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UNDER PRESSURE: REGIONAL DIVERGENCE AND MONETARY ACCOMMODATION IN CANADA



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Under Pressure: Regional Divergence and Monetary Accommodation in Canada [*]

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Abstract

This paper examines whether regional economic divergence helps explain monetary policy deviations from standard aggregate prescriptions. Using monthly Canadian data from 1999 to 2024, we estimate benchmark Taylor-type rules for the Bank of Canada and interpret the residual component, with reversed sign, as a measure of monetary accommodation relative to fundamentals. We then relate this measure to provincial labor-market conditions constructed from unemployment gaps. The main result is that greater cross-province dispersion in unemployment gaps predicts more accommodative policy relative to the benchmark rule. This relationship is robust across alternative specifications and does not appear to reflect only lower-tail distress or one-region-specific conditions. The evidence instead points to a broader regional-divergence channel, with particularly strong contrasts between fossil-industry and non-fossil provinces. Additional institutional and textual evidence suggests that regional information flows, rather than regional favoritism, may help account for this pattern. Overall, the findings suggest that regional divergence matters for monetary policy even in a central bank with a national mandate and no formal regional representation.

Résumé

Cet article examine dans quelle mesure les divergences économiques régionales peuvent expliquer les écarts entre la politique monétaire effectivement menée et les orientations prescrites par les règles habituelles fondées sur les données agrégées. À partir de données mensuelles canadiennes couvrant la période de 1999 à 2024, nous estimons des règles de référence de type Taylor pour la Banque du Canada et interprétons l'opposé de leur composante résiduelle comme une mesure du caractère accommodant de la politique monétaire par rapport aux fondamentaux économiques. Nous mettons ensuite cette mesure en relation avec les conditions des marchés du travail provinciaux, établies à partir des écarts de

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chômage. Le principal résultat montre qu'une plus grande dispersion des écarts de chômage entre les provinces prédit une politique monétaire plus accommodante que celle prescrite par la règle de référence. Cette relation demeure robuste à différentes spécifications et ne semble pas s'expliquer uniquement par les difficultés des régions les plus touchées ou par la situation particulière d'une seule région. Les résultats mettent plutôt en évidence un mécanisme plus général lié aux divergences régionales, avec des contrastes particulièrement marqués entre les provinces où les industries des combustibles fossiles occupent une place importante et les autres provinces. Des éléments complémentaires tirés de l'analyse institutionnelle et textuelle suggèrent que la circulation de l'information régionale, plutôt qu'un traitement préférentiel accordé à certaines régions, pourrait contribuer à expliquer cette tendance. Dans l'ensemble, les résultats suggèrent que les divergences régionales influencent la politique monétaire, même au sein d'une banque centrale dont le mandat est national et qui ne dispose d'aucune représentation régionale officielle.

Mots-clés/Keywords : Politique monétaire, divergences régionales, sous-utilisation des ressources régionales, règles de Taylor, orientation accommodante de la politique monétaire, Banque du Canada / Monetary policy, Regional divergence, Regional slack, Taylor rules, Monetary accommodation, Bank of Canada.

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1. Introduction

Monetary policy is usually described, and often estimated through aggregate conditions. Standard Taylor-type rules relate the policy rate to national inflation, national slack, and a limited set of macro-financial controls. This approach seems logical for a central bank with a national mandate. It is also empirically convenient, since aggregate variables summarize the state of the economy in a compact way. Yet this may conceal substantial spatial heterogeneity, especially in a large monetary union, where a given national unemployment gap may coexist with very different regional labor-market situations. When such divergence is large, the central bank may face a policy environment that is not fully summarized by representative national indicators.

This paper asks whether regional divergence helps explain monetary accommodation in Canada. The Canadian case is well suited to this question. The Bank of Canada operates within a well-established inflation-targeting framework, whose Canadian implementation has been widely studied and generally viewed as successful (Beaudry and Ruge-Murcia, 2017; Otto and Voss, 2014). Yet it sets a single monetary policy for a federal economy characterized by persistent provincial heterogeneity, large resource-sector shocks, and substantial regional differences in labor-market conditions[1]. At the same time, it has no formal regional voting structure comparable to the Federal Reserve System, and no explicit regional mandate. As a consequence, if provincial conditions matter for Canadian monetary policy, they are unlikely to do so through institutional representation of particular provinces. They are more likely to matter indirectly: because regional conditions enter the Bank's assessment of the national outlook, because asymmetric provincial developments may affect the balance of risks around national forecasts, or because shocks concentrated in specific provinces may be viewed as sufficiently important to affect the Canadian economy as a whole.

Our empirical strategy proceeds in two steps. We first estimate benchmark Taylor-type rules for the Bank of Canada using monthly data from 1999 to 2024. These rules relate the policy rate to standard aggregate fundamentals, including inflation, the national unemployment gap, interest-rate smoothing, the U.S. monetary stance, exchange-rate changes, and, in extended specifications, oil prices and financial volatility. We then use the unexplained component of these rules, with reversed sign, as a measure of monetary accommodation relative to the benchmark prescription. The second step asks whether this residual accommodation measure is systematically related to the regional distribution of unemployment gaps across Canadian provinces. To be clear, the Bank of Canada is not treated as

[1] These features are especially relevant because commodity shocks have important aggregate effects in Canada and may also propagate across regions through housing markets, trade, migration, and fiscal linkages (Charnavoki and Dolado, 2014; Kilian and Zhou, 2022).

following a separate regional policy rule. Rather, the paper asks whether regional divergence helps account for the margin of policy discretion left unexplained by standard aggregate fundamentals.

The main result is that cross-province dispersion in unemployment gaps predicts residual monetary accommodation. Periods in which provincial labor-market conditions are more unevenly distributed are associated with a more accommodative policy stance relative to the benchmark Taylor rule. This result is stronger and more robust than specifications focused on the lower end of the provincial distribution. Given the small number of provinces, such measures are necessarily close to extreme-province indicators: the lowest percentile of unemployment gaps, or the population share living in provinces with elevated labor-market slack, mainly captures whether accommodation is associated with the most adverse provincial observations. These measures are informative in some specifications, but they do not survive as consistently as the dispersion measure. The evidence therefore points to a broader regional-divergence channel. The Bank of Canada does not appear to respond mechanically to a single adverse provincial observation. Rather, monetary accommodation is more closely associated with the overall unevenness of labor-market conditions across provinces.

The province-level evidence further clarifies the interpretation. The association between regional labor-market conditions and residual accommodation is not driven by a single large province. Province-specific indicators show that Alberta, Ontario, and Quebec are positively associated with residual accommodation in the baseline horse-race specification, while other provinces contribute differently once the full provincial distribution is taken into account. Alberta's role is particularly important, but it should not be interpreted as evidence that the Bank of Canada gives special weight to Alberta. When oil-price controls are introduced, Alberta remains positively associated with accommodation, but the effect is attenuated. This pattern suggests that Alberta partly captures resource-sector macroeconomic pressures, without being mechanically reducible to oil prices. Consistent with this interpretation, fossil-industry provinces display a strong positive contrast with non-fossil provinces.

We also examine whether institutional features help explain these patterns. The evidence is consistent with the view that the Bank of Canada's regional offices help convey information about provincial economic conditions, while providing little support for a simpler interpretation based on regional favoritism. Provinces with Bank of Canada regional offices are more positively associated with accommodation than non-office provinces, although this contrast should be interpreted cautiously and in interaction with resource geography. By contrast, the birthplace or regional origins of Governing Council members do not support a simple favoritism explanation. Origin shares are slow-moving and difficult to interpret statistically, and interactions between provincial slack and regional origins do not provide evidence that monetary accommodation reflects birthplace-based preferences. These checks are

important because they delimit the mechanism: the results are consistent with regional information and macroeconomic risk management, not with direct territorial representation.

The paper contributes to several strands of literature. First, it speaks to work on regional influences in monetary policy committees. In the U.S. context, Gildea (1992), Meade and Sheets (2005), Jung and Latsos (2015), and Bennani, Farvaque and Stanek (2018) examine whether Federal Reserve policymakers respond to conditions in their home districts or regions. In the euro-area context, Heinemann and Huefner (2004), Sturm and Wollmershäuser (2008), Hayo and Méon (2013), Badinger and Nitsch (2014), and Riboni and Ruge-Murcia (2010) study whether national conditions, bargaining, or committee decision rules affect ECB policy. Berger and de Haan (2002) and Ruge-Murcia (2022) provide related perspectives on central-bank decision-making and the institutional structure of monetary policy committees. Our contribution differs from this literature by focusing not on individual votes or explicit territorial representation, but on whether the aggregate policy stance of a national central bank contains a residual regional component.

Second, the paper relates to research on monetary unions, regional stress, and the uneven consequences of a single monetary policy. Drometer et al. (2018) explicitly frame ECB policy through the idea of caring for the weakest links, while Bennani (2015) studies the euro area as a stressful monetary union through the lens of monetary-policy coverage. Quint (2016) examines whether dispersion itself is empirically meaningful in the euro-area context. Combes and Lesuisse (2022) provide related evidence on inflation and unemployment during EMU accession. We bring this logic to Canada, where the institutional environment is different: provinces are economically heterogeneous, but they are not formally represented in the monetary-policy decision rule.

Third, the paper contributes to the Canadian regional and monetary-policy literature. Earlier work has documented long-run regional differences and convergence dynamics across Canadian provinces, including Coulombe and Lee (1995), Beine and Coulombe (2003), and De Juan and Tomljanovich (2005). More recent work has examined whether Canadian provinces are uniformly well served by the national inflation-targeting framework, with particular attention to Alberta (Chaban and Voss, 2016). Related evidence also shows that Canadian monetary policy is usefully studied through richer reaction-function and transmission channels: Caglayan et al. (2016) estimate asymmetric monetary-policy rules for Canada as an open economy, while Kronick and Ambler (2019) examine whether demographic structure affects monetary-policy transmission in Canada. This literature shows that Canada is not a frictionless representative economy at the regional level, and that monetary policy may interact with structural heterogeneity. We build on this insight but shift the question from regional convergence, optimal-currency-area suitability, or transmission heterogeneity to the conduct of monetary policy itself.

The issue is not only whether Canadian regions differ, but whether such differences help explain monetary accommodation beyond aggregate fundamentals.

Methodologically, the paper uses a simple residual-based approach. Rather than estimating an expanded Taylor rule in which regional indicators directly compete with aggregate fundamentals in explaining the policy rate, we first construct a benchmark policy prescription and then study the residual accommodation component. This design has two advantages. First, it keeps the benchmark transparent and close to the empirical monetary-policy-rule literature. Second, it provides a direct test of whether regional indicators contain information not already captured by the usual national variables. The approach is not a forecast-comparison exercise in the strict sense of Diebold and Mariano (2002), but it shares the same concern for assessing whether additional information improves our understanding of deviations from a benchmark.

The empirical results are robust along several dimensions. The dispersion result survives oil-price controls, including specifications using WTI, WCS, and the WTI-WCS spread. It is also robust to GDP-weighted measures of regional slack, to controls for provincial inflation heterogeneity, to crisis controls for the global financial crisis and the Covid period, and to residuals extracted from a forward-looking Taylor-rule specification. Descriptive evidence from Bank of Canada Monetary Policy Reports further supports the plausibility of the mechanism: regional and resource-sector language appears in the Bank's public narrative and spikes around periods of resource-sector stress. This evidence is used only as descriptive motivation, not as a formal mechanism test.

The remainder of the paper is organized as follows. Section 2 presents the conceptual background and explains why Canada is an informative case. Section 3 describes the data and provides descriptive evidence. Section 4 introduces the Taylor-rule framework and the residual accommodation measure. Sections 5 and 6 present the main regional results, including province-level evidence and the role of resource-sector provinces. Section 7 examines institutional channels. Section 8 reports robustness checks. Section 9 concludes.

2. Regional divergence and monetary policy in Canada

The question we address in this paper is whether a central bank with a national mandate reacts only to aggregate conditions, or whether the regional distribution of those conditions also matters. Though single policy rate applies to all regions, the economic conditions faced by households, firms, and local labor markets may differ substantially across space. When regional cycles are imperfectly synchronized, the national average may become an incomplete summary of the policy environment. This problem is central to the literature on heterogeneous monetary unions and regional policy stress, where cross-

regional divergence can complicate the conduct of a single monetary policy (Heinemann and Huefner, 2004; Sturm and Wollmershäuser, 2008; Hayo and Méon, 2013; Quint, 2016; Drometer et al., 2018).

