
# Liberalizing Internal Trade Barriers in Canada

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# What we do

This project builds on and extends Alvarez et al (2019):

i. greater sector granularity **(from 18 to 230 sectors)**
ii. updated input-output data **(2021 version versus 2015 version used previously)** and trade elasticities
iii. focus on key areas to benefit most from barrier removal

# Our Approach

- Estimate non-tariff trade barriers, taking into account distance and interprovincial border effects for both interprovincial and international trade flows.
- Calibrate a multi-region, multi-sector general equilibrium trade model, designed to fit Canadian data (**initial equilibrium**)
- Simulate long-run economic gains from reducing interprovincial trade barriers in Canada. (**counterfactual responses**)

# Measuring Internal Trade Barriers

- **De jure approach**: The list of NTBs is daunting…
- **De facto approach**: data on trade flows are used to infer unobservable total trade costs between provinces
- The Head-Ries Index summarizes average trade costs in a broad range of models

$$\bar{\tau}^{j}_{ni,t} \equiv \sqrt{\frac{\tau^{j}_{ni,t}\,\tau^{j}_{in,t}}{\tau^{j}_{nn,t}\tau^{j}_{ii,t}}} = \left(\sqrt{\frac{\pi^{j}_{ni,t}\,\pi^{j}_{in,t}}{\pi^{j}_{nn,t}\pi^{j}_{ii,t}}}\right)^{\frac{1}{2\theta_j}}$$

where $\tau^{j}_{ni,t} \geq 1$ is the iceberg cost of importing good $j$ from region $i$ into region n at time $t$, $\theta_j$ is the cost elasticity of trade for the sector, and $\pi^{j}_{ni,t}$ is the share of spending region $n$ allocates to production from region $i$ at time $t$. That is $\pi^{j}_{ni,t} = \frac{X^{j}_{ni}}{\sum_i X^{j}_{ni}}$, where $X^{j}_{ni}$ reflects imports of region $n$ from region $i$ and $X^{j}_{nn}$ stands for local goods consumption.

# Measuring Internal Trade Barriers

- Regressing the Head-Ries index on population weighted distances and an indicator of whether regions share a contiguous border

$$ln\left(\bar{\tau}_{ni,t}^{j}\right) = \alpha_1^j Distance_{ni} + \alpha_2^j Neighbor_{ni} + \beta_1^j Intra_{ni,t} + \beta_2^j Inter_{ni,t} + \gamma_{n,t}^j + \eta_{i,t}^j + \epsilon_{ni,t}^j$$

- Estimating **policy-relevant ad valorem equivalents of NTBs** to allow for an easy comparison of total trade costs between trading partners and different sector, taking into account the role that geography plays

$$ln\left(\widehat{\bar{\tau}_{ni,t}^{J,NG}}\right) \equiv ln\left(\bar{\tau}_{ni,t}^{j}\right) - \left(\widehat{\alpha_1^J} Distance_{ni} + \widehat{\alpha_2^J} Neighbor_{ni}\right)$$

