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Bank of Canada Monthly Research Update

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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

Forthcoming

Bailliu, Jeannine, Ali Dib, Takashi Kano and Lawrence Schembri, "Multilateral Adjustment, Regime Switching and Real Exchange Rate Dynamics", North American Journal of Economics and Finance

Bekaert, Geert, Michael Ehrmann, Marcel Fratzscher and Arnaud J. Mehl, "The Global Crisis and Equity Market Contagion", Journal of Finance

Raykov, Radoslav S., "Catastrophe Insurance Equilibrium with Correlated Claims", Theory and Decisions

Shao, Enchuan, "Accounting for the Cyclical Dynamics of Income Shares", Economic Inquiry

WORKING PAPERS

Bruno, Valentina G., Bahattin Büyükșahin and Michel A. Robe, "The Financialization of Food?", Bank of Canada working paper 2013-39

Dorich, José, Michael Johnston, Rhys Mendes, Stephen Murchison and Yang Zhang, "ToTEM II: An Updated Version of the Bank of Canada's Quarterly Projection Model", Bank of Canada technical report No. 100

Gans, Joshua and Hanna Halaburda, "Some Economics of Digital Currency", Bank of Canada working paper 2013-38

Hagiu, Andrei and Hanna Halaburda, "Information and Two-Sided Platform Profits", Harvard Business School working paper 12-045

Jain, Monica, "Perceived Inflation Persistence", Bank of Canada working paper 2013-43

Kryvtsov, Oleksiy, Luba Petersen, "Expectations and Monetary Policy: Experimental Evidence", Bank of Canada working paper 2013-44

Kumar, Gitanjali, "High-Frequency Real Economic Activity Indicator for Canada", Bank of Canada working paper 2013-42

Vayid, Ianthi, "Central Bank Communications Before, During and After the Crisis: From Open-Market Operations to Open-Mouth Policy", Bank of Canada working paper 2013-41

Yahong Zhang, "Unemployment Fluctuations in a Small Open-Economy Model with Segmented Labour Markets: The Case of Canada", Bank of Canada working paper 2013-40

ONLINE PUBLICATIONS

Owyang, Michael T., E. Katarina Vermann and Tatevik Sekhposyan, "Output and Unemployment: How do they Relate today?", The Regional Economist, The Federal Reserve Bank of St. Louis, October 2013, 5-9

ABSTRACTS

Multilateral Adjustment, Regime Switching and Real Exchange Rate Dynamics

The purpose of this paper is to examine the role of multilateral adjustment to U.S. external imbalances in driving bilateral real exchange rate movements by developing a new regime-switching model that consists of a Markov-switching model with a time-varying transition matrix that depends on a threshold variable. Consequently, the dynamics of the real exchange rate can be modelled in the context of two regimes: one in which multilateral adjustment to large U.S. external imbalances is an important factor driving movements in the real exchange rate and the second in which there are no significant U.S. external imbalances (and hence the real exchange rate is driven mainly by country-specific macroeconomic fundamentals). We apply this model to the bilateral real Canada-U.S. dollar exchange rate. We compare the performance of our new model, both in and out-of-sample, to several other alternative models. All of the models are estimated using a Bayesian approach. Our findings suggest that during periods of large U.S. imbalances, both fiscal and external, an exchange rate model for the real Canada-U.S. dollar exchange rate should allow for multilateral adjustment effects.

The Global Crisis and Equity Market Contagion

We analyze the transmission of the financial crisis of 2007 to 2009 to 415 country-industry equity portfolios. We use a factor model to predict crisis returns, defining unexplained increases in factor loadings and residual correlations as indicative of contagion. While we find evidence of contagion from the U.S. and the global financial sector, the effects are small. By contrast, there has been substantial contagion from domestic markets to individual domestic portfolios, with its severity inversely related to the quality of countries' economic

fundamentals. This confirms the "wake-up call" hypothesis, with markets focusing more on country-specific characteristics during the crisis.

