Impacts of Trade Liberalization in Canada's Supply Managed Dairy Industry

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Impacts of Trade Liberalization in Canada's Supply Managed Dairy Industry

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IATRC, December 2019

Outline

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Supply Management

- Restrict supply, in the form of production and imports, to meet demand
- Decreases producer price volatility and surplus production so as to maintain a producer price above cost of production
- Maintained by the Canadian Dairy Commission (CDC) who sets market sharing quota limits for dairy producers
- Milk produced in a region is used in the production of dairy products within that region

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Classified Pricing

- Enables the breakdown of milk into components
- Charges a component price depending on end use product class
- Allows for the incorporation of Class 7 and MPI

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Classified Pricing

Class 7

- Prices non-fat solids in SMP at approximately world prices
- Allows the pricing of non-fat solids in SMP to be used in the production of other products

Milk Protein Isolates

- MPI are imported and used as ingredients in production of processed goods
- Not subject to tariffs but limited to a given proportion depending upon product

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Price Supports

- The CDC publishes support prices for butter and SMP
- Since Class 7 CDC only maintains butter
- Purchases good when price is below support price (reduces supply)
- Sells inventory when price is above support price (increases supply)

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Tariff Rate Quotas

- Removal of non-tariff barriers in the Uruguay Round, involved the tariffication of import quota
- Minimum access commitment allows products to be imported at an in-quota tariff rate
  - Allocated according to a licensing system through an application to Global Affairs Canada
- Above that minimum access commitment, the product may be imported but at an over-quota tariff rate
- Over-quota tariff rate is set at a near prohibitively high level

Product Demand Changes

- Trade liberalization within RTAs occurs over a multi-year period
- Canadian demand for dairy products experience different annual demand changes
- Butter 3%, Cheddar 2%, Pizza Mozzarella 2%, Specialty 3.5%, Fluid Milk 1%, Concentrated Milk 0%, Ice Cream 2%, Yogurt 1%, Animal Feed 3%, and SMP 2%

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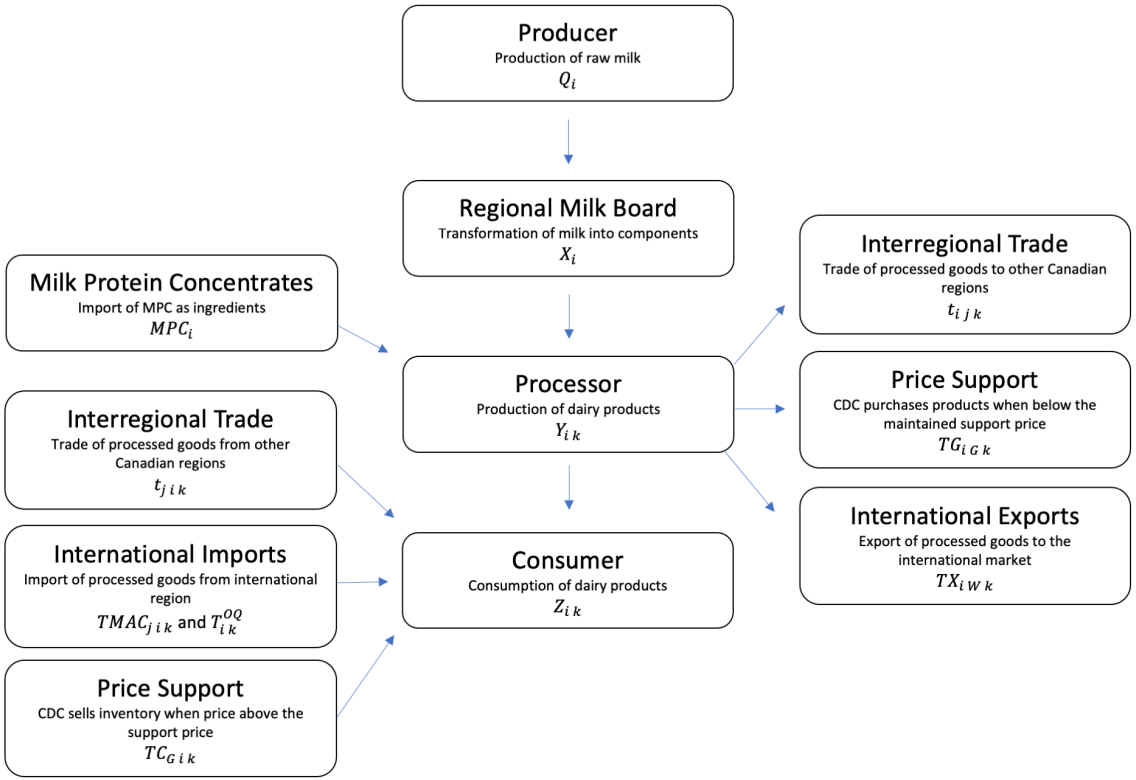
Dairy Supply Chain



