The Price Impact of Canadian Retaliatory Tariffs*

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– PRELIMINARY –

Abstract

Canada's 2025 retaliatory tariffs on U.S. imports provide a quasi-natural experiment on retail price pass-through. We combine daily product-level posted prices from seven major Canadian retailers (October 2024 to January 2026) with product-level tariff exposure to estimate pass-through in a difference-in-differences framework. Tariffed goods experience gradual price increase of 6.3% by August, with few spillovers to untariffed products. When most tariffs are removed on September 1, 2025, price effects unwind rapidly, generating pronounced asymmetry. Pass-through also shifts around major trade-policy news and is substantially larger when products are labeled "Tariffed" at the point of sale, consistent with expectations and information shaping pricing.

Keywords: Tariffs; Price pass-through; Inflation dynamics; Expectations
JEL codes: E31, F13, E52.

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1 Introduction

In early 2025, the United States implemented the largest and most broad-based tariff increases in decades, including on close trading partners. Canada responded swiftly with retaliatory tariffs on U.S. imports, creating a sizable and well-defined trade cost shock. This episode provides a rare opportunity to study how retaliatory tariffs transmit to domestic consumer prices outside the United States, where evidence on retail price pass-through remains limited.

We examine this question using daily product-level posted prices from seven large Canadian s, covering groceries, appliances, hardware, electronics, clothing and footwear, and personal care. The data span October 1, 2024 to January 11, 2026 and include detailed product characteristics and point-of-sale labels such as "Tariffed" and "Prepared in Canada." Linking these prices to product-level tariff exposure allows us to measure the magnitude and timing of pass-through from the border to the retail shelf at high frequency.

To identify tariff exposure at the product level, we use generative AI methods to assign each item to its corresponding 8-digit Harmonized System (HS8) category and to determine its country of origin. Using structured prompts applied to retailer product descriptions and web-based information, the model produces consistent product-level classifications that can be directly linked to the official tariff schedule. In the resulting sample, 82 percent of products are imported, including 14 percent from the United States and 21 percent from China, while the remainder are produced domestically. We define a product as *Tariffed* if it is imported from the United States and belongs to an HS8 category subject to Canadian retaliatory tariffs.

We estimate the dynamic effect of Canadian retaliatory tariffs introduced on March 4, 2025, on relative prices of tariffed products using a difference-in-differences design (Dube et al.). The estimation compares price changes for *Tariffed* products to those of domestically produced goods in non-tariffed HS8 categories (*Domestic non-substitutes*), which serve as the control group. The results yield five main findings.

First, retaliatory tariffs raise relative prices of tariffed products, with the effect reaching 6.3% by August 2025, i.e., passing through roughly 1/4 of the 25% tariff. The adjustment is gradual: prices increase steadily over roughly six months following the March 4 imposition. We also find little or no effects on relative prices of untariffed substitutes—domestic or third-country imports in the same HS8 category as the tariffed U.S. products—or on relative prices of other imported goods.

Second, pass-through varies substantially across retailers. The largest effects are ob-

served for appliance and electronics retailers, followed by household goods and grocery chains. In contrast, variation across product categories is more limited, suggesting that tariff pass-through is driven primarily by retailer-level pricing decisions rather than by intrinsic category characteristics. A decomposition of the average tariff effect attributes approximately 41% percent of the variation to heterogeneity in pass-through across retailers, 30% percent to heterogeneity across product categories, and the remainder 29% to a common component.

Third, we document discrete jumps in pass-through around major trade policy announcements *after March 4*. For appliances, household goods, and electronics—and to a lesser extent groceries—the estimated tariff effect increases sharply on or around April 2, 2025, when the U.S. administration unexpectedly announced a broad escalation of tariffs on U.S. imports. For example, for one appliance retailer, the estimated pass-through jumped from -1.1% on April 1 to 6.4% on April 3, reaching its 10% peak 16 days later. Because Canadian tariffs were already in place at that time, such discontinuity suggests that retailers revised their expectations about the persistence of the policy, treating it as more likely to remain in effect. On May 7, the Canadian government published the regulation on tariff remissions (exemptions) covering a broad set of intermediate goods. Following this announcement, part of the April 2 increase in the estimated pass-through was reversed. Since most of the consumer products in our data are not eligible for claiming remissions, we interpret this decline as corroborating evidence that retailers updated their beliefs, revising downward the expected scope or duration of the tariffs.

Fourth, when most Canadian retaliatory tariffs were removed on September 1, 2025, the estimated price effects declined rapidly and were largely reversed within four months. The reversal is nearly complete for appliances, electronics, and groceries, but only partial for household goods. The asymmetric response—gradual adjustment following imposition and faster adjustment following removal—suggests that most retailers initially treated the tariffs as potentially temporary and delayed full price adjustment until expectations about persistence changed. The upshot is that tariffs, when permanently removed, may lead to fast realignment of relative prices, removing tariff-induced price effects.

Fifth, tariff visibility at the point of sale played a role in the retailers' decision to pass through the tariff to prices. Two retailers in our sample display a "Tariffed" banner on the price tags of 671 (out of 1192) tariffed products, making the policy salient to consumers. Exploiting this variation, we compare price responses for tariffed products with and without the banner. Pass-through is substantially larger and faster for products displaying the "Tariffed" label, while we detect no statistically significant relative price response for tariffed products without the banner. These results suggest that retailers may have feared

antagonizing consumers and, therefore, raised prices gradually, absorbing most of the tariff impact.

Related literature and contributions. This paper contributes to several strands of literature examining tariff pass-through to consumer prices, the role of retailer heterogeneity in tariff pass-through, policy expectations and pricing, and tariff salience.

A growing empirical literature uses high-frequency retail data to measure how tariffs affect consumer prices. Cavallo et al. (2021) show that while U.S. tariffs in 2018–19 were largely reflected in import costs, retail price responses were modest—between 3.5% and 5% over a year—implying that retailers absorbed a substantial share of the shock. More recent evidence from Cavallo, Llamas, and Vazquez (2025) documents faster and larger retail adjustment during the 2025 U.S. tariff episode. Using daily prices linked to country-of-origin and HS10 tariff codes, they estimate a 24% retail pass-through and a 0.76 percentage point (p.p.) contribution to CPI inflation by October 2025.[1] In line with these papers, we provide evidence using high-frequency data for Canada that the average tariff pass-through to consumer prices is substantial but incomplete. Measured in percentages, our tariff passthrough estimate of 25% is almost identical to the one found for the 2025 tariffs in the U.S. In addition, our finding that tariff pass-through varies much more across retail chains than across product categories suggests that retailers with different market power or distribution networks respond differently to cost shocks.[2]

Product-level evidence from specific tariff episodes also finds sizable spillovers of tariff effects to closely related goods (Flaaen, Hortaçsu, and Tintelnot, 2020) and from imported to domestic products (Cavallo, Llamas, and Vazquez, 2025). Tariff impacts can

[1]This builds on evidence from prices at the border: Amiti, Redding, and Weinstein (2019) reported complete pass-through of the 2018 U.S. tariffs to imported goods prices and significant but partial effects on U.S. producer and consumer prices. Similarly, Fajgelbaum et al. (2020) and Flaaen et al. (2024) found that U.S. tariffs (and foreign retaliatory tariffs) in 2018—19 were almost entirely borne by importers in the form of higher prices, with little change in foreign exporter prices. Gopinath and Neiman (2026) found similar results for the 2025 tariffs. These studies established that tariff incidence in recent episodes have fallen on the U.S.

[2]This also resonates with broader literature that studies how market power influences pass-through of cost shocks to prices of retailers and distributors. For instance, Hellerstein (2008) showed that local beer distributors in the U.S. adjusted markups to absorb currency changes, and Nakamura and Zerom (2010) found evidence of retail markups dampening coffee bean cost pass-through. Alexander et al. (2024) show that market power and price stickines of Canadian wholesale firms implies a faster pass-through of common cost shocks and an incomplete pass-through of idiosyncratic cost shocks. DellaVigna and Gentzkow (2019) documented that large U.S. retail chains practice uniform pricing across regions, implying a willingness to absorb cost differences to maintain a consistent national price. Sangani (2026) demonstrates that pass-through measured in percentage terms can appear small when firms pass through cost dollar-for-dollar, i.e., in levels. Theories of oligopolistic pricing and supply-chain pass-through (Cole and Eckel, 2018; Alvarez-Blaser et al., 2024)

also propagate beyond targeted goods through trade diversion and supply-chain channels. Evidence from the trade war shows substantial reallocation of sourcing toward third countries (Fajgelbaum et al., 2024; Dang, Krishna, and Zhao, 2023), while protectionist shocks can spill through global value chains, affecting downstream costs and export outcomes (Handley, Kamal, and Monarch, 2025; Grossman, Helpman, and Redding, 2024). Our empirical design separates domestic and third-country substitutes within targeted HS categories and tests for broader spillovers to non-targeted products. We find little evidence of indirect effects on untariffed goods. This suggests that spillovers are not automatic, but instead depend on the specific features of the tariff episode, including policy scope and timing, the country imposing the tariffs, and retailer pricing behavior.

Our paper contributes to the literature on how policy uncertainty and expected tariff duration influence consumer prices. We provide direct evidence for the role of expectations by documenting "intraday" pricing reactions to trade policy news. Cavallo et al. (2021) conjectured that the unusually low pass-through of tariffs (relative to exchange-rate shocks) may reflect perceptions that the tariffs were temporary. Schmitt-Grohé and Uribe (2025) emphasize the importance of tariff persistence in shaping inflation dynamics. Using estimation from the U.S. business cycle and import customs duty data, they show that transitory tariffs have muted effects on inflation, while persistent tariffs generate stronger and more sustained price responses. Their findings highlight the role of expectations: if firms and consumers perceive tariffs as short-lived, price adjustments may be delayed or limited. We provide corroborating evidence from the *Business Leaders Pulse*, a survey of Canadian firms, in which respondents report higher tariff pass-through to consumers under a hypothetical three-year tariff than under a one-year tariff scenario.

Furthermore, Canadian firms may have been delaying their price responses to March 4 tariffs amid heightened trade policy uncertainty. Barnichon and Singh (2025) examine historical U.S. tariff episodes and find that tariff uncertainty can lower inflation by delaying price adjustments and dampening demand. The April 2 U.S. announcement may have lifted some of that uncertainty, removing the need to "wait and see". Our contribution is to show empirically that trade policy news can cause discontinuous changes in pricing, that are distinct from the mechanical effect of the tariff itself.

The expectations mechanism is also supported by the distinct time profile of the effect of the 2025 tariffs. Our data and analysis provide a direct comparison of the response to new tariffs with the response after the tariffs are lifted. We document an asymmetric response in which prices of tariffed goods rose gradually after imposition—consistent with retailers initially treating the policy as transitory and uncertain, but reacted more sharply as expectations about persistence shifted. This evidence of the fast reversal of

tariff price effects has important policy implications. It suggests that if and when tariffs are removed—such as those recently imposed by the United States on its imports—a disinflationary correction is likely to materialize shortly thereafter.

Finally, our setting connects to research on how the salience of taxes to consumers affects pricing. Consumers respond more strongly to taxes and fees when they are made explicit (Chetty, Looney, and Kroft, 2009; Finkelstein, 2009), and disclosure policies can shift demand and firms' pricing incentives (Bradley and Feldman, 2020; Donnelly et al., 2021; Taubinsky and Rees-Jones, 2018). Evidence on country-of-origin claims similarly suggests that salient origin information can change willingness to pay (Kong and Rao, 2021). Canadian retailers' "Tariffed" and "Prepared in Canada" labels therefore allow us to study how visibility and origin signals interact with tariff pass-through. Our paper offers new evidence that displaying a tariff at the point of sale can change how it is passed through to prices. It indicates that retailers may have been concerned about upsetting consumers and thus increased prices only gradually, initially absorbing most of the tariff's effect themselves.

