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Internal Trade in Canada: Case for Liberalization

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Internal Trade in Canada: Case for Liberalization[1]

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Abstract

This paper assesses the costs of internal trade barriers and proposes policies to improve internal trade. Estimates suggest that complete liberalization of internal trade in goods can increase GDP per capita by about 4 percent and reallocate employment towards provinces that experience large productivity gains from trade. The positive impact highlights the need for federal, provincial and territorial governments to work together to reduce internal trade barriers. There is significant scope to build on the new Canadian Free Trade Agreement to more explicitly identify key trade restrictions, resolve differences, and agree on cooperative solutions.

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I. INTRODUCTION

Non-tariff internal trade barriers (NTBs) are often cited as an important factor behind Canada's lagging productivity growth[2]. From dairy quotas to trucking requirements, from business registration to professional licensing, non-tariff trade barriers exist due to different regulations across provinces[3] which is a consequence of the division of powers and responsibilities between federal and provincial authorities. The collection of these regulatory distortions can have important macroeconomic effects, as NTBs hinder labor mobility, limit choice for consumers, fragment markets, stifle competition, and limit the effective scale of production thereby lowering productivity growth[4].

There are four categories of internal trade barriers in Canada: natural barriers, "prohibitive" barriers, technical barriers, and regulatory and administrative barriers (Canadian Federation of Independent Business, 2014). Geographical characteristics, such as distance and the configuration of borders are important natural barriers to trade. Prohibitive barriers arise from provincial and territorial laws that unintentionally prohibit internal trade, such as restrictions on the sale of alcoholic beverages to customers in other provinces[5]. Technical barriers stem from sector specific regulations that differ across provinces and territories, such as vehicle weight and dimension standards. Regulatory and administrative barriers stem from provincial and territorial permits, licensing, and other paperwork requirements imposed on businesses that operate in multiple provinces/territories, such as business registry regulation and technical standards and safety certification. Among these, labor mobility, business regulation, transportation, markets for drugs, agricultural products, food and alcohol products, and until recently, government procurement, have been cited as areas mostly affected by trade barriers (Beckman and others, 2006).

This paper assesses the collective cost of internal trade barriers and proposes policies to enhance internal trade[6]. The analysis proceeds in two stages. First, we follow the approach by

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[2] The Canadian Chamber of Commerce (2013) labeled NTBs as one of the top ten obstacles to improving competitiveness in Canada.

[3] References in the paper to "provinces" and "provincial" generally refer to "provinces and territories" and "provincial and territorial".

[4] For example, the 2011 Survey on Financing and Growth of Small and Medium Enterprises suggests that SME firms that trade across provincial borders are also more export oriented, more growth oriented, better educated and innovative. On the other hand, only 3.5 percent of firms that do not trade across provincial borders are exporters.

[5] For example, the control and sale of alcoholic beverages in Canada are generally controlled by provincial governments, where most provinces maintain a monopoly system and legislate alcohol sale and distribution within their territory.

[6] The recent literature shows that the costs of internal trade barriers are sizeable. Agnosteva, Andreson and Yotov (2014) estimate the bilateral trade costs using a panel regression model and find that distance is a significant interprovincial barrier—the average interprovincial tariff equivalent is higher than 100 percent but 5.6 percent after controlling for distance and contiguity. Bemrose, Brown and Tweedle (2017) estimate a 6.9 percent tariff equivalent in goods sectors based on a more granular measure of intraprovincial trade accounting for short-distance intraprovincial flows, and allowing for the presence of zero flows while also mitigating the geographic aggregation bias that plagues other papers. Albrecht and Tombe (2016) find that eliminating their

Albrecht and Tombe (2016) to estimate an ad valorem tariff equivalent of NTBs, taking into account distance and interprovincial border effects for both inter-provincial and international trade flows. Second, counterfactual experiments are performed to assess the effects of lower NTBs on regional and aggregate GDP and employment using a multi-sector, multi-province model of internal trade as in Albrecht and Tombe (2016). After the trade costs are assessed, we turn to a policy discussion on the current institutional set up and potential policy avenues to further improve the internal trade market in Canada.

II. INTERPROVINCIAL VERSUS INTERNATIONAL TRADE

Compared to an ambitious and successful international trade strategy, progress in reducing internal trade barriers across Canada has not kept pace. Since Canada's free trade agreement with the United States (U.S.) in 1989, Canadian authorities have implemented free trade agreements with 44 countries. Meanwhile, progress in liberalizing internal trade has been slow and, in many cases, international free trade agreements allowed foreign companies better access to Canada than Canadian companies. The Agreement on Internal Trade (AIT) in 1995 did not yield the expected results[7] despite making some progress in areas such as labor mobility, regulation on agricultural products and transparency in government procurement (Industry Canada, 2013). This was mainly due to the AIT's narrow coverage (via a positive list approach)[8], weaknesses in dispute resolution mechanisms, and the absence of agreements in important sectors (OECD, 2016). Several provinces even entered into regional trade agreements to accelerate progress in facilitating trade between the provinces[9]. In 2017, all provinces, territories, and the federal government agreed to update the AIT. They signed a new Canadian Free Trade Agreement (CFTA) that adopted a negative list approach,

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preferred estimate of internal trade costs, would increase GDP between 3-7 percent with largest gains in highly interconnected industries. Bank of Canada (2016) find that a 10 percent reduction in interprovincial trade barriers would raise the potential GDP growth rate by 0.2 percentage points annually. See APEC (2016) and Macmillan and Grady (2007), Palda (1994), Grady and Macmillan (2007), for an extensive empirical evidence on the effects of the costs of internal trade barriers.

[7] The Canadian Federation of Independent Business (2014) indicated that only one in ten firms saw benefits from the AIT.

[8] In a positive list approach, only the sectors listed are covered by the trade agreement's rules. In a negative list approach all sectors are covered except specific exceptions.

[9] In 2008, New Brunswick and Quebec signed an agreement to improve labor mobility and skills recognition. In 2009, the Partnership Agreement on Regulation and the Economy (PARE) was signed between New Brunswick and Nova Scotia to streamline practices, remove duplication, and harmonize regulations. In 2009, the Ontario-Quebec Trade and Cooperation Agreement (TCA) was signed to increase harmonization and labor mobility and improve dispute resolution. The new West Partnership Trade Agreement (NWPTA) was signed in 2010 between Alberta, British Columbia and Saskatchewan, building on the 2006 Trade, Investment and Labor Mobility Agreement (TILMA) between Alberta and British Columbia. Manitoba joined the partnership in 2017. Compared to the AIT, the agreement improved on sector coverage (via a negative list approach), mutual recognition of provinces' regulations related to trade, investment and labor, government procurement and corporate registration and reporting system. The Joint Regulatory and Service Effectiveness Office was created by a memorandum of understanding, which was signed between Nova Scotia and New Brunswick in 2015 to improve the regulatory environment between the two provinces. PEI announced that it was joining the Office later that year. Newfoundland and Labrador followed suit in 2016.

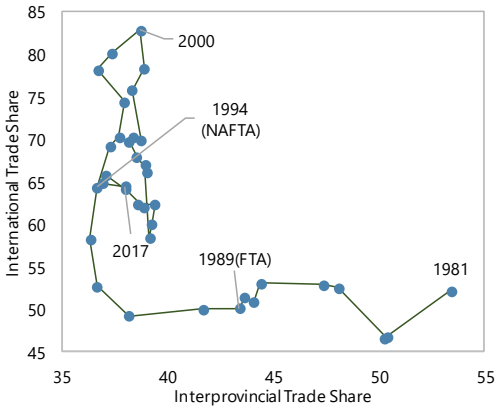
improved procurement coverage and the dispute resolution mechanism, and promoted regulatory cooperation.

Interprovincial trade has lost ground to international trade (Figure 1). The evolution of internal and international trade illustrates three distinct periods. In the early 1980s, the volume of interprovincial and international trade (exports plus imports as a share of GDP) was about the same—55 percent of GDP. For the next 10 years, interprovincial trade steadily shrank to less than 40 percent and stayed constant at that level until 2017. Over the same period international trade expanded to more than 80 percent following the signing of the Canada-U.S. free trade agreement (in 1989) and NAFTA (in 1994)[10]. The boom in international trade came to a halt with the dot-com bust in the early 2000s and the volume of international trade came down to about 65 percent of GDP in 2017. This was still 25 percentage points higher than interprovincial trade. Nevertheless, while international trade in goods is much larger than interprovincial trade, interprovincial trade in services (such as information services, finance, insurance and real estate services, warehousing, wholesale trade and professional services) account for more than a half of total interprovincial trade relative to only 10 percent of international trade in services. Growth of interprovincial trade in the period from 1982 to 2017 has mainly been driven by British Columbia, Saskatchewan, Manitoba, and Alberta, the provinces most open to internal trade (based on the share of internal trade in GDP). This likely reflects an increase in the value of internal trade in natural resources (crude petroleum, potash and other minerals).

[10] There is some evidence that the decrease in the interprovincial trade share might be attributed to trade diversion of the 1989 Free Trade Agreement (Helliwell, Lee and Messinger, 1999).