In line with this literature, Canada provides a useful setting in which to study this issue. Monetary policy is centralized and conducted by the Bank of Canada, whose mandate is defined at the national level. Canada's inflation-targeting framework is well established and has been extensively studied in the Canadian monetary-policy literature (Beaudry and Ruge-Murcia, 2017). Evidence that the Bank of Canada has pursued a flexible inflation-forecast-targeting approach also suggests that real-side conditions can matter within the conduct of inflation targeting, rather than being external to it (Otto and Voss, 2014). At the same time, the Bank does not have a formal system of regional representation in its policy decisions comparable to the Federal Reserve System, where Reserve Bank presidents participate in FOMC deliberations, or to the European Central Bank, where national central bank governors sit on the Governing Council. The Canadian setting therefore makes it possible to study regional divergence without starting from an explicit system of regional or national voting representation.

The Canadian economy is also regionally heterogeneous. Provincial labor markets differ in their sectoral composition, exposure to commodity prices, demographic structure, and cyclical sensitivity. Resource-producing provinces, in particular, may experience shocks that are geographically concentrated but macroeconomically relevant. This feature is important because Canada is a small commodity-exporting economy in which global shocks and commodity-price fluctuations affect domestic macroeconomic conditions (Charnavoki and Dolado, 2014). Moreover, oil-price shocks can propagate across Canadian regions through channels that extend beyond oil-producing provinces, including housing markets, interprovincial trade, migration, government redistribution, and consumer spending (Kilian and Zhou, 2022). These mechanisms make it plausible that regional shocks may matter for national monetary-policy assessment even when the mandate is aggregate.

This institutional configuration separates two issues that are often intertwined in the literature. In the United States and the euro area, regional or national conditions may matter because policymakers are themselves attached to territorial constituencies or institutions. In Canada, by contrast, the Bank of Canada's policy decision is not formally organized around provincial representation. If provincial conditions are associated with monetary-policy deviations from standard aggregate prescriptions, the mechanism is therefore unlikely to be a direct voting or bargaining channel. It is more naturally interpreted as reflecting the information content of regional conditions, the macroeconomic relevance of geographically concentrated shocks, or risk-management concerns when the national economy becomes unevenly distributed across provinces.

The distinction between lower-end regional indicators and regional divergence is central to the paper. A narrow lower-end interpretation would imply that monetary policy becomes more accommodative when the most adverse provincial labor-market observations deteriorate. This view is related to arguments suggesting that policymakers in monetary unions may pay disproportionate attention to fragile parts of the union (Drometer et al., 2018). In the Canadian case, however, the number of provinces is small, so lower-percentile statistics are necessarily close to extreme-province indicators. A broader regional-divergence interpretation instead implies that what matters is the dispersion of conditions across provinces. In this view, the central bank reacts not only to the level of national slack, nor necessarily to a single provincial observation, but to the extent to which the national economy is internally uneven.

These interpretations are related but empirically distinct. A sharp deterioration in one small province may generate an extreme-observation signal without much aggregate or systemic relevance. Conversely, a period in which several provinces diverge from the national average may signal a more complex policy environment, even if no single province alone dominates the national picture. Regional dispersion may therefore matter because it captures the limits of aggregate indicators. When provincial unemployment gaps are tightly clustered, the national unemployment gap is a reasonable summary of labor-market conditions. When they are widely dispersed, the same national gap may conceal very different regional realities.

This logic is also related to Canadian work on provinces and the national monetary framework. Earlier studies document persistent provincial differences and convergence dynamics across Canada (Coulombe and Lee, 1995; Beine and Coulombe, 2003; DeJuan and Tomljanovich, 2005). More directly, Chaban and Voss (2016) study Canada from an optimal-currency-area perspective under inflation targeting and find that most provinces appear well served by the national framework, while Alberta is more difficult to fit within the same assessment. Their result is especially relevant for our paper because it identifies Alberta as a potentially distinctive case in the Canadian monetary union. Our analysis is complementary: rather than asking whether provinces belong in the currency area, we ask whether the regional distribution of labor-market slack helps explain monetary accommodation relative to an aggregate policy-rule benchmark.

Several mechanisms could generate a relationship between regional divergence and monetary accommodation. The first is an information mechanism. Provincial labor-market dispersion may contain information about the state of the economy that is not captured by national aggregates. If the Bank of Canada monitors regional developments through its staff analysis, business contacts, regional offices, and public communication, such information may influence the assessment of risks around the aggregate

outlook. The second is a risk-management mechanism. Even if the mandate is national, policymakers may respond more cautiously when the distribution of slack is uneven, because regional divergence can reveal macroeconomic risks that are obscured by the average. The third is a resource-shock mechanism. In Canada, some regional downturns are linked to oil and resource-sector fluctuations. Such shocks may be geographically concentrated while still being relevant for investment, employment, exchange rates, inflation dynamics, and financial conditions.

The paper also considers the possibility of a personal-background mechanism. In committee-based central banking, policymakers' origins or regional affiliations may in principle shape their preferences or information sets. This mechanism is more directly relevant in institutional settings where regional representation is formalized, or where individual voting records can be observed. It is therefore central to studies of the FOMC and the ECB (Gildea, 1992; Meade and Sheets, 2005; Heinemann and Huefner, 2004; Sturm and Wollmershäuser, 2008; Hayo and Méon, 2013; Riboni and Ruge-Murcia, 2010; Badinger and Nitsch, 2014; Jung and Latsos, 2015; Bennani et al., 2018). It is less central in the Canadian case, but it remains useful as a falsification-style check. If the results were driven by birthplace favoritism or regional attachment among Governing Council members, one would expect the sensitivity of monetary accommodation to provincial conditions to vary systematically with the regional origins of policymakers. The evidence presented below does not support this interpretation.

The empirical analysis is therefore organized around four nested questions. First, does regional slack contain information beyond national macroeconomic variables in explaining monetary accommodation relative to a benchmark Taylor rule? Second, is the relevant regional signal better described as lower-end provincial conditions or as cross-province dispersion? Third, are the province-specific patterns consistent with a single-province interpretation, a resource-sector interpretation, or a broader regional-divergence mechanism? Fourth, do institutional features such as Bank of Canada regional offices or Governing Council origins help explain the relationship? This structure allows the paper to distinguish the robust empirical finding — the role of cross-province unemployment-gap dispersion — from more speculative interpretations about why this relationship arises.

3. Data and descriptive evidence

3.1. National and provincial data

The empirical analysis uses monthly Canadian data from January 1999 to December 2024. The starting date is chosen for two reasons. First, it places the analysis in the mature inflation-targeting period. Although the Bank of Canada adopted inflation targeting in 1991, the mid-1990s mark a stabilization of

the inflation-targeting regime and of the statistical behavior of inflation, making the post-1998 period more suitable for estimating policy-rule residuals. This is consistent with the Canadian inflation-targeting literature, which emphasizes the credibility and flexibility of the regime after its consolidation (Beaudry and Ruge-Murcia, 2017; Otto and Voss, 2014). Second, the sample is broadly comparable to the period studied in parts of the euro-area literature on regional divergence and common monetary policy, including Drometer et al. (2018). This comparison is only indirect, since the Canadian and euro-area institutional settings differ, but it is useful for situating the analysis within the broader literature on regional heterogeneity under a single monetary policy.

The dependent variable in the benchmark policy-rule estimations is the Bank of Canada policy rate. The national macroeconomic controls are year-on-year CPI inflation, the unemployment gap, the U.S. monetary-policy stance, changes in the CAD/USD exchange rate, oil-price changes, and financial-market volatility measured by the VIX[2]. The unemployment gap is constructed as the deviation of the unemployment rate from its moving-average benchmark. These variables define the aggregate benchmark against which residual monetary accommodation is measured.

The regional analysis is based on province-specific unemployment gaps. For each of the ten Canadian provinces, we construct a provincial unemployment gap as the deviation of the provincial unemployment rate from its own moving-average benchmark, using labor-market data from the Labour Force Survey. The paper therefore uses a set of ten provincial unemployment gaps in each month, not a single provincial measure. These province-level gaps are the building blocks of the regional indicators used in the empirical analysis.

The unemployment gaps are constructed using a one-sided moving-average benchmark. For the national series and for each province *i*, the unemployment gap is defined as the difference between the observed unemployment rate and its lagged moving average computed over up to 119 previous monthly observations:

$$\bar{u}_{i,t}^{119} = (1/\, n_{i,t}) \times \sum_{s=1}^{\min(119,\, t-1)} u_{i,t-s},$$

$$u_{i,t}^{gap} = u_{i,t} - \bar{u}_{i,t}^{119},$$

where $n_{i,t} = min(119\ ,\ t-1)$. The same construction is used for the national unemployment gap. The benchmark is therefore one-sided: it uses only observations available before month *t*, rather than a two-sided filter using future observations. This avoids the end-point bias associated with two-sided filters.

[2] The VIX is the Chicago Board Options Exchange volatility index, based on S&P 500 index options. It measures the market-implied expected volatility of U.S. equity prices over the next 30 days and is commonly used as a proxy for global financial-market uncertainty.

At the beginning of the sample, where a full lagged window is not yet available, the benchmark is computed using the available lagged observations; the first month is therefore not assigned a gap.

Two dimensions of the provincial distribution are central to the paper. The first concerns the lower end of the distribution. We use measures designed to capture whether residual accommodation is associated with the most adverse provincial labor-market observations, such as the lower percentile of provincial unemployment gaps or the population share living in provinces with elevated labor-market slack. Given the small number of provinces, these variables should be interpreted cautiously: they are close to extreme-province indicators rather than rich lower-tail statistics. The second dimension is cross-province dispersion. We measure the overall unevenness of provincial labor-market conditions using the cross-province dispersion of unemployment gaps. This distinction maps directly into the two interpretations examined in the paper: a narrow lower-end interpretation, in which accommodation is related to the most adverse provincial observations, and a broader regional-divergence interpretation, in which accommodation is related to the overall dispersion of labor-market conditions across provinces.

The main dispersion variable is the unweighted cross-sectional sample standard deviation of the ten provincial unemployment gaps in month t:

$$Dispersion_t = [(1/(N_{t-1})) \times \sum_{i=1}^{N_t} (u_{i,t}^{gap} - \bar{u}_t^{gap})^2]^{1/2},$$

where

$$\bar{u}_t^{gap} = (1/N_t) \times \sum_{i=1}^{N_t} u_{i,t}^{gap}.$$

In the main sample, $N_t=10$ whenever all provincial gaps are observed. The dispersion measure is expressed in percentage points of unemployment. It is not winsorized, trimmed, or standardized in the regressions. Extreme episodes are retained in the empirical analysis; robustness checks instead assess their influence through crisis controls. The only capping applied in the paper concerns the color scale of Figure 1, where the heatmap is capped for visual readability, not for estimation.

Although the main regional variables are based on labor-market gaps, the analysis also considers provincial inflation heterogeneity. Provincial inflation gaps are constructed as deviations of provincial inflation from Canada-wide CPI inflation, and their cross-province dispersion is used in robustness checks. This allows us to verify whether the main unemployment-dispersion result is in fact capturing regional inflation heterogeneity, which would be a natural concern given the Bank of Canada's inflation-targeting mandate. The results reported below show that provincial unemployment-gap dispersion is not absorbed by provincial inflation-gap dispersion.

The baseline regional indicators are constructed from the unweighted cross-province distribution of unemployment gaps. This choice gives each province equal weight and is therefore appropriate for measuring spatial divergence as such. Robustness checks then consider alternative weighting schemes, including population-weighted and GDP-weighted measures. These checks ask whether the results depend on treating provinces as territorial units, demographic units, or economic-weighted units. What matters for the provincial analysis is therefore not simply whether a given province has a high unemployment gap, but whether the distribution of provincial gaps contains information that is not summarized by national unemployment, national inflation, oil prices, exchange-rate changes, or other aggregate controls.

The use of provincial labor-market indicators is motivated by the long-standing evidence that Canada displays persistent regional economic differences. Coulombe and Lee (1995) document convergence patterns across Canadian provinces, while Beine and Coulombe (2003) and DeJuan and Tomljanovich (2005) emphasize that regional differences remain relevant for assessing the Canadian monetary union. More recent evidence also highlights the distinctive role of Alberta within Canada's inflation-targeting framework (Chaban and Voss, 2016) and the regional propagation of oil-price shocks in Canada (Kilian and Zhou, 2022). Our paper builds on this literature but shifts the focus from regional convergence or the optimality of the Canadian monetary union to monetary-policy conduct. The empirical question is not only whether Canadian provinces differ, but whether the distribution of those differences helps explain monetary accommodation beyond standard aggregate fundamentals.

3.2. Provincial unemployment gaps and regional divergence

Figure 1 provides a first view of the provincial unemployment gaps used in the analysis, showing that provincial labor-market conditions often diverge substantially across provinces. This visual evidence illustrates an important feature of the Canadian economy: in some periods, the cross-province distribution of unemployment gaps is compressed, suggesting that the national unemployment gap is a reasonable summary of labor-market slack. In other periods, however, the distribution is more contrasted, with some provinces recording markedly larger unemployment gaps than others. In such episodes, although the national unemployment gap remains an average, it becomes less informative of regional labor-market conditions.

