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MACROECONOMIC IMPACTS OF A CANADA-U.S. TARIFF WAR

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Macroeconomic Impacts of a Canada-U.S. Tariff War

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We use a vector autoregressive (VAR) model to produce macroeconomic forecasts conditional on two trade war scenarios between the United States and Canada. The first scenario examines the impact of tariff imposition on Canadian exports to the United States, while the second scenario incorporates the effect of Canadian retaliatory tariffs on imports from the United States. Our results show that these trade tensions would have significant consequences on the Canadian economy, with notable declines in GDP and employment. The analysis highlights a more pronounced contraction when imports are also affected, emphasizing the amplifying effects of retaliatory measures. In the trade war scenario with retaliatory tariffs, the model predicts a GDP decline of 4.2%, corresponding to the loss of approximately 700,000 jobs in Canada. Furthermore, the model interprets these scenarios as negative demand shocks for the Canadian economy, leading to deflationary pressures and an adjustment of interest rates by the Bank of Canada. These results illustrate the relevance of risk scenarios in the analysis of economic shocks and their usefulness for economic policy design.

Nous utilisons un modèle à vecteurs autorégressifs (VAR) pour produire des prévisions macroéconomiques conditionnelles à deux scénarios de guerre tarifaire entre les États-Unis et le Canada. Le premier scénario examine l'impact de l'imposition de tarifs douaniers sur les exportations canadiennes vers les États-Unis, tandis que le second ajoute l'effet de contre-tarifs canadiens sur les importations en provenance des États-Unis. Nos résultats montrent que ces tensions commerciales auraient des conséquences significatives sur l'économie canadienne, avec des baisses notables du PIB et de l'emploi. L'analyse met en évidence une contraction plus marquée lorsque les importations sont également affectées, soulignant les effets amplificateurs des mesures de rétorsion. Dans le scénario de guerre tarifaire avec représailles, le modèle prévoit une baisse de PIB de 4,2% ce qui correspond à la destruction d'environ 700 000 emplois au Canada. Par ailleurs, le modèle interprète ces scénarios comme des chocs de demande négatifs pour l'économie canadienne, entraînant des pressions déflationnistes et un ajustement des taux d'intérêt par la Banque du

Canada. Ces résultats illustrent la pertinence des scénarios de risque dans l'analyse des chocs économiques et leur utilité pour l'élaboration des politiques économiques.

1 Introduction

This note analyzes the macroeconomic consequences of the imposition of tariffs affecting trade between Canada and the United States. The methodology relies on conditional forecasts produced using VARs (vector autoregressive models), as recently described by Moran et al. (2024). We adapt this analysis to the study of a trade war between the United States and Canada by examining two distinct scenarios. In the first, a negative shock affects Canada's exports to the United States, capturing the impact of tariffs on Canadian exports. In the second, a negative shock to Canada's imports from the United States is added to the first, to reflect the effect of retaliatory tariffs imposed by the Canadian government.

In a scenario without Canadian retaliation, GDP declines by 3.2% one year after the implementation of tariffs. The contraction is more severe (4.2%) in a scenario with retaliation. Associated job losses range from 490,000 to 700,000 jobs. These predictions are more pessimistic than those of the Bank of Canada (Macklem, 2025), which forecasts a 3% decline in GDP over two years in the event of a trade war, and those of Steinberg (2025), who estimates a GDP decline of 1.5% in Canada.

The methodology allows for forecasting not only GDP and employment but also inflation dynamics, interest rates, and exchange rates. A notable result is that the trade war constitutes a negative demand shock and thus has deflationary effects, suggesting that the Bank of Canada would respond by lowering interest rates. The method is also applied at the provincial level, providing insight into the expected effects for Ontario and Quebec respectively.

2 Methodology

2.1 Conditional forecasting

The macroeconomic impacts of a trade war between the United States and Canada constitute a major public policy issue and have recently been the subject of various discussions and analyses. Tombe (2024) and Macklem (2025), in particular, assess the macroeconomic effects of tariffs on Canadian exports and imports using structural quantitative exercises based on modeling agents' decisions and their adjustments to the implementation of tariffs.[1]

The approach adopted in this note is complementary to that used by these authors. Indeed, our VAR-based approach emphasizes historical macroeconomic data variations, assuming that shocks

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[1]The analyses by Macklem (2025) are built upon the work of Baqaee and Farhi (2024).

similar to those studied here have previously affected the Canadian economy and that their effects can therefore be identified through an appropriate analysis of historical fluctuations.