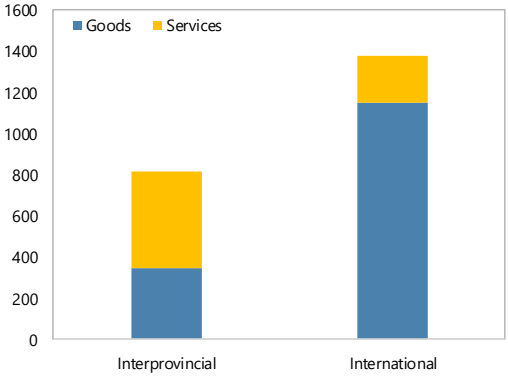
Figure 1. Canada: Interprovincial and International Trade

Interprovincial and International Trade, 1981-2017
(Percent of GDP)

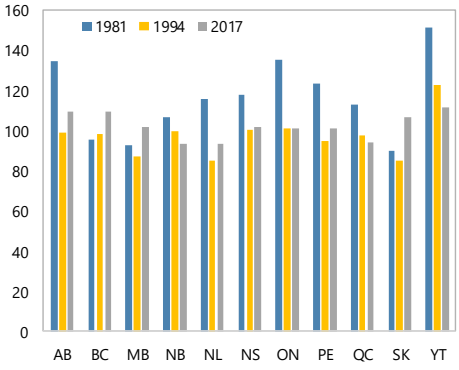


Average Growth of Nominal Exports
(Y/Y percent change)

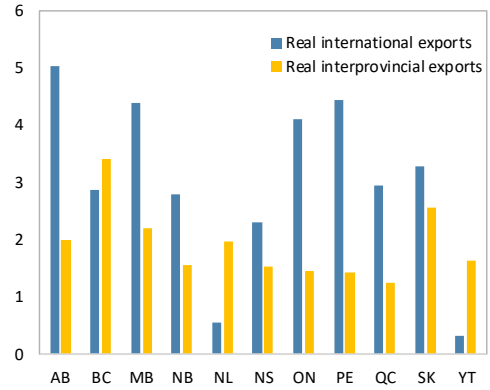
Trade Flows
(2017, billion Can$)



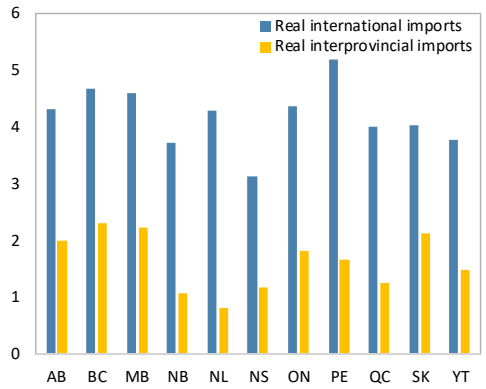
Real Interprovincial Trade Relative to Size of Economy
(Index, 2002=100)



Real Exports by Province
(Y/Y percent change, avg. 1982-2017)



Real Imports by Province
(Y/Y percent change, avg. 1982-2017)



Source: Statistics Canada.

III. ESTIMATING INTERNAL TRADE BARRIERS

Methodology

Measuring internal trade costs directly is not feasible. The list of NTBs is daunting (see Beaulieu and others (2003) and APEC (2016) for a comprehensive overview of NTBs in Canada). While the federal government commissioned Ernst & Young (EY) to create an index of Canadian internal trade barriers (APEC, 2016), the data were not publicly available. The findings of the EY report are being used by federal, provincial and territorial governments to inform the CFTA's Regulatory Reconciliation and Cooperation Table's (RCT) work plan, which identifies barriers to trade, investment and labor mobility within Canada and establishes working groups to undertake the work to reconcile trade barriers[11]. Constructing indices that reflect the restrictiveness on NTBs across provinces and different sectors, however, was beyond the scope of this paper.

Instead, an indirect method is used to estimate the costs of internal trade barriers[12]. As in Albrecht and Tombe (2016), data on trade flows are used to infer unobservable total trade costs between provinces, the U.S., and the Rest of the World (relative to the cost of trading within provinces) from bilateral import shares[13]. More specifically, we use the Head-Ries index as our primary measure of trade barriers. Head and Ries (2001) and Novy (2013) demonstrate that this index summarizes average trade costs in a broad range of models and is therefore a reasonable measure of unobservable trade costs. The Head-Ries index for each sector j and pair of regions n and i is computed as:

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

where $\tau^{j}_{ni,t} \geq 1$ is the iceberg cost of importing good j from region i into region n at time t, θ_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 $\pi^{j}_{ni,t} = X^{j}_{ni} / \sum_i X^{j}_{ni}$, where X^{j}_{ni} reflects imports of region n from region i and X^{j}_{nn} stands for local goods consumption.

The intuition behind the measure is simple: if bilateral flows are lower relative to domestic trade flows, that means interprovincial trade barriers make it difficult for the two provinces to

[11] The RCT's 2019-2020 work plan can be found on the CFTA's website (https://www.cfta-alec.ca/regulatory-reconciliation-cooperation/).

[12] Another approach would be to study price data on comparable goods in different provinces. This approach was not feasible as the data on comparable prices were not available.

[13] This trade cost measure can be derived from a broader range of micro founded trade (gravity) models such as Anderson and van Wincoop (2003), Eaton and Kortum (2003), Chaney (2008) and Melitz and Ottaviano (2008) - see Novy (2011) for the derivation.

trade with each other relative to trading within the province. Intuitively, the index reflects trade costs of trading across regions relative to trading within each region. In our application, the index reflects trade barriers from trading between Canadian provinces, the U.S., and the Rest of the World.

The objective is to estimate 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. The index is therefore decomposed into a geographic component—driven by distance[14] and border effects—and a residual non-geographic, policy relevant component. In particular, we regress the Head-Ries index on population weighted distances and an indicator of whether regions share a contiguous border.

$$\ln\left(\bar{\tau}^{j}_{ni,t}\right) = \alpha^{j}_{1} Distance_{ni} + \alpha^{j}_{2} Neighbor_{ni} + \beta^{j}_{1} Intra_{ni,t} + \beta^{j}_{1} Inter_{ni,t} + \gamma^{j}_{n,t} + \eta^{j}_{i,t} + \epsilon^{j}_{ni,t}$$

where $Distance_{ni}$ is our distance measure, $Neighbor_{ni}$ is the shared-border indicator, $Intra_{ni,t}$ and $Inter_{ni,t}$ are indicators of intra-provincial and inter-provincial trade interacted by year, and $(\gamma^{j}_{n,t}, \eta^{j}_{i,t})$ are exporter and importer fixed effects interacted with year. Non-geographic trade costs are thus defined as:

$$\ln\left(\widehat{\bar{\tau}^{J,NG}_{ni,t}}\right) \equiv \ln\left(\bar{\tau}^{j}_{ni,t}\right) - \left(\widehat{\alpha^{J}_{1}} Distance_{ni} + \widehat{\alpha^{J}_{2}} Neighbor_{ni}\right)$$

In this way, ad valorem equivalents of the non-geographic NTBs are computed for every inter-provincial and international trade route for each sector and year. The sample includes 12 Canadian provinces and territories[15], the U.S. and the Rest of the World (see Appendix I for a detailed description of the data) and covers the years from 1997 to 2015. To make different data sources consistent, sector classification of output, expenditure and trade data of each trading partner are reclassified to 18 new goods and services[16] sectors.[17] In addition, data

[14] Distance based on population-weighted centroids for each province, USA, and ROW is used in the analysis. See Bemrose et al. (2017) for a discussion on how lack of information on intra-provincial trade flow distances introduces upward biases in the measurement of barriers. Point-to-point intra-provincial trade flow data is not publicly available for all years, sectors, territories and trade flows covered by this study.

[15] Data for Northwest Territories and Nunavut were merged to have a consistent dataset before and after 1999 when Northwest Territories was divided into two territories.

[16] We thank Denis Caron at Statistic Canada for providing estimated service trade data with the U.S., by province. Two assumptions were used to estimate the data. First, the concordance between Balance of payments' service categories and Input-Output commodities (IOCC at Detail level) on which this exercise is based might not necessarily reflect final balancing operations to the input-output matrix. Second, for the same IOCC commodity (at Detail level) the proportion of services traded with the U.S. is the same for each province. This is due to the limitation of the data source used.

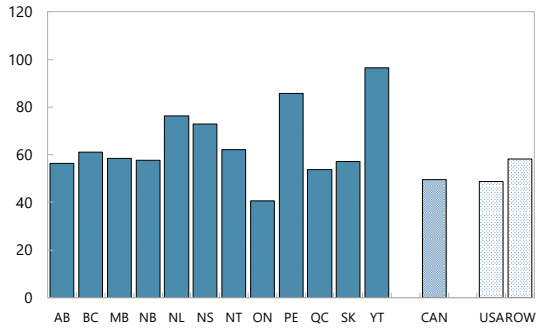
[17] International service flows data are only available from 2010 to 2015.

on bilateral distances, population, contiguous borders and elasticities of substitution at the sector level are used in the estimation. To explore how changes in estimated NTBs correlated with the signing of inter-provincial trade barriers, dummy variables[18] for regional agreements, including TILMA (2007), the New Brunswick-Quebec agreement (2009), NWPTA (2011[19]), PARE (2010) and the Ontario-Quebec agreement (2010), are constructed to study their effects on trade costs within Canada[20].

Estimates of Internal Trade Barriers

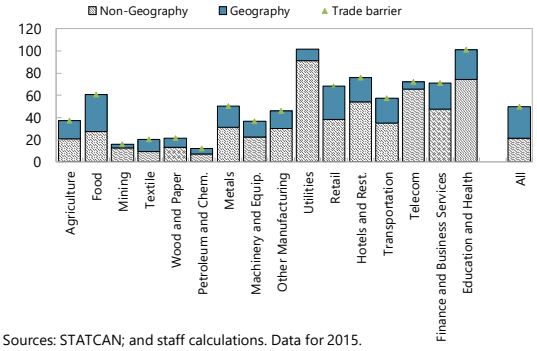
Total NTBs (the sum of geographic and non-geographic barriers) differ significantly by province, at times surpassing the costs of international trade barriers. Ontario and Quebec have the lowest trade-weighted average cost of NTBs in the last year of the sample (2015). In contrast, the more isolated provinces of Prince Edward Island, Newfoundland and Labrador, Nova Scotia and Yukon have the highest average cost. Several provinces have higher average NTB costs than those measured for international trade flows, especially those involving the U.S. This pattern reflects the relatively low trade inter-connectivity between some provinces relative to their international linkages. These cost measures, however, include both policy- and geography-driven differences of which distance plays a significant role in the latter.

Total Trade Barriers by Province
(Trade-weighted average, percent)



Sources: STATCAN; and staff calculations.

Trade Barriers and Geography
(Trade-weighted average, percent)



Sources: STATCAN; and staff calculations. Data for 2015.