Figure 1 also helps motivate the distinction between lower-end provincial conditions and cross-province dispersion. In some episodes, one or a small number of provinces stand out from the rest, pointing to an extreme-province signal. In others, the pattern is broader, with provincial labor-market conditions spread across a wider range. The former corresponds to the idea that monetary accommodation may be

associated with the most adverse provincial observations; the latter corresponds to the idea that what matters is the overall unevenness of labor-market conditions across provinces. The empirical analysis below compares these two interpretations directly and shows that cross-province dispersion is the more robust predictor of residual monetary accommodation.

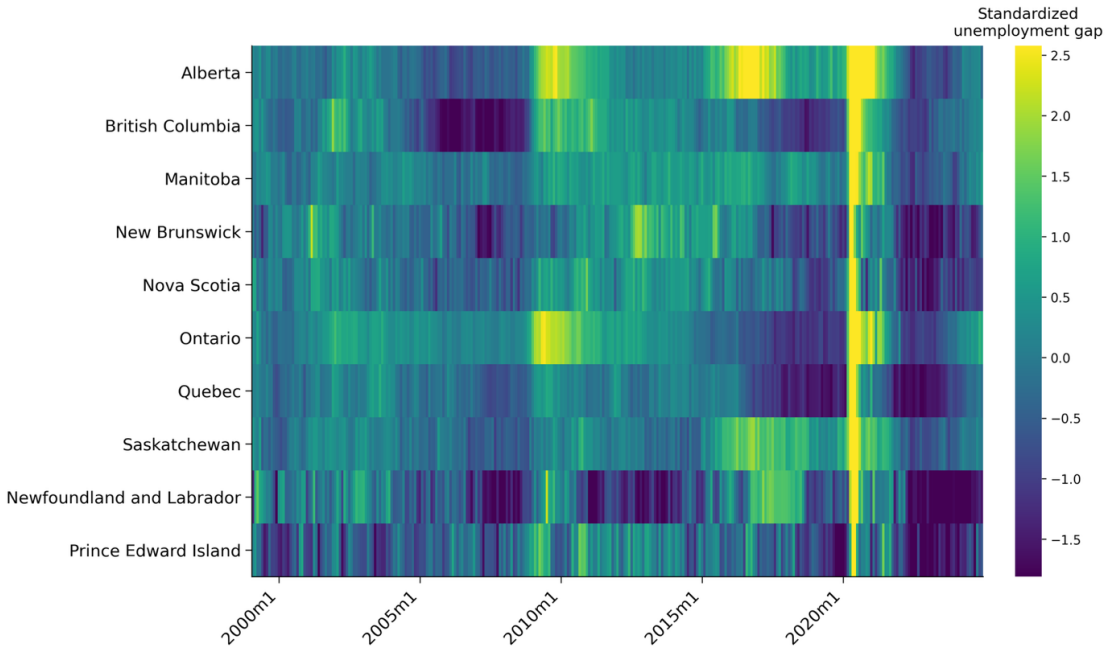


Figure 1. Provincial unemployment gaps, 1999–2024.

Notes: The figure reports standardized provincial unemployment gaps, constructed from deviations of provincial unemployment rates from their respective moving-average benchmark. Higher values indicate unemployment above the provincial benchmark. The color scale is capped at the 2.5th and 98.5th percentiles to improve readability; this capping is applied only to the figure and not to the regression variables. The figure illustrates both episodes in which provincial labor-market conditions move closely together and episodes in which unemployment gaps diverge substantially across provinces.

3.3. Regional and resource-sector language in Bank of Canada communication

As descriptive motivation, we also examine the presence of regional and resource-sector language in Bank of Canada Monetary Policy Reports. This evidence is not used as a formal mechanism test. Monetary Policy Reports are public narratives, not internal deliberation records, and their quarterly timing does not map perfectly into the monthly residuals used in the econometric analysis. Nevertheless, they provide useful context on whether regional and resource-sector issues appear in the Bank's own description of the Canadian macroeconomic environment.

The exercise is based on simple dictionary counts. For each Monetary Policy Report, we count occurrences of predefined regional terms and resource-sector terms, standardize the resulting counts by document length, and plot their evolution over time. The regional dictionary includes references to Canadian regions and provinces, while the resource-sector dictionary captures oil, energy, commodity, and resource-related language. The dictionaries are reported in Appendix Table A.0.

Figure 2 reports the resulting frequency series. The figure shows that regional and resource-sector language is present in the Bank's communication and becomes more salient in particular episodes, notably around 2015–2016, when resource-sector shocks were also associated with pronounced regional labor-market divergence in Figure 1. This pattern is consistent with the idea that geographically concentrated shocks can enter the Bank's assessment of macroeconomic conditions. It does not by itself establish that regional language causes policy deviations, but it supports the plausibility of the information channel studied in the rest of the paper.

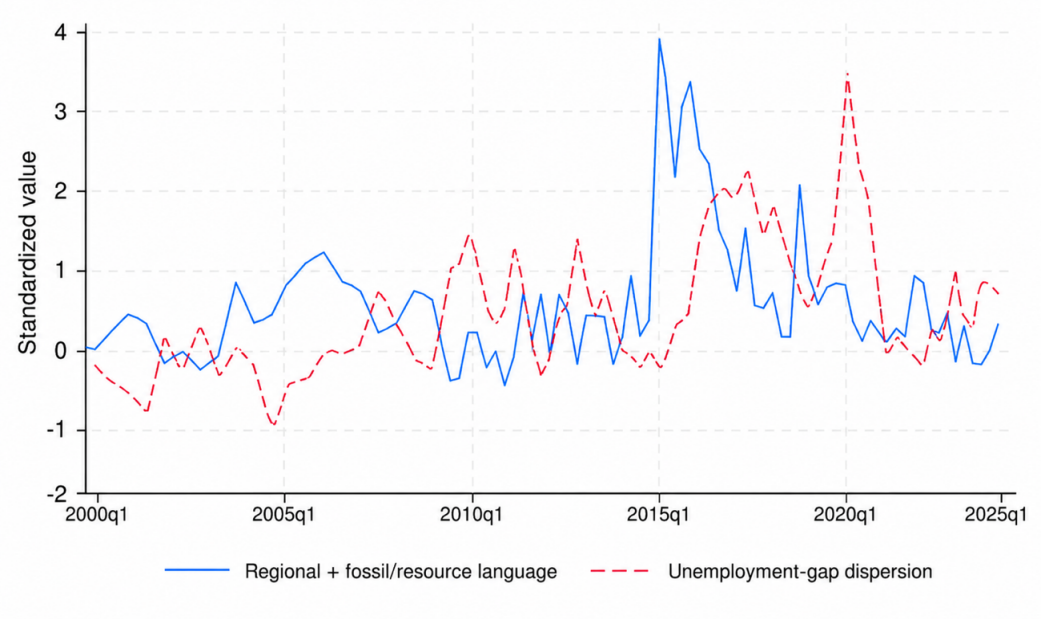


Figure 2. Regional and resource-sector language in Bank of Canada Monetary Policy Reports

Notes: The figure reports dictionary-based counts of regional and resource-sector terms in Bank of Canada Monetary Policy Reports. The text extraction and preliminary dictionary-count procedure were implemented with the assistance of ChatGPT; the resulting series were reviewed and validated by the authors. Occurrences were counted after converting the text to lower case and were standardized by document length. The regional dictionary includes terms referring to Canadian regions and provinces, while the resource-sector dictionary includes oil, energy, commodity, and resource-related terms. The figure is intended as descriptive evidence on the presence of regional and resource-sector issues in Bank of Canada communication, not as a formal mechanism test.

This use of textual evidence is related to, e.g., Bennani (2015), who studies the euro area as a stressful monetary union using monetary-policy coverage. Our use is more limited and deliberately descriptive. The figure helps motivate why regional and resource-sector conditions should not be treated as external to monetary-policy analysis in Canada. The formal tests below rely instead on the relationship between Taylor-rule residual accommodation and provincial unemployment-gap indicators.

4. Measuring residual monetary accommodation

4.1. Benchmark Taylor rule

The first step of the empirical analysis constructs a benchmark measure of systematic monetary policy, through the estimates of Taylor-type rules for the Bank of Canada (from January 1999 to December 2024). The objective is to obtain a transparent benchmark policy prescription based on standard

aggregate fundamentals, and then examine whether the residual component of policy is related to regional conditions.

The baseline rule relates the Bank of Canada policy rate to interest-rate smoothing, CPI inflation, the national unemployment gap, the U.S. monetary-policy stance, and exchange-rate changes. Extended specifications add oil-price changes and the VIX in order to account for global commodity and financial conditions that are especially relevant for a small open economy such as Canada. This open-economy specification is consistent with evidence that Canadian monetary-policy rules may display asymmetries and may depend on external conditions (Caglayan et al., 2016). The inclusion of the U.S. monetary stance reflects the importance of North American monetary and financial linkages, while oil-price controls are important because some Canadian regional shocks are closely connected to resource-sector fluctuations.

Formally, the benchmark specification can be written as:

$$i_t = \alpha + \rho\, i_{t-1} + \beta_\pi\, \pi_t + \beta_y\, gap_t + \beta_{US}\, US_t + X'_t\, \gamma + \varepsilon_t$$

where i_t denotes the policy rate, π_t is inflation, gap_t is the national unemployment gap, US_t captures the U.S. monetary stance, and X'_t stands for exchange rate changes and global financial variables. All regressions are estimated using monthly data, and inference is based on heteroskedasticity- and autocorrelation-consistent standard errors, given the persistence of interest-rate and macroeconomic variables.

Table 1 reports the benchmark estimates. The results are broadly consistent with a conventional policy-rule interpretation. The lagged policy rate is strongly significant, reflecting substantial interest-rate smoothing. Inflation enters positively and significantly. The U.S. monetary-policy stance is also positively associated with the Bank of Canada policy rate, consistent with the importance of external monetary conditions. Exchange-rate changes and financial volatility are relevant in the extended specifications. By contrast, the national unemployment gap is small and not robustly significant.

This last result is important for the logic of the paper. It does not imply that the Bank of Canada ignores real activity. Rather, it suggests that the national unemployment gap may not fully summarize the real-side conditions relevant for monetary policy. If the regional distribution of slack contains information not captured by the national gap, it may appear in the residual component of the benchmark rule. This is precisely what the next step examines.

4.2. From Taylor-rule residuals to monetary accommodation

Although Table 1 reports standard Taylor-type rules including interest-rate smoothing, for the regional-accommodation analysis, however, residual monetary accommodation is constructed from the corresponding no-inertia specification. This choice is deliberate. The second-stage regressions ask whether regional conditions explain deviations from a contemporaneous aggregate policy prescription, rather than deviations from the highly persistent path mechanically implied by the lagged policy rate. Let the residual from the benchmark Taylor rule be denoted by u_t. A positive (respectively, negative) residual means that the observed policy rate is higher (lower) than the benchmark rule predicts. We define residual monetary accommodation as the residual multiplied by minus one:

$$a_t = -u_t$$

Higher values of this variable therefore indicate a more accommodative policy stance relative to the benchmark rule. This transformation is purely interpretive, but it is useful because the empirical question is whether regional divergence is associated with policy being easier than standard aggregate fundamentals would imply.

Table 1. Taylor-rule estimates for the Bank of Canada.