Catastrophe Insurance Equilibrium with Correlated Claims

Catastrophe insurance differs from regular insurance in that individual claims are correlated and insurers have to pay more clients at once, which creates a liquidity strain. In this paper, I show two related findings: first, that when customers know their claims are correlated, this correlation can cause positive-sloping demand at low prices, and second, that because of this, a catastrophe insurance market can fail. Market failure is a stable equilibrium, which provides a better understanding of the frequent failures in catastrophe insurance markets.

Accounting for the Cyclical Dynamics of Income Shares

Over the business cycle, labor's share of output is negatively but weakly correlated with output, and it lags output by about four quarters. Profits' share is strongly pro-cyclical. It neither leads nor lags output, and its volatility is about five times that of output. Those assumptions relate to the structure of aggregate technology and the degree of competition in factor markets. Despite much evidence in favor of time-varying income shares, macroeconomics still lacks models that can account for their time series facts. This paper constructs a model that can replicate those facts. We introduce costly entry of firms in a model with frictional labor markets and find a link between the ability of the model to replicate income shares' dynamics and the ability of the model to amplify and propagate shocks. That link is a weak correlation between the real interest rate and output, a fact in US data but a feature that models of aggregate fluctuations have had difficulty achieving.

The Financialization of Food?

Commodity-equity and cross-commodity return co-movements rose dramatically after the 2008 financial crisis. This development took place following what has been dubbed the "financialization" of commodity markets. We first document changes since 2000 in the intensity of speculative activity in grain and livestock futures. We then use a structural VAR model to establish the role of speculative activity in explaining the strength of co-movements between grain, livestock and equity returns. We find that speculative intensity does not in itself affect the extent to which grain markets move in sync with the stock market. Rather, pre-crisis, financial speculators' futures positions facilitated the transmission of macroeconomic shocks into grain markets. Strikingly, in the post-crisis period, this transmission channel weakened to the point of statistical insignificance. The role of speculative activity is less evident in livestock markets, where only macroeconomic conditions.

ToTEM II: An Updated Version of the Bank of Canada's Quarterly Projection Model

This report provides a detailed technical description of an updated version of the Terms of Trade Economic Model (ToTEM II), which replaced ToTEM (Murchison and Rennison 2006) in June 2011 as the Bank of Canada's quarterly projection model for Canada. ToTEM has been improved along a number of dimensions, with important changes to the model structure, including: (i) multiple interest rates, (ii) sector-specific demand specifications for consumption, housing investment and inventory investment, (iii) a role for financial wealth in household consumption, and (iv) rule-of-thumb price and wage setters. These new features remove some of the restrictions on model dynamics implied by assumptions in ToTEM, making ToTEM II more general and flexible than its predecessor. Furthermore, most of ToTEM II's parameters are now formally estimated using full information estimation techniques, leading to significantly improved in-sample goodness of fit. The report discusses the model's estimation and reviews the most important changes in the model's properties. Finally, some important applications of ToTEM II in addressing recent policy questions are provided.

Some Economics of Digital Currency

This paper reviews some recent developments in digital currency, focusing on platform-sponsored currencies such as Facebook Credits.

Information and Two-Sided Platform Profits

We study the effect of different levels of information on two-sided platform profits--under monopoly and competition. One side (developers) is always informed about all prices and therefore forms responsive expectations. In contrast, we allow the other side (users) to be uninformed about prices charged to developers and to hold passive expectations. We show that platforms with more market power (monopoly) prefer facing more informed users. In contrast, platforms with less market power (i.e., facing more intense competition) have the opposite preference: they derive higher profits when users are less informed. The main reason is that price information leads user expectations to be more responsive and therefore amplifies the effect of price reductions. Platforms with more market power benefit because this leads to demand increases, which they are able to capture fully. Competing platforms are affected negatively because more information intensifies price competition.

