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Monetary Policy Challenges in a Volatile World

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Abstract

Rising macroeconomic volatility and structural transformations—such as deglobalization, climate risks, and rapid AI adoption—are reshaping inflation dynamics and the trade-offs faced by monetary policy. Drawing on existing literature, internal modelling, and new experimental evidence, we assess the conditions under which policymakers may accommodate supply-driven inflation. We find that the current framework retains sufficient flexibility to balance inflation and output stabilization, provided inflation expectations remain well anchored, and policy responses appropriately reflect the size and persistence of supply shocks, as well as prevailing economic conditions.

Topics: Monetary policy framework and transmission, Inflation dynamics and pressures, Structural challenges
JEL codes: E31, E32, E52, E58

Résumé

La volatilité macroéconomique croissante et les transformations structurelles — telles que la démondialisation, les risques climatiques et l'adoption rapide de l'intelligence artificielle — modifient la dynamique de l'inflation et les arbitrages auxquels la politique monétaire est confrontée. En nous appuyant sur la littérature existante, des travaux de modélisation internes et de nouvelles données expérimentales, nous examinons les conditions dans lesquelles les décideurs peuvent tolérer une inflation d'origine liée à des chocs d'offre. Nous constatons que le cadre actuel conserve une flexibilité suffisante pour concilier la stabilisation de l'inflation et de l'activité économique, à condition que les anticipations d'inflation demeurent bien ancrées et que la réponse de politique monétaire tienne compte de l'ampleur et de la persistance des chocs d'offre, ainsi que de la conjoncture économique.

Sujets : Cadre et transmission de la politique monétaire ; Dynamique de l'inflation et pressions inflationnistes ; Défis structurels.
Codes JEL : E31, E32, E52, E58

Introduction

The Bank of Canada's flexible inflation-targeting framework includes a target range (1–3%) and a medium-term horizon for returning inflation to 2% when faced with supply and demand shocks. Without compromising price stability, this flexibility allows monetary policy to account for other relevant considerations, including maximum sustainable employment.

Ongoing structural forces are making the Canadian economy more vulnerable to economic volatility. Trade conflicts, supply chain disruptions, and extreme weather events are becoming more frequent. Global shocks have a larger supply component, higher variance, and more persistent effects on inflation in advanced economies (Forbes et al., 2026). At the same time, demographic trends and rapid AI adoption are reshaping workforce participation, skill composition, and productivity. These supply-side developments have important implications for the conduct of monetary policy and are likely to increase tensions between inflation and output stability.

Against this backdrop, central banks are reassessing their monetary policy framework and asking whether a richer playbook for monetary policy is needed to keep inflation on target.

Reconsidering whether and to what extent tolerating temporary inflation spikes is appropriate is warranted. Since the 2000s and until the onset of the COVID-19 pandemic, the traditional monetary playbook implied that central banks have "looked through" temporary supply-driven inflation (Nakamura et al., 2025). Under this approach, policymakers tolerate short-lived price increases and refrain from tightening policy when the underlying shocks are expected to dissipate without threatening the anchoring of long-term inflation expectations. Today, however, structural transformations and potentially larger and more persistent shocks might reshape the inflation process, requiring policymakers to balance the risk of inflation persistence against the risk that policy tightening leads to sustained economic slack. The sharp and persistent inflation surge of 2021–22, a defining feature of the post-pandemic global economy, highlights the relevance of this risk-management problem.

In this context, the flexibility of the framework is paramount. While the two percent inflation target should not be called into question because it has proved effective in anchoring inflation expectations, increased vulnerability to supply-side shocks may call for greater flexibility. [1] For instance, this may include a wider inflation control range, a

[1] While the inflation target credibly anchors long-term inflation expectations, it cannot be the preferred tool to address the permanent consequences of structural change as monetary policy is neutral in the long run.

different time horizon for returning to target, or contingent application of the framework—for example, when and to what extent monetary policy should lean against inflationary supply-side shocks.

This note investigates whether the current framework can manage the monetary policy trade-offs implied by greater macroeconomic volatility and structural transformations (e.g. deglobalization, climate risks, and the adoption of AI). To this purpose, we leverage the existing literature, modelling work conducted at the Bank of Canada, and draw conclusions from new experimental evidence.

We reach three main conclusions. First, despite the inflationary pressures experienced after the pandemic, the Bank of Canada monetary policy framework proved effective in returning inflation to target without causing a sharp economic downturn. Second, in an increasingly volatile global environment, balancing the risk of persistent inflation against the risk of unnecessary economic slack can still justify accommodating temporary inflationary pressures. This includes placing greater weight on output gap stabilization, which can still deliver inflation outcomes within the control range and the framework horizon. Third, whether it is appropriate to support output by accommodating inflationary pressures depends on a range of conditions. Policymakers must assess whether the supply shock is expected to be sufficiently limited in size and persistence, and whether risks of pass-through to long-run inflation expectations, second-round effects, or broad-based price pressures remain contained. The state of the economy is also important. For instance, high initial levels of inflation require additional caution in providing further monetary stimulus. If adverse supply-side developments materialize when the economy is already operating with excess aggregate demand and the labour market is tight, firms are more likely to pass higher costs through prices (Blanco et al., 2024; Cavallo et al., 2023). In such circumstances, research underscores the importance of timely and decisive action (Karadi et al., 2024), as delaying policy adjustment may necessitate more aggressive tightening later and result in larger employment losses (Beaudry et al., 2023; Bullard et al., 2025; Kostyshyna et al., 2026).

These considerations are especially relevant in an environment where some shocks reflect permanent changes in the economic structure (e.g., trade reconfiguration, transformative technological change).[2] While monetary policy cannot directly influence the economy's productive capacity, it plays an important role in facilitating adjustment to such structural changes and in addressing the aggregate effects of sectoral relative price shifts and sectoral spillovers. At the same time, if such changes affect potential output, they complicate the real-time assessment of economic slack and inflationary pressures. The use of complementary tools, including survey data and cost-based measures, can

[2] See, for instance, Macklem (2026).

help mitigate this challenge. Recent advances in trend–cycle decomposition methods (Del Negro et al., 2017; Kamber et al., 2018; Fosso, 2025) can also be leveraged.

All in all, the current framework provides the flexibility to navigate more volatile shocks and structural change. Our analysis suggests that effective risk management and clear central bank communication play a key role in preserving price stability.

Flexible Inflation Targeting in Canada After the Pandemic

The Canadian Experience

The COVID-19 pandemic provides a rare stress test for our inflation-targeting framework, exposing it to unprecedented supply and demand shocks. In 2020, the virus' global spread forced countries—including Canada—to impose lockdowns. The onset of the pandemic triggered severe supply-chain disruptions—ranging from semiconductor shortages to dramatically higher freight costs—and, when combined with sizeable fiscal and monetary support, drove goods prices sharply higher (Kryvtsov et al., 2023; Bank of Canada, 2025; Hernández de Cos et al., 2024; Wu, et al., 2024).

By April 2021, CPI inflation had reached the 3 percent upper target band, mirroring trends in other advanced economies. The inflationary pressure intensified in early 2022, when Russia's invasion of Ukraine sent energy and food costs soaring. Those war-related spikes not only fed directly into headline CPI but also entrenched broader cost pressures. At the same time, firms re-engineered global sourcing strategies, bearing higher production costs, while the pandemic's fallout in labour markets (e.g., elevated vacancies and accelerated worker reallocation) put upward pressure on wage growth across many sectors. Furthermore, when the economy reopened, demand outpaced supply. Amid the combination of persistent global supply disruptions, strong demand, and a tight domestic labour market, year-over-year CPI inflation peaked at 8.1 percent, the highest level in decades. As these forces pushed inflation higher and broadened price pressures, the key policy concern became the risk that elevated near-term inflation would become entrenched in expectations. In early 2022, the Bank of Canada therefore initiated one of the fastest tightening cycles in its history, raising the policy rate from 0.25% to 4.5% over the course of the year to restore price stability and prevent spillovers from short-term inflation into longer-term expectations and price- and wage-setting behaviour (Bank of Canada, 2022). While inflation expectations are not a sufficient statistic for realized inflation, they proxy for beliefs about future marginal costs—a relevant object for price-setting decisions. By January 2024, CPI inflation had fallen back

to 2.8%, returning within the Bank's 1–3% target band. Najjar and Shapiro (2025) also find evidence that monetary policy tightening was largely responsible for the reduction in actual and expected inflation.