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Composition

A static, constrained optimization, inter-regional trade model

- Sectors
  Producers, Processors, Consumers
- Regions (i=3)
  Western Canada, Ontario, Eastern Canada, Rest of World
- Dairy Products

  Milk Components (s=3)
  1) Butterfat, 2) Protein, 3) Other Solids

  Processed Products (k=10)
  1) Butter, 2) Cheddar Cheese, 3) Pizza Mozzarella, 4) Specialty Cheese,
  5) Fluid Milk, 6) Concentrated Milk, 7) Ice Cream, 8) Yogurt,
  9) Animal Feed, 10) Skim Milk Powder

Calibration

A maximization problem of social surplus subject to constraints. Follows theory developed by Cox & Chavas (2001) and Abbassi et al. (2008)

- Baseline is 2016/2017 dairy year
- Optimizes 324 variables
- Subject to 110 constraints

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Objective Function

$$\sum_{i=1}^{J}[D_i(Z_{i1},\ldots,Z_{iK}) - S_i(Q_i) - G_i(X_i, Y_{i1}, \ldots, Y_{iK})]$$
$$- \sum_{i=1}^{J}\sum_{j=1}^{J}\sum_{k=1}^{K} t_{ijk}c_{ijk} - \sum_{i=1}^{J}\sum_{j=1}^{J}\sum_{k=1}^{K} TMAC_{ijk}(p_{Wk} + c_{Wik} + \tau_k^{IQ} + c_{ijk})$$
$$- \sum_{i=1}^{J}\sum_{k=1}^{K} T_{Wik}^{OQ}(p_{Wk} + c_{Wik} + \tau_k^{OQ}) + \sum_{i=1}^{J}\sum_{k=1}^{K} TX_{iWk}(p_{Wk} - c_{iWk})$$
$$+ \sum_{i=1}^{J}\sum_{k=1}^{K} TG_{iGk}p_{Gk} - \sum_{i=1}^{J}\sum_{k=1}^{K} TC_{Gik}p_{Wk}$$
$$+ \sum_{i=1}^{J} PW_iX_i - \sum_{i=1}^{J}\sum_{k=1}^{K} PW_{ik}Y_{ik}$$

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Constraints

$$MSQ_i \geq Q_i \qquad Q_i \geq X_i$$

$$X_i \alpha_{is} + MPI_i \alpha_{is}^{'} \geq \sum_{k=1}^{K} Y_{ik} b_{iks} \qquad h_{iks} \leq M_{iks} \leq 1$$

$$\rho_{ik} MAC_k \geq \sum_{i=1}^{J} TMAC_{ijk}$$

$$Y_{Gk} \geq \sum_{i=1}^{J} TC_{Gik} \qquad \overline{Y}_{Gk} \geq \sum_{i=1}^{J} TG_{iGk}$$

$$Y_{ik} \geq t_{ijk} + TX_{iWk} + TG_{iGk}$$

$$Z_{ik} \leq t_{jik} + TMAC_{jik} + T_{ik}^{OQ} + TC_{Gik}$$

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CETA and CPTPP

Canada-European Union Comprehensive and Economic Trade Agreement

- Signed in 2016, brought into force on September 21, 2017
- Dairy market access is 16,000 mt for all cheese TRQ, 1,700 mt industrial cheese, and a reallocation of 800 mt to EU within WTO obligations

Comprehensive and Progressive Agreement for Trans-Pacific Partnership

- Renegotiation of TPP-12 after US dropped out in 2017
- TPP-11 or CPTPP was signed in 2018 and brought into force on December 30, 2018
- Dairy market access commitments amount to $\sim$ 3.25% of consumption

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Canada-US-Mexico Agreement (CUSMA)

- Dairy market access commitments amount to ~3.59% of consumption
- Removal of Class 6 in Ontario and Class 7 nationally
- Canada is to follow US SMP pricing formula
- Export restrictions on SMP (35,000mt) and infant formula (40,000mt)

