Bank of Canada Monthly Research Update

July 2016

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

Boyd, Naomi E., Bahattin Buyuksahin, Michael S. Haigh & Jeffrey H. Harris, "The Prevalence, Sources, and Effects of Herding", Journal of Futures Markets, July 2016, Volume 36, Issue 7, Pages 671–694

Xu, Shaofeng, "On the Welfare Cost of Rare Housing Disasters", Journal of Economic Dynamics and Control, August 2016, Volume 69, Pages 301–318

Forthcoming

Ahnert, Toni & Ali Kakhbod, "Information Choice and Amplification of Financial Crises", Review of Financial Studies

Dhaene, Geert & Yu Zhu, "Median-based estimation of dynamic panel models with fixed effects", Computational Statistics & Data Analysis

Giusti, Giovanni, Janet Hua Jiang & Yiping Xu, "Interest on Cash, Fundamental Value Process and Bubble Formation", Journal of Behavioral and Experimental Finance

Pinheiro, Tiago, Francisco Rivadeneyra & Marc Teignier, "Financial Development, Credit and Business Cycles", Journal of Money Credit and Banking

Sekkel, Rodrigo & Jon Samuels, "Model Confidence Sets and Forecast Combinations", International Journal of Forecasting

STAFF WORKING PAPERS

Ampudia, Miguel & Michael Ehrmann, "Financial Inclusion—What's it Worth?", Bank of Canada Staff Working Paper 2016-30

Berg, Kimberly & Nelson C. Mark, "Global Macro Risks in Currency Excess Returns", Bank of Canada Staff Working Paper 2016-32

Bruneau, Gabriel, Ian Christensen & Césaire Meh, "Housing Market Dynamics and Macroprudential Policy", Bank of Canada Staff Working Paper 2016-31

Chiu, Jonathan & Cyril Monnet, "Relationships in the Interbank Market", Bank of Canada Staff Working Paper 2016-33

Christoffersen, Peter, Bruno Feunou, Yoontae Jeon & Chayawat Ornthanalai, "Time-Varying Crash Risk: The Role of Stock Market Liquidity", Bank of Canada Staff Working Paper 2016-35

Cunningham, Rose & Christian Friedrich, "The Role of Central Banks in Promoting Financial Stability: An International Perspective", Bank of Canada Staff Discussion Paper 2016-15

Damar, H. Evren & Adi Mordel, "International Banking and Cross-Border Effects of Regulation: Lessons from Canada", Bank of Canada Staff Working Paper 2016-34

Ehrmann, Michael & Jonathan Talmi, "Starting from a Blank Page? Semantic Similarity in Central Bank Communication and Market Volatility", Bank of Canada Staff Working Paper 2016-37

Kitamura, Tomiyuki & Tamon Takamura, "Output Comovement and Inflation Dynamics in a Two-Sector Model with Durable Goods: The Role of Sticky Information and Heterogeneous Factor Markets", Bank of Canada Staff Working Paper 2016-36

Pérez-Saiz, Héctor & Gabriel Xerri, "Credit Risk and Collateral Demand in a Retail Payment System", Bank of Canada Staff Discussion Paper 2016-16

ABSTRACTS

The Prevalence, Sources, and Effects of Herding

We test the prevalence, sources and effects of herding among large speculative traders in thirty U.S. futures markets over 2004–2009. We find significant herding levels within the large trader category of managed money traders (hedge funds) who are known to have similar performance evaluation measures. Our results support for the notion that greater public information takes away incentives to herd. The number of traders and floor-based markets are positively associated with herding, while trading volume and electronic trading are negatively related to herding. Notably, we find little evidence that herding by managed money traders serves to destabilize prices in futures markets.

On the Welfare Cost of Rare Housing Disasters

This paper examines the welfare cost of rare housing disasters characterized by large drops in house prices. I construct an OLG general equilibrium model with recursive preferences and housing disaster shocks. The likelihood and magnitude of housing disasters are inferred from historical housing market experiences in the OECD. The model shows that despite the rarity of housing disasters,

Canadian households would willingly give up 6 percent of their non-housing consumption each year to eliminate the housing disaster risk. The welfare evaluation of this risk, however, varies considerably across age groups. The risk translates into a welfare loss of as much as 16 percent of annual non-housing consumption for the old, but a welfare gain of 2 percent for the young. This asymmetry stems from the fact that, compared to the old, younger households suffer less from house price declines in disaster periods, due to smaller holdings of housing assets, and benefit from lower house prices in normal periods, due to the negative price effect of disaster risk.

Information Choice and Amplification of Financial Crises

We propose an amplification mechanism of financial crises based on the information choice of investors. Information acquisition always makes investors more likely to act against what is suggested by the prior. Deteriorating public news under an initially strong (weak) prior increases (reduces) the value of private information and induces more (less) information acquisition. Deteriorating public news always increases the probability of a crisis, since the initially strong (weak) prior suggests do-not-attack (attack). This effect is amplified when information choices are endogenous. To enhance financial stability, a policymaker can use taxes and subsidies to affect information acquisition. We also derive implications about the magnitude of amplification and discuss how these can be tested.

