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Bank of Canada Monthly Research Update

November 2021

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

Matveev, Dmitry, “Time-Consistent Management of a Liquidity Trap with Government Debt”, *Journal of Money, Credit and Banking*, Vol 53(8): 2129-2165, November 2021

Forthcoming

Woodford, Michael & Xie, Yixi, “Fiscal and monetary stabilization policy at the zero lower bound: Consequences of limited foresight”, *Journal of Monetary Economics*

Kostyshyna, Olena & Lalé, Etienne, “On the Evolution of Multiple Jobholding in Canada”, *Canadian Journal of Economics*

Chernoff, Alexander & Craig, Andrea N., “Distributional and Housing Price Effects from Public Transit Investment: Evidence from Vancouver”, *International Economic Review*

Balutel, Daniela & Henry, Christopher & Vásquez, Jorge & Voia, Marcel, “Bitcoin Adoption and Beliefs in Canada”, *Canadian Journal of Economics*

STAFF WORKING PAPERS

Zhang, Xu, “Evaluating the Effects of Forward Guidance and Large-scale Asset Purchases”, *Bank of Canada Staff Working Paper 2021-54*

Acharya, Sushant & Challe, Edouard & Dogra, Keshav, “Optimal Monetary Policy According to HANK”, *Bank of Canada Staff Working Paper 2021-55*

Shukayev, Malik & Ueberfeldt, Alexander, “Are Bank Bailouts Welfare Improving?”, *Bank of Canada Staff Working Paper 2021-56*

Hodbod, Alexander & Hommes, Cars & Huber, Stefanie J. & Salle, Isabelle, “The COVID-19 Consumption Game-Changer: Evidence from a Large-Scale Multi-Country Survey”, *Bank of Canada Staff Working Paper 2021-57*

Corhay, Alexandre & Kind, Thilo & Kung, Howard & Morales, Gonzalo, “Discount Rates, Debt Maturity, and the Fiscal Theory”, *Bank of Canada Staff Working Paper 2021-58*

Livshits, Igor & Park, Youngmin, “Democratic Political Economy of Financial Regulation”, *Bank of Canada Staff Working Paper 2021-59*

Chen, David Xiao & Friedrich, Christian, “[The Countercyclical Capital Buffer and International Bank Lending: Evidence from Canada](#)”, Bank of Canada Staff Working Paper 2021-61

Cao, Jin & Dinger, Valeriya & Gómez, Tomás & Gric, Zuzana & Hodula, Martin & Jara, Alejandro & Juelsrud, Ragnar & Liaudinskas, Karolis & Malovaná, Simona & Terajima, Yaz, “[Monetary Policy Spillover to Small Open Economies: Is the Transmission Different under Low Interest Rates?](#)”, Bank of Canada Staff Working Paper 2021-62

STAFF DISCUSSION PAPERS

McDaniels, Karim & Palesch, Nico & Suri, Sanjam & Quiviger, Zacharie & Walsh, John, “[Updated Methodology for Assigning Credit Ratings to Sovereigns](#)”, Bank of Canada Staff Discussion Paper 2021-16

ABSTRACTS

Time-Consistent Management of a Liquidity Trap with Government Debt

I show that debt maturity considerations affect the optimal conduct of monetary and fiscal policy in the presence of lower bound episodes. I consider a New Keynesian model where the lower bound on nominal interest rates binds occasionally. I study optimal monetary and fiscal policy under discretion, characterizing the strategic use of government debt as a tool to affect expectations of real interest rates and inflation. During lower bound episodes, the presence of long-term bonds makes it optimal to temporarily consolidate debt. In addition, the long-run level of debt increases with both the likelihood of reaching the lower bound and the maturity of debt.

Fiscal and monetary stabilization policy at the zero lower bound: Consequences of limited foresight

This paper reconsiders the degree to which macroeconomic stabilization is possible when the zero lower bound is a relevant constraint on the effectiveness of conventional monetary policy, under an assumption of bounded rationality. In particular, we reconsider the potential role of countercyclical fiscal transfers as a tool of stabilization policy. Because Ricardian Equivalence no longer holds when planning horizons are finite (even when relatively long), we find that fiscal transfers can be a powerful tool to reduce the contractionary impact of an increased financial wedge during a crisis, and can even make possible complete stabilization of both aggregate output and inflation under certain circumstances, despite the binding lower bound on interest rates. However, the power of such policies depends on the degree of monetary policy accommodation. We also show that a higher level of welfare is generally possible if both monetary and fiscal authorities commit themselves to history-dependent policies in the period after the financial disturbance that causes the lower bound to bind has dissipated.