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All RTA TRQ (mt)

	WTO	ALL RTA	% of Consumption
Butter	3,274	9,000	8.8%
Cheddar	3,149	11,565	7.3%
Mozza	1,228	7,260	4.9%
Specialty	16,035	25,875	16.5%
Fluid Milk	64,894	111,080	3.9%
Concentrated Milk	11.7	3,380	3.2%
Ice Cream	484	1,741	1.3%
Yogurt	332	10,135	2.6%
Animal Feed	-	-	-
SMP	3,425	15,000	14.0%

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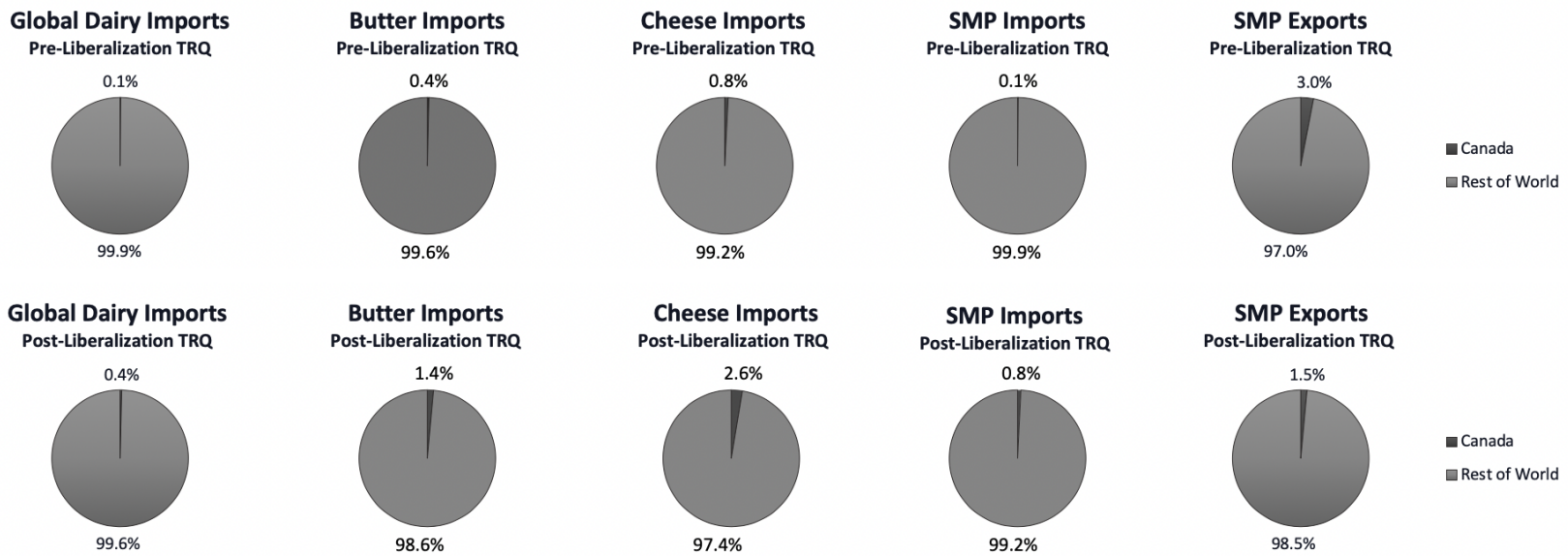
Small Country Assumption



Note: 2017 reference year. Post-Liberalization uses CETA, CPTPP, CUSMA, year 6 commitments.
Source: FAO. (2019). Overview of global dairy market developments in 2018. *Dairy Market Review*, March 2019.

