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Bank of Canada Monthly Research Update

July 2022

This monthly newsletter features the latest research publications by Bank of Canada economists. The report includes papers appearing in external publications and staff working papers published on the Bank of Canada's website.

PUBLISHED PAPERS

In-Press

Anson T.Y. Ho & Lealand Morin & Harry J. Paarsch & Kim P. Huynh, "A flexible framework for intervention analysis applied to credit-card usage during the coronavirus pandemic", International Journal of Forecasting, Vol 38(3): 1129-1157, July 2022

Sushant Acharya & Julien Bengui & Keshav Dogra & Shu Lin Wee, "Slow Recoveries and Unemployment Traps: Monetary Policy in a Time of Hysteresis", The Economic Journal, Vol 132(646): 2007-2047, August 2022

Daniela Hauser & Martin Seneca, "Labor mobility in a monetary union", Journal of International Economics, Vol 137, July 2022

Jonathan Chiu & Todd Keister, "The economics of digital currencies: Progress and open questions", Journal of Economic Dynamics and Control, Vol 142, September 2022

Forthcoming

Julien Bengui & Javier Bianchi, "Macroprudential policy with leakages", Journal of International Economics

Maarten Janssen & Edona Reshidi, "Regulating Recommended Retail Prices", International Journal of Industrial Organization

STAFF WORKING PAPERS

Xiangjin Shen & Iskander Karibzhanov & Hiroki Tsurumi & Shiliang Li, "Comparison of Bayesian and Sample Theory Parametric and Semiparametric Binary Response Models", Bank of Canada Staff Working Paper 2022-31

Toni Ahnert & Michael Brolley & David Cimon & Ryan Riordan, "Cyber Security and Ransomware in Financial Markets", Bank of Canada Staff Working Paper 2022-32

Olena Kostyshyna & Luba Petersen & Jing Yang, "A Horse Race of Monetary Policy Regimes: An Experimental Investigation", Bank of Canada Staff Working Paper 2022-33

Monica Jain & Olena Kostyshyna & Xu Zhang, "How Do People View Price and Wage Inflation?", Bank of Canada Staff Working Paper 2022-34

STAFF DISCUSSION PAPERS

Heng Chen & Marie-Hélène Felt, "Canadians' Access to Cash Before and During the COVID-19 Pandemic", Bank of Canada Staff Discussion Paper 2022-15

Sarah Burkinshaw & Yaz Terajima & Carolyn A. Wilkins, "Income Inequality in Canada", Bank of Canada Staff Discussion Paper 2022-16

ABSTRACTS

A flexible framework for intervention analysis applied to credit-card usage during the coronavirus pandemic

We develop a variant of intervention analysis designed to measure a change in the law of motion for the distribution of individuals in a cross-section, rather than modeling the moments of the distribution. To calculate a counterfactual forecast, we discretize the distribution and employ a Markov model in which the transition probabilities are modeled as a multinomial logit distribution. Our approach is scalable and is designed to be applied to micro-level data. A wide panel often carries with it several imperfections that complicate the analysis when using traditional time-series methods; our framework accommodates these imperfections. The result is a framework rich enough to detect intervention effects that not only shift the mean, but also those that shift higher moments, while leaving lower moments unchanged. We apply this framework to document the changes in credit usage of consumers during the COVID-19 pandemic. We consider multinomial logit models of the dependence of credit-card balances, with categorical variables representing monthly seasonality, homeownership status, and credit scores. We find that, relative to our forecasts, consumers have greatly reduced their use of credit. This result holds for homeowners and renters as well as consumers with both high and low credit scores.

Slow Recoveries and Unemployment Traps: Monetary Policy in a Time of Hysteresis

We analyse monetary policy in a model where temporary shocks can permanently scar the economy's productive capacity. Workers lose skill while unemployed and are costly to retrain, generating multiple steady-state unemployment rates. Following a large shock, unless monetary policy acts aggressively and quickly enough to prevent a significant rise in unemployment, hiring falls to a point where the economy recovers slowly at best—at worst, it falls into a permanent unemployment trap. Monetary policy can only avoid these outcomes if it commits in a timely manner to more accommodative policy in the future. Timely commitment is essential as the effectiveness of monetary policy is state dependent: once the recession has left substantial scars, monetary policy cannot speed up a slow recovery, or escape from an unemployment trap.

Labor mobility in a monetary union

Internal migration flows are endogenously driven by relative labor market performance in a New Keynesian DSGE model of a monetary union calibrated to U.S. data. When labor markets are competitive, a strict focus on stabilizing unionwide inflation remains close to optimal. With search and matching frictions in regional labor markets, labor mobility across state borders introduces additional trade-offs for optimal monetary policy since workers do not internalize the full effects of their individual migration decisions. But when monetary policy is suboptimal, a mobile labor force helps to close inefficiency gaps in regional labor markets following region-specific shocks. Putting some weight on labor market outcomes in a simple instrument rule enhances welfare more when labor is mobile.

The economics of digital currencies: Progress and open questions

No abstract.

Macroprudential policy with leakages

We explore how imperfect regulation enforcement affects the design of optimal macroprudential policy. We study an open economy workhorse model of macroprudential regulation motivated by pecuniary externalities. Our analytical characterization shows that imperfect enforcement generates two opposing effects. While tighter regulation leads to higher borrowing by unregulated agents, a “leakage effect”, mitigating the increase in fragility calls for “squeezing” regulated agents further. Quantitative simulations show that, overall, a macroprudential policy that accounts for the leakages remains successful at mitigating the vulnerability to financial crises.

