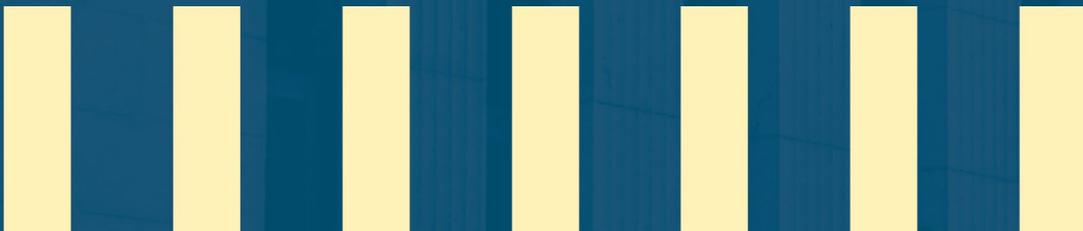# Examining the macro drivers of mortgage arrears in Canada

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Acknowledgements

Abstract

Mortgage debt represents over 70% of all Canadian household financial liabilities, and the performance of these debts is critical to the health of the financial system. We explore the relationships between mortgage arrears and key macroeconomic fundamentals such as labour market variables, interest rates, house prices and inflation. We then develop a framework to assess future household mortgage stress.

Topics: *Financial stability; Business fluctuations and cycles; Monetary and financial indicators; Credit and credit aggregates; Housing*
JEL codes: E2, E3, E5, E37, G51

Résumé

Au Canada, la dette hypothécaire représente plus de 70 % de l'ensemble des engagements financiers des ménages et constitue un élément crucial du système financier du pays. Nous explorons les liens entre les arriérés de paiement sur les prêts hypothécaires et les principaux facteurs macroéconomiques fondamentaux, comme les variables du marché du travail, les taux d'intérêt, les prix des logements et l'inflation. Nous élaborons ensuite un cadre pour évaluer les futures tensions financières liées aux prêts hypothécaires des ménages.

Sujets : Stabilité financière ; Cycles et fluctuations économiques ; Indicateurs monétaires et financiers ; Crédit et agrégats du crédit ; Logement
Codes JEL : E2, E3, E5, E37, G51

Introduction

Mortgage debt represents over 70% of all household financial liabilities in Canada and is a critical component of the country's financial system. In this note, we explore the relationships between mortgage arrears—the rate of mortgage payments overdue by 90 days or more—and key macroeconomic fundamentals such as labour market variables, interest rates, house prices and inflation. We then develop a framework to assess future household mortgage stress.

Mortgage arrears are correlated with macroeconomic forces

Examining available historical data on the Canadian economy shows four intuitive patterns concerning the relationship between the rate of mortgage arrears and other key macroeconomic fundamentals:[1]

- Dynamics between the rate of mortgage arrears and the **unemployment rate** have been highly and positively correlated for the past 35 years (**Chart 1**, panel a). This is intuitive given that mortgage payments tend to make up a significant part of a household's spending, and if fewer homeowners have jobs, fewer can meet their debt obligations.

- **Mortgage interest rates** have also co-moved with mortgage arrears over time, though with a lag (**Chart 1**, panel b). This relationship is unsurprising because mortgage interest rates are the primary driver of changes in mortgage payments, either in real time for variable-rate, variable-payment mortgages or at renewal for fixed-payment mortgages.

- **House price growth** has tended to be negatively correlated with mortgage arrears (**Chart 1**, panel c). This could be a sign that equity accumulation provides households with additional buffers (via flexibility during periods of stress and additional borrowing power).

- Periods of high core **inflation** tend to correlate with lower rates of mortgage arrears (**Chart 1**, panel d). This perhaps signals that on average, homeowners experience some relief from inflation through a reduction in the real value of their debts (i.e., nominal debt deflation).[2]

[1] See Appendix A for additional details on our data sources and transformations.