Despite the scale of inflationary pressures, the inflation-targeting framework proved to be an effective stabilizing force, preserving the credibility of the Bank of Canada's commitment to price stability. Throughout the inflation surge, long-term inflation expectations—measured through market indicators and surveys—remained anchored around 2% (Adrian, 2022; Bundick et al., 2024). Moreover, while short-term inflation expectations rose noticeably during 2021–22, they subsequently returned to levels consistent with their historical average. Compared with other OECD countries, Canadian households' inflation expectations were lower and less dispersed.

As suggested by recent literature, maintaining well-anchored inflation expectations has been a key to success. First, de-anchoring amplifies the effect of shocks on inflation expectations (Kostyshyna et al., 2024; Beaudry et al., 2023; Patzelt & Reis 2024) and makes disinflation slower and costlier. Second, decades of credible inflation targeting (Mendes, 2024) combined with clear, consistent communication (Macklem, 2024a) and public trust prevented the kind of self-reinforcing wage-price spirals that characterized past inflationary eras, such as the 1970s (Adrian, 2022; Mojon, 2024).

Another key success of the framework has been its flexibility in accommodating different monetary policy responses to inflationary pressures, depending on how broad based they are. For example, when they became persistent and widespread in 2022, the Bank pivoted decisively. This responsiveness reflects a key feature of the framework; the ability to adjust the speed at which inflation is returned to target over the policy horizon, tailoring the policy reaction function to magnitude and persistence of the shock. Kang et al. (2026) show that the Bank of Canada reacts more aggressively to demand-driven inflation relative to supply-driven inflation, which is consistent with historical behavior following the role played by base effects, pandemic-specific shortages, and energy price shocks in 2021.

Overall, the inflation-targeting framework proved resilient in the face of sudden, large supply shocks. The Canadian experience over this turbulent period affirms that a well-designed inflation-targeting framework can effectively navigate complex macroeconomic shocks, not only delivering price stability but also sustaining economic activity and resilience.

Cross-Country Perspectives

The importance of flexible inflation targeting in anchoring inflation expectations is also apparent when considering the historical experience of other central banks. Briganti et

al. (2026) analyze the experience of the RBNZ, a small-open economy like Canada in many respects, which adopted frequent changes to its monetary policy framework in the last decades.

In 1990, the RBNZ was the first central bank to adopt inflation targeting as a monetary policy framework, and price stability was defined as an inflation target of 0% to 2%. Earlier adjustments to the inflation-targeting framework—such as (i) changing the target range to 1–3%, and (ii) placing explicit emphasis on the 2% midpoint—contributed positively to anchoring long-term inflation expectations in New Zealand and aligned the RBNZ's framework to the Bank of Canada's.

The 2018 revision marked a significant policy shift, as New Zealand formally adopted a dual mandate. Alongside price stability, the central bank was tasked by the government with considering maximum sustainable employment (MSE) in its monetary policy decisions. However, in 2023, New Zealand returned to a single inflation-targeting mandate, removing MSE from its policy objectives. The rationale was to reinforce the credibility of the inflation target following the disruptions caused by post-COVID inflationary pressures (Treasury of New Zealand, 2023).

Some of the changes to the RBNZ framework have had a marked effect on long-run inflation expectations. For instance, the explicit focus on the 2% midpoint led to a slow convergence of long-run inflation expectations to this value. In contrast, there was no significant effect between 2018 and 2023, i.e., during the introduction and removal of the dual mandate and the COVID-19 pandemic, capitalizing on the low and stable inflation of the previous 30 years.

Nonetheless, as discussed in their last review of their monetary policy framework in 2023 (Reserve Bank of New Zealand, 2023), the RBNZ believed that a framework prioritizing the price stability mandate would improve the ability of the Monetary Policy Committee to communicate and clarify how to manage the trade-off between inflation and employment, therefore facilitating the successful conduct of monetary policy. In its 2023 five-year review of the Remit—a policy document from the Ministry of Finance that sets out monetary policy goals—the government sought public input. The feedback revealed that most respondents favoured a hierarchical approach that placed price stability at the top of the objectives. Similarly, a majority of Monetary Policy Committee members endorsed this prioritization, noting that it would offer clearer guidance for handling trade-offs between inflation and maximum sustainable employment (MSE) goals while reinforcing the credibility of the price stability mandate.

Trade Reconfiguration and Climate Change

Deglobalization

The global economic landscape is increasingly shaped by shocks to international trade flows, rising geopolitical fragmentation, and the partial reversal of decades-long globalization trends. A retreat from integrated global supply lines could unleash inflationary forces as countries face higher costs to reroute production and secure materials (Gopinath, 2024). At the same time, heightened trade uncertainty and supply chain reconfiguration may lead to long-term changes in production structures within Canada and across the global economy.

This evolving environment raises important questions about the robustness of flexible inflation targeting. How do increased protectionism (e.g., trade wars) and trade fragmentation alter the inflation-output trade-off faced by monetary policymakers? Can the framework accommodate shocks from protectionism and supply chain disruptions?

We first review existing estimates of the effects of protectionism and fragmentation on inflation and economic activity. Next, we examine the implications of deglobalization for the monetary policy framework. We discuss factors that are likely to affect the magnitude and persistence of inflationary pressure and analyze to what extent the central bank faces a monetary policy trade-off between stabilizing output and inflation.

Empirical Evidence

In the last decades, globalization has helped contain inflation in advanced economies by easing cost pressures and bottlenecks, as well as spurring price competition in tradable goods. However, at the aggregate level, the effect has been relatively small (e.g., Attinasi & Balatti, 2021).

As protectionism has been on the rise, empirical studies have assessed the macroeconomic impact of rising trade costs. Since past tariff hikes in advanced economies have typically been narrow in scope, available data offer limited insight into the effects of large and persistent deglobalization shocks.

Concerning inflation, historical tariff hikes resulted in higher inflation, although the estimated effects are quantitatively small. Barattieri et al. (2021) demonstrate this result using tariff data from antidumping duties for Canada. The 2018 U.S. tariffs fully fed into higher prices for affected imports yet added only around 0.1–0.2 percentage points to core inflation (see Barbiero & Stein, 2025; Minton & Somale, 2025). Tariffs on intermediate inputs tend to have stronger inflationary spillovers than those on final goods, since cost increases propagate through supply chains (see Barattieri &

Cacciatore, 2023). Finally, economic fragmentation that disrupts supply chains can create sustained inflationary pressures, as demonstrated by the energy shortages following Russia's invasion of Ukraine (Ascari et al., 2024; IMF, 2024).

A related strand of the literature focuses on tariff pass-through at the product level. Cavallo et al. (2025a) show that the 2025 U.S. tariffs prompted quick adjustments in domestic prices, though their magnitude remains modest relative to the announced tariff rates and varies by country of origin. For Canadian retaliatory tariffs, Cavallo et al. (2025b) find that average pass-through so far has been small—around 20% for tariffed products—with these products representing a small share of consumption and limited spillovers to other goods.

Several studies focus on the macroeconomic effects of tariffs on real aggregate variables. Concerning output, employment, and investment, existing evidence suggests that protectionist policies do not lead to significant employment gains in protected industries (Barattieri & Cacciatore, 2023), while also creating negative spillover effects in downstream sectors due to higher input costs. At the macroeconomic level, these policies reduce aggregate investment and output without delivering meaningful improvements in the trade balance. Input tariffs raise production costs for domestic firms that rely on imported components, dampening competitiveness and economic activity.

Trade Fragmentation and Inflation Targeting

Existing evidence suggests that if Canada were to face significant deglobalization pressures—such as rising protectionism and global trade fragmentation—the Bank of Canada could encounter a more challenging trade-off between inflation control and output stabilization. Deglobalization may raise inflationary pressures by disrupting supply chains and increasing import costs, while simultaneously weighing on output and investment. At the same time, however, existing research suggests that demand-side factors, including lower household income and reduced investment stemming from greater uncertainty, could offset some of the inflationary pressures.