Geographic characteristics are estimated to account for more than half of trade barriers. Geography accounts for 57 percent of total trading barriers across all regions and trading routes.[21] The aggregate effect of geography depends on how distance and border effects interact with established trading routes and the composition of trade. The regression estimates suggest that an extra 1,000 km of distance between trading partners is associated with a trading barrier increase of around 3-13 percent for agricultural and food products and most manufacturing goods. Distance effects are highest for utilities and retail trade services and lowest for petroleum, chemicals and mining. In addition, bordering a trading partner is associated with a barrier reduction of 4-30 percent, with the largest effects being observed in

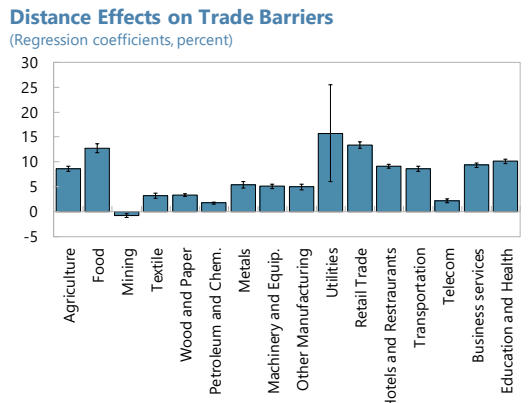
[18] For simplicity the dummy variables are constructed based on provinces involved and take the same value across all sectors.

[19] Manitoba joined the agreement in 2017. However, the effects on trading costs in Manitoba were not assessed because the sample ended in 2015.

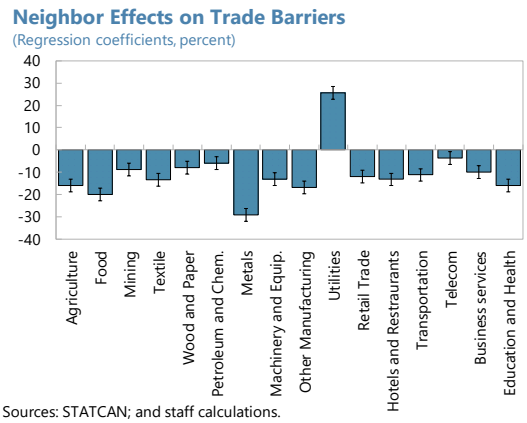
[20] It is assumed that possible effects of the specific agreement come in the first year after the agreement was signed.

[21] This represents the trade-weighted average contribution of geography variables to total trade barriers.

agriculture and food products, metals, electrical machinery, textiles, and other manufacturing.[22]

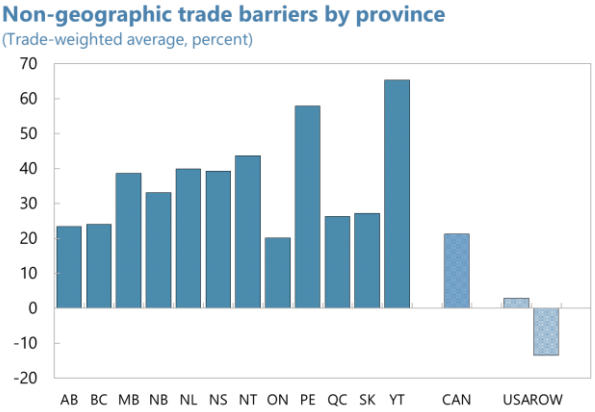


Sources: STATCAN; and staff calculations.

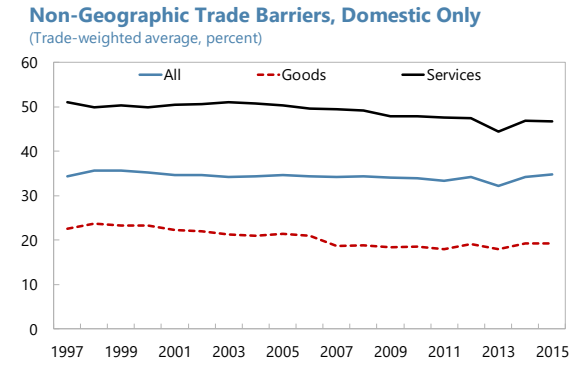


Sources: STATCAN; and staff calculations.

After taking away the geographic component, non-geographic trade barriers account for 43 percent of total trade barriers. The average[23] tariff-equivalent of non-geographic barriers in 2015 was 21 percent. Across sectors, these range from 7 percent for textiles, petroleum and chemicals to over 27 percent for heavier metals, food products and other manufacturing goods, and significantly higher for services. This cross-sectoral variation reflects both the nature of goods and services traded as well as their interaction with trading patterns and sector-specific regulations in different provinces. Alberta, British Columbia, and Ontario exhibit the lowest non-geographic barriers. In contrast, the relatively less connected provinces of Manitoba, Prince Edward Island, Nova Scotia, Yukon, and Newfoundland and Labrador exhibit the highest barriers, even when accounting for geographic distance and neighboring effects. The magnitudes of these barriers are larger than those measured for the U.S. and the rest



Sources: Statistics Canada; and staff calculations.



Sources: STATCAN; and staff calculations
Note: Trade-weighted average of inter-provincial flows. International flows excluded.

[22] The border effect is positive for utilities due to the lack of trade data in this sector between bordering regions.

[23] All averages are weighted by total trade flows.

of the world, though it is hard to assess the average effect of geographic variables on international trade flows.[24]

Average non-geographic barriers in goods and services have fallen slightly since 1997, with substantial variation across sectors. Domestic trade-weighted averages of non-geographic barriers for all goods declined from 23 percent in 1997 to 19 percent in 2015. For services, there was a similar decline from 51 to 47 percent during the same period[25]. However, there is substantial variation across sectors and provinces when comparing changes between 1997 and 2015 (Table 1). Barriers were reduced mainly in agricultural goods, food, textiles, utilities, transportation and business services, while trade barriers increased in the telecommunications, metals, and machinery and equipment sectors. Across provinces (Table 2), Yukon, Prince Edward Island, and Saskatchewan saw the largest fall in non-geographic trade barriers, potentially reflecting recent efforts to integrate remote provinces.

[24] The analysis of international trade barriers between province and rest of the world (including the U.S. as one trading partner) was distorted by the measure of distance between the provinces and the rest of the world. For example, it is reasonable to assume that some U.S. states would trade easier with neighboring Canadian provinces. Geographic distance between provinces, the U.S., and ROW is measured based on population-weighted centroids and neighbor effects are coded as 0 for ROW. Based on these geographic characteristics, the model predicts lower international flows than observed, and the resulting average non-geographic component is negative. It is likely that the geographic measures for international partners overstate the effect of geography. Ideally, detailed trade data between the provinces and the U.S. states (or other countries) could be used to construct a more relevant measure of distance.

[25] These declines are less pronounced if we include international flows. The overall average cost for goods and services combined remained stable due to the increased importance of service trade over time.

Table 1. Canada: Costs of Trade Barriers by Sector
(percent)

	1997			2015			1997-2015 Change	
Sector	Trade barrier	Geography	Non-Geography	Trade barrier	Geography	Non-Geography	Trade barrier	Non-Geography
Agriculture	43.1	12.7	30.4	37.4	16.6	20.8	-5.7	-9.6
Food	79.1	28.9	50.2	60.5	33.1	27.4	-18.6	-22.8
Mining	14.3	5.4	8.9	15.8	3.2	12.6	1.6	3.8
Textile	29.0	11.2	17.8	20.4	11.1	9.3	-8.5	-8.5
Wood and Paper	20.4	8.0	12.4	21.5	8.3	13.2	1.1	0.8
Petroleum and Chemicals	10.8	4.9	5.9	12.2	4.9	7.3	1.4	1.4
Metals	45.9	18.8	27.1	50.5	19.3	31.2	4.6	4.1
Machinery and Equipment	30.5	15.0	15.5	37.0	14.6	22.4	6.5	6.9
Other Manufacturing	44.1	16.7	27.4	46.1	15.8	30.3	2.1	2.9
Utilities	111.7	12.4	99.4	101.5	10.5	91.0	-10.3	-8.4
Wholesale and retail trade	60.4	24.5	35.9	68.2	29.5	38.7	7.8	2.7
Hotels and Restraurants	73.7	20.0	53.7	76.1	21.8	54.2	2.3	0.5
Transportation and warehousing	63.6	19.9	43.7	57.7	22.5	35.2	-5.9	-8.5
Post and Telecommunications	60.5	6.4	54.2	72.1	6.4	65.7	11.6	11.5
Business services	84.2	22.4	61.8	71.2	23.4	47.8	-13.0	-14.0
Education and Health	96.9	22.5	74.4	100.8	26.7	74.1	3.9	-0.3
All	51.8	17.5	34.4	55.1	20.3	34.8	3.2	0.4

Source: STATCAN; and staff calculations.

Note: Trade-weighted averages excluding international flows. Government services and construction flows between provinces not available.

Table 2. Canada: Costs of Trade Barriers by Provinces
(percent)

	1997			2015			1997-2015 Change	
	Trade barrier	Geography	Non-Geograpy	Trade barrier	Geography	Non-Geograpy	Trade barrier	Non-Geograpy
AB	48.3	20.2	28.2	50.6	22.2	28.3	2.3	0.2
BC	59.6	26.6	33.0	59.2	28.0	31.2	-0.4	-1.7
MB	59.7	17.7	41.9	59.1	17.4	41.7	-0.5	-0.2
NB	57.8	12.9	44.9	61.0	15.2	45.8	3.2	0.9
NL	83.0	23.4	59.6	73.2	23.2	50.0	-9.8	-9.6
NS	62.8	19.5	43.3	66.9	21.5	45.4	4.1	2.1
ON	48.9	17.4	31.5	53.5	21.5	32.0	4.5	0.4
PE	79.7	17.0	62.6	74.0	16.2	57.8	-5.7	-4.9
QC	45.9	11.2	34.8	53.3	13.9	39.4	7.4	4.7
SK	56.1	16.2	40.0	52.7	15.8	36.9	-3.5	-3.0
YT	104.6	28.9	75.7	90.6	24.3	66.2	-14.0	-9.4
Canada	51.8	17.5	34.4	55.1	20.3	34.8	3.2	0.4

Source: STATCAN; and staff calculations.

Note: Trade-weighted averages excluding international flows.

