Bank of Canada
Monthly Research Update

April 2018

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

Li, Fuchun & Perez-Saiz, Hector, "Measuring systemic risk across financial market infrastructures", Journal of Financial Stability, Volume 34, 1-11

Forthcoming

Champagne, Julien & Sekkel, Rodrigo, "Changes in Monetary Regimes and the Identification of Monetary Policy Shocks: Narrative Evidence from Canada", Journal of Monetary Economics

Chu, Ba & Huynh, Kim P. & Jacho-Chavez, David & Kryvtsov, Oleksiy, "On the evolution of the UK price distributions", Annals of Applied Statistics

Dorich, José & Labelle, Nicholas & Lepetyuk, Vadym & Mendes, Rhys R., "Could a Higher Inflation Target Enhance Macroeconomic Stability?", Canadian Journal of Economics

Huynh, Kim P. & Fung, Ben & Nield, Kerry & Welte, Angelika, "Merchant Acceptance of Cash and Credit Cards at the Point of Sale", Journal of Payments Strategy and Systems

Huynh, Kim P. & Paligorova, Teodora & Petrunia, Robert J., "Debt financing in private and public firms", Annals of Finance.

STAFF WORKING PAPERS

Brolley, Michael & Cimon, David, "Order Flow Segmentation, Liquidity and Price Discovery: The Role of Latency Delays", Bank of Canada Staff Working Paper 2018-16

St-Amant, Pierre & Tessier, David, "Firm Dynamics and Multifactor Productivity: An Empirical Exploration", Bank of Canada Staff Working Paper 2018-15

STAFF DISCUSSION PAPERS

Bailliu, Jeannine & Han, Xinfen & Kruger, Mark & Liu, Yu-Hsien & Thanabalasingam, Sri, "Can Media and Text Analytics Provide Insights into Labour Market Conditions in China?", Bank of Finland's Institute for Economies in Transition, Discussion Paper Series, BOFIT 9/2018

Davoodalhosseini, Mohammad & Rivadeneyra, Francisco, "A Policy Framework for E-Money: A Report on Bank of Canada Research", Bank of Canada Staff Discussion Paper 2018-5

ABSTRACTS

Measuring systemic risk across financial market infrastructures

We measure systemic risk in the network of financial market infrastructures (FMIs) as the probability that two or more FMIs have a large credit risk exposure to a common FMI participant. We construct indicators of credit risk exposures in three main Canadian FMIs and use multivariate extreme value methods to estimate this probability. We find large differences in the levels of systemic risk across participants. Conditional on the participant being distressed, we re-estimate these probabilities and find that some participants create large exposures to FMIs, resulting in a larger level of systemic risk than the rest of the participants. Our results suggest that an appropriate oversight of FMIs may benefit from an in-depth system-wide analysis, which may have useful implications for the macroprudential regulation of the financial system.

Changes in Monetary Regimes and the Identification of Monetary Policy Shocks: Narrative Evidence from Canada

Using narrative evidence with a novel database of real-time data and forecasts from the Bank of Canada's staff projections (1974-2015), we construct a new measure of monetary policy shocks and estimate the effects of monetary policy in Canada. We show it is crucial to account for the break in the conduct of monetary policy caused by the announcement of inflation targeting in 1991. A 100-basis-point increase in our new shock series leads to a 1.0 percent peak decrease in real GDP and a 0.5 percent fall in the price level, while not accounting for the break leads to a persistent decrease in GDP and a price puzzle. Albeit the change in monetary regime, the effects of monetary policy have not changed much before and after IT.

On the evolution of the UK price distributions

We propose a functional principal components method that accounts for stratified random sample weighting and time dependence in the observations to understand the evolution of distributions of monthly micro-level consumer prices for the United Kingdom (UK). We apply the method to publicly available monthly data on individual-good prices collected in retail stores by the UK Office for National Statistics

for the construction of the UK Consumer Price Index from March 1996 to September 2015. In addition, we conduct Monte Carlo simulations to demonstrate the effectiveness of our methodology. Our method allows us to visualize the dynamics of the price distribution and uncovers interest patterns during the sample period. Further, we demonstrate the efficacy of our methodology with an out-of-sample forecasting algorithm which exploits the time dependence of distributions. Our out-of-sample forecasts compares favorably with the random walk forecast.

Could a Higher Inflation Target Enhance Macroeconomic Stability?

Recent international experience with the effective lower bound on nominal interest rates has rekindled interest in the benefits of inflation targets above 2 per cent. We evaluate whether an increase in the inflation target to 3 or 4 per cent could improve macroeconomic stability in the Canadian economy. We find that the magnitude of the benefits hinges critically on two elements: (i) the availability and effectiveness of unconventional monetary policy (UMP) tools at the effective lower bound and (ii) the level of the real neutral interest rate. In particular, we show that when the real neutral rate is in line with the central tendency of estimates, raising the inflation target yields some improvement in macroeconomic outcomes. There are only modest gains if effective UMP tools are available. In contrast, with a deeply negative real neutral rate, a higher inflation target substantially improves macroeconomic stability regardless of UMP.