This method originates from the academic work of Waggoner and Zha (1999). It consists of estimating a VAR model on a given historical sample (from the first quarter of 1981 to the fourth quarter of 2024 in our case) and then using the model to produce forecasts. These forecasts are initially unconditional, meaning that no constraints are imposed on the model when generating them. Conditional forecasts are then produced by imposing a predetermined trajectory (the scenario) for certain variables under study while allowing the model to adjust its forecasts for other variables. The importance of such risk scenarios is highlighted in the Bernanke (2024) report on the Bank of England, which recommends their increased integration into forecasting and communication strategies. Conditional forecasts enable policymakers to anticipate various risk scenarios, an essential asset in an uncertain context.

It is worth noting that the VAR methodology used in this analysis implies that shocks and scenarios affecting the economy have ultimately transitory effects. The simulated effects of the trade war will eventually dissipate, and the economy will return to an equilibrium state, although this adjustment process may be very gradual. In this context, the trade war represented in our analysis is an event that affects trade between the two countries only temporarily. A different methodological approach should be used to assess the effects of a permanent decoupling of trade between Canada and the United States.

The macroeconomic variables included in our analysis are as follows: the Consumer Price Index (CPI), real GDP, employment level, exports and imports, the interest rate, and the exchange rate between the Canadian and U.S. dollars. Table 1 in the appendix provides a detailed description of these variables, sourced from the Fortin-Gagnon et al. (2022) database. This selection of variables is standard in the VAR literature and provides an overview of the aggregate macroeconomic impacts of the export and import shocks studied.

2.2 Scenarios

The first scenario examines the macroeconomic impacts of imposing tariffs on Canada's exports to the United States. To capture the impact of these tariffs, we impose a negative trajectory on the evolution of these exports: this trajectory begins in the first forecast quarter (2025Q1) and ends after one year, with a cumulative effect of -10% on exports relative to their initial level. A similar negative trajectory, but affecting Canada's imports from the United States, with an equally cumulative effect of -10% after one year, is then examined to reflect the imposition of Canadian retaliatory tariffs.

A central element of this exercise is the calibration of shocks on Canadian international trade. The 25% tariffs imposed by the Trump administration and the Canadian retaliatory measures will have direct effects on Canadian trade. In the scenario considered here, U.S. exports decrease by 10% after one year. This 10% case is consistent with the forecasts of the Bank of Canada (see Figure 3 in Macklem, 2025).

A rough calculation leads us to a similar estimate. Boehm et al. (2023) estimate the trade elasticity to tariffs after one year to be 0.76. This implies that a 25% increase in tariffs leads to a 19% decline in Canadian exports to the U.S. This represents an upper bound because Canada's competitors (Mexico and China—and potentially soon the European Union) also face tariff increases, and Canadian energy exports are only subject to a 10% tariff. Moreover, the implementation of tariffs on all goods leads to a depreciation of the Canadian dollar, which counterbalances the negative effects of tariffs. We can therefore expect a decline in the range of 10% to 15%. The United States is Canada's primary trade partner (accounting for 75% of its exports) but not the only one. Thus, a 10% to 15% decrease in exports to the U.S. results in an overall export decline of approximately 10%.

3 Results

This section discusses the results for GDP and employment in detail, while the complete results are presented in the appendix.

Impacts of the trade war on Canadian real GDP

Figure 1 displays the responses of Canadian GDP following the implementation of the scenarios. Two significant episodes in Canadian macroeconomic history have been added to the figure for comparison purposes: the 2008–2009 recession and the COVID-19 period. The figure thus illustrates the GDP trajectory for each of these four episodes, using the quarter immediately preceding the shock as a reference point. For instance, the fourth quarter of 2019 serves as the reference point for the COVID-19 period, and the graph notably reveals that GDP plummeted sharply at the beginning of this episode, reaching a low of 87, representing a maximum decline of 13% relative to its initial level.

The figure reveals that our first trade war scenario (a 10% decline in Canadian exports to the United States) has significant effects on Canadian real GDP (solid blue line in the graph). This scenario leads to a gradual decline, with the maximum impact occurring one year after the shock, at which point GDP registers a 3.2% decrease relative to the 2024Q4 reference point. Scenario 2