Table 3. Canada: Dynamics of Costs of Non-geographic Trade Barriers
(Goods, percent)

2015

	AL	BC	MB	NB	NL	NS	ON	PE	QC	SK	YT
AL	0	24	21	25	26	26	10	54	17	24	38
BC	24	0	27	29	36	27	10	42	17	28	41
MB	21	27	0	33	62	28	28	60	27	29	46
NB	25	29	33	0	19	29	30	29	35	38	52
NL	26	36	62	19	0	32	30	45	47	58	34
NS	26	27	28	29	32	0	27	36	32	46	50
ON	10	10	28	30	30	27	0	41	26	20	26
PE	54	42	60	29	45	36	41	0	51	80	30
QC	17	17	27	35	47	32	26	51	0	35	45
SK	24	28	29	38	58	46	20	80	35	0	67
YT	38	41	46	52	34	50	26	30	45	67	0

1997

	AL	BC	MB	NB	NL	NS	ON	PE	QC	SK	YT
AL	0	30	23	53	57	40	12	75	22	30	57
BC	30	0	33	39	57	34	16	75	24	36	49
MB	23	33	0	58	69	49	35	87	33	37	86
NB	53	39	58	0	44	33	31	46	41	59	88
NL	57	57	69	44	0	36	40	60	63	60	62
NS	40	34	49	33	36	0	32	49	36	51	75
ON	12	16	35	31	40	32	0	48	26	25	57
PE	75	75	87	46	60	49	48	0	52	76	48
QC	22	24	33	41	63	36	26	52	0	37	58
SK	30	36	37	59	60	51	25	76	37	0	71
YT	57	49	86	88	62	75	57	48	58	71	0

Change 1997-2015

	AL	BC	MB	NB	NL	NS	ON	PE	QC	SK	YT
AL	0	-6	-2	-27	-31	-14	-2	-21	-5	-5	-19
BC	-6	0	-5	-11	-21	-6	-6	-33	-6	-8	-8
MB	-2	-5	0	-24	-7	-21	-7	-27	-6	-9	-40
NB	-27	-11	-24	0	-25	-4	-1	-17	-6	-21	-36
NL	-31	-21	-7	-25	0	-4	-10	-15	-16	-1	-28
NS	-14	-6	-21	-4	-4	0	-5	-13	-4	-5	-25
ON	-2	-6	-7	-1	-10	-5	0	-8	0	-5	-31
PE	-21	-33	-27	-17	-15	-13	-8	0	-1	4	-18
QC	-5	-6	-6	-6	-16	-4	0	-1	0	-2	-13
SK	-5	-8	-9	-21	-1	-5	-5	4	-2	0	-4
YT	-19	-8	-40	-36	-28	-25	-31	-18	-13	-4	0

Source: Staff calculations.

Note: Trade weighted averages excluding international flows.

Altogether, there is some evidence of regional integration in goods trade[26], although there remains significant room for improvement. The heatmap of trade barriers (Table 3) show an increasingly more integrated Canadian economy over the years. Barriers affecting trade routes between major provinces—Alberta, British Columbia, Ontario, and Quebec—have declined, but by less than the changes between other provinces. Regions that were relatively disconnected from non-bordering regions such as Nova Scotia, Prince Edward Island, Yukon, and Newfoundland and Labrador, have significantly reduced barriers with several trading partners, including non-bordering provinces.

Table 4. Canada: Trade Agreements and Trade Barriers

								Goods only	
Variables	log(t)	log(t)	log(t)	log(t)	log(t)	log(t)	log(t)	log(t)	log(t)
2007 TILMA	-0.0373***					-0.0301***	-0.00719	-0.0403***	-0.0158**
	(0.00366)					(0.00412)	(0.00437)	(0.00669)	(0.00700)
2009 NB-QC agreement		-0.0437***				-0.0446***	-0.0237***	-0.0527***	-0.0284**
		(0.00723)				(0.00722)	(0.00746)	(0.0114)	(0.0117)
2010 PARE			-0.0208*			-0.0218**	0.00228	-0.0399**	-0.0120
			(0.0107)			(0.0106)	(0.0109)	(0.0174)	(0.0178)
2010 TCA				0.00876**		0.00949**	-0.00201	-0.0158***	-0.00754*
				(0.00213)		(0.00213)	(0.00232)	(0.00370)	(0.00386)
2011 NWPTA					-0.0232***	-0.0130***	0.00268	-0.00874*	0.00273
					(0.00285)	(0.00320)	(0.00355)	(0.00513)	(0.00561)
Trading pair fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year * Eporter fixed effec	No	No	No	No	No	No	Yes	No	Yes
Observations	36,060	36,060	36,060	36,060	36,060	36,060	36,060	19,782	19,782
R-squared	0.991	0.991	0.991	0.991	0.991	0.991	0.992	0.988	0.988

Source: STATCAN; and staff calculations.
Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

There is also evidence that inter-provincial trade agreements are associated with lower non-geographic trade barriers. Trade-weighted regressions using trade agreement dummies indicate that provincial routes affected by the free trade agreements saw higher trade flows than other routes (Table 4). This appears to be true for TILMA, the 2009 New Brunswick-Quebec agreement, PARE, and NWPTA. The signing of these trade agreements was associated with an average reduction of trade barriers between 1 and 4 percent based on weighted estimates. These effects were likely driven by regulatory changes in specific sectors, and a re-orientation of trade flows towards sectors and trade routes with lower inter-provincial barriers.

[26] We show the results with respect to trade in goods only because trade service flows do not exist for all provincial pairs.

In fact, growth in trade among provinces that signed internal trade agreements was largely driven by a decline in measured trade barriers. Table 5 shows a growth decomposition, where the gravity framework is used to examine the driving forces behind the growth of interprovincial trade following the signing of free trade agreements. For every sector, the growth of bilateral trade can be decomposed into contributions from the growth of local production, the change in bilateral trade barriers (for example due to regional free trade agreements) and the change in multilateral barriers due to trade diversion effects (for example due to international free trade agreements).[27] Trade among these provinces grew in most sectors between the year of the agreement's signing and the last year of our sample. For the majority of sectors, the decomposition suggests that most of this growth was driven by the decline in trade barriers as opposed to an expansion of local supply or an increase in overall demand from non-signatory provinces.

[27] See Novy (2011) for details.

Table 5. Canada: Trade Growth Decomposition

Agreement (provinces)	2015 Trade	Change since agreement	Contribution of growth in production	Contribution of trade barrier decline	Contribution of decline in multilateral resistance	Total
NWPTA and TILMA (AL-BC)						
Agriculture	1,250	360	-20%	54%	66%	100%
Food	2,411	448	-37%	115%	22%	100%
Mining	4,183	807	-38%	122%	15%	100%
Textile	23	-341	163%	3%	-66%	100%
Wood and Paper	1,145	-641	201%	13%	-114%	100%
Petroleum and Chemicals	3,845	141	-561%	75%	587%	100%
Metals	921	-142	268%	194%	-362%	100%
Electrical and Machinery, and	1,126	200	-462%	370%	192%	100%
Other Manufacturing	336	72	2%	-247%	345%	100%
NB - QC agreement (NB - QC)						
Agriculture	532	411	16%	90%	-6%	100%
Food	815	385	55%	94%	-49%	100%
Mining	136	88	34%	164%	-98%	100%
Textile	28	-	-	-	-	-
Wood and Paper	333	-159	38%	101%	-40%	100%
Petroleum and Chemicals	1,026	-871	116%	53%	-70%	100%
Metals	782	488	6%	101%	-7%	100%
Electrical and Machinery, and	230	68	40%	34%	26%	100%
Other Manufacturing	107	3	36%	32%	31%	100%
PARE (NB - NS)						
Agriculture	256	-46	-137%	200%	37%	100%
Food	309	86	68%	202%	-170%	100%
Mining	21	-	-	-	-	-
Textile	10	-	-	-	-	-
Wood and Paper	228	29	560%	211%	-671%	100%
Petroleum and Chemicals	588	153	867%	-697%	-69%	100%
Metals	91	36	45%	121%	-66%	100%
Electrical and Machinery, and	50	25	26%	-84%	158%	100%
Other Manufacturing	81	35	6%	75%	20%	100%
TCA (ON - QC)						
Agriculture	1,792	430	30%	43%	27%	100%
Food	10,162	1,083	33%	-29%	96%	100%
Mining	3,628	1,655	55%	66%	-20%	100%
Textile	598	-	-	-	-	-
Wood and Paper	3,178	-334	444%	26%	-370%	100%
Petroleum and Chemicals	6,249	-917	101%	171%	-172%	100%
Metals	5,692	484	266%	-183%	17%	100%
Electrical and Machinery, and	3,865	-1,949	-65%	145%	20%	100%
Other Manufacturing	1,617	197	120%	119%	-139%	100%

Source: STATCAN; and staff calculations.

Notes: Decomposition of change in trade flows since signing of agreement. For NWPTA-TILMA, the signature year of TILMA was used.

IV. What Are The Gains From Liberalizing Internal Trade?

A trade and migration model, with a full set of intersectoral input-output linkages, is used to gauge the impact of lower internal trade costs on real GDP and employment in Canada. This model builds on the recent work of Tombe and Winter (2018), and Caliendo and Parro (2015) to analyze within-country trade and migration. At its core, this is a multi-sector Eaton and Kortum (2002) model featuring intersectoral linkages and interprovincial migration. If trade costs are infinite, there is no trade and all spending is allocated to domestic producers. As trade costs fall, more spending is allocated to the cheapest producers elsewhere and a narrower range of products is produced domestically. This results in higher overall productivity as resources shift to producing goods for which an economy has a stronger comparative advantage. In addition, workers move across provinces (but not across countries) in response to changes in real wages. The results represent comparative static comparisons between two equilibria. We abstract from any adjustment costs or time involved in moving from on equilibrium to another. The results should therefore be seen as a long-run potential gain, as we do not quantify the short-run adjustment costs or how long such an adjustment might take[28].

We follow Caliendo and Parro (2015) and solve the model in the so-called "Exact Hat Algebra" form. This eases model calibration and simulation substantially. Specifically, it allows us to simulate the counterfactual responses of GDP, employment, wages, prices, and so on, to eliminating the policy-relevant (non-geographic) trade costs starting from an initial equilibrium that exactly matches observed data on interprovincial and international trade. We provide a broad overview of the model structure here, but leave detailed derivations to the three papers just cited.