[2] For example, over a typical 25-year amortization, a 1.5% annual inflation rate would deflate debt value by 31%, whereas a rate of 2.5% would deflate it by 46%.

Chart 1: Key correlations observed in the data

**a. Mortgage arrears are highly correlated with the unemployment rate**

Mortgage arrears rate (left scale)
Unemployment rate (right scale)

b. Mortgage arrears are correlated with mortgage interest rates, but with a lag

Mortgage arrears rate (left scale)
Five-year mortgage interest rate (right scale)
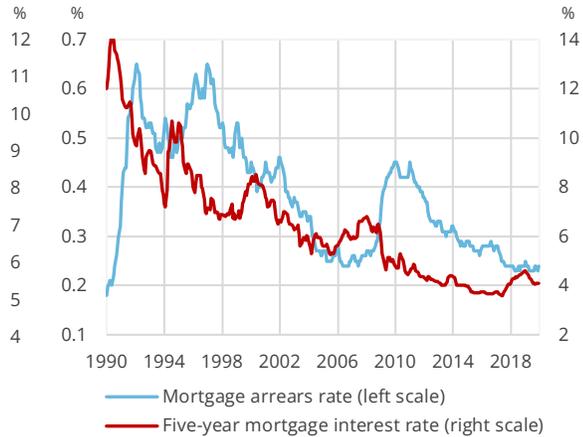
c. Periods of high growth in house prices (year-over-year) are negatively correlated with mortgage arrears

Mortgage arrears rate (left scale)
House price growth (right scale)
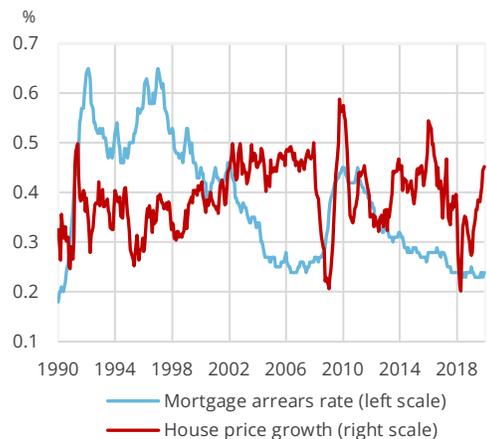
d. Periods of relatively high core inflation coincide with periods of falling mortgage arrears
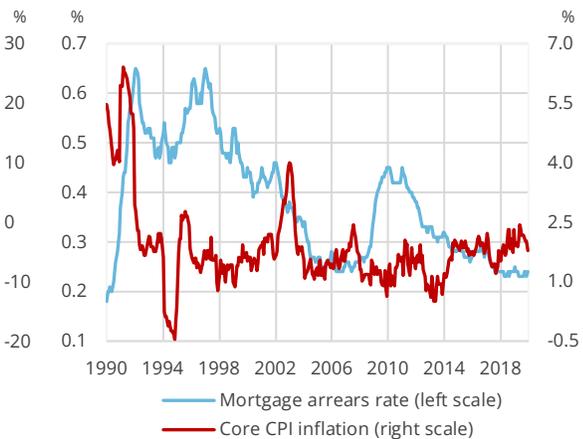
Mortgage arrears rate (left scale)
Core CPI inflation (right scale)

Note: *Mortgage arrears* are accounts with payments that are overdue by 90 days or more and are shown as a percentage of all residential mortgages in Canada. CPI is consumer price index.
Sources: Canadian Bankers Association, Canadian Real Estate Association and Statistics Canada
Last observation: December 2019

Are these correlations significant and, perhaps more importantly, jointly significant? To answer this, we estimate a set of provincial regressions over the period from 1990 to 2019 (see details in **Box 1**). Estimating individual provincial regressions not only allows us to investigate how much these statistical relationships may vary across provinces, but

also provides a natural way to account for regulatory differences between provinces, such as the existence of non-recourse mortgages in Alberta and Saskatchewan.[3, 4]

