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Partners in Prosperity

Exploring the Significance of Canada-U.S. Trade

October 2024

MESSAGE FROM THE CHIEF ECONOMIST

While the United States is widely recognized as Canada's main trading partner, Canada's economic importance to the U.S. is often overlooked south of the border. That's one reason this new report — which is being released at a critical time for this bilateral relationship — written by one of Canada's top academic economists, Trevor Tombe, will make a valuable contribution to public understanding and trade policy discussions on both sides of the border.

Tombe's research provides a comprehensive look into the massive, deeply interconnected, and mutually beneficial Canada-U.S. economic relationship. His work reveals many fundamentally important points, such as, how we make things together and invest in each other for shared prosperity. Here are a few of the paper's key takeaways:

1. In this time of growing global uncertainty and protectionism, **Canada is a critical and reliable supply chain partner for U.S. companies and consumers.**

2. Canada-U.S. trade overwhelmingly involves intermediate inputs. In practical terms, this means that a significant share of Canadian exports to the U.S. are actually inputs for U.S. exports. As such, **maintaining efficient cross-border supply chains ultimately makes both countries more competitive at home and abroad, benefitting workers and businesses, and increasing economic resilience to global shocks.**

3. Tombe's analysis reveals **the high degree of integration between businesses that involve complex cross-border operations** and production processes. He finds that roughly half of all two-way merchandise trade between Canada and the U.S. involves firms exporting to "related parties" in which they have an ownership stake.

4 Adding further nuance, **a significant share of Canadian exports to the U.S. come from U.S. companies**. Roughly 12% of the total value of Canadian exports to the U.S. consists of value added that originates from U.S. producers. This means that Canadian exports to the U.S. also indirectly generate income and wages for other U.S. businesses and workers, far beyond those specific transactions.

5 **Canada is an important export market for U.S. businesses**, and is the top export destination for 34 U.S. states.

6 **Canadians invest billions more in the U.S. than Americans invest in Canada**. The book value of Canadian direct investment in the U.S. is nearly $1.1 trillion versus the $620 billion of direct U.S. investment in Canada.

7 Tombe carefully models the potential impact of **a 10% tariff on U.S. imports** — as recently proposed in former President Donald Trump's reelection campaign. He finds that such a tariff **would have a large and negative impact, not only for Canada's economy** (reducing real income by 0.9% and labour productivity by nearly 1%), **but also for the U.S. economy** (decreasing incomes by 0.6% and labour productivity by 0.5%). Trade in energy and autos would be the disrupted most product categories.

8 **Things would be even worse if other countries retaliated to the U.S. tariffs** with tariff walls of their own. In that case, Canadian incomes would fall by 1.5% and productivity by 1.6%. For the U.S., the declines would be nearly 1%. This means that, **if enacted, Trump's tariffs and an ensuing trade war would result in roughly $800 USD ($1,100 CAD) in foregone income annually for people on both sides of the border!**

In an increasingly complex global trade environment, Tombe's research makes a compelling case that we must continue to nurture this vital relationship. It shows how Canada-U.S. economic collaboration benefits both countries, and it brings a stark warning about the serious economic consequences that would come from enacting protectionist policies.

With continued partnership, and by rejecting protectionism, Canada and the U.S. can ensure their shared economic security and prosperity well beyond the upcoming election.

Stephen Tapp
Chief Economist, Canadian Chamber of Commerce

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His research explores a broad set of topics, including, international trade, public finances, and fiscal federalism. He has published in top economics journals, is co-author of the textbook Public Finance in Canada, co-author of a forthcoming textbook Macroeconomics, co-editor of the recent volume Fiscal Federalism in Canada, is co-director of Finances of the Nation, and a Public Policy Forum Fellow.

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1 INTRODUCTION

The global economy is increasingly uncertain, with some characterizing the current moment as one of "deglobalization." In fact, the volume of world trade in goods relative to global GDP has started to decrease and tariff wars between major economies continue. But others point to the rapid rise in services trade as more than compensating for the decline in goods trade.[1] Whatever the future holds, for small open economies like Canada there are few more important factors than trade in shaping our economy, productivity growth and our future prosperity. This global uncertainty should therefore matter to all Canadians.

In addition to global developments, Canada faces unique opportunities and risks from its deep integration with the United States. The two countries have enjoyed stable and peaceful relations for centuries — sharing similar cultures, legal systems, business environments, consumer tastes, technologies and more. And trade between Canada and the United States goes far beyond a simple story of specialization, where one partner focuses on producing one item while the other produces another. Instead, the two economies are intertwined in a complex web of supply chains across many sectors. Parts for a final good might be produced in one country, shipped to the other as an input for another product, and then shipped back across the border for further processing, and so on. This report provides a rich exploration of the size, composition and importance of the Canada-U.S. trading relationship in recent years. It also examines the potential implications of trade policy changes in the U.S., with the potential for an across-the-board 10% tax on imports proposed by some leading political figures there.

The importance of this trading relationship will come as no surprise to Canadians. Historically, Canada's trade has normally been highly dependent on a few key markets. In the decades following Confederation, for example, Canadian exports were evenly split between the United Kingdom and the United States, with each country accounting for between 40% to 50% of overall trade volumes. However, after the Second World War, the importance of trade with the U.K. began to decline, while trade with the U.S. grew dramatically. In 1945, the U.S. accounted for approximately 38% of Canadian exports, and the U.K. for about 30%.[2] By 1955, the United States' share had surged to 60%, while the United Kingdom's had dropped to only 18%. This trend continued, and by 1985 — just a few years before the signing of the Free Trade Agreement between Canada and the United States — the U.S. accounted for 79% of Canadian exports, with the U.K. barely exceeding 2%. These shares have remained relatively stable ever since. So, for the past several decades, Canada's economy has been tightly connected to that of the U.S.

While the importance of the United States as a trading partner for Canada is clear and widely known, the significance of Canada as a trading partner for the United States is often overlooked south of the border. Although it is true, as I will document in this report, that trade volumes with Canada as a share of U.S. GDP are considerably lower than those same volumes are for

[1] See, for example, Richard Baldwin, Rebecca Freeman, and Angelos Theodorakopoulos, 2024, "Deconstructing Deglobalization: The Future of Trade is in Intermediate Services," Asia Economic Policy Review 19(1): 18-37.

[2] Source: Author's calculations using the Historical Statistics of Canada, series G41-407, and Statistics Canada data table 12-10-0011-01.

Canada — largely due to the sheer size and scale of the U.S. economy — this perspective neglects several key facts that this report aims to highlight.

First, the composition of trade between Canada and the United States is overwhelmingly dominated by intermediate inputs and capital goods. Goods and services consumed by final consumers in the United States make up a relatively small share of the overall total. This means that Canada-U.S. trade has cascading effects throughout the U.S. economy, with Canada serving as a critical and reliable supplier of inputs. This is not just true for energy items like oil and gas but extends throughout the manufacturing sector as well. Moreover, there are several U.S. states where Canada-U.S. trade is not only essential to their supply chains but also to their economies overall, with such trade volumes accounting for a relatively large share of production and jobs. These rich interconnections are evident beyond the top-line numbers, as seen in the fact that a slight majority of overall trade between the two countries occurs between subsidiaries of the same larger enterprise or between related parties, where one firm has an ownership stake in the other located in the opposite country.

Large cross-border investment flows are also a significant consequence of this interconnectedness, with Canadians investing considerable amounts directly into the United States. In the latest data, as I will show, Canadians have invested well over $1 trillion in the United States — several hundred billion dollars more than Americans have invested in Canada.

But in current U.S. policy debates, few trade statistics receive as much attention as the trade balance between the U.S. and its trading partners. However, as many economists have pointed out, this statistic can be misleading (and potentially irrelevant economically), yet it continues to draw significant attention from leading political figures and commentators. This report closely examines the nature of the Canada-U.S. trade balance. Even if one is concerned about the existence of a trade deficit between the U.S. and one of its trading partners, the deficit that the U.S. has with Canada should not be misunderstood. As I demonstrate in this report, this imbalance is driven entirely by Canadian oil imports into the United States. Using U.S. data, I show that the U.S. maintains a large and stable trade surplus with Canada if oil is excluded. Trade balance data also often focuses solely on merchandise trade — that is, the trade in physical goods between two countries. This perspective ignores the fact that the U.S. exports a substantial number of services to Canada, at a volume much greater than the reverse. The U.S. maintains a significant trade surplus in services, which, while not as large as

the trade deficit in goods, further adds to the overall trade surplus that exists when oil is excluded from the equation.

In addition to direct trade flows, whether in goods or services, the economies of the United States and Canada are deeply interconnected in ways that are not immediately evident in raw data. Input-output linkages between sectors create indirect connections between the two countries' economies. Recent analysis by the OECD, reveals that a substantial portion of what the United States imports from Canada embodies value-added that was originally generated in the United States. For example, suppliers to U.S. exporters may provide parts that are shipped to Canadian firms for further assembly or production, which are then exported back to the United States.

Overall, about 12% of the value of U.S. imports from Canada consists of value-added originally by U.S. producers — a significant share. Additionally, imports from Canada facilitate and enhance the productivity and international competitiveness of U.S. producers. Canadian value-added embodied within U.S. exports has been substantial, exceeding $24 billion USD in 2019. This amount is larger than the value-added embodied in U.S. exports from any other country. This interconnectedness also impacts the overall trade balance. The amount of U.S. value-added embodied in imports from Canada is greater than the Canadian value-added embodied in U.S. exports back to Canada. As a result, the OECD finds that the trade deficit falls by nearly one-third when trade in value-added is considered.

Given the deep interconnections between the two economies, small changes in policy can have significant implications for both countries. In this report, I document research from recent historical episodes, focusing primarily on the Canada-U.S. Free Trade Agreement and its aftermath, as well as the 1971 "Nixon Shock," where the U.S. levied a temporary 10% surcharge on imports, including from Canada. Today, a similar 10% across-the-board surcharge on U.S. imports is again on the table. While all policies have pros and cons, a disruption to the critical trading relationship between Canada and the United States — such as the one a tariff like this would cause — would have substantial negative economic implications for both countries. Using a robust and popular model of international trade, I simulate the effects of this tariff, both with and without retaliation from other countries.

I find that such a policy significantly reduces the volume of trade between Canada and the U.S., particularly in critical sectors like energy products, motor vehicles, transport equipment, chemicals and others. Productivity would also take a hit, with Canada's productivity estimated to decline by nearly 1% because of the U.S. tariff, while U.S. productivity is projected to decline by roughly 0.5%. However, if other countries retaliate with similar measures, these costs would grow, leading to a 1.6% productivity loss for Canada and nearly a 1% productivity loss for the United States. These are substantial changes. In Canada, the aggregate effect is over $45 billion per year. This loss is also equivalent to just over $800 USD or $1,100 CAD in lost real annual income per person on both sides of the border. The details of the policy would matter for these results, to be clear, but this early look at the potential effect of such a tariff war demonstrates the critical contribution that the Canada-U.S. trading relationship makes to the strength of both economies.[3]

[3] For detailed work examining the economic effects of past tariff changes by both the administrations of President Trump and President Biden, see Erica York, 2024, "Tariff Tracker: Tracking the Economic Impact of the Trump-Biden Tariffs," Tax Foundation, available online at https://taxfoundation.org/research/all/federal/trump-tariffs-biden-tariffs/.