Overall, a quantitative assessment specific to Canada is needed to determine the net impact of a large deglobalization shock. Cacciatore et al. (2026) employ a two-country, New Keynesian, multi-sector model calibrated to Canada and the United States to study whether larger and more frequent tariff shocks call for greater flexibility in the Canadian monetary policy framework.

The model focuses on changes in iceberg trade shocks, capturing both tariffs and broader sources of economic fragmentation. Such interpretation is consistent with Guerrieri et al. (2025) who demonstrate that trade cost shocks can be thought, in

reduced form, as cost-push shocks. Since the analysis abstracts from tariff revenues, the model does not account for their collection, redistribution, or associated economic effects such redistribution could generate. The model features quadratic price adjustment costs.[3] Each country includes five sectors: 1. Agriculture, Fishing and Forestry; 2. Mining and Quarrying; 3. Durables Manufacturing and Construction; 4. Non-Durables Manufacturing; 5. Services. Each sector produces output using a combination of domestic and imported intermediate goods. Trade occurs in both final and intermediate goods, highlighting the interconnected nature of North American production networks. Thus, trade cost shocks propagate through production networks, affecting not only directly targeted sectors but also those connected through input–output linkages.

We now briefly discuss the channels at work in the model, distinguishing between the effects of U.S. tariffs imposed on Canadian exports and Canadian tariffs imposed on U.S. exports. We analyze the dynamics of these different tariff shocks when monetary policy follows a historical Taylor rule for both Canada and the U.S. We consider a 10 percentage-point increase in tariffs. Compared to historical tariff increases, the shock affects a substantially larger share of trade goods, including Agriculture, Fishing and Forestry, Durables Manufacturing and Construction, and Non-Durables Manufacturing goods, reflecting substantial larger deglobalization threats in recent times.[4]

U.S. tariffs on Canadian exports

Higher U.S. tariffs reduce the competitiveness of Canadian goods in U.S. markets, reducing Canadian exports, output, and hours worked. Despite weaker domestic activity, CPI inflation rises in Canada due to second-round cost pressures transmitted through input-output linkages, e.g., higher U.S. prices triggered by tariffs ultimately raise the prices of Canadian imports—particularly for intermediate inputs.

Canadian Tariffs on U.S. Exports

Canadian tariffs directly increase import prices paid by households and firms. Expenditure switching (which depends on the elasticity of substitution between foreign and domestic products) towards Canadian goods increases domestic demand and creates additional price pressures. At the same time, higher import prices for tariffed goods lower households' and firms' real income, reducing aggregate demand and

[3] A growing literature emphasizes that the frequency of price adjustment itself is state dependent and can vary with inflation and aggregate conditions (e.g., Nakamura & Steinsson, 2008; Alvarez et al., 2016), a feature not captured by quadratic adjustment costs.

[4] Iceberg trade costs capture the economic costs associated with moving goods across borders—modelled as a fraction of goods effectively lost in transit. The analysis focuses on a sustained increase in these iceberg trade costs. Mining and Quarrying and Services are assumed to be exempted from tariffs. This sectoral focus reflects the fact that protectionist measures, such as tariffs, supply chain reshoring, or geopolitical disruptions, tend to target goods trade while leaving services largely unaffected.

investment, all else equal. Overall, Canadian hours worked decline and CPI inflation increases. Both imports from the U.S. and exports to the U.S. contract permanently, reflecting reduced demand for inputs and weaker overall economic activity.

Bilateral Tariffs (Trade War Scenario)

Taken together, the different channels we have discussed illustrate the complex and often opposing forces that tariff/fragmentation shocks exert on the Canadian economy. A bilateral trade war leads to lower output and a negative output gap, and higher inflation in Canada. Production costs rise across the board, especially when intermediate goods are targeted, when tariff pass-through to prices is high, and when domestic and foreign goods are not easily substitutable.[5] At the same time, output and total hours contract, reflecting reduced export demand and weaker domestic consumption.

The Output Cost of Inflation Stabilization

While tariff shocks generate inflationary pressures and contract economic activity, this does not automatically imply a tension between stabilizing inflation and output fluctuations. A trade-off arises when inflationary pressures coincide with a negative output gap (proxied by hours worked in the model)—that is, when economic activity falls below its potential level, as represented by the frictionless, flexible-price economy.

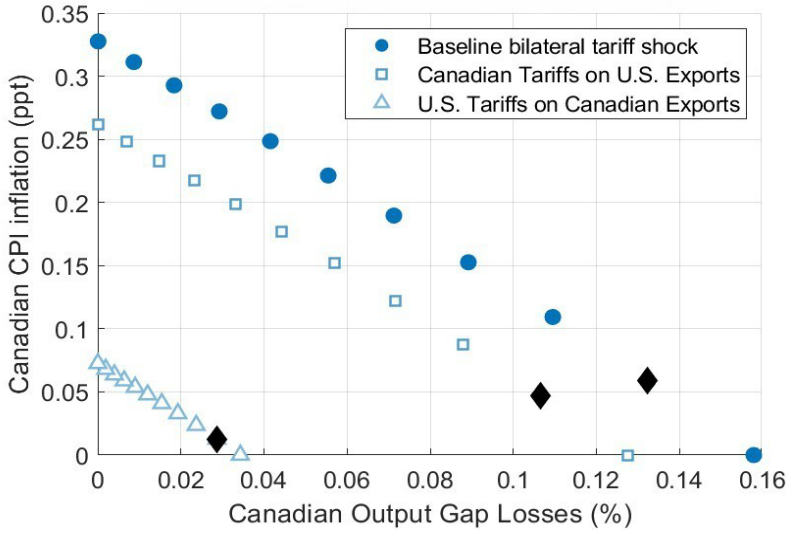
To assess the extent to which tariffs pose a trade-off between stabilizing inflation and output in deviation from potential, following Del Negro et al. (2023), the model is simulated under a range of alternative monetary policies that deliver increasingly more stable inflation at a cost of larger output deviations from potential.[6] The range of outcomes spans from full price stability to complete output gap stabilization, depending on the central bank's appetite for looking through inflationary pressures arising from tariff changes. The use of efficient frontiers has been popularized since Taylor (1979), as discussed in Taylor and Williams (2010). Importantly, the model characterizes policy behavior directly through the degree of inflation versus output stabilization, summarized by the parameter α in the charts below. For any given value of α, there exists a corresponding quadratic loss function whose minimization yields the observed inflation–output outcomes. For each policy, we report (Chart 1) the average deviation of CPI inflation from its two percent target against the average output gap over a two-year horizon, which traces out the trade-off frontier. To the extent that the frontier spans

[5] Even when the model assumes full pass-through of tariffs into prices at the level of imported final goods, aggregate CPI pass-through is necessarily less than one, reflecting the limited share of tariffed goods in the consumption basket, substitution toward untariffed or domestic goods, and the presence of non-tradable components in consumer prices.

[6] Each policy is implemented through a rule that places a specific weight (α) on inflation in deviation from target relative to the output gap.

values for inflation and output-gap deviations different from zero, the central bank faces a trade-off between its two objectives.

Chart 1: Canadian inflation-output trade-off following a rise in trade costs with the United States



Notes: Inflation shows the two-year average year-over-year CPI response (in percentage points), while the output gap losses reflect the two-year average deviation of hours worked from its flexible-price level (in percent).

Chart 1 demonstrates that a bilateral trade war where tariffs increase by 10 percentage points generates a non-negligible trade-off between inflation and output gap stabilization. For inflation to remain at target when tariffs spike, the monetary policy stance needs to contract to reduce the price of domestically produced goods, which is only possible if output falls below potential. In other words, there is no divine coincidence: it is not possible to simultaneously stabilize CPI inflation at its target and close the output gap.

Quantitatively, achieving full CPI inflation stabilization over a two-year horizon requires tolerating a 0.16 percent reduction in hours worked relative to its potential. Conversely, fully closing the hours worked gap implies that monetary policy "looks through" a 0.32 percentage-point increase in year-over-year inflation. The output cost of stabilizing inflation under a trade war is more severe compared to the case of unilateral tariff increases: a 'look-through policy' entails accepting a 0.26 percentage-point increase in CPI inflation when only Canada imposes tariffs, whereas the figure is 0.07 percentage points for a U.S. tariff.