	(1)	(2)
	Baseline	WTI + VIX
Lagged BoC policy rate	0.876***	0.898***
	(0.032)	(0.026)
CPI inflation (y/y, %)	0.056***	0.065***
	(0.015)	(0.017)
Unemployment gap	-0.011	0.008
	(0.010)	(0.013)
U.S. monetary policy stance	0.085***	0.068***
	(0.025)	(0.021)
Exchange rate change	-0.026***	-0.016***
	(0.008)	(0.006)
WTI oil-price change		0.001
		(0.001)
VIX		-0.005**
		(0.002)
Constant	-0.029	0.048
	(0.028)	(0.043)
Observations	300	300

Notes: Monthly data 1999m1–2024m12. The dependent variable is the Bank of Canada policy rate. Both specifications include interest-rate smoothing through the lagged policy rate. Exchange rate change is the log change in the CAD/USD exchange rate. WTI oil-price change is the log change in West Texas Intermediate oil prices. VIX denotes financial-market volatility. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

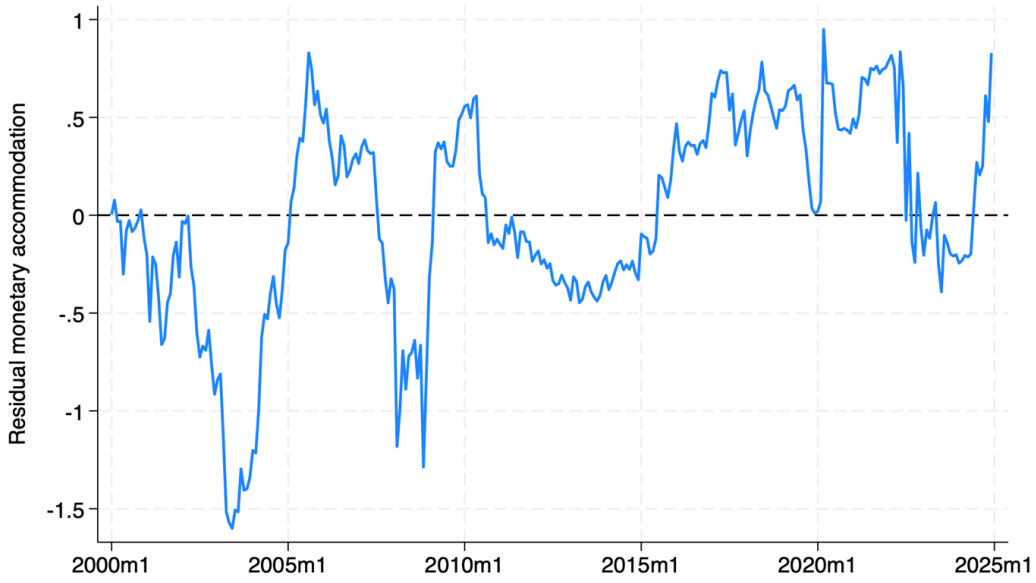


Figure 3. Residual monetary accommodation from the no-inertia Taylor rule

Figure 3 reports the resulting residual accommodation series. The series should not be read as a complete measure of discretionary monetary policy. It captures only the component of the policy rate that is not explained by the benchmark specification without smoothing. Residual movements may reflect omitted variables, nonlinearities, changes in the Bank's information set, or risk-management considerations. The empirical contribution of the paper is to ask whether one particular omitted dimension — the regional distribution of labor-market slack — systematically explains this residual component.

This residual-based design is useful for two reasons. First, it avoids overloading the Taylor rule itself with a large set of regional variables. The benchmark remains close to the standard policy-rule literature, while the regional analysis is conducted in a second step. Second, it provides a demanding test for the regional-divergence hypothesis. If provincial slack indicators predict residual accommodation after controlling for inflation, national unemployment, external monetary conditions, exchange-rate movements, oil prices, and financial volatility, then they contain information not summarized by the aggregate rule.

The approach also helps distinguish the paper from existing work on regional influences in monetary policy committees. Studies of the FOMC and the ECB often examine whether regional or national conditions affect individual preferences, votes, or bargaining outcomes (Gildea, 1992; Meade and Sheets, 2005; Heinemann and Huefner, 2004; Sturm and Wollmershäuser, 2008; Hayo and Méon, 2013;

Riboni and Ruge-Murcia, 2010; Badinger and Nitsch, 2014; Jung and Latsos, 2015; Bennani, Farvaque and Stanek, 2018). Our question is different. We observe the aggregate Canadian policy stance and ask whether its deviation from a standard aggregate benchmark is systematically related to provincial labor-market divergence.[3]

5. Regional divergence and monetary accommodation

This section provides the main test of the paper's central hypothesis. Having constructed residual monetary accommodation from the Taylor-rule estimates, we ask whether this residual component is systematically related to the regional distribution of labor-market slack across Canadian provinces. The analysis focuses on two distinct interpretations. The first is a lower-end interpretation, according to which accommodation is associated with the most adverse provincial labor-market observations. The second is a regional-divergence interpretation, according to which accommodation is associated with the overall dispersion of unemployment gaps across provinces.

5.1. Regional slack indicators

We now examine whether the residual accommodation measure constructed above is related to the regional distribution of labor-market slack. The analysis uses three indicators based on provincial unemployment gaps. The first is the cross-province standard deviation of unemployment gaps, which captures the overall dispersion of provincial labor-market conditions. The second is a lower-end provincial indicator, computed as the 10th percentile of the monthly cross-province distribution (and, since this distribution contains only ten provinces, the measure is de facto an extreme-province statistic and not a large-sample distributional tail). The third is the population share living in provinces with elevated labor-market slack, defined as provinces where the unemployment gap exceeds one percentage point.

These three variables correspond to distinct interpretations of how regional conditions may matter for monetary policy. The lower-end measure is closest to the extreme-province interpretation: policy becomes more accommodative when the most adverse provincial observation deteriorates. This view is related to arguments developed in the context of monetary unions, where policymakers may pay particular attention to fragile members or regions (Drometer et al., 2018). The population-share measure

[3] A forward-looking version of the Taylor rule is considered later as a robustness check. That specification uses realized twelve-month-ahead inflation as a proxy for expected inflation and also considers an instrumental-variable version. Because this proxy is ex post and because the forward-looking estimates are less straightforward to interpret, they are not used as the baseline. Their role is to verify whether the main regional-divergence result depends mechanically on the backward-looking residual constructed in this section.

captures a broader exposure channel: monetary policy may respond more strongly when elevated labor-market slack affects a larger share of the population. The dispersion measure captures a different mechanism. It does not focus only on the province with the largest slack, nor on the number of people living in provinces with elevated slack, but on the extent to which the Canadian labor market becomes internally uneven.

The baseline specification is:

$$a_t = \alpha + \beta R_t + \varepsilon_t$$

where a_t denotes residual monetary accommodation and R_t denotes, alternatively, the 10th percentile of provincial unemployment gaps ($P10Gap_t$), the population share living in provinces with elevated labor-market slack ($ShareElevSlack_t$), or the cross-province dispersion of unemployment gaps ($Dispersion_t$). For the joint specification reported in the main columns of Table 2, R_t is replaced by the three indicators entered simultaneously:

$$a_t = \alpha + \beta_1 P10Gap_t + \beta_2 ShareElevSlack_t + \beta_3 Dispersion_t + \varepsilon_t.$$

Table 2 reports the results, showing that the evidence does not support a purely lower-end interpretation. The 10th percentile of the provincial unemployment-gap distribution is not a robust positive predictor of residual accommodation. In richer specifications, its coefficient is negative, which is inconsistent with a simple view in which monetary policy becomes more accommodative whenever the most adverse provincial conditions deteriorate. The population-share measure is more informative in simple specifications: the share of the population living in provinces with elevated labor-market slack is positively associated with accommodation. However, this variable is less stable once the full set of regional indicators is included.

The most robust result concerns cross-province dispersion. When the regional indicators enter jointly, the dispersion of provincial unemployment gaps is positive and statistically significant. Periods in which provincial labor-market conditions are more unevenly distributed are associated with a more accommodative policy stance relative to the benchmark Taylor rule. This is the central result of the paper. It implies that the relevant regional signal is not simply the condition of the province with the largest slack, but the degree of divergence across provinces.

This finding also helps position the paper relative to the existing literature. Studies of the ECB have often interpreted cross-country heterogeneity as a source of stress for a single monetary policy (Heinemann and Huefner, 2004; Sturm and Wollmershäuser, 2008; Hayo and Méon, 2013; Quint, 2016). Our results point to a similar logic in Canada, but in a different institutional setting. Canadian provinces are not represented in the Bank of Canada's policy decision in the same way that national central banks

participate in the ECB Governing Council. The association between dispersion and accommodation is therefore better interpreted as evidence that regional divergence contains policy-relevant information, rather than as evidence of formal regional bargaining.

Table 2. Regional slack and monetary accommodation

	(1)	(2)		(3)		(4)		(5)		(6)	
P10 gap	-0.022			-0.113	***	-0.113					
	(0.035)			(0.034)		(0.075)					
HighSlack-pop. share		0.752	***	0.558	***	0.558	*				
		(0.078)		(0.139)		(0.303)					
Gap dispersion				0.537	***	0.537	***				
				(0.082)		(0.184)					
L.P10 gap								-0.101	***	-0.095	
								(0.034)		(0.070)	
L. HighSlack-pop. share								0.524	***	0.390	
								(0.137)		(0.238)	
L.Gap dispersion								0.549	***	0.222	
								(0.084)		(0.142)	
L2.P10 gap										-0.011	
										(0.098)	
L3.P10 gap										-0.015	
										(0.058)	
L2. HighSlack-pop. share										0.078	
										(0.355)	
L3. HighSlack-pop. share										0.043	
										(0.321)	
L2.Gap dispersion										0.241	
										(0.166)	
L3.Gap dispersion										0.183	
										(0.145)	
Constant	-0.033	-0.093	***	-0.740	***	-0.740	***	-0.730	***	-0.847	***
	(0.066)	(0.034)		(0.086)		(0.227)		(0.089)		(0.095)	
Observations	300	300		300		300		300		300	

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from the baseline no-inertia Taylor-type rule, so that higher values indicate a more accommodative policy stance relative to the benchmark. P10 gap is the 10th percentile of the provincial unemployment-gap distribution. Provincial unemployment gaps are defined relative to one-sided moving-average benchmarks computed from up to 119 lagged monthly observations. Gap dispersion is the unweighted sample standard deviation of the ten provincial unemployment gaps in each month and is not winsorized. HighSlack-pop share is the population share living in provinces with an unemployment gap above 1 percentage point. Gap dispersion is the cross-province standard deviation of provincial unemployment gaps. L., L2., and L3. denote one-, two-, and three-month lags. Monthly data, 1999m1–2024m12. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

5.2. Timing and visual evidence

Table 2 also reports specifications using lagged regional indicators. The one-month lag of cross-province dispersion remains positive and statistically significant, whereas additional lags are weaker. This pattern suggests that the relationship between regional divergence and residual accommodation is not only contemporaneous noise. At the same time, the evidence does not point to a long-delayed response. This is consistent with the nature of the dependent variable: residual accommodation captures deviations from a monthly policy-rule benchmark, so any regional information contained in it should be expected to operate relatively quickly.

The timing evidence should be interpreted cautiously. The results do not imply that provincial unemployment gaps mechanically cause policy-rate deviations within one month. Rather, they show that regional divergence is systematically aligned with the component of monetary policy not explained by standard aggregate fundamentals. This alignment is consistent with a risk-management interpretation: when provincial conditions become more dispersed, the Bank of Canada may place greater weight on downside risks or on the unevenness of the national cycle.

The visual evidence is consistent with the regression results. Figure 1 shows that provincial unemployment gaps are sometimes tightly clustered and sometimes widely dispersed, while Figure 3 shows the evolution of residual monetary accommodation over the same period. Taken together, the two figures illustrate the central intuition of the paper: periods of stronger regional divergence tend to coincide with greater monetary accommodation relative to the benchmark Taylor rule. The figures are descriptive and do not establish causality, but they help visualize why the national unemployment gap may become a less complete summary of labor-market conditions when provincial gaps move apart.

6. Which regions matter? Resource geography and province-specific evidence

The previous section shows that cross-province unemployment-gap dispersion is the most robust regional predictor of residual monetary accommodation. This section examines what lies behind that aggregate result. The objective is to assess whether the dispersion result reflects a broad regional pattern, the influence of particular provinces, or the macroeconomic relevance of resource-sector geography. The analysis therefore proceeds from province-specific indicators to oil-price robustness and then to the contrast between fossil-industry and non-fossil provinces.

6.1. Province-specific labor-market slack indicators

The aggregate results show that regional divergence predicts residual monetary accommodation. The next question is whether this relationship is geographically diffuse or driven by specific provinces. This distinction matters for interpretation. If the results were driven almost entirely by, for instance, Ontario, it would suggest that the Bank of Canada responds to the largest provincial economy rather than to regional divergence as such. If it were driven only by Alberta, the result might instead reflect oil-price exposure or resource-sector shocks. If several provinces contribute differently, the evidence would be more consistent with the broader view that the regional distribution of slack contains information not summarized by national aggregates.

To examine this issue, we construct province-specific indicators of slack. For each province, the variable is defined as the positive part of the unemployment gap above a one-percentage-point threshold. The measure is therefore zero when the province is not experiencing substantial labor-market slack, and increases with the intensity of provincial slack when the threshold is exceeded. These variables are then entered in a multivariate horse-race specification. Because the number of provincial indicators is large relative to the sample and the variables are correlated, we use LASSO selection as a dimension-reduction device and then re-estimate the selected specification using Newey–West standard errors.

