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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 staff working papers published on the Bank of Canada's website.

PUBLISHED PAPERS

In Press

Altug, Sumru & Serdar Kabaca, "Search Frictions, Financial Frictions, and Labor Market Fluctuations in Emerging Markets", Emerging Markets Finance and Trade, January 2017, Volume 53, Issue 1, Pages 128-149

Caucutt, Elizabeth, Lance Lochner & Youngmin Park, "Correlation, Consumption, Confusion, or Constraints: Why Do Poor Children Perform so Poorly?", The Scandinavian Journal of Economics, January 2017, Volume 119, Issue 1, Pages 102-147

Forthcoming

Chernis, Tony & Rodrigo Sekkel, "A Dynamic Factor Model for Nowcasting Canadian GDP Growth", Empirical Economics

Feunou, Bruno, Jean-Sebastien Fontaine & Romeo Tedongap, "Implied Volatility and Skewness Surface", Review of Derivatives Research

Ho, Anson T.Y., "Tax-deferred Saving Accounts: Heterogeneity and Policy Reforms", European Economic Review

Jain, Monica, "Perceived Inflation Persistence", Journal of Business and Economic Statistics

STAFF WORKING PAPERS

Alexander, Patrick, Jean-Philippe Cayen & Alex Proulx, "An Improved Equation for Predicting Canadian Non-Commodity Exports", Bank of Canada Staff Discussion Paper 2017-1

Binette, Andre, Tony Chernis & Daniel de Munnik, "Global Real Activity for Canadian Exports: GRACE", Bank of Canada Staff Discussion Paper 2017-2

Corrigan, Paul, "Terms-of-Trade and House Price Fluctuations: A Cross-Country Study", Bank of Canada Staff Working Paper 2017-1

Fontaine, Jean-Sebastien, James Hately & Adrian Walton, "Repo Market Functioning when the Interest Rate Is Low or Negative" Bank of Canada Staff Discussion Paper 2017-3

ABSTRACTS

Search Frictions, Financial Frictions, and Labor Market Fluctuations in Emerging Markets

This article examines the role of the extensive and intensive margins of labor input in the context of a business cycle model with a financial friction. We document significant variation in the hours worked per worker for many emerging-market economies using manufacturing data. Both employment and hours worked per worker are positively correlated with each other and with output. We show that a search-theoretic context in a small open-economy model requires a small wealth effect to explain these regularities at the expense of a smaller wage response. On the other hand, introducing a financial friction in the form of a working capital requirement can explain the observed movements of labor market variables such as employment and hours worked per worker, as well as other distinguishable business cycle characteristics of emerging economies. These include highly volatile and cyclical real wages, labor share, and consumption.

Correlation, Consumption, Confusion, or Constraints: Why Do Poor Children Perform so Poorly?

Early developing and persistent gaps in child achievement by family income combined with the importance of adolescent skill levels for schooling and lifetime earnings suggest that a key component of intergenerational mobility is determined before individuals enter school. After documenting important differences in early child investments by family income, we study four leading mechanisms thought to explain these gaps: intergenerational ability correlation, consumption value of investment, information frictions, and credit constraints. We evaluate whether these mechanisms are consistent with other stylized facts related to the marginal returns on investments and the effects of parental income on child investments and skills.

A Dynamic Factor Model for Nowcasting Canadian GDP Growth

This paper estimates a dynamic factor model (DFM) for nowcasting Canadian gross domestic product. The model is estimated with a mix of soft and hard indicators, and it features a high share of international data. The model is then used to generate nowcasts, predictions of the recent past and current state of the economy. In a

pseudo real-time setting, we show that the DFM outperforms univariate benchmarks as well as other commonly used nowcasting models, such as mixed-data sampling (MIDAS) and bridge regressions.

Implied Volatility and Skewness Surface

The Homoscedastic Gamma (HG) model characterizes the distribution of returns by its mean, variance and an independent skewness parameter. The HG model preserves the parsimony and the closed form of the Black–Scholes–Merton (BSM) while introducing the implied volatility (IV) and skewness surface. Varying the skewness parameter of the HG model can restore the symmetry of IV curves. Practitioner's variants of the HG model improve pricing (in-sample and out-of-sample) and hedging performances relative to practitioners' BSM models, with as many or less parameters. The pattern of improvements in Delta-Hedged gains across strike prices accord with predictions from the HG model. These results imply that expanding around the Gaussian density does not offer sufficient flexibility to match the skewness implicit in options. Consistent with the model, we also find that conditioning on implied skewness increases the predictive power of the volatility spread for excess returns.