Thus far, we have focused on the output cost of stabilizing inflation, which grows with the size of the shock. We now turn to the sacrifice ratio — the output cost of reducing inflation by one percentage point — which corresponds to the inverse of the slope of the

frontier in Chart 1. A flatter frontier means a larger sacrifice ratio, as a greater output loss is needed to achieve a given reduction in inflation. The sacrifice ratio is similar across the three tariff scenarios. Chart 1 also shows, for each frontier and thus for each of the three trade scenarios, the optimal degree of inflation stabilization when the central bank assigns equal weight to inflation and output gap stabilization (black diamonds). Since the sacrifice ratio does not vary across scenarios, the loss-minimizing value of α is also the same across them, and under these preferences points toward near-complete price stability over a two-year horizon.

Overall, the trade-off appears manageable for a tariff shock of a magnitude consistent with current policy scenarios. In the case analyzed, the model implies that policy responses that aggressively stabilize the output gap result in inflation outcomes that remain within the inflation control range. In other words, the framework allows for the flexibility that a richer monetary policy playbook requires, including stabilizing output at a moderate inflation cost over a two-year horizon. However, this conclusion hinges on the size of the trade cost shock. Larger shocks would push the trade-off frontier to the right, implying that looking-through policies might become too costly in terms of inflation volatility. This result underscores that the magnitude of shocks is itself one of the circumstances qualifying the richer playbook: looking through presents limited inflation risk insofar as the shock is not too large or too persistent. The result adds to the recent literature that studies the effects of large shocks on inflation after COVID-19 (e.g., Hajdini et al. 2025). Finally, looking through inflationary pressure may present more substantial de-anchoring risks for larger shocks. In the next section, we will further discuss de-anchoring risks of look-through polices, leveraging recent experimental evidence.

The existence of a clear trade-off between inflation and output gap stabilization aligns with the recent literature studying monetary policy implications of higher tariffs (e.g., Guerrieri, et al., 2025; Monacelli, 2025; and Crescentini et al., 2025). However, various factors influence the severity of the trade-off. First, the expected persistence of tariffs plays a central role. For instance, when protectionist measures are perceived as temporary, fully closing the output gap results in more moderate inflationary pressures. Second, the effect of tariffs on monetary policy trade-offs depends on whether they are imposed on final consumption goods or on intermediate inputs. Tariffs on final goods directly raise consumer prices, depressing output without changing domestic firms' cost structure. Tariffs on intermediate goods, instead, raise firms' input costs, directly affecting potential output. As a result, while hours worked and output decline more persistently following a hike in intermediate input tariffs, the output gap is smaller, and accordingly the trade-off is less severe. Chart 2 illustrates this result by plotting the potential (e.g., flexible-price) total hours response (dashed lines in the left panel), which falls by more over a two-year horizon under intermediate-goods tariffs. As a result, a

policy of strict inflation targeting results in a smaller hour worked gap with intermediate input tariffs.

Chart 2: Impulse responses of Canadian hours worked and the hours worked gap to a permanent 10-percentage-point rise in bilateral trade costs

Notes: The blue line shows retaliation limited to final consumption goods; the red line shows Canadian tariffs on U.S. intermediate imports. In all cases, Canadian monetary policy is assumed to fully stabilizes CPI inflation.

The model abstracts from additional factors that may influence the inflation–output trade-off. First, we abstract from both aggregate and trade policy-specific uncertainty, which—even without actual tariff changes—can have significant macroeconomic effects (Macklem, 2024b). Tariff threats may trigger an additional demand contraction, mitigating inflationary pressure (e.g., Caldara et al., 2020). To the extent that this dampens inflation more than activity, the trade-off for monetary policy could be less severe. However, the effects of uncertainty also depend on where they occur in the supply chain, as increased uncertainty in upstream sectors can manifest as supply-side disturbances (Cacciatore & Candian, 2025), implying potentially more adverse trade-offs. Second, the model abstracts from tariff revenue. Thus, we do not consider the possibility that additional fiscal revenue could partially offset the negative impact of tariffs by stimulating demand through redistribution or by enabling tax cuts on capital and labour (see Alessandria et al., 2025; Bianchi & Coulibaly, 2025). Such offsets would imply a somewhat less severe trade-off than the one modeled here. Third, our analysis abstracts from the effects that tariff wars and threats may have on consumers' and businesses' confidence and their inflation expectations. To the extent that confidence effects amplify demand weakness, the trade-off may again be somewhat more favorable for inflation control. Finally, our two-country model does not account for trade diversification, i.e., the shift in the destination of Canadian exports caused by U.S. trade policies (Macklem, 2025). Diversification could cushion output losses.

Climate Change

Climate change has become an increasingly important consideration for central banks due to its wide-ranging and long-term economic implications. Here we focus on the implications of the physical impacts of more frequent and severe natural disasters, e.g., wildfires, floods, and storms.

Empirical Evidence

A recent and growing body of work assesses the implications of natural disasters for output and inflation dynamics. A series of Bank of Canada Staff Analytical Notes (Dahlhaus, et al., 2025; Duprey & Fernandez, 2025) examine the historical responses of economic activity and inflation following Canadian natural disasters, using monthly data on provincial output and prices combined with detailed event-level information from the Canadian Disaster Database maintained by Public Safety Canada (2024). This empirical strategy exploits variation in the timing, location, and severity of disasters across provinces to identify their average macroeconomic effects.

Overall, climate-related disasters tend to exert upward pressure on inflation, although the magnitude and persistence of these effects depend on the nature, severity, and sectoral footprint of the event. For example, winter storms are found to have some of the largest inflationary impacts, primarily through higher shelter, utility, and energy-related costs. Floods are also inflationary, with shelter costs emerging as an important transmission channel. At the same time, output typically contracts following disasters, reflecting capital destruction, production disruptions, and labour supply constraints, unless governments have sufficient fiscal capacity to provide timely relief and reconstruction support.

A key caveat is that these empirical estimates may not fully capture general equilibrium spillovers, such as cross-provincial migration, labour market reallocation, or longer-term adjustments in production networks. These limitations arise because the identification strategy relies on cross-province variation to ensure sufficient statistical power, which may understate aggregate effects when disasters are widespread, highly correlated, or increasingly frequent.

The Output Cost of Inflation Stabilization

We now turn to the implications for the inflation-output trade-off stemming from climate disasters. Extreme weather events can have substantial economic effects. Destruction of physical capital (e.g., production facilities, infrastructure, and housing), supply chain disruptions, reduced labour productivity, and lost hours worked lower production and

generate inflationary pressures. Key sectors for the Canadian economy, such as agriculture and natural resources, are particularly vulnerable to climate risk. At the same time, extreme climate events may suppress demand by lowering incomes and wealth, though reconstruction, government relief, and insurance can soften these effects. The overall macroeconomic impact depends on the interplay between these supply- and demand-side forces, which varies across types of events as discussed below.

To assess the potential monetary policy trade-offs, Dahlhaus (2026) integrates natural disasters into a medium-scale dynamic macroeconomic model that captures the effects of disasters through the channels mentioned above. Scenarios are based on major Canadian climate events—such as the 1998 Ice Storm and the Fort McMurray wildfire. Chart 3 reports the average deviation of CPI inflation from its two-percent target against the average output gap over a 2-year horizon for each disaster shock.

The output cost of inflation stabilization is greatest in disasters causing severe physical damage and major disruptions to the commodity sector. For instance, the 1998 ice storm (Chart 3, blue dots) caused severe damage to the power grid, crippling transmission and electricity infrastructure in large parts of Eastern Canada—leading to widespread power outages and reduced electricity production. In this episode, output-gap stabilization would increase yearly average CPI inflation by about 0.15 percentage points over the two years following the disaster. Conversely, full inflation stabilization generates an average output gap of about 0.21 percent. The output cost is larger for droughts, as they are longer-lasting. In the case of the 1988 U.S./CA drought, inflation averages about 0.22 pp above target over a two-year period if the central bank focused on stabilizing output.