Table 3 shows that the relationship between provincial slack and residual accommodation is not uniform across provinces. Alberta, Ontario, and Quebec enter with positive and statistically significant coefficients. British Columbia, Manitoba, and New Brunswick enter with negative coefficients, while the remaining provinces are less precisely estimated. These coefficients should be interpreted cautiously. They are conditional horse-race coefficients, not isolated marginal effects. A negative coefficient does not mean that slack in a given province mechanically tightens monetary policy. It means that, conditional on the other selected provincial indicators, the marginal information associated with that province is negatively related to the residual accommodation measure.

Table 3. Province-specific slack and residual monetary accommodation

	Residual monetary accommodation	
Alberta	0.198	***
	(0.070)	
British Columbia	-0.314	***
	(0.091)	
Manitoba	-0.418	**
	(0.197)	
New Brunswick	-0.214	**
	(0.105)	
Ontario	0.206	***
	(0.079)	
Quebec	0.153	**
	(0.061)	
Saskatchewan	0.325	
	(0.226)	
Newfoundland and Labrador	0.047	
	(0.167)	
Prince Edward Island	-0.060	
	(0.110)	
Constant	-0.094	
	(0.108)	
Observations	300	

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from the no-inertia Taylor-type rule, so that higher values indicate a more accommodative policy stance relative to the benchmark. Province-specific regressors measure elevated provincial labor-market slack. For each province, the variable equals zero when the provincial unemployment gap is below or equal to one percentage point and increases one-for-one with the unemployment gap above that threshold. Candidate provincial indicators are selected using LASSO with ten-fold cross-validation. The reported coefficients are obtained by re-estimating the selected specification using Newey-West standard errors with 12 lags. Standard errors are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Figure 5 presents the standardized version of the province-specific results. The figure reinforces two points. First, the evidence does not support a one-province interpretation. In particular, Ontario matters, but it is not the sole positive contributor. Alberta and Quebec also enter positively in the baseline province-specific specification. Second, the results do not suggest that all provinces with higher slack are treated symmetrically. This is consistent with the literature showing that regional conditions may influence monetary policy in heterogeneous ways, depending on institutional structure, economic weight, and the information content of regional shocks (Gildea, 1992; Meade and Sheets, 2005; Jung and Latsos, 2015; Bennani, Farvaque and Stanek, 2018). In Canada, where provincial representation is not formalized in the monetary-policy decision process, the heterogeneity is more naturally interpreted as reflecting the macroeconomic relevance of particular regional shocks rather than regional voting power.

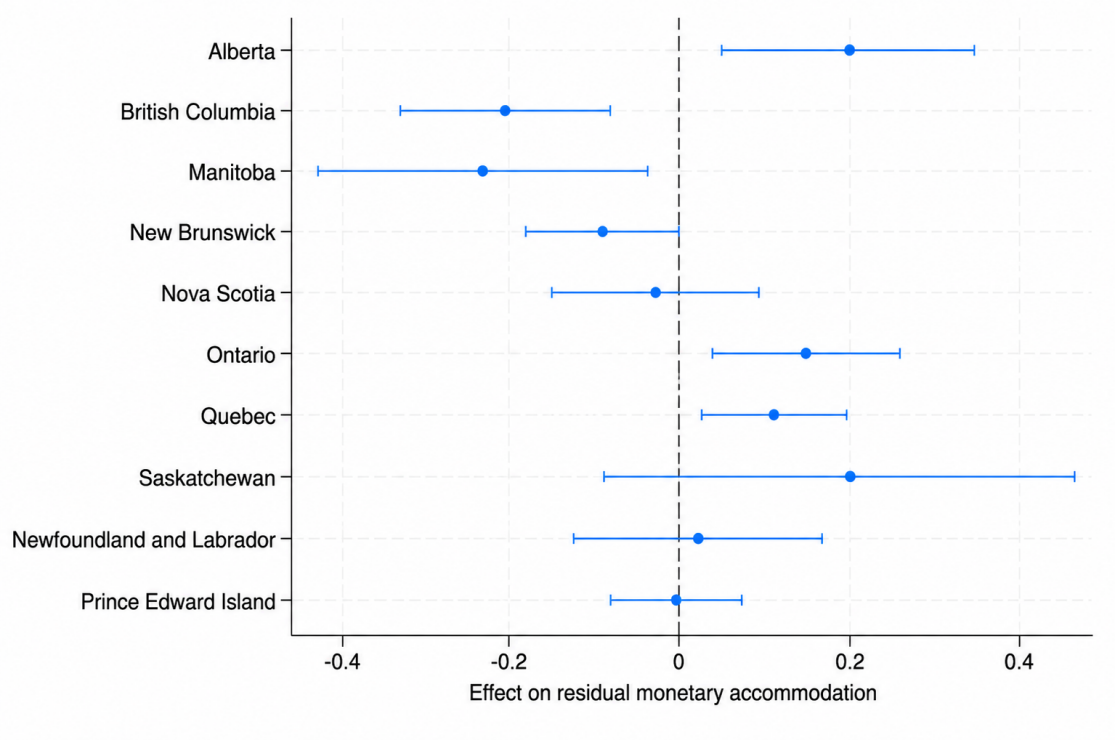


Figure 5. Province-specific labor-market slack and residual monetary accommodation.

Notes: The figure reports standardized coefficients from the province-specific specification in Table 3. The dependent variable is residual monetary accommodation, defined as the negative of the residual from the no-inertia Taylor-type rule, so that higher values indicate a more accommodative policy stance relative to the benchmark. Province-specific regressors measure elevated provincial labor-market slack: for each province, the variable equals zero when the provincial unemployment gap is below or equal to one percentage point and increases one-for-one with the unemployment gap above that threshold. Horizontal bars report 95 percent confidence intervals based on Newey-West standard errors with 12 lags. The vertical dashed line marks zero.

6.2. Alberta, oil prices, and residual accommodation

Alberta's positive coefficient raises the specific issue of resource-sector exposure. A positive association between Alberta slack and residual accommodation could therefore reflect several mechanisms: province-specific attention, oil-sector macroeconomic stress, or the fact that Alberta downturns coincide with broader regional divergence.

We address this issue by reconstructing residual accommodation under alternative Taylor-rule specifications that control more explicitly for oil and resource-price conditions. The baseline residual is compared with residuals obtained from rules including WTI oil prices, WTI and the VIX, WTI and WCS

prices, and the WTI-WCS spread. The purpose is to test whether the regional-dispersion result disappears once oil-related macroeconomic information is included directly in the benchmark rule.

Table 4. Regional slack and monetary accommodation: robustness to oil-price controls

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline, common sample	WTI	WTI + VIX	WTI + WCS	WTI + spread
P10 gap	-0.113	-0.006	-0.012	-0.033	-0.020	-0.021
	(0.075)	(0.061)	(0.062)	(0.069)	(0.071)	(0.071)
High slack-pop. share	0.558*	0.215	0.229	0.389	0.160	0.163
	(0.303)	(0.286)	(0.288)	(0.337)	(0.334)	(0.334)
Gap dispersion	0.537***	0.422**	0.425**	0.332*	0.389*	0.389*
	(0.184)	(0.213)	(0.208)	(0.200)	(0.210)	(0.210)
Constant	-0.740***	-0.325	-0.341	-0.314	-0.448**	-0.451**
	(0.227)	(0.239)	(0.231)	(0.210)	(0.204)	(0.204)
Observations	300	239	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. P10 gap is the 10th percentile of the provincial unemployment-gap distribution. High slack-pop. share is the population share living in provinces with an unemployment gap above 1 percentage point. Gap dispersion is the cross-province standard deviation of provincial unemployment gaps. Column (1) uses the full baseline sample. Columns (2)–(6) use the common WCS sample, so differences across these columns are not driven by changes in sample coverage. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table 4 shows that the main aggregate result survives these alternative residual constructions. Cross-province unemployment-gap dispersion remains positively associated with residual accommodation across the oil-control variants. This is important because it shows that the main dispersion result is not mechanically generated by omitted oil prices in the benchmark Taylor rule. Oil and resource-sector shocks are part of the Canadian macroeconomic environment, but they do not absorb the regional-divergence effect.

The province-specific results tell a more nuanced story. Alberta remains positively associated with residual accommodation after oil controls, but the coefficient is attenuated. This pattern is informative. If Alberta were only proxying for oil prices, its coefficient should disappear once oil controls are

included. If oil prices were irrelevant to Alberta's role, the coefficient should be unchanged. The observed attenuation lies between these extremes. It suggests that Alberta's role is partly resource-related, but not reducible to oil prices alone.

Table 5. Province-specific slack and residual monetary accommodation: oil-robust residuals

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline, common sample	WTI	WTI + VIX	WTI + WCS	WTI + spread
Alberta	0.194***	0.146**	0.154**	0.126*	0.130*	0.129*
	(0.074)	(0.067)	(0.067)	(0.065)	(0.066)	(0.066)
British Columbia	-0.309***	-0.264***	-0.246***	-0.258***	-0.287***	-0.287***
	(0.084)	(0.076)	(0.080)	(0.072)	(0.075)	(0.074)
Manitoba	-0.414**	-0.226	-0.258	-0.348**	-0.332**	-0.328**
	(0.189)	(0.153)	(0.160)	(0.165)	(0.167)	(0.166)
New Brunswick	-0.212**	-0.351***	-0.367***	-0.413***	-0.348***	-0.347***
	(0.106)	(0.120)	(0.116)	(0.108)	(0.116)	(0.116)
Nova Scotia	-0.043	0.024	-0.020	-0.083	-0.091	-0.093
	(0.149)	(0.118)	(0.120)	(0.120)	(0.118)	(0.118)
Ontario	0.207**	0.126*	0.116	0.221***	0.154**	0.157**
	(0.081)	(0.070)	(0.072)	(0.062)	(0.065)	(0.065)
Quebec	0.158***	0.184***	0.240***	0.264***	0.225***	0.225***
	(0.059)	(0.057)	(0.054)	(0.056)	(0.063)	(0.063)
Saskatchewan	0.332	0.213	0.197	0.246	0.265	0.263
	(0.240)	(0.194)	(0.196)	(0.204)	(0.222)	(0.221)
Newfoundland and Labrador	0.052	0.079	0.076	0.047	0.105	0.107
	(0.176)	(0.146)	(0.146)	(0.150)	(0.158)	(0.157)
Prince Edward Island	-0.039	-0.072	-0.077	-0.007	-0.031	-0.037
	(0.105)	(0.101)	(0.098)	(0.128)	(0.138)	(0.137)
Constant	-0.094	0.065	0.066	0.053	-0.073	-0.073
	(0.109)	(0.100)	(0.099)	(0.094)	(0.093)	(0.093)
Observations	300	239	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. Province-specific regressors are unemployment-gap intensities above 1 percentage point, defined as max(0, provincial unemployment gap − 1). Column (1) uses the full baseline sample. Columns (2)–(6) use the common WCS sample, so differences across these columns are not driven by changes in sample coverage. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

This evidence is consistent with the broader Canadian regional literature, which emphasizes the importance of persistent provincial differences and region-specific shocks (Coulombe and Lee, 1995; Beine and Coulombe, 2003; DeJuan and Tomljanovich, 2005). It also connects the Canadian case to the monetary-union literature on asymmetric shocks and policy stress (Sturm and Wollmershäuser, 2008; Drometer et al., 2018; Quint, 2016). The Canadian setting differs institutionally from the euro area, but

the policy problem is related: a single monetary policy operates over regions that may experience different cyclical and sectoral conditions.

6.3. Fossil versus non-fossil provinces

The Alberta evidence suggests a resource-sector interpretation, but focusing on Alberta alone would be too narrow. We therefore group provinces according to their exposure to fossil-fuel industries. The preferred classification defines fossil-industry provinces narrowly as Alberta, Saskatchewan, and Newfoundland and Labrador. These provinces share stronger exposure to oil and resource-sector fluctuations than the rest of the country. A broader classification adding British Columbia (as in Kilian and Zhou, 2022) is considered as a robustness check, but the narrow definition is conceptually cleaner and empirically sharper.

Table 6. Fossil-industry versus non-fossil provinces and residual monetary accommodation

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline, common sample	WTI	WTI + VIX	WTI + WCS	WTI + spread
Fossil provinces	0.321***	0.235***	0.227***	0.211***	0.225***	0.224***
	(0.079)	(0.070)	(0.072)	(0.062)	(0.067)	(0.067)
Non-fossil provinces	-0.211***	-0.153**	-0.144**	-0.125**	-0.201***	-0.200***
	(0.070)	(0.062)	(0.065)	(0.062)	(0.063)	(0.063)
Constant	-0.078	0.070	0.072	0.067	-0.060	-0.059
	(0.100)	(0.092)	(0.092)	(0.089)	(0.088)	(0.088)
Observations	300	239	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. Fossil provinces are Alberta, Saskatchewan, and Newfoundland and Labrador. Non-fossil provinces are all other provinces. Group variables are population-weighted averages of province-level unemployment-gap intensity above 1 percentage point, defined as max(0, provincial unemployment gap − 1). Column (1) uses the full baseline sample. Columns (2)–(6) use the common WCS sample, so differences across these columns are not driven by changes in sample coverage. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table 6 shows a strong contrast between fossil-industry and non-fossil provinces. Slack in fossil-industry provinces is positively and significantly associated with residual monetary accommodation across the residual variants. By contrast, slack in non-fossil provinces is negatively associated with accommodation. Equality tests reject equality between the two groups. The null hypothesis of equality is rejected in the full baseline sample and in every common-sample oil specification, with p-values

ranging from 0.0002 to 0.0060. The detailed tests are reported in Appendix Table A.1. This result strengthens the interpretation that the regional-divergence effect is connected to resource-sector macroeconomic stress, not merely to the identity of a single province.