2 Data from large multi-channel Canadian retailers

We use micro price data from PriceStats, a private firm associated with The Billion Prices Project (Cavallo and Rigobon, 2016). The dataset contains daily posted prices for 119,670 products sold by seven major Canadian retailers. Each observation includes product identifiers, category classifications, sale indicators, and point-of-sale labels such as "Tariffed" and "Prepared in Canada." The sample spans October 1, 2024 to January 11, 2026.

Missing price observations are filled using carry-forward methods when products remain listed but prices are temporarily unavailable. For the construction of aggregate price indices, we exclude temporary sale prices; however, all posted prices, including sales, are used in the pass-through estimations. As part of the data cleaning process, we exclude 2,114 products (approximately 1.7 percent of the sample) that exhibit implausibly large price-level jumps at the COICOP 3-digit level within specific retailers.

The daily frequency and product-level granularity of the data enhance comparability across retailers and categories over a common time horizon. High-frequency posted prices reduce measurement error relative to data sources based on aggregated revenues, which can be affected by time aggregation and compositional shifts (Cavallo, 2018). Moreover, prior research shows that web-scraped prices closely track prices in the corresponding brick-and-mortar stores of the same retailers (Cavallo, 2017).

2.1 AI methods for classifying affected products

To map products to affected tariff categories, we apply large language models (LLMs) to identify countries of origin (COO) and classify goods into Harmonized System (HS8) categories targeted by Canadian tariffs. For details, see Appendix B and Cavallo, Llamas, and Vazquez (2025).

For COO identification, we use a LLM with web-search capabilities. The model takes as inputs the product name and retailer URL, then follows a structured protocol: first inspecting the retailer page for explicit COO statements, then searching other sources (other retailers, manufacturer websites) if needed, and finally inferring the most likely country based on brand and product category when no explicit information is available.[3]

Products are labeled **Domestic** if their COO is Canada or they display a "Made in Canada" or "Prepared in Canada" banner.[4] The remaining 96,706 products are labeled **Imported**: 17% of them originate from the United States, 21% from China, and the remainder from Mexico, Italy, Taiwan, Vietnam, and 93 other countries. For 45% of imported products, COO could not be classified, and they did not have a "Tariff" banner—these are assumed to be non-U.S. imports.

To assign HS8 classification, we use an hierarchical LLM-based method that navigates the HS tree level-by-level rather than selecting from thousands of codes at once. At each stage, the model receives the product description and valid subcategories at the current level, selects one category, then moves to its subcategories—repeating until reaching a terminal 8-digit code. For example, "roasted, non-decaffeinated, certified organic coffee" is classified through: Vegetable products → Coffee, tea, spices → Coffee → Roasted, not decaffeinated → Certified organic (HS8 code 0901.21.10). This approach requires no labeled training data, reduces classification errors by constraining choices at each step, and applies uniformly to both imported and domestic products—enabling comparisons between tariffed goods and their domestic competitors. The resulting HS8 assignments bridge high-frequency retail price data with tariff schedules, enabling precise measurement of tariff exposure at the product level.

[3] We assess the accuracy of this approach using a validation sample of 8,941 products from three large retailers, for which COO was obtained either by scraping it directly from the product description on the retailer's website or by scraping COO from *other* retailers' websites using the product's UPC. The model correctly distinguishes domestic from imported items 85% of the time and it identifies COO correctly 88% of the time. Accuracy is broadly similar across the most common origin countries in our sample.

[4] Under Canada's *Competition Act*, origin labels are voluntary but must not be false or misleading. "Made in Canada" labels products for which the last substantial transformation occurred in Canada, at least 51% of total direct production costs were incurred in Canada, and the label includes an appropriate qualifier disclosing imported content. "Prepared in Canada" is treated as a descriptive label indicating that certain processing occurred in Canada.

2.2 Canadian retaliatory tariffs on U.S. products

In February and March 2025, the new U.S. administration repeatedly threatened, implemented, and then put on hold tariffs targeting Canada and Mexico. Substantial U.S. tariffs remained in effect for steel, aluminum, and automobiles.

In response, Canada implemented retaliatory tariffs against U.S. imports on March 4 with a 25% tariff on machinery, appliances, furniture, and electronics, affecting C$30 billion in imports. This initial action was expanded on March 13 with a 25% tariff on steel, aluminum, and consumer durables, adding C$29.8 billion more and increasing pressure on economically and politically important U.S. sectors.[5]

On April 2, 2025, the United States issued a broad set of tariff measures, introducing a baseline tariff regime and higher tariffs on certain goods, which triggered wider trade tensions and possible escalation dynamics between the United States and trading partners (including Canada). One week later, on April 9, the United States reduced most of those tariffs for 90 days to a 10% universal rate. This universal tariff does not apply to most of exports from Canada and Mexico, which remain exempt under the United States–Mexico–Canada Agreement (USMCA).

Canadian policy shifted toward mitigation and de-escalation later in the year. On May 7, a remission order was published to provide temporary tariff relief for goods used in manufacturing or processing, food and beverage packaging, agricultural production, public health, healthcare, public safety, and medical supplies and critical industrial inputs, reducing the effective tariff rate to zero for eligible imports through October 16, 2025 (later extended to December 16, 2025, and further into 2026).[6] On September 1, 2025, Canada removed retaliatory tariffs on most products, while steel, aluminum, and automobiles remained subject to tariffs.[7] As of October 2025, the effective Canadian tariff rate on U.S. goods was about 1% (2.6% in July), and the average U.S. tariff rate on Canadian

[5] List of U.S. products subject to Canadian tariffs effective March 4, 2025: https://www.canada.ca/en/department-finance/news/2025/03/list-of-products-from-the-united-states-subject-to-25-per-cent-tariffs-effective-march-4-2025.html. List of U.S. products subject to Canadian tariffs effective March 13, 2025: https://www.canada.ca/en/department-finance/news/2025/03/list-of-products-from-the-united-states-subject-to-25-per-cent-tariffs-effective-march-13-2025.html

[6] https://gazette.gc.ca/rp-pr/p2/2025/2025-05-07/html/sor-dors122-eng.html. Canadian government made an announcement about remissions on April 15, 2025, the publication of the remissions order on May 7, 2025, provided legal and regulatory implementation of the remissions.

[7] List of the U.S. products subject to tariffs efffective Sept 1, 2025: https://www.canada.ca/en/department-finance/programs/international-trade-finance-policy/canadas-response-us-tariffs/complete-list-us-products-subject-to-counter-tariffs.html

goods was 5.9% (4.4% in July 2025).[8]

Table 1 shows that most of the goods in our sample are imported (82.3%), mostly from other countries (68.2%) than the U.S. (14.1%). Tariffed goods represent 3.3% of all imported goods and 19.1% of the imports from the United States. Most of the tariffed goods are in the categories of food and beverages (1,024 products) and household goods, furniture and equipment (1,024 products). Tariffed products are also present among clothing and footwear, health and personal care, transportation, recreation, culture and reading.[9]

Table 1. Product composition.

	Products	**%**	**Tariffed**	**% Tariffed**
Domestic	20,826	17.7	0	0.0
Imported	96,706	82.3	3,156	3.3
U.S. origin	16,555	14.1	3,156	19.1
Non-U.S. origin	80,151	68.2	0	0.0
Affected HS8	3,308	2.8	2,622	79.3
Unaffected HS8	114,224	97.2	534	0.5
Food and beverages	27,254	23.2	1,024	3.8
Alcohol and tobacco	50	0.0	0	0.0
Clothing and footwear	8,483	7.2	27	0.3
Shelter maintenance and repair	3,184	2.7	57	1.8
H/h goods, furniture, equipment	42,081	35.8	1,024	2.4
Health and personal care	2,784	2.4	160	5.7
Transportation	10,517	8.9	297	2.8
Recreation, culture, reading	23,179	19.7	567	2.4
Total	**117,532**	**100.0**	**3,156**	**2.7**

2.3 Product groups

We categorize the products into five mutually exclusive groups: (i) **Tariffed**—products imported from the U.S. that are in HS8 categories tariffed by Canada; (ii) **Domestic substitutes**—domestic products in HS8 categories tariffed by Canada; (iii) **Third-country substitutes**—products imported from countries other than the U.S. within tariffed HS8 categories; (iv) **Imported non-substitutes**—goods imported from the U.S. or third countries

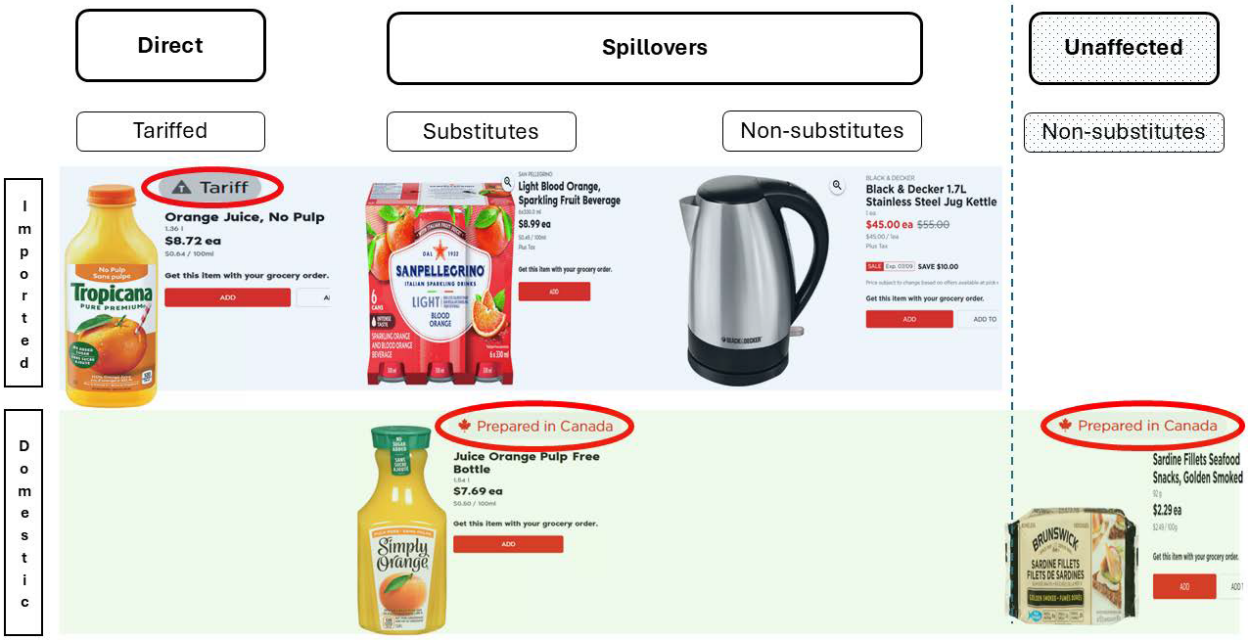
[8]Table A1 in the Appendix provides additional details. Current tariffs apply primarily to products that do not meet rules-of-origin requirements or fall under specific national security tariffs. See Bank of Canada (2025), Monetary Policy Report, October 29, Section 8: https://www.bankofcanada.ca/wp-content/uploads/2025/10/mpr-2025-10-29.pdf.

[9]Transportation category includes parts for repair of personal transportation equipment, but it does not include cars.

in HS8 categories that are *not* tariffed by Canada; and (v) **Domestic non-substitutes**—domestic products in HS8 categories that are not tariffed.

Figure 1 provides examples of how the products are classified. 8-digit HS category 2009.12.00 "Orange juice, not frozen, of a Brix value not exceeding 20" is one of the HS8 categories affected by Canadian tariffs on U.S. imports. If a product "BRAND-1 Orange Juice, No Pulp" is classified in this HS8 category, and it has a "Tariff" banner (provided by some retailers) or is imported from the United States, it is **Tariffed**.

Figure 1. Product groups



There are other juices sold in Canada that are also classified in this HS8 category but are not tariffed. Those are the substitutes imported from non-U.S. destinations (**Third-country substitutes**)—e.g., "BRAND-2 Light Blood Orange, Sparkling Fruit Beverage"—and the substitutes produced in Canada (**Domestic substitutes**)—e.g., "BRAND-3 Juice Orange Pulp-Free Bottle."