Chart 3: Canadian inflation-output trade-off across disaster scenarios

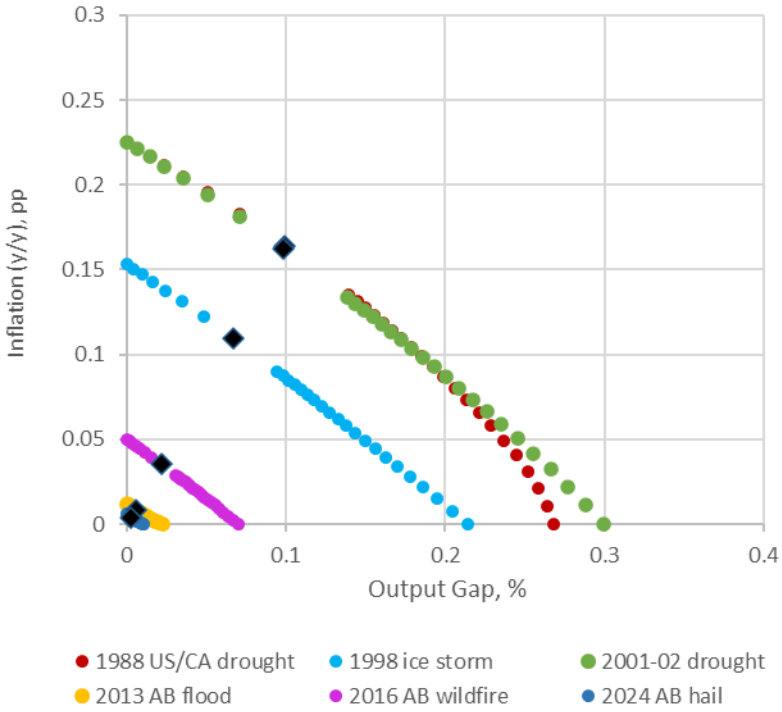


Chart 3 also plots, for each frontier (black diamonds), the optimal degree of inflation stabilization for balanced central bank preference that assigns equal weight to inflation and output gap losses. Like the deglobalization analysis, the loss minimizing value of the parameter α is similar across disasters. However, in contrast to the trade shock scenarios, the optimal policy is relatively closer to output gap stabilization for the balanced loss function we consider. The reason is that the frontiers are flatter, implying a greater sacrifice ratio.

Overall, the analysis shows that the current framework provides enough flexibility to support output at a moderate inflation cost. Moreover, since the effects of adverse climate events are shorter lived, look-through policies present a limited de-anchoring risk.

The Role of Other Structural Forces: Demographics and Digitalization

Ongoing demographic trends (e.g., rising longevity and declining fertility rates) and digitalization may have important implications for monetary policy through their effects on (i) the neutral interest rate, (ii) potential output, (iii) the monetary policy trade-off faced by central banks.

Demographic trends — in particular population ageing and slower trend labour-force growth, which raise desired saving relative to investment — are expected to exert downward pressure on the neutral interest rate (Cacciatore et al., 2024). Because these forces are common across advanced economies, they primarily weigh on the global neutral rate, which a small open economy largely takes as given. Canada temporarily diverged from the global population slowdown in 2024 (Adjalala et al., 2024) due to a surge in immigration in 2022 and 2023. In 2025, however, labour force growth was revised down again reflecting the introduction of federal government's immigration policies (Adjalala et al., 2025). Overall, the likelihood of monetary policy being constrained by the effective lower bound—and its macroeconomic implications—remains broadly consistent with the assessment in the 2021 Monetary Policy Renewal Framework (Bank of Canada, 2021). The risk could even be lower, as recent research (Rachel, 2025) suggests that artificial intelligence (AI) adoption may put upward pressure on the neutral real interest rate by raising the capital–labour ratio, shifting production toward more capital-intensive technologies, and increasing desired investment.

Digitalization and AI represent a positive technology shock, with the potential to lift productivity and expand output capacity, generating deflationary pressures. For an inflation-targeting central bank such as the Bank of Canada such a shock would thus require a more accommodative stance to stabilize prices (Chu et al., 2023). At the same time, deflationary pressures may help ease the trade-offs arising from other inflationary shocks. In addition, digitalization and AI may also influence inflation dynamics by triggering changes in pricing behaviour and market structure (Cavallo, 2019; Chu et al., 2023) and sectoral reallocation. AI-induced reallocation across firms and sectors could generate inflationary pressures during the transition. When prices and wages adjust sluggishly and labour and capital reallocate slowly, expanding high-productivity sectors face temporarily inelastic factor supplies, which can increase marginal costs even in the presence of positive productivity shocks (e.g., Afrouzi et al., 2024).

That said, the overall monetary policy implications remain uncertain, as technology adoption may materialize gradually due to the need for complementary investments in data, training, and organizational restructuring.

Inflation Expectations and De-Anchoring Risk

In a shock-prone environment, it is paramount to reassess the risks of de-anchoring inflation expectations when relying on look-through strategies. To explore this issue, we draw on new experimental evidence from Bank of Canada research (Kostyshyna et al., 2026).

Controlled macroeconomic experiments serve as a useful complement to conventional empirical approaches and have been employed in the Bank of Canada's Monetary Policy Framework Renewals (Kryvtsov & Petersen, 2021; Kostyshyna et al., 2022). These experiments help overcome the limitations of available data by enabling researchers to test counterfactual policy actions across different scenarios, such as varying the scale and persistence of supply shocks. A key advantage of the experimental setting is the ability to identify causal effects of policy interventions on inflation expectations, something difficult to establish using observational data due to endogeneity and data limitations. Since expectations are gathered directly from participants, the analysis does not depend on specific assumptions about how expectations are formed. Instead, experiments shed light on the behavioural processes shaping expectations and their macroeconomic consequences. This makes them especially well-suited for exploring monetary policy responses to supply shocks and their role in anchoring inflation expectations.

Kostyshyna et al. (2026) design a controlled macroeconomic experiment to assess the resiliency of the Bank of Canada monetary policy framework in a world where supply shocks become larger and more persistent. Specifically, they compare the performance of alternative monetary policy rules that are all consistent with the current monetary policy framework but differ in the extent to which supply shocks are looked through. Furthermore, the alternative interest rate rules are complemented with various communications protocols, which differ in the type and amount of information released by the Bank as the economic environment becomes more turbulent. This study contributes to the experimental macroeconomic literature by explicitly modelling a structural change in the shock process and analyzing a richer set of policies, which also explicitly include a well-specified communication strategy.

Based on the data collected to date, the macroeconomic experiments yield several key insights. First, a look-through policy that partially accommodates a supply shock generates moderate output losses at the cost of persistently higher inflation, similar to what is implied by rational expectations. Second, a persistent inflation surge increases the volatility of both short-term and medium-term inflation expectations, which become more responsive to contemporaneous shocks. Third, the central bank can effectively steer expectations, and avoid expectations de-anchoring, by releasing information about its own inflation and output projections. As participants view the central bank's projections as credible and incorporate them into their forecasts, communication aligns agents' expectations towards the rational expectations benchmark. As a result, inflation and output are less volatile than without communication.

Overall, the experimental evidence underscores that look-through strategies come with meaningful risks in a shock-prone environment: while they may mitigate output costs,

they heighten the danger of persistent inflation surges and expectation de-anchoring. At the same time, the results highlight the central role of credible communication. These insights suggest that the effectiveness of the monetary policy framework hinges not only on the choice of interest rate rule, but also on how policy is communicated in the face of persistent supply shocks.

Additional Insights Using a Medium-Scale Model (ToTEM III)

The analyses so far focused on specific supply-side developments such as deglobalization and climate change. While quantitatively the effects depend on the mechanisms behind inflation fluctuations and the nature of the underlying structural disturbances, qualitatively the implications for monetary policy are more general. To this point, in this section, we summarize the key insights from Booth et al. (2026), who use simulations from the medium-scale policy model ToTEM III (v3.8 vintage, March 2025) to illustrate how monetary policy trade-offs evolve in an environment characterized by larger supply shocks.