The contrast between fossil and non-fossil provinces should not be read as evidence that the Bank of Canada gives preferential treatment to resource-producing regions. A more cautious interpretation is that fossil-province slack contains macroeconomic information that is especially relevant for the Canadian outlook. Resource-sector downturns can affect investment, employment, exchange rates, inflation dynamics, and financial conditions. In this sense, elevated slack in fossil-industry provinces may be regionally concentrated but nationally informative.

The broader classification, which adds British Columbia to the fossil/resource group, weakens precision. As reported in Appendix Table A.2, the coefficient on the broader fossil/resource group remains positive, but the contrast with other provinces is less sharply estimated than under the narrower classification. This is useful evidence because it supports the narrower interpretation: the relevant channel is not simply "Western Canada" or a broad regional bloc, but provinces more directly exposed to fossil-resource shocks. The baseline classification is therefore retained in the main analysis, while the broader definition is reported as a robustness check.

Overall, these results show that regional divergence matters, but it does not operate as a simple equal-weighted concern for every province with elevated slack. Nor does it reduce to Ontario, Alberta, or oil prices alone. The province-specific and fossil-industry results suggest that the regional distribution of slack is policy-relevant partly because some regional shocks, especially resource-sector shocks, contain information about national macroeconomic risks that is not fully captured by aggregate unemployment, inflation, or oil-price controls.

7. Institutional channels: information versus favoritism

The province-specific and fossil-industry results suggest that regional slack matters partly because some regional shocks are macroeconomically informative. This section considers whether institutional features help explain the relationship, with two specific potential channels. The first is an informational one associated with the Bank of Canada's regional presence. The second is a personal-background channel associated with the regional origins of Governing Council members. While regional offices may improve the Bank's information about local economic conditions, the Governing Council members' origin would point toward a background-based interpretation.

The empirical exercises in this section are organized as group comparisons: rather than estimating a separate coefficient for each province, we aggregate province-specific elevated-slack indicators into groups defined by institutional characteristics. First, provinces are grouped according to whether they host a Bank of Canada regional office (and, in the appendix, this office distinction is crossed with fossil-industry exposure). Then, provincial slack indicators are interacted with the regional origins of Governing Council members.

7.1. Bank of Canada regional offices

The Bank of Canada has regional offices that contribute to its monitoring of local economic developments, business conditions, and regional risks. If regional offices improve the information available to the Bank, provinces with such offices may display a stronger relationship between local labor-market slack and residual accommodation. This would not imply that office provinces are formally represented in policy decisions. Rather, it would suggest that regional information flows complement the macroeconomic relevance of provincial shocks.

We therefore compare provinces with a Bank of Canada regional office to provinces without one. Office provinces are Alberta, British Columbia, Nova Scotia, Ontario, and Quebec. Non-office provinces are Manitoba, New Brunswick, Newfoundland and Labrador, Prince Edward Island, and Saskatchewan. For each group, we construct a population-weighted average of province-specific elevated-slack indicators. The resulting variables measure whether elevated labor-market slack in office provinces and non-office provinces is differently associated with residual monetary accommodation.

Table 7 reports these group-level regressions across the same residual-accommodation variants used in Section 6. Column (1) uses the baseline residual in the full sample. Column (2) re-estimates the baseline residual on the common WCS sample. Columns (3) to (6) use residuals constructed from Taylor-rule specifications that add WTI oil prices, WTI and the VIX, WTI and WCS prices, and the WTI-WCS spread, respectively. The structure therefore parallels Tables 4 to 6: the purpose is to assess whether the office/non-office contrast survives alternative treatment of oil and financial conditions.

Table 7. Bank of Canada regional offices and residual monetary accommodation

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline, common sample	WTI	WTI + VIX	WTI + WCS	WTI + spread
BoC-office provinces	0.436***	0.303**	0.311**	0.424***	0.292**	0.296**
	(0.154)	(0.141)	(0.142)	(0.136)	(0.140)	(0.140)
Non-office provinces	-0.364	-0.241	-0.258	-0.441**	-0.315	-0.321
	(0.223)	(0.197)	(0.202)	(0.187)	(0.195)	(0.195)
Constant	-0.044	0.103	0.102	0.090	-0.029	-0.029
	(0.102)	(0.093)	(0.092)	(0.089)	(0.090)	(0.090)
Observations	300	239	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. BoC-office provinces are Alberta, British Columbia, Nova Scotia, Ontario, and Quebec. Non-office provinces are Manitoba, New Brunswick, Newfoundland and Labrador, Prince Edward Island, and Saskatchewan. Group variables are population-weighted averages of province-level unemployment-gap intensity above 1 percentage point, defined as max(0, provincial unemployment gap − 1). Column (1) uses the full baseline sample. Columns (2)–(6) use the common WCS sample, so differences across these columns are not driven by changes in sample coverage. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table 7 shows that elevated slack in office provinces is positively associated with residual monetary accommodation across all residual variants. The coefficient on non-office provinces is negative or statistically weaker. This pattern is consistent with an information-channel interpretation: regional conditions may matter more when they are more directly embedded in the Bank's information-gathering structure. However, the evidence should not be overinterpreted. Equality tests are suggestive but not uniformly strong, and office status overlaps partly with other economically relevant dimensions, including province size and resource exposure. The null hypothesis of equality between the office and non-office coefficients is rejected at conventional levels in the full baseline sample and in the WTI + VIX specification, and at the 10 percent level in most common-sample oil specifications. Detailed p-values are reported in Appendix Table A.3.

To separate the office channel from resource geography, we also consider a four-group split that crosses the office distinction with fossil-industry exposure: fossil-office provinces, fossil non-office provinces, non-fossil office provinces, and non-fossil non-office provinces. The corresponding regressions, reported in Appendix Table A.4, use the same residual variants as Table 7. This exercise confirms that office status alone is not the whole mechanism. Alberta, the fossil-office category, remains positively associated with accommodation. Non-fossil office provinces are also sometimes positive, while non-

fossil non-office provinces are negative (see Appendix Table A.4). These patterns suggest that the information channel complements resource geography rather than replacing it.

The office results therefore refine, but do not overturn, the interpretation of Section 6. They suggest that the Bank's regional information structure may help explain why some provincial conditions are more strongly associated with residual accommodation. At the same time, the results do not support a pure institutional-presence story. The main empirical regularity remains the role of regional divergence, with resource-sector geography playing an important role in province-specific patterns.

7.2. Governing Council origins

A second possibility is that regional effects reflect the personal backgrounds of policymakers. This mechanism has been studied more directly in settings where individual voting behavior is observed. In the U.S. context, Gildea (1992), Meade and Sheets (2005), Jung and Latsos (2015), and Bennani, Farvaque and Stanek (2018) examine whether regional conditions influence Federal Reserve policymakers. In the euro-area context, national representation and committee structure have been central to studies of ECB decision-making (Heinemann and Huefner, 2004; Sturm and Wollmershäuser, 2008; Hayo and Méon, 2013; Riboni and Ruge-Murcia, 2010; Badinger and Nitsch, 2014). In Canada, the institutional setting is different, but it remains useful to check whether the regional origins of Governing Council members help explain the results.

The analysis is exploratory for two reasons. First, Governing Council origin shares move slowly over time and are therefore difficult to distinguish from other low-frequency changes in monetary-policy behavior. Second, origins are imperfect proxies for preferences, information sets, or regional attachment. The purpose of the exercise is therefore not to estimate a structural effect of personal background, but to test whether the main regional results are consistent with a simple birthplace-favoritism interpretation.

The results do not support a simple birthplace-favoritism mechanism (see Appendix Tables A.5 and A.6). Origin shares are correlated with residual accommodation in some specifications, but the coefficients are difficult to interpret because the shares are slow-moving and collinear. More importantly, interactions between provincial slack and regional origins do not show that accommodation rises systematically when provinces with elevated slack are more strongly represented in the Governing Council's regional background. Alberta's elevated slack remains positively associated with accommodation, but its interaction with Western or Northern origins is not statistically significant. Ontario's elevated slack does not become more positively associated with accommodation when Ontario-born members are more present; if anything, the corresponding interaction is negative.

These findings are useful because they delimit the interpretation of the paper. The results are not well described as regional favoritism by policymakers. They are more consistent with a combination of regional information, macroeconomic risk management, and resource-sector geography. This distinction matters for the contribution of the paper. The Canadian evidence complements the literature on regional influences in monetary-policy committees, but it does not rely on formal territorial representation or observed individual votes. Instead, it shows that regional economic divergence may matter for the aggregate policy stance even in a national central bank without explicit regional representation.

8. Robustness checks

This section reports additional robustness checks, whose objective is to assess whether the main result depends on the weighting of provincial conditions, on omitted regional inflation heterogeneity, on crisis episodes, or on the specific Taylor-rule residual used to define monetary accommodation.

8.1. Population versus GDP weighting

The baseline regional indicators are constructed from provincial unemployment gaps using population-based or unweighted measures, depending on the specific exercise. One possible concern is that monetary policy may respond more to economically large provinces than to demographically large provinces. This concern is relevant in Canada because provincial population and GDP weights are correlated but not identical, especially when resource-producing provinces experience large sectoral shocks.

We therefore reconstruct the regional slack indicators using GDP weights and compare the results with the baseline population-weighted measures. The exercise asks whether the dispersion result reflects the distribution of people across provinces with slack, or whether it is robust to weighting provinces by their economic size.

The results show that GDP-weighted dispersion remains positively and significantly associated with residual monetary accommodation (see Table A7). The magnitude is close to the population-weighted result, indicating that the main finding is not driven by a particular weighting convention. By contrast, high slack province shares and average slack measures are less robust. This reinforces the central conclusion of the paper: the stable empirical signal is cross-province dispersion, not the simple prevalence of provinces with slack.

We also replicate the fossil-industry versus non-fossil comparison using GDP-weighted group variables (see Appendix Table A8). The fossil/non-fossil contrast is virtually unchanged under GDP weighting.

Fossil-province slack remains positively associated with residual accommodation, while non-fossil feebleness remains negatively associated. This strengthens the interpretation that the fossil-province result is not a mechanical consequence of population weights.

8.2. Provincial inflation heterogeneity

A second concern is that unemployment-gap dispersion may proxy for regional inflation heterogeneity. Since the Bank of Canada's mandate is defined in terms of inflation, this is a natural alternative interpretation. If periods of labor-market dispersion also coincide with periods of provincial inflation dispersion, the unemployment-based result might be capturing inflationary heterogeneity rather than regional slack.

To address this issue, we construct measures of provincial inflation-gap dispersion and include them alongside unemployment-gap dispersion. The logic is straightforward: if the unemployment-dispersion result is merely an inflation-heterogeneity result, it should weaken substantially once provincial inflation dispersion is controlled for.

The results do not support this alternative interpretation. Appendix Table A.10 shows that the unemployment-dispersion result is not absorbed by provincial inflation heterogeneity. Cross-province unemployment-gap dispersion remains positive and statistically significant when inflation-gap dispersion is included, whereas inflation-gap dispersion itself is not a robust predictor of residual monetary accommodation. This supports the interpretation that the main result captures regional labor-market divergence rather than a disguised response to regional inflation dispersion. The relevant signal is the uneven regional distribution of labor-market slack.

8.3. Crisis episodes

A third concern is that the results may be driven by a small number of high-variance episodes. The sample includes both the global financial crisis and the Covid period, during which monetary policy, unemployment, financial conditions, and regional dispersion all moved sharply. If the dispersion result were merely a crisis artifact, it should weaken substantially once these periods are controlled for. We therefore add crisis controls for the global financial crisis and the Covid period to the baseline regional-slack regressions.

Appendix Table A.11 shows that the dispersion result is not mechanically driven by crisis episodes. In the full baseline sample, cross-province unemployment-gap dispersion remains positive and statistically significant after adding controls for the global financial crisis and the Covid period. In the shorter WCS

common sample and in the oil-adjusted residual specifications, the coefficient remains positive but becomes less precisely estimated. This pattern suggests that crisis episodes contribute to the variation in regional divergence and monetary accommodation, but do not fully account for the main result.