Figure 1: **Impacts of the trade war on Canadian GDP**
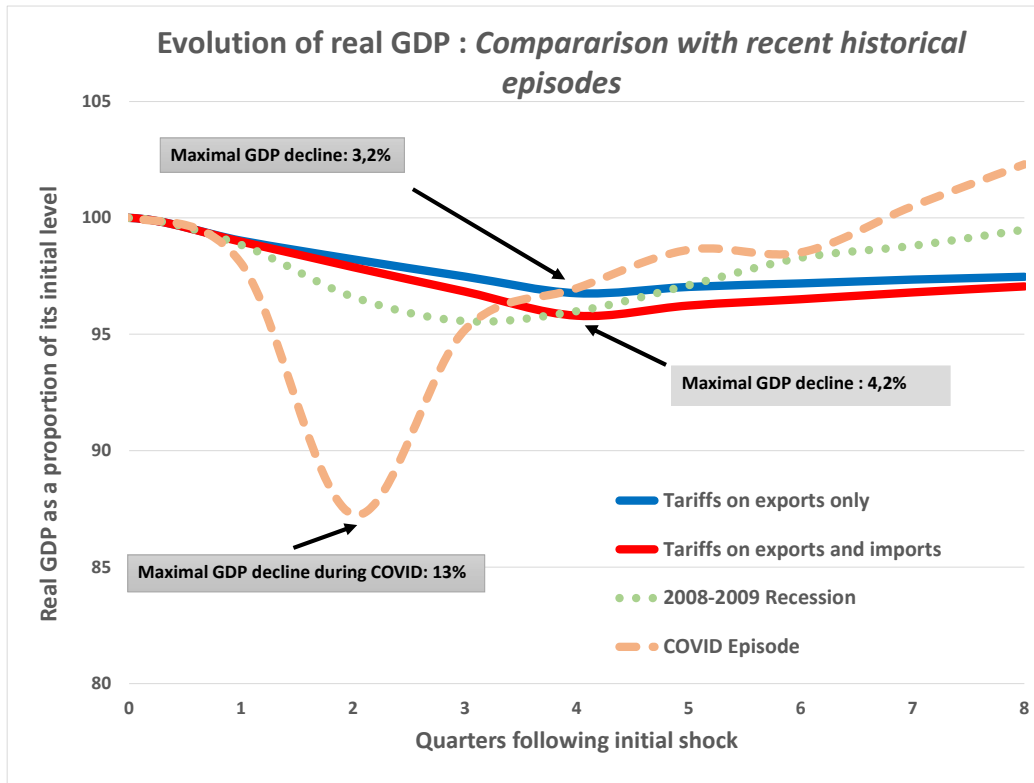
(a decrease in imports in addition to the decline in exports) is represented by the solid red line and follows a similar trajectory but with greater magnitude: the projected GDP trajectory now includes a maximum decline of 4.2% after one year.

However, it should be noted that adding the import decline scenario does not constitute an entirely new shock, as imports already decrease in the first scenario, as evidenced by the conditional forecasts presented in Figure 4 in the appendix. This scenario thus acts more as an amplifier of a demand shock on exports.

Overall, both trade war scenarios have GDP effects similar to those observed during the 2008 – 2009 recession, particularly in terms of the magnitude of the maximum declines, which are of the same order. However, our forecasts anticipate a more gradual decline in GDP than was observed in 2008–2009, as well as a slower recovery than that recorded after that recession. The figure also illustrates how the COVID-19 episode in early 2020 had unprecedented effects on GDP: the maximum decline observed in 2020 is three to four times greater than those predicted by our two scenarios.

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Impacts of the scenarios on employment in Canada

Figure 2 presents the responses of employment levels in Canada following the two scenarios. Once again, responses associated with the first scenario are in blue, while those corresponding to the second scenario are in red. Additionally, employment responses during the 2008–2009 recession and the COVID-19 episode remain included to facilitate comparisons across episodes.

Figure 2: **Impacts of the scenarios on employment in Canada**
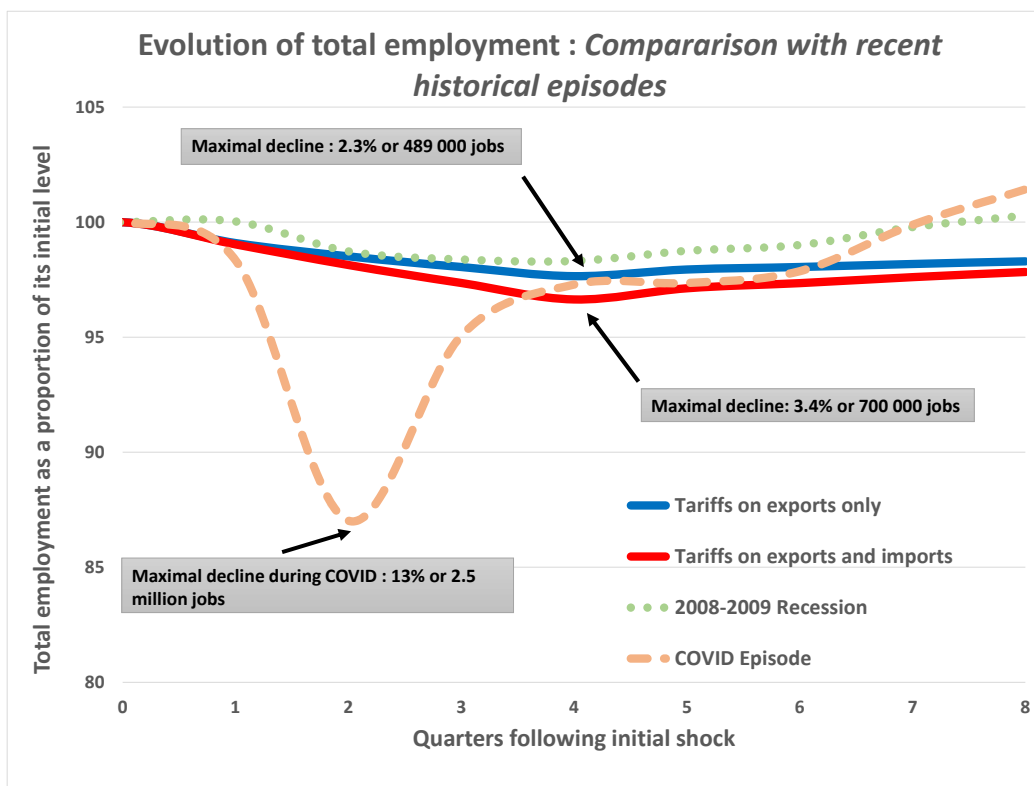
Overall, the employment responses mirror those of GDP described above: the magnitude of the simulated employment responses is similar to that observed during the 2008–2009 recession, although the maximum projected declines (2.3% or $490,000$ jobs for the first scenario, 3.4% or $700,000$ jobs for the second) are now slightly more pronounced than their equivalents during the 2008–2009 recession. This stronger employment response in our trade war scenarios can be attributed to the fact that the 2008–2009 recession was, overall, a relatively mild scenario for employment in Canada.