2 CANADA-U.S. TRADE PATTERNS

Our analysis begins with trade volumes and balances, breaking down the data by product categories and types of goods, including intermediate inputs, capital goods and final consumption goods. Additionally, this section explores the trade flows between specific provinces and states, offering insights into the regional dynamics behind this critical economic partnership. The analysis reveals the deep integration of both economies, characterized by balanced trade in many sectors, strong cross-border investment flows and substantial within-firm trade.

2.1 TRADE FLOWS AND BALANCES

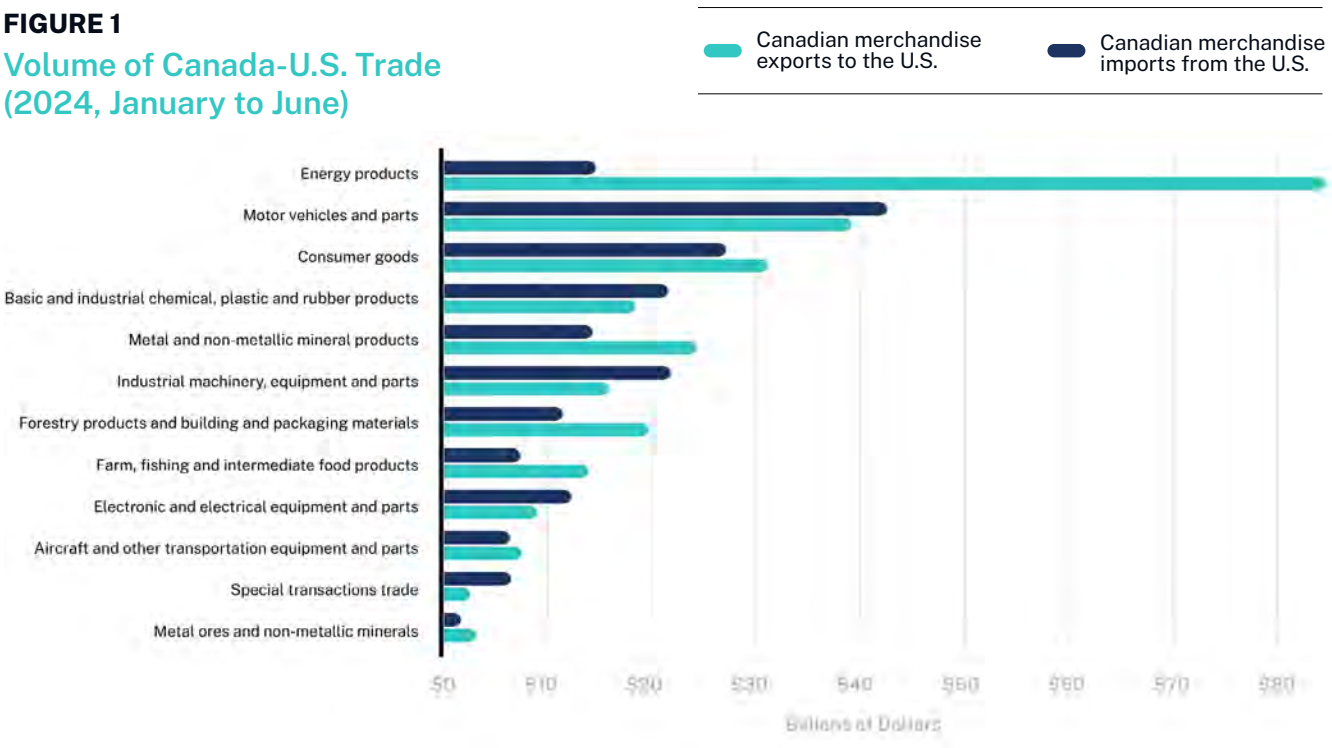
The total volume of international trade between Canada and the United States can be illustrated and broken down in several ways, each shedding light on different aspects of this critical economic relationship.

But first, a note on how trade flows are measured and recorded by statistical agencies is necessary. Data on international trade between Canada and other countries is normally reported in one of two forms. First, there is the customs basis for measuring the value of imports and exports. This method tracks the physical movement of goods that cross a border. Between Canada and the U.S., this data is compiled by the respective border services agencies. An alternative measure of international trade is the balance of payments method. This approach accounts for the change in ownership of items between residents of one country and another, rather than tracking the physical movement of those items across the border. In most of what follows, I use the customs basis unless otherwise noted.

With that caveat in hand, we can begin with the data on trade volumes between Canada and the United States for major product categories. *Figure 1* displays the total value of exports and imports by categories, using the latest data for the first half of 2024. There are several notable patterns. Energy products are by far the largest item exported from Canada to the United States, approaching $85 billion in the first half of 2024 or nearly $170 billion on an annualized basis. The second most significant export is motor vehicles and parts, which accounted for nearly $40 billion in exports over that same period. These two product categories also illustrate an important feature of Canada-U.S. trade.

FIGURE 1

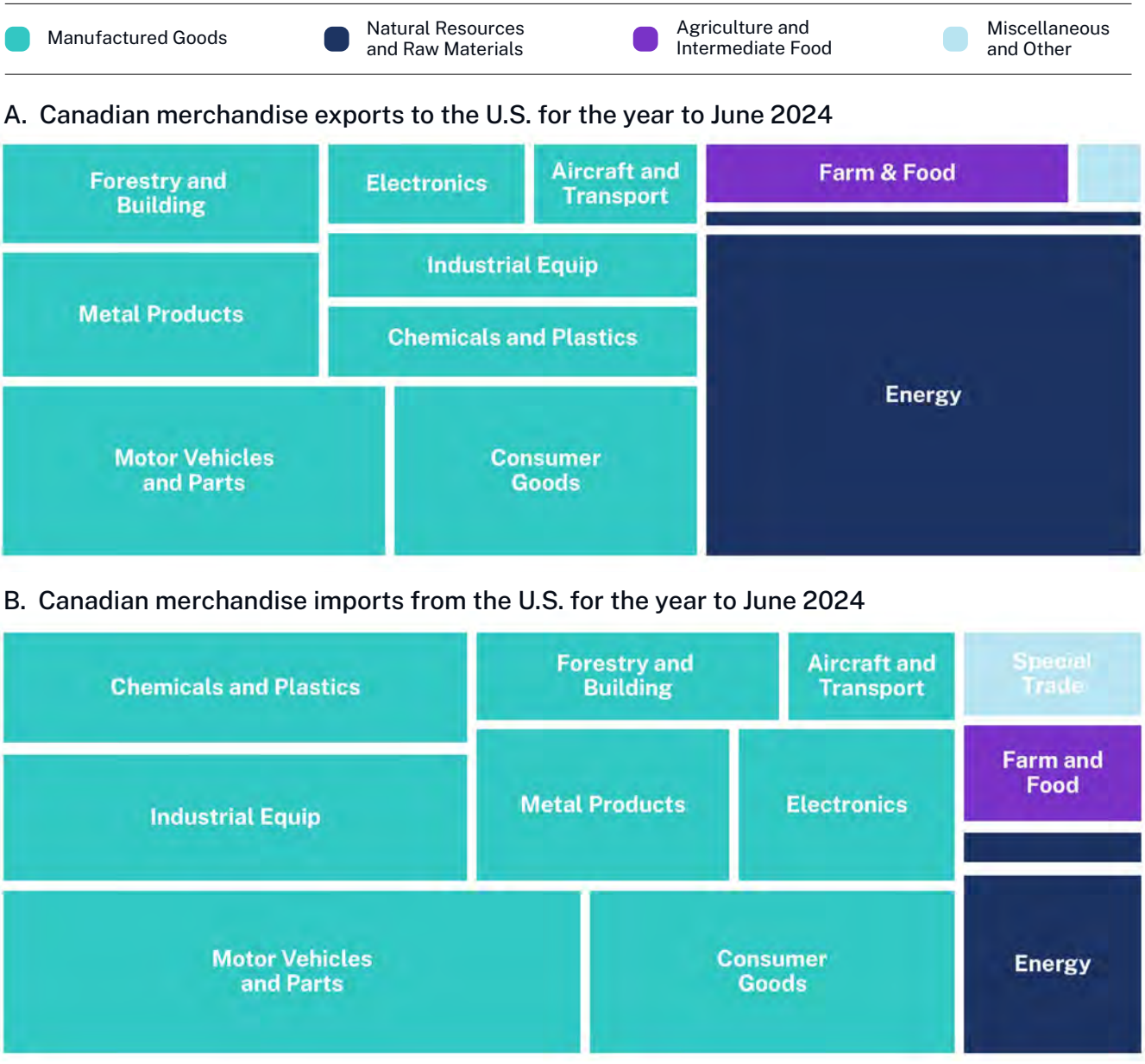
Volume of Canada-U.S. Trade (2024, January to June)



Note: Displays the total value of trade between Canada and the United States by broad product category.
Source: Author's calculations from Statistics Canada data table 12-10-0175-01.

FIGURE 2

Composition of Canada-U.S. Trade



Note: Displays the composition of Canada-U.S. trade flows for the first half of 2024.
Source: Author's calculations from Statistics Canada data table 12-10-0175-01.

While energy product flows are predominantly from Canada to the United States, trade in motor vehicles and parts is largely balanced, with export and import values being roughly equivalent. Indeed, for most manufactured products — such as chemicals, plastics, rubber, industrial machinery, equipment and parts, electronics and electrical equipment — trade is largely balanced between the two countries. The largest imbalances are in energy products and metal and non-metallic mineral products. This is due to Canada's considerable comparative advantage in the production of these raw materials, as it is endowed with many natural resource deposits.

The roughly balanced trade in most manufactured goods illustrates that the gains from trade, which I will discuss further in this report, come not from specializing in one type of product or another but from deepening the interconnections along long and international supply chains between the two countries to take advantage of economies of scale.

To simplify matters and clarify the nature of trade between Canada and the United States, I next classify products into four broad categories. First, we have natural resources and raw materials, dominated by exports of energy items like oil and gas. The magnitude of these exports for the first half of 2024 is illustrated in *Figure 2*. Second, manufactured goods consist of a wide variety of items. Many Canadian exports to the United States fall into this category, including machinery and equipment, electrical equipment, vehicles and transportation equipment, chemicals, base metals, plastics, rubber and more. Together with natural resources and raw materials, these two broad categories account for most Canadian exports to the United States. On the import side, Canada's trade with the United States is overwhelmingly dominated by manufactured goods. Within this category, it is evident from the figure that the composition of imports is broadly diversified across a wide range of specific types of manufactured goods. However, motor vehicles and parts are clearly the largest subset, just as they are for exports.