We regress mortgage arrears on all of the following:

- unemployment rate

- job finding and job separations rates

- house price growth

- mortgage rates net of the Bank of Canada's estimate of the neutral rate

- core inflation

- the Bank of Canada's estimate of the output gap

- a constant term

Notably, given the close relationship between the unemployment rate, job finding rate and job separation rate, for the remainder of this note we discuss these three variables together, effectively as a single "labour market" variable.[5]

Our results reinforce the raw correlations seen in the data: the dynamics in mortgage arrears of 90 days or more are significantly and jointly correlated with labour market dynamics, interest rates, house price growth, core inflation and the output gap across the provinces.

Furthermore, we find statistical evidence that the relationships between macroeconomic forces and mortgage arrears differ substantially by region. **Chart 2** plots mortgage arrear rates in each province against the fitted values of our provincial regressions. It highlights that, in general, macroeconomic fundamentals can explain a large share of the variation in mortgage arrears across both time and provinces.

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[3] In our empirical testing, we also estimated (i) an aggregate time series regression on Canada-wide data and (ii) a weighted panel regression leveraging provincial data, with weights equal to each province's share of the Canadian mortgage market. However, these regressions were found to have inferior performance to the model presented in this note.

[4] We aggregate the Atlantic Canadian provinces to match the Canadian Bankers Association's available mortgage arrears data.

[5] By definition, the unemployment rate is highly correlated with the job finding and separation rates because its changes are ultimately derived from the flows into and out of unemployment. While this has the potential to introduce multicollinearity into the coefficient estimates for these variables, we include them to help assess which labour market indicators best correlate with mortgage arrears for each province.

Chart 2: Historical fit comparison of panel and baseline provincial specifications

a. British Columbia

Mortgage arrears rate — Fitted values

b. Alberta

Mortgage arrears rate — Fitted values

c. Saskatchewan

Mortgage arrears rate — Fitted values

d. Manitoba

Mortgage arrears rate — Fitted values

e. Ontario

Mortgage arrears rate — Fitted values

f. Quebec

Mortgage arrears rate — Fitted values
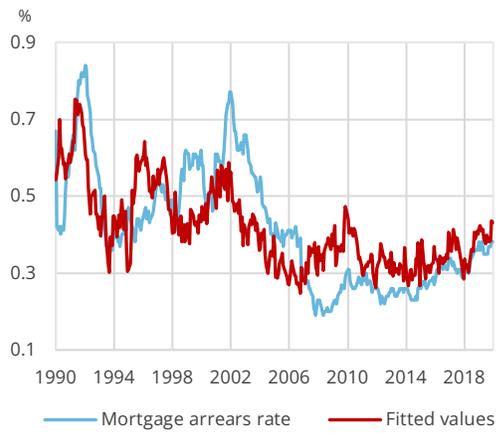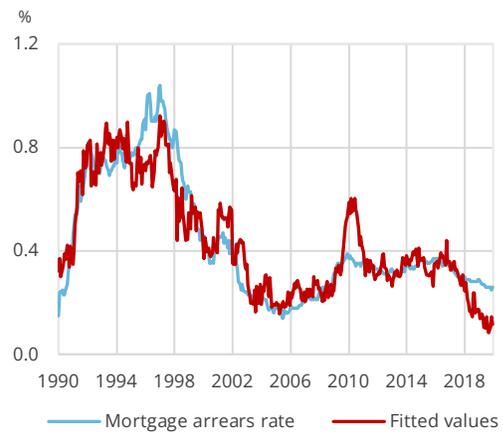
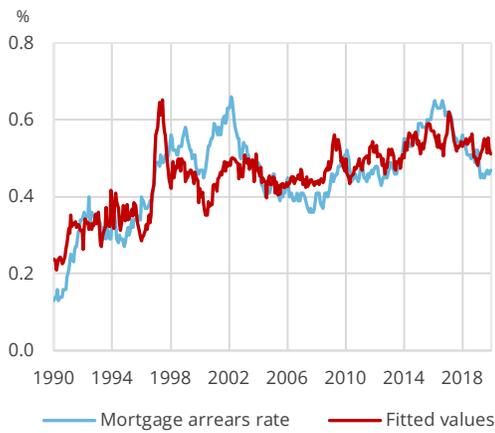g. Atlantic Canada