The analysis compares a pre-COVID baseline—calibrated to 1995–2019 shock variances—to a "Shock-Prone" world based on post-2020 supply shock volatility. In the shock-prone environment, both inflation and output volatility increase markedly: the probability and persistence of core inflation exceeding 3% rise sharply, and recession risk becomes more frequent and longer-lasting. The shock-prone economy exhibits a more significant inflation–output trade-off relative to the pre-COVID baseline: inflation volatility can only be reduced at the cost of more frequent recessionary episodes.

Alternative structural scenarios are also considered, including a steeper Phillips curve, de-anchored inflation expectations, and shocks that lower potential output. A steeper Phillips curve or de-anchored expectations worsen the trade-off and amplify inflation fluctuations. By contrast, when shocks reduce potential output, the trade-off becomes milder, like the effects of intermediate-input tariffs discussed before.

Overall, across scenarios, the simulations suggest that greater supply-side volatility increases the frequency of high-inflation episodes and reduces the scope for "looking through" inflation deviations. In many cases, the policy rule that minimizes the central bank's loss function involves a more aggressive response to inflation than under historical norms, indicating that a more volatile world may require tighter policy on average to maintain price stability.

Taking Stock: Monetary Policy in a More Volatile and Uncertain World

In an era of heightened instability and structural change, which increasingly drive relative price changes and persistent cost pressures, central banks may need to adapt their monetary policy playbook within their policy frameworks. Different types of supply-driven shocks make the conduct of monetary policy more challenging by intensifying tensions between inflation control and output stabilization. Navigating these trade-offs requires active risk management to identify the conditions under which aggressive inflation stabilization is warranted despite output losses. The concept of "looking through" provides a useful organizing principle for risk management, guiding policymakers on when to tolerate temporary or relative price movements that are unlikely to generate persistent inflationary pressures, and when to act decisively.

In the three decades preceding the pandemic, the "traditional" monetary policy playbook implied looking through temporary supply-side shocks and partially accommodating one-off price-level shocks provided longer-term inflation expectations remain anchored (e.g., Bandera et al., 2023). The logic built on several well-established principles. First, the direct inflationary impact of a transitory shock will likely have faded by the time monetary tightening works through the economy, so that a policy rate hike could become pro-cyclical—depressing output after inflation has already subsided. Second, when inflation expectations are well anchored around the target, one-off supply shocks are less likely to trigger wage-price spirals or persistently higher inflation. Third, adverse supply shocks create a tension between stabilizing inflation and output. Tightening policy risks exacerbating the output loss for little immediate inflation benefits.

Recent literature provides important qualifications regarding the conditions under which accommodation of supply-driven inflation fluctuations is appropriate. Disturbances may no longer be short-lived and even mark a transition to a different economic environment (Nuno et al., 2025). In these circumstances, monetary policy faces a more difficult task of balancing inflation control with risks to economic activity.

First, as highlighted by the post-pandemic experience, distinguishing demand from supply-driven inflation in real time is paramount for the appropriateness of the policy response (Shapiro, 2024; Schneider, 2025). Moreover, underestimating the shocks persistence or not accounting for the state of the economy (e.g., high demand when an adverse supply shock materializes) would lead to delayed tightening and sustained inflation, undermining price stability. Distinguishing cyclical versus structural shocks in real time represents a key challenge to correctly identify shock persistence and expected inflationary pressures. However, recent empirical literature provides new guidance by

comparing the forecasting properties of alternative filtering methods (Del Negro et al., 2017; Fosso, 2025; Kamber et al., 2018). Finally, robustness to model uncertainty is an important ingredient in the policy assessment and risk management, as it enables policymakers to rely on prescriptions that perform well across a range of plausible economic models.

Second, looking through can be optimal at least as an initial response when facing supply shocks. However, the literature shows that the timing of interest rate hikes is key to avoid inflation expectations de-anchoring. For instance, Beaudry et al. (2023) show it can be optimal for the central bank to initially look through supply shocks and then pivot to a more hawkish anti-inflationary stance when the risk that inflation expectations drift becomes too large. Bullard et al. (2025) argue that the timing of monetary tightening is more important than the strength, as early action can prevent de-anchoring of inflation expectations (e.g., inflation scares) without causing a recession. If tightening is delayed, inflation expectations diverge from the target, leading to persistent inflation, worsened credibility, and higher output losses.

Third, recent work also shows that the output cost of course-correcting in a high-inflation environment depends on a variety of factors. Erceg et al. (2024) show that prolonged looking through can become excessively risky and costly if inflation persistently drifts away from target. Higher wage pressures and possible wage-price spirals would make subsequent disinflationary policies costly in terms of output. According to another channel, in high-inflation episodes the frequency of price changes may increase (Blanco et al., 2024; Cavallo et al., 2023), steepening the Phillips curve and lowering the output cost of stabilizing inflation. This finding suggests that the output cost of bringing inflation back to target after prolonged inflation episodes may vary over time and become progressively larger, because, as inflation comes down and price frequency falls, running the last mile is more costly. Finally, when labour markets are tight, inflation can be reduced without incurring large employment losses (Gitti, 2024; Smith et al., 2024). Overall, a case-by-case assessment is required to gauge the appropriate monetary policy stance. To this end, monitoring the breadth of price increases across CPI components, changes in the frequency and size of price adjustments, measures of inflation expectations, wage growth dynamics, unit labour costs, and indicators of labour market tightness can help assess the degree to which price pressures are becoming generalized and persistent.

In summary, looking-through policies can still be part of the new monetary policy playbook, but cautiousness is required. Although the framework provides the flexibility needed to navigate a shock-prone environment, the effective use of flexibility depends on the central bank's ability to correctly identify the type of shock, carefully track

developments in inflation expectations, and clearly convey its outlook and policy intentions.

All in all, the Canadian experience highlights that a flexible inflation-targeting framework remains the cornerstone of monetary policy in a more volatile global economy. While structural forces such as deglobalization, climate change, demographics, and digitalization are reshaping the inflation–output trade-off, the Bank of Canada monetary policy framework continues to anchor expectations effectively, combining resiliency and flexibility.

Conclusions

The Bank of Canada's flexible inflation-targeting framework has demonstrated remarkable resilience under the unprecedented "stress test" of the post-pandemic era. However, structural forces like trade fragmentation, climate change, and AI adoption point to the need of a richer playbook that emphasizes risk-management strategies when facing supply-driven inflationary pressures. This shift recognizes that the "divine coincidence"—where price stability can be achieved without meaningful output costs—has become increasingly elusive; instead, policymakers must navigate more complex trade-offs. Ultimately, achieving price-stability in a volatile world hinges on state-dependent flexibility and transparent communication.

References

Adjalala, F., Alves, F., Desgagnés, H., Dong, W., Matveev, D. & Simon, L. (2024). *Assessing the US and Canadian neutral rates: 2024 update* (Staff analytical note 2024-9). Bank of Canada. https://www.bankofcanada.ca/2024/04/staff-analytical-note-2024-9/

Adjalala, F., Alves, F., Beaudoin, W., Desgagnes, H., Dong, W., Krohn, I., & Schneider, J.D. (2025). *Assessing the US and Canadian neutral rates: 2025 update* (Staff analytical note 2025-16). Bank of Canada. https://www.bankofcanada.ca/2025/06/staff-analytical-note-2025-16/

Adrian, T. (2022). *Are household inflation expectations de-anchoring?* [Speech]. International Monetary Fund. https://www.imf.org/en/news/articles/2022/05/17/sp05172022-are-household-inflation-expectations-deanchoring

Afrouzi, H., Bhattarai, S. & Wu, E. (2024). Relative-price changes as aggregate supply shocks revisited: Theory and evidence. *Journal of Monetary Economics*, *148,* 103650. https://doi.org/10.1016/j.jmoneco.2024.103650

Alessandria, G., Ding, Jiaxiaomei, D., Khan, S. Y., & Mix, C. B. (2025). *The tariff tax cut: Tariffs as revenue* (NBER Working Paper 33784). National Bureau of Economic Research. DOI: 10.3386/w33784

Alvarez, F., Le Bihan, H., & Lippi, F. (2016). The real effects of monetary shocks in sticky price models: a sufficient statistic approach. *American Economic Review*, *106*(10), 2817-2851. DOI: 10.1257/aer.20140500

Ascari, G., Bonam, D., & Smadu, A. (2024). Global supply chain pressures, inflation, and implications for monetary policy. *Journal of International Money and Finance*, *142*, 103029. https://doi.org/10.1016/j.jimonfin.2024.103029