Outline

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All RTA Removing Class 7

ALL RTA Removing Class 7

CETA + CPTPP + CUSMA
Export Limits on SMP and Infant Formula

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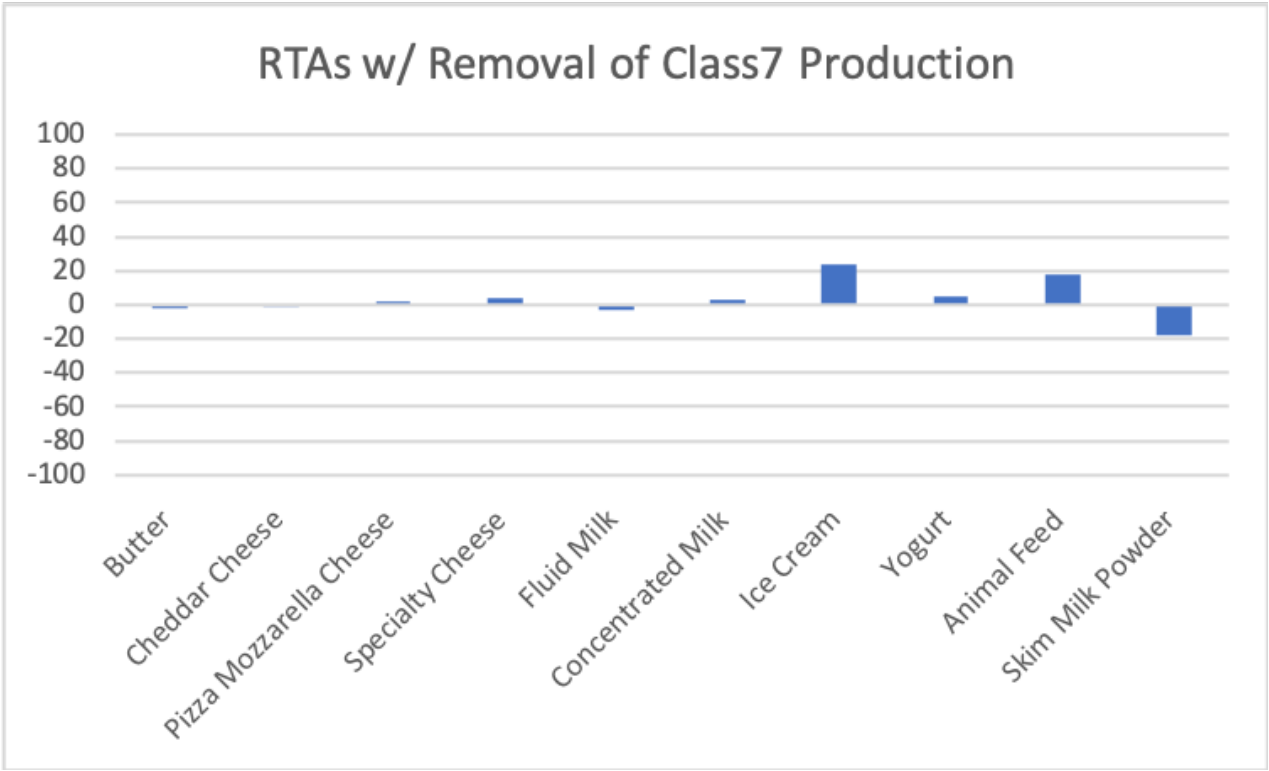
Production