Median-based Estimation of Dynamic Panel Models with Fixed Effects

Outlier-robust estimators are proposed for linear dynamic fixed-effect panel data models where the number of observations is large and the number of time periods is small. In the simple setting of estimating the AR(1) coefficient from stationary Gaussian panel data, the estimator is (a linear transformation of) the median ratio of adjacent first-differenced data pairs. Its influence function is bounded under contamination by independent or patched additive outliers. The influence function and the gross-error sensitivity are derived. When there are independent additive outliers, the estimator is asymptotically biased towards 0, but its sign remains correct and it has a reasonably high breakdown point. When there are patched additive outliers with point mass distribution, the asymptotic bias is upward in nearly all cases; breakdown towards 1 can occur; and the associated breakdown point increases with the patch length.

Interest on Cash, Fundamental Value Process and Bubble Formation on Experimental Asset Markets

We study the formation of price bubbles on experimental asset markets where cash earns interest. There are two main conclusions. The first is that paying positive interest on cash is ineffective in diminishing bubbles through the reducing-active-participation channel. The second is that the fundamental value generating process plays a critical role in the formation of asset bubbles in the laboratory. In particular, bubbles tend to occur whenever there is a conflict between the sign of the time trend of the fundamental value and the sign of the expected dividend payment. This explanation is consistent with all existing studies that analyze the role of fundamental value processes in inducing bubbles on experimental asset markets.

Financial Development, Credit and Business Cycles

How does financial development affect the magnitude of the business cycles fluctuations? We examine this question in a general equilibrium model with heterogeneous agents and endogenous credit constraints based on Kiyotaki (1998). We show that there is a hump-shaped relationship between the degree of financial frictions and the amplification of unexpected productivity shocks. This non-monotonic relation is due to the fall in financial frictions having two opposite effects on the response of output. One effect is the reallocation of productive inputs between agent types, which, while active, increases with the fall in financial frictions. The other effect is the change in the demand of inputs, which decreases with the fall in financial frictions. At low levels of financial development the reallocation effect dominates and a fall in financial frictions increases the amplification of productivity shocks. In contrast, at higher levels of financial development, a fall in financial frictions decreases the shock amplification because the reallocation effect disappears while the effect on the demand of inputs is still present

Model Confidence Sets and Forecast Combinations

A longstanding finding in the forecasting literature is that averaging forecasts from different models often improves upon forecasts based on a single model, with equal weight averaging working particularly well. This paper analyzes the effects of trimming the set of models prior to averaging. We compare different trimming schemes and propose a new approach based on Model Confidence Sets that takes into account the statistical significance of out-of-sample forecasting

performance. In an empirical application of forecasting U.S. macroeconomic indicators, we find significant gains in out-of-sample forecast accuracy from the proposed trimming method.

Financial Inclusion—What's it Worth?

The paper studies the determinants of being unbanked in the euro area and the United States as well as the effects of being unbanked on wealth accumulation. Based on household-level data from The Eurosystem Household Finance and Consumption Survey and the U.S. Survey of Consumer Finances, it first documents that there are, respectively, 3.6 per cent and 7.5 per cent of unbanked households in the two economies. Low-income households, unemployed households and those with a poor education are the most likely to be affected, remarkably more so in the United States than in the euro area. At the same time, there is a role for government policies in fostering financial inclusion. Using a propensity score matching approach to estimate the effects of being unbanked, we found that banked households report substantially higher net wealth than their unbanked counterparts, with a gap of around €74,000 for the euro area and $42,000 for the United States. A potential reason for this wealth difference is that banked households are considerably more likely to accumulate wealth through ownership of their principal residence.

Global Macro Risks in Currency Excess Returns

We study a cross section of carry-trade-generated currency excess returns in terms of their exposure to global fundamental macroeconomic risk. The cross-country high-minuslow (HML) conditional skewness of the unemployment gap—our measure of global macroeconomic uncertainty—is a factor that is robustly priced in currency excess returns. A widening of the HML gap signifies increasing divergence, disparity and inequality of economic performance across countries.

Housing Market Dynamics and Macroprudential Policy

We perform an analysis to determine how well the introduction of a countercyclical loanto- value (LTV) ratio can reduce household indebtedness and housing price fluctuations compared with a monetary policy rule augmented with house price inflation. To this end, we construct a New Keynesian model in which a fraction of households borrow against the value of their houses and we introduce news shocks on housing demand. We estimate the model

with Canadian data using Bayesian methods. We find that the introduction of news shocks can generate a housing market boom-bust cycle, the bust following unrealized expectations on housing demand. Our study also suggests that a countercyclical LTV ratio is a useful policy to reduce the spillover from the housing market to consumption, and to lean against news-driven boom-bust cycles in housing price and credit generated by expectations of future macroeconomic developments.