Note: *Mortgage arrears* are accounts with payments that are overdue by 90 days or more and are shown as a percentage of all residential mortgages in Canada.
Sources: Canadian Bankers Association and Bank of Canada calculations
Last observation: December 2019

The labour market is the key driver of arrears

We now aggregate the provincial estimates using a weighted average to show the contribution of each component for Canada. **Chart 3** plots mortgage arrears (blue line) in Canada over the estimation sample. The red line shows the fitted values of our regressions on the set of fundamental macroeconomic forces described earlier. **Chart 4** then plots the regressions' estimated contributions from each macroeconomic fundamental.

Chart 3: Macroeconomic fundamentals and mortgage arrears in Canada

Note: *Mortgage arrears* are accounts with payments that are overdue by 90 days or more and are shown as a percentage of all residential mortgages in Canada.
Sources: Canadian Bankers Association and Bank of Canada calculations
Last observation: December 2019

Chart 4: Contribution of each macroeconomic fundamental to mortgage arrears

Contributions by component (in percentage points)

Note: *Labour market* includes the unemployment rate, job finding rate and job separation rate. *Constant* is estimated from the model (α_i, **Box 1**); *Residual* includes all variat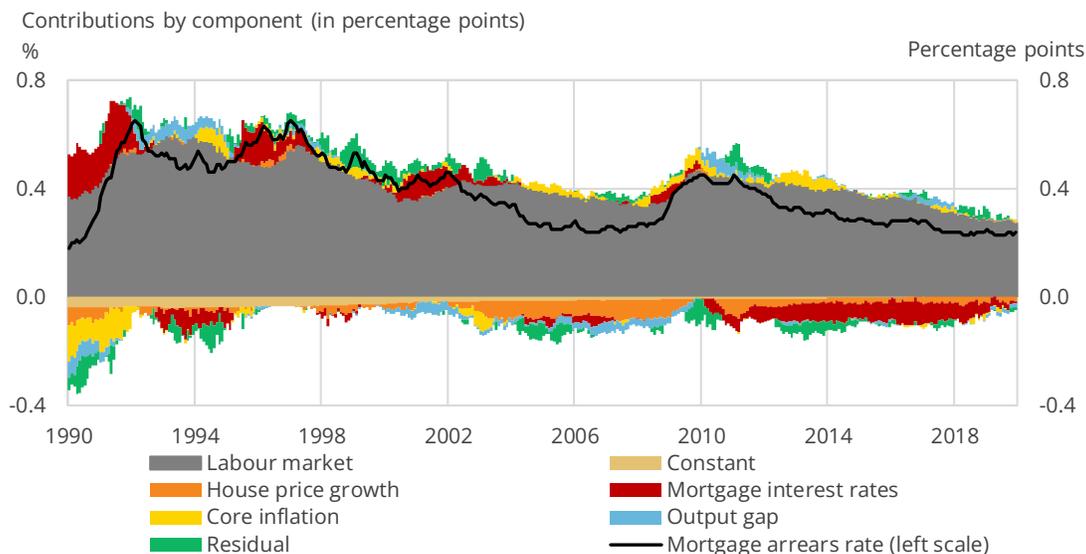ion not captured by the coefficients (ϵ_{it}, **Box 1**). *Mortgage arrears* are accounts with payments that are overdue by 90 days or more and are shown as a percentage of all residential mortgages in Canada.