Merchant Acceptance of Cash and Credit Cards at the Point of Sale

Recent data show that the use of credit cards in Canada has been increasing, while the use of cash has been declining. At the same time, only two-thirds of small or medium-sized businesses accept credit cards. To better understand future development of this trend, it is important to study whether a change in merchant fees will increase credit card acceptance and will thus further reduce cash use. In this note, we calculate the level of the merchant fee where a merchant would be indifferent to accepting a credit card or cash payment, using the merchant indifference test. We find that the results are sensitive to the underlying assumptions. Furthermore, we discuss several main issues of applying such a methodology to Canada.

Debt financing in private and public firms

Using administrative confidential data on the universe of Canadian corporate firms, we compare debt financing choices of private and public firms. Private firms have higher leverage ratios, which are entirely driven by private firms' stronger reliance on short-term debt. Further, private firms rely more of leverage during economic expansions, while public firms rely on equity financing. Specifically, private firms manage to increase their long-term debt during expansions, while short-term debt is used during downturns. Our findings have implications for a better understanding of the role of asymmetric information in private firms' capital structure decisions.

Order Flow Segmentation, Liquidity and Price Discovery: The Role of Latency Delays

Latency delays - known as "speed bumps"- are an intentional slowing of order flow by exchanges. Supporters contend that delays protect market makers from high-frequency arbitrage, while opponents warn that delays promote "quote fading" by market makers. We construct a model of informed trading in a fragmented market, where one market operates a conventional order book and the other imposes a latency delay on market orders. We show that informed investors migrate to the conventional exchange, widening the quoted spread, while the quoted spread narrows at the delayed exchange. The overall market quality impact depends on the relative concentration of speculators who may become informed. If speculators are few relative to liquidity traders, total welfare falls; with relatively more speculators, total welfare rises.

Firm Dynamics and Multifactor Productivity: An Empirical Exploration

There are indications that business dynamism has declined in advanced economies. In particular, firm entry and exit rates have fallen, suggesting that the creative destruction process has lost some of its vitality. Meanwhile, productivity growth has slowed. Some believe that lower entry and exit rates partly explain the weaker productivity growth. However, the evidence supporting, or invalidating, this view is scarce. In the present paper, we use multi-horizon causality tests and dynamic simulations with Canadian and US data to examine the following question: Do changes to entry and exit rates provide information about, or Granger-cause, future productivity? We do not find significant evidence that entry rates Granger-cause productivity. But we do find evidence that productivity

causes entry rates. Using small models with economy-wide data (but not at the sectoral level), we find some evidence that exit rates cause productivity in both countries. This suggests that the decline in productivity growth is partly caused by a decline in the productivity-based exit selection process. However, when other variables, such as measures of the business cycle and the real effective exchange rate, are controlled for, the significance of exit rates in explaining productivity tends to fall. Specifically, business-cycle measures appear to cause both productivity and the exit rate. This suggests that firm dynamics are an intermediate, not an ultimate, cause of productivity growth.

Can Media and Text Analytics Provide Insights into Labour Market Conditions in China?

The official Chinese labour market indicators have been seen as problematic, given their small cyclical movement and their only-partial capture of the labour force. In our paper, we build a monthly Chinese labour market conditions index (LMCI) using text analytics applied to mainland Chinese-language newspapers over the period from 2003 to 2017. We use a supervised machine learning approach by training a support vector machine classification model. The information content and the forecast ability of our LMCI are tested against official labour market activity measures in wage and credit growth estimations. Surprisingly, one of our findings is that the much-maligned official labour market indicators do contain information. However, their information content is not robust and, in many cases, our LMCI can provide forecasts that are significantly superior. Moreover, regional disaggregation of the LMCI illustrates that labour conditions in the export-oriented coastal region are sensitive to export growth, while those in inland regions are not. This suggests that text analytics can, indeed, be used to extract useful labour market information from Chinese newspaper articles.

A Policy Framework for E-Money: A Report on Bank of Canada Research

We present a policy framework for electronic money and payments. The framework poses a set of positive questions related to the areas of responsibility of central banks: payments systems, monetary policy and financial stability. The questions are posed to four broad forms of e-money: privately or publicly issued, and with centralized or decentralized verification of transactions. This framework is intended to help evaluate the trade-offs that central banks face in the decision to issue new forms of e-money.

UPCOMING EVENTS

Bank of Canada - Wilfrid Laurier Market Structure Workshop, 7 May 2018
Organizer: Michael Brolley (WLU), David Cimon (FMD), Corey Garriott (FMD), Andriy Shkilko (WLU)

Regis Barnichon (Federal Reserve Bank of San Francisco), 18 May 2018
Organizer: Julien Champagne (CEA)

Martin Ellison (University of Oxford), 15 June 2018
Organizer: Daniela Hauser (CEA)

Marco Lombardi (Bank for International Settlements), 25 June 2018
Organizer: José Dorich (CEA)

Matthias Kehrig (Duke University), 21 September 2018
Organizer: Dmitry Matveev (CEA)

Matthias O. Paustian (Federal Reserve Board), 12 October 2018
Organizer: Romanos Priftis (CEA)

Albert Queralto (Federal Reserve Board), 16 November 2018
Organizer: Martin Kuncl (CEA)