There are products that are not in HS8 categories affected by tariffs, i.e., they are less substitutable with products in affected HS8 categories. They can be imported from the United States or elsewhere (**Imported non-substitutes**)—e.g., "BRAND-4 1.7L Stainless Steel Jug Kettle"—or produced domestically (**Domestic non-substitutes**)—e.g., "BRAND-5 Sardine Filets Seafood Snacks, Golden Smoked."

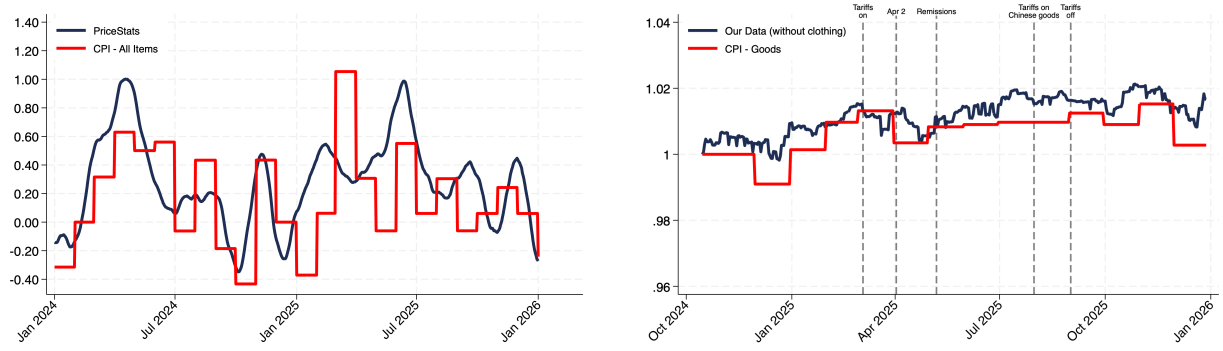
The estimation of the effects of tariffs in Section 4 is based on the differences-in-differences approach, where we use **Domestic non-substitutes** as the control group. The direct effects are estimated by using **Tariffed** goods as the treatment group. The other

three groups are used for identifying the indirect effects of tariffs, or *spillovers*. For example, a pass-through to **Third-country substitutes** could indicate relocation of demand toward imports from other countries as importers look to replace the United States with other sources. Similarly, they can source domestically, which would show up as an effect on **Domestic substitutes**. Finally, a pass-through to **Imported non-substitutes** could indicate broader-based spillovers to goods not affected by tariffs. It could also reflect "imported inflation" from the United States: for example, U.S. tariffs on Canadian steel and aluminum could raise the prices of U.S.-produced exports to Canada, such as the steel jug kettle in Figure 1.

3 Aggregated Price Dynamics in 2025

The top panel of Figure 2 compares monthly inflation rates computed by PriceStats at daily frequency with the official CPI inflation rate in Canada. The PriceStats inflation series accurately captures the dynamics of CPI inflation.

Figure 2. Comparison of inflation and price indexes, CPI and PriceStats.



(a) Monthly inflation rates

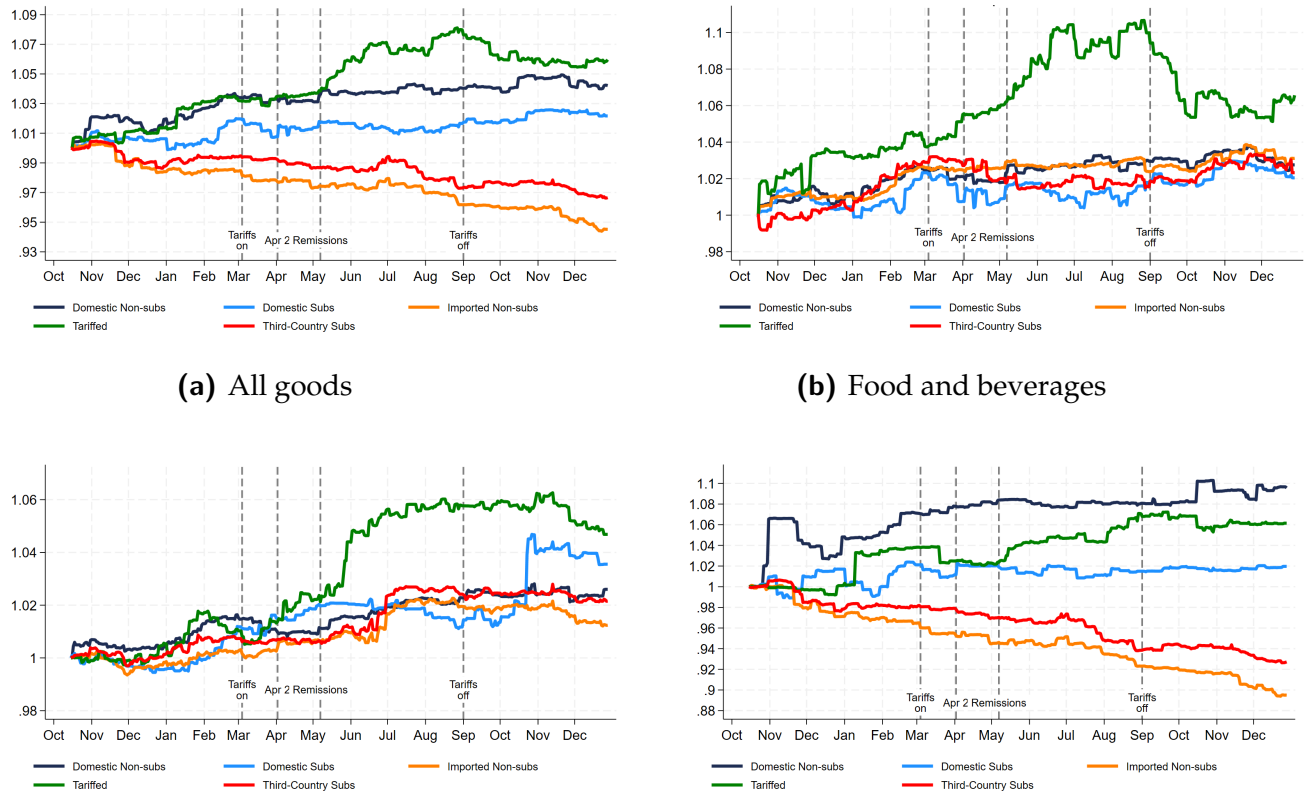
(b) Price indexes

Note: Panel (a) presents month-over-month inflation rates computed by PriceStats and Canadian CPI-All items computed with data from Statistics Canada. Panel (b) presents a price index computed with our micro data and the CPI-Goods price index from Statistics Canada. Our index is computed as a weighted geometric mean of observed price changes using CPI weights at the 3-digit COICOP level for the period October 15, 2024 – December 28, 2025. This price index excludes COICOP 300 "Clothing and footwear", which is quality-adjusted in the CPI.

In this paper, we use a subset of PriceStats data. We construct price indexes as weighted geometric means of product-level price changes, computed with CPI weights at 3-digit COICOP level. Bottom panel of Figure 2 compares this index (in levels) with the CPI in-

dex for goods in Canada.[10] This figure illustrates that the level and the dynamics in the index based on our data are consistent with those in the CPI-Goods.

Figure 3. Price movements by product groups



(a) All goods

(b) Food and beverages

(c) Household goods, appliances, and furniture

(d) Other goods (clothing and footwear, health and personal care, electronics, recreation, transport)

Note: Price indexes are weighted geometric means of price changes, excluding price discounts, with COICOP 3-digit weights. Tariffed are goods imported from the US subject to Canadian tariffs; Domestic substitutes are domestic goods in the tariffed HS8 categories; Third-Country substitutes are goods imported from third countries in tariffed HS8 categories; Imported Non-substitutes are goods imported from the US or third countries in non-tariffed HS8 categories; and Domestic Non-substitutes are domestic goods in non-tariffed HS8 categories. Canadian retaliatory tariffs are imposed at HS8 level. Note the y-axis scales and ranges are different across panels.

Next, we examine price dynamics for five groups of goods across different categories of products. Figure 3 illustrates the average price dynamics across five product groups for All goods, Food and beverages, Household goods and furnishings, and all other

[10]The index excludes COICOP 300 "Clothing and footwear" which exhibits a significant downward trend (Figure A2). In the computation of CPI, Statistics Canada performs quality adjustments and accounts for frequent seasonal product rotation and sales in clothing and footwear, which are not applied in our data. Figure A1 provide the index that includes "Clothing and footwear".

goods. Prices for tariffed products (green line) diverge markedly starting around February/March 2025 (Panel a). Prices of tariffed products have peaked around the end of summer, and then slowly declined after September 1, reflecting mainly the fall in prices of tariffed food and beverages (top right panel), whereas price of durables, such as household goods (bottom left panel) and other goods (bottom right panel) declined much more slowly. The hump-shaped pattern of average prices may reflect the effects of the removal of Canadian tariffs on September 1, 2025.

Prices of other imported goods (third-country substitutes or imported non-substitutes) have declined relative to domestic good prices over this period (Panel d), largely driven by category "Clothing and Footwear" imported from China and Vietnam.

Table 2 provides inflation rates across different groups and categories of products. Overall, tariffed products reported the highest inflation rate (4.34%) over the period between December 1, 2024 and December 1, 2025, driven by the household goods (5.29%) and other goods, such as electronics and recreation equipment (6.25%). The price of third-country substitutes and imported non-substitutes have declined by 1.86% and 3.82%, respectively, mostly on the decline in the prices of clothing and footwear.

Table 2. Summary of the data: number of unique products and observations .

	All goods	Food & bev.	Household	Other
Inflation rates by product groups, Dec 1, 2024–Dec 1, 2025				
Tariffed	4.34	2.02	5.29	6.35
Domestic non-subs	2.06	1.40	1.91	4.14
Domestic subs	1.67	1.75	4.19	0.76
Third-country subs	-1.86	2.98	2.64	-5.20
Imported non-subs	-3.82	2.31	2.23	-7.92
Number of observations				
Tariffed	1,178,122	374,561	378,410	425,151
Domestic non-subs	6,515,834	4,458,869	924,693	1,132,272
Domestic subs	1,022,153	526,036	230,436	265,681
Third-country subs	5,811,055	339,699	2,704,394	2,766,962
Imported non-subs	27,905,707	3,602,205	11,243,795	13,059,707
Total	42,432,871	9,301,370	15,481,728	17,649,773

Note: The number of observations and the number of unique products is for the period between Oct 15, 2024 to Dec 28, 2025. "Other" goods include clothing and footwear, health and personal care, electronics, recreation, and transport.

4 Pass-through to product prices

This section provides estimates of the price effects of Canadian 2025 tariffs on U.S. imports. Section 4.1 provides total effects for all product groups. Section 4.2 dissects the effects across retailers and product categories.

4.1 Direct effect of Canadian tariffs

We analyze the tariff pass-through for Canada as an event study of March 4, 2025—the date when Canadian tariffs were introduced—on relative prices. We use **Domestic non-substitutes** as our control group, and the four remaining groups as treated.[11] We estimate dynamic treatment effects using local projections difference-in-differences (LP-DiD) regressions (Dube et al.):

$$\Delta_h \ln p_{irt} = \beta_{0,h} D_{it} + \sum_{r \in \mathcal{R}} \beta_{r,h} \left(D_{it} \times \mathbb{1}\{R_i = r\} \right) + \sum_{c \in \mathcal{C}} \gamma_{c,h} \left(D_{it} \times \mathbb{1}\{C_i = c\} \right) + \delta_{rt}^{(h)} + \delta_{ct}^{(h)} + \varepsilon_{irt}^{(h)}. \tag{1}$$

In equation (1), the dependent variable is the h-horizon log price change, $\Delta_h \ln p_{irt} \equiv \ln(p_{ir(t+h)}) - \ln(p_{irt})$, where p_{irt} denotes the posted price of product i at retailer r on day t. The indicator D_{it} equals one on the day a tariff is applied to the relevant treatment group for product i (and zero otherwise), and we estimate a separate set of regressions for each treatment group. The coefficients $\beta_{0,h}$, $\{\beta_{r,h}\}_{r \in \mathcal{R}}$, and $\{\gamma_{c,h}\}_{c \in \mathcal{C}}$ trace the response of prices to the tariff event at horizon h, allowing the response to vary flexibly across retailers $\mathcal{R}$ and CPI categories $\mathcal{C}$.[12] The fixed effects $\delta_{rt}^{(h)}$ absorb retailer-by-day relative price variation common to all products sold by retailer r at time t (e.g., promotions or repricing events), and $\delta_{ct}^{(h)}$ absorb category-by-day relative price variation common to all products in CPI category c at time t (e.g., category-specific cost or demand shocks). We estimate (1) by weighted least squares,[13] and we report standard errors clustered at the product level to allow for arbitrary serial correlation in shocks within product over time and across horizons.