Relationships in the Interbank Market

The market for central bank reserves is mainly over-the-counter and exhibits a core-periphery network structure. This paper develops a model of relationship lending in the unsecured interbank market. In equilibrium, a tiered lending network arises endogenously as banks choose to build relationships to insure against liquidity shocks and to economize on the cost to trade in the interbank market. Relationships matter for banks' bidding strategies at the central bank auction and introduce a relationship premium that can significantly distort the observed overnight rate. For example, it can explain some anomalies in the level of interest rates—namely, that banks sometimes trade above (below) the central bank's lending (deposit) rate. The model also helps to explain how monetary policy affects the network structure of the interbank market and its functioning, and how the market responds dynamically to an exit from the floor system. We also use the model to discuss the potential effects of bilateral exposure limits on relationship lending.

Time-Varying Crash Risk: The Role of Stock Market Liquidity

We estimate a continuous-time model with stochastic volatility and dynamic crash probability for the S&P 500 index and find that market illiquidity dominates other factors in explaining the stock market crash risk. While the crash probability is time-varying, its dynamic depends only weakly on return variance once we include market illiquidity as an economic variable in the model. This finding suggests that the relationship between variance and jump risk found in the literature is largely due to their common exposure to market liquidity risk. Our study highlights the importance of equity market frictions in index return dynamics and explains why prior studies find that crash risk increases with market uncertainty level.

The Role of Central Banks in Promoting Financial Stability: An International Perspective

The 2007–09 global financial crisis has led policy-makers around the world, including central banks, to refocus their efforts to promote financial stability. As part of this process, central banks became quite active in supporting financial stability in a variety of ways, such as publicly sharing their assessments of financial system vulnerabilities and risks and helping to strengthen regulation, supervision and macroprudential measures. However, the use of monetary policy instruments for managing financial stability risks is more widely debated because central banks may face a trade-off between attaining their inflation targets in a timely manner and exacerbating financial stability risks. Recent research suggests that central banks that tend to have stronger financial stability mandates and less influence over regulatory and macroprudential tools are more likely to use monetary policy to address financial stability risks.

International Banking and Cross-Border Effects of Regulation: Lessons from Canada

We study how changes in prudential requirements affect cross-border lending of Canadian banks by utilizing an index that aggregates adjustments in key regulatory instruments across jurisdictions. We show that when a destination country tightens local prudential measures, Canadian banks lend more to that jurisdiction, and the effect is particularly significant when capital requirements are tightened and weaker if banks lend mainly via affiliates. Our evidence also suggests that Canadian banks adjust foreign lending in response to domestic regulatory changes. The results confirm the presence of heterogeneous spillover effects of foreign prudential requirements.

Starting from a Blank Page? Semantic Similarity in Central Bank Communication and Market Volatility

Press releases announcing and explaining monetary policy decisions play a critical role in the communication strategy of central banks. Because of their market-moving potential, it is particularly important how they are drafted. Often, central banks start from the previous statement and update the earlier text with only small changes. This way, it is straightforward to compare statements and see how the central bank's thinking has evolved. This paper studies to what extent such similarity in central bank statements matters for the reception of their content in financial markets. Using the case of the Bank of Canada (the G7 central bank that had to rely the least on

unconventional monetary policy following the global financial crisis and has therefore broadly continued standard monetary policy communications), the paper shows that press releases with larger differences in wording lead to higher volatility in financial markets, suggesting that their content is more difficult to absorb. At the same time, while press releases that are similar to the previous one generate less market volatility, once their wording is updated, volatility increases substantially.

Output Comovement and Inflation Dynamics in a Two-Sector Model with Durable Goods: The Role of Sticky Information and Heterogeneous Factor Markets

In a simple two-sector New Keynesian model, sticky prices generate a counterfactual negative comovement between the output of durable and nondurable goods following a monetary policy shock. We show that heterogeneous factor markets allow any combination of strictly positive price stickiness to generate positive output comovement. Even if the prices of durable goods are flexible, adding sticky information ensures that the output of both sectors moves in the same direction. Furthermore, we find that the combination of sticky information and heterogeneous factor markets produces hump-shaped responses in both sectoral output and inflation, as observed in a vector-autoregression analysis. In contrast to backward indexation to past inflation, which is often assumed in the literature, sticky information leads to a hump-shaped response in the inflation of flexibly priced goods. Finally, the estimated information stickiness through the minimum-distance estimation method suggests that information rigidity is stronger in residential investment than nondurable goods and services.

Credit Risk and Collateral Demand in a Retail Payment System

The recent financial crisis has led to the development of new regulations to control risk in designated payment systems, and the implementation of new credit risk management standards is one of the key issues. In this paper, we study various credit risk management schemes for the Canadian retail payment system (ACSS) that are designed to cover the exposure of a defaulting member. We consider schemes that use a collateral pool calculated using a rolling time window. Our simulations show that the size of the window has a very significant effect on the average level of collateral and its variability day to day, creating an interesting trade-off. Collateral levels and variability may be important for ACSS

participants because they could affect the opportunity costs of pledging collateral, and also the costs of managing it over time. Our results contribute to understanding the practical implementation of risk management schemes in the current and future generations of payment systems in Canada.