The responses of other macroeconomic aggregates are reported in the appendix. The economy's overall trajectory is consistent with interpreting the trade war as a negative demand shock

for the Canadian economy. In this context, the forecasts indicate that this trade war will have deflationary effects, limiting price increases and prompting the Bank of Canada to moderate or reduce interest rates.

Regional Impacts: Quebec and Ontario

An interesting aspect of our analysis is to examine the aggregate Canadian effects shown in Figures 1 and 2 at the provincial level.

To assess the significance of this issue, we now estimate the same VAR model but for Canada's two largest provinces: Quebec and Ontario. The following variables, included in the initial Canadian VAR, are replaced with their provincial counterparts: CPI, real GDP, employment, exports, and imports (the interest rate and exchange rate remain unchanged as these two variables are nationwide). The estimation sample now ends in 2024Q3 due to the availability of provincial data.[2]

We maintain the same export and import scenarios at the provincial level as in the aggregate case. However, it is worth noting that Quebec's economy is slightly less exposed to trade with the United States (70% of exports), while Ontario's economy is the most integrated (80% of exports) among Canadian provinces, particularly due to the automotive industry. The baseline scenario of a 10% export decline for Quebec therefore represents more of an upper bound, whereas this scenario could reflect Ontario's situation in the event that the automotive sector is spared from U.S. tariffs.

