# A product/sectoral level analysis of COVID-19's impact on Canada's agri-food exports: Did FTAs mitigate this impact?

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1. Introduction

- **Global Impact of COVID-19**: The pandemic brought unprecedented challenges to the global economy, severely disrupting international trade and supply chains.

- **Impact on Canada's Agri-Food Trade:** Trade is a crucial component of the Canadian agri-food industry. FTAs have been key in facilitating market access and could potentially cushion the pandemic's negative trade impacts. Despite the pandemic, Canada's total agri-food exports showed minimal decline in 2020, demonstrating the industry's resilience (Yeung & Kerr, 2021; USDA, 2020).

Agri-Food Exports
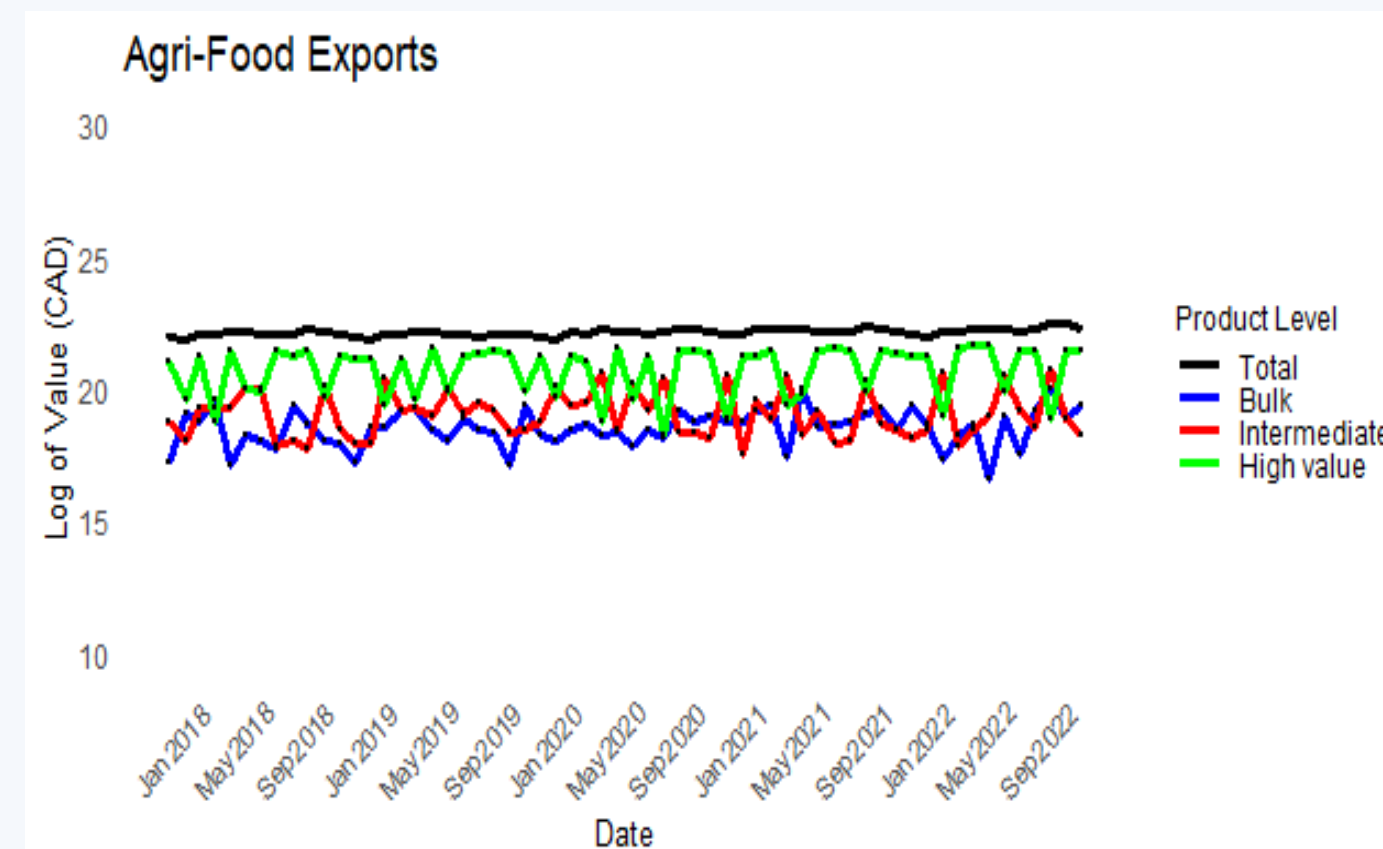
- **Motivation:** Observed resilience of Canada's agri-food industry may not translate to resilience across products and sectors. This research aims to analyze product and sector-specific impacts and evaluate the role of FTAs.

Research Questions

- What are the differential impacts of COVID-19 across dimensions?

- Is there any evidence of a mitigating effect of FTAs?

2. Theoretical Argument

Theoretically, the economic impacts of COVID-19 on Canada's agri-food exports can be conceptualized in the supply and demand framework.