Model description

The overall environment is structured to cleanly map onto readily available multi-region input-output data, yet still allow for rich and flexible counterfactual experiments. There are N regions, each with L_n individuals that work and consume. They consume a set composite goods, one from each of J sectors, and individual utility is given by

$$U_n = \prod_{j=1}^{J} \left(C_n^j\right)^{\beta^j},$$

where β^j, in equilibrium, is share of total consumer expenditures allocated to sector j. The consumption composite is a CES aggregate across a continuum of varieties produced by heterogeneous firms within each sector. A producer of a specific variety ν requires labour inputs $l_n^j(\nu)$ and intermediate inputs $q_n^{jk}(\nu)$ to generate output according to

[28] Our results are also contingent on the model that we use, and alternative techniques may yield alternative results.

$$y_n^j(v) = \varphi_n^j(v) l(v)^{\phi^j} \left[\prod_{k=1}^{J} q_n^{jk}(v)^{\sigma^{jk}} \right],$$

where $\varphi_n^j(v)$ is the total factor productivity of this specific producer. Variation in productivity leads to variation in production costs, and therefore scope for gains from trade. Consumers seek out the lower cost producer of any given variety, and can trade across regions subject to iceberg costs $\tau_{ni}^j \geq 1$ whereby τ_{ni}^j must be shipped for one unit to arrive.

Abstracting from the technical derivations, this implies an equilibrium share of expenditures that consumers in each region n allocate to goods from sector j that are produced in region i as a function of productivity (A_i^j), trade costs (τ_{ni}^j), prices (P_n^j), and production costs

$$\pi_{ni}^j \propto \left(\frac{\tau_{ni}^j c_i^j}{P_n^j A_i^j} \right)^{-\theta^j},$$

where θ^j is the trade-cost elasticity of trade, A_i^j is a measure of fundamental productivity in region i to produce sector j goods, τ_{ni}^j is the cost of imported sector j goods from region i into region n, P_n^j is the average price of sector j goods in the importing region n, and c_i^j is the cost of an input bundle in region i used to product sector j goods. Specifically, given the production function described earlier,

$$c_i^j \propto w_i^{\phi^j} \left[\prod_{k=1}^{J} \left(P_i^k \right)^{\sigma^{jk}} \right]$$

where ϕ^j is the value-added share in sector j (which we assume is common across regions) and σ^{jk} is the share of total spending on inputs by sector j on intermediate inputs from sector k. These parameter values are calibrated to precisely match the input-output data for Canada in 2015 using Statistics Canada data table 36-10-0001-01, aggregated to correspond with the 18 broad sectors used in our analysis. Finally, average prices depend on trade costs, production costs, and productivity across all regions according to

$$P_n^j \propto \left[\sum_{i=1}^{N} \left(\frac{\tau_{ni}^j c_i^j}{A_i^j} \right)^{-\theta^j} \right]^{-\frac{1}{\theta^j}}.$$

These three equations describe the key relationships between trade costs and trade flows. One can show that trade flows, prices, and productivity affect real wages for workers in each region and sector according to

$$\frac{w_n}{P_n^j} \propto A_n^j \left(\pi_{nn}^j \right)^{-\frac{1}{\theta^j}} \left[\prod_{k=1}^{J} \left(\frac{w_n}{P_n^k} \right)^{\sigma^{jk}} \right]$$

Taking logs and collecting the input-output coefficients σ^{jk} into the standard Direct Requirements Matrix A, one can use this equation to map changes in trade shares $\log(\hat{\pi}_{nn}^{j})$ to changes in real wages $\log(\hat{w}_n/\hat{P}_n^{j})$, where hats relative changes, according to

$$W = \Pi^{\mathrm{T}}(I - A)^{-1},$$

where W is the $N \times J$ matrix of (log) real wage changes for each region and sector, Π is the $N \times J$ matrix of changes in home-shares $-\log(\hat{\pi}_{nn}^{j})/\theta^{j}$, and $(I - A)^{-1}$ is the standard Leontief Inverse matrix common to models with complex input-output linkages. This result implicitly holds fundamental productivity A_n^{j} fixed in our counterfactuals of changes in trade costs.

This expression reveals two important channels for how trade costs affect real wages. First, lower trade costs will decrease the share of spending allocated to home produced goods ($\hat{\pi}_{nn}^{j} < 1$). This will increase average labor productivity in sector j and region n as consumers and business shift their spending to more productive producers in other locations, away from relatively less productive domestic producers. Second, productivity gains in one sector cascade through the economy's complex web of intersectoral linkages. This is captured by the Leontief Inverse matrix.

Changes in trade shares are induced by changes in trade costs, production costs, and prices according to,

$$\hat{\pi}_{ni}^{j} \propto \left(\hat{\tau}_{ni}^{j}\hat{c}_i^{j}/\hat{P}_n^{j}\right)^{-\theta^{j}},$$

where the change in trade costs are exogenous and reflect the estimated costs described in the paper. Changes in production costs and prices are solved as equilibrium counterfactual changes that solve

$$\hat{P}_n^{j} \propto \left[\sum\nolimits_{i=1}^{N} \pi_{ni}^{j}\left(\hat{\tau}_{ni}^{j}\hat{c}_i^{j}\right)^{-\theta^{j}}\right]^{-\frac{1}{\theta^{j}}}.$$

and

$$\hat{c}_i^{j} \propto \hat{w}_i^{\phi^{j}}\left[\prod\nolimits_{k=1}^{J}\left(\hat{P}_i^{k}\right)^{\sigma^{jk}}\right],$$

given changes in trade costs, initial trade shares π_{ni}^{j}, which are from data, and wage changes, which are solved endogenously within the model. Specifically, counterfactual changes in wages are implied by changes in global expenditures and revenue. We do not report the full algorithm to solve for wages here. Intuitively, given an initial guess for wage changes, we solve for the counterfactual production costs, price, and trade share changes. Together, these

imply counterfactual changes in sales in each sector in each region. And changes in a sector's total payments to labor are proportional to changes in sales. Wages are then inferred from the change in total payments to labor, given a counterfactual distribution of employment, which we turn to next.

Our model allows workers to not only move across sectors but also across regions. Though workers can reallocate across sectors within a region at zero cost (which is why wages equalize across sectors) they face costs of migrating across regions. In addition, following Tombe and Winter (2018), workers differ in their individual preferences for different locations. Some prefer living in one province, all else equal, while others prefer living in a different province. The degree of preference heterogeneity across individuals will determine how sensitive workers are to changes in real incomes across locations. That is, workers will choose to live in the region offering the higher real incomes, net of migration costs, adjusted for individual preferences. Let $\hat{P}_n$ denote the change in the aggregate price index of region n, which, given the structure of individual utility, $\hat{P}_n = \prod_{j=1}^{J} \left(\hat{P}_n^j\right)^{\beta^j}$ is simply the weighted (geometric) average across $\hat{P}_n^j$. With this price index in hand, real wage changes determine the counterfactual change in employment in each region $\hat{L}_n$ according to

$$\log\left(\hat{L}_n\right) \propto \kappa \cdot \log\left(\frac{\hat{w}_n}{\hat{P}_n}\right),$$

where κ is the income-elasticity of migration, which itself is determined by the underlying heterogeneity in worker preferences across location. The constant of proportionality in the above equation ensures employment shares across all provinces sum to one. Migration is restricted to within-Canada moves only; that is, international migration flows are not modelled here.

It remains to specify how we calculate real GDP changes. A province's aggregate real GDP Y_n is the aggregate real wages across sectors. Thus, we can use the vector of utility weights β to aggregate the matrix W into a vector of welfare changes,

$$Y = \Pi^{\mathrm{T}}(I - A)^{-1}\beta.$$

The vector $(I - A)^{-1}\beta$ collects a measure of each sector's "importance" for the national economy, each element of which corresponds to g^j used in the text. Specifically, g^j is the elasticity of aggregate productivity with respect to sector j's productivity.

Nationally, Canada's overall real GDP depends on each province's real GDP and the allocation of workers across provinces. Changes in national real GDP are given by,

$$Aggregate\ Real\ GDP\ Change = \sum_n \omega_n \hat{L}_n \hat{Y}_n,$$

where ω_n is province n's initial share of national nominal GDP.[29]

The model is calibrated to assess the importance of current trade and to simulate the effects of lower trade barriers. In the first step we assess the welfare gains of current trade flows with existing trade barriers relative to an autarky or no trade counterfactual where trade costs in all 18 sectors become prohibitive. In the second step, we analyze the impact of removing all non-geographic trade barriers on GDP, trade and employment. We simulate only changes in outcomes and start from an initial equilibrium that exactly matches observed trade flows. The key production function and consumption parameters are taken directly from Canada's supply-and-use tables for 2015. Finally, two parameters are central to how trade and migration responds to changes in trade costs. First, the estimates of trade elasticities are taken from Caliendo and Parro (2015) for the goods sectors. Following Costinot and Rodriguez-Clare (2014) an elasticity for the service sectors is set to 5. Second, an income-elasticity of migration is set to 1.5, as in Tombe and Winter (2018). This is also consistent with empirical estimates and quantitative simulations in the literature.

Counterfactual 1: The Importance of Trade

Even with existing barriers, trade is critical for Canada's national and provincial economies. In the counterfactual autarky equilibrium, consumers and businesses allocate all spending to domestically produced goods and services. As a result, average productivity declines. The exercise suggests that trade even if restricted would bring welfare gains relative to autarky. Internal trade increases national real GDP by over 5 percent, external trade by nearly 11 percent, and trade overall by nearly 20 percent (Table 6).

The importance of trade for provincial economies varies widely. Internal trade increases real GDP more among smaller provinces than among larger provinces, and especially among Atlantic provinces. Nova Scotia, for example, gains roughly 10 percent from internal trade relative to a counterfactual where only external trade is possible. External trade also increases real GDP more among smaller provinces, except for Prince Edward Island, where internal trade matters more. Combined, the gains for provinces range from a low of 15.4 percent for Ontario to a high of 58.8 percent for Nova Scotia. Overall, larger gains in typically poorer regions implies trade promotes greater equality across provinces—trade lowers the variance of real GDP per worker by 22 percent.