Figure 3 visualizes the cumulative effects of the scenarios, again for real GDP (top panel) and employment (bottom panel), for Quebec (left side of the figure) and Ontario (right side of the figure). The export shock reduces Quebec's real GDP by 3.9% and is accompanied by a maximum loss of $120,000$ jobs over a one-year horizon. When the import trajectory is also imposed, these reductions reach 4.5% for GDP and a loss of $160,000$ jobs, respectively. In Ontario, the effects are similar, although slightly less pronounced in relative terms. Recall that the 10% export shock for Ontario represents an optimistic scenario where the automotive industry is less affected by tariffs. If this sector is also impacted by the 25% tariffs, we could simulate trajectories with 15% shocks, in which case the effects on GDP and employment would be 5.4% and 4.1%, respectively.
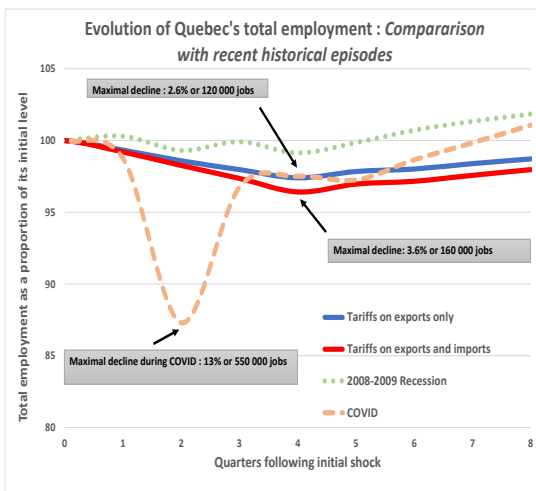
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[2]It is not possible to replicate the analysis from this note for other Canadian provinces because we do not have quarterly GDP data and other economic aggregates for them.
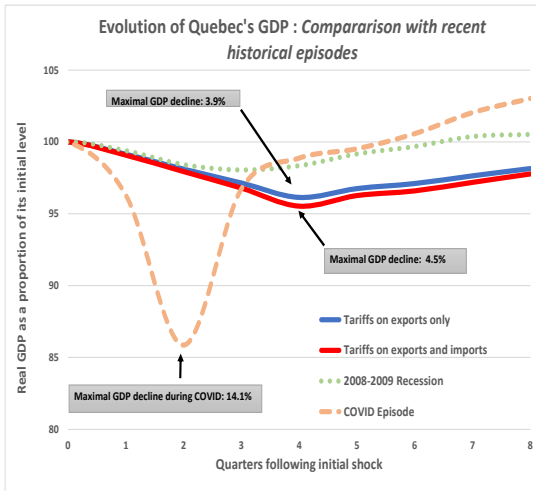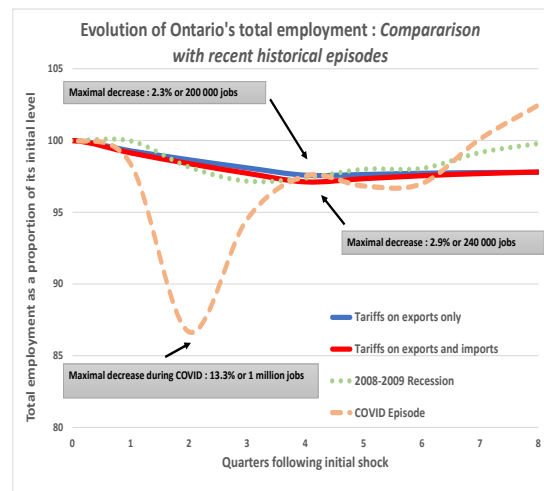
(a) Quebec
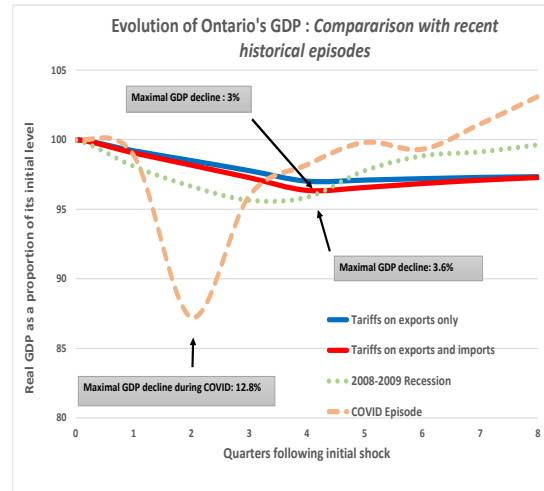
(b) Ontario

(c) Quebec

(d) Ontario

Figure 3: **Impacts of the scenarios on Quebec and Ontario: GDP and employment**

4 Conclusion

This study highlights the macroeconomic effects of a trade war between Canada and the United States using conditional forecasts from a VAR model. Our results show that the imposition of tariffs on Canadian exports to the United States leads to a significant contraction in GDP and employment, with amplified effects when retaliatory tariffs are also implemented. The analysis underscores that these trade tensions exert deflationary pressure and prompt a monetary policy response, with the Bank of Canada likely adjusting interest rates to mitigate the negative impacts.

Moreover, our simulations reveal that these shocks, although transitory, have consequences comparable to those observed during the 2008–2009 recession, albeit with a smaller magnitude. The regional impact varies, with Ontario being more exposed to trade disruptions than Quebec, particularly due to the significance of the automotive sector.

Our results highlight the importance of risk scenarios for economic analysis and decision-making in times of uncertainty. Conditional forecasts help anticipate the potential consequences of adverse trade policies and guide appropriate macroeconomic responses. Finally, future research could build on this analysis by exploring more complex scenarios, incorporating firms' strategic responses, and assessing the long-term effects of a permanent trade decoupling between Canada and the United States.

References

Baqaee, D. R. and E. Farhi (2024). Networks, barriers, and trade. *Econometrica 92*(2), 505–541.

Bernanke, B. S. (2024). Forecasting for monetary policy making and communication at the bank of england: a review. Report to the Bank of England, April.

Boehm, C. E., A. A. Levchenko, and N. Pandalai-Nayar (2023, April). The Long and Short (Run) of Trade Elasticities. *American Economic Review 113*(4), 861–905.

Fortin-Gagnon, O., M. Leroux, D. Stevanovic, and S. Surprenant (2022). A large Canadian database for macroeconomic analysis. *Canadian Journal of Economics/Revue canadienne d'économique 55*(4), 1799–1833.