# Larger Costs in Small Provinces and Services

## Average Non-Distance Trade Costs for Goods (%)

| | BC | AB | SK | MB | ON | QC | NB | NS | PE | NL | YT | NT | NU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | | 0.5 | 1.7 | 0.5 | 0 | 0 | 0.8 | 0.8 | 4.4 | 11 | 6.6 | 5.6 | 0.9 |
| AB | 0.9 | | 1.4 | 0.5 | 0.1 | 0.1 | 1.1 | 0.4 | 7.7 | 2.9 | 34 | 0.9 | 27 |
| SK | 3.7 | 2.9 | | 2.9 | 1.2 | 1.5 | 2.6 | 3.3 | 11 | 37 | 62 | 59 | 26 |
| MB | 1.1 | 0.5 | 1.3 | | 0.5 | 0.7 | 2.4 | 0.8 | 8.1 | 1.9 | 19 | 11 | 34 |
| ON | 0.1 | 0 | 0.1 | 0.1 | | 0.6 | 1 | 0.4 | 2.4 | 1.9 | 3.2 | 5.4 | 3.9 |
| QC | 0.5 | 0.1 | 1.2 | 0.2 | 0.9 | | 4.7 | 4.1 | 22 | 15 | 1.7 | 11 | 7 |
| NB | 2.4 | 0.2 | 1.9 | 0.7 | 3 | 9.9 | | 9.6 | 11 | 1 | 50 | 30 | 11 |
| NS | 0.4 | 0.4 | 1.8 | 2.8 | 1.4 | 4.6 | 5.5 | | 18 | 10 | 39 | 12 | 2 |
| PE | 3.4 | 4.4 | 13 | 6.9 | 4.9 | 14 | 1 | 9.3 | | 53 | 586 | 87 | 81 |
| NL | 1.3 | 4.5 | 26 | 17 | 8.4 | 6.2 | 3.6 | 5.7 | 9.7 | | 341 | 181 | 232 |
| YT | 3 | 8.1 | 5.7 | 6.3 | 12 | 27 | 26 | 27 | 586 | 36 | | 32 | 49 |
| NT | 27 | 21 | 40 | 24 | 17 | 38 | 56 | 30 | 121 | 54 | 22 | | 1 |
| NU | 19 | 37 | 66 | 49 | 44 | 42 | 11 | 75 | 125 | 27 | 48 | 28 | |

## Average Non-Distance Trade Costs for Services (%)

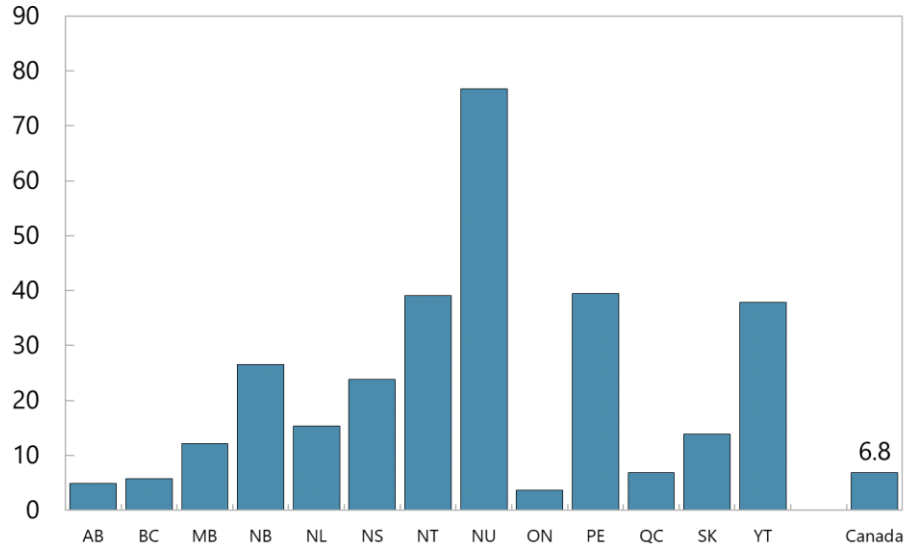
| | BC | AB | SK | MB | ON | QC | NB | NS | PE | NL | YT | NT | NU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | | 27 | 41 | 14 | 4.7 | 8.6 | 25 | 39 | 58 | 47 | 47 | 79 | 121 |
| AB | 22 | | 33 | 17 | 4.2 | 12 | 30 | 35 | 67 | 31 | 58 | 50 | 117 |
| SK | 25 | 34 | | 25 | 17 | 20 | 56 | 59 | 97 | 57 | 59 | 105 | 160 |
| MB | 20 | 31 | 42 | | 13 | 19 | 46 | 59 | 61 | 83 | 80 | 71 | 134 |
| ON | 7 | 8.9 | 12 | 13 | | 18 | 37 | 26 | 27 | 29 | 52 | 38 | 72 |
| QC | 14 | 19 | 35 | 23 | 16 | | 53 | 48 | 64 | 45 | 91 | 90 | 97 |
| NB | 20 | 20 | 48 | 40 | 20 | 34 | | 57 | 51 | 41 | 135 | 105 | 209 |
| NS | 16 | 20 | 47 | 44 | 16 | 36 | 54 | | 77 | 32 | 96 | 84 | 143 |
| PE | 23 | 31 | 68 | 68 | 27 | 35 | 43 | 72 | | 56 | 113 | 112 | 310 |
| NL | 35 | 18 | 84 | 59 | 27 | 34 | 38 | 36 | 44 | | 99 | 77 | 137 |
| YT | 29 | 36 | 92 | 65 | 58 | 57 | 81 | 116 | 179 | 88 | | 21 | 137 |
| NT | 58 | 46 | 157 | 80 | 59 | 71 | 164 | 108 | 152 | 185 | 62 | | 37 |
| NU | 76 | 86 | 163 | 181 | 82 | 59 | 254 | 91 | 285 | 127 | 36 | 36 | |