Attinasi, M. G., & Balatti, M. (2021). Globalisation and its implications for inflation in advanced economies. *Economic Bulletin Articles*, *4.* European Central Bank. *https://www.ecb.europa.eu/press/economic-bulletin/articles/2021/html/ecb.ebart202104_01~ae13f7fe4c.en.html*

Bandera, N., Barnes, L., Chavaz, M., Tenreyro, S., & von dem Berge, L. (2023). *Monetary policy in the face of supply shocks: The role of inflation expectations.* European Central Bank. https://www.ecb.europa.eu/press/conferences/ecbforum/shared/pdf/2023/Tenreyro_paper.pdf

Bank of Canada (2021). *Monetary policy framework renewal–December 2021*. https://www.bankofcanada.ca/wp-content/uploads/2021/12/Monetary-Policy-Framework-Renewal-December-2021.pdf

Bank of Canada (2022). *Monetary policy report - July*. https://www.bankofcanada.ca/wp-content/uploads/2021/07/mpr-2021-07-14.pdf

Bank of Canada (2025). *Review of the bank of Canada's exceptional policy actions during the pandemic.* https://www.bankofcanada.ca/2025/01/review-of-the-bank-of-canadas-exceptional-policy-actions-during-the-pandemic-executive-summary/

Barattieri, A., & Cacciatore, M. (2023). Self-harming trade policy? protectionism and production networks. *American Economic Journal: Macroeconomics*, *15*(2), 97-128. DOI: 10.1257/mac.20190445

Barattieri, A., Cacciatore, M., & Ghironi, F. (2021). Protectionism and the business cycle. *Journal of International Economics*, *129*, 103417. DOI: 10.1016/j.jinteco.2020.10341

Barbiero, O., & Stein, H. (2025). *The impact of tariffs on inflation* (Current Policy Perspectives 25-2). Federal Reserve Bank of Boston. https://www.bostonfed.org/publications/current-policy-perspectives/2025/the-impact-of-tariffs-on-inflation.aspx#collapse3

Beaudry, P., Carter, T. J., & Lahiri, A. (2023). *The central bank's dilemma: Look through supply shocks or control inflation expectations?* (NBER Working Papers 317410). National Bureau of Economic Research. DOI: 10.3386/w31741.

Bianchi, J., & Coulibaly, L. (2025). *The optimal monetary policy response to tariffs* (NBER Working Papers 33560). National Bureau of Economic Research. DOI:10.3386/w33560

Blanco, A., Boar, C., Jones, C., & Midrigan, V. (2024). *Non-linear inflation dynamics in menu cost economies* (NBER Working Papers 32094). National Bureau of Economic Research. DOI: 10.3386/w32094

Booth, E., Djeutem, E. , Kryvtsov O., & Zhang Y. (2026), *Cost-push shocks and inflation stabilization: ToTEM Scenarios* (Staff Analytical Paper forthcoming). Bank of Canada.

Briganti, E., Dong, W., Kostyshyna, O., Lee, S., Samson, F., and Sekkel, R. (2026). *Recent evidence on the resilience of flexible inflation targeting* (Staff Analytical Paper forthcoming). Bank of Canada.

Bullard, J., Grimaud, A., Salle, I., & Vermandel, G. (2025). Soft landing and inflation scares. *Journal of Monetary Economics*, *157*, 103871. DOI: https://doi.org/10.1016/j.jmoneco.2025.103871

Bundick, B., Smith, A. L., Van der Meer, L., (2024). *Maintaining the Anchor: An Evaluation of Inflation Targeting in the Face of COVID-19* (Research Working Paper 24-15). Federal

Reserve Bank of Kansas City. https://www.kansascityfed.org/research/research-working-papers/maintaining-the-anchor-an-evaluation-of-inflation-targeting-in-the-face-of-covid-19/

Cacciatore, M. & Candian, G. (2025*). Uncertainty through the production network: Sectoral origins and macroeconomic implications* (NBER Working Papers 33953). National Bureau of Economic Research. DOI: 10.3386/w33953

Cacciatore, M., Fenou, B., & Ozhan, G. K. (2024). *The Neutral interest rate: Past, present and future* (Staff Discussion Paper 2024-3). Bank of Canada. https://www.bankofcanada.ca/2024/04/staff-discussion-paper-2024-3/

Cacciatore, M., Hauser, D., & Imura, Y. (2026). *Deglobalization and trade fragmentation: Implications for the inflation-output trade-Off* (Staff Analytical Paper forthcoming). Bank of Canada.

Caldara, D., Iacoviello, M., Molligo, P., Prestipino, A., & Raffo, A. (2020). The economic effects of trade policy uncertainty. *Journal of Monetary Economics*, *109*, 38-59. DOI: https://doi.org/10.1016/j.jmoneco.2019.11.002

Cavallo, A. (2019). *More Amazon effects: online competition and pricing behaviors* (Jackson Hole Economic Symposium Conference Proceedings).

Cavallo, A., Kostyshyna, O., Kryvtsov, O. & Vieyra, M. (2025b*). Impact of Canadian retaliatory tariffs on consumer prices: Evidence from large Canadian retailers* (Staff Working Paper forthcoming). Bank of Canada.

Cavallo, A., Lippi, F., & Miyahara, K. (2023). *Inflation and misallocation in New Keynesian models*. Einaudi Institute for Economics and Finance.

Cavallo, A., Llamas, P., & Vazquez, F. (2025a). *Tracking the short-run price impact of U.S. tariffs* (Working paper 34496). National Bureau of Economic Research. DOI: 10.3386/w34496

Chu, V., Dahlhaus, T., & Hajzler, C. (2023). *Digitalization: Prices of goods and services* (Discussion Papers 2023-27). Bank of Canada. https://www.bankofcanada.ca/wp-content/uploads/2023/10/sdp2023-27.pdf

Crescentini, A., Fierro, L., Poledna, S., Colon, C., Hommes, C., & Zhang, Y. (2025). *Macroeconomic effects of tariffs in a multi-country agent-based model* [Presentation]. European Central Bank.

Dahlhaus, T., Duprey, T. & Johnston, C. (2025), *Estimating the impacts on GDP of natural disasters in Canada* (Staff Analytical Note 2025-5). Bank of Canada. https://www.banqueducanada.ca/wp-content/uploads/2025/02/san2025-5.pdf

Dahlhaus, T. (2026). *Climate change and monetary policy: Navigating physical risks and the low-carbon transition* (Staff Analytical Paper forthcoming). Bank of Canada.

Del Negro, M., di Giovanni, J., & Dogra, K. (2023). *Is the green transition Inflationary?* (Staff Report 1053). Federal Reserve Bank of New York. https://www.newyorkfed.org/research/staff_reports/sr1053

Del Negro, M., Giannone, D., Giannoni, M. P., & Tambalotti, A. (2017). Safety, liquidity, and the natural rate of interest. *Brookings Papers on Economic Activity*, *2017*(1), 235-316. https://www.brookings.edu/wp-content/uploads/2017/08/delnegrotextsp17bpea.pdf

Duprey, T., & Fernandes, V. (2025). *Natural disasters and inflation in Canada* (Staff Analytical Note 2025-8). Bank of Canada. https://www.bankofcanada.ca/wp-content/uploads/2025/03/san2025-8.pdf

Erceg, C., Linde, J., & Trabandt, M. (2024). Monetary policy and inflation scares (IMF Working Paper 2024/260). International Monetary Fund. https://doi.org/10.5089/9798400295287.001

Forbes K., Ha, J., Kose, M.A. (2026). *Heaven or Earth? The evolving role of global shocks for domestic monetary policy* (CAMA Working Papers 2026-05). Centre for Applied Macroeconomic Analysis. https://crawford.anu.edu.au/sites/default/files/2026-02/05_2026_Forbes_Ha_Kose.pdf

Fosso, L. (2025*). Decomposing US economic fluctuations: A trend-cycle approach* (ECB Working Paper Series 3138). European Central Bank. https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp3138~13c472834e.en.pdf

Gitti, G. (2024). *Nonlinearities in the regional Phillips curve with labor market tightness* [Presentation slides]. Federal Reserve Bank of Cleveland.

