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

PUBLISHED PAPERS

In Press

Tomlin, Ben, “Exchange Rate Fluctuations, Plant Turnover and Productivity”, International Journal of Industrial Organization

Alpanda, Sami and Adam Honig, “The impact of central bank independence on the performance of inflation targeting regimes”, Journal of International Money and Finance

Alpanda, Sami and Uluc Aysun, “International Transmission of Financial Shocks in an Estimated DSGE Model”, Journal of International Money and Finance

Baumeister, Christiane and Lutz Kilian, “What Central Bankers Need to Know about Forecasting Oil Prices”, International Economic Review

Ehrmann, Michael, Benjamin Born and Marcel Fratzscher, “Central Bank Communication on Financial Stability”, The Economic Journal

Santor, Eric and Lawrence Schembri, “Success under Pressure: The Bank of Canada and the Global Financial Crisis - Actions and Lessons”, Crisis and Reform: Canada and the International Financial System

Forthcoming

Anand, Kartik, Ben Craig and Goetz von Peter, “Filling in the Blanks: Network Structure and Interbank Contagion”, Quantitative Finance (Also published as Bank of Canada Working Paper 2014-26)

Baumeister, Christiane and Lutz Kilian, “Do Oil Price Increases Cause Higher Food Prices?”, Economic Policy

Baumeister, Christiane, Lutz Kilian and Pierre Guérin, “Do High-Frequency Financial Data Help Forecast Oil Prices? The MIDAS Touch at Work”, International Journal of Forecasting

Ehrmann, Michael, “The pricing of G7 sovereign bond spreads - the times, they are a-changin”, Journal of Banking and Finance

Ehrmann, Michael, Chiara Osbat, Jan Strasky and Lenno Uusküla, “The euro exchange rate during the European sovereign debt crisis – dancing to its own tune?”, Journal of International Money and Finance

WORKING PAPERS

Bagnall, John, David Bounie, Kim Huynh, Anneke Kosse, Tobias Schmidt, Scott Schuh and Helmut Stix, “Consumer Cash Usage: A Cross-Country Comparison with Payment Diary Survey Data”, Bank of Canada Working Paper 2014-20

Dahlhaus, Tatjana, “Monetary Policy Transmission during Financial Crises: An Empirical Analysis”, Bank of Canada Working Paper 2014-21

Jiang, Janet Hua and Enchuan Shao, “Understanding the Cash Demand Puzzle”, Bank of Canada Working Paper 2014-22

- Ahnert, Toni, “Rollover Risk, Liquidity and Macroprudential Regulation”, Bank of Canada Working Paper 2014-23
- Chen, Heng, “Sheep in Wolf’s Clothing: Using the Least Squares Criterion for Quantile Estimation”, Bank of Canada Working Paper 2014-24
- Rempel, Mark, “Improving Overnight Loan Identification in Payments Systems”, Bank of Canada Working Paper 2014-25
- Chen, Heng, Marie-Hélène Felt and Kim Huynh, “Retail Payment Innovations and Cash Usage: Accounting for Attrition Using Refreshment Samples”, Bank of Canada Working Paper 2014-27
- Ehrmann, Michael, Damjan Pfajfar and Emiliano Santoro, “Consumer Attitudes and the Epidemiology of Inflation Expectations”, Bank of Canada Working Paper 2014-28
- Raykov, Radoslav, “Optimal Margining and Margin Relief in Centrally Cleared Derivatives Markets”, Bank of Canada Working Paper 2014-29
- Leboeuf, Maxime and Louis Morel, “Forecasting Short-Term Real GDP Growth in the Euro Area and Japan Using Unrestricted MIDAS Regressions”, Bank of Canada Discussion Paper 2014-3

ABSTRACTS

Exchange Rate Fluctuations, Plant Turnover and Productivity

In a small open economy, fluctuations in the real exchange rate can affect plant turnover, and thus aggregate productivity, by altering the makeup of plants that populate the market. This paper develops a structural model that captures the effect of plant-level productivity and real exchange rate fluctuations on plant entry and exit decisions, and how this, in turn, affects average industry productivity. Using plant-level data for a single industry, the model’s dynamic parameters are estimated in two-stages using the Nested-Pseudo Likelihood algorithm and the Method of Simulated Moments. Simulations of the model are used to investigate the effects of shocks to the exchange rate process on productivity. The results suggest that, given the mechanisms highlighted in the model, transitory and permanent depreciations have similar long-term effects on average industry productivity.

The impact of central bank independence on the performance of inflation targeting regimes

This paper examines the effects of inflation targeting on inflation in both advanced and emerging economies. We do not detect significant effects in advanced economies and only find small benefits in emerging economies, in line with previous studies. However, when we differentiate the impact of inflation targeting based on the degree of central bank independence, we find large effects in emerging economies with low central bank independence. Our results therefore suggest that central bank independence is not a prerequisite for countries to experience significant declines in inflation following the adoption of inflation targeting. Furthermore, we provide evidence that one channel through which inflation targeting lowers inflation more in countries with low central bank independence is the reduction of budget deficits following the adoption of an inflation target.