Perceived Inflation Persistence

The Survey of Professional Forecasters (SPF) has had vast influence on research related to better understanding expectation formation and the behaviour of macroeconomic agents. Inflation expectations, in particular, have received a great deal of attention, since they play a crucial role in determining real interest rates, the expectations-augmented Phillips curve and monetary policy. One feature of the SPF that has surprisingly not been explored is the natural way in which it can be used to extract useful measures of inflation persistence. This paper presents a new measure of U.S. inflation persistence from the point of view of a professional forecaster, referred to as perceived inflation persistence. It is built via the implied autocorrelation function that follows from the estimates obtained using a forecaster-specific state-space model. Findings indicate that perceived inflation persistence has changed over time and that forecasters are more likely to view unexpected shocks to inflation as transitory, particularly since the mid-1990s. When compared to the autocorrelation function for actual inflation, forecasters react less to shocks than the actual inflation data would suggest, since they may engage in forecast smoothing.

Expectations and Monetary Policy: Experimental Evidence

The effectiveness of monetary policy depends, to a large extent, on market expectations of its future actions. In a standard New Keynesian business-cycle model with rational expectations, systematic monetary policy reduces the variance of inflation and the output gap by at least two-thirds. These stabilization benefits can be substantially smaller if expectations are non-rational. We design an economic experiment that identifies the contribution of expectations to macroeconomic stabilization achieved by systematic monetary policy. We find that, despite some non-rational component in expectations formed by experiment participants, monetary policy is quite potent in providing stabilization, reducing macroeconomic variance by roughly half.

High-Frequency Real Economic Activity Indicator for Canada

I construct a weekly measure of real economic activity in Canada. Based on the work of Aruoba et al. (2009), the indicator is extracted as an unobserved component underlying the co-movement of four monthly observed real macroeconomic variables—employment, manufacturing sales, retail sales and GDP. The indicator has a number of applications in macroeconomics and finance—it can be used to measure macroeconomic news, to quantify the impact of news on financial asset prices, to study exchange rate movements and as an input in nowcasting and forecasting exercises.

Central Bank Communications Before, During and After the Crisis: From Open-Market Operations to Open-Mouth Policy

The days when secrecy and opacity were the bywords of central banking are gone. The advent of inflation targeting in the early 1990s acted as the catalyst for enhanced transparency and communications in the conduct of monetary policy. In the wake of the 2007-09 global financial crisis, this trend accelerated, resulting in further striking advances in monetary policy and financial stability communications, including markedly the emergence of extraordinary forward guidance as a distinct policy tool under unconventional monetary policies. Drawing on the record to-date at major central banks, as well as on a growing body of related academic literature, this paper reviews the history and effectiveness of central bank communications before and especially since the crisis. It also highlights some of the challenges facing central banks, particularly those that have engaged heavily in unconventional monetary policies to support their economies since the crisis. Steering deftly a course back to normality will depend crucially on their ability to communicate effectively a credible strategy for an orderly exit from such policies. In this context, clear, deliberate, coordinated messages that are anchored in their mandate are of the essence.

Unemployment Fluctuations in a Small Open-Economy Model with Segmented Labour Markets: The Case of Canada

The recent financial crisis and subsequent recession have spurred great interest in the sources of unemployment fluctuations. Previous studies predominantly assume a single economy-wide labour market, and therefore abstract from differences across sector-specific labour markets in the economy. In Canada, such differences are substantial. From 1991 to 2010, employment in the tradable sector is almost three times as volatile as that in the non-tradable sector, and wages are about twice as volatile. To capture the labour market differences at the sectoral level, I introduce a segmented labour market structure to a medium-scale dynamic stochastic general-equilibrium model with financial and labour market frictions and estimate the model using Canadian data from 1991 to 2010. I find that, in the long run, unemployment fluctuations are mainly driven by the shocks to firms' net worth and production technology in the non-tradable sector and the shocks to the foreign interest rate. In the short run, however, it is the shocks to firms' net worth in the tradable sector that account for about 50 per cent of unemployment fluctuations. I also find that inclusion of the recent financial crisis data in the estimation is crucial for assessing the effects of the financial wealth shocks.

Output and Unemployment: How do they Relate today?