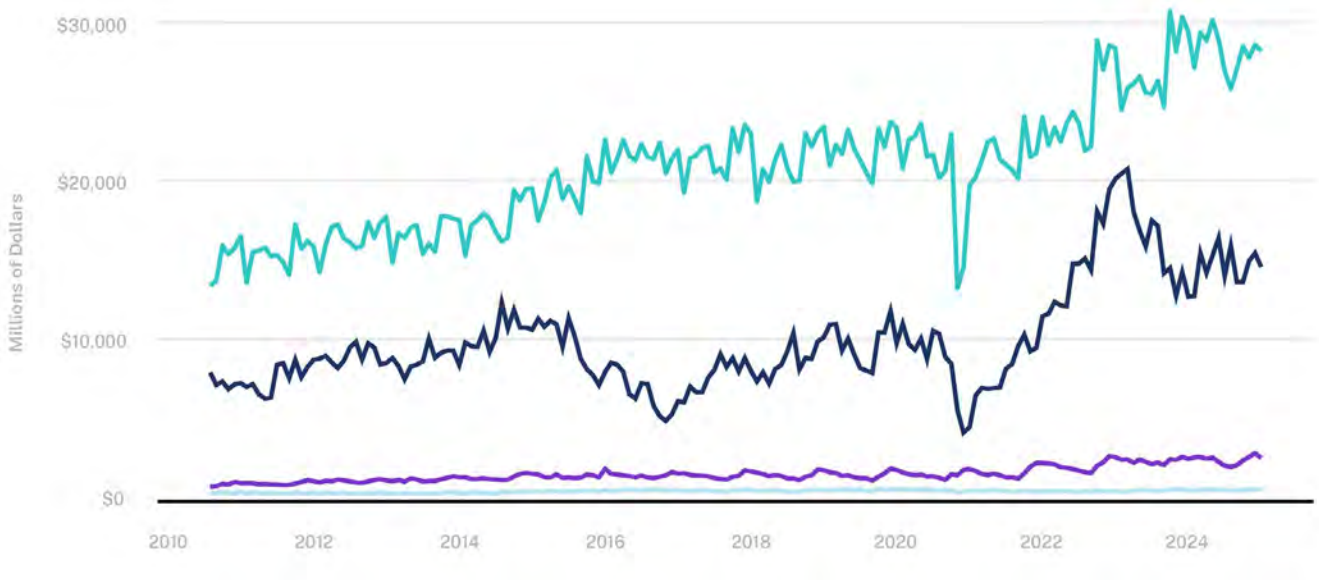
These patterns have remained broadly consistent over time. *Figure 3* illustrates the total value of the four major product categories between 2010 and the latest data in June 2024. Exports of manufactured goods from Canada to the United States gradually increased between 2010 and 2016, stabilizing at over $20 billion per month thereafter. However, these exports have risen markedly since Canada's recovery from the COVID-19 pandemic. As of today, aggregate exports of manufactured goods are nearly $30 billion per month on a seasonally adjusted basis. Natural resource and raw material exports to the United States have followed a different pattern, rising considerably after the pandemic while maintaining a roughly flat trend in the years previously, albeit one with a high degree of volatility. This volatility is due to fluctuations in global commodity prices, which can have dramatic effects on the value of these exported items. The pattern of imports by Canada from U.S. producers and exporters is also relatively consistent over time, with manufactured goods overwhelmingly dominant.

FIGURE 3

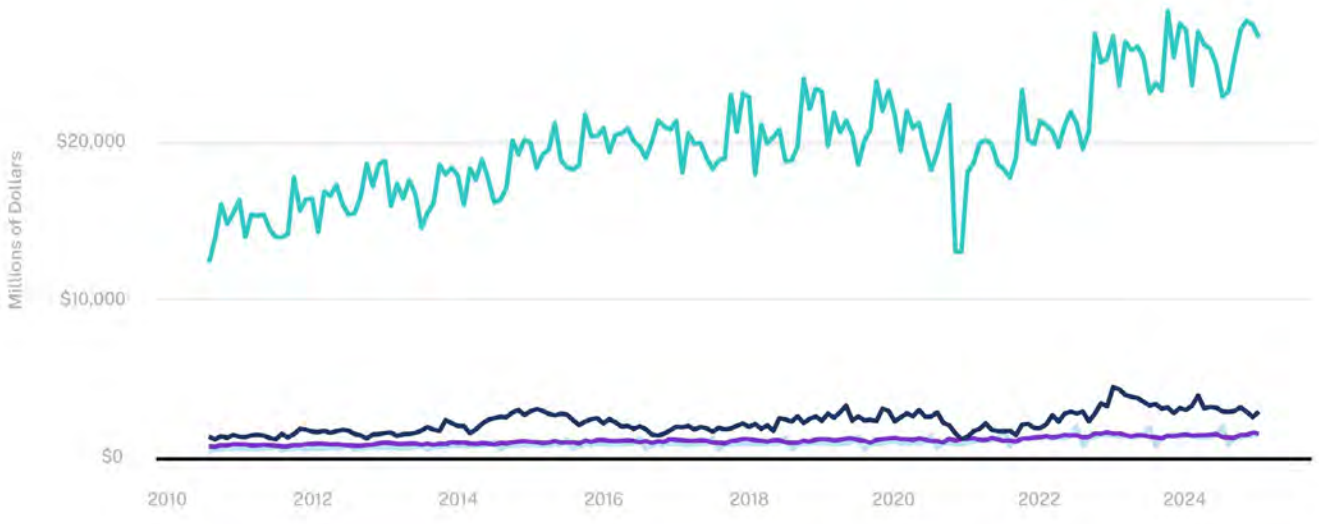
Canada-U.S. Trade Over Time, by Product Categories

Manufactured Goods | Natural Resources and Raw Materials | Agriculture and Intermediate Food | Miscellaneous and Other

A. Canadian merchandise exports to the U.S., January 2010-June 2024



B. Canadian merchandise imports from the U.S., January 2010-June 2024



Note: Displays the value of Canadian trade with the United States over time according to four broad product categories.
Source: Author's calculations from Statistics Canada data table 12-10-0099-01.

2.2 TRADE IN INTERMEDIATE INPUTS, CAPITAL GOODS AND FINAL CONSUMPTION GOODS

But what are these products used for by buyers? Economically, whether an item is purchased by final consumers or by businesses using it as an input into the production of another good or service is a critical distinction. For that reason, Statistics Canada uses an international classification system known as Broad Economic Categories (BEC) to distinguish whether an item is normally used for final consumption, as capital equipment, or as an intermediate input used by producers to make another product.[4]

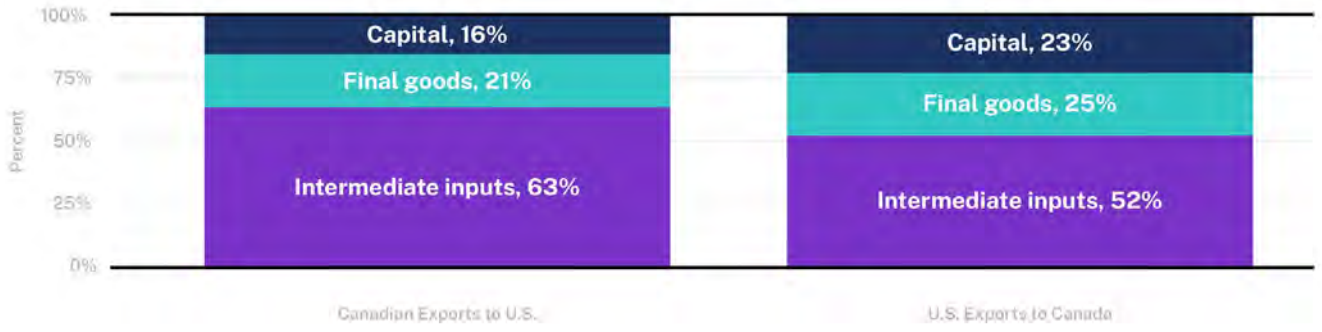
Figure 4 displays the composition of Canadian exports to the United States across these three broad categories, along with U.S. exports to Canada, using the latest available information for 2023. The results are striking. Over 63% of Canadian exports to the United States were composed of intermediate inputs, and nearly 16% were classified as capital goods. This leaves only 21% — or roughly $1 in every $5 — of Canadian exports to the U.S. being used as final consumption goods by American buyers. This indicates that Canadian exports are disproportionately used by U.S. businesses as inputs to produce other goods. This significantly enhances the competitiveness of U.S. producers, as they can secure high-quality inputs at competitive prices, which boosts their productivity and international competitiveness.

The same dynamic is true in the other direction, though to a slightly lesser extent. U.S. exports to Canada are composed of approximately 50% "to" 52% intermediate inputs and 23% capital goods, leaving 25% for final consumption.

Understanding Canada as a critical, safe and secure supplier of inputs to U.S. businesses is key to grasping the trading relationship between the two countries. A tariff levied on items purchased by final consumers will naturally have a negative impact on their well-being, as their income will no longer stretch as far due to the higher cost of those items. However, tariffs on business intermediate inputs or capital goods will have an even broader effect by making the production of other goods and services throughout the U.S. economy more expensive than it otherwise would be. As such inputs are used to produce other inputs that are then used to produce additional inputs, these costs can cascade and magnify in size. This not only leads to higher prices but also to lower productivity, as firms adjust their input purchases away from what might have been optimal for them before the tariffs were imposed. The importance of these intersectoral connections will be a key feature of the model-based simulations discussed later in this report.

FIGURE 4

Broad Economic Categories of Canada-U.S. Trade (2023)

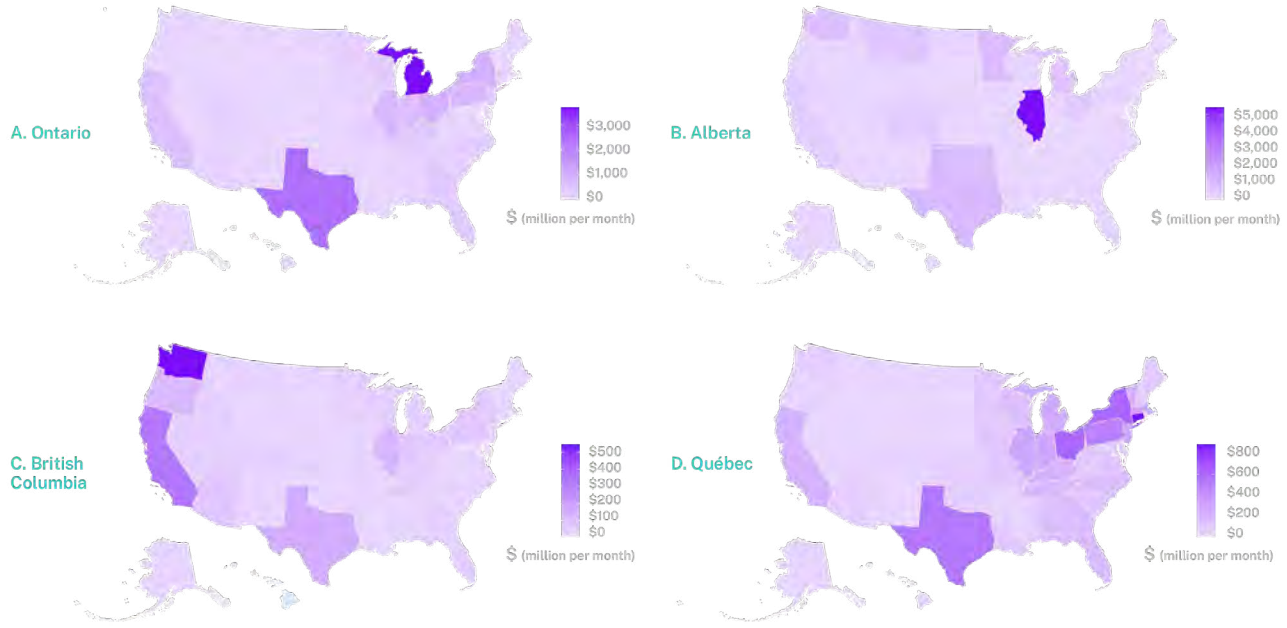


Note: Displays the composition of Canada-U.S. trade flows in 2023 based on the Broad Economic Categories classification system. This classifies items by their eventual end use. Intermediate inputs and capital items are used by businesses in the production of yet other goods and services. Final goods are consumed.
Source: Author's calculations from Statistics Canada data table 12-10-0143-01.

