

Bank of Canada Monthly Research Update

April 2017

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

Bauer, Gregory, “International House Price Cycles, Monetary Policy and Credit”, *Journal of International Money and Finance*, June 2017, Volume 74, Pages 88-114

Beirne, John & Christian Friedrich, “Macroprudential Policies, Capital Flows, and the Structure of the Banking Sector”, *Journal of International Money and Finance*, July 2017, Volume 75, Pages 47-68

Forthcoming

Bauer, Gregory & Eleonora Granziera, “Monetary Policy, Private Debt and Financial Stability Risks”, *International Journal of Central Banking*

STAFF WORKING PAPERS

Alexander, Patrick, “Vertical Specialization and Gains from Trade”, Bank of Canada Staff Working Paper 2017-17

Amano, Robert & Stefano Gnocchi, “Downward Nominal Wage Rigidity Meets the Zero Lower Bound”, Bank of Canada Staff Working Paper 2017-16

Crucini, Mario & Anthony Landry, “Accounting for Real Exchange Rates Using Micro-Data”, Bank of Canada Staff Working Paper 2017-12

Davoodalhosseini, Mohammad, “Constrained Efficiency with Adverse Selection and Directed Search”, Bank of Canada Staff Working Paper 2017-15

Guérin, Pierre, Danilo Leiva-Leon & Massimiliano Marcellino, “Markov-Switching Three-Pass Regression Filter”, Bank of Canada Staff Working Paper 2017-13

Wagner, Joel, “Anticipated Technology Shocks: A Re-Evaluation Using Cointegrated Technologies”, Bank of Canada Staff Working Paper 2017-11

Witmer, Jonathan, “Strategic Complementarities and Money Market Fund Liquidity Management”, Bank of Canada Staff Working Paper 2017-14

ABSTRACTS

International House Price Cycles, Monetary Policy and Credit

We evaluate three alternative predictors of house price corrections: anticipated tightenings of monetary policy, deviations of house prices from fundamentals, and rapid credit growth. A new cross-country measure of monetary policy expectations based on an international term structure model with time-varying risk premiums is constructed. House price overvaluation is estimated via an asset pricing model. The variables are incorporated into a panel logit regression model that estimates the likelihood of a large house price correction in 18 OECD countries. The results show that corrections are predicted by increases in the market's forecast of higher policy rates. The estimated degree of house price overvaluation also contains significant information about subsequent price reversals. In contrast to the financial crisis literature, credit growth is less important. All of these variables help forecast recessions.

Macroprudential Policies, Capital Flows, and the Structure of the Banking Sector

Using a large sample of advanced and emerging market economies over the period 1999-2012, we examine the effectiveness of macroprudential policies (MPPs) in managing cross-border bank flows. Conditioning on the structure of the banking sector in the MPP-implementing country, we find that higher regulatory quality and a higher credit-to-deposit ratio increase the effectiveness of MPPs, while a higher cost-to-income ratio has the opposite effect. If all three financial variables are evaluated at the median, the marginal effect of our preferred MPP measure leads to a reduction of international bank inflows in percent of GDP by around half a percentage point and is only marginally significant. However, when the more enhanced 25th (10th) percentiles of their respective distributions are considered, we observe, as a response to the same MPP measure, a reduction of bank inflows by 3.44 (5.39) percentage points that is highly statistically and economically significant. Additionally, we find that the structure of the domestic banking sector determines spillovers from MPPs across asset classes, while spillovers from MPPs across countries are a function of banking sector conditions both at home and abroad.

Monetary Policy, Private Debt and Financial Stability Risks

Can monetary policy be used to promote financial stability? We answer this question by estimating the impact of a monetary policy shock on private-sector leverage and the likelihood of a financial crisis. Impulse responses obtained from a panel VAR model of 18 advanced countries suggest that the debt-to-GDP ratio rises in the short run following an unexpected tightening in monetary policy. As a consequence, the likelihood of a financial crisis increases, as estimated from a panel logit regression. However, in the long run, output recovers and higher borrowing costs discourage new lending, leading to a deleveraging of the private sector. A lower debt-to-GDP ratio in turn reduces the likelihood of a financial crisis. These results suggest that monetary policy can achieve a less risky financial system in the long run but could fuel financial instability in the short run. We also find that the ultimate effects of a monetary policy tightening on the probability of a financial crisis depend on the leverage of the private sector: the higher the initial value of the debt-to-GDP ratio, the more beneficial the monetary policy intervention in the long run, but the more destabilizing in the short run.

Vertical Specialization and Gains from Trade

Multi-stage production is widely recognized as an important feature of the modern global economy. This feature has been incorporated into many state-of-the-art quantitative trade models, and has been shown to deliver significant additional gains from international trade. Meanwhile, specialization across stages of production, or "vertical specialization," has been largely ignored in these models. In this paper, I provide evidence that vertical specialization is a salient feature in the international trade data, which implies that the assumption made in standard models is inaccurate. I then develop a model with multi-stage production where country-level productivity differences provide a basis for vertical specialization and additional global gains from trade beyond those currently accounted for in standard models. I quantify the gains from vertical specialization according to the model. Despite the importance of vertical specialization in the data, I find that the average gains from trade are only slightly higher than the gains suggested by standard models with multi-stage production. Moreover, much of the impact of across-stage specialization is largely offset by across-sector intermediate input linkages. These results suggest that vertical specialization is not the source of missing gains from trade that have recently confounded trade economists.