International Transmission of Financial Shocks in an Estimated DSGE Model

This paper investigates the transmission of financial shocks across large economies. To quantify these effects, we estimate a two-region open economy DSGE model that includes frictions in credit markets. The baseline model fails to replicate the high correlation between the U.S. and Euro Area macroeconomic variables. Allowing for an ad hoc, cross-regional correlation in financial shocks considerably improves the model's ability to match the data. We extend the baseline model by including global banks, and generate an endogenous cross-regional correlation of borrowing costs. Simulations demonstrate large spillover effects, and highlight the importance of including frictions in international financial contracts for more accurately capturing the high cross-regional correlation.

What Central Bankers Need to Know about Forecasting Oil Prices

Forecasts of the quarterly real price of oil are routinely used by international organizations and central banks worldwide in assessing the global and domestic economic outlook, yet little is known about how best to generate such forecasts. Our analysis breaks new ground in several dimensions. First, we address a number of econometric and data issues specific to real-time forecasts of quarterly oil prices. Second, we develop real-time forecasting models not only for U.S. benchmarks such as WTI crude oil, but we also develop forecasting models for the price of Brent crude oil, which has become increasingly accepted as the best measure of the global price of oil in recent years. Third, we design for the first time methods for forecasting the real price of oil in foreign consumption units rather than U.S. consumption units, taking the point of view of forecasters outside the U.S. In addition, we investigate the costs and benefits of allowing for time variation in vector autoregressive (VAR) model parameters and of constructing forecast combinations. We conclude that quarterly forecasts of the real price of oil from suitably designed VAR models estimated on monthly data generate the most accurate forecasts overall among a wide range of methods including forecasts based on oil futures prices, no-change forecasts and forecasts based on regression models estimated on quarterly data.

Central Bank Communication on Financial Stability

Central banks regularly communicate about financial stability issues. This article asks how such communications affect financial markets, based on a unique dataset covering more than 1,000 releases of Financial Stability Reports (FSRs) and speeches by 37 central banks over the past 14 years. The findings suggest that optimistic FSRs lead to significant and potentially long-lasting positive abnormal stock market returns, whereas no such effect is found for pessimistic FSRs. Speeches and interviews, in contrast, have smaller effects on market returns during tranquil times but have been influential during the 2007–10 global financial crisis.

Success under Pressure: The Bank of Canada and the Global Financial Crisis - Actions and Lessons

For the Bank of Canada (BoC) and other central banks, the global financial crisis of 2008-2009 and the subsequent Great Recession represented an unprecedented challenge to their two core policy functions: monetary policy and financial stability. These events were the most severe since the Great Depression of the 1930s when several central banks – including the BoC – were established to help prevent future financial crises and limit their economic fallout. Central bankers were well aware of the policy mistakes made during the Great Depression, but unfortunately this did not prevent the most recent crisis from occurring. Nevertheless, central banks, by effectively executing a broad and seemingly radical set of policy actions and coordinating among themselves and with fiscal authorities via the newly reconstituted Group of Twenty (G20), stopped the crisis from spiralling into another Great Depression.

Filling in the Blanks: Network Structure and Interbank Contagion

The network pattern of financial linkages is important in many areas of banking and finance. Yet bilateral linkages are often unobserved, and maximum entropy serves as the leading method for estimating counterparty exposures. This paper proposes an efficient alternative that combines information-theoretic arguments with economic incentives to produce more realistic interbank networks that preserve important characteristics of the original interbank market. The method loads the most probable links with the largest exposures consistent with the total lending and borrowing of each bank, yielding networks with minimum density. When used in a stress-testing context, the minimum density solution overestimates contagion, whereas maximum entropy underestimates it. Using the two benchmarks side by side defines a useful range that bounds the cost of systemic stress present in the true interbank network when counterparty exposures are unknown.

Do Oil Price Increases Cause Higher Food Prices?

U.S. retail food price increases in recent years may seem large in nominal terms, but after adjusting for inflation have been quite modest even after the change in U.S. biofuel policies in 2006. In contrast, increases in the real prices of corn, soybeans, wheat and rice received by U.S. farmers have been more substantial and can be linked in part to increases in the real price of oil. That link, however, appears largely driven by common macroeconomic determinants of the prices of oil and agricultural commodities rather than the pass-through from higher oil prices. We show that there is no evidence that corn ethanol mandates have created a tight link between oil and agricultural markets. Moreover, increases in agricultural commodity prices have contributed little to U.S. retail food price increases, because of the small cost share of agricultural products in food prices. In short, there is no evidence that oil price shocks have been associated with more than a negligible increase in U.S. retail food prices in recent years. Nor is there evidence for the prevailing wisdom that oil-price driven increases in the cost of food processing, packaging, transportation and distribution have been responsible for higher retail food prices. Similar results hold for other industrialized countries. There is reason to expect higher food commodity prices to be more tightly linked to retail food prices in developing countries, however.

