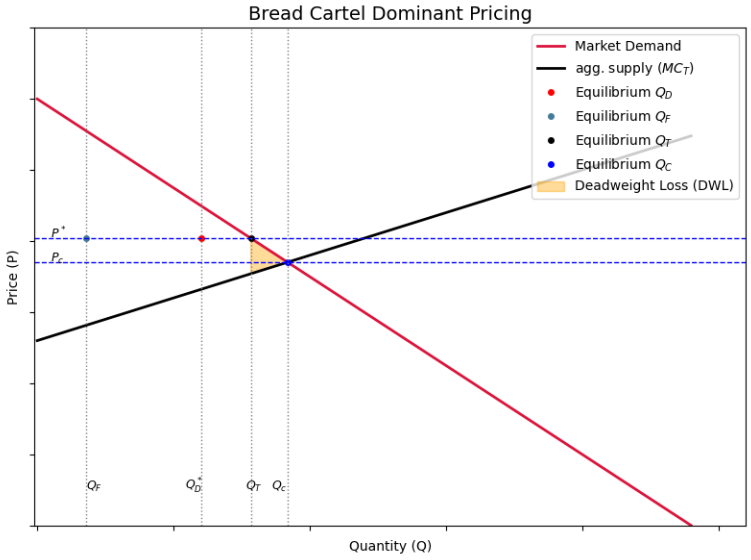

Figure 7.

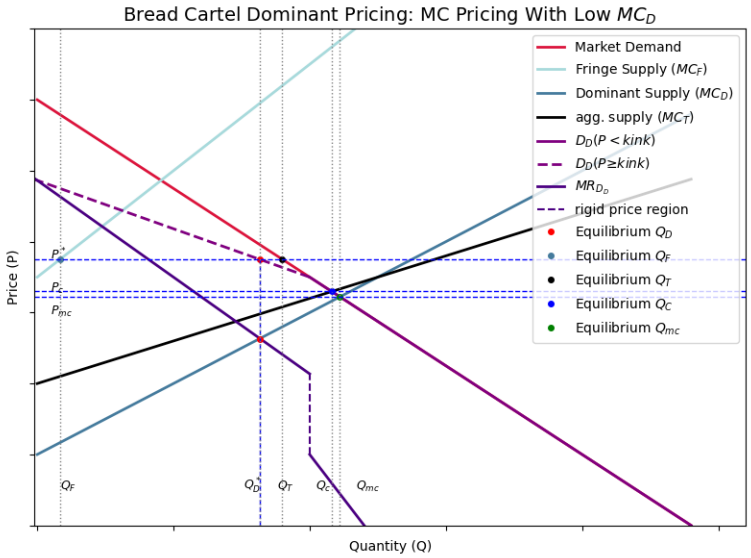

Figure 8.

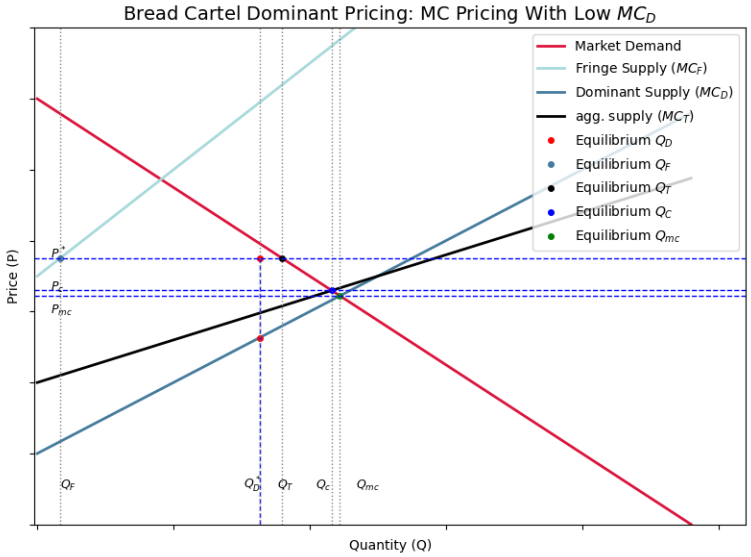

Figure 9.

In short, the efficient response of government to cartel should take into account of the difference in cost structure and cartel results in deadweight loss.