Sources: Canadian Bankers Association and Bank of Canada calculations

Last observation: December 2019

Our decomposition by macroeconomic factor in **Chart 4** points to three results:

- The labour market (grey bars) appears to be the central force influencing mortgage arrears in Canada, both nationally and in most provinces.

- That said, mortgage interest rates (red bars) also explain key cyclical movements in rates of mortgage arrears over time. This is evidenced by the sharp upward pressure on arrears during the early and late 1990s and the prolonged downward trend in arrears following the global financial crisis in 2008–09.

- House price growth (orange bars), core inflation (yellow bars) and the output gap (blue bars) are less significant contributors, but they each play important roles at various times throughout history. For example, despite intense monetary policy tightening during the late 1980s and early 1990s, high core inflation appears to have provided an important offset to the pressure felt by existing mortgage holders, whose nominal debt experienced material deflation. Additionally, strong growth in house prices between 2002 and the global financial crisis is estimated to have been one of the stronger contributors to low levels of mortgage arrears during those years.

The labour market and mortgage interest rates are causal drivers of mortgage arrears

Do changes in labour market conditions and mortgage interest rates—the two main factors we identified—*cause* changes in mortgage arrears? The distinction between correlation and causation is important, since it helps us determine whether the variables' evolution can be used to reliably predict future mortgage delinquency rates. We evaluate this using a structural vector autoregression model (SVAR), the details of which are outlined in **Box 2**.

We find that the labour market is indeed an important causal driver of mortgage arrears. This is true for the unemployment rate generally, but also the job finding and separation rates. We estimate that an increase of one percentage point in the unemployment rate leads to a rise in the mortgage arrears rate of 0.1 percentage points after roughly one year (**Chart 5**).

Chart 5: The response of mortgage arrears to a rise in the unemployment rate

Impact of a 1-percentage-point change in the unemployment rate on mortgage arrears
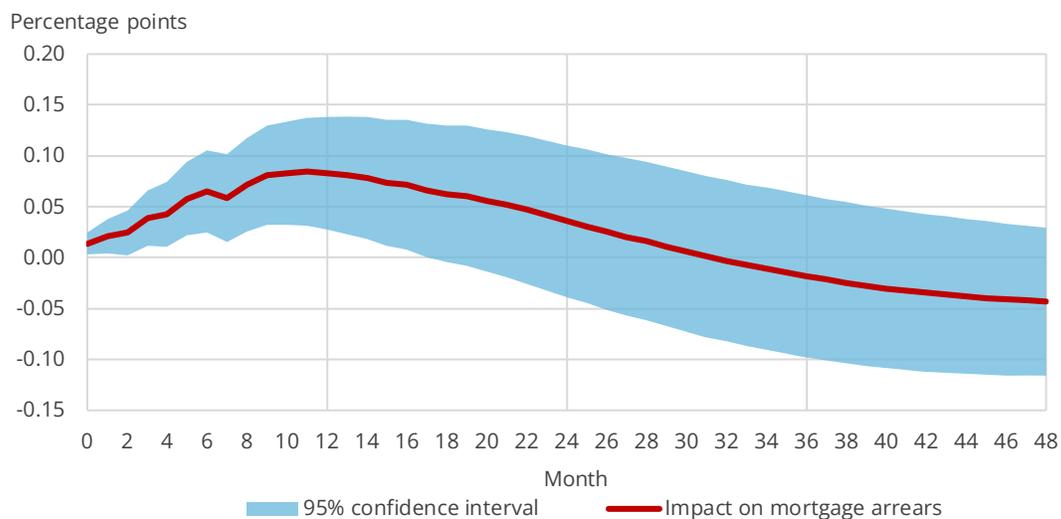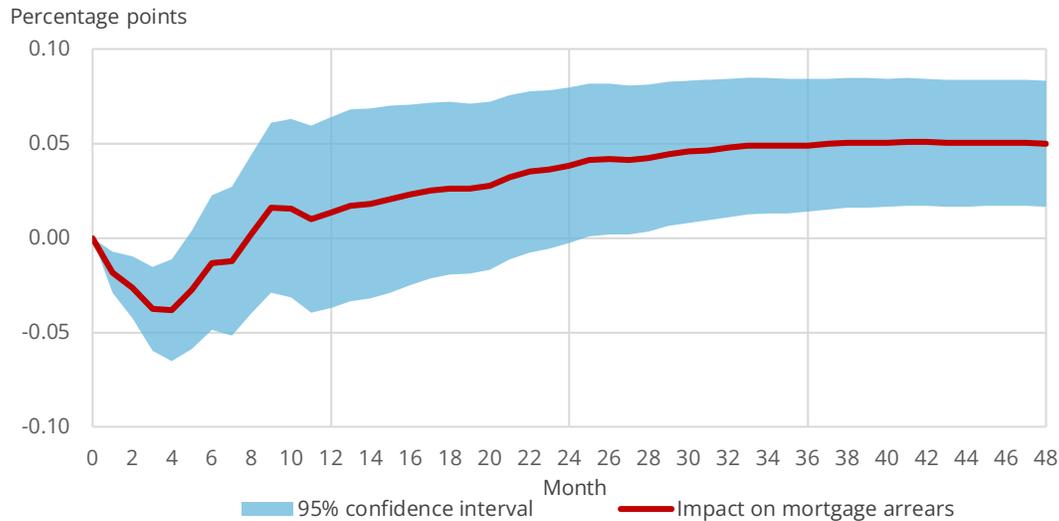