On the Evolution of Multiple Jobholding in Canada

The number of workers who hold more than one job (a.k.a. multiple jobholders) has increased spectacularly in Canada since the mid-1970s – it has been multiplied by almost three. In this paper, we document this historical change and provide a comprehensive account of its dynamics. To this end, we use restricted-access panel

micro-data from the Canadian labour force survey to construct transition probabilities in and out of multiple jobholding. We analyze these data through the lens of a trend decomposition that separates out the role of worker inflows and outflows. The upward trend in multiple jobholding is chiefly explained by the increased likelihood of single jobholders to pick up second jobs. While economic reasons remain important among the motives that push workers towards multiple jobholding, a more flexible hours schedule in the main job may explain why taking on a second job has become more frequent.

Distributional and Housing Price Effects from Public Transit Investment: Evidence from Vancouver

We estimate a residential sorting model using microdata to study an expansion of the Vancouver rapid transit network. Our results indicate that many aspects of household preferences were stable over time; however, preferences for transit access became more homogeneous with respect to income. Simulations show that these preference changes, along with endogenous housing appreciation and rising income levels in connected neighborhoods, result in larger benefits for higher-income households. This distributional pattern is driven by the gains of households working in pre-connected neighborhoods. In contrast, the benefits to those working in newly connected neighborhoods disproportionately favor lower-income households.

Bitcoin Adoption and Beliefs in Canada

We develop a tractable model of Bitcoin adoption with network effects and social learning, which we then connect to unique data from the Bank of Canada's Bitcoin Omnibus Survey for the years 2017 and 2018. The model determines how the probability of Bitcoin adoption depends on (1) network effects; (2) individual learning effects; and (3) social learning effects. After accounting for the endogeneity of beliefs, we find that both network effects and individual learning effects have a positive and significant direct impact on Bitcoin adoption, whereas the role of social learning is to ameliorate the marginal effect of the network size on the likelihood of adoption. In particular, in 2017 and 2018, a one percentage point increase in the network size increased the probability of adoption by 0.45 and 0.32 percentage points, respectively. Similarly, a one percentage point increase in Bitcoin beliefs increased the probability of adoption by 0.43 and 0.72 percentage points. Our results suggest that network effects, individual learning, and social learning were important drivers of Bitcoin adoption in 2017 and 2018 in Canada.

Evaluating the Effects of Forward Guidance and Large-scale Asset Purchases

This paper evaluates the effects of forward guidance and large-scale asset purchases (LSAP) when the nominal interest rate reaches the zero lower bound. I investigate the effects of the two policies in a dynamic new Keynesian model with financial frictions adapted from Gertler and Karadi (2011, 2013), with changes implemented so that the framework delivers realistic predictions for the effects of each policy on the entire yield curve. I then match the change that the model predicts would arise from a linear combination of the two shocks with the observed change in the yield curve in a 30-minute window around Federal Reserve announcements, allowing me to identify the separate contributions of each shock to the effects of the announcement. My estimates imply that LSAP was more important in influencing output and inflation than forward guidance.

Optimal Monetary Policy According to HANK

We study optimal monetary policy in an analytically tractable Heterogeneous Agent New Keynesian model with rich cross-sectional heterogeneity. Optimal policy differs from that in a representative agent model because monetary policy can affect consumption inequality by reducing both idiosyncratic consumption risk and the inequality that arises from households' unequal exposures to aggregate shocks. Simple target criteria summarize the planner's tradeoff between consumption inequality, productive efficiency and price stability. Mitigating consumption inequality requires putting some weight on stabilizing the level of output and correspondingly reducing the weights on the output gap and the price level relative to an economy without inequality.

Are Bank Bailouts Welfare Improving?

The financial sector bailouts seen during the Great Recession generated substantial opposition and controversy. We assess the welfare benefits of government-funded emergency support to the financial sector, taking into account its effects on risk-taking incentives. In our quantitative general equilibrium model, the financial crisis probability depends on financial intermediaries' balance sheet choices, influenced by capital adequacy constraints and ex ante known emergency support provisions. These policy tools interact to make financial sector bailouts welfare improving when capital adequacy constraints are consistent with the current Basel III

regulation, but potentially welfare decreasing with looser capital adequacy regulation existing before the Great Recession.

The COVID-19 Consumption Game-Changer: Evidence from a Large-Scale Multi-Country Survey

Prospective economic developments depend on the behavior of consumer spending. A key question is whether private expenditures recover once social distancing restrictions are lifted or whether the COVID-19 crisis had a sustained impact on consumer confidence, preferences, and hence, spending. The elongated and profound experience of the COVID-19 crisis may durably affect consumer preferences. We conducted a representative consumer survey in five European countries in summer 2020 after the release of the first wave's lockdown restrictions. We document the underlying reasons for households' reduction in consumption in five key sectors: tourism, hospitality, services, retail, and public transports. We identify a large confidence shock in the Southern European countries and a shift in consumer preferences in the Northern European countries, particularly among high-income earners. We conclude that the COVID-19 experience has altered consumer behavior and that long-term sectoral consumption shifts may occur.