Figure 4 provides average price response estimates for each of the four treated product

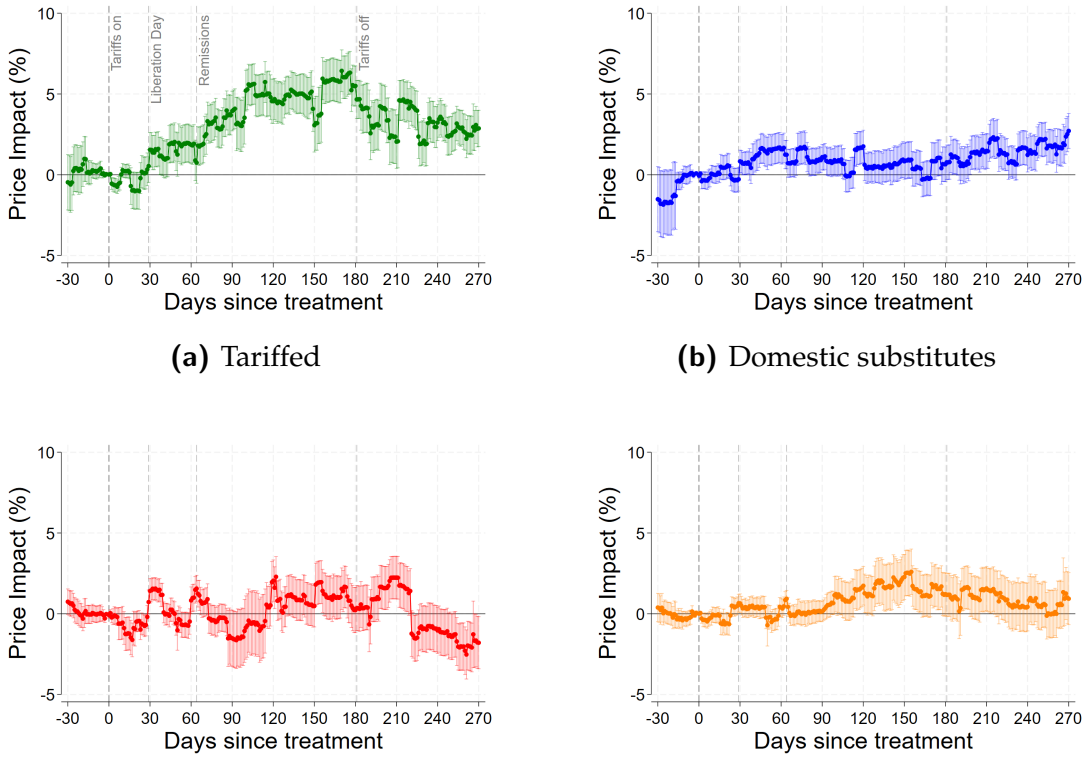
[11] For this estimation, we drop COICOP categories for clothing and footware and shelter, maintenance and repair because they have fewer than 100 unique tariffed products in our sample. We also dropped two retailers that had fewer than 100 unique tariffed products.

[12] We omit the first retailer and CPI category, so $\beta_{r,h}$ and $\gamma_{c,h}$ estimate differential pass-throughs.

[13] We use COICOP-3 level weights, and uniform weights within a COICOP-3 level and day.

groups.[14]

Figure 4. Average price impact across treated product groups



(a) Tariffed

(b) Domestic substitutes

(c) Third-country substitutes

(d) Imported non-substitutes

Note: The pass-through is estimated by the difference-in-differences linear projections of the March 4 effect, with CPI weights, using specification (1). Each plot provides the estimated average pass-through for each of the four treated groups (Tariffed, Domestic substitutes, Third-Country substitutes, and Imported Non-substitutes) relative to the control group (Domestic Non-substitutes). Vertical lines refer to March 4, April 2, May 7, and September 1, 2025, respectively.

The effect of tariffs on prices of tariffed products (Panel a) increased gradually after

[14]To summarize the heterogeneous effects, we form weighted averages across retailers and CPI categories. For each horizon h, we compute:

$$S_h \equiv \sum_{i,r,t \in \mathcal{S}_h} aw_{irt}\, D_{it}, \qquad S_{r,h} \equiv \sum_{i,t \in \mathcal{S}_h} aw_{irt}\, D_{it}\, \mathbb{1}\{R_i = r\}, \qquad S_{c,h} \equiv \sum_{i,r,t \in \mathcal{S}_h} aw_{irt}\, D_{it}\, \mathbb{1}\{C_i = c\},$$

$$w_{r,h} \equiv \frac{S_{r,h}}{S_h}, \qquad w_{c,h} \equiv \frac{S_{c,h}}{S_h},$$

where aw_{irt} are the analytic weights used in (1). Given these weights, each horizon reports $\widehat{\beta}_{0,h} + \overline{\beta}_h + \overline{\gamma}_h$, where:

$$\overline{\beta}_h \equiv \sum_{r \in \mathcal{R}} w_{r,h}\, \widehat{\beta}_{r,h}, \qquad \overline{\gamma}_h \equiv \sum_{c \in \mathcal{C}} w_{c,h}\, \widehat{\gamma}_{c,h}.$$

March 4, reaching 6.3% after six months, by August. It decreased gradually after the tariff removal on September 1, down to 2.5% by the end of November. Hence, about 1/4 of the 25% tariff was passed through to prices of tariffed products over the six months that the tariffs were in effect. Most of the price effect was reversed within three months after the tariffs were removed.

The magnitude and timing of the pass-through for Canada is very similar to the pass-through of the U.S. import tariffs estimated by Cavallo, Llamas, and Vazquez (2025) using PriceStats' U.S. retail price data. Our findings suggest that permanently removing the tariffs could result in fast reversal of the tariff effects.

Figure 4 (Panels b, c, d) shows minimal or no indirect effects of the Canadian tariffs on the other treated groups.[15] This result contrasts with findings from other studies of import tariffs that document significant spillovers.[16] Our result suggests that such spillovers are not universal and may depend on tariff policy scope, timing, and retailer behavior.

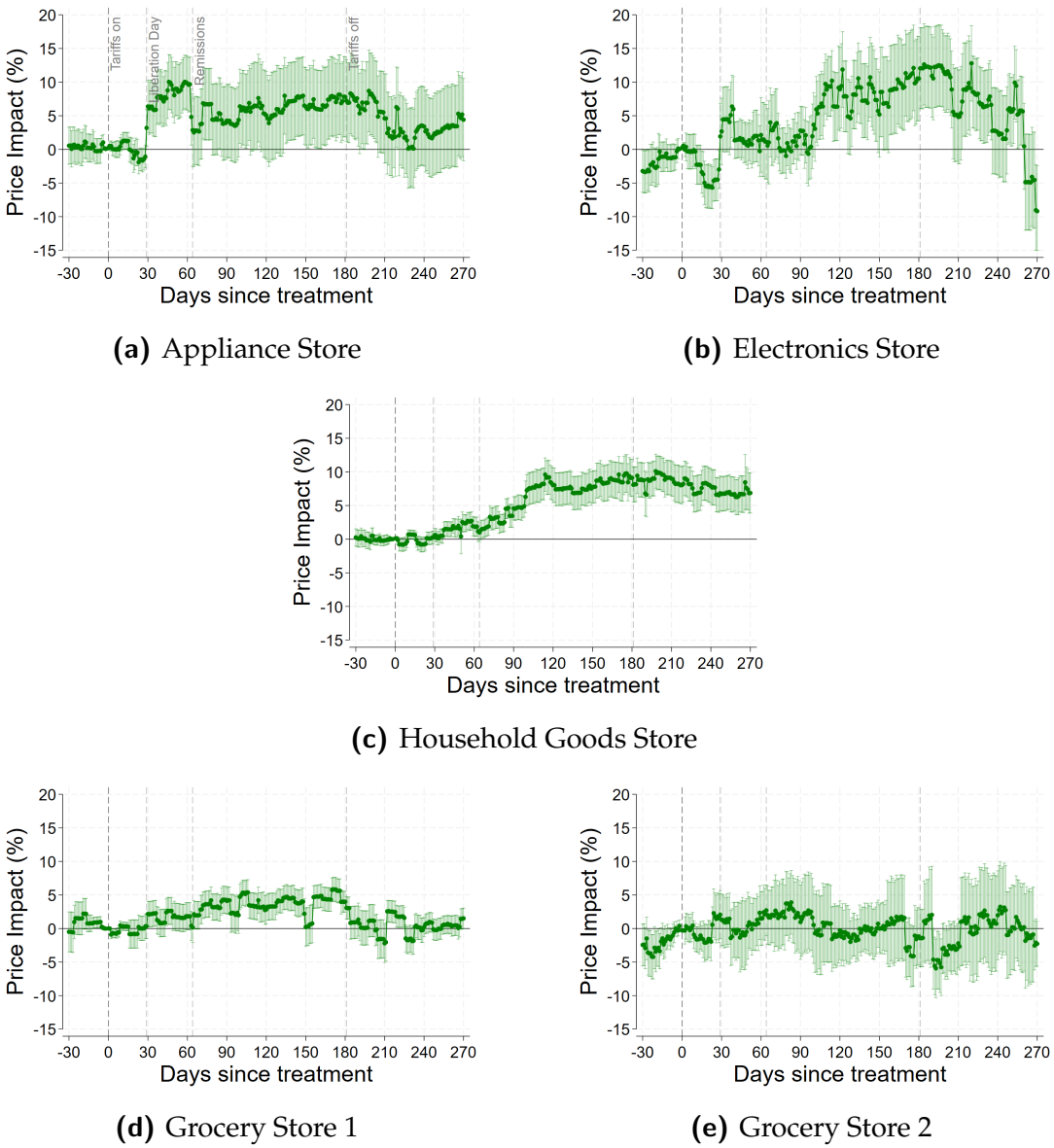
4.2 Pass-through across goods and retailers

We now turn to our estimates of price impacts across retailers and CPI categories. Figure 5 shows large variation of the pass-through across retailers. First, the speed of the pass-through increase and decrease varies across retailers. For example, the pass-through for the Appliances and Electronics stores reaches its peak rapidly, and dissipates to zero shortly after tariffs are removed. For Grocery retailers, the pass-through rises more gradually, but is also sharply reversed after tariffs are removed. The pass-through for the Household Goods retailer, on the other hand, declines slower, falling to around half of its peak level by the end of November.

[15] Macklem (2026) shows that Canadian imports supply chains have shifted in 2025: imports from the U.S. have declined, while imports from other countries has increased. Some imports were re-routed to avoid going through the U.S. Although Canadian demand for imports from other countries has increase, it does not appear to have affected the prices for imported substitutes.

[16] Cavallo, Llamas, and Vazquez (2025) show that prices of imported goods rose twice as much as domestic ones after U.S. imposed import tariffs in 2025, with spillovers concentrated in categories like furnishings and low-priced goods. Flaaen, Hortaçsu, and Tintelnot (2020) document significant spillovers in the 2018 U.S. washing machine case: while tariffs directly raised washer prices by around 12%, dryer prices—untariffed but complementary—also rose by a similar amount.

Figure 5. Price impact estimates across retailers



(a) Appliance Store

(b) Electronics Store

(c) Household Goods Store

(d) Grocery Store 1

(e) Grocery Store 2

Note: The price impact of tariffs is estimated by the difference-in-differences linear projections of the March 4 effect using specification (1). Each plot provides the estimates for each of the retailers of the price impact on Tariffed goods relative to the control group (Domestic Non-substitutes). Vertical lines refer to March 4, April 2, May 7, and September 1, 2025, respectively. Coefficients are averaged across CPI categories using the weights of Footnote 14.