Tax-deferred Saving Accounts: Heterogeneity and Policy Reforms

Tax-deferred saving accounts (TDA) are systematically used in many countries. In the United States, households' access to TDA exhibits substantial heterogeneity: 401(k) has a higher contribution limit than IRA, but only 50% of workers are eligibility for it. I developed an overlapping-generations model that captures the tax benefits of TDA and the heterogeneity in 401(k) eligibility to investigate the quantitative impacts on the aggregate economy and their implications on policy reforms. Experiment results show that IRA already provides sufficient tax benefits for most households. The effects of providing universal 401(k) are insignificant because households who can benefit from 401(k) already have access to it; raising the TDA contribution limit allows high-income households to increase their use of TDA and results in stronger effects on the economy. When households' use of TDA is considered, the U.S. income tax system is less distortionary and the welfare gain from a consumption tax reform is reduced by more than half.

Perceived Inflation Persistence

This paper constructs and estimates a measure called perceived inflation persistence that can be used to determine if professional forecasters' inflation forecasts indicate there has been a change in inflation persistence. This measure is built via the implied autocorrelation function that follows from the estimates obtained using a forecaster-specific state-space model. Findings indicate that U.S. perceived inflation persistence has changed since the mid-1990s with more consensus among forecasters at lower levels of persistence. When compared to the autocorrelation function for actual inflation, forecasters typically react less to shocks to inflation than the actual inflation data would suggest.

An Improved Equation for Predicting Canadian Non-Commodity Exports

We estimate two new equations for Canadian non-commodity exports (NCX) that incorporate three important changes relative to the current equation used at the Bank of Canada. First, we develop two new foreign activity measures (FAMs), which add new components to the FAM currently used at the Bank of Canada. The first measure adds US exports and US government expenditures, and the second adds US industrial production. These new FAMs calibrate the weights on the various components based on the 2014 World Input-Ouput Database to avoid the instability problem that arises when the equations are estimated. Second, we add a new variable to the equations, the trend of Canada's manufacturing share of output, to control for structural or competitiveness factors that affect Canada's global import market share. Third, the relative price of exports is determined by a new measure of the Canadian real effective exchange rate developed by Barnett, Charbonneau and Poulin-Bellisle (2016). We find that the new equations improve the in-sample fit and the out-of-sample forecast accuracy relative to the current equation specified in "LENS," a forecasting model used at the Bank of Canada.

Global Real Activity for Canadian Exports: GRACE

Canadian exports have often disappointed since the Great Recession. The apparent disconnect between exports and the Bank of Canada's current measure of foreign demand has created an impetus to search for an alternative. Based on a dynamic factor model (DFM) methodology, we use a broad range of international economic indicators (close to 300) to estimate external demand for

Canadian exports. The new measure, Global Real Activity for Canadian Exports (GRACE), follows Binette et al. (2014) who suggest that a mix of global final expenditure and production variables could help better identify activity relevant to Canadian exports. They also suggest that non?US variables might be relevant. GRACE uses final expenditure and production variables not only from the United States but also for all of Canada's major trading partners. We apply this approach to total exports and 14 subaggregates of Canadian exports. Overall, we find that this new measure has good theoretical and empirical properties, especially for higher-level aggregates.

Terms-of-Trade and House Price Fluctuations: A Cross-Country Study

Terms-of-trade shocks are known to be key drivers of business cycles in open economies. This paper argues that terms-of-trade shocks were also important for house price fluctuations in a panel of developed countries over the 1994–2015 period. In a panel vector error-correction model of house prices, household debt and real tradable prices, terms-of-trade shocks explain between 16 and 41 per cent of the long-run variance in house price growth in a typical country, and from 45 to 85 per cent of the long-run variance of the ratio of house prices to non-housing consumption. Most of the variation in the house price/consumption ratio is associated with changes in real import prices, with idiosyncratic shocks to real export prices playing a minor role. On average, a permanent 1 per cent decline in real import prices raises the ratio of real house prices to non-housing consumption by about 0.9 per cent.

Repo Market Functioning when the Interest Rate Is Low or Negative

This paper investigates how a low or negative overnight interest rate might affect the Canadian repo markets. The main conclusion is that the repo market for general collateral will continue to function effectively. However, changes to market conventions—such as the introduction of a charge for settlement fails—or other institutional changes may be required so that the repo market for specific collateral continues to support liquidity on the secondary market for government bonds. The historical experience shows that the special repo market in other jurisdictions can function effectively even if the overnight rate is negative. Closer examination suggests what specific circumstances can lead to persistent settlement fails in the specific collateral repo market. Specifically, the combination of (i) low or

negative interest rates, (ii) large aggregate short positions in bonds, and (iii) economic or policy surprises may lead to persistent settlement fails.