Discount Rates, Debt Maturity, and the Fiscal Theory

This paper examines how the transmission of government portfolio risk arising from maturity operations depends on the stance of monetary/fiscal policy. Accounting for risk premia in the fiscal theory allows the government portfolio to affect the expected inflation, even in a frictionless economy. The effects of maturity rebalancing on expected inflation in the fiscal theory directly depend on the conditional nominal term premium, giving rise to an optimal debt maturity policy that is state dependent. In a calibrated macro-finance model, we demonstrate that maturity operations have sizable effects on expected inflation and output through our novel risk transmission mechanism.

Democratic Political Economy of Financial Regulation

This paper offers a simple theory of inefficiently lax financial regulation arising as an outcome of a democratic political process. Lax financial regulation encourages some banks to issue risky residential mortgages. In the event of an adverse aggregate housing shock, these banks fail. When banks do not fully internalize the losses from such failure (due to limited liability), they offer mortgages

at less than actuarially fair interest rates. This opens the door to home ownership for young, low net-worth individuals. In turn, the additional demand from these new home-buyers drives up house prices. This leads to a non-trivial distribution of gains and losses from lax regulation among households. On the one hand, renters and individuals with large non-housing wealth suffer from the fragility of the banking system. On the other hand, some young, low net-worth households are able to get a mortgage and buy a house, and current (old) home-owners benefit from the increase in the price of their houses. When these latter two groups, who benefit from the lax regulation, constitute a majority of the voting population, then regulatory failure can be an outcome of the democratic political process.

The Countercyclical Capital Buffer and International Bank Lending: Evidence from Canada

We examine the impact of the recently introduced Basel III countercyclical capital buffer (CCyB) on foreign lending activities of Canadian banks. Using panel data for the six largest Canadian banks and their foreign activities in up to 94 countries, we explore the variation in CCyB rates across countries to overcome the identification challenge associated with limited time-series evidence on the use of the CCyB in individual jurisdictions. Our main sample focuses on the period from 2013Q2 to 2019Q3, when CCyB rates experienced a prolonged tightening cycle. We show that in response to a 1-percentage-point tightening announcement in a foreign CCyB, the growth rate of cross-border lending between Canadian banks' head offices and borrowers in CCyB-implementing countries decreases by between 12 and 17 percentage points. Most importantly, due to the CCyB's unique reciprocity rule, which also subjects foreign banks to domestic regulation, the direction of this effect differs from that of other forms of foreign capital regulation that have been previously examined in the literature. When investigating the underlying transmission channels of a CCyB change, we find that, in particular, large banks are more able than small banks to shield their cross-border lending against the impact of foreign CCyB changes. Finally, when focusing on the loosening cycle in CCyB rates that emerged in early 2020, we show that our findings on the differential effects for large and small banks also carry over to the COVID-19 episode—a time when various jurisdictions rapidly released their CCyBs to stabilize their banks' lending activities.

Monetary Policy Spillover to Small Open Economies: Is the Transmission Different under Low Interest Rates?

We explore the impact of low and negative monetary policy rates in core world economies on bank lending in four small open economies—Canada, Chile, the Czech Republic and Norway— using confidential bank-level data. Our results show that the impact on lending in these small open economies depends on the interest rate level in the core. When interest rates are high, monetary policy cuts in core economies can reduce credit supply in small open economies. In contrast, when interest rates in core economies are low, further expansionary monetary policy increases lending in small open economies, consistent with an international bank lending channel. These results have important policy implications, suggesting that central banks in small open economies should watch for the impact of potential regime switches in core economies' monetary policy when rates shift to and from the very low end of the distribution.

Updated Methodology for Assigning Credit Ratings to Sovereigns

The investment of foreign exchange reserves or other asset portfolios requires an assessment of the credit quality of investment counterparties. Traditionally, foreign exchange reserve and other asset managers relied on credit rating agencies (CRAs) as the main source of information for credit assessments. In October 2010, the Financial Stability Board issued principles to reduce reliance on CRA ratings in standards, laws and regulations, in support of financial stability. Moreover, best practices in the asset management industry suggest that investors should understand the credit risks they are exposed to and, more broadly, that they should rely on internal credit assessments to inform investment decisions. In support of these objectives, the Bank of Canada first published its sovereign rating methodology in 2017. It provided a detailed technical description of the process developed to assign internal credit ratings to sovereigns, using only publicly available data.

This publication updates the internal sovereign rating methodology to stay abreast of evolving best practices and leverage internal experience. This updated methodology proposes three key innovations: (i) a new approach to assessing a sovereign's fiscal position, (ii) adjustments to the approach to assessing monetary policy flexibility and (iii) the explicit consideration of climate-related factors.

UPCOMING EVENTS

*** All onsite conferences and events are suspended until further notice. All events listed below will take place virtually.**

Roméo Tédongap (ESSEC Business School)
Organizer: FMD FSD/EFR Seminar Series
Date: 16 December 2021

Michelle Alexopoulos (University of Toronto)
Organizer: CEA PRIME
Date: 14 January 2022