[4] There are other categories beyond these three, but I focus only on those here.

FIGURE 5

Selected Provincial Domestic Exports to Individual U.S. States (June 2024)



Note: Displays the distribution of export flows from selected provinces to each U.S. state.
Source: Author's calculations from Statistics Canada data table 12-10-0099-01.

2.3 TRADE FLOWS BETWEEN SPECIFIC PROVINCES AND STATES

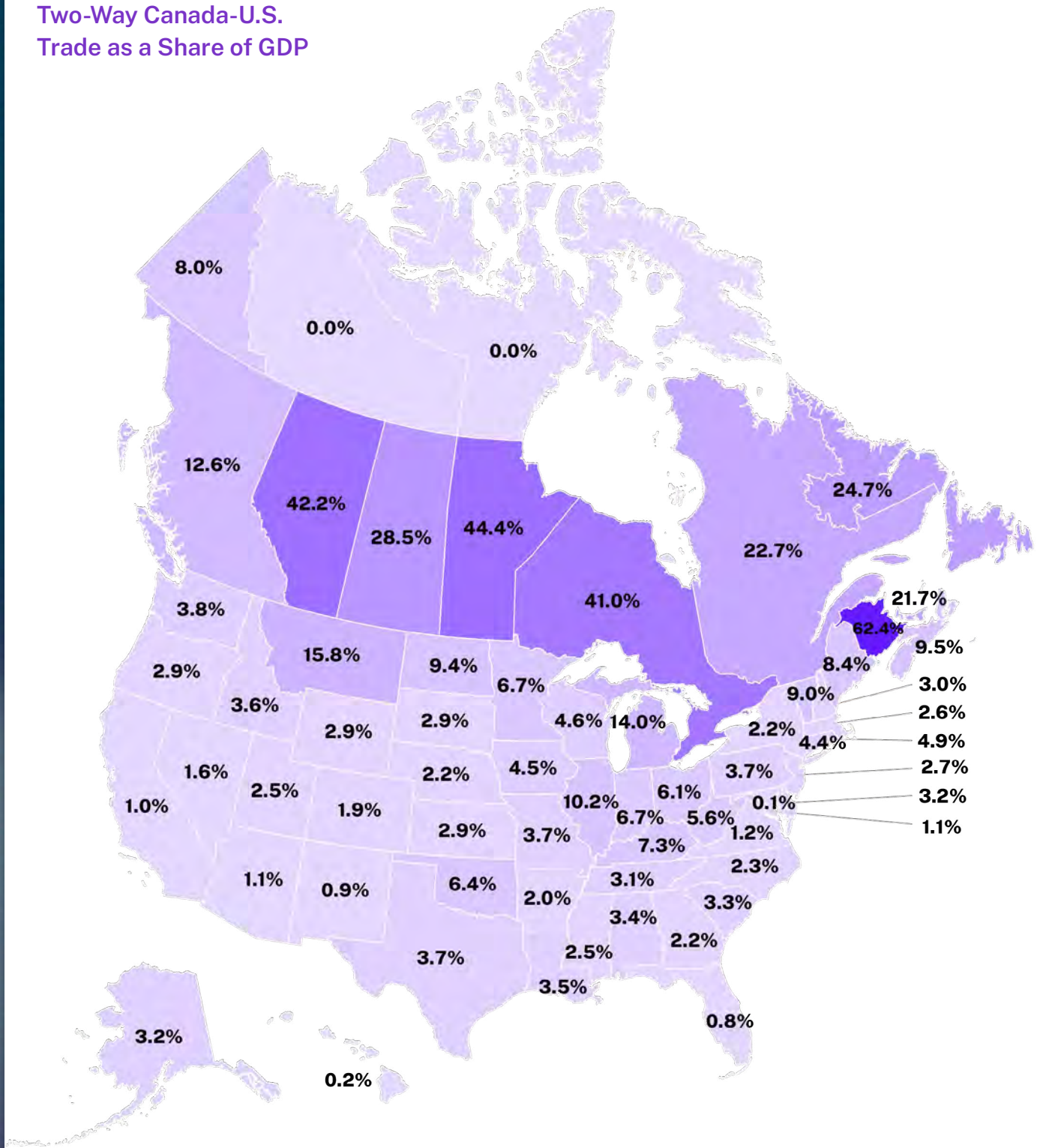
The economies of both Canada and the United States are highly diverse across different parts of each country. It's therefore worth exploring the trade connections between provinces and states individually, and not just the aggregate flows between the two countries. Data from Statistics Canada provides a detailed mapping of trade flows — both exports and imports — for each of Canada's provinces and territories with each U.S. state. To illustrate some of the relevant patterns, *Figure 5* highlights selected provinces and the value of their latest exports to various states.

Ontario's top export destinations are Michigan and several other Midwestern states, reflecting the deeply integrated supply chains in the manufacturing sector, particularly in transport equipment manufacturing. British Columbia's top exports are to Washington State and other West Coast states, a pattern that aligns with the gravity model of trade, where proximity plays a significant role. Québec, with its substantial manufacturing activities, primarily exports to the Midwest and the northeastern region of the United States. Alberta presents a different picture, with Illinois as its top export destination. This is largely due to the energy infrastructure that directs Alberta's top export items — oil and gas — to U.S. markets, where they are processed and refined, mainly in Illinois.[5]

[5] The pattern of imports from U.S. states into Canadian provinces follows a similar geographic logic, although I have not detailed it explicitly here.

FIGURE 6

Two-Way Canada-U.S. Trade as a Share of GDP



Note: Displays the total value of two-way trade in June 2024, on an annualized basis, as a share of each province, territory, and state's latest GDP for 2023. Provincial GDP for that year is inferred from the latest RBC Outlook. Territorial GDP is inferred using their 2022 values and the national average NGDP growth rate forecast by RBC.
Source: Author's calculations from Statistics Canada data table 12-10-0099-01.

Understanding these trade flows is important because trade is often thought of as occurring between countries. However, this perspective can be misleading, especially for countries with vast geographies and diverse economic regions like Canada and the United States. Recognizing the regional nature of trade also helps in understanding how economic shocks in one location may propagate to economies in another country. Different parts of the United States can experience economic booms while others face relative decline, and the same is true in Canada.

Economic shocks in different regions or sectors will have varied implications for different parts of Canada. This is particularly evident when comparing Alberta's commodity-focused trade with Ontario's manufacturing base, but the diversity extends beyond this comparison. It also reveals which parts of each country may be more exposed to policy changes that make trade more costly. That exposure is also shaped by the size of trade flows relative to a province's or state's economy, which varies considerably.

Given Canada's relatively smaller economy, the proportion of overall economic activity accounted for by trade with the United States is much greater than the importance of trade with Canada for many U.S. states. *Figure 6* displays the value of two-way trade relative to the most recently available statistics on the GDP of each province, state and territory. For instance, in Ontario, the volume of trade with the United States, based on the most recent data from Statistics Canada, represents 41% of the province's overall economy. In New Brunswick, the value of two-way trade — which includes both imports and exports — accounts for nearly two-thirds of its economy. While the U.S. economy is larger and generally less reliant on international trade flows than Canada, there are many U.S. states where the volume of trade with Canada constitutes a considerable share of overall economic activity. In Michigan, for example, trade with Canada is valued at 14% of the state's economy. Even in Texas, trade with Canada accounts for 3.7% of its economy, while in Illinois it's 10.2%, Ohio it's 6.1%, and Wisconsin it's 6.7%.

2.4 U.S. TRADE DATA

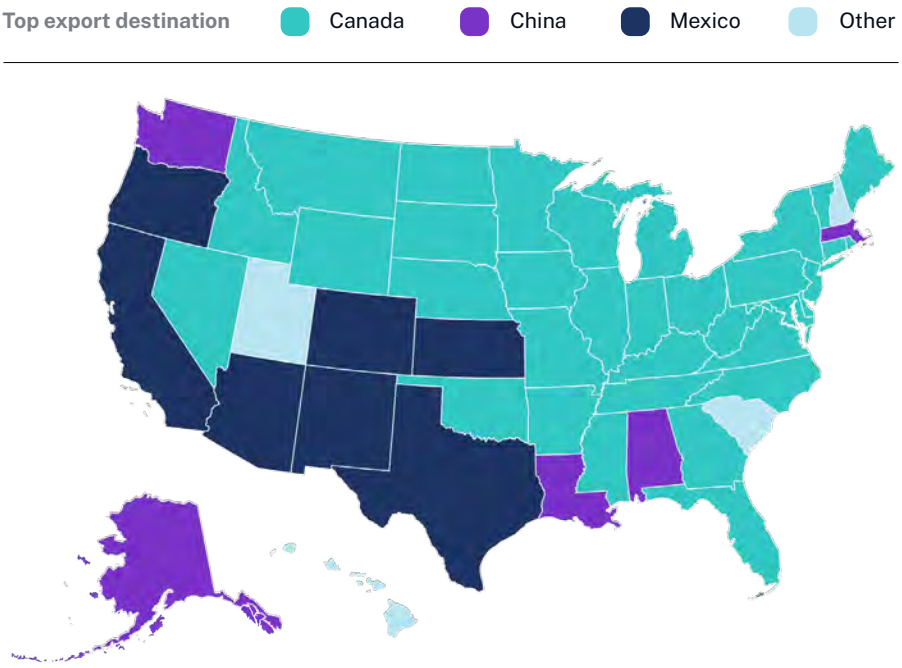
The preceding data was reported from Canadian sources. But data from the U.S. also provide critical insight into the Canada-U.S. trading relationship that is not available from Canadian sources. Using data from the U.S. Census Bureau, *Figure 7* plots the top trading partners of each U.S. state. Panel A displays exports, showing that Canada is the top export destination for 34 states. Mexico is the top export destination for seven states and China for five states, while three states have top exports to other countries.

Canada's status as the leading trade partner for most U.S. states is a critical pattern. For many of these states, the difference between the top export destination (Canada) and the second largest export destination is significant. For example, in the first half of 2024, Michigan exported nearly $13 billion USD to Canada, compared to approximately $8.5 billion to Mexico, its second largest export destination. Similarly, Illinois exported close to $11 billion to Canada during the same period, while exports to Mexico totalled only $6.6 billion. Indiana exported nearly $8 billion to Canada, roughly double what it exported to Mexico. Overall, among the 17 states where Canada is the top export destination and Mexico is the second, exports to Canada were approximately 80% higher than those to Mexico. This highlights that Canada is not just the top export destination for most U.S. states, but the gap between Canada and other countries is substantial.