The distribution of employment across provinces is also affected by internal and external trade. Internal trade allows more workers to live in the three northern territories than would otherwise be the case. Moreover, employment in Atlantic provinces and the territories is significantly higher as a result of internal trade. Employment in Prince Edward Island, for example, is nearly 11 percent higher relative to the counterfactual with no internal trade. For

[29] Note that we do not incorporate observed trade imbalances into the model. This eases the model expressions above, and none of the quantitative results reported below meaningfully depend on whether we allow for trade imbalances or not. Aggregate gains from internal trade, for example, are 5.35% in a model where exogenous trade imbalances match the observed trade surplus to GDP ratios in the initial equilibrium. This compares to the 5.18% gains reported in the baseline results.

the four Atlantic provinces, internal trade raises aggregate employment by over 5 percent. External trade also has implications for the distribution of employment. Western provinces and most Atlantic provinces see gains, while other provinces see declines. Overall, trade tends to sustain higher employment levels in provinces outside Ontario and Quebec. The primary reason for these employment shifts is changes in real incomes. Provinces with above-average gains in real incomes will see employment increases due to immigration while provinces with below-average gains will see lower employment.

Table 6. Canada: Gains from Observed Trade Relative to Autarky, 2015 1/

	Real GDP Per Capita (percentage change)			Employment (percentage change)		
Region	Internal	External	All Trade	Internal	External	All Trade
AB	5.1	11.4	20.8	0.1	0.9	1.3
BC	4.4	13.4	24.2	-1.0	3.6	5.5
MB	8.3	8.8	26.0	4.7	-2.7	7.9
NB	7.2	16.4	36.6	3.1	7.7	21.8
NL	6.9	13.7	26.3	2.5	4.0	8.2
NS	9.6	23.7	58.8	6.5	18.0	52.6
NT & NU	8.7	10.5	28.8	5.2	-0.3	11.4
ON	4.4	9.2	15.4	-0.9	-2.2	-5.4
PE	12.6	9.0	33.4	10.8	-2.4	17.4
QC	5.0	9.8	18.0	-0.2	-1.4	-2.3
SK	6.7	14.1	26.3	2.3	4.5	8.2
YT	8.6	19.0	45.5	5.0	11.4	33.8
Canada	5.1	10.9	19.6	-	-	-

Source: Staff calculations.

1/ The reported changes in real GDP and employment are defined as changes in the observed values relative to the no-trade counterfactual.

Counterfactual 2: The Impact of Lower Internal Trade Barriers

To quantify the impact of lower trade costs on Canada's provincial and national economies, the model is used to simulate the complete liberalization of internal trade, an extreme scenario which represents an upper bound of welfare gains. This is done by removing the measured non-geographic trade costs reported earlier for the 9 goods sectors only.[30]

[30] To measure the effects of lower internal trade barriers versus lower external trade barriers, we separately lower the measured trade costs between provinces (internal trade only) and between each province and the world (external trade only). To simulate the effect only of improving trade flows, we hold unchanged trade cost between region-pairs and sectors where we estimate negative non-geographic trade barriers. Any province with

Removing non-geographic internal trade costs increases trade volumes as a share of GDP by roughly 15 percentage points. This would bring internal trade volumes to a level similar to international trade volumes, a situation not seen in Canada since the early 1980s. The effect on economic activity is similarly large. Real GDP per capita would increase by 3.8 percent nationally, with gains as large as 16 percent in Prince Edward Island (Table 7). For the Atlantic provinces, real GDP per worker would increase by 8 percent. The prevalence of widespread significant gains is robust to different elasticity specifications (see Appendix II).

Table 7. Canada: Gains from Eliminating Non-Geographic Trade Barriers for Goods, 2015

	Real GDP Per Capita (percentage change)			Employment (percentage change)		
Region	Internal	External	All Trade	Internal	External	All Trade
AB	3.2	6.5	8.9	-0.9	0.4	-0.2
BC	2.8	5.7	7.9	-1.5	-0.7	-1.6
MB	7.1	11.4	16.1	4.8	7.4	9.8
NB	6.0	5.6	10.0	3.1	-0.8	1.2
NL	12.8	12.0	21.2	13.3	8.3	17.1
NS	4.8	19.8	22.0	1.4	19.8	18.2
NT & NU	7.5	7.6	13.3	5.3	2.0	5.9
ON	2.9	4.8	7.0	-1.3	-2.0	-2.8
PE	16.2	9.6	22.1	18.4	4.8	18.4
QC	4.6	6.1	9.6	1.0	-0.2	0.7
SK	5.1	5.7	9.6	1.9	-0.7	0.7
YT	6.9	4.2	9.8	4.5	-2.8	1.0
Canada	3.8	6.2	9.1	-	-	-

Source: Staff calculations.

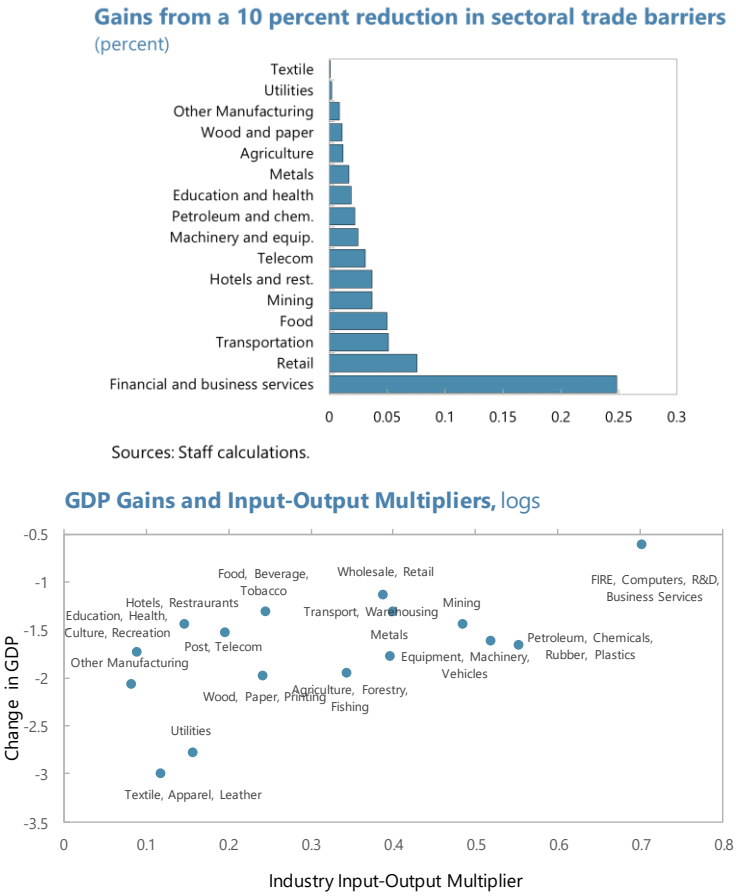
Lower internal trade costs also tend to reallocate employment towards provinces that experience large productivity gains from trade. Workers respond to productivity gains and migrate out of provinces where gains are below average (British Columbia, Alberta, and Ontario) to other regions, especially Atlantic provinces, where employment increases by 6 percent overall. These flows are large for some provinces, such as Prince Edward Island and Newfoundland and Labrador, but the aggregate migration flows across all provinces from reducing internal non-geographic barriers represents only 0.8 percent of total Canadian employment.

To gauge the importance of individual sectors in contributing to the aggregate gain in GDP from lower internal trade costs, we simulate the reduction in measured internal trade costs for each individual sector, holding trade costs in all other sectors unchanged. Specifically, we lower measured trade costs by 10 percent in each sector, to ensure comparability across sectors (Figure 2; top panel). Gains from lower internal trade costs are larger in sectors that

zero production, or zero trade with some other province, in any sector, will continue to have zero production or zero trade in all counterfactuals.

are important suppliers of intermediate inputs. Reducing trade costs in finance, computers, and business services lead to the largest gains, followed by wholesale and retail activities and transport and warehousing. This reinforces the value of efforts to unify securities regulations across provinces and speaks to the importance of allowing legal, accounting, and other professions to move seamlessly across borders. Since these sectors are the largest suppliers of inputs to other sectors, lower trade costs in these sectors cascade throughout the economy and boost productivity in all other sectors that use these inputs (Figure 2[31]). To be sure, it may be more difficult to liberalize trade in certain service sectors – especially, for example, in education, health, culture and recreation. On the other hand, trade liberalization in sectors such as business services, transportation and warehousing could be achieved with certification harmonization, labor mobility agreements, or harmonized trucking and transport rules.

Figure 2. Canada: Real GDP Gains from Individually Liberalizing Industries



Note: The effect of reducing measured internal trade costs in each sector – one at a time – by 10 percent. The top panel displays the change in national real GDP. The bottom panel displays these gains against each sector's total forward linkage – both on a log scale.

[31] The bottom panel plots the sector-specific gains to national real GDP (in logs) against a measure of each sector's importance as an input supplier. This is the row-sum of the Leontief Inverse Matrix. Intuitively, this measure is proportional to the average amount of sector i's output required to satisfy one dollar of final demand in all other sectors of the economy. It is sometimes referred to as the "total forward linkage" measure.

V. POLICY DISCUSSION

We now turn to a discussion on the current institutional setup behind inter-provincial trade patterns and potential policies to improve it going forward.

Can the Federal Government Secure Free Internal Trade?

In theory, yes. Under the 1867 Constitution Act, Section 90 gives the federal authorities the powers to reserve or outright disallow any new provincial legislation that has the effect of inhibiting internal trade[32] and Section 91(2) gives the federal government full control over "trade and commerce". In addition, Section 121 states that goods should be admitted freely across provinces.

Nevertheless, the potential role of the federal government is more limited in practice. Federal government powers over trade also intersect with provincial powers granted under other sections of the Constitution Act. For example, Section 92(13) gives provinces control over "property and civil rights".[33] This intersection of powers has been tested several times. In 2011, the Supreme Court ruled that the proposed 2010 Canadian Securities Act[34] was not valid under federal trade and commerce powers and that federal authorities intruded into provincial powers over property and civil rights. In 2018, the Supreme Court ruled in R. *v.* Comeau[35] that New Brunswick was within its rights to impose fines on the transportation of alcoholic beverages into the province.[36] The court noted that Section 121 of the Constitution should be interpreted in historical context and in light of the principle of federalism, which allows for provincial and territorial diversity and provincial regulation of local concerns. Thus, trade restrictions for purposes such as enabling public supervision of the production, movement, sale and use of alcohol were consistent with the Constitution as they reflected the provincial right to govern even if the restrictions had an "incidental" effect on trade.