Second, the pass-through to prices of Appliances and Electronics retailers moved significantly around April 2 ("Liberation Day") and May 7 ("Remissions"). For example, for the Appliances Store, the pass-through jumped from -1.1% on April 1st to 6.4% on April

3rd, a day after the announcement of broad U.S. import tariffs by the U.S. administration, and reached its overall peak of 10% only 16 days later. Because Canadian retaliatory tariffs had already been in place for roughly a month, these discrete movements suggest that the U.S. announcement influenced these retailers' expectations of the future path of *Canadian* tariffs. They are consistent with belief updating about policy persistence: even though April 2 did not introduce new U.S. tariffs specifically on Canada, it plausibly increased the perceived likelihood that the trade conflict would escalate and endure, raising the expected duration of Canada's retaliation.[17] Indeed, Canada announced new tariffs on April 3, 2025.[18]

At least half of the April 2 effect was reversed at the time of the publication of the remissions order for the tariffs on the U.S. products by the Canadian government on May 7, 2025. Our dataset includes some of the products subject to remissions. For example, infant formula and nutrition formula are present in the food category in our dataset. Washing machines and other appliances may be sold to long-term care facilities and, thus, might be eligible for remissions. Firms importing aluminum cans or steel for canned products could claim remissions.[19] However, the remissions were for "... the products imported for processing – not for direct retail sale" according to the Retail Council of Canada.[20] Given that the remissions do not broadly apply to the final consumer products in our dataset, we interpret the reversal of the tariff impact as the result of the correction of retailers' beliefs that the tariffs will persist. The remissions were viewed at the time as covering a broad cross-section of businesses: manufacturing and processing, food and beverage packaging, public health, public safety etc. Further, the government guidelines stated that remissions will be considered on a "... case-by-case basis, other exceptional circumstances that could have severe impacts on the Canadian economy...".[21]

[17] On April 4, 2025, Canada's Foreign Affairs Minister Mélanie Joy said: "The relationship between the United States and Canada will never be the same again after President Donald Trump announced a sweeping new tariff regime on Wednesday." https://globalnews.ca/video/11116615/canada-us-relationship-will-never-be-the-same-after-trump-tariffs-joly-warns. Bank of Canada Governor Macklem described U.S. protectionism as one of the structural changes that Canada undergoes in his speech in 2026 (Macklem, 2026).

[18] On April 3, 2025, Canada announced new 25% tariffs on non-Canada-U.S.-Mexico Agreement (CUSMA) compliant fully assembled vehicles and on non-Canadian and non-Mexican contest of CUSMA compliant vehicles imported into Canada from the United States; these tariffs were effective on April 9, 2025.

[19] The announcement about remissions covers very broad range of industries and inputs, without specific details on HS categories, it is hard to assess the extent to which products in our dataset are subject to the remissions.

[20] Retail Council of Canada wrote on May 1, 2025 here: www.retailcouncil.org/tariffs-and-trade.

[21] Department of Finance guidelines are available here: https://www.canada.ca/en/department-finance/programs/international-trade-finance-policy/process-requesting-remission-tariffs-that-apply-on-certain-goods-us.html

Some economists interpreted remissions as reducing Canadian tariffs on U.S. to "nearly zero".[22] This reduction of the tariffs through remissions for a broad range of industries and inputs suggested to some that Canada might scale back the tariffs in the future.[23]

After most of the Canadian retaliatory tariffs were removed on September 1, 2025, their relative price effects were completely reversed by grocery retailers (within a month or so), and by appliance and electronics retailers (within three months or so). By contrast, the effect persists for the household goods retailer, where they are at around 2/3 of its peak by the end of 2025.

Breaking down pass-through estimates by CPI categories instead of by retailers (Figure A4) yields somewhat smaller variation in the estimated pass-through, suggesting that the pass-through is determined at a retailer level rather than dictated by product characteristics. The impact of tariffs is the largest for food and beverages. In line with retail-level estimates, the effects are completely reversed for food and beverages after the tariffs were lifted.

To quantify the contributions of retailer and CPI category effects to the total tariff effect shown in Figure 4, we compute the partial R^2 for the first three terms of specification (1), and average each of them across horizons $h > 0$. We find that, of the total increase in the R^2 when comparing the unrestricted model to the model with only fixed effects, the treatment effect without interactions explains 29%; the retailer-specific treatment effects explain 41%, and the CPI category-specific treatment effects explain 30%.[24] We interpret results from this decomposition as pointing towards retailers playing a dominant role in the determination of tariff pass-through.

We have examined the role of the expectations about tariff persistence on the firm's tariff pass-through by using data from Business Leaders Pulse, an online survey of Canadian firms.[25] In the survey conducted in September 2025, respondents answered questions about their expected tariff pass-through after being exposed to a hypothetical scenario. Each respondent was randomly assigned one of two hypothetical scenarios: 1) tariff duration of 1 year and 2) tariff duration of 3 years. We find higher expected pass-through for firms exposed to a hypothetical scenario with a longer duration of tariffs: these firms

[22] Financial Post, May 14, 2025 "Canada's new tariffs on U.S. drop to "nearly zero" with exemptions" available at https://financialpost.com/commodities/canadas-new-tariffs-on-us-drop-to-nearly-zero-with-exemptions-oxford-says. "It's a very strategic approach from a new prime minister to really say, 'We're not going to have a retaliation,'" Tony Stillo, Oxford's director of Canada economics, said in an interview. "It's a strategic play on the government's part to not damage the Canadian economy."

[23] While initially, remissions were announced to be a temporary 6-month measure (until October 16, 2025), they were extended to December 16, 2025 and then to February or July 2026 for different goods.

[24] Results are unchanged when we permute the order in which we add the regressors.

[25] Details are provided in Appendix C.

expect to have a higher pass-through of tariffs to consumers by 20.4 p.p. relative to firms with shorter scenario of 1 year (59%). This analysis of firms survey data indicates the importance of the beliefs about the persistence of the tariffs in the tariff pass-through.

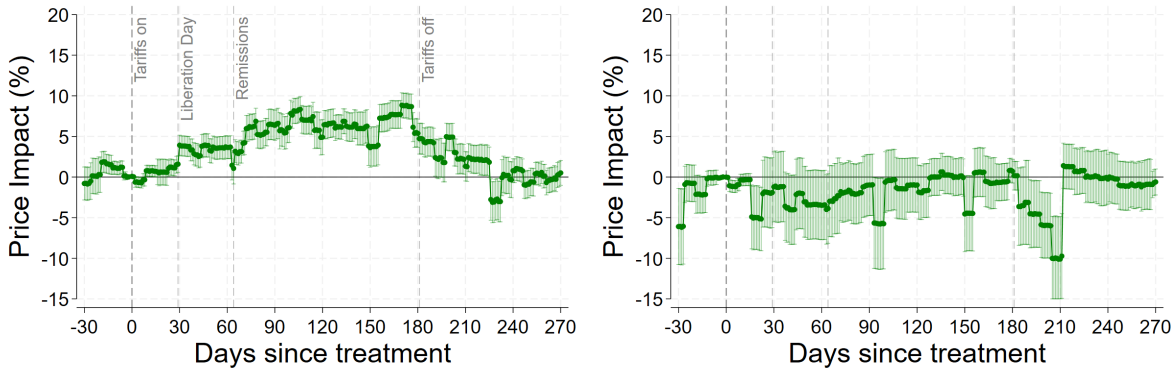
5 Tariff visibility

A distinctive feature of some Canadian retailers in our sample is the use of explicit *tariff banners* on shelf tags (e.g., a *Tariffed* label) that makes the policy origin of cost increases salient at the point of purchase. To understand whether Tariff banners affect the pass-through, we modify specification (1) and estimate:

$$\Delta_h \ln p_{irt} = \beta_{0,h} D_{it} + \beta_{tb,h} \left(D_{it} \times \mathbb{1}\{TB_{ir} = 1\} \right) + \delta_{rt}^{(h)} + \delta_{ct}^{(h)} + \varepsilon_{irt}^{(h)}, \tag{2}$$

only for observations for the two retailers that used tariff banners, where a product that (at any time) exhibited a tariff banner has $TB_{ir} = 1$. We observe 1192 unique tariffed products in these two retailers, of which 671 displayed a tariff banner.

Figure 6. Price impact estimates conditional on Tariff banner



(a) Products with Tariff banner **(b)** Products without Tariff banner

Note: The price impact of tariffs is estimated by the difference-in-differences linear projections of the March 4 effect using specification (2). Each plot provides the estimates for each of the two subgroups (with/without Tariff banner) of the price impact on Tariffed goods relative to the control group (Domestic Non-substitutes). Vertical lines refer to March 4, April 2, May 7, and September 1, 2025, respectively.

Figure 6 shows that tariffed imported products with a tariff banner exhibit substantially larger and faster retail price responses than tariffed imported products without a banner: the estimated treatment effect becomes positive shortly after implementation and climbs to economically meaningful magnitudes within a few days, while the corre-

sponding series for tariffed imports without the banner is insignificant and considerably noisier.[26] This pattern suggests that tariff *visibility* may materially affect pass-through.

Why would visibility matter for pass-through? A central (but often implicit) friction in retail pricing is the fear of antagonizing customers. A classic starting point in the literature is the evidence that consumers impose fairness norms on firms' pricing decisions and view some price increases as illegitimate (Kahneman, Knetsch, and Thaler, 1986). Building on this idea, Rotemberg (2005) formalizes "customer anger" as a real economic cost that can rationalize price rigidity: firms may delay or smooth price adjustments because nominal price increases trigger scrutiny about whether the firm is behaving fairly. In related theoretical work, Rotemberg (2011) emphasizes that firms may avoid pricing patterns that could be interpreted as opportunistic, because customers who reject the "benevolent firm" hypothesis become angry and impose penalties on the firm. These mechanisms line up with direct evidence from firm surveys that customer considerations loom large in managers' pricing decisions and can dominate literal menu costs (Blinder et al., 1998; Zbaracki et al., 2004). Complementing the survey evidence, Anderson and Simester (2010) provide field-experimental evidence that customers react adversely to pricing outcomes they perceive as unfair: customers who observe that the same retailer later sells a product at a lower price reduce subsequent purchases.

In this framework, a tariff is not only a cost shock; it is also an *explanation* for why posted prices change. When the tariff is not salient, a retailer raising prices risks being perceived as raising markups, which can trigger fairness-based punishment (lower loyalty, reduced demand, reputational harm) and thereby dampen pass-through even if costs rise. A visible "Tariffed" banner can shift attribution away from the retailer and toward government policy, reducing perceived unfairness and the associated anger cost. Recent theory makes this inference channel explicit: when consumers care about fairness and form beliefs about firms' costs and motives, equilibrium prices can display incomplete and delayed pass-through that depends on what consumers infer from observed price changes and available information (Eyster, Madarász, and Michaillat, 2021). Tariff banners can be interpreted as providing precisely the information that changes consumers' inferences about why prices are rising, thereby relaxing a reputational constraint on price adjustment.

Interpreting the banner split causally requires care. Banner use is likely endogenous:

[26] We would like to note a potential caveat in this finding – misclassifications of the country of origin (the U.S.) and/or HS8 category could have misclassified products into tariffed group. However, it is also possible that the retailer has not raised prices on some of the tariffed products and has not marked them with a tariff banner because it has negotiated with suppliers such that suppliers absorbed the tariffs without impact the retail price.

retailers may choose to display a tariff tag precisely when larger price changes are anticipated or when they expect consumers to be particularly sensitive. Moreover, banner status may correlate with product category, competitive conditions, or the size of the underlying cost shock, all of which could independently affect pass-through. Nonetheless, the pattern in Figure 6 is consistent with a sharp prediction of fairness/anger models: conditional on tariff exposure, increasing the salience and credibility of the *justification* for a price increase should raise the willingness of firms to adjust posted prices, leading to faster and more complete pass-through.