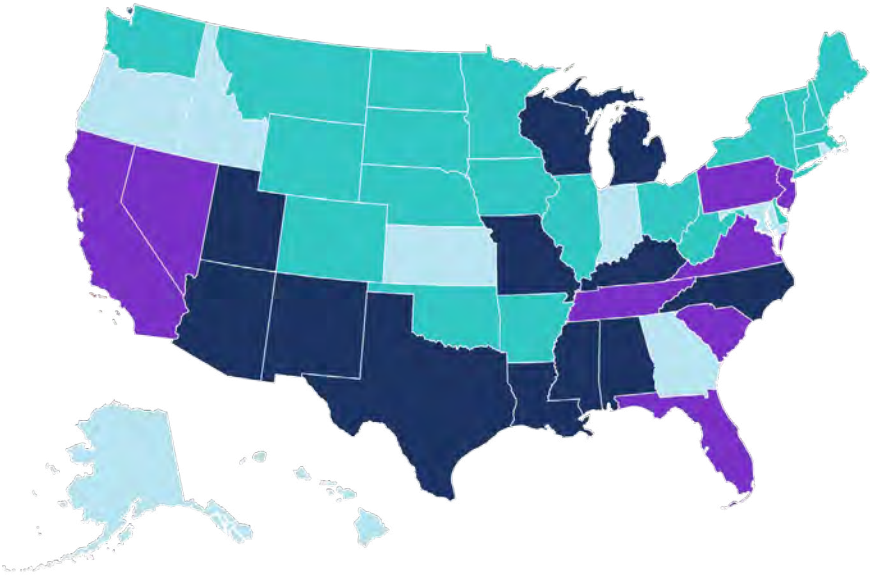
FIGURE 7

Top Trade Partners for U.S. States

A. U.S. Exports



B. U.S. Imports



Note: Displays the top trading partner for each U.S. state.
Source: Author's calculations from the U.S Census Bureau.

This can be explained not only by Canada being a safe and reliable trade partner for the United States but also by our close physical proximity, particularly to the northern and eastern population centres of the United States. Mexico is the top trade partner for seven states, mainly along the southern U.S. border. This is again explained by Mexico's close physical proximity to these states. This mirrors a general pattern observed in international trade, where two factors primarily explain trade relationships: the size of the economies and the distance between them. This is often referred to as the "gravity model" of international trade, analogous to the force of gravity between two bodies, which depends on their respective mass and inversely on their distance.

Canada is also an important trading partner for many U.S. states on the import side. Panel B of *Figure 7* displays the top import partner for each U.S. state, though the pattern here is quite different. Mexico is the top import partner for a dozen states, while China holds that position for nine. Canada remains a top trading partner for over 20 states.

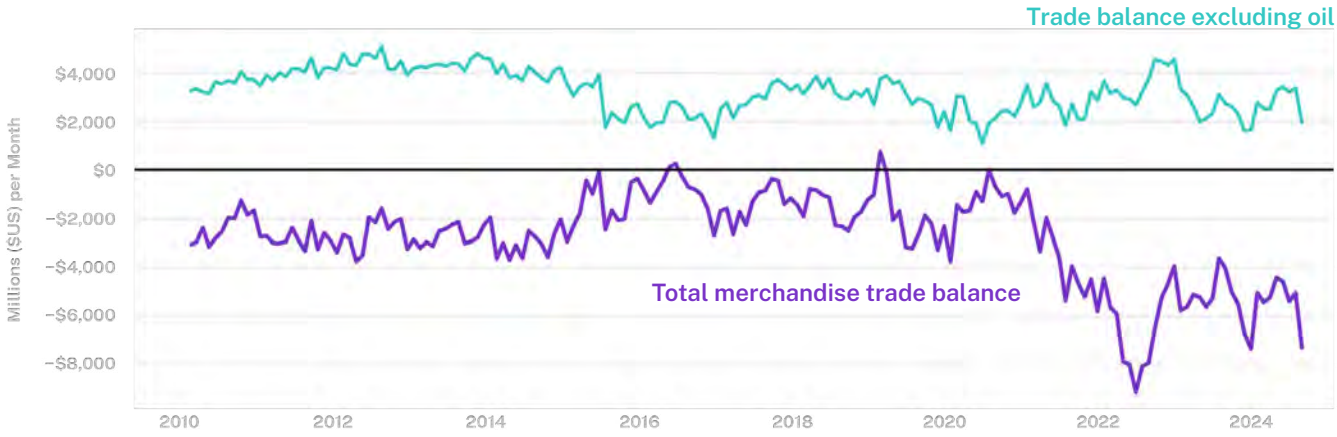
There are gains from trade in both directions. On the export side, these gains come in the form of higher revenues for exporters, as they can often achieve better prices abroad, such as in Canada, than in their home market. On the import side, trade provides consumers with lower-cost access to goods produced elsewhere. However, the trade relationship between Canada and the United States is less about one country specializing in certain products and exporting them while importing others. Instead, it's characterized by a high volume of trade in similar sectors on both sides of the border. For instance, vehicles, transportation equipment and machinery are heavily traded between the two economies, often in the form of intermediate inputs used by producers in both countries to manufacture other goods. Therefore, imports from Canada greatly facilitate exports by U.S. producers.

As mentioned in the introduction, many policymakers in the United States, including recent presidents, have focused heavily on the balance of trade between the U.S. and its trading partners. As mentioned earlier in this report, the value of raw material exports from Canada to the U.S. is considerably larger than the value of similar products exported from the U.S. to Canada. U.S. data on the overall trade balance between Canada and the United States consistently shows a significant trade deficit from the U.S. perspective.

To illustrate this, *Figure 8* uses data from the U.S. Census Bureau, adjusted for seasonality. In recent years, this deficit has grown considerably, from an average of around $2 billion USD per month to approximately $5 billion per month. However, this increase is largely driven by the rising value of oil exports from Canada to the United States. As oil prices increase, the total value of imports from Canada naturally rises as well. The U.S. Census Bureau also reports the value of trade by individual product. When excluding the value of fuel and oil trade from the overall trade balance, the U.S. maintains a consistent and relatively stable trade

FIGURE 8

U.S. Trade Balance with Canada, With and Without Oil



Note: Displays the balance of trade with and without fuels and oils (two-digit HS code 27).
Source: Author's calculations from the U.S. Census Bureau. Seasonally adjusted monthly data.

surplus with Canada. Over the past decade and a half, this surplus has varied between $2 billion and $4 billion USD per month, with no significant changes in recent years.

This context highlights Canada's role as a safe, secure and reliable supplier — not just of intermediate inputs and materials across various sectors of the U.S. economy, but also of critical energy supplies, particularly oil and gas. This should be viewed as a positive aspect of the trading relationship between the two countries. While there are strong reasons for policymakers not to focus too heavily on bilateral trade balances, the concern in the U.S. about this measure is misplaced. Even if one were to prioritize the trade balance, U.S. data clearly show that the trading relationship between the U.S. and Canada is characterized by trade surpluses when oil is excluded.

2.5 TRADE IN SERVICES

Most trade statistics focus on goods physically traded between countries, as these are easier to track due to the ability of border services agencies to monitor shipments. In contrast, trade in services is much harder to quantify, as it often does not involve a physical product crossing a border to a specific location. But given its rising importance in international trading relationships, statistical agencies are putting in more effort in estimating the size and nature of these flows.

Trade in services encompasses a wide range of economic transactions. Consider maintenance and repair services provided by residents of one country to those of another. This might involve an individual travelling for short-term work to service a facility in another country. Alternatively, and especially relevant for IT services, such work can be done remotely while the service provider remains in their own country. A more familiar example for most people is travel. When individuals visit another country, they purchase goods and services while there. This spending represents an export for the country supplying those goods and services and an import for the traveller's home country. Another form of service trade is transportation. When a firm moves people or goods from one country to another, and if the supplier is based in a different country, this transaction represents trade between the two nations. Financial and insurance services also constitute a significant part of international trade. Payments made for such services by residents of one country flow to suppliers in another. Another notable example, particularly relevant for the United States, is the trade in intellectual property. Payments for movies, music or other creative works purchased by residents of one country from an American artist, for example, fall into this category of service trade.

The list of services trades is long, but data are often not available with the same level of detail, either in terms of the countries or the services involved, or in terms of frequency as trade in goods. Canada and the U.S. produce data on services trade, typically on an annual basis. Canada does produce monthly-level information on trade in services, but this data does not distinguish between specific countries. Statistics Canada produces quarterly data on services trade between partner countries but does not disaggregate by type of services at that level. U.S. Bureau of Economic Analysis, however, does provide quarterly detail on international transactions between the two countries, so I use this data here.[6]

The latest data on U.S. international transactions with Canada, available through the first quarter of 2024, provides a detailed view of the trade relationship between the two countries. Table 1 displays data for the most recent five quarters. At the beginning of 2024, U.S. exports of goods to Canada exceeded $85.6 billion USD for that quarter. U.S. exports of services during the same period amounted to approximately $22.4 billion,

[6] These data are available online at https://www.bea.gov/itable/international-transactions-services-and-investment-position.

TABLE 1

International Transactions Between Canada and the United States (Millions of USD)

	2023				2024
	Q1	Q2	Q3	Q4	Q1
Exports of Goods and Services by the U.S. to Canada					
Goods	86,840	91,922	89,897	86,298	85,679
Services	21,508	21,960	20,811	21,701	22,399
Travel	6,046	5,739	5,186	4,907	5,657
Finance and insurance services	3,353	3,231	3,480	3,327	3,398
Charges for use of IP	1,713	2,075	1,883	2,024	1,605
Transport	2,145	1,976	1,903	1,996	2,139
ICT services	1,956	2,156	2,023	2,069	2,189
Other business services	5,209	5,656	5,212	6,106	6,207
All other services	1,086	1,127	1,124	1,272	1,204
Imports of Goods and Services by the U.S. from Canada					
Goods	105,511	107,450	106,309	108,017	103,056
Services	11,897	14,116	15,037	13,228	12,224
Travel	1,269	2,953	4,135	2,145	1,618
Finance and insurance services	1,631	1,621	1,692	1,421	1,352
Charges for use of IP	317	346	252	325	313
Transport	1,648	1,841	1,890	1,701	1,698
ICT services	3,095	3,219	3,051	3,082	3,003
Other business services	2,792	2,877	2,821	3,244	2,850
All other services	1,145	1,259	1,196	1,310	1,390

Note: Displays the value of goods and services trade between Canada and the United States, with selected detail for trade in services. Not seasonally adjusted. All values are in millions of USD per quarter. **Source:** U.S. Bureau of Economic Analysis, "Table 1.3. U.S. International Transactions, Expanded Detail by Area and Country" (accessed Sunday, August 25, 2024).

with the most significant category being business services, which accounted for $6.2 billion. This was closely followed by travel services, which totalled $5.7 billion. The U.S. finance and insurance sectors combined exported around $3.3 billion, while telecommunications, computer, and information service exports from the United States to Canada approached $2.2 billion. Payments for the use of intellectual property amounted to just over $1.6 billion that quarter.

On the import side, the United States imported just over $103 billion in goods from Canada during the first quarter of 2024 but imported only $12.2 billion in services. The most significant services supplied by Canadians to Americans were telecommunications, computer, information, and other business services, accounting for nearly $6 billion all together. Canadian exports of financial services to the U.S. were valued at $1.2 billion, transportation services at $1.7 billion, and travel services at $1.6 billion for that quarter. As a result, the U.S. maintains a substantial trade surplus in services with Canada, a point often overlooked in public discussions about the overall trade balance between the two countries. Throughout 2023, the total U.S. bilateral trade surplus in services with Canada approached $32 billion USD.