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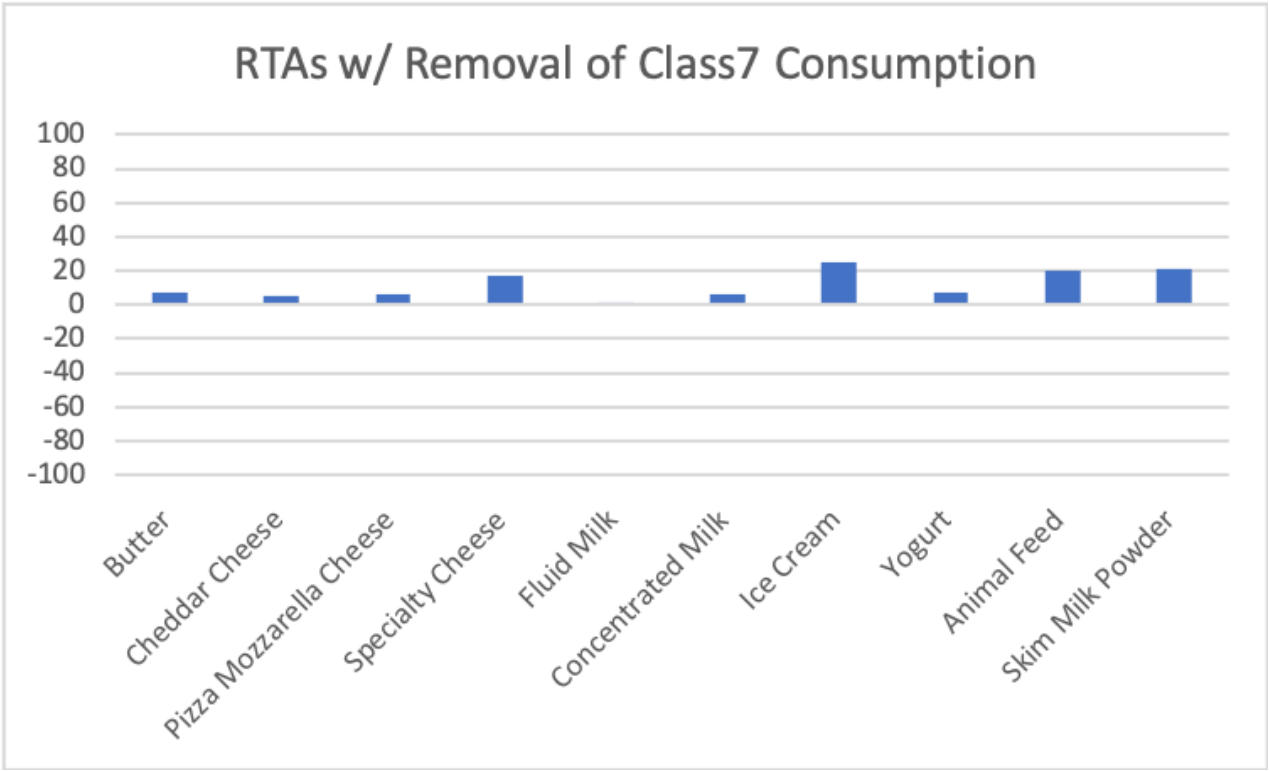
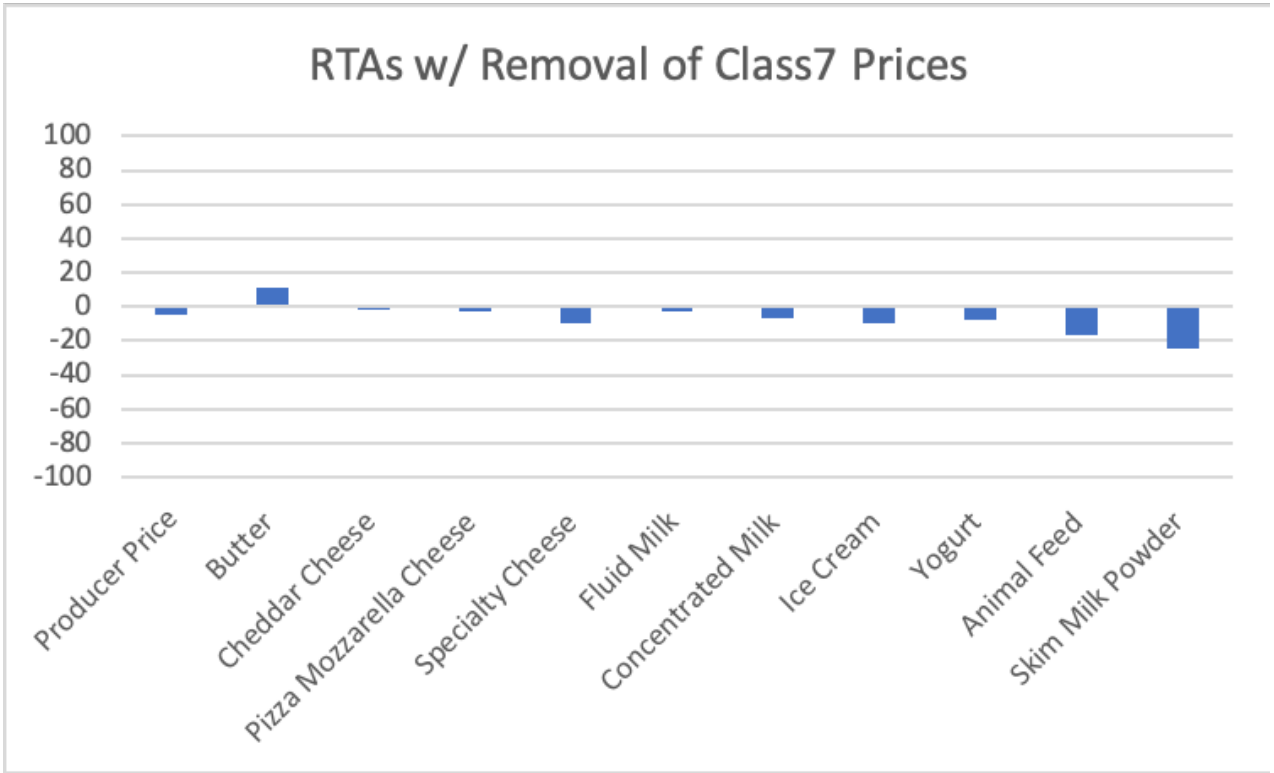
Consumption



