

Bank of Canada Monthly Research Update

August 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

Mohammad Davoodalhosseini, “[Optimal taxation in asset markets with adverse selection](#)”, *European Economic Review*, Vol 147, August 2022

Gavin Goy & Cars Hommes & Kostas Mavromatis, “[Forward guidance and the role of central bank credibility under heterogeneous beliefs](#)”, *Journal of Economic Behaviour and Organization*, Vol 200: 1240-1274, August 2022

Forthcoming

Gökçe Akın-Olçum & Madanmohan Ghosh & Elisabeth Gilmore & Peter Johnston & Mohammad M. Khabbazan & Ruben Lubowski & Margaret McCallister & Nick Macaluso & Sonja Peterson & Malte Winkler & Maosheng Duan & Mengyu Li & Ramiro Parrado & Sebastian Rausch, “[A model intercomparison of the welfare effects of regional coalitions for ambitious climate mitigation targets](#)”, *Climate Change Economics*

Huixin Bi & Yongquan Cao & Wei Dong, “[Credit Guarantee and Fiscal Costs](#)”, *Journal of Money, Credit and Banking*

Antoine Camous & Dimitry Matveev, “[The Central Bank Strikes Back! Credibility of Monetary Policy Under Fiscal Influence](#)”, *The Economic Journal*

Tony Chernis & Patrick J. Coe & Shaun P. Vahey, “[Reassessing the dependence between economic growth and financial conditions since 1973](#)”, *Journal of Applied Econometrics*

Jonathan Chiu & Mohammad Davoodalhosseini & Janet (Hua) Jiang & Yu Zhu, “[Bank Market Power and Central Bank Digital Currency: Theory and Quantitative Assessment](#)”, *Journal of Political Economy*

Katya Kartashova & Xiaoqing Zhou, “[How Do Mortgage Rate Resets Affect Consumer Spending and Debt Repayments? Evidence from Canadian Consumers](#)”, *Journal of Money, Credit and Banking*

STAFF WORKING PAPERS

Jonathan Chiu & Thorsten Koepl, “[PayTech and the D\(ata\) N\(etwork\) A\(ctivities\) of BigTech Platforms](#)”, *Bank of Canada Staff Working Paper 2022-35*

Johan Brannlund & Geoffrey R. Dunbar & Reinhard Ellwanger & Matthew Krutkiewicz, “[Weather the Storms? Hurricanes, Technology and Oil Production](#)”, Bank of Canada Staff Working Paper 2022-36

Martin Harding & Rafael Wouters, “[Risk and State-Dependent Financial Frictions](#)”, Bank of Canada Staff Working Paper 2022-37

STAFF DISCUSSION PAPERS

Walter Engert & Kim Huynh, “[Cash, COVID-19 and the Prospects for a Canadian Digital Dollar](#)”, Bank of Canada Staff Discussion Paper 2022-17

Jing Yang & H el ene Desgagn es & Grzegorz Halaj & Yaz Terajima, “[COVID and Financial Stability: Practice Ahead of Theory](#)”, Bank of Canada Staff Discussion Paper 2022-18

ABSTRACTS

Optimal taxation in asset markets with adverse selection

Constrained efficiency is characterized in an asset market, subject to search frictions, where sellers are privately informed about the type of their asset. The type determines the opportunity cost of the asset for sellers and the quality of the asset for buyers. The constrained-efficient allocation is implemented using a sales tax schedule. The optimal schedule has a single-crossing property, requiring the trading of low-quality assets to be subsidized and trading of high-quality assets to be taxed. Surprisingly, the optimal schedule could be non-monotonic in the quality or price of assets even when buyers and sellers agree on the ranking of assets. This result implies that using a linear tax schedule, as typically assumed in the literature, could significantly limit the benefits of taxation. The role of traditional search frictions, and the effects of higher measure of distressed sellers, higher quality of assets and more efficient matching technology on the optimal schedule are also studied.

Forward guidance and the role of central bank credibility under heterogeneous beliefs

This paper studies the macroeconomic effects of central bank forward guidance when central bank credibility is endogenous. We take a stylized New Keynesian model with an occasionally binding effective lower bound constraint on nominal interest rates and heterogeneous and boundedly rational households. Central bank forecasts follow a bivariate VAR, not taking into account the time-variation in the distribution of aggregate expectations. In this framework, we extend the central bank's toolkit to allow for the publication of its own forecasts (Delphic guidance) and the commitment to a future path of the nominal interest rate (Odyssean guidance). We find that both Delphic and Odyssean forward guidance increase the likelihood of recovery from a liquidity trap. Even though Odyssean guidance alone appears more powerful in inducing recovery, we find it to increase ex post macroeconomic volatility and thus reduce welfare.