2.6 TRADE IN VALUE-ADDED

The importance of intermediate input trade and increasingly the trade in services means that much of the flows that occur between countries may be missed by looking just at data on what crosses the border. To better capture the complex interconnections between sectors and countries, analysis that estimates where value was added and where it was ultimately absorbed by final buyers is increasingly useful. Such "value-added flows" are tracked and reported regularly by the OECD, which makes this information available through a database known as the Trade in Value-Added (TiVA) database.[7]

These data can sometimes lead to counterintuitive results that are not broadly appreciated. For example, in 2019 — the last full year of data before the onset of the COVID-19 pandemic — the OECD found that imports to the United States from Canada amounted to approximately $319 billion USD. However, of that total, $38 billion originated from the United States itself. This means that U.S. producers made inputs that were exported to Canada or another country, where they were transformed into other products by Canadian firms and then re-exported back to the United States. This implies that in 2019, approximately 12% of the value of imports to the U.S. from Canada consisted of value-added by U.S. producers. In other words, income generated by U.S. producers and paid to workers and owners in the U.S. constituted a significant portion of these imports from Canada.

The OECD also reports that in recent years, Canadian value-added embedded within U.S. exports has been around $20 billion USD per year. In 2019, this figure exceeded $24 billion. This is a larger amount of value-added embodied within U.S. exports than that from the next most important partner country for U.S. exports, China. In comparison, Mexican value-added embedded within U.S. exports was nearly $13 billion in 2020 and almost $16 billion in 2019.

This understanding significantly changes how one views the trade balance between the two countries. Since a considerable share of Canadian exports to the United States is accounted for by value-added that is earned by U.S. workers and business owners, this portion shouldn't be fully counted towards the overall bilateral trade deficit that the United States has with Canada. According to the OECD, the gross trade deficit between the U.S. and Canada in 2019 was just over $52 billion USD, which declined to a little under $51 billion in 2020, the most recent year available in the TiVA database. However, when using total value-added in final demand to assess the trade balance, the OECD found that the overall U.S. deficit with Canada was just under $36 billion for that year. And, as highlighted earlier, this deficit is entirely driven by the imbalance in raw materials and energy products, particularly oil. In contrast, the U.S. has a considerable surplus in its trade with Canada in many important service sectors, such as information and communications, financial intermediation and business support services.

There are other data sources that, while not as detailed as those from the OECD, provide a more recent view of the complex trading relationship between Canada and

[7] These data are available online at https://data-explorer.oecd.org/?pg=0&bp=true&snb=14&tm=TIVA.

the United States, particularly in terms of intermediate inputs. For example, in 2022, Statistics Canada estimated that of the over $634 billion dollars exported from Canada to the United States, more than $105 billion of U.S. imports were embodied within those exports.[8] This means that nearly one-sixth of what the U.S. buys from Canada contains items that the United States had previously produced and shipped to Canada as intermediate inputs.

On the Canadian side, there were also significant domestic services supplied to exporters, which are embodied within those exports. This means that the income generated by exports, in terms of their direct value-added, understates the overall scale of value-added in exports. Of the $634 billion in gross exports in 2022, Statistics Canada estimates that the direct value-added was just shy of $290 billion. However, when including the services value-added that are embodied in those exports, the total value-added exports to the United States rises to approximately $469 billion. Although similar data for the United States is not reported in this fashion, a comparable pattern likely exists. This is also true for the employment impacts of trade with the United States, which exceed the number of people directly employed by firms that export to the United States. In 2022, Statistics Canada estimated that over 1.2 million direct jobs were embodied in exports. When including jobs associated with firms that provide services to Canadian exporters, and so on up the supply chain, the total number of jobs embodied within Canadian exports to the United States exceeded 2.4 million.

Therefore, the economic impact of trade with the United States is larger than what might be suggested by looking at the direct impact of exporters alone.

[8] Source: Author's calculations using Statistics Canada data table 12-10-0100-01.

2.7 CROSS BORDER INVESTMENT FLOWS BETWEEN CANADA AND THE U.S.

In addition to trade in goods and services, the deep and significant economic relationship between Canada and the United States is evident in the volume of investment flows between the two countries. Investors on both sides of the border actively seek opportunities to invest in productive activities. This activity is tracked on a quarterly basis by Statistics Canada, as illustrated in *Figure 9*, which presents the latest data on investment flows between the two nations.

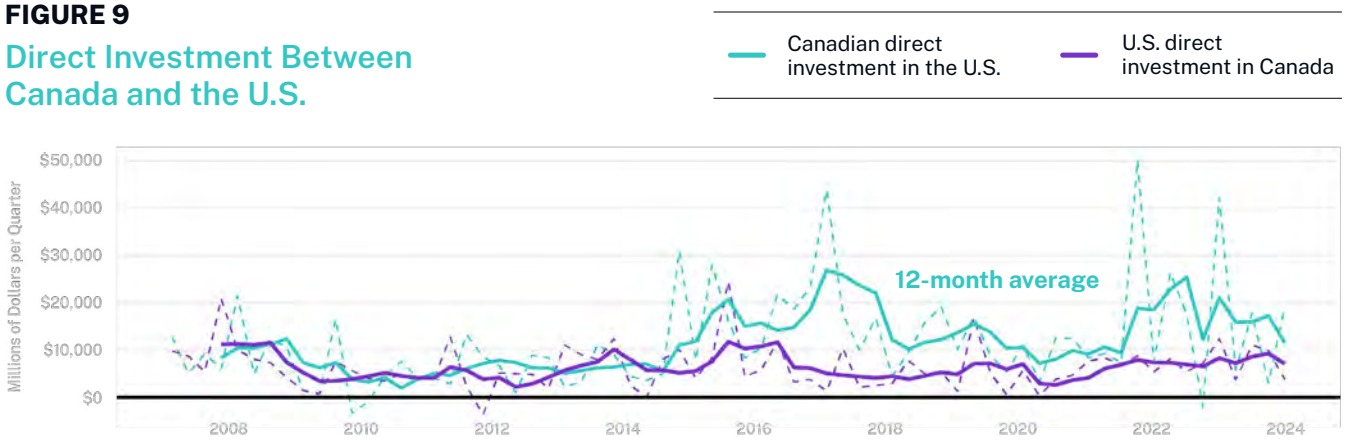
Given the inherent volatility in such data, I have illustrated both the raw flows and the 12-month moving average. In recent quarters, the volume of Canadian direct investment in the United States has ranged from approximately $15–20 billion per quarter, or $3–4 billion per month. This investment has risen recently and is now higher than the volume of U.S. direct investment in Canada, which is averaging less than $10 billion per quarter, or roughly $2 billion per month. Prior to 2014, the relative magnitude of direct investment flows in either direction was roughly similar; the amount Canadians invested in the U.S. was comparable to what Americans invested in Canada. However, since 2014, there has been a notable increase in Canadian investment in the United States.

Net flows have averaged approximately $10 billion per quarter in recent years, contributing to the productive capital stock and improvements in productivity in the United States. Over time, these flows accumulate into considerable stocks of capital held in both countries by residents of the other. For example, in 2023, Statistics Canada estimated that the total book value of Canadian direct investment in the United States was just under $1.1 trillion. In comparison, U.S. direct investment in Canada was nearly $620 billion that same year.

The fact that Canadians invest substantially more in the United States than Americans invest in Canada is noteworthy. Some in Canada may view this as an appropriate response to challenging economic conditions and potentially declining opportunities for significant investments within the country. However, it also highlights the deeply intertwined nature of economic activity on both sides of the border and underscores the special importance of the United States to Canadian investors. Indeed, of the nearly $2.2 trillion in Canadian direct investment abroad globally, half is accounted for by investment in the United States.

FIGURE 9

Direct Investment Between Canada and the U.S.



Note: Displays the quarterly direct investment flows between Canada and the U.S. The solid line is the 12-month moving average and the dotted line is the raw data. **Source:** Author's calculations from Statistics Canada data table 36-10-0025-01.

2.8 WITHIN-FIRM TRADE BETWEEN CANADA AND THE U.S.

As the previous sections have made clear, trade and cross-border investment are intimately linked because many firms operate across jurisdictions. For instance, a company might produce inputs at a facility in Ontario and then ship those inputs to another facility in Michigan for further processing or manufacturing. Similarly, an oil and gas company in Alberta might export products to a refinery it owns in the United States. This kind of trade occurs within the firm rather than in a market between two unrelated buyers and sellers.

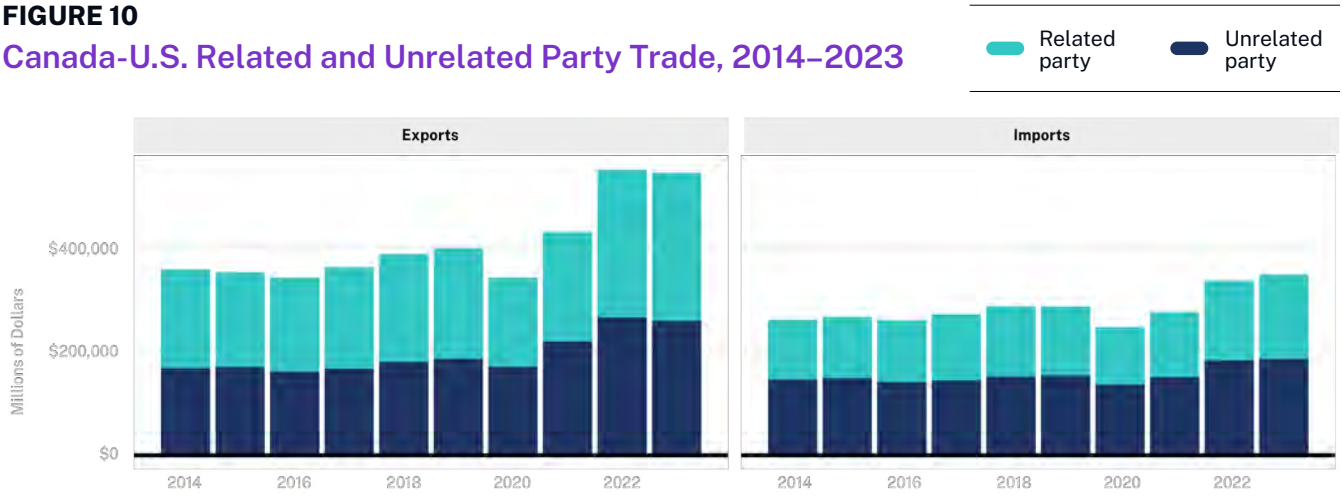
Both Statistics Canada and the United States track and distinguish trade between related and unrelated parties. In Canada, a related party is defined as one that owns at least 5% of the entity that it is buying from or selling to.

The latest data for 2023 indicates that over half of the total value of exports from Canada to the United States involves firms exporting to related parties in which they have an ownership stake. Similarly, imports by Canadian firms from related parties in the U.S. account for just under half of total imports that same year.

Figure 10 reports this data over time, starting from 2014 when such estimates began. The distinction between related and unrelated parties also impacts how we understand the overall trade balance between Canada and the United States. The gap between the value of exports and imports is largest when considering trade between related parties. In 2023, the trade surplus between related parties from Canada's perspective was $122 billion.

FIGURE 10

Canada-U.S. Related and Unrelated Party Trade, 2014–2023



Note: Displays the annual value of Canada's exports and imports to and from the United States in Canadian dollars for related party and unrelated party transactions. A related party is one that holds an ownership stake in the party it is buying from or selling to.
Source: Author's calculations from Statistics Canada data table 12-10-0158-01 and 12-10-0160-01.