8.4. Forward-looking Taylor-rule residuals

The baseline measure of residual accommodation is obtained from a Taylor-type rule using contemporaneous inflation. As a final robustness check, we consider a forward-looking policy-rule specification in which inflation is proxied by realized twelve-month-ahead inflation. We estimate both an OLS version and an instrumental-variable version. The IV specification is used only in this forward-looking robustness exercise because realized twelve-month-ahead inflation is an imperfect proxy for the inflation expectations relevant at the time of the policy decision. It may contain information from shocks occurring after the policy rate was set and may therefore be correlated with the error term in the forward-looking Taylor rule. We therefore instrument realized future inflation with predetermined variables: lags of inflation, oil-price growth, and the VIX. This IV exercise is not introduced in the baseline residual construction because the baseline Taylor rules use contemporaneous observed macroeconomic variables and are intended as transparent policy-rule benchmarks rather than structural reaction functions.

We then reconstruct residual accommodation from the forward-looking rule and repeat the regional-slack analysis. Appendix Table A.13 shows that the regional-dispersion result survives when residual accommodation is reconstructed from forward-looking Taylor-rule variants. Gap dispersion remains positive and statistically significant across all specifications, including the OLS, IV, WTI + VIX, and WTI + WCS + VIX residuals. By contrast, the lower-tail and high slack-population-share measures remain less stable. This supports the conclusion that the main result is not mechanically tied to the baseline backward-looking Taylor-rule residual. The main conclusion is unchanged.

Appendix Figures A.1 and A.2 provide diagnostic evidence for the forward-looking robustness exercise. Appendix Figure A.1 compares the Bank of Canada policy rate with the fitted values from the forward-looking Taylor-rule specifications, while Appendix Figure A.2 reports the corresponding residual accommodation series. These figures are not used to select the preferred specification. They are included only to document the residuals underlying Appendix Table A.13 and to show that the persistence of the regional-dispersion result is not driven by an obviously anomalous residual series.

Overall, the robustness checks support the main interpretation of the paper. Regional unemployment-gap dispersion predicts residual monetary accommodation across alternative weighting schemes, after accounting for provincial inflation heterogeneity, after controlling for major crisis episodes, and when residual accommodation is reconstructed from a forward-looking Taylor-rule specification. The weaker

robustness of lower-tail and high slack-share measures further reinforces the paper's central conclusion: regional divergence, rather than a literal high-degree-of-slack-province mechanism, is the stable empirical signal.

8 Conclusion

This analysis examines whether regional economic divergence helps explain monetary accommodation in Canada, using monthly data from 1999 to 2024. Taylor-type rules are estimated and the residual component is interpreted as a measure of monetary accommodation relative to national fundamentals. We then relate this residual accommodation measure to indicators of provincial labor-market conditions constructed from unemployment gaps.

We show that cross-province dispersion in unemployment gaps predicts residual monetary accommodation by the Bank of Canada, pointing to a regional-divergence interpretation, rather than to a narrower extreme-province mechanism. In other words, the Bank of Canada does not appear to respond mechanically to a single adverse provincial observation, but its degree of residual accommodation is systematically related to the degree of regional divergence in labor-market slack.

The province-specific results clarify this interpretation. The pattern is not driven by a single province. Alberta, Ontario, and Quebec are positively associated with residual accommodation in the baseline province-specific exercise, but Alberta's coefficient is attenuated when oil-price controls are introduced. This suggests that Alberta partly captures resource-sector macroeconomic pressures, without being mechanically reducible to oil prices. The stronger and more systematic contrast is between fossil-industry and non-fossil provinces: elevated slack in Alberta, Saskatchewan, and Newfoundland and Labrador is positively associated with residual accommodation, whereas elevated slack in non-fossil provinces is negatively associated. This points to a regional resource-stress channel rather than to province-specific targeting.

Institutional checks further delimit the mechanism. Provinces with Bank of Canada regional offices are more positively associated with residual accommodation than non-office provinces, which is consistent with an information-channel interpretation. However, the office results are not sufficiently strong to support a pure institutional-presence mechanism, and they overlap with province size and resource geography. By contrast, Governing Council origins do not support a birthplace-favoritism interpretation. The results are therefore better read as evidence that regional conditions contain policy-relevant information than as evidence of territorial representation or regional preference.

The robustness checks support the central result. The dispersion coefficient remains positive under oil-price controls, GDP-weighted slack measures, controls for provincial inflation heterogeneity, crisis

controls, and forward-looking Taylor-rule residuals. Descriptive evidence from Bank of Canada Monetary Policy Reports is also consistent with the relevance of regional and resource-sector conditions in the Bank's public narrative, although this evidence is used only for motivation rather than as a formal mechanism test.

Hence, our results show that, even when a central bank has a national mandate and no formal regional representation, the spatial distribution of economic slack may matter for policy decisions. The conduct of monetary policy thus cannot always be understood through representative national indicators alone. Geography matters, not because central banks necessarily target regions, but because regional divergence can reveal macroeconomic risks that aggregate variables may obscure.

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APPENDIX

To:

"Under Pressure:

Regional Divergence and Monetary Accommodation in Canada"

Table A.0. Dictionaries used for Bank of Canada Monetary Policy Report text counts

Dictionary	Keywords and expressions
Regional terms	province, provinces, provincial, region, regions, regional, Atlantic, Quebec, Ontario, Prairies, Alberta, Saskatchewan, Manitoba, British Columbia, Newfoundland, Labrador, Nova Scotia, New Brunswick, Prince Edward Island
Resource-sector terms	oil, crude, petroleum, energy, natural gas, gas, commodity, commodities, resource, resources, mining, metals, WTI, WCS, Western Canadian Select

Notes: The table reports the keyword dictionaries used to construct Figure 2. For each Monetary Policy Report, occurrences are counted after converting the text to lower case. Counts are standardized by document length. The figure is intended as descriptive evidence on the presence of regional and resource-sector language in Bank of Canada communication, not as a formal test of the mechanism.

Table A.1. Equality tests for fossil- and non-fossil-province coefficients

Specification	Sample	N	p-value
Baseline	Full	300	0.000238
Baseline	WCS common	239	0.002882
WTI	WCS common	239	0.006008
WTI + VIX	WCS common	239	0.003876
WTI + WCS + VIX	WCS common	239	0.000793
WTI + WTI-WCS diff. + VIX	WCS common	239	0.000805

Table A.2. Fossil-industry versus non-fossil provinces: broad classification

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline, common sample	WTI	WTI + VIX	WTI + WCS	WTI + spread
Broad fossil/resource provinces	0.324**	0.244**	0.228**	0.190*	0.209*	0.208*
	(0.140)	(0.109)	(0.114)	(0.097)	(0.108)	(0.108)
Other provinces	-0.167	-0.130	-0.113	-0.071	-0.152	-0.150
	(0.142)	(0.105)	(0.109)	(0.107)	(0.111)	(0.111)
Constant	-0.054	0.094	0.095	0.090	-0.035	-0.035
	(0.100)	(0.090)	(0.090)	(0.087)	(0.086)	(0.086)
Observations	300	239	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. The broad fossil/resource definition includes Alberta, British Columbia, Saskatchewan, and Newfoundland and Labrador. Other provinces are all remaining provinces. Group variables are population-weighted averages of province-level unemployment-gap intensity above 1 percentage point, defined as max(0, provincial unemployment gap − 1). Column (1) uses the full baseline sample. Columns (2)–(6) use the common WCS sample, so differences across these columns are not driven by changes in sample coverage. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table A.3. Equality tests for Bank of Canada office and non-office provinces

	Specification	Sample	Observations	p-value
(1)	Baseline	Full sample	300	0.032
(2)	Baseline	Common WCS sample	239	0.105
(3)	WTI	Common WCS sample	239	0.096
(4)	WTI + VIX	Common WCS sample	239	0.008
(5)	WTI + WCS + VIX	Common WCS sample	239	0.068
(6)	WTI + WTI-WCS spread + VIX	Common WCS sample	239	0.064

Notes: The table reports p-values from tests of equality between the coefficient on BoC-office provinces and the coefficient on non-office provinces in Table 7. BoC-office provinces are Alberta, British Columbia, Nova Scotia, Ontario, and Quebec. Non-office provinces are Manitoba, New Brunswick, Newfoundland and Labrador, Prince Edward Island, and Saskatchewan. The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules. The common WCS sample is used in columns (2)–(6) of Table 7. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread.

Table A.4. Fossil exposure, Bank of Canada regional offices, and monetary accommodation

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline, common sample	WTI	WTI + VIX	WTI + WCS	WTI + spread
Fossil + office	0.205***	0.129**	0.128**	0.119**	0.119**	0.119**
	(0.065)	(0.054)	(0.054)	(0.052)	(0.053)	(0.053)
Fossil + no offic	0.180	0.223	0.203	0.180	0.232	0.227
	(0.199)	(0.177)	(0.185)	(0.185)	(0.184)	(0.185)
Non-fossil office	0.144*	0.147	0.158	0.303***	0.159*	0.162*
	(0.076)	(0.091)	(0.097)	(0.088)	(0.087)	(0.087)
Non-fossil + r office	-0.600***	-0.559**	-0.553**	-0.738***	-0.658***	-0.659***
	(0.187)	(0.226)	(0.229)	(0.235)	(0.227)	(0.228)
Constant	-0.084	0.065	0.066	0.056	-0.067	-0.067
	(0.101)	(0.093)	(0.093)	(0.088)	(0.088)	(0.088)
Observations	300	239	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. The four groups cross the narrow fossil-industry definition with the presence of a Bank of Canada regional office. Fossil + office is Alberta. Fossil + no office includes Saskatchewan and Newfoundland and Labrador. Non-fossil + office includes British Columbia, Nova Scotia, Ontario, and Quebec. Non-fossil + no office includes Manitoba, New Brunswick, and Prince Edward Island. Group variables are population-weighted averages of province-level unemployment-gap intensity above 1 percentage point, defined as max(0, provincial unemployment gap − 1). Column (1) uses the full baseline sample. Columns (2)–(6) use the common WCS sample, so differences across these columns are not driven by changes in sample coverage. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table A.5. Regional origins of Bank of Canada Governing Council members: descriptive evidence

	Mean	Minimum	Maximum
Number of Governing Council members	6.81		
Number with known regional origin	6.81		
Unknown regional origin (%)	0.0		
Ontario-born share (%)	61.1	33.3	85.7
Quebec-born share (%)	25.5	0.0	50.0
Alberta-born share (%)	4.5		
Western/Northern-born share (%)	11.7	0.0	33.3
Resource-province-born share (%)	4.5	0.0	16.7

Notes: The table reports descriptive statistics on the regional origins of Bank of Canada Governing Council members over the sample used in the Governing Council origins analysis. Shares are expressed in percent. Western/Northern-born share refers to members born in Western or Northern Canada according to the classification used in the empirical analysis. Resource-province-born share refers to members born in provinces classified as resource/fossil provinces.