Macklem, T. (2025). Tariffs, structural change and monetary policy. www.bankofcanada.ca/wp-content/uploads/2025/02/remarks-2025-02-21.pdf. Bank of Canada - Speech of Governor Macklem.

Moran, K., D. Stevanovic, and S. Surprenant (2024). Risk scenarios and macroeconomic impacts: Insights for canadian policy. https://doi.org/10.54932/DCXI8467. 2024s-03, Cahiers scientifiques, CIRANO.

Steinberg, J. (2025, feb). Canada gets a break from american tariffs—for now. here's how our economy would fare if trump changes his mind. *The Hub Canada*. https://thehub.ca/2025/02/04/joseph-steinberg-canada-got-a-break-from-american-tariffs-for-now-heres-h

Tombe, T. (2024). Partners in prosperity: Exploring the significance of Canada-U.S. trade. https://businessdatalab.ca/wp-content/uploads/2024/10/PartnersInProsperity_EN_Final.pdf. Business Data Lab, Canadian Chamber of Commerce.

Waggoner, D. F. and T. Zha (1999). Conditional forecasts in dynamic multivariate models. *The Review of Economics and Statistics 81*(4), 639–651.

Appendix: Complete results

Recall that the VAR used in our analysis includes seven variables: the price level, real GDP, employment, exports, imports, the interest rate, and the exchange rate. The first five variables are expressed in growth rates, while the interest rate is measured in percentage points and the exchange rate is in levels. The VAR is estimated using observed data up to 2024Q4, and the forecast horizon spans three years, from 2025Q1 to 2026Q4.

Figure 4 shows the observed macroeconomic evolution up to 2024Q4 (black lines) and the unconditional (blue lines) and conditional (red lines) forecasts under the export decline scenario for the seven macroeconomic aggregates. Note that the forecast horizon (two years) differs from the scenario horizon, where imposed trajectories for exports and imports last only one year. The conditional forecasts for exports and imports thus result from imposing a trajectory for the first forecast year, while the model takes over for the remaining year.

Figure 4: **Macroeconomic impacts of a 10% decline in exports over one year**
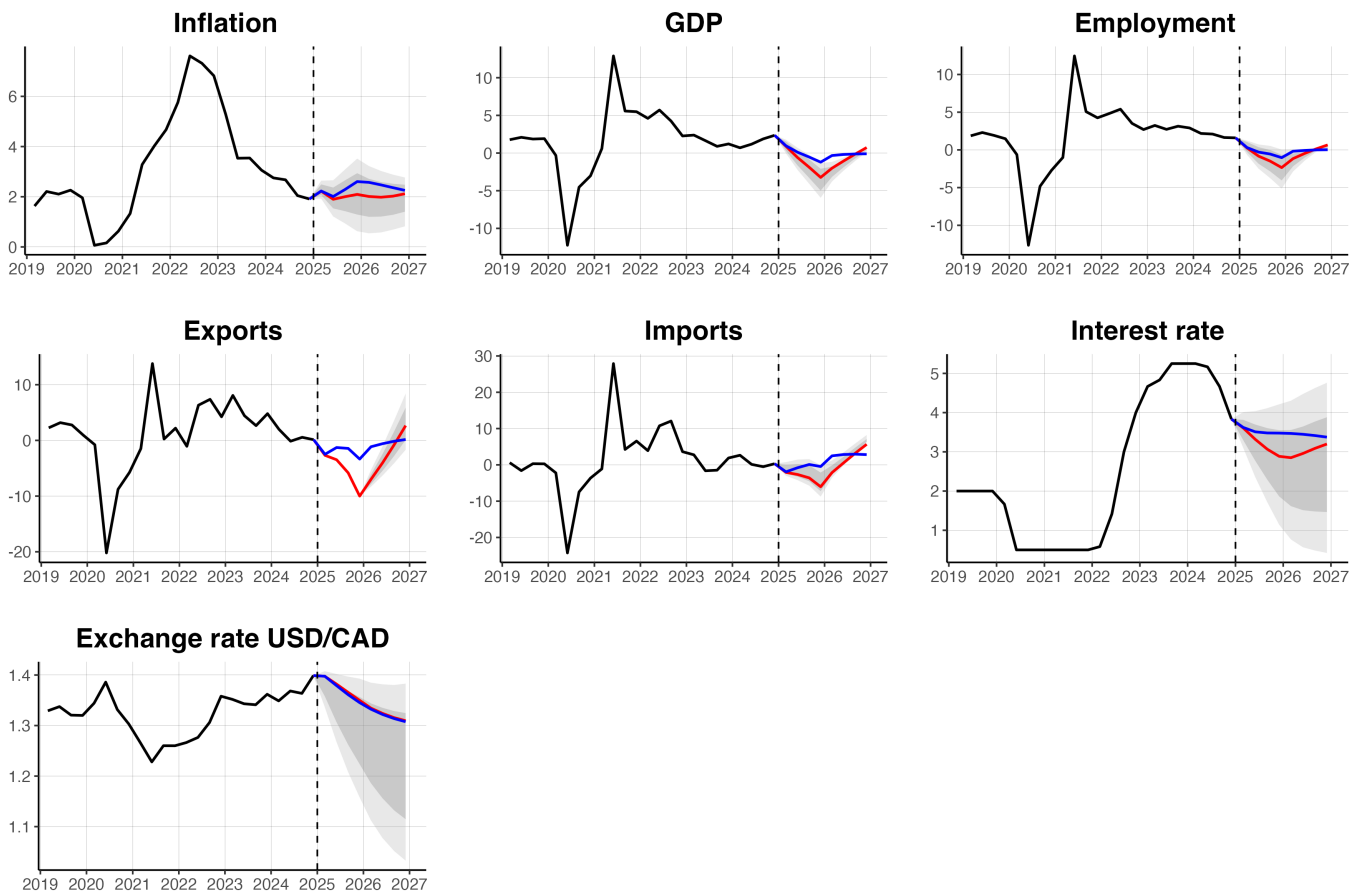
The unconditional forecast (blue lines) shown in Figure 4 already anticipates an economic slowdown affecting the Canadian economy in the coming quarters. Indeed, the model predicts that real GDP and employment levels will exhibit slightly negative growth rates, particularly in 2026. Moreover, the unconditional forecast suggests that the recent weakness in export and import growth will persist over the next few quarters, though without experiencing sharp declines. Meanwhile, the price growth rate (inflation) is expected to remain slightly above the official 2% target, leading the Bank of Canada to continue monetary easing and interest rate reductions, albeit very gradually. Finally, the forecast suggests that the Canadian dollar's exchange rate will eventually strengthen slightly against the U.S. dollar.[3]