Gopinath, G. (2024). *Navigating fragmentation, conflict, and large Shocks* [Speech], International Monetary Fund. https://www.imf.org/en/news/articles/2024/06/21/sp062124-fdmd-nbu-nbp-annual-research-conference

Guerrieri, V. and Lorenzoni, G. & Werning, I. (2025*). Tariffs as cost-push shocks: Implications for optimal monetary policy* (Working Paper 33772). National Bureau of Economic Research. DOI: 10.3386/w33772

Hajdini, I., Shapiro, A., Smith, A.L. & Villar, D. (2025). *Inflation since the pandemic: Lessons and challenges* (Working Paper Series 2025-16). Federal Reserve Bank of San Francisco. DOI: https://doi.org/10.17016/FEDS.2025.070

Hernández de Cos, P., Forbes, K., & Tombe, T. (2024). *External comments on the review of the bank of Canada's exceptional policy actions during the pandemic*. Bank of Canada. https://www.bankofcanada.ca/wp-content/uploads/2025/01/external-panel-report.pdf

Kamber, G., Morley, J., & Wong, B. (2018). Intuitive and reliable estimates of the output gap from a Beveridge-Nelson filter. *Review of Economics and Statistics*, *100*(3), 550-566. https://www.jstor.org/stable/pdf/26616219.pdf

Kang, K., Sekkel, R., Taskin, T., & Yang, J. (2026*). Decomposing Canadian inflation into its supply- and demand-driven components* (Staff Analytical Note forthcoming). Bank of Canada.

Karadi, P., Nakov, A., Barrau, G. N., Pasten, E., & Thaler, D. (2024*). Strike while the iron is hot: Optimal monetary policy with a nonlinear Phillips curve* (Working Paper 1203). Bank for International Settlements. https://www.bis.org/publ/work1203.htm

Kostyshyna, O., Ozden, T., & Zhang, Y. (2024). *Endogenous credibility and wage-price spirals* (Staff Working Paper 2024-14). Bank of Canada. https://www.bankofcanada.ca/2024/05/staff-working-paper-2024-14/

Kostyshyna, O., Petersen, L. & Yang, J. (2022*). A horse race of monetary policy regimes: An experimental investigation* (NBER Working Papers 30530). National Bureau of Economic Research. https://www.bankofcanada.ca/2022/07/staff-working-paper-2022-33/

Kostyshyna, O., Petersen, L., & Yang, J. *Beyond "Looking Through": Monetary Policy Responses and Communication Under Supply-Driven Inflation* (Staff Working Paper forthcoming). Bank of Canada.

Kryvtsov, O., MacGee, J., & Uzeda, L. (2023). *The 2021-22 surge in inflation* (Staff Discussion Paper 2023-3). Bank of Canada. https://www.bankofcanada.ca/2023/01/staff-discussion-paper-2023-3/

Kryvtsov, O., & Petersen, L. (2021). Central bank communication that works: Lessons from lab experiments. *Journal of Monetary Economics*, *117*, 760-780. https://doi.org/10.1016/j.jmoneco.2020.05.001

Macklem, T. (2024a). *Delivering price stability – learning from the past, preparing for the future* [Speech]. Bank of Canada. https://www.bankofcanada.ca/2024/12/delivering-price-stability-learning-from-the-past-preparing-for-the-future/

Macklem, T. (2024b). *Rewired, recast and redirected: Global trade and implications for Canada* [Speech]. Bank of Canada. https://www.bankofcanada.ca/2024/09/rewired-recast-and-redirected-global-trade-and-implications-for-canada/

Macklem, T. (2025). *Navigating tariff uncertainty* [Speech]. Bank of Canada. https://www.bankofcanada.ca/2025/03/navigating-tariff-uncertainty/

Macklem. T. (2026). *Structural change – Canada at a crossroads* [Speech]. Bank of Canada. https://www.bankofcanada.ca/2026/02/structural-change-canada-at-a-crossroads/

Mendes, R. (2024). *Sticking the landing: Keeping Inflation at 2%* [Speech]. Bank of Canada. https://www.bankofcanada.ca/2024/11/sticking-landing-keeping-inflation-at-2/

Minton, R., & Somale, M., (2025). *Detecting tariff effects on consumer prices in real time* (FEDS Notes). Board of Governors of the Federal Reserve System. https://www.federalreserve.gov/econres/notes/feds-notes/detecting-tariff-effects-on-consumer-prices-in-real-time-20250509.html

Mojon, B. (2024). *Monetary policy frameworks and challenges ahead*. Bank of Canada Annual Conference.

Monacelli, T. (2025). *Tariffs and monetary policy* (Discussion Paper No. 20142). Centre for Economic Policy Research. https://cepr.org/publications/dp20142

Najjar, R., & Shapiro, A. H. (2025). *Does monetary policy tightening reduce inflation?* (Economic Letter 2025-03). Federal Reserve Bank of San Francisco. https://www.frbsf.org/research-and-insights/publications/economic-letter/2025/02/does-monetary-policy-tightening-reduce-inflation/

Nakamura, E., Riblier, V., & Steinsson, J. (2025). *Beyond the Taylor rule* (NBER Working Papers 34200). National Bureau of Economic Research. DOI: 10.3386/w34200

Nakamura, E., & Steinsson, J. (2008). Five facts about prices: A reevaluation of menu cost models. *The Quarterly Journal of Economics*, *123*(4), 1415-1464. https://www.jstor.org/stable/40506213

Nuno, G., Renner, P., & Scheidegger, S., (2025). *Monetary policy with supply regimes* (unpublished manuscript). https://www.imf.org/-/media/files/news/seminars/2025/ame/galo-nuno-paper.pdf

Patzelt, P., & Reis, R. (2024). *Estimating the rise in expected inflation from higher energy prices* (Discussion Papers 2411). Centre for Macroeconomics. https://cepr.org/publications/dp18907

Public Safety Canada (2024). The Canadian Disaster Database. https://www.publicsafety.gc.ca/cnt/rsrcs/cndn-dsstr-dtbs/index-en.aspx.

Rachel, L. (2025). What next for r*? A capital market equilibrium perspective on the natural rate of interest. *Brookings Papers on Economic Activity*. The Brookings Institution. https://www.brookings.edu/wp-content/uploads/2025/09/3_Rachel_unembargoed.pdf

Reserve Bank of New Zealand. (2023). *Supporting New Zealand's economic stability, Five-year review of the Remit that guides monetary policy decisions: Advice to the Minister.*

Schneider, J. D. (2025). *The sectoral origins of post-pandemic inflation* (Staff Working Paper 2025-37). Bank of Canada. https://www.bankofcanada.ca/2025/12/staff-working-paper-2025-37/

Shapiro, A. H. (2024). Decomposing supply- and demand-driven inflation*. Journal of Money, Credit and Banking.* DOI: https://doi.org/10.1111/jmcb.13209

Smith, S. C., Timmermann, A., & Wright, J. (2024). *Nonlinear Phillips curves* (FEDs Notes). Board of Governors of the Federal Reserve System. https://www.federalreserve.gov/econres/notes/feds-notes/nonlinear-phillips-curves-20240904.html

Taylor, J. B. (1979). Estimation and control of a macroeconomic model with rational expectations. *Econometrica: Journal of the econometric society*, *47*(5), 1267-1286. https://doi.org/10.2307/1911962

Taylor, J. B., & Williams, J.C. (2010). Simple and robust rules for monetary policy. in Benjamin M. Friedman & Michael Woodford (Eds.), *Handbook of Monetary Economics* (Vol. 3, pp. 829-859). Elsevier.

The Treasury of New Zealand. (2023). *Regulatory impact statement: Removing the 'dual mandate' from the Reserve Bank of New Zealand Act 2021.* https://www.treasury.govt.nz/publications/risa/regulatory-impact-statement-removing-dual-mandate-reserve-bank-new-zealand-act-2021

Wu, J. C., Xie, Y., & Zhang, J. (2024). *The role of international financial integration in monetary policy transmission* (Staff Working Paper 2024-3). Bank of Canada. https://www.bankofcanada.ca/2024/02/staff-working-paper-2024-3/