A model intercomparison of the welfare effects of regional coalitions for ambitious climate mitigation targets

This paper presents the overall and distributional welfare effects of alternative multi-regional emissions trading coalitions relative to unilateral action. It focusses on meeting Paris Agreement pledges

and more emissions reduction targets consistent with 2C and 1.5C temperature pathways in 2030. The results from seven computable general equilibrium (CGE) models are compared. Across all models, welfare gains are highest with a global market and increase with the stringency of targets. All regional coalitions also show overall welfare gains, although lower gains than the global market. The models show more variability in the gains by participant. Depending on the model, participants may benefit more from some regional arrangements than from a global market or face modest losses compared to the domestic reductions alone, due to interactions between carbon targets and fossil fuel markets. The scenario with a joint China-European Union emissions trading system in all sectors is consistently favorable for participants and provides the highest economic gains per unit of emissions abated.

Credit Guarantee and Fiscal Costs

This paper studies the effectiveness of government-backed credit guarantees to the infrastructure sector. We propose a two-sector model with financial intermediary frictions so that infrastructure producers rely on bank loans to finance production. Governments can intervene in the credit market by providing a partial guarantee. We find that a credit guarantee increases infrastructure production, leading to a high fiscal multiplier in the longer run. In the near term, however, higher infrastructure-sector wages crowd out private-sector labor supply. Importantly, the higher leverage associated with credit expansion raises non-performing loans, and this channel is particularly pronounced if the government-backed credit guarantees linger.

The Central Bank Strikes Back! Credibility of Monetary Policy Under Fiscal Influence

How should independent central banks react if pressured by fiscal policymakers? We study an environment with strategic monetary-fiscal interactions where the central bank has a limited degree of commitment to follow policies over time and the fiscal authority has none. We contrast the implications of two monetary frameworks: one, where the central bank follows a standard rule aiming exclusively at price stability against the other, where monetary policy additionally leans against fiscal influence. The latter rule improves economic outcomes by providing appropriate incentives to the fiscal authority. More importantly, the additional fiscal conditionality can enhance the credibility of the central bank to achieve price stability. We emphasize

how the level and structure of government debt emerge as key factors affecting the credibility of monetary policy with fiscal conditionality.

Reassessing the dependence between economic growth and financial conditions since 1973

Adrian, Boyarchenko and Giannone (2019, ABG) adapt Quantile Regression (QR) methods to examine the relationship between U.S. economic growth and financial conditions. We confirm their empirical findings, using their methodology and their pre-2016 sample. Mindful of the importance of the Covid-19 pandemic, we extend the sample to 2021:3 and find attenuation of the key estimated coefficients using ABG's empirical methods. Given the pandemic observations, we provide robust QR analysis of dependence based on ranked data, and explain the relationship with extant copula modelling methods.

Bank Market Power and Central Bank Digital Currency: Theory and Quantitative Assessment

This paper develops a micro-founded general equilibrium model of payments to study the impact of a central bank digital currency (CBDC) on intermediation of private banks. If banks have market power in the deposit market, a CBDC can enhance competition, raising the deposit rate, expanding intermediation, and increasing output. A calibration to the United States economy suggests that a CBDC can raise bank lending by 1.57% and output by 0.19%. These “crowding-in” effects remain robust, albeit with smaller magnitudes, after taking into account endogenous bank entry. We also assess the role of a non-interest bearing CBDC as the use of cash declines.

How Do Mortgage Rate Resets Affect Consumer Spending and Debt Repayments? Evidence from Canadian Consumers

One of the most important channels through which monetary policy affects the real economy is changes in mortgage rates. This paper studies the effects of mortgage rate changes resulting from monetary policy shifts on homeowners' spending, debt repayment and defaults. The Canadian institutional setting facilitates the design of identification strategies for causal inference, since the vast majority of mortgages in the country experience predetermined, periodic, and automatic contract renewals with the mortgage rate reset based on the prevailing market rate. This allows us to exploit quasi-random variation in the timing of the rate reset and present causal evidence for both rate declines and increases, with the help of detailed,

representative consumer credit panel data. We find asymmetric effects of rate changes on spending, debt repayment and defaults. Our results can be rationalized by the conventional cash-flow effect in conjunction with changes in consumer expectations about future interest rates upon the reset. Given the pervasiveness of Canadian-type mortgages in many other OECD countries, our findings have broader implications for the transmission of monetary policy to the household sector.