Sources: Canadian Bankers Association and Bank of Canada calculations

We also find that when mortgage interest rates increase by 100 basis points, this leads to an increase in the mortgage arrears rate of about 3 to 5 basis points after two years (**Chart 6**). To put this into perspective, a rise in mortgage interest rates of 300 basis points—similar to the recent cycle of monetary policy tightening—would be expected to increase the rate of mortgage arrears by 10 to 15 basis points. For context, the arrears rate stood at 0.2% before the pandemic and reached 0.5% at the height of the global financial crisis.

Chart 6: The response of mortgage arrears to higher mortgage interest rates

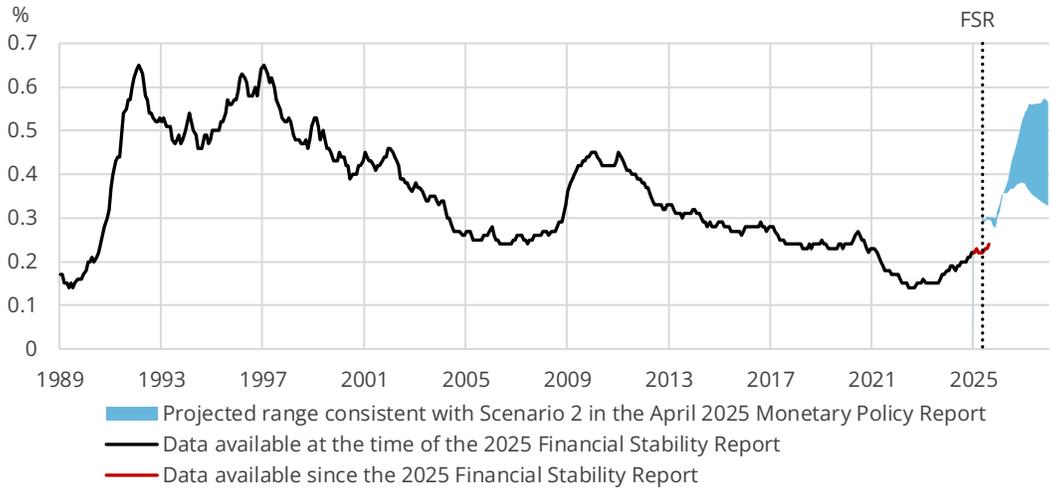Impact of a 1-percentage-point change in mortgage interest rates on mortgage arrears