Supply side
- COVID cases ⬆ ⟶ stringency levels ⬆ ⟶ supply chain disruption ⬆ ⟶

  Agrifood exports ⬆⬇ or "no sig change" *Dependent on sector or product differentiation*

Demand side
- COVID cases ⬆ ⟶ income/purchasing power ⬇ ⟶ changes

  consumer preferences ⟶ Agrifood exports ⬆⬇ or "no sig change" *Dependent on sector or product differentiation*

3. Data

Data sources include;
- OMAFRA (Bilateral agrifood export data, 2018 – 2022)
- Oxford Govt GitHub Repository (COVID variables).
- World Bank (GDP)
- CEPII

4. Empirical Strategy

- Baseline gravity equation is estimated as;

$$AgTrade_{ijmy} = \exp(\beta_0 + \beta_1 Covid_{imy} + \beta_2 Covid_{jmy} + \beta_3 D_{ijt} + \beta_4 lnGDP_{jt} + \mathbb{P}_{jt} + \delta_{ij} + \lambda_{jmy}) * \epsilon_{ijmy}$$

$AgTrade_{ijmy}$ = Bilateral monthly export value
$Covid_{imy} / Covid_{jmy}$ = COVID cases in countries i and j
D_{ijt} = Standard gravity control variables
GDP_{jt} = GDP for country j
$\mathbb{P}_{jt}$ = Multilateral resistance term for country j
δ_{ij} = Bilateral fixed effects
λ_{jmy} = Importer-month-year fixed effects
ϵ_{ijmy} = Error term

5. Results

- **Baseline estimation:** PPML regression show **no significant impact** on total exports but show **significant differential impacts** on product and sectoral exports.

					Dep. Variable			
			Product level			Sector level		
Ind. Var	Total	Bulk	Interm	HighValue	Crop	Hort	Livestock	Food & Bev
lnCases (exp)	0.0039	0.0193	-0.0508**	-0.0317***	-0.00919	-0.0778**	-0.0511***	0.0219
	(0.00716)	(0.0477)	(0.0252)	(0.0114)	(0.0215)	(0.0318)	(0.0151)	(0.0247)
lnCases (imp)	-0.00122	0.0180	0.0174	0.0225***	0.0252	0.0697***	0.0247***	-0.00960
	(0.00577)	(0.0367)	(0.0154)	(0.00799)	(0.0165)	(0.0217)	(0.00898)	(0.0141)
lnGDP (imp)	-0.0151	-0.270	0.0764	0.287**	0.0250	-0.519	0.534***	0.701**
	(0.113)	(0.441)	(0.294)	(0.116)	(0.229)	(0.362)	(0.179)	(0.293)
lnIMR_jt	-0.986***	-1.307***	-0.773***	-0.513***	-1.101***	-0.514***	-0.694***	-0.297***
	(0.0497)	(0.153)	(0.0841)	(0.0539)	(0.0757)	(0.162)	(0.0813)	(0.0890)
Observations	8,744	933	2,648	5,083	2,857	636	2,716	2,420

6. Results (cont'd)

Sub-sample regression: Shows evidence of mitigating negative effects on intermediate and food and beverage exports
- Panel A (FTA with Canada present):

Ind. Var	Total	Bulk	Interm	HighValue	Crop	Hort	Livestock	Food & Bev
lnCases (exp)	-0.00253	0.0918	0.0192	-0.00528	0.00609	-0.0847**	-0.0340*	0.0753**
	(0.00733)	(0.0917)	(0.0285)	(0.00708)	(0.0295)	(0.0396)	(0.0183)	(0.0355)
lnCases (imp)	-0.00184	-0.0326	-0.0191	0.000629	0.00912	0.0853***	0.00895	-0.0514***
	(0.00526)	(0.0650)	(0.0161)	(0.00546)	(0.0215)	(0.0261)	(0.0112)	(0.0171)

- Panel B (FTA with Canada absent)

Ind. Var	Total	Bulk	Interm	HighValue	Crop	Hort	Livestock	Food & Bev
lnCases (exp)	0.00718	-0.0266	0.0749*	-0.0213	-0.0127	-0.00260	-0.0283*	0.0849**
	(0.0114)	(0.0605)	(0.0416)	(0.0156)	(0.0361)	(0.0622)	(0.0168)	(0.0376)
lnCases (imp)	0.00562	0.0538	0.0296	0.0416***	0.0319	-0.0268	0.0387**	0.0519***
	(0.00982)	(0.0522)	(0.0291)	(0.0113)	(0.0288)	(0.0457)	(0.0163)	(0.0265)

*Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1. All regressions contain time-varying and bilateral fixed effects. Zero flow control - YES*

Conclusion/Policy Recommendation

- The study highlights the differential impacts of the pandemic on various agri-food trade segments, underscoring the complex interplay between trade and pandemic-related variables.

- Develop targeted trade strategies that address the differential impacts observed across various agri-food trade dimensions, ensuring tailored support and adaptive FTAs to enhance resilience against disruptions.

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