3 TRADE POLICY AND PRODUCTIVITY IN CANADA AND THE U.S.

The deep connections in terms of trade, investment and other flows between Canada and the United States are well established. But how do these interconnections affect productivity? And how do policy changes, such as new tariffs, influence that relationship? In this section, I explore some of the basic intuition behind how trade affects productivity, examine a relevant historical case of broad-based U.S. tariffs, and turn to model-based estimates of how new tariffs imposed by the United States might impact the economies of both countries.

3.1 HOW TRADE AFFECTS PRODUCTIVITY

The effect of international trade on a country's productivity can be significant. Intuitively, there are two fundamental reasons for this, though many other channels also contribute substantially. First, we have the classic gains from trade, known for centuries, where countries can specialize in producing items in which they have a comparative advantage. Simply put, this means that a country can produce a particular item with relatively greater efficiency compared to another country. Meanwhile, the other country might have a relative productivity advantage in producing something else. If both countries specialize in the items they produce more efficiently, they can achieve higher levels of consumption than would be possible if they did not trade and instead produced everything on their own.

For example, Canada enjoys a comparative advantage in certain types of energy and mineral products due to its abundant natural resources. It exports these goods and imports items where it lacks a comparative advantage. The impact on Canada's productivity is primarily seen in the allocation of labour and capital within the economy. Not all sectors are equally productive, and if we shift labour, capital and other productive resources towards areas where we have a comparative advantage — necessarily reducing those sectors where we do not — the overall economy-wide average productivity rises. Trade facilitates this improved allocation of labour and capital.

Another source of gains from trade arises from the selection of which producers, within a given sector, operate in a country. In sectors where there are many varieties of goods and services, it's common to see multiple producers coexisting. Because their products are somewhat distinct and not perfectly substitutable, even firms with relatively lower productivity can continue to operate and sell within this market. However, as trade costs decrease and import penetration increases, consumers within a country may begin to prefer products from abroad over domestically produced goods. As a result, less competitive firms that cannot keep up with foreign producers will likely shut down.

Meanwhile, the more productive firms within the country will expand as they can now access a larger market abroad. This shift reallocates labour and capital from less productive firms to those with higher productivity within the same sector. This mechanism is distinct from the traditional concept of comparative advantage, which typically involves specializing in one sector and importing goods from another. Instead, the gains from trade described here occur within sectors, as firms producing slightly differentiated varieties of goods and services compete and specialize. For instance, Canada-U.S. trade is characterized by large flows of manufactured goods that are quite similar but slightly differentiated. Trade allows the more productive firms in each country to serve both markets effectively, benefiting from a larger customer base and fostering further growth.

There are numerous other potential reasons why trade can enhance productivity. Larger markets increase the incentives for innovation, potentially leading to higher research and development expenditures. Trade, by expanding markets, also enables firms in industries with large fixed costs to grow to scales that would be otherwise unattainable, resulting in efficiency benefits for consumers. Additionally, trade can curb the market power of domestic firms that might otherwise hold a monopoly, preventing them from charging prices to domestic consumers that exceed the actual costs of production. There are also gains in terms of the variety of products available to consumers, who can enjoy a wider range of goods after a country opens to trade than they would have otherwise. For these and many other reasons, trade significantly contributes to productivity.

3.2 RELEVANT RESEARCH ON THE CANADA-U.S. FREE TRADE AGREEMENT

Empirically estimating the effect of trade on a country's productivity is no easy task for researchers. The causation may run in the opposite direction. For example, higher-income countries might engage more in international trade for various reasons. Perhaps consumers in these countries have a greater appetite for variety or luxury goods produced abroad. Additionally, there may be confounding factors driving the correlation between trade volumes and economic strength. For instance, countries with more developed infrastructure tend to have both higher productivity and higher levels of trade. But given the importance of this policy area, several significant contributions have enhanced our understanding of the gains from trade. While a full review of the relevant literature is beyond the scope of this paper, two are particularly relevant for the Canada-U.S. trading relationships.

The first is a paper published by University of Toronto economist Daniel Trefler that examines the effect of the Canada-U.S. Free Trade Agreement.[9] As many Canadians know, this agreement led to a dramatic reduction in tariffs between the two countries, lowering the average tariffs levied by the United States on imports from Canada from roughly 5% in the early 1980s to approximately 1% by the mid-1990s. Similarly, the average Canadian tariff declined from over 9% to less than 2% during the same period. However, not all industries experienced the same scale of tariff reductions — some saw much larger decreases than others. Trefler exploits this variation by comparing outcomes among plants in sectors that faced significant tariff reductions to those in sectors with small or no tariff reductions. While Trefler examines many outcomes, I will focus here on the results related to labour productivity. He finds that in exporting sectors that experienced the largest tariff reductions, labour productivity rose by an average of 14% per plant. Among sectors that compete with imports, Trefler also found that the most impacted sectors saw plants experience labour productivity increases of 15%. For manufacturing, Trefler concludes that labour productivity rose by about 6% — a substantial effect considering that a significant portion of manufacturing was already able to move between the countries duty-free even before the free trade agreement.

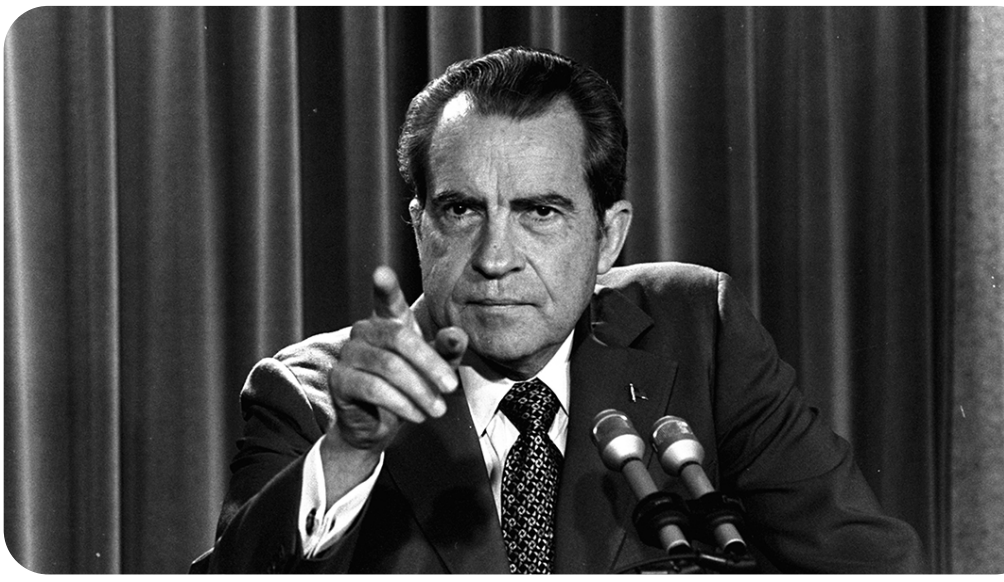
In later research, Daniel Trefler and his coauthor, Alla Lileeva, delve deeper into the effects of trade liberalization between Canada and the United States, revealing that it not only led to the exit of relatively lower-productivity plants but also changed the incentives for individual plants to engage in productivity-enhancing activities.[10] By constructing a novel measure of tariffs facing individual plants, the researchers were able to connect tariff cuts to developments at those plants over time. They found that among plants that started exporting or increased their exports because of the tariff cuts, individual labour productivity rose by nearly 7%. This increase was driven, in part, by these firms engaging in more product innovation and adopting more advanced manufacturing technologies than they had previously. While most plants did not respond to the tariff reductions, those that did contributed to a labour productivity increase of 1.4% across the manufacturing sector. This figure does not even account for the boost in aggregate productivity resulting from the exit of lower-productivity firms.

[9] Daniel Trefler, 2004, "The Long and Short of the Canada-U. S. Free Trade Agreement," American Economic Review 94 (4): 870–895.
[10] Alla Lileeva and Daniel Trefler, 2010, "Improved access to foreign markets raises plant-level productivity… for some plants," Quarterly Journal of Economics 125 (3): 1051–1099.

3.3 THE 1971 "NIXON SHOCK"

The proposed 10% tariff on imports into the United States, put forward by former President Trump during his 2024 re-election campaign, is not the first time such a policy has been suggested in U.S. history. Half a century ago, in August 1971, President Nixon levied a 10% surcharge on imports across-the-board. The motivations behind this were tied to efforts to improve the U.S. trade balance and the country's withdrawal from the international gold standard. As with today's proposal, Nixon's tariff was controversial and strained relationships with major U.S. trading partners. Then, as now, Canada sought an exemption from the policy, citing its unique and integral role as a reliable trade partner for the United States. In Canada, estimates at the time suggested that approximately 90,000 jobs would be lost if the measure had remained in place for a full year (Muirhead, 2011).[11] The 10% tariff implemented by Nixon was short-lived, lasting only four months before it was reversed. Nonetheless, it was a significant development in trade policy and has been studied extensively since. Recent research by leading trade economist Douglas Irwin, published in 2012, found that Nixon's 10% import tariff resulted in a 2.6% reduction in total imports into the United States from Canada.

Given the short duration of the "Nixon Shock," a more permanent 10% across-the-board tariff would likely cause greater disruption in trade flows between the two countries. And there are other reasons why the effect might be greater today. First, the nature of trade between the two countries has become much more complex, with deep interconnections and supply chain linkages across various sectors in both nations. The Nixon Shock tariff also applied only to a subset of total goods traded between the two countries. The 10% levy was charged only on what are known as dutiable imports, which accounted for approximately one-third of total Canadian shipments to the United States. As a result, a considerable amount of trade was not subject to the 10% levy. Finally, it's important to note that during the Nixon era, there was no broad-based retaliation through tariffs against U.S. exports by other countries. In contrast, a broad-based policy like the one proposed today would almost certainly provoke systematic retaliation from many countries worldwide, like what occurred in response to the recent steel and aluminum tariffs imposed by the United States just a few years ago. I will turn in the next section to the implications of a truly across-the-board 10% tariff on all imports into the United States, regardless of their origin, both with and without global retaliation.



[11] Bruce Muirhead, 2011, "From Special Relationship to Third Option: Canada, the U.S., and the Nixon Shock," American Review of Canadian Studies 34 (3): 439-462.
[12] Douglas Irwin, 2012, "The Nixon Shock After Forty Years: The Import Surcharge Revisited," NBER Working Paper 17749.

3.4 PROJECTED ECONOMIC COST OF A 10% TRUMP TARIFF

To undertake this analysis, I rely on a detailed model of international trade that includes all the intricate intersectoral connections that exist both within and between these nations. The foundation of this model is the OECD's Inter-Country Input-Output (ICIO) table, which is regularly updated and increasingly vital in trade analysis today. This is due to the growing significance of multinational production, cross-border supply chains and the rising importance of trade volumes among many advanced economies. I will not explicitly discuss the technical details of the model, but it incorporates frontier-level techniques widely used in international trade research and is calibrated to the best available estimates of key model parameters. For readers interested in the underlying details, I recommend referring to research by Caliendo and Parro (2015),[13] which details a similar framework to the one I use here, and one used to analyze the implications of the North American Free Trade Agreement (NAFTA) on the economies of Canada, the United States and Mexico.

I begin with the model set up to accurately replicate the observed patterns of trade between countries, including all the input-output linkages and flows between sectors within and between nations as reflected in the OECD ICIO table. The model also incorporates average observed tariff levels between countries, detailed data on country sizes and other key aspects of the global economy. I then simulate an increase in the cost of importing into the U.S. by 10 percentage points, regardless of the exporter.