This result has policy implications. Targeted tariffs paired with clear, credible disclosure may accelerate retail price adjustment by reducing retailers' concern about customer backlash. Conversely, when there is uncertainty about the products affected by the tariffs, firms may absorb more of the shock in margins (at least temporarily) or adjust more slowly, muting observed pass-through. Whether transparency is normatively desirable depends on the objective (revenue, protection, inflation management), but our evidence suggests that the informational environment around a tariff can be a first-order determinant of pass-through dynamics.

6 Conclusions

This paper studies how retaliatory tariffs transmit to consumer prices in an advanced open economy. We exploit Canada's 2025 tariffs on U.S. imports—a large shock with clear implementation and subsequent removal—to measure retail price adjustment using daily product-level posted prices from major Canadian retailers linked to product-level tariff exposure.

We document three broad patterns. First, retaliatory tariffs raise the prices of directly affected goods, but pass-through is gradual and incomplete and we find little evidence of systematic spillovers to untariffed products. Second, the dynamics are asymmetric: price effects build slowly after imposition but unwind quickly after the September 1, 2025 removal, with most of the increase reversed by the end of the year. Third, information at the point of sale matters. Pass-through is substantially larger for products explicitly labeled as "Tariffed," while tariffed products without such labels show little detectable price response, consistent with retailers passing through more of the cost when they can credibly attribute price increases to policy.

Taken together, the results show that tariff pass-through is shaped by expectations and information, not only by tariff rates and coverage. The pronounced asymmetry—slow pass-through after imposition but rapid unwinding after removal—is consistent with

forward-looking pricing when firms are uncertain about whether tariffs will persist. The visibility result points to a related margin: when tariffs are explicitly labeled at the point of sale, retailers can more easily attribute price increases to policy, and pass-through is higher. The limited spillovers to untariffed goods are also consistent with an information channel: when tariff exposure is salient to consumers, domestic producers may have less scope to raise prices without drawing scrutiny, dampening opportunistic spillovers. More broadly, the inflationary consequences of trade policy depend on the clarity of the policy path and on how policy changes are communicated to firms and consumers. In this sense, the sharper price responses we observe in Canada may reflect a comparatively clearer and less volatile sequence of policy changes than in recent U.S. episodes, where tariff announcements and implementation have often been murkier and more variable.

Several questions remain for future work. A natural next step is to connect retail pricing responses more directly to upstream cost changes, inventories, and sourcing adjustments to distinguish price-setting from supply-chain avoidance. Another is to examine how consumer demand and substitution respond when tariffs are explicitly labeled, which would clarify the welfare and incidence consequences of visibility. More broadly, cross-country evidence beyond the United States remains scarce; the Canadian episode provides a benchmark for understanding how trade shocks propagate to inflation in other advanced economies.

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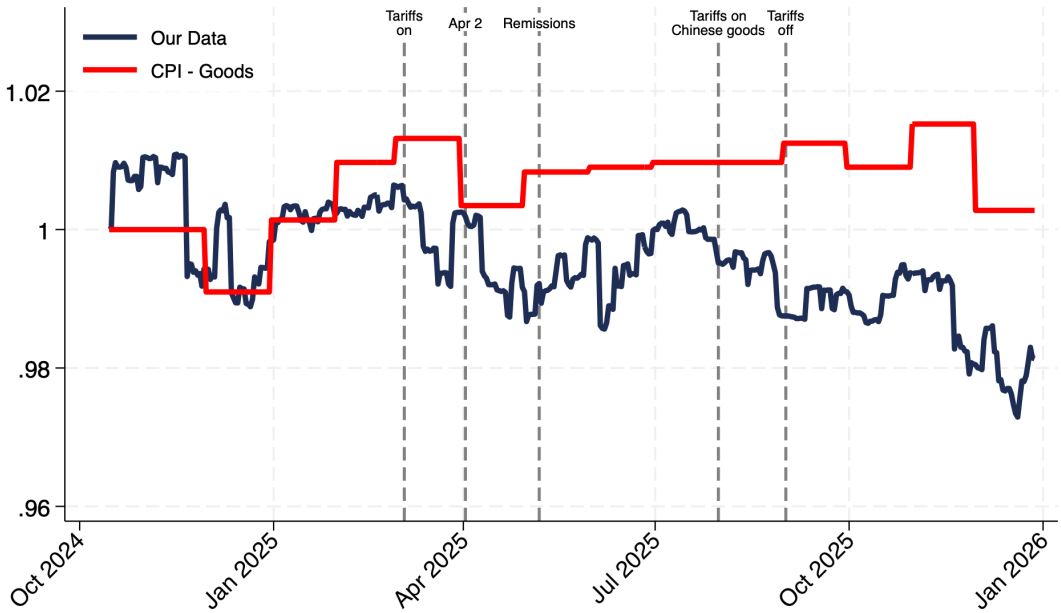
Appendix

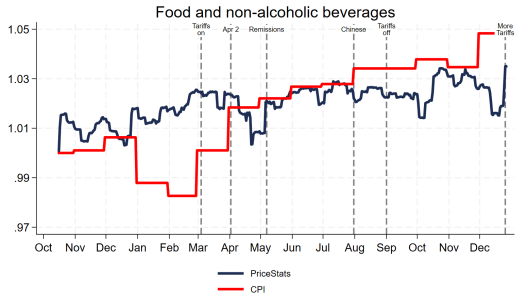
A Additional Tables and Figures

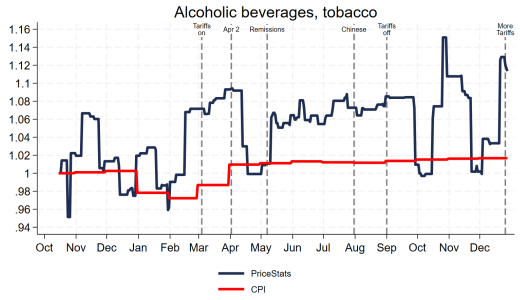
Figure A1. Price movement in our data (with clothing) in comparison with CPI.

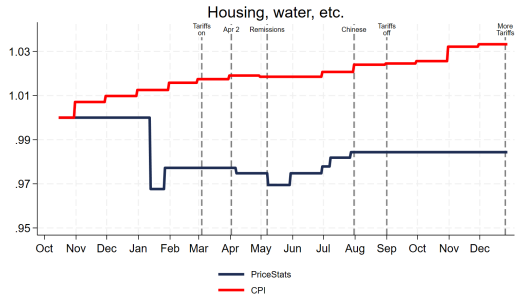


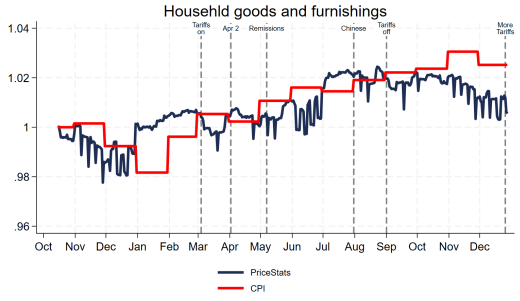
Note: The index with our data is constructed as a weighted geometric mean of observed product-level price changes, using CPI expenditure weights at the 3-digit COICOP level. This version includes COICOP 300 (Clothing and footwear). In the CPI, clothing prices are quality-adjusted (often using hedonic methods), whereas our matched-model index uses posted prices without quality adjustment. Because apparel items typically enter at higher prices and are discounted over their life cycle, and because we do not link discontinued items to replacement models, the apparel component mechanically drifts downward over time. As a result, including COICOP 300 induces a persistent downward trend in the index compared to the more stable quality-adjusted CPI.

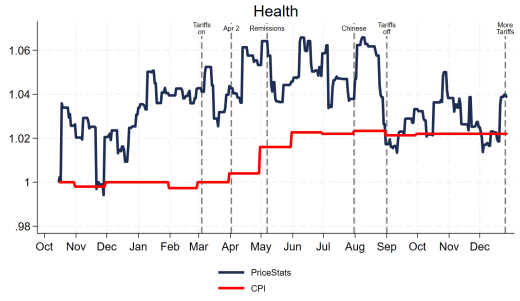
Figure A2. Price movement in PS in comparison with CPI by COICOP.

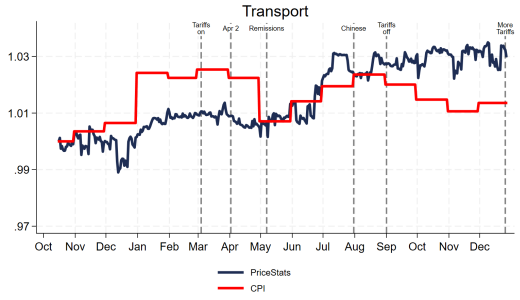


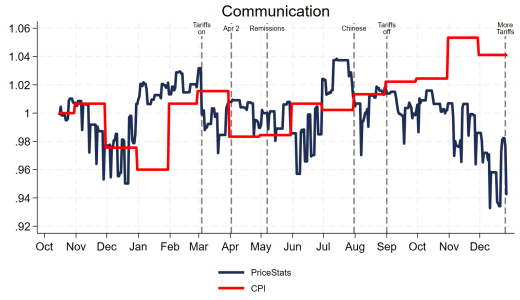


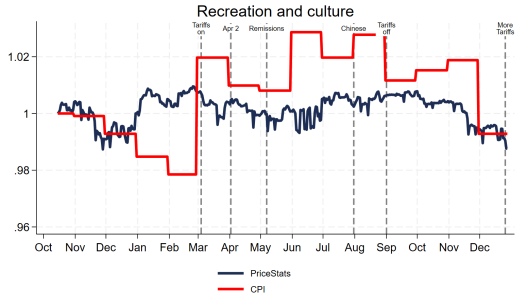












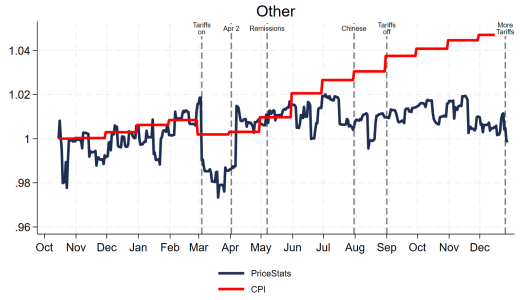
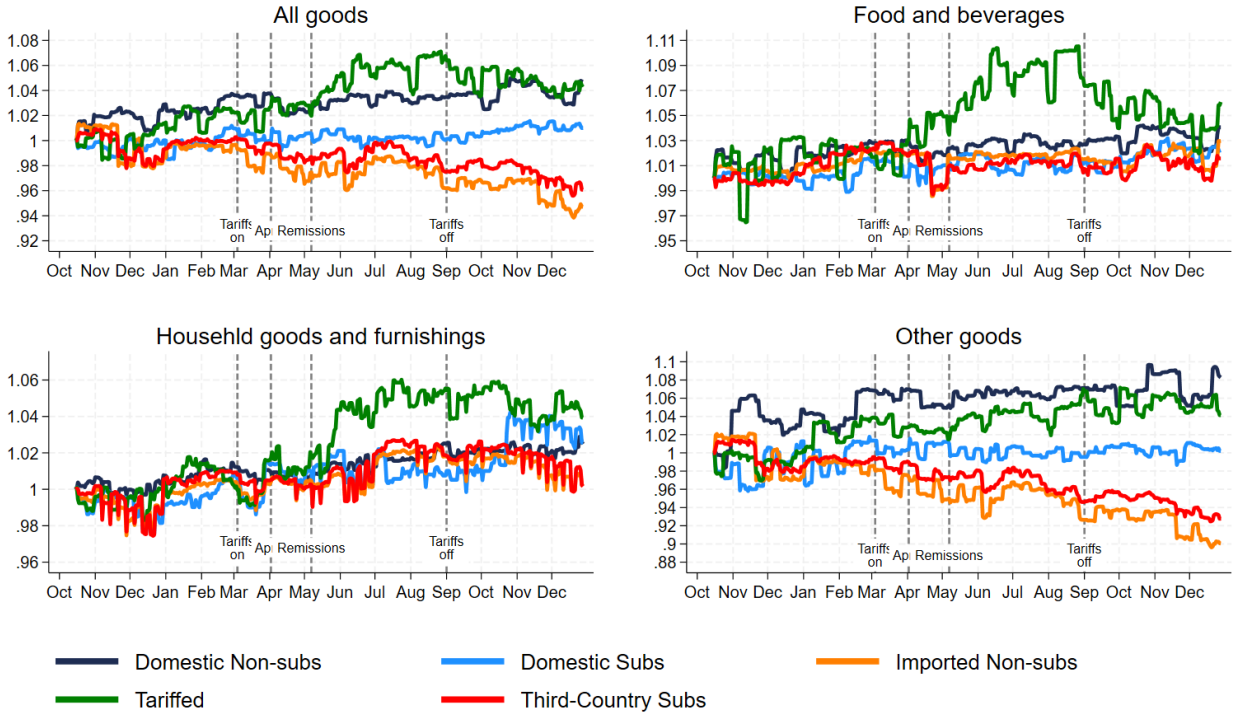
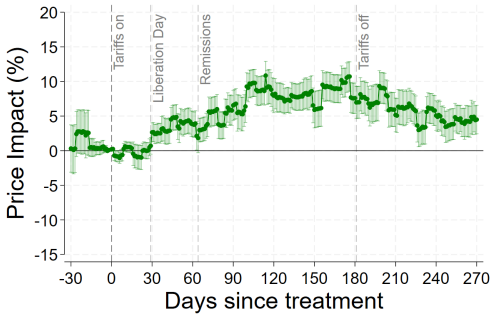