Conclusions

With free market entry, the dominant pricing in bread industry might not be as detrimental as legalized dairy control. Since new market participants with yet lower marginal cost (either via technology or differentiation) may enter and compete with the cartel, different from the idealized theoretical framework. Economic theorist Schumpeter coined the term creative destruction in which monopolies/cartels' price discrimination are treated as tem-

poral reward to their innovation..[11] His theory is further developed into innovative cycle.[12] Where monopolies are displaced by innovative monopolies incessantly and thus regulation is superfluous. However, Arrow showed that the inventors' incentive under competition always exceeds the monopolists' incentives. [13] A monopolist already earning profits has less to gain from innovation because it would only replace (not add to) their existing monopoly rent. In contrast, a competitive firm, earning little to no excess profit, has more to gain from innovation that offers cost advantages or market differentiation.

In either cases, the barrier of entry in dairy market as a result of supply management results in yet greater disincentive for any invention whatsoever. They enjoy the *fair share of* profit without competitive pressure, at the cost of the loss social surplus, both from domestic quantity controlled and the consequent price fixing; as well as the loss of consumers from trade where greater choices and lower price could have been realized. In a addition, monopolists' tend to be temporal, but dairy supply management seems to be inevitably perpetual. Cosh was right in asserting the degree of detriments between the two, i.e., cartel might not be as bad as supply management; however as was shown he neglects the political inevitability of such outcome. In particular, the regulation against cartel may be attributed not only to the government's inconsistency. It is a response to the loss of social surplus, as well as the disincentive of monopolists' argued by Arrow. Further, it can be argued that the regulation aims not merely for the efficiency of the society. But to also appease the sentimental perceptions of the public that may, in turns, economically (in game theoretical sense by similar framework we used), influence their political interests.

Appendix

Supply Management

Supply management in Canadian dary market follows three fundamental pillars: 1) production control, 2)pricing mechanisms, and 3)import control.[14] First, production control

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11. Joseph A. Schumpeter, *Capitalism, Socialism and Democracy*, Originally published in 1942; this edition based on the 1976 printing by George Allen & Unwin (London: Taylor & Francis e-Library, 2003), 83.

12. Ibid.

13. Kenneth J. Arrow, "Economic Welfare and the Allocation of Resources for Invention," in *The Rate and Direction of Inventive Activity: Economic and Social Factors*, ed. Richard R. Nelson (Princeton, NJ: Princeton University Press, 1962), 609–626. "The only ground for arguing that monopoly may create superior incentives to invent is that appropriability may be greater under monopoly than under competition. Whatever differences may exist in this direction must, of course, still be offset against the monopolist's disincentive created by his preinvention monopoly profits."

14. Khamla Heminthavong, "Canada's Supply Management System," 2018, https://lop.parl.ca/sites/PublicWebsite/default/en_CA/ResearchPublications/201842E.

is achieved by quota. Quota is the permitted quantity set by the government to which farmers produce in accordance. Initially allocated free of charge, quota has aquired market value gradually.[15] This allows the farmers with the lower cost purchasing more quota and produce more based on the difference of their production cost. Now, the price mechanisms ensure the stability of price and farmers' *fair share* of profit. Farmers negotiate the minimum farm-gate prices with processors through their provincial marketing boards. Lastly, import is controlled through tariff rate quotas. This ensures only desired amount of import is permitted whilst the rest is imposed with high customs tariff to prevent domestic market from flooding.

Supply management in Canadian dairy market results in a government-sanctioned multiplant monopoly. A multiplant monopoly operates on different marginal costs, analogously, each farmers produce on different cost structure.Suppose a multiplant monopoly has k number of plants each with different marginal cost. Then, we can define the total marginal cost MC_T as follows:

1. We apply horizontal summation across all MC_j s.t. $j \in [1,k] \cap \mathbb{N}$, we will thus get Q_T as a function of $MC_j, j \in [1,k] \cap \mathbb{N}$;
2. invert and get MC_T as a function of Q_T
3. Solve for Q_T s.t. $MC_T = MR$ where MR is the marginal cost from the demand curve. Substituent Q_T back to demand curve gives profit max price, P^*.
4. Compute MR then solve for each q_j of $MC_j, j \in [1,k] \cap \mathbb{N}$.