# What Are the Gains From Removing Internal Barriers?

- A quantitative trade and migration model building on Eaton and Kortum (2002), Caliendo and Parro (2015)
- Key model features:
  - **Multi-sector, multi-region structure**: 230 economic sectors across 13 provinces and territories and the rest of the world
  - **Input-output linkages:** sectoral interdependencies modeled using input output tables
  - **Trade costs:** modeled as iceberg costs that vary by sector and province pair
- Use detail-level supply and use tables, and the corresponding symmetric input-output table for provinces

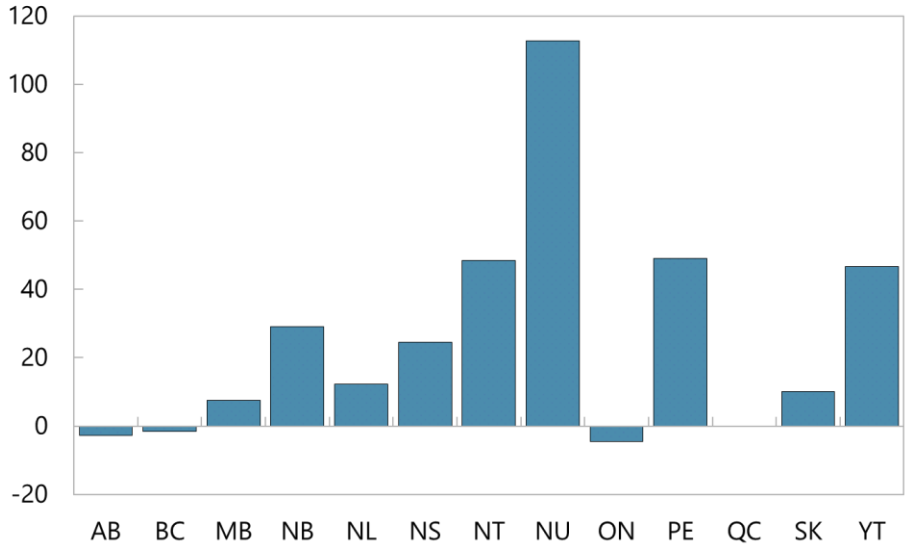
# Small Provinces Would Benefit the Most