Price Impacts



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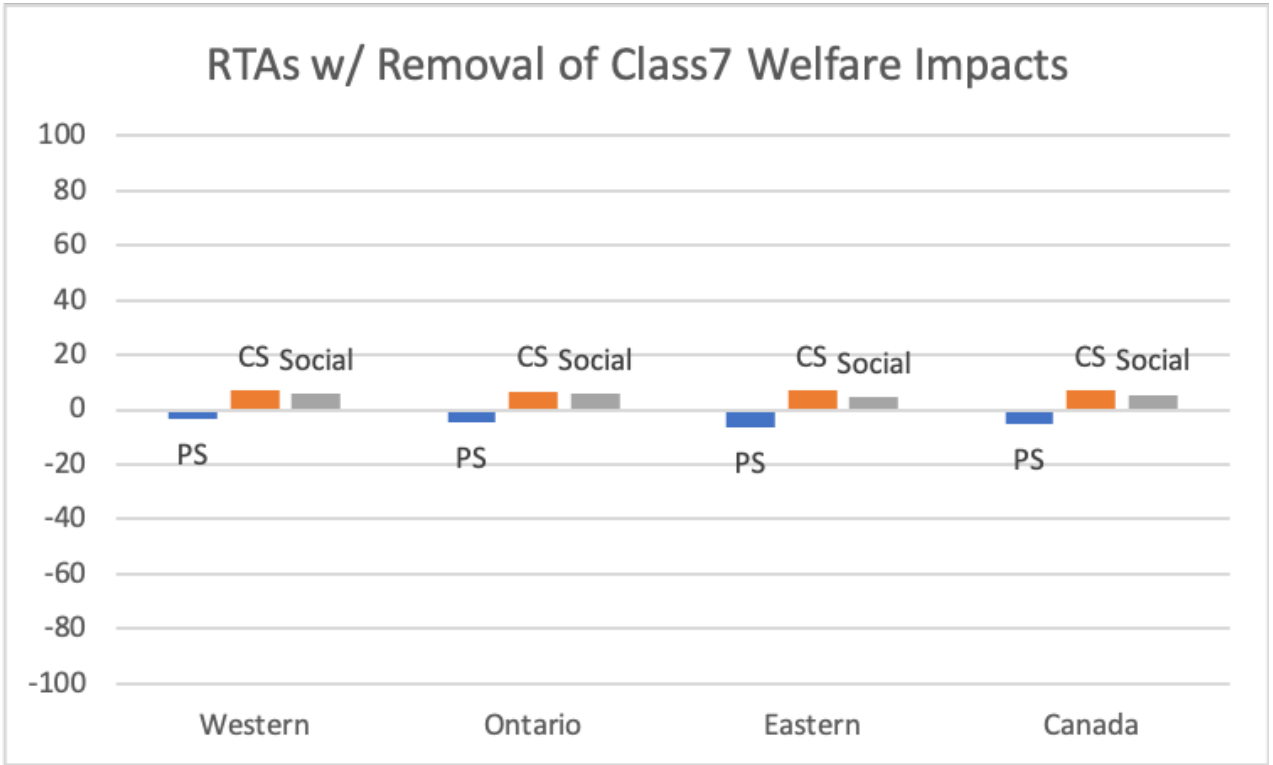
Welfare Impacts



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Summary

- Trade liberalization results in increased consumption of most dairy products
- Trade agreements in aggregate marginally exceed consumer demand for most products
- Producer blended price of milk decreases by 4.7%
  - The eastern region, composed mainly of Quebec, experiences the largest producer price decrease (6.7%)

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Summary

- Producer surplus decreases by 5.0%
- Consumer surplus increases by 6.9%
- Social surplus increases by 5.5%

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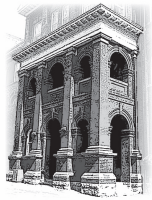
Thank you

Questions?



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