Analogously, via supply management:

1. Total output is chosen based on government forecast of market demand.
2. As import is controlled, foreign goods has no effect to such chosen output.
3. Farmers have different cost structures and so they trade quota to achieve the total output.
4. Lastly, they negotiate the minimum price that ensures at least $P > AC \implies \pi > 0$, i.e., *fair share of profit.*[16]

In this sense, dairy supply operates similar to multiplant monopoly. A direct consequence of dairy supply management is the suppressed quantity traded and a higher price. For example, a simple calculation shows that the price of milk per hectoliter between Canada and USA differs by approximately 58.3%. with Cnadian milk price to be around 121.8 CAD, and US milk 76.94 CAD per hectoliter. Suppose a standard milk composition used in Canadian Dairy Commission's Cost of Production (COP) report: on average per hectoliter of milk consists of 3.6.kg butterfat.[17] Then, the total price of milk per hectoliter in Ontario in

15. Heminthavong, "Canada's Supply Management System."

16. Canadian Dairy Commission, "Cost of Production: October 2024," 2024, https://www.cdc-ccl.ca/sites/default/files/2024-10/COP%20October%202024.pdf. Note that when the minimum price is negotiated, the cost of production refereed includes also factors such as cash costs.

17. Ibid.

2025 can be calculated by[18]

$$\text{Total Price (CAD/hl)} = (10.3684 \times 3.6) + 84.47 \approx 37.33 + 84.47 = \boxed{121.80 \text{ CAD/hl.}}$$

In contrast, according to US Department of Agriculture, the estimated milk price per hectoliter in USA in 2025 is[19]

$$\text{CAD per hl} = \frac{\text{USD per cwt} \times \text{Exchange Rate}}{0.386} = \frac{22.00 \times 1.35}{0.386} \approx \frac{29.70}{0.386} \approx \boxed{76.94 \text{ CAD/hl.}}$$

Supply-managed Dairy Market: Lost Social Surplus

A simple calculation shows that the price of milk per hectoliter between Canada and USA differs by approximately 58.3%. with Cnadian milk price to be around 121.8 CAD, and US milk 76.94 CAD per hectoliter.[20] Cairns et al. (2010) estimates MC by the cash cost. [21] Here we presumes similar estimation. Then we have that, take for example, in 2023, AC is around 92.60 with $MC \approx$ cash cost $= 55.16$.[22]

Let Q_I be the quantity of dairy import controlled. Let Q_T be the targeted domestic quantity of dairy such that $Q_T - Q_I = Q_{dom}$ where Q_{dom} is the domestic quota. Suppose an increasing aggregate marginal cost of domestic supply ,MC_S. Let D denote the demand of the processor at the farm gate that is downward sloping. For simplicity suppose linearity of MC_S and D. Then the total loss of social surplus can be captured by three steps. First, suppose trade is controlled. We denote $P_D = 121.80$ as the doemstic price for milk as a result of chosen Q_T. Then, we have:

18. Canada.ca, "Milk Class Prices – February 1, 2025," 2025, https://agriculture.canada.ca/en/sector/animal-industry/canadian-dairy-information-centre/statistics-market-information/processing/prices-02-2025. "BF: \$10.3684(\$/kg) and SNF: \$84.47(\$/hl)."

19. U.S. Department of Agriculture, Economic Research Service, "Dairy: Market Outlook," 2025, https://www.ers.usda.gov/topics/animal-products/dairy/market-outlook."All-milk price forecasts for 2025 and 2026 are \$22.00 and \$21.65 per hundredweight [in usd]."

20. See appendix for comparsion of Diary market and monopoly; also for the calculation of price herein.

21. Alexander P. Cairns, Karl D. Meilke, and Nick Benett, *Supply Management and Price Ceilings on Production Quota Values: Future or Folly?* (Canadian Agricultural Trade Policy Research Network, 2010), https://ideas.repec.org/p/ags/catpwp/91474.html. "The direct cash cost components (per hl) of the survey serve as our estimate of the marginal cost of milk production."