Sources: Canadian Bankers Association and Bank of Canada calculations

This regression framework provides a powerful way to assess future financial stress

Using our framework above, we can leverage Bank of Canada staff projections to examine how mortgage arrears might evolve in the future. **Chart 7** is an example of this. The Bank's *Financial Stability Report—2025* used staff projections underpinning Scenario 2 (an escalation of the trade war with the United States) in the April 2025 *Monetary Policy Report* as well as various risk scenarios around a rise in unemployment or a potential decline in house prices. We analyze this further and find that overall, the historical relationships between macroeconomic forces and mortgage arrears suggest that stress levels could surpass those seen in the global financial crisis but would not return to the peaks observed in 1990s. Since the publication of the *Financial Stability Report—2025*, this downside risk scenario has not come to pass. And although many households continue to feel the effects of the trade conflict, to date it has not led to a noticeable acceleration in the rate of Canadian mortgage arrears. Going forward, Bank staff will continue to leverage this framework to help inform the Bank's view of how the macroeconomic outlook could influence household financial stress.

Chart 7: Macroeconomic forces and the evolution of household financial stress

Share of mortgages in arrears by 90 days or more

Projected range consistent with Scenario 2 in the April 2025 Monetary Policy Report
Data available at the time of the 2025 Financial Stability Report
Data available since the 2025 Financial Stability Report

Sources: Canadian Bankers Association and Bank of Canada calculations

Last observation: August 2025

Box 1: Methodology for provincial linear regression

Mortgage arrears are regressed on our set of macroeconomic fundamentals using ordinary least squares with heteroskedasticity and autocorrelation consistent standard errors. The regression is run independently for each province to allow for heterogeneity in the coefficients across regions. The regression specification is as follows:

$$Mortgage\ arrears_{i,t} = \alpha_i + \beta_1 UR_{i,t-6} + \beta_2 Sep_{i,t\ to\ t-6} + \beta_3 Find_{i,t\ to\ t-6} + \beta_4 \Delta_{12} HP_{i,t-12} \ldots$$

$$+ \beta_5(i_{t-12} - r^*_{t-12}) + \beta_6 \pi_{i,t} + \beta_7 outputgap_{t-12} + \epsilon_{i,t} \tag{1}$$

In equation (1), *UR* is the unemployment rate (lagged by six months). *Sep* and *Find* are, respectively, the average job separation rate and the average job finding rate over the previous six months. *HP* is year-over-year average house price growth lagged 12 months. $i_{t-12} - r^*_{t-12}$ is the average 5-year mortgage rate net of the Bank of Canada's estimate of the neutral rate. π is year-over-year inflation excluding food and energy. Finally, $outputgap_{t-12}$ is the Bank's estimate of the national output gap lagged 12 months. This is included to control for additional factors related to the business cycle where longer historical time series are not available (for example, household borrowing conditions not captured by mortgage rates).[6, 7] Additionally, we include a linear trend in the regression for Atlantic Canada to help control for the unique upward trend observed in mortgage arrears in that region over our sample.

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[6] Data for mortgage rates and the Bank's estimates of the neutral rate and output gap are available only at the national level.

[7] The lag structure of the regression framework was established using peak historical correlations between the variables of interest over our estimation sample. The starting point for the lag length was chosen using the peak simple correlation between mortgage arrears and various lags of the regressors. However, if during testing a different lag length was found to provide both stronger statistical significance and a better overall model fit of the data, it was used instead.

Box 2: Methodology for structural vector autoregression

We inspect the dynamic causal impacts of macroeconomic factors on mortgage arrears using monthly data from January 1980 to December 2017. We estimate a structural vector autoregression model (SVAR) with 12-month lag using a causal identification strategy based on Cholesky decomposition.