PayTech and the D(ata) N(etwork) A(ctivities) of BigTech Platforms

Why do BigTech platforms introduce payment services? Digital platforms often run business models where activities on the platform generate data that can be monetized off the platform. There is a trade-off between the value of such data and the privacy concerns of users, since platforms need to compensate users for their privacy loss by subsidizing activities. The nature of complementarities between data and payments determines whether and how payment services are provided. When data help to provide better payments (data-driven payments), platforms have too little incentive to adopt. When payments generate additional data (payments-driven data), platforms may adopt payments inefficiently.

Weather the Storms? Hurricanes, Technology and Oil Production

Do technological improvements mitigate the potential damages from extreme weather events? We address this question using oil production and hurricane data from the Gulf of Mexico. We show that hurricane activity lowers well production and that stronger storms have larger impacts that persist for months after impact. Hurricanes also significantly increase the probability that oil assets are stranded, particularly when the hurricanes pass within 50km of an oil rig's location. Regulations enacted in 1980 that required improved construction standards for rigs in the Gulf only modestly mitigated the short-run production losses caused by hurricanes. The 1980 regulatory reforms also modestly decreased the probability that leases permanently exited production.

Risk and State-Dependent Financial Frictions

We augment a standard New Keynesian model with a financial accelerator mechanism and show that financial frictions generate large state-dependent amplification effects. We fit the model to US

data and show that, when shocks drive the model far away from the steady state, the nonlinear model produces much stronger propagation of shocks than the linearized model. We document that these amplification effects are due to endogenous variation in financial conditions and not due to other nonlinearities in the model. Motivated by these findings, we propose a regime-switching dynamic stochastic general equilibrium framework where financial frictions endogenously fluctuate between moderate (low risk) and severe (high risk), depending on the state of the economy. This framework allows for efficient estimation with many state variables and improves fit with respect to the linear model.

Cash, COVID-19 and the Prospects for a Canadian Digital Dollar

We provide an analysis of cash trends in Canada before and during the COVID-19 pandemic. Focusing on the pandemic period, we explore the implications on demand for, use of and access to cash. We find that cash demand has been strong pre-pandemic and increased sharply during the pandemic. While cash use fell initially due to the decreased number of in-person shopping opportunities, it recovered as containment measures eased. We explore the potential two scenarios for issuance of central bank digital currency or Canadian digital dollar. We discuss the Canadian experience in maintaining cash as an efficient and accessible method of payment and store of value.

COVID and Financial Stability: Practice Ahead of Theory

The COVID-19 pandemic forced policy-makers to deploy a range of unprecedented measures to support the economy. In this discussion paper, we discuss the outcome of the economic measures implemented in the context of financial stability in Canada. We also present related challenging policy questions that are being tackled by staff at the Bank. These include the uneven impact of the pandemic on households' financial conditions and how it affects the transmission of policy, the challenges associated with setting banks' countercyclical capital buffers, detecting imbalances in a buoyant housing market, and policy coordination challenges.

UPCOMING EVENTS

International Journal of Central Banking Annual Conference
Date: 10-11 August 2022

Russell Wong (Richmond Fed)
Organizer: FMD/FSD EFR Seminar Series
Date: 24 August 2022

Ina Hajdini (Federal Reserve Bank of Cleveland)
Organizer: CSCE Working Group
Date: 1 September 2022

Kei-Mu Yi (University of Houston)
Organizer: INT/CEA EFR Seminar Series
Date: 9 September 2022

Hanna Halaburda (Stern School of Business, New York University)
Organizer: BAP Virtual Speaker
Date: 12 September 2022

Bank of Canada FSRC Macro-Finance Conference
Date: 15-16 September 2022

Dalibor Stevanovic (Université du Québec à Montréal)
Organizer: BAP Hybrid Speaker
Date: 19 September 2022

Sasha Indarte (Wharton School, University of Pennsylvania)
Organizer: FMD/FSD Seminar Series
Date: 19 September 2022

2nd Bank of Canada Workshop on Monetary Policy Research
Date: 21-22 September 2022

Sebnem Kalemli-Ozcan (University of Maryland)
Organizer: EFR CEA/INT/FSD/FMD Speaker
Date: 22 September 2022

Mitsuru Igami (Yale)
Organizer: CUR Visiting Speaker
Date: 23 September 2022

Chryssi Giannitsarou (University of Cambridge)

Organizer: EFR Seminar Series

Date: 27 September 2022

Josep Pijoan-Mas (CEMFI)

Organizer: FMD/FSD Seminar Series

Date: 27 September 2022