Regulating Recommended Retail Prices

This paper analyses the effects of regulated recommended retail prices (RRPs). Such recommendations by manufacturers are non-binding in nature and thus retailers do not have to adhere to them. We look at regulations, similar to that by the Federal Trade Commission (FTC), requiring at least some sales to take place at RRPs. Such regulations were introduced with the aim of protecting consumers. In the absence of regulation an equilibrium exists where the manufacturer charges the same wholesale prices across retailers. We show that regulating RRPs enables manufacturers to commit to their unobserved contracts, creating an equilibrium with wholesale price discrimination. We find that such an equilibrium increases manufacturer’s profits, but harms retailers and consumers.

Comparison of Bayesian and Sample Theory Parametric and Semiparametric Binary Response Models

This study proposes a Bayesian semiparametric binary response model using Markov chain Monte Carlo algorithms since this Bayesian algorithm works when the maximum likelihood estimation fails. Implementing graphic processing unit computing improves the computation time because of its efficiency in estimating the optimal bandwidth of the kernel density. The study employs simulated data and Monte Carlo experiments to compare the performances of the parametric and semiparametric models. We use mean squared errors, receiver operating characteristic curves and marginal effects as model assessment criteria. Finally, we present an application to evaluate the consumer bankruptcy rates based on Canadian TransUnion data.

Cyber Security and Ransomware in Financial Markets

Financial markets face the constant threat of cyber attacks. We develop a principal-agent model of cyber-attacking with fee-paying clients who delegate security decisions to financial platforms. We derive testable implications about clients' vulnerability to cyber attacks and about the fees charged. We characterize which cyber attacks actors choose. We find that ransomware attacks are more successful than traditional attacks and that platforms underinvest in security when security is unobservable. Regulating security investment (e.g., minimum security standards) or improving transparency (e.g., security ratings) can improve welfare. Our results support regulatory efforts to increase transparency around cyber security and cyber attacks.

A Horse Race of Monetary Policy Regimes: An Experimental Investigation

We provide a comprehensive assessment of five monetary policy regimes—inflation targeting (IT), dual mandate (DM), average inflation targeting under 4-period (AIT-4) and 10-period (AIT-10) horizons, price level targeting (PLT), and nominal GDP level targeting (NGDP)—in a unified experimental framework. We study how participants can understand different regimes and form expectations during periods of economic stability and during a demand-driven recession that temporarily brings the economy to the ELB. Our results suggest a distinct ranking of policy regimes in terms of their ability to achieve macroeconomic stability. DM and IT are the most stabilizing regimes, followed by AIT and then level-targeting regimes PLT and

NGDP. AIT with a shorter horizon performs better than AIT with a longer horizon. Monetary policy regimes that are framed around the inflation rate (e.g., AIT-10) are found to deliver significantly more stable economic outcomes than those that target price levels (PLT). Participants have greater difficulty understanding regimes that are more history-dependent and forecasting in the rationally expected direction. They instead rely on trend-chasing heuristics to form their expectations. Trend-chasing forecasting is more destabilizing for regimes with more history dependence. Participants also “need to see it to believe it.” PLT and NGDP initially have mixed success at achieving their targets, and these regimes do not gain credibility before the economy enters into the ELB, where credibility is needed more than ever.

How Do People View Price and Wage Inflation?

This paper examines novel household-level data from the Canadian Survey of Consumer Expectations (CSCE) from 2014Q4 to 2022Q1 to understand households’ expectations about price and wage inflation, their respective links to views about labour market conditions and their subsequent impact on households’ outlook for real spending growth. We find, consistent with recent research, that households associate higher expected price inflation with worse labour market conditions. In contrast, higher expected wage growth is linked to better labour market outcomes—an avenue not previously explored—and consistent with standard macroeconomic models. These differing supply-side and demand-side views of price inflation and wage inflation are reflected in households’ spending outlook: expected real spending is negatively linked to inflation expectations but positively linked to expected wage inflation. Finally, the link between households’ inflation expectations and wage growth expectations is weak, suggesting limited pass-through from consumers’ inflation expectations into their expected wage gains, and thus a lower likelihood of entering a wage-price spiral.

Canadians’ Access to Cash Before and During the COVID-19 Pandemic

This paper studies Canadians’ access to cash using the geographical distribution of automated banking machines (ABMs). We find that over 97% of urban Canadians have access to ABMs in their communities, while 92% of rural people have access to at least one ABM. During the pandemic, there have been no sustained adverse effects on cash accessibility through ABMs.

Income Inequality in Canada

Concerns over rising inequality have heightened in the years following the 2007–09 global financial crisis and, more recently, with the COVID-19 pandemic. This staff discussion paper reviews the historical facts regarding income inequality in Canada, comparing Canada with the United States and reviewing briefly what the literature says about the most likely drivers of the rise in inequality. Data show that income inequality in Canada increased substantially during the 1980s and first half of the 1990s but has been relatively stable over the past 25 years. This increase was felt mainly by low-income earners and younger people, while older people benefited from higher retirement income. Income inequality in the United States has been higher than in Canada for the last four decades, with the main differences observed at the high end of the income distribution. These facts give rise to a number of important questions for future research, including the role (if any) of monetary policy in driving changes in income inequality and that of the monetary policy framework and decisions in reflecting the observed inequality.

UPCOMING EVENTS

Toni Ahnert (European Central Bank)
Organizer: BAP Virtual Speaker
Date: 5 July 2022

Sephorah Mangin (Australian National University)
Organizer: BAP Virtual Speaker
Date: 12 July 2022