Because of this, a political, cooperative solution is likely the most viable solution. Most of the barriers to internal trade are the result of regulatory differences, and harmonizing those

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[32] This power can only be used within the first year of a provincial law being enacted. Also, Section 90 is not specific to disallowing provincial legislation that has the effect of inhibiting internal trade but to any provincial legislation. However, the federal power to disallow or reserve a provincial law has not in practice been invoked since 1961 and is generally considered to be dormant.

[33] Section 92 gives the provincial legislatures the authority to make laws regarding important economic areas such as starting and running a business, obtaining professional accreditation, ensuring safety and generally any other matters of a "merely local or private nature in the province". The federal and provincial governments have also shared responsibility over specific areas such as immigration, agriculture, old age pensions, etc.

[34] Canadian securities markets are regulated by Canada's provincial and territorial governments. The intention of the 2010 Canadian Securities Act was to establish a national securities regulator.

[35] See the 2018 Supreme Court of Canada decision in Her Majesty The Queen v. Gerard Comeau (2018), S.C.C. 15.

[36] New Brunswick's Liquor Control Act limits personal importation to 12 pints of beer and one bottle of alcohol or wine with the primary purpose of public supervision of the production, movement, sale, and use of alcohol within New Brunswick and sustaining a provincial monopoly liquor distributor.

regulations requires cooperation among provinces rather than a top-down approach. The Supreme Court's conclusions regarding the 2011 securities reference case noted:

> *"…the growing practice of resolving the complex governance problems that arise in federations, not by the bare logic of either/or, but by seeking cooperative solutions that meet the needs of the country as a whole as well as its constituent parts. Such an approach is supported by the Canadian constitutional principles and by the practice adopted by the federal and provincial governments in other fields of activities. The backbone of these schemes is the respect that each level of government has for each other's own sphere of jurisdiction. Cooperation is the animating force. The federalism principle upon which Canada's constitutional framework rests demands nothing less."*

There has been a move toward cooperative federalism and increasing support from governments for a broad reduction in trade barriers in recent years. The renegotiation of the AIT in 2014-2017 (resulting in the CFTA), collaborative messages from the recent Council of the Federation meetings of premiers, as well as the December 2018 First Ministers' Meeting all suggest a desire and willingness to take action. The federal, provincial and territorial governments should build on the current consensus and move forward to tackle the remaining restrictions.

Lessons from Countries That Have Undergone Internal Trade Liberalization

Mutual recognition was adopted in Australia in 1993 to remove regulatory barriers to the free flow of goods and labor between Australian states and territories. This brought about a more efficient economy (Productivity Commission, 2009), strengthening competition in many industries and benefiting consumers with lower prices and more choices for goods. A single consumer protection law was adopted in 2010 under the authority of the federal government to replace consumer protection laws of individual states and territories. This was a major step towards eliminating all internal trade barriers in Australia.

The success of the Australian approach was the result of collaborative federalism and the courts' stance on internal trade barriers. Collaborative federalism towards achieving a single market in the early 1990s was key in eliminating internal trade barriers: the Mutual Recognition Accord of 1992 was endorsed and signed by all first ministers and the Productivity Commission created in 1997 was given resources to study and make recommendations about internal trade. Furthermore, there was greater consensus for cooperative and executive federalism, which led to a gradual transfer of power from the states to the federal government over time (Smith and Mann, 2015). The history of litigation and courts' decisions might also explain why Australia made greater progress in reducing internal trade barriers. Australian courts have often applied Section 92 of the Australian Constitution, which is similar to Canada's Section 121 that free internal trade, to invalidate laws creating internal trade barriers (Smith and Mann, 2015)[37].

The European Union (EU), on the other hand, has adopted a more coercive approach to ensuring a single market. The EU's Treaty of Rome prohibits measures "capable of

[37] It is important to note that the constitutional division of powers between the federal and state authorities in Australia is different than in Canada.

hindering, directly or indirectly, actually or potentially, intra-Community trade". In addition, the EU has issued directives[38] requiring the harmonization of laws between member states and adopted the Mutual Recognition Regulation in 2008 to facilitate the free movement of goods and services.[39] The European Commission provides an important oversight role by reviewing and providing feedback on proposed legislative and regulatory changes prior to their ratification in national and subnational legislatures.

The experience of Australia and the EU, nevertheless, cannot be directly translated to Canada. In contrast to Australia, courts in Canada have generally not used Section 121 to eliminate laws creating internal trade barriers. They have argued instead that Section 121 prohibits tariff barriers only[40] and not other impediments to interprovincial trade, or that it should be interpreted based on the historical, legislative and constitutional context in Canada that respects an appropriate balance between federal and provincial powers. For the same reasons, the more coercive approach of the EU may be difficult to envisage in Canada.

Is There Public Support for Internal Trade Liberalization?

There is overwhelming public support for free internal trade. The surveys of the Canadian Federation of Independent Business (2014) showed that most Canadian firms (87 percent) believe that provincial and territorial premiers should commit to reducing internal trade barriers. Nine in ten small businesses, including several industry associations,[41] think that all firms should have open access to all markets in Canada. More than half of the firms believe that provincial and territorial governments should not protect local businesses from competition in other provinces and territories. A survey conducted by Ipsos Public Affairs (2017) found 89 percent of respondents agree that Canadians should be allowed to bring any legally purchased product from one province to another; nine in ten Canadians say there should be free trade between the provinces "because we are one country." A majority see reducing trade barriers between provinces as being good for consumers (81 percent) and Canadian businesses (77 percent).

What Can We Expect in the Future: From AIT to CFTA and beyond

The AIT was an important step forward but its effectiveness in reducing internal trade barriers was limited[42]. The AIT was an intergovernmental trade agreement that came into force in 1995. While it aimed to enhance interprovincial trade by eliminating barriers to the

[38] A directive is a coercive measure which indicates the objectives to be met and sets a period for national governments to adapt their own regulations. Failure to implement the directive can lead to material consequences for a member state.

[39] See Regulation (EC) No 764/2008.

[40] See the 1921 Supreme Court of Canada decision in Gold Seal Ltd. v. Alberta (1921), 62 S.C.R. 424.

[41] They include the Retail Council of Canada, the Canadian Vintners Association, the Canadian Federation of Agriculture, the Business Council of Canada, and the Canadian Welding Bureau (Senate hearing, 2016).

[42] Moreover, Anderson and Yotov (2008) find no empirical evidence for positive effects of the AIT on interprovincial trade.

free movement of persons, goods, services and investment within Canada, many restrictions remained. The agreement was narrow in its scope, adopting a positive list approach focused on removing trade barriers in eleven sectors[43]. The AIT also did not have an effective dispute resolution mechanism. In 2015, the AIT was amended to include a dispute resolution mechanism that was enforceable and carried monetary penalties for non-compliance. A measure of success was achieved in public procurement which was made more transparent and open, and labor mobility[44] for regulated occupations was enhanced.

After several years of negotiations, a new intergovernmental trade agreement, the CFTA, was established to replace the AIT. The government of Canada, the ten provinces and three territories[45] signed the CFTA on July 1, 2017. Unlike the AIT, the CFTA adopts a negative list approach, where its rules apply automatically to almost all areas of economic activity in Canada, with any exceptions being clearly identified. While the number of exemptions is large, the negative list approach is a significant step forward in enhancing transparency. The agreement also enhances government procurement rules and introduces a regulatory reconciliation process (through the Regulatory Reconciliation and Cooperation Table, RCT) to eliminate duplicate, overlapping and inconsistent regulations. The dispute settlement mechanism from the 2015 AIT amendments was carried forward into the CFTA and strengthened with higher penalties for non-compliance[46]. The agreement is fully harmonized with international agreements to ensure a level playing field for both domestic and foreign firms.

However, substantial challenges remain. The list of exceptions is long, itemized in well over 135 pages, and the areas often cited as most affected by internal trade barriers (alcohol, dairy and other farm products, trucking regulations, corporate registry) are part of the list. Despite the RCT, it is relatively easy for governments to opt out of negotiations if they do not have an existing measure to reconcile or if they determine that reconciliation is not a desirable option for their jurisdiction. Progress on labor mobility and professional accreditation is also limited and the Internal Trade Secretariat is insufficiently resourced to study and prepare regular progress reports.

Recently, the federal and provincial governments announced that they would tackle key outstanding issues. They are planning to take action to reduce regulatory restrictions related

[43] They include procurement, investment, labor mobility, consumer protection, agricultural and food products, alcoholic beverages, energy, communications, transportation and environmental protection.

[44] For example, there was a commitment for certificate-to-certificate recognition for labor mobility in Chapter 7 in the 2009 AIT.

[45] The CFTA allows other regional free trade agreements only if they liberalize trade, investment, labor mobility beyond the level achieved by the CFTA.

[46] Penalties for non-compliance were raised for the largest jurisdictions to a maximum of $10 million. The fines collected would be deposited into an internal trade fund and not as a compensation to the complainant.

to occupational health and safety[47], transport regulation[48], licensing in agriculture, and corporate registry[49]. They also agreed to address personal use exemption limits for alcohol when crossing provincial/territorial boundaries. Some jurisdictions may eliminate limits entirely, as has already been done in Manitoba, Alberta, Saskatchewan, Nova Scotia and Prince Edward Island. Moreover, in January 2019, the streamlined and outcomes-based Safe Food for Canadians Regulations came into effect, and in April 2019, the federal government made the National Building Codes available for free online. More recently, five reconciliation agreements have been completed.

This progress notwithstanding, there are several policy avenues that can improve on the existing agreement and boost internal trade going forward:

- NTBs should be clearly identified and progress towards removing them should be assessed at regular intervals.

- Targets for a reduction in the number of exemptions included in the CFTA should be explicitly set out in future negotiations.