The conditional forecast under the scenario is then depicted by the red lines in the figure. Naturally, a significant decline in exports is observed, lasting one year and culminating in a -10% drop relative to the initial level, as imposed by the scenario. Note again that the trajectory displayed for exports *after* this period is then produced by the model without further intervention.[4]

The conditional forecasts for the other macroeconomic aggregates indicate how the model adjusted its projections to account for the imposed export trajectory. The figure reveals that the model interprets the export decline as a negative demand shock for the Canadian economy. Consequently, the previously mentioned economic slowdown is exacerbated by the export decline scenario: the negative growth rates in real GDP and employment deepen, approaching levels (-4% for GDP, -3% for employment) similar to those observed during the 2008–2009 Great Recession. These pronounced declines form the basis of the results already analyzed in Figures 1 and 2.

Furthermore, imports, driven by the declines in GDP and employment, are also negatively affected—an endogenous economic adjustment resulting from the decline in aggregate income rather than the effects of Canadian retaliatory tariffs. Inflation, in turn, remains very close to the 2% target, whereas it was slightly above this target in the unconditional scenario. This moderation in inflation reflects the VAR model's interpretation of the shock as a negative shift in aggregate demand for the Canadian economy. In response, the exacerbated economic slowdown and moderated price increases logically prompt the Bank of Canada to lower interest rates more rapidly than in the unconditional forecast.