Our baseline specification includes four monthly variables ranked in the following order: (i) monetary policy shocks[8], (ii) the unemployment rate, (iii) mortgage arrears of 90 days or more and (iv) mortgage interest rates.[9] This causal ordering is selected for the following reasons:[10]

- First, given their exogeneity by construction, monetary policy shocks are assumed to affect the labour market, mortgage interest rates and mortgage arrears contemporaneously.

- Second, labour market deterioration may lead to an immediate loss in income for mortgage holders, which in turn can result in a rise in the rate of mortgage arrears of 90 days or more because that income loss creates financial strain.

- Finally, higher mortgage arrear risk can then be priced into mortgage interest rates. Higher mortgage interest rates do not tend to immediately drive mortgage arrears since (i) most mortgage holders in Canada have some degree of buffers,[11] and (ii) many mortgages in Canada have fixed payments and don't experience payment shock until renewal.[12]

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[8] Taken from J. Champagne and R. Sekkel, "Changes in monetary regimes and the identification of monetary policy shocks: Narrative evidence from Canada." *Journal of Monetary Economics* 99: 72-87 (November 2018).

[9] We find these results to be robust to a variety of causal structures. For example, estimating the model with an alternative causal order of (i) monetary policy shocks, (ii) mortgage interest rates, (iii) the unemployment rate and (iv) mortgage arrears yields highly similar dynamic responses of mortgage arrears to the unemployment rate and the mortgage rate.

[10] It is worth noting that although monetary policy shocks are supposed to be exogenous to the contemporaneous macroeconomic conditions, we include them in the SVAR to allow the possibility of their endogenous lagged responses to the other three variables. Empirically constructed monetary policy shocks are often made to reflect changes in policy rates that do not reflect the central bank's reactions to macroeconomic fundamentals. But to the extent that such changes might stem from macroprudential responses left unspecified within inflation-based policy rules, they may be correlated with financial market variables such as mortgage interest rates and mortgage arrears.

[11] For additional details on household buffers, see T. M. Pugh, S. Sheikh and T. Webley, "Household balance sheets and mortgage payment shocks," Bank of Canada Staff Analytical Note No. 2025-23 (October 2025).

[12] For additional information on household mortgage renewals, see C. Godbout, A. Su and Y. Xu, "How will mortgage payments change at renewal? An updated analysis," Bank of Canada Staff Analytical Note No. 2025-21 (July 2025).

Appendix A: Data sources and transformations

We use data from Statistics Canada's Labour Force Survey (LFS) for our labour market indicators. Our calculations of unemployment follow Statistics Canada's methodology; job separation and job finding rates are group-specific monthly transition rates using Shimer's 2004 methodology.[13] These data are seasonally adjusted using standard X13-ARIMA as per Statistics Canada and United States Census Bureau methodology.

Statistics Canada's monthly consumer price index (CPI) survey provides CPI inflation data (province-specific for all items and for all items excluding food and energy). We use Statistics Canada's not seasonally adjusted series to compute the year-over-year changes that enter our regressions.

We use the effective mortgage rates from chartered banks, listed on the Bank of Canada's website. The estimate of the neutral rate of interest that is used to convert the Canadian Bankers Association mortgage rate series is taken from Bank staff projections.

For house price growth, we use year-over-year growth in average resale prices published by the Canadian Real Estate Association (CREA). Average prices are used in place of the hedonic House Price Index (HPI) because of the significantly longer history of the former. While they are subject to compositional effects, dynamics in CREA's hedonic HPI generally map closely with dynamics in average prices over the preceding year.

For mortgage arrear rates, we use the Canadian Bankers Association series, which calculates the share of mortgages that are delinquent by 90 days or more as a percentage of the total stock of all residential mortgages, from 1989 to present.

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[13] R. Shimer, "The Consequences of Rigid Wages in Search Models," *Journal of the European Economic Association*, no. 2, issue 2-3 (2004): 469–479.