Table A.6. Governing Council origins and province-specific labor-market slack

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline, common sample	WTI	WTI + VIX	WTI + WCS	WTI + spread
Alberta	0.285***	0.207***	0.206***	0.177***	0.193***	0.192***
	(0.065)	(0.061)	(0.061)	(0.057)	(0.058)	(0.058)
Ontario	1.000***	0.603*	0.622**	0.703*	0.613*	0.618*
	(0.353)	(0.309)	(0.307)	(0.361)	(0.363)	(0.362)
Quebec	-0.008	0.005	0.036	0.000	-0.008	-0.008
	(0.041)	(0.030)	(0.037)	(0.044)	(0.037)	(0.037)
Alberta × GC West/North share	-0.397	-0.174	-0.026	0.013	-0.072	-0.068
	(0.406)	(0.340)	(0.361)	(0.344)	(0.326)	(0.323)
Ontario × GC Ontario share	-1.854***	-1.189**	-1.321**	-1.343**	-1.281**	-1.288**
	(0.599)	(0.542)	(0.551)	(0.610)	(0.595)	(0.595)
Constant	-0.101	0.052	0.054	0.044	-0.078	-0.078
	(0.106)	(0.101)	(0.100)	(0.097)	(0.096)	(0.096)
Observations	300	239	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. Province-specific slack variables are unemployment-gap intensities above 1 percentage point, defined as max(0, provincial unemployment gap − 1). GC denotes Governing Council. Origin shares are computed among active Governing Council members with known birthplaces. Mandates are annual in the source workbook and are expanded to months, so composition in transition years is approximate. Column (1) uses the full baseline sample. Columns (2)–(6) use the common WCS sample. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table A.7. Population-weighted and GDP-weighted regional slack

	(1)	(2)	(3)	(4)	(5)	
	Baseline	Baseline	WCS sample	WCS sample GDP-weighted	WTI + WCS	WTI + spread
Pop. high slack share	0.142		0.070			
	(0.210)		(0.222)			
Pop. avg. high slack	-0.064		-0.020			
	(0.046)		(0.038)			
Pop. gap dispersion	0.922***		0.691***			
	(0.205)		(0.141)			
GDP high slack share		0.189	0.108	0.094	0.096	
		(0.195)	(0.206)	(0.254)	(0.254)	
GDP avg. slack		-0.052	-0.013	-0.080*	-0.080*	
		(0.043)	(0.036)	(0.047)	(0.047)	
GDP gap dispersion		0.843***	0.634***	0.687***	0.688***	
		(0.184)	(0.124)	(0.140)	(0.140)	
Constant	-0.694***	-0.656***	-0.436***	-0.410***	-0.581***	-0.582***
	(0.180)	(0.171)	(0.131)	(0.131)	(0.127)	(0.128)
Observations	300	300	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. Pop. High slack share is the population share living in provinces with an unemployment gap above 1 percentage point. Pop. avg. high slack is the population-weighted average of province-level unemployment-gap intensity above 1 percentage point. Pop. gap dispersion is the population-weighted dispersion of provincial unemployment gaps. GDP slack share, GDP avg. slack, and GDP gap dispersion are the corresponding GDP-weighted measures. GDP weights are computed over the ten provinces using current-price provincial GDP at market prices from StatCan Table 36-10-0222-01. Columns (3)–(6) use the WCS common sample. WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table A.8. Fossil-industry provinces: population versus GDP weights

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline pop.	Baseline GDP	WCS sample pop.	WCS sample GDP	WTI + WCS GDP	WTI + spread GDP
Fossil provinces	0.321***	0.319***	0.235***	0.234***	0.224***	0.223***
	(0.079)	(0.077)	(0.070)	(0.068)	(0.065)	(0.065)
Non-fossil provinces	-0.211***	-0.210***	-0.153**	-0.152**	-0.201***	-0.200***
	(0.070)	(0.069)	(0.062)	(0.061)	(0.062)	(0.062)
Constant	-0.078	-0.079	0.070	0.069	-0.060	-0.060
	(0.100)	(0.100)	(0.092)	(0.092)	(0.088)	(0.088)
Observations	300	300	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. Fossil provinces are Alberta, Saskatchewan, and Newfoundland and Labrador. Non-fossil provinces are all other provinces. Group variables are weighted averages of province-level unemployment-gap intensity above 1 percentage point, defined as max(0, provincial unemployment gap − 1). Columns (1) and (3) use population weights. Columns (2), (4), (5), and (6) use GDP weights based on current-price provincial GDP at market prices. Columns (3)–(6) use the WCS common sample. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table A.9. Equality tests for fossil- and non-fossil-province coefficients: population and GDP weights

	Specification	Sample	Weights	Observations	p-value
(1)	Baseline	Full sample	Population	300	0.000238
(2)	Baseline	Full sample	GDP	300	0.000159
(3)	Baseline	Common WCS sample	Population	239	0.002882
(4)	Baseline	Common WCS sample	GDP	239	0.002310
(5)	WTI + WCS + VIX	Common WCS sample	GDP	239	0.000599
(6)	WTI + WTI-WCS spread + VIX	Common WCS sample	GDP	239	0.000607

Notes: The table reports p-values from tests of equality between the coefficient on fossil-province slack and the coefficient on non-fossil-province slack in Appendix Table A.8. Fossil provinces are Alberta, Saskatchewan, and Newfoundland and Labrador. Non-fossil provinces are all other provinces. Group variables are weighted averages of province-level unemployment-gap intensity above 1 percentage point. Population weights and GDP weights are used as indicated. The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread.

Table A.10. Regional unemployment and inflation dispersion, and monetary accommodation

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline	Baseline	WCS sample	WTI + WCS	WTI + spread
Unemployment-gap dispersion	0.744***		0.712***	0.508***	0.435***	0.436***
	(0.160)		(0.159)	(0.157)	(0.151)	(0.151)
Inflation-gap dispersion		-0.393	-0.187	-0.043	-0.063	-0.063
		(0.283)	(0.236)	(0.212)	(0.201)	(0.201)
Constant	-0.690***	0.276	-0.530**	-0.339	-0.396*	-0.397*
	(0.207)	(0.206)	(0.257)	(0.239)	(0.233)	(0.233)
Observations	300	300	300	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. Unemployment-gap dispersion is the cross-province standard deviation of provincial unemployment gaps. Inflation-gap dispersion is the cross-province standard deviation of provincial inflation gaps, where each provincial inflation rate is expressed relative to Canada-wide CPI inflation. Columns (1)–(3) use the full baseline sample. Columns (4)–(6) use the WCS common sample. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table A.11. Regional slack and monetary accommodation: crisis robustness

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Baseline + crises	WCS sample	WCS sample + crises	WTI + WCS crises	WTI + spread crises
P10 gap	-0.113	-0.133*	-0.006	-0.024	-0.035	-0.036
	(0.075)	(0.078)	(0.061)	(0.064)	(0.072)	(0.072)
High-slack-pop. share	0.558*	0.461	0.215	0.178	0.019	0.022
	(0.303)	(0.354)	(0.286)	(0.346)	(0.345)	(0.345)
Gap dispersion	0.537***	0.472**	0.422**	0.344	0.368	0.368
	(0.184)	(0.205)	(0.213)	(0.220)	(0.226)	(0.226)
GFC dummy		-0.102		-0.190	0.071	0.074
		(0.177)		(0.200)	(0.136)	(0.136)
Covid dummy		0.384		0.327	0.294	0.295
		(0.256)		(0.218)	(0.183)	(0.183)
Constant	-0.740***	-0.721***	-0.325	-0.287	-0.463**	-0.466**
	(0.227)	(0.230)	(0.239)	(0.212)	(0.201)	(0.201)
Observations	300	300	239	239	239	239

Notes: The dependent variable is residual monetary accommodation, defined as the negative of the residual from alternative no-inertia Taylor-type rules, so that higher values indicate a more accommodative policy stance relative to the benchmark. P10 gap is the 10th percentile of the provincial unemployment-gap distribution. High slack-pop. share is the population share living in provinces with an unemployment gap above 1 percentage point. Gap dispersion is the cross-province standard deviation of provincial unemployment gaps. The GFC dummy equals one from 2008m9 to 2009m12. The Covid dummy equals one from 2020m3 to 2021m12. Columns (3)–(6) use the WCS common sample. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select; spread denotes the WTI–WCS spread. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Table A.12. Forward-looking Taylor-rule estimates

	(1)	(2)	(3)	(4)
	OLS	IV	OLS + WTI + VIX	OLS + WTI + WCS VIX
12-month-ahead inflation	-0.097***	0.232**	-0.099***	-0.088**
	(0.036)	(0.095)	(0.031)	(0.034)
Unemployment gap	0.035	-0.040	-0.035	-0.060
	(0.077)	(0.039)	(0.066)	(0.047)
U.S. monetary policy stance	0.782***	0.773***	0.770***	0.755***
	(0.033)	(0.019)	(0.029)	(0.039)
Exchange rate change	0.012	0.031	-0.014	0.024*
	(0.029)	(0.025)	(0.030)	(0.014)
WTI oil-price change			0.002	0.003
			(0.004)	(0.006)
VIX			0.023***	0.017**
			(0.008)	(0.008)
WCS oil-price change				-0.000
				(0.001)
Constant	0.863***	0.147	0.415*	0.365
	(0.182)	(0.190)	(0.227)	(0.235)
Observations	299	285	299	227

Notes: The dependent variable is the Bank of Canada policy rate. Forward-looking inflation is proxied by realized inflation 12 months ahead. Columns (1), (3), and (4) are OLS specifications estimated with Newey–West standard errors using 12 lags. Column (2) is an IV specification that instruments 12-month-ahead inflation with lags 1–3 of inflation, WTI oil-price growth, and the VIX, and reports robust standard errors. WTI denotes West Texas Intermediate oil prices; WCS denotes Western Canadian Select. The forward-looking proxy implies that the sample ends before the final 12 months of the dataset. R-squared statistics are omitted because the table combines OLS and IV specifications and the estimates are used only to construct alternative residuals for robustness. *** p<.01, ** p<.05, * p<.1.

Table A.13. Regional slack and forward-looking Taylor-rule residuals

	(1)	(2)	(3)	(4)	(5)
	Baseline residual	Forward OLS	Forward IV	Forward OLS WTI + VIX	Forward OLS WTI + WCS + VIX
P10 gap	-0.116	-0.041	-0.156*	-0.075	0.031
	(0.076)	(0.089)	(0.091)	(0.083)	(0.082)
High-slack-pop. share	0.571*	0.125	0.888**	0.390	-0.119
	(0.308)	(0.359)	(0.414)	(0.399)	(0.370)
Gap dispersion	0.535***	0.765***	0.512*	0.574***	0.480**
	(0.187)	(0.190)	(0.261)	(0.191)	(0.208)
Constant	-0.749***	-0.782***	-0.821***	-0.693***	-0.416**
	(0.227)	(0.231)	(0.291)	(0.219)	(0.169)
Observations	285	285	285	285	227

Notes: The dependent variable is residual monetary accommodation. The baseline residual in column (1) is the no-inertia Taylor-rule residual used in the main analysis, re-estimated on the forward-looking residual sample for comparability. Forward-looking residuals use realized 12-month-ahead inflation as a proxy for expected inflation. P10 gap is the 10th percentile of the provincial unemployment-gap distribution. High slack-pop. share is the population share living in provinces with an unemployment gap above 1 percentage point. Gap dispersion is the cross-province standard deviation of provincial unemployment gaps. Column (5) uses the shorter sample available for WCS oil-price changes and the 12-month-ahead inflation proxy. WTI denotes West Texas Intermediate oil

prices; WCS denotes Western Canadian Select. Newey–West standard errors with 12 lags are reported in parentheses. *** p<.01, ** p<.05, * p<.1.

Figure A.1. Forward-looking Taylor-rule fit and Bank of Canada policy rate

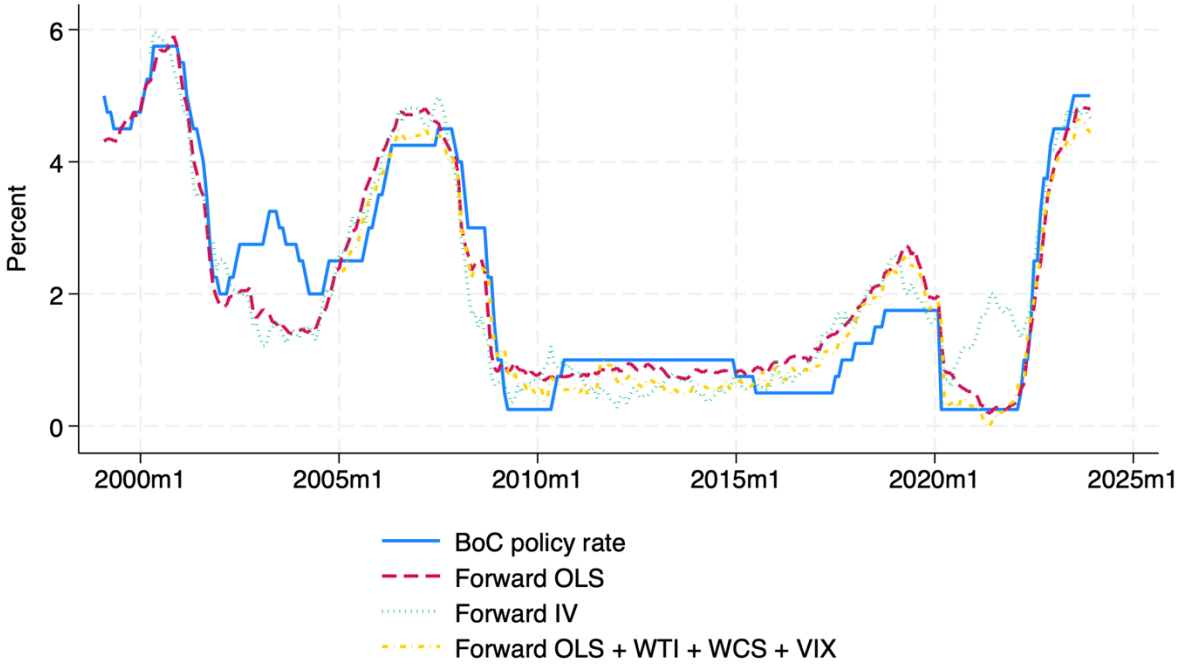


Figure A.2. Residual monetary accommodation from forward-looking Taylor-rule specifications