Simultaneous 10% declines in exports and imports

Figure 5 then illustrates the macroeconomic effects when an import decline, again with a cumulative effect of -10% over four quarters, modifies the previously studied scenario. Note once
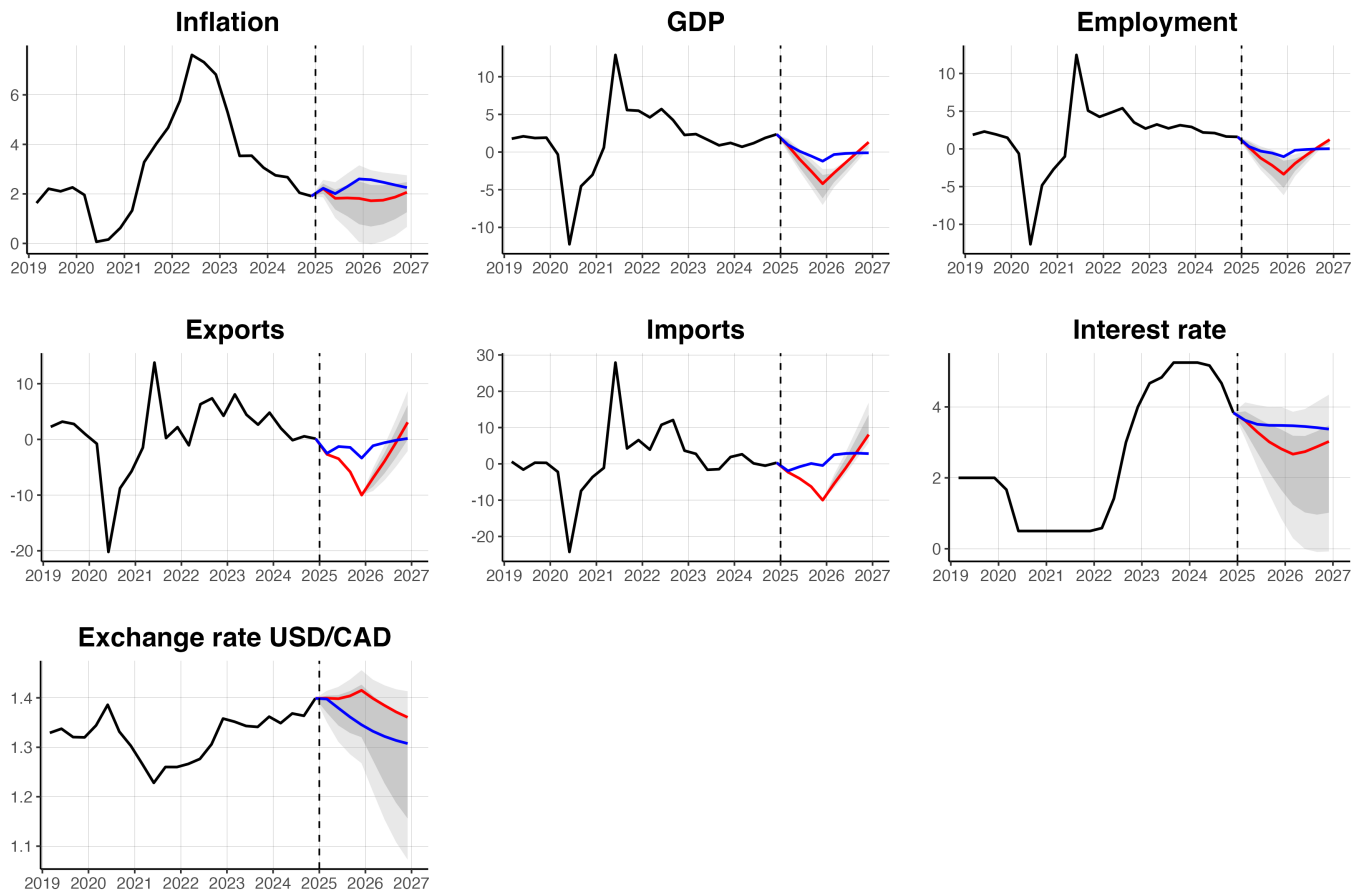
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[3]The exchange rate is measured such that a decrease in its level represents an appreciation of the Canadian dollar.
[4]However, economic developments during the first year will naturally affect forecasts for 2026.

Figure 5: **Macroeconomic impacts of simultaneous 10% declines in exports and imports**

again that since imports were already declining endogenously in the previous scenario, the second scenario amplifies the first rather than introducing an entirely new shock.

The figure shows that, relative to the unconditional forecast (which remains unchanged from Figure 4), the macroeconomic responses to this additional shock are qualitatively similar to those analyzed earlier but of greater magnitude. Indeed, the economic slowdown intensifies, with GDP and employment growth rates reaching -4.2% and -3.4%, respectively. The deflationary effects of the scenario, represented by the gap between the blue and red lines, are also more pronounced, with inflation remaining below the 2% target. In response, the interest rate decreases more rapidly than in Figure 4.

An important contrast between the two figures is the projected exchange rate trajectory. In the scenario where only exports declined, the exchange rate gradually appreciated in both the unconditional and conditional forecasts. By contrast, Figure 5 shows that the conditional forecast

now predicts a stabilization of the exchange rate at recently depreciated levels, at least for the first forecast year. The addition of the import shock suggests that no appreciation in the Canadian dollar's value will materialize in the coming quarters.

Table 1: Variable descriptions and data sources

Variables	Description	Canada	Quebec	Ontario
Inflation	CPI (2002=100)	v41690973	v41691783	v41691919
GDP	GDP (2017 chained dollars)	v62305752	ISQ	OMF
Imports	Imports (2017 chained dollars)	v62305748	ISQ	OMF
Exports	Exports (2017 chained dollars)	v62305745	ISQ	OMF
Employment	Total employment	v2057603	v2057698	v2057717
Interest Rate	Official discount rate	v122550		
Exchange Rate	USD/CAD Exchange rate	v37426 and v111666275		

Notes. Monthly variables, CPI, Employment, Interest rate, and Exchange rate, are expressed as quarterly averages. ISQ: Institut de la statistique du Québec. OMF: Ontario Ministry of Finance.