Downward Nominal Wage Rigidity Meets the Zero Lower Bound

We add downward nominal wage rigidity to a standard New Keynesian model with sticky prices and wages, where the zero lower bound on nominal interest rates is allowed to bind. We find that wage rigidity not only reduces the frequency of zero bound episodes but also mitigates the severity of corresponding recessions. As a result, previous studies abstracting from the presence of wage rigidity may have overemphasized the need for increasing the inflation target to offset the costs associated with hitting the zero bound. Moreover, our findings add to the recent debate on the presumed benefits of wage flexibility that has arisen in the aftermath of the Great Recession.

Accounting for Real Exchange Rates Using Micro-Data

The classical dichotomy predicts that all of the time-series variance in the aggregate real exchange rate is accounted for by non-traded goods in the consumer price index (CPI) basket because traded goods obey the Law of One Price. In stark contrast, Engel (1999) claimed the opposite: that traded goods accounted for all of the variance. Using micro-data and recognizing that final good prices include both the cost of the goods themselves and local, non-traded inputs into retail such as labor and retail space, our work re-establishes the conceptual value of the classical dichotomy. We also carefully show the role of aggregation, consumption expenditure weighting and assignment of covariance terms in the differences between our findings and those of Engel.

Constrained Efficiency with Adverse Selection and Directed Search

Constrained efficient allocation (CE) is characterized in a model of adverse selection and directed search (Guerrieri, Shimer, and Wright (2010)). CE is defined to be the allocation that maximizes welfare, the ex-ante utility of all agents, subject to the frictions of the environment. When equilibrium does not achieve the first best (the allocation that maximizes welfare under complete information), then welfare in the CE is strictly higher than welfare in the equilibrium allocation. That is, equilibrium is not constrained efficient. Under some conditions, welfare in the CE even attains welfare in the first best. Finally, sufficient conditions are provided under which equilibrium is not constrained Pareto efficient, either. Cross-subsidization is the key to all these results. In an asset market application, the first best is

shown to be implementable through tax schedules that are monotone in the asset prices.

Markov-Switching Three-Pass Regression Filter

We introduce a new approach for the estimation of high-dimensional factor models with regime-switching factor loadings by extending the linear three-pass regression filter to settings where parameters can vary according to Markov processes. The new method, denoted as Markov-switching three-pass regression filter (MS-3PRF), is suitable for datasets with large cross-sectional dimensions, since estimation and inference are straightforward, as opposed to existing regime-switching factor models where computational complexity limits applicability to few variables. In a Monte Carlo experiment, we study the finite sample properties of the MS-3PRF and find that it performs favourably compared with alternative modelling approaches whenever there is structural instability in factor loadings. For empirical applications, we consider forecasting economic activity and bilateral exchange rates, finding that the MS-3PRF approach is competitive in both cases.

Anticipated Technology Shocks: A Re-Evaluation Using Cointegrated Technologies

Two approaches have been taken in the literature to evaluate the relative importance of news shocks as a source of business cycle volatility. The first is an empirical approach that performs a structural vector autoregression to assess the relative importance of news shocks, while the second is a structural-model-based approach. The first approach suggests that anticipated technology shocks are an important source of business cycle volatility; the second finds anticipated technology shocks are incapable of generating any business cycle volatility. This paper challenges the latter conclusion by presenting a structural news shock model adapted to reproduce the cointegrating relationship between total factor productivity and the relative price of investment. With cointegrated neutral and investment-specific technology, anticipated shocks to the common stochastic trend explain approximately 22%, 32%, 34% and 20% of the variance of output, investment, hours and consumption in the United States, respectively, reconciling the discrepancy between theory and data.

Strategic Complementarities and Money Market Fund Liquidity Management

Following the financial crisis, there has been increased regulatory focus on the management of liquidity in mutual funds and, specifically, whether funds hold enough liquidity to guard against the potential for investor runs. Using a novel, detailed regulatory dataset on the portfolio holdings of US money market funds, I find that internal prime money market funds—those that manage the liquidity of other funds in the fund family—have lower liquidity than external prime funds. This suggests that money market funds hold more liquidity to reduce the potential for strategic complementarities (i.e., incentives to run) in investor redemptions, because the family funds that invest in these internal funds should be able to coordinate their redemption decisions. Additionally, at quarter ends, when non-US bank dealers reduce their repo funding (Munyan, 2015), I find that prime money market funds reduce their overnight liquidity, which consists primarily of overnight repos. External prime money market funds do not let this decreased cash demand from non-US bank dealers reduce their liquidity as much as internal funds do. This all suggests that these external prime money market funds are more concerned about overnight liquidity, consistent with greater concern about potential investor strategic complementarities.