Figure A3. Price movements by product groups - Including Sales

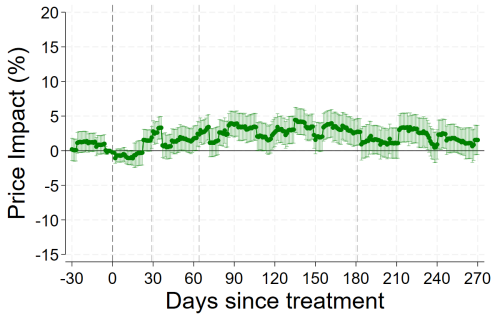


Note: Price indexes are weighted geometric means of price changes, with COICOP 3-digit weights. Tariffed are goods imported from the US subject to Canadian tariffs; Domestic substitutes are domestic goods in the tariffed HS8 categories; Third-Country substitutes are goods imported from third countries in tariffed HS8 categories; Imported Non-substitutes are goods imported from the US or third countries in non-tariffed HS8 categories; and Domestic Non-substitutes are domestic goods in non-tariffed HS8 categories. Canadian retaliatory tariffs are imposed at HS8 level.

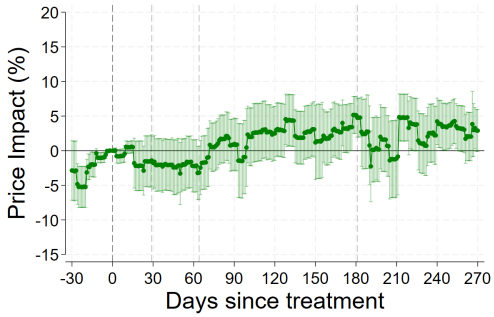
Figure A4. Price impact estimates across CPI categories



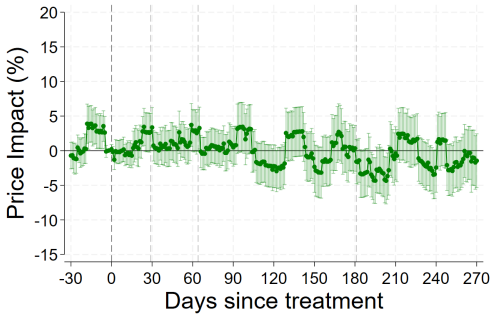
(a) Food and beverages



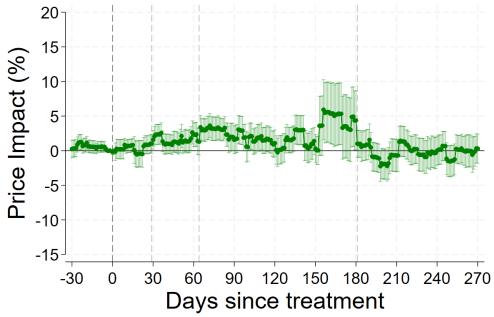
(b) Household operations, furniture, and equipment



(c) Health and personal care



(d) Transportation



(e) Recreation, culture, and reading

Note: The price impact of tariffs is estimated by the difference-in-differences linear projections of the March 4 effect using specification (1). Each plot provides the estimates for each of the CPI categories of the price impact on Tariffed goods relative to the control group (Domestic Non-substitutes). Vertical lines refer to March 4, April 2, May 7, and September 1, 2025, respectively. Coefficients are averaged across retailers using the weights of Footnote 14.

Table A1. Canadian Tariffs in 2025

Date	Measure	Tariff/Action	Product Scope	Policy Details
A. Tariffs and actions on U.S. imports				
March 4	Retaliatory Tariffs	25% surtax	Machinery, appliances, furniture, electronics	First wave of retaliatory tariffs targeting approximately C$30 billion in U.S. imports
March 13	Retaliatory Tariffs	25% surtax	Steel, aluminum, consumer durables	Expanded list worth about C$29.8 billion; intended to increase pressure on key U.S. exports
April 9	Auto Tariffs	25% surtax	U.S.-origin vehicles and auto parts (non-USMCA-compliant)	Strategic focus on autos; subject to exemptions and future quota arrangements (announced on April 3)
May 7	Remission Order: General Sectors	0% effective rate (relief)	Medical, public safety, packaging, manufacturing, and food processing inputs	Temporary surtax relief for eligible goods imported on or before October 16, 2025; must meet CBSA criteria (announced on April 15)
Sep 1	Canadian retaliatory tariffs are removed		Tariffs removed on most of the products	Tariffs on steel, aluminum and cars remain
B. Tariffs on non-U.S. imports				
July 31	Steel and Aluminum Goods Tariffs	25% surtax	Goods with steel melted/poured and aluminum smelted/cast in China	Addresses global overcapacity and non-market policies; exempts U.S.-origin goods (CUSMA), casual goods, and shipments under C$5,000
Dec 26	Steel Derivative Products Tariffs	25% tariff	Steel derivative products (structures, fasteners, chains, springs, furniture, prefab buildings)	Applies to full value from all countries; exemptions for motor vehicle/aircraft parts (until July 1, 2026), western wind towers, and goods in transit

B AI methods for classifying affected products

To determine which of the products in the scraped data are affected by tariffs, we employ AI methods to 1) identify each product's country of origin, and 2) assign each product to an 8-digit HS category. Since Canadian tariffs are imposed on products that fall within certain HS8 categories and are imported from the United States, this classification allows us to determine which products are tariffed. Among the products that are not tariffed we will also know which ones are close substitutes to the tariffed products, and which of the substitutes are supplied domestically versus imported from other countries.

B.1 AI-assisted Country-of-Origin Identification at the Individual Product Level

We develop an AI-assisted procedure to assign a *country of origin* (COO) to individual retail products using a large language model (LLM) with integrated web-search capabilities. The method takes as inputs (i) a product name and (ii) a URL to the product page on a Canadian retailer website. Rather than relying on a pre-labeled training set, the procedure uses targeted retrieval and a structured decision rule embedded in the prompt to produce a single COO label for each product.

For each product, we submit an API request consisting of a fixed system prompt and a short user query that references the product name and instructs the model to begin with the provided URL. The system prompt defines a step-by-step protocol:

1. **Inspect the retailer product page** (starting from the provided URL) and extract an explicit COO statement when available (e.g., "Made in X" or "Country of origin: X").

2. If the page indicates only that the item is **"Imported"** without naming a country, treat this as incomplete and **continue searching**.

3. **Search other trusted sources** (e.g., other retailers' listings and/or the manufacturer) using the product name to find an explicit COO.

4. If no explicit COO is found, **infer the most likely single country** using brand knowledge and typical production locations for the product category.

5. Return **"Imported"** only as a last resort when the item is clearly not produced in Canada but no specific country can be found or inferred; return **"Unknown"** if no usable information is available and no reasonable inference can be made.

The API call uses the following structured message template:

```
System: [Fixed instructions defining the COO protocol and strict output format]

User: Tell me the country of origin of this item: {product_name}.
      Begin your search with this URL: {product_url}.
```

We assess the accuracy of this approach using a validation sample of 8,941 products from three large retailers. For these products, COO was obtained either by scraping it directly from the product description on the retailer's website (Retailers 2 and 4) or by using the product's UPC to scrape COO from other retailers' websites (UPC codes were also scraped from Retailer 7's website). These latter products allow us to test not only the accuracy of AI predictions when COO information is available directly on the retailer's website, but also when the AI must rely on external sources to infer it. Table B1 summarizes performance along these two margins. First, the model correctly distinguishes domestic from imported items 85% of the time. Second, restricting attention to products for which a specific COO can be benchmarked against directly observed COO, it identifies the correct country in 88% of cases. Accuracy is broadly similar across the most common origin countries in our sample.

Table B1. AI-Based Validation of Country-of-Origin Classification

	Products	Accuracy (%)
Panel A: Overall Accuracy		
Domestic/Imported	8941	85.0
Imported	1194	99.8
Domestic	7747	82.8
Country of Origin	8211	87.9
Canada	7146	89.7
China	584	84.8
Mexico	72	61.1
United States	57	71.9
Italy	45	97.8
Taiwan	39	84.6
India	18	94.4
Other countries	250	52.8
Panel B: Accuracy by Retailer		
Retailer 2	1166	96.1
Retailer 4	6149	88.7
Retailer 7	896	71.5

Note: This table reports the number of products and prediction accuracy for AI-based country-of-origin classification. Accuracy rates are computed using three validations sample from three distinct retailers present in the dataset. Predictions were generated in July 2025 and January 2026 using an OpenAI retrieval-augmented large language model with web-search capabilities (gpt-4o-mini-search-preview).

Based on COO classifications, we define a product as **Domestic** if its country of origin is Canada, or if the price banner had "Prepared in Canada" on it in 2025. On the other hand, if a retailer had a "Tariff" sign on the product's price banner in 2025, we label its COO as the United States. We drop products for which COO was not classified and which did not have "Prepared in Canada" or "Tariff" banner in 2025. All remaining 98,644 products not tagged as **Domestic** are tagged as **Imported**.

Table B2 provides the country of origin for imported products in the data. For 43,140 of imported products (44.6%), we could not classify the country of origin—we will assume those are not U.S. imports. Among the remaining imported products, 16,715 (17.3%) are imported from the United States. The biggest number of imported non-U.S. products come from China (19,837), Mexico (2,852), Italy (2,071), Taiwan (1,773), Vietnam (1,384), Japan (1,014), and Korea (1,007). The remaining imports from 93 countries amount to

7,943 unique products.

Table B2. Country of origin for imported products

Country of origin	Products	%
Imported	43,140	44.6
China	19,837	20.5
United States	16,715	17.3
Mexico	2,852	2.9
Italy	2,071	2.1
Taiwan	1,773	1.8
Vietnam	1,384	1.4
Japan	1,014	1.0
Korea	1,007	1.0
Other (93 countries)	7,943	8.2
Total	96,706	100.0

B.2 AI-based HS-8 Classifications at the Individual Product Level

We develop an AI-based method to classify individual retail products directly into the HS hierarchy at the 8-digit level. This method has recently been used by Cavallo, Llamas, and Vazquez (2025) for classifying individual products in PriceStats micro data for retailers in the United States. Our approach uses large language models (LLMs) in a hierarchical and iterative manner: rather than assigning a product to an HS code in a single step, the algorithm moves sequentially through the HS tree, refining the classification one level at a time. This mirrors how a human expert would classify goods, starting from broad distinctions and progressively narrowing the choice set until reaching a unique HS-8 code.