- The CFTA process of regulatory reconciliation could be more effective. It is administratively burdensome, negotiations are protracted, and a province can opt out of the process[50]. A "comply or explain" approach would ensure better accountability and accelerate the work on harmonization of regulations.

- The Secretariat should be sufficiently resourced (with budget and full-time employees) to assess and communicate progress on trade liberalization, including publishing an annual report on goals set and progress in achieving them. The Secretariat would assume the responsibilities of ad hoc committees and working groups to initiate, develop, and monitor policy reforms.

- Although penalties for non-compliance were raised when the CFTA came into force in 2017, they still do not fully reflect the magnitude of the economic impact. Penalties should be calibrated to better distinguish large barriers from small.

- There is scope for recognizing unilateral provincial action. Recognizing the validity of extra-provincial certifications, standards, and registrations can benefit a single province even if the recognition is not reciprocated. Under such a "national recognition" regime, a

[47] Provinces, territories and the federal government have agreed to adopt and recognize common standards for first aid kits, head protection, eye and face protection, hearing protection, foot protection, and personal floatation devices and life jackets.

[48] Provinces, territories and the federal government have agreed in principle to allow the use of wide-base single tires at weight parity with conventional dual tires on all major trade routes in Canada by the end of 2019.

[49] A new multi-jurisdictional registry access system (MRAS) is being developed that will enable streamlined registration and mutual recognition for multi-jurisdictional businesses. The system is expected to be in operation by 2020.

[50] The opt out must be transparently listed on the CFTA's website.

province would consider a certification from another province as deemed-compliant with its own.

VI. Conclusion

While there is evidence of improvements in regional integration, significant trade barriers remain. The average non-geographical trade barrier in our measure is about 20 percent, ranging from 7 percent for textiles, petroleum and chemicals to over 27 percent for heavier metals, food products and other manufacturing goods. Alberta, British Columbia, and Ontario have the lowest non-geographic barriers. In contrast, Manitoba, Prince Edward Island, Nova Scotia, Yukon, and Newfoundland and Labrador have the highest non-geographic barriers.

Reducing the cost of internal trade barriers can benefit the whole economy. Our results suggest that removing non-geographic trade barriers would increase trade volumes to a level similar to international trade volumes. Real GDP per capita would increase by 4 percent nationally if trade in goods was fully liberalized. Workers would respond to productivity gains and migrate out of provinces where gains are below average (British Columbia, Alberta, and Ontario) to other regions, especially Atlantic provinces where employment would increase by 6 percent. Reducing barriers in the finance, business and insurance sectors would most benefit the economy, as they are highly interconnected with other parts of the economy, reinforcing the value of efforts to unify securities regulations across provinces and enhance labor mobility.

With much at stake, federal, provincial and territorial governments should make reducing internal trade barriers their common priority. Internal trade barriers are a longstanding issue and nothing short of a sustained and concerted collective effort will be necessary to break down barriers that are impeding Canadian businesses from competing on a level playing field and scaling-up. Easier access to the entire Canadian market could also attract more investment to Canada. A “coalition of the willing” could be one way to accelerate progress.

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APPENDIX I. DATA DESCRIPTION

The sample include all Canadian provinces and territories, the United States and the rest of the world (ROW). All variables are classified into 18 sectors, 9 goods sectors and 9 service sectors, to match different sources of data for trade, production, expenditure in Canada, the U.S. and the ROW. The data sources used are as follows:

- **Trade data.** Bilateral interprovincial trade data during 1992-1996 come from Statistics Canada, table 12-10-0085-01, which was replaced by table 12-10-0086-01 and table 12-10-0088-01 for data between 1997-2006 and 2007-2015. Aggregated international trade data are also obtained from these three tables. The product categories are based on the Supply and Use Product Classification from Statistics Canada. Data on merchandise trade between US and Canadian provinces come from Statistics Canada, table 12-10-0099-01, which records commodity flow based on Harmonized Commodity Description and Coding System (HS). Service trade data between US and Canadian provinces are provided by Statistics Canada. Trade between provinces and the ROW are derived by subtracting US trade flow from the total international trade flow. Data on trade between US and ROW are obtained from USA Trade Online, where US trade flows are reported based on the same HS categories.

- **Production.** Provincial production is taken from Statistics Canada, table 12-10-0086-01, table 12-10-0088-01 and 12-10-0085-01. US and ROW production data is derived from Eora's world input-output tables. Eora provides a harmonized 26-sector classification derived from different national account categories used all over the world.

- **Expenditure.** Provincial expenditure data is based on the same tables from Statistics Canada that provided production and interprovincial trade data. US and ROW's expenditure was calculated by adding international imports and subtracting international exports from the gross output.

- **Distance data** is calculated based on population-weighted centroids by province, U.S. and the ROW separately. Specifically, we use the spatial distribution of global population from the Global Rural-Urban Mapping Project (Version 1) Settlement Points data for the year 2000. This data is produced by the Center for International Earth Science Information Network at Columbia University, CUNY Institute for Demographic Research, IFPRI, the World Bank, and CIAT. We aggregate using the population data, and determine the population-weighted longitude and latitude coordinate for each Canadian province and territory, the U.S., and the ROW. We then calculate the orthodromic distance between these points. This measure of distance does not reflect the differences in transportation costs per kilometer inherent in certain trade pairs within Canada. For example, trade with territories is costlier per kilometer than trade between provinces, and trading across the Rocky Mountains is more costly than across the Prairies.

- Sectoral classifications from different datasets are reclassified into the following categories:

Industry	Supply and Use Product Codes (2007-2015)	HS Code	Eora Sector	NAICS Code
Agricultural products, fishing, forestry	M111B, M112A, M11D0, M11E0, M1140, M1150	01-15	Agriculture, Fishing	11
Food, beverage, tobacco	M31C0, M312A	16-24	Food & Beverages	311FT
Mining	M21B0, M2122, M2123, M2130, M21A0	25-27	Mining and Quarrying	21
Textile, apparel, leather products	M31D0	41-43, 50-67	Textiles and Wearing Apparel	313TT, 315AL
Wood and Paper, printing	M3210, M3220, M3230, M51E0	44-49	Wood and Paper	321, 322, 323, 511
Petroleum, Chemical and Non-Metallic Mineral Products, rubber plastics	M3240, M3250, M3260, M3270	28-40, 68-71	Petroleum, Chemical and Non-Metallic Mineral Products	324-327
Metals and metal Products	M3310, M3320	72-76, 78-83	Metal Products, Recycling	331, 332
Electrical and Machinery	M3330, M334C, M3350	84-85, 90-91, 93	Electrical and Machinery	333-335
Transport Equipment	M336A, M3363,	86-89	Transport Equipment	3361MV, 3364OT
Other Manufacturing including furniture	M3370, M3B00,	92, 94-99	Other Manufacturing	337, 339
Utilities	M2200		Electricity, Gas and Water	22
Construction	M23A0, M23B0, M23C0, M23D0		Construction	23
Wholesale and retail trade	M4100, M4A00, F3000		Maintenance and Repair, Wholesale Trade, Retail Trade	42, 44T
Hotels and Restraurants	M7200		Hotels and Restraurants	721
Transportation and warehousing	M4B00		Transport	48TW
Post and Telecommunications	M5170		Post and Telecommunications	513
Finacial Intermediation, RE, insurance, computer, R&D, and other Business Activities	M51D0, M52C0, M5F00, M53D0, M53C0, M541E, M5E00, M5417, M5G00		Finacial Intermediation and Business Activities	514, FIRE, PROF
Government services	M9B00, G6100, G6200, G9110, G9120, G9130, G9140		Public Administration	G
Education, Health and Other Services incl Recreational, cultural and sporting activities	M6100, M6200, M7100, M8100, M9A00, F1000, F2000, N0000, P1000		Education, Health and Other Services, Private Households, Others	512, 6, 7, 81

APPENDIX II. ROBUSTNESS OF THE RESULTS TO ALTERNATIVE ELASTICITIES

Our measure of trade costs, and the gains from their reduction, depends on how sensitive trade flows are to trade costs. This trade-cost elasticity of trade flows is summarized in the model by the parameter θ^j. In our baseline results, we adopt the elasticities estimated by Caliendo and Parro (2015), although a range of alternative estimates exist. For example, Bemrose et al. (2017) estimate an aggregate elasticity across all goods sectors of $\theta = 6.4$. To ensure our main results are not biased by the elasticity values we use, we report here our main results under a range of alternative values from $\theta = 4$ to $\theta = 8$ (Table 1).

Our baseline results are conservative and not biased upward on account of the specific elasticity values we use. We find that lower elasticities result in larger gains from trade liberalization – which is a well-known property of this class of models. If goods-sector elasticities are a uniform $\theta = 8$, which is at the high-end of the generally accepted range in the literature, aggregate welfare gains from lowering internal trade costs are 3.2 percent. Our baseline results suggest gains of 3.8 percent. For a lower elasticity of $\theta = 4$, aggregate gains exceed 7.3 percent.

Table 1. Gains from Eliminating Non-Geographic Internal Barriers for Goods, 2015

	Real GDP Per Capita (percentage change)			Employment (percentage change)		
Region	$\theta = 4$	$\theta = 6.5$	$\theta = 8$	$\theta = 4$	$\theta = 6.5$	$\theta = 8$
AB	6.0	3.8	2.8	-2.1	-1.3	-0.8
BC	6.0	3.8	2.7	-2.1	-1.4	-0.9
MB	13.0	8.3	5.9	7.7	5.3	3.8
NB	10.9	6.9	4.9	4.7	3.2	2.3
NL	20.7	13.2	9.0	19.0	12.4	8.3
NS	10.8	6.8	4.7	4.6	3.1	1.9
NT & NU	12.7	8.1	5.6	7.4	4.9	3.3
ON	5.9	3.6	2.6	-2.3	-1.6	-1.1
PE	27.4	17.8	12.2	29.0	19.3	13.2
QC	8.9	5.6	3.9	1.9	1.3	0.8
SK	9.8	6.2	4.3	3.2	2.1	1.4
YT	13.0	8.2	5.8	7.8	5.1	3.6
Canada	7.3	4.6	3.2	-	-	-

Source: Staff calculations