Do High-Frequency Financial Data Help Forecast Oil Prices? The MIDAS Touch at Work

In recent years there has been increased interest in the link between financial markets and oil markets, including the question of whether financial market information helps forecast the real price of oil in physical markets. An obvious advantage of financial data in forecasting monthly oil prices is their availability in real time on a daily or weekly basis. We investigate the predictive content of these data using mixed-frequency models. We show that, among a range of alternative high-frequency predictors, cumulative changes in U.S. crude oil inventories in particular produce substantial and statistically significant real-time improvements in forecast accuracy. The preferred MIDAS model reduces the MSPE by as much as 28 percent compared with the no-change forecast and has statistically significant directional accuracy as high as 73 percent. This MIDAS forecast also is more accurate than a mixed-frequency real-time VAR forecast, but not systematically more accurate than the corresponding forecast based on monthly inventories. We conclude that typically not much is lost by ignoring high-frequency financial data in forecasting the monthly real price of oil.

The pricing of G7 sovereign bond spreads - the times, they are a-changin

Against the background of the current debate about fiscal sustainability in several advanced economies, this paper estimates determinants of G7 sovereign bond spreads, using high-frequency proxies for market expectations about macroeconomic fundamentals and allowing for time-varying parameters. The paper finds substantial asymmetry in the importance of country fundamentals and considerable time variations in the pricing of risks. There has been a reduced pricing of several risk factors in the years preceding the financial crisis, and either an over-pricing of risk or the pricing of a re-denomination risk of euro area bonds during the European sovereign debt crisis, a pattern that does not apply to the non-euro area G7 bonds.

The euro exchange rate during the European sovereign debt crisis - dancing to its own tune?

This paper studies the determinants of the euro exchange rate volatility during the European sovereign debt crisis, allowing a role for macroeconomic fundamentals, policy actions and the public debate by policy makers. It finds that the euro exchange rate mainly danced to its own tune, with a particularly low explanatory power for macroeconomic fundamentals. The findings of the paper also suggest that financial markets might have been less reactive to the public debate by policy makers than previously feared. Still, there are instances where exchange rate volatility increased in response to news, such as on days when several politicians from AAA-rated countries went public with negative statements, suggesting that communication by policy makers at times of crisis should be cautious about triggering undesirable financial market reactions.

Consumer Cash Usage: A Cross-Country Comparison with Payment Diary Survey Data

We measure consumers' use of cash by harmonizing payment diary surveys from seven countries. The seven diary surveys were conducted in 2009 (Canada), 2010 (Australia), 2011 (Austria, France, Germany and the Netherlands), and 2012 (the United States). Our paper finds cross-country differences - for example, the level of cash usage differs across countries. Cash has not disappeared as a payment instrument, especially for low-value transactions. We also find that the use of cash is strongly correlated with transaction size, demographics, and point-of-sale characteristics such as merchant card acceptance and venue.

Monetary Policy Transmission during Financial Crises: An Empirical Analysis

This paper studies the effects of a monetary policy expansion in the United States during times of high financial stress. The analysis is carried out by introducing a smooth transition factor model where the transition between states ("normal" and high financial stress) depends on a financial conditions index. Employing a quarterly data set over the period 1970Q1 to 2009Q2 containing 108 U.S. macroeconomic and financial time series, I find that a monetary policy shock during periods of high financial stress has stronger and more persistent effects on macroeconomic variables such as output, consumption, and investment than it has during "normal" times. Differences in effects among the regimes seem to originate from non-linearities in the credit channel.

Understanding the Cash Demand Puzzle

We develop a model to explain a puzzling trend in cash demand in recent years: the value of bank notes in circulation as a percentage of GDP has remained stable despite decreasing cash usage at points of sale owing to competition from alternative means of payment such as credit cards. The main feature of the model is that cash circulates between economic activities where the substitutability between cash and other means of payment is uneven. Our model predicts that, once credit expands beyond a certain level, agents adjust their cash management practices in response to further credit expansions, causing the velocity of cash to slow down, so that the demand for cash can remain flat despite diminishing cash transactions.