In response to this tariff, businesses and consumers in the model re-optimize their choices. Buyers in the United States shift some of their purchases to locally supplied producers rather than paying the 10% tariff. The economic consequences for the United States are twofold. First, the shift toward greater use of domestically produced goods and services leads to a reduction in productivity within the U.S. The firms replacing the imported suppliers typically have slightly lower productivity, which is why they were not the preferred choice in the pre-tariff equilibrium. Second, offsetting this negative productivity impact, the U.S. gains what is called a "terms of trade" advantage. In principle, it's theoretically possible for a large economy to gain from the unilateral imposition of a modest tariff. But as we will see in the results I present shortly, this may not be the case for the proposed 10% across-the-board tariff today.

In a second simulation, I consider the scenario where this is not just a unilateral 10% tariff imposed by the United States, but a situation where broad and systematic retaliation occurs. In this case, other countries would levy a 10% tariff on imports from U.S. producers. As a result, trade in both directions between the United States and any other country would face a 10% tariff on top of any pre-existing levies. This would lead to a significant reduction in the volume of trade and a corresponding increase in domestic production across most countries.

Using this model, I find that a 10% across-the-board increase in tariffs on imports into the United States would significantly impact trade flows, productivity, prices and real income levels in both countries. I estimate that the permanent effect of this tariff on Canadian imports from the United States would result in a decline equivalent to just over 5 percentage points of Canada's GDP. While a significant portion of this lost trade is replaced by an increase in expenditures allocated to domestic production within Canada, there is also a shift towards importing goods and services from other markets. I estimate that the increase in imports from markets other than the United States is equivalent to approximately 0.8 percentage points.

There is a greater exposure to such a tariff among some sectors than others. As we saw earlier in this report, trade volumes for Canadian exports to the United States are highest in sectors like energy products and certain manufacturing industries, such as motor vehicles and parts. Exports from these sectors as a share of their output to the United States would decline significantly under a tariff. I estimate that if a 10% tariff were imposed across-the-board on all sectors, the share of output exported to the United States from these affected sectors would decline by 22 percentage points. In the motor vehicle and transport equipment sectors,

[13] Lorenzo Caliendo and Fernando Parro, 2015, "Estimates of the Trade and Welfare Effects of NAFTA," The Review of Economic Studies 82 (1): 1-44.

TABLE 2
Simulated Economic Effects of a 10% Import Tariff Levied by the United States

	Real Incomes	Labour Productivity
No Retaliation		
Canada	**-0.88%**	**-0.95%**
United States	**-0.63%**	**-0.51%**
Full Retaliation		
Canada	**-1.51%**	**-1.57%**
United States	**-0.95%**	**-0.95%**

Source: Author's calculations using a general equilibrium model of the global economy. See text for details and discussion.

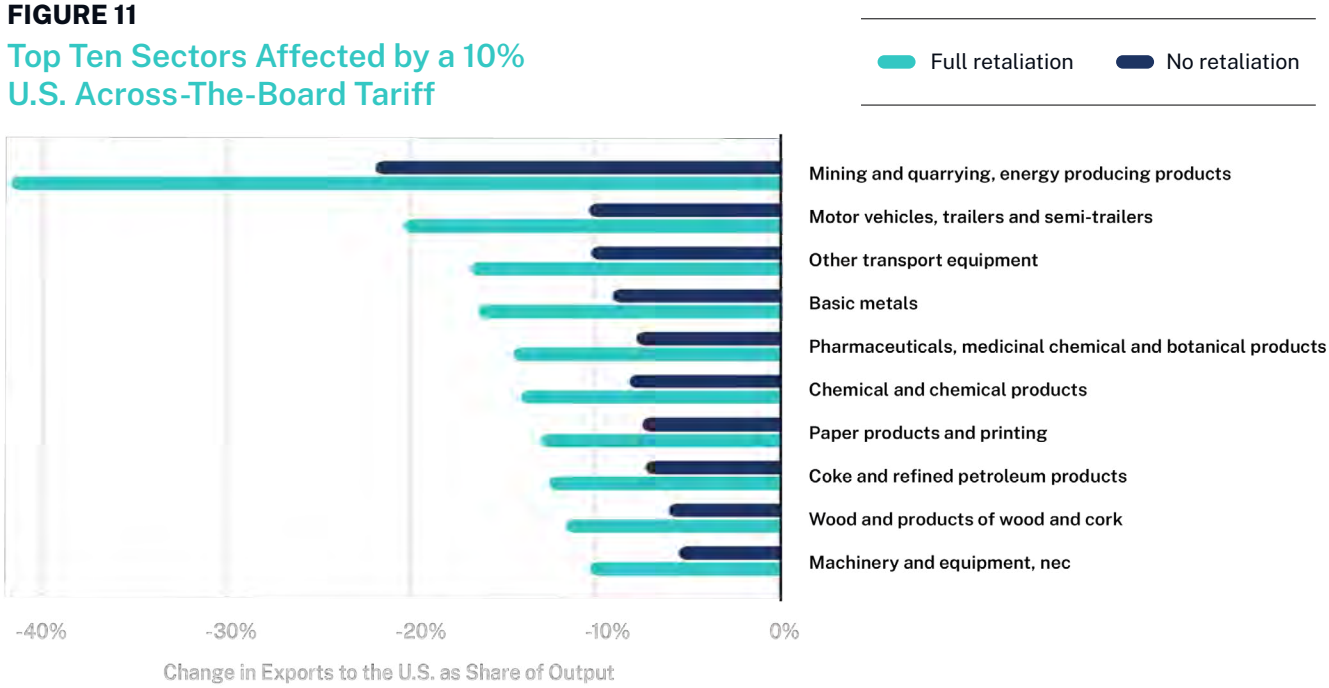
the decline in U.S. exports as a share of their output would be 10 percentage points. Basic metals would see a 9 percentage point reduction, chemicals would see an 8 percentage point reduction, and paper products would face a 7 percentage point reduction. Some sectors would experience very little disruption, to be clear, with the model estimating negligible changes in trade and services between Canada and the United States as a share of those sectors' output, largely because there is very little trade in those areas to begin with. I show the disruption in *Figure 11*. And while not reported here, the sectors in the United States that see the most disruptions from this tariff are similar, especially motor vehicles, basic metals, and energy products.

These shifts in trading expenditure patterns have a large and negative impact on Canada's economy. Specifically, if the U.S. imposes such a measure without any retaliation from other countries, Canadian real income would decline by 0.9%, and overall labour productivity in Canada would drop by nearly 1%. The United States also experiences disruptions in its trade and expenditure patterns. The decline in imports from Canada as a share of its GDP is equivalent to 0.5 percentage points. The U.S. would consequently also experience a reduction in the size and productivity of its economy, with real income decreasing by an estimated 0.6% and labour productivity falling by 0.5%. I display these results in *Table 2*.

However, such a policy move is unlikely to occur without a response from other countries, as we've seen in previous instances. If other countries retaliate by imposing their own 10% tariffs on U.S. exports, the economic costs and disruptions would increase. In this scenario, I find that the effects on trade volumes are substantially larger. Canadian imports from the United States as a share of GDP would decline by just over 9 percentage points. Similarly, U.S. imports from Canada as a share of their GDP would fall further, by an additional 0.8 percentage points. The effects on individual sectors are similarly intensified. With this greater disruption in the pattern of trade and expenditures on both sides of the border, the negative implications for real income and productivity are also amplified, as I illustrate in *Figure 11*. I estimate that real incomes in Canada would decline by 1.5%, while labour productivity would fall by nearly 1.6%. In the United States, both real income and labour productivity would decline by approximately 1%. These are large changes, equivalent to just over $800 USD (or nearly $1,100 CDN) per person in lost real annual income for individuals on both sides of the border.

FIGURE 11

Top Ten Sectors Affected by a 10% U.S. Across-The-Board Tariff



Note: Displays the simulated change in sectoral exports to the United States as a share of output. Changes are reported in percentage points. **Source:** Author's calculations using a general equilibrium model of the global economy. See text for details and discussion.

3.5 DISCUSSION OF MODEL RESULTS

There are several important reasons why these model-based estimates may understate the true magnitude of the economic disruptions that both countries would face if the United States imposed a 10% across-the-board tariff.

First, the model in question abstracts from the adjustment costs that arise when economies transition from one equilibrium to another. While real GDP may recover in the long run, the model implicitly assumes that workers and other productive factors can seamlessly shift into new sectors, with trade flows and purchasing patterns adjusting accordingly. However, in the short-term, individuals incur costs when shifting across occupations or sectors, potentially experiencing periods of unemployment during these adjustments. These costs would add to the overall negative consequences of a disruptive trade policy, such as a 10% tariff, but the model fails to capture them.

Second, the long-term nature of these estimates means that the implications of a tariff for some sectors may be substantially smaller initially than the results reported here suggest. Take, for example, energy product exports from Canada to the United States. This sector heavily relies on specific types of infrastructure that are constructed and configured in ways that are extremely difficult to change in the short-term. As a result, a tariff may not immediately alter the overall production and shipment of barrels of oil from producers in Alberta to refineries and processors in the United States. Initially, firms in this sector are more likely to experience a reduction in profit margins and revenues, which would have short-term implications for government revenues and could lower the incentive to invest. Over time, this might also lead to lower production volumes as firms seek to find new buyers. However, the longer the tariff remains in place, the greater the incentive becomes for these firms to explore alternative markets. It's important to note that the model used here abstracts from these sector-specific details, focusing instead on broader, long-run impacts.

Moreover, the model does not account for the more complex, forward-looking decisions that firms make. Investing in productive technology and facilities, as well as developing supplier and customer relationships, takes time and requires firms to make significant upfront investments. In the face of a 10% tariff, firms would need to alter their decisions, direction and relationships. These changes not only entail direct costs but also lead to long-term trade volume responses to tariff changes that are larger than what is typically estimated by researchers. Put another way, the "trade elasticity" may increase over time. Indeed, recent analysis by George Alessandria, Horag Choi and Kim Ruhl (2021)[14] suggests that taking these factors into account increases the consequences of tariff changes by an order of magnitude compared to results suggested by a simple comparison of two steady-state equilibriums as I performed here.

[14] George Alessandria, Horag Choi, and Kim Ruhl, 2021, "Trade adjustment dynamics and the welfare gains from trade," Journal of International Economics 131: 103458.

4 SUMMARY AND CONCLUSION

The analysis presented in this report underscores the critical importance of Canada-U.S. trade in enhancing the economic strength and resilience of both nations. The depth of the economic relationship, characterized by significant two-way trade in goods, services and investment, highlights the role of Canada as a vital trading partner and key supplier of intermediate inputs, particularly in manufacturing and energy sectors. This not only supports U.S. productivity but also ensures that American businesses have access to high-quality resources essential for their operations. The interdependence of our economies is further evidenced by the embedded value-added and the substantial within-firm trade flows that drive efficiency and competitiveness on both sides of the border.

As global supply chains face increasing uncertainty, Canada's status as a safe, secure and dependable partner is more important than ever. The sustained economic benefits of this relationship are clear: both countries gain from an integrated supply chain that leverages their respective strengths. By fostering and protecting trade between Canada and the U.S., both nations can further enhance their economic stability, productivity and global competitiveness in the years to come.

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