22. Canadian Dairy Commission, "Cost of Production: October 2024."

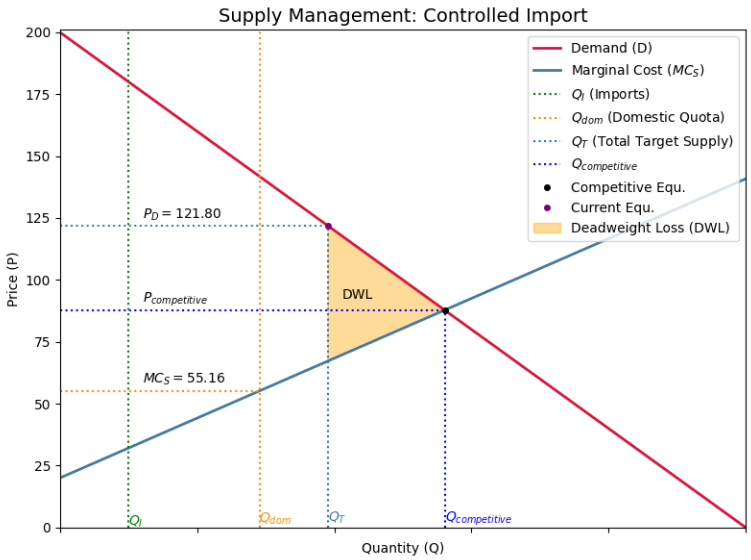

Figure 1.

Note that the area highlighted in figure 1 is the deadweight loss. In particular, farmars enjoy producer surplus calculated by

$$\frac{MC_s \cdot Q_{dom}}{2} + (P_D - MC_S) \cdot Q_{dom}.$$

The rest of the surplus under P_D is shared by foreign producers subjected to their marginal cost structure. For simplicity suppose $MC(Q_T) \approx MC_S = 55.16$. As Q_T is reported to be $10,395$ thousand metric tons,[23] i.e., around 100.9 million hl of milk, we can also approximate the deadweight loss, DWL, suppose we know the competitive outcome $Q_{competitive}$,

$$DWL \approx \frac{(121.8 - 55.16)\,(Q_{competitve} - 100.9\text{mil})}{2}.$$

Which will be a non-trivial loss given the metric. Now, we proceed to show the loss of social surplus from import controlled. Suppose trade is uncontrolled and USA's milk price is presumed to be the world price, P_{world}. Then, we have:

23. U.S. Department of Agriculture, Foreign Agricultural Service, "Dairy and Products Annual: Canada," GAIN Report No. CA2023-0045, published October 16, 2023, 2023, https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Dairy+and+Products+Annual_Ottawa_Canada_CA2023-0045.pdf.

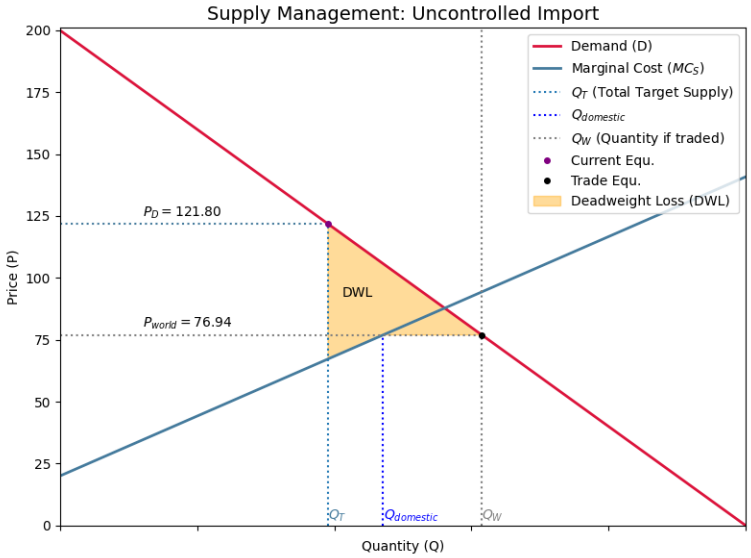

Figure 2.

Where $Q_{domestic}$ here represents the competitive outcome under trade; farmers in Canada produce such that $MC_S(Q_{domestic}) = P_{world}$. The difference between Q_W and $Q_{domestic}$ is then the total supply from USA in our case. Clearly both the quantity controlled and the import controlled pillars of supply management in Canada result in loss of social surplus.

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