Rollover Risk, Liquidity and Macroprudential Regulation

I study rollover risk in the wholesale funding market when intermediaries can hold liquidity ex ante and are subject to fire sales ex post. Precautionary liquidity restores multiple equilibria in a global rollover game. An intermediate liquidity level supports both the usual run equilibrium and an efficient equilibrium. I provide a uniqueness refinement to characterize the privately optimal liquidity choice. Because of fire sales, liquidity holdings are strategic substitutes. Intermediaries free ride on the liquidity of other intermediaries, causing excessive liquidation. A macroprudential authority internalizes the systemic nature of liquidity and restores constrained efficiency by imposing a macroprudential liquidity buffer.

Sheep in Wolf's Clothing: Using the Least Squares Criterion for Quantile Estimation

Estimation of the quantile model, especially with a large data set, can be computationally burdensome. This paper proposes using the Gaussian approximation, also known as quantile coupling, to estimate a quantile model. The intuition of quantile coupling is to divide the original observations into bins with an equal number of observations, and then compute order statistics within these bins. The quantile coupling allows one to apply the standard Gaussian-based estimation and inference to the transformed data set. The resulting estimator is asymptotically normal with a parametric convergence rate. A key advantage of this method is that it is faster than the conventional check function approach, when handling a sizable data set.

Improving Overnight Loan Identification in Payments Systems

Information on the allocation and pricing of over-the-counter (OTC) markets is scarce. Furfine (1999) pioneered an algorithm that provides transaction-level data on the OTC interbank lending market. The veracity of the data identified, however, is not well established. Using permutation methods, I estimate an upper bound on the daily false positive rate of this algorithm to be slightly above 10%. I propose refinements that reduce the bound below 10% with negligible power loss. The results suggest that the inferred prices and quantities of overnight loans do provide viable estimates of interbank lending market activity.

Retail Payment Innovations and Cash Usage: Accounting for Attrition Using Refreshment Samples

We exploit the panel dimension of the Canadian Financial Monitor (CFM) data to estimate the impact of retail payment innovations on cash usage. We estimate a semiparametric panel data model that accounts for unobserved heterogeneity and allows for general forms of non-random attrition. We use annual data from the CFM on the methods of payment and cash usage for the period 2010–12. Estimates based on cross-sectional methods find a large impact of retail payment on cash usage (around 10 percent). However, after correcting for attrition, we find that contactless credit cards and multiple stored-value cards (reloadable) have no significant impact on cash usage, while single-purpose stored-value cards reduce the usage of cash by 2 percent in terms of volume. These results point to the uneven pace of the diffusion of payment innovations, especially contactless credit.

Consumer Attitudes and the Epidemiology of Inflation Expectations

This paper studies the formation of consumers' inflation expectations using micro-level data from the Michigan Survey. It shows that beyond the well-established socio-economic determinants of inflation expectations such as gender, income or education, other characteristics such as the households' financial situation and their purchasing attitudes also matter. Respondents with current or expected financial difficulties, pessimistic attitudes about major purchases, or expectations that income will go down in the future have considerably higher forecast errors, are further away from professional forecasts, and have a stronger upward bias in their expectations than other households. However, their bias shrinks by more than that of the average household in response to increasing media reporting about inflation.

Optimal Margining and Margin Relief in Centrally Cleared Derivatives Markets

A major policy challenge posed by derivatives clearinghouses is that their collateral requirements can rise sharply in times of stress, reducing market liquidity and further exacerbating downturns. Smoothing sharp changes in collateral requirements - an approach known as through-the-cycle margining - however, has its own disadvantages, one of which is increased risk sharing among clearinghouse members when financial risk is high. This can give rise to undesirable side effects, including distorted incentives, which can reverse the conventional knowledge about collateral policy. In contrast to the existing literature, I show that through-the-cycle margining can increase as well as reduce trading in volatile markets. Due to increased risk sharing, clearinghouse members may prefer to overcollateralize transactions, leading to lower than socially optimal trading. This creates a challenge for policy-makers, since it may be challenging to push for lower collateral standards than deemed proper by the industry. For such cases, I propose an alternative policy tool - increasing default penalties - to align private and social incentives.

Forecasting Short-Term Real GDP Growth in the Euro Area and Japan Using Unrestricted MIDAS Regressions

In this paper, the authors develop a new tool to improve the short-term forecasting of real GDP growth in the euro area and Japan. This new tool, which uses unrestricted mixed-data sampling (U-MIDAS) regressions, allows an evaluation of the usefulness of a wide range of indicators in predicting short-term real GDP growth. In line with previous Bank studies, the results suggest that the purchasing managers' index (PMI) is among the best-performing indicators to forecast real GDP growth in the euro area, while consumption indicators and business surveys (the PMI and the Economy Watchers Survey) have the most predictive power for Japan. Moreover, the results indicate that combining the predictions from a number of indicators improves forecast accuracy and can be an effective way to mitigate the volatility associated with monthly indicators. Overall, our preferred U-MIDAS model specification performs well relative to various benchmark models and forecasters.