At each stage, the model is provided with (i) the product description and (ii) the list of valid HS subcategories at the current level of the hierarchy. The prompt, submitted via API, is simple and structured to minimize ambiguity. It takes the following form:

```
Classify the following item into one of these subcategories: {list}
Item: "{product description}"
Return exactly one code from the list.
```

Once a category is selected, we retrieve its immediate subcategories and repeat the procedure. This process continues recursively until the model reaches a terminal node of

the HS tree at the 8-digit level. Each decision is therefore local, constrained, and conditioned on all previous choices.

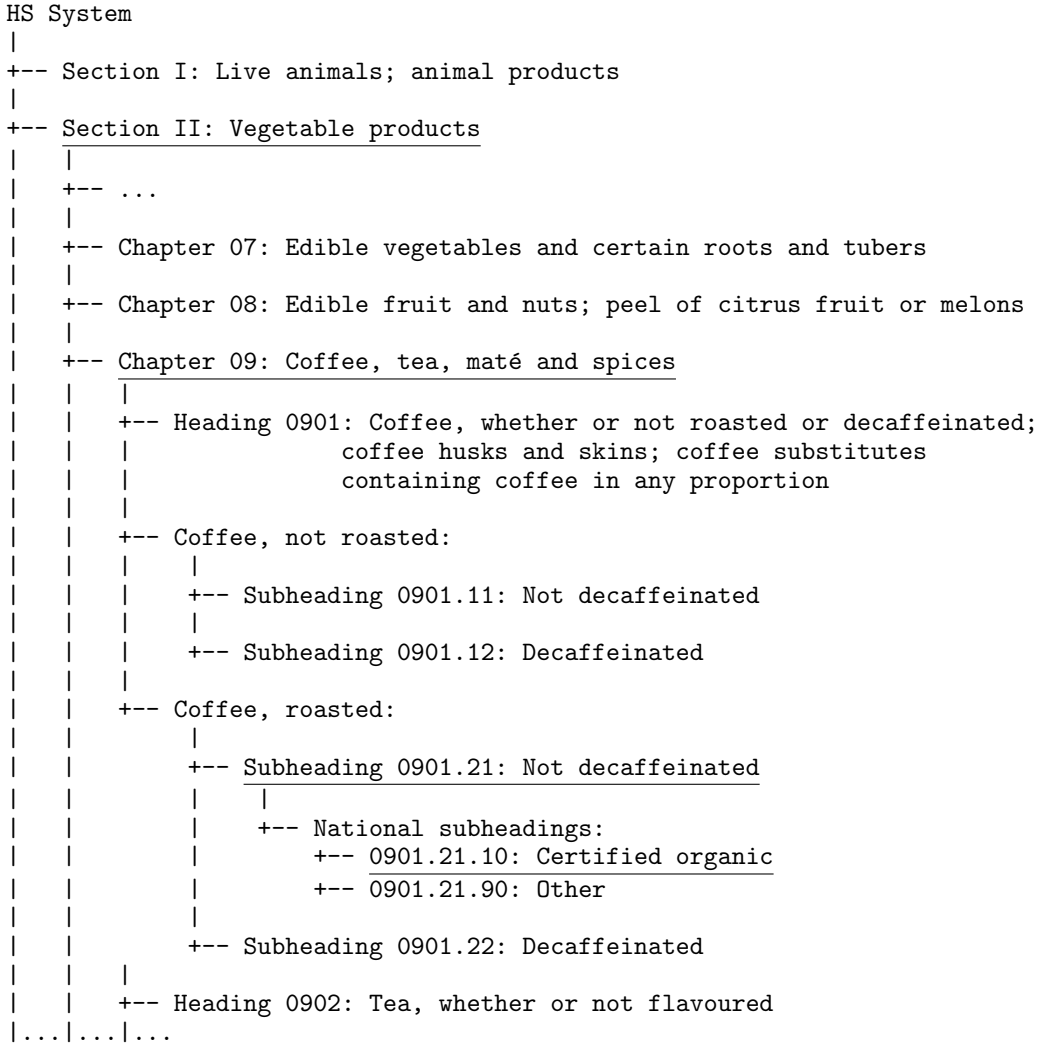
Figure B1 illustrates this process using the example of *roasted, non-decaffeinated coffee*. At the top level, the model distinguishes between broad HS sections such as *Live animals and animal products* and *Vegetable products*, correctly selecting the latter. Within *Vegetable products*, it identifies *Chapter 09: Coffee, tea, maté and spices*. In the next iteration, it selects *Heading 0901: Coffee, whether or not roasted or decaffeinated*. It then chooses *Subheading 0901.21: Coffee, roasted, not decaffeinated*. Finally, it assigns the product to the relevant national subheading—*0901.21.10: Certified organic*—from the set of valid national subheadings under 0901.21.

A key advantage of this approach over traditional machine-learning classifiers is that it does not require a labeled training dataset. Instead, it leverages the ability of large language models to perform structured, coarse-to-fine reasoning over hierarchical taxonomies. These distinctions are made without task-specific training and rely instead on the model's general semantic reasoning. By limiting the choice set at each step, the method reduces classification errors that often arise when models are asked to choose among thousands of HS codes simultaneously.

In practice, many standard HS descriptions are ambiguous or too vague to support reliable classification, particularly for retail products. To address this, we augment the original HS hierarchy with enriched labels and clarifying annotations that make category boundaries more explicit. These refinements improve accuracy in cases where the official HS text lacks the specificity needed to classify consumer goods in our sample.

We apply this classification procedure uniformly to both imported and domestic products. This allows us not only to identify goods directly subject to tariffs, but also to map domestic products into the same HS categories, facilitating comparisons between imported goods and their domestic competitors. The resulting HS-8 assignments provide a consistent and scalable bridge between high-frequency retail price data and tariff schedules, enabling precise measurement of tariff exposure at the product level.

Figure B1. Structure of the Harmonized System classification, illustrated for roasted, non-decaffeinated, certified organic coffee



C Pass-through in the survey of Canadian firms

We use data from the survey of Canadian firms (Business Leaders Pulse) conducted in September, 2025. In this survey, the survey respondents were randomly presented with one of two hypothetical scenarios with different duration of the tariffs between the U.S. and Canada. After that duration, tariff is then removed. Scenario 1 presents duration of 1 year, whereas scenario 2 presents a longer duration of 3 years.

Scenario 1 *Suppose that tariffs between the US and Canada remained in place for the next year and were then removed.*

Scenario 2 *Suppose that tariffs between the US and Canada remained in place for the three years and were then removed.*

After the text of the scenario, respondents received the following question.

What portion of the tariff cost increases would you pass through to Canadian customers? If you plan to pass on all of the tariff cost increases, insert 100. If you do not plan to pass on any of the tariff cost increases, insert 0.

Respondents in Scenario 2 with longer duration of tariffs reported higher pass-through of tariffs to their customers of 75% than respondents with shorter scenario of 60% (Figure D1), on average.

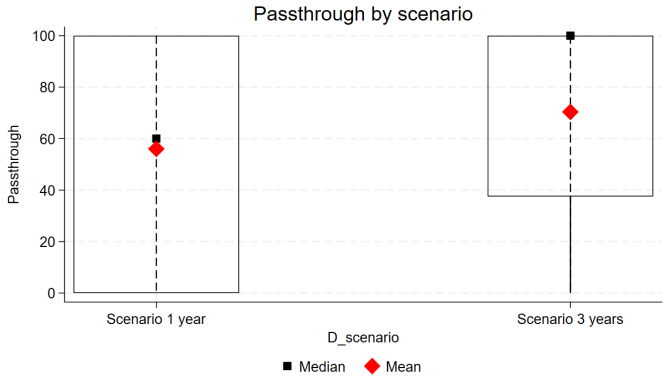
We estimate the following simple model:

$$pass - through_i = a + b * T_i^{scenario3years} + \epsilon_i \tag{D.1}$$

where $pass - through_i$ is tariff pass-through reported by a firm i, $T_i^{scenario3years}$ is a dummy variable equal 1 if respondent i was assigned scenario with tariff duration of 3 years, and equal 0 if respondent i was assigned scenario with tariff duration of 1 year.

Estimation results are presented in Table D1. When firms expect that tariff are going to last longer (3 years), they expect to have a higher pass-through of tariffs to consumers by 20.4 p.p. relative to firms with shorter scenario of 1 year (59%). This analysis is very simple, and it does not control for the size of the tariffs. Nevertheless, these results are suggestive of the importance of the role of the expectations about the duration of the tariffs on firm's tariff pass-through.

Figure D1. Pass-through of tariffs by scenario



Note: This figure presents median and mean pass-through of tariffs reported by firms for two scenarios of the durations of tariffs.

Table D1. Estimation results for pass-through for firms.

	Pass-through
$T_i^{scenario3years}$	20.441**
	(7.944)
Constant	59.425***
	(5.766)
Observations	205
R^2	0.032

Notes: This table presents estimation results of Equation D.1. Results are from Huber robust regressions to control for outliers and influential observations. Standard errors in parentheses. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

D Pass-through of Canadian tariffs on Chinese imports

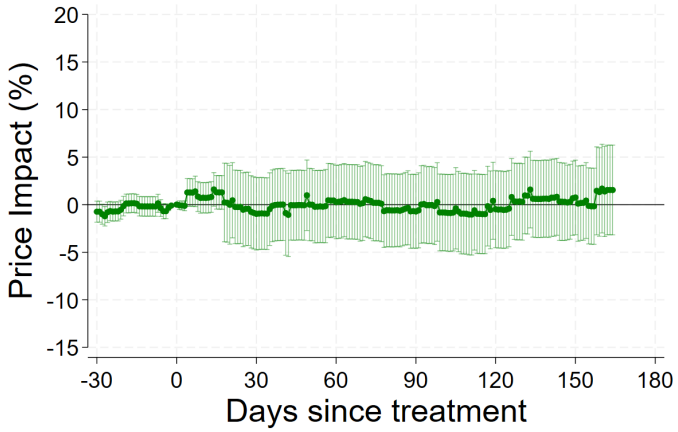
In addition to assessing the impact of Canadian tariffs on the U.S. imports, our data allow us studying the impact of Canadian tariffs on Chinese imports. To protect domestic steel and aluminum industries from non-market policies and practices by China, Canada imposed 25% tariff on steel goods that contain steel melted and poured in China and on aluminum goods that contain aluminum smelted and cast in China, effective July 31, 2025.[27] In our dataset, there are 80 products subject to these tariffs (about 0.07% of observations), including furniture, appliances, major and small tools, spare parts for personal

[27]Details on tariffs are provided here: https://gazette.gc.ca/rp-pr/p2/2025/2025-08-13/html/sor-dors154-eng.html

transportation equipment and non-durable household goods. These products are sold at the household goods retailer.

We use a similar approach as in (1) to estimate the impact of tariffs on goods using Chinese steel and aluminum.[28] Figure C1 shows that the July 31 Canadian tariffs had no effect on the relative prices of tariffed products.

Figure C1. Price impact estimates for tariffs on China



Note: The price impact of tariffs is estimated by the difference-in-differences linear projections of the July 31 effect. The plot provides the estimates of the price impact on Tariffed goods relative to the control group (Domestic Non-substitutes).

Canada's tariffs on Chinese goods may generate little detectable retail pass-through for two practical reasons. First, these measures are comparatively low-visibility at the shelf: unlike the U.S. counter-tariffs (which in some retailers were explicitly framed to consumers), the China tariffs are harder to translate into a simple product-level narrative at the point of sale, especially when exposure depends on upstream production attributes rather than a straightforward country-of-origin label. With weaker consumer attribution, retailers may have less incentive to reprice quickly, consistent with the broader idea that customer reactions can discipline pricing.

Second, the China measures likely looked less persistent from the perspective of retailers and their suppliers. When these tariffs were applied in October 2025, firms had just observed that most U.S. counter-tariffs were rolled back in September. In fact, the China tariffs were subsequently eased in early 2026. If firms expected the China measures to be temporary, standard menu-cost mechanisms predict less adjustments and pass-through.

[28] Due to the lower number of treated products, we do not estimate heterogeneous pass-through coefficients.