**Labor Productivity Gains**
(Percent)



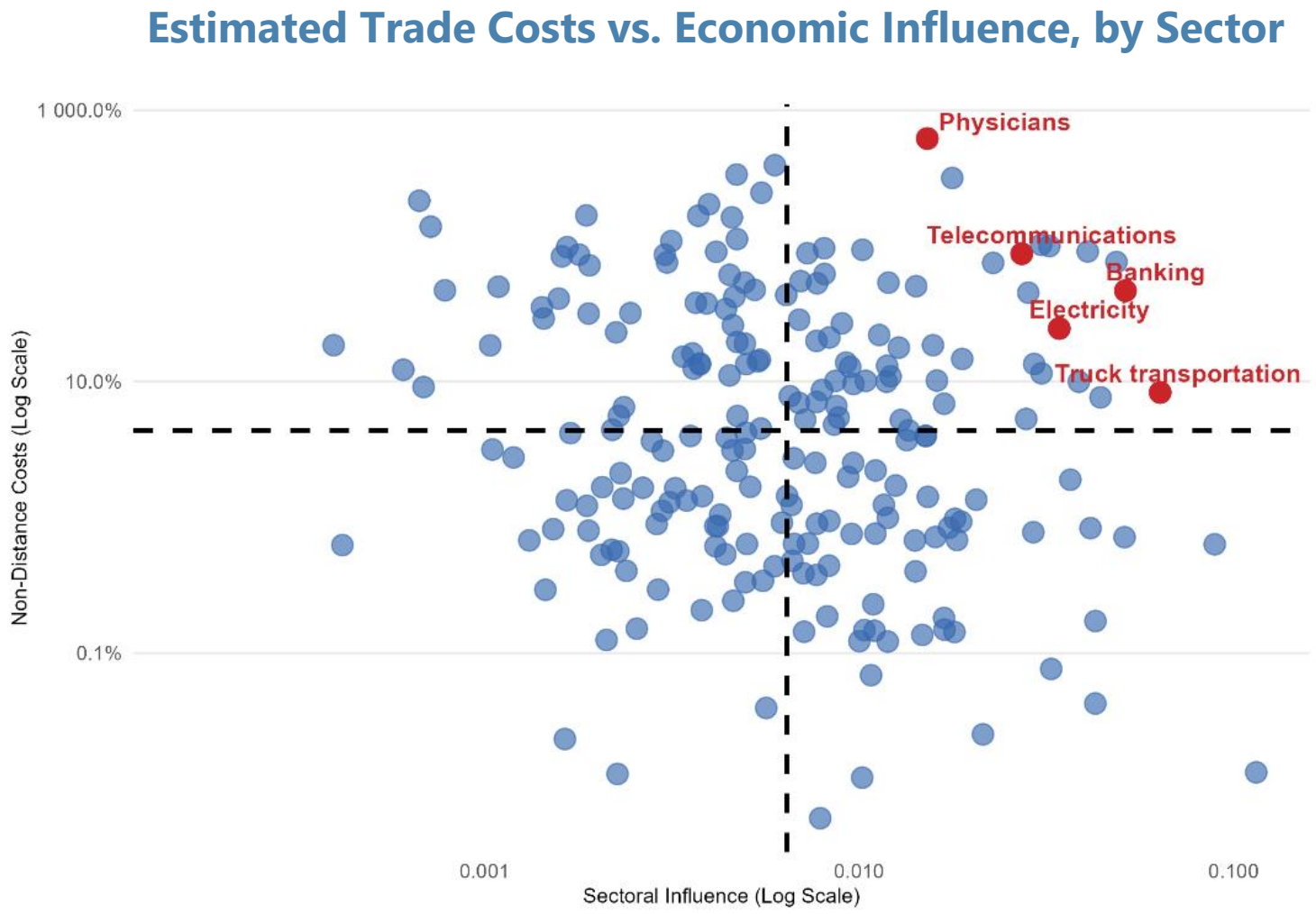

Sources: Statistics Canada and IMF staff calculations

**Changes in Employment**
(Percent)




Sources: Statistics Canada and IMF staff calculations

# Sectoral Priorities



# Virtuous Cycle of Provincial Liberalization?

- Literature shows unilateral liberalization can deliver sizable gains
- Bilateral liberalization agreements can also produce gains…
- But can this patchwork approach undermine efficiency?
  - Trade diversion may lead to misallocated resources?

- Double simulation:
  - S1: fully liberalize costs on imports into a given province
  - S2: marginal gains if another province had already liberalized?
  - ➢ 2/3 of provincial pairs result in higher aggregate gains

# Summary: Model-Gains From Removing Barriers

- Total productivity would rise by 6.8% following a complete elimination of all internal trade costs
- Small provinces would be the largest winners
- Liberalizing upstream, heavily traded sectors yields more benefits