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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

Alpanda, Sami, "Identifying the Role of Risk Shocks in the Business Cycle Using Stock Price Data", Economic Inquiry, vol. 51(1), Jan. 2013

Forthcoming

Chu, Ba M., Kim Huynh, and David T. Jacho-Chavez, "Functionals of Order Statistics and their Multivariate Concomitants with Application to Semiparametric Estimation by Nearest Neighbors", Sankhya: Series B

Goldreich, David, and Hanna Halaburda, "When Smaller Menus Are Better: Variability in Menu-Setting Ability", Management Science

Gravelle, Toni, and Fuchun Li, "Measuring Systemic Importance of Financial Institutions: An Extreme Value Theory Approach", Journal of Banking & Finance

WORKING PAPERS

Coibin, Olivier, Yuriy Gorodnichenko, and Gee Hee Hong, "The Cyclicality of Sales, Regular and Effective Prices: Business Cycle and Policy Implications", Bank of Canada Working Paper 2013-1

Kartashova, Katya, and Ben Tomlin, "House Prices, Consumption and the Role of Non-Mortgage Debt", Bank of Canada Working Paper 2013-2

Takamura, Tamon, "A General Equilibrium Model with Banks and Default on Loans.", Bank of Canada Working Paper 2013-3

ABSTRACTS

Identifying the Role of Risk Shocks in the Business Cycle Using Stock Price Data

I analyze the sources of U.S. business cycle fluctuations in an estimated Dynamic Stochastic General Equilibrium model with a rich set of nominal and real rigidities and various exogenous disturbances. The model includes a shock to the expected risk-premium, which introduces a time-varying wedge between the policy rate set by the central bank and the cost-of-capital of firms. In the aggregate data, most U.S. corporations finance their investment using internal funds, and stock prices reveal the opportunity cost of this type of financing. I

therefore use corporate market value and dividend data in the Bayesian estimation of the model to identify risk shocks. Variance decomposition exercises show that these shocks account for a substantial part of the variation in the stock market, as well as the variation in output and investment, especially at short forecast horizons. The variation of these variables at longer forecast horizons are mainly captured by shocks to investment-specific technological change. Historical decomposition points to the important role played by risk shocks in the run up of stock prices and output in the late 90s, and in the reversal of these variables in the early 2000s and during the recent recession.

Functionals of Order Statistics and their Multivariate Concomitants with Application to Semiparametric Estimation by Nearest Neighbors

This paper studies the limiting behavior of general functionals of order statistics and their multivariate concomitants for weakly dependent data. The asymptotic analysis is performed under a conditional moment -based notion of dependence for vector-valued time series. It is argued, through analysis of various examples, that the dependence conditions of this type can be effectively implied by other dependence formations recently proposed in time-series analysis, thus it may cover many existing linear and nonlinear processes. The utility of this result is then illustrated in deriving the asymptotic properties of a semiparametric estimator that uses the k-Nearest Neighbor estimator of the inverse of a multivariate unknown density. This estimator is then used to calculate consumer surpluses for electricity demand in Ontario for the period 1971 to 1994. A Monte Carlo experiment also assesses the efficacy of the derived limiting behavior in finite samples for both these general functionals and the proposed estimator.

When Smaller Menus Are Better: Variability in Menu-Setting Ability

Are large menus better than small menus? Recent literature argues that individuals' apparent preference for smaller menus can be explained by choosers' behavioral biases or informational limitations. These explanations imply that absent behavioral or informational effects, larger menus would be objectively better. However, in an important economic context---401(k) pension plans---we find that larger menus are objectively worse than smaller menus, as measured by the maximum Sharpe ratio achievable. We propose a model in which menu setters differ in their ability to pre-select the menu. We

show that when the cost of increasing the menu size is sufficiently small, a lower-ability menu setter optimally offers more items in the menu than a higher-ability menu setter. Nevertheless, the menu optimally offered by a higher-ability menu setter remains superior. This results in a negative relation between menu size and menu quality: smaller menus are better than larger menus.

Measuring Systemic Importance of Financial Institutions: An Extreme Value Theory Approach

In this paper, we define a financial institution's contribution to financial systemic risk as the increase in financial systemic risk conditional on the crash of the financial institution. The higher the contribution is, the more systemically important is the institution for the system. Based on relevant but different measurements of systemic risk, we propose a set of market-based measures on the systemic importance of financial institutions, each designed to capture certain aspects of systemic risk. Multivariate extreme value theory approach is used to estimate these measures. Using six big Canadian banks as the proxy for Canadian banking sector, we apply these measures to identify systemically important banks in Canadian banking sector and major risk contributors from international financial institutions to Canadian banking sector. The empirical evidence reveals that (i) the top three banks, RBC Financial Group, TD Bank Financial Group, and Scotiabank are more systemically important than other banks, although with different order from different measures, while we also find that the size of a financial institution should not be considered as a proxy of systemic importance; (ii) compared to the European and Asian banks, the crashes of U.S. banks, on average, are the most damaging to the Canadian banking sector, while the risk contribution to the Canadian banking sector from Asian banks is quite lower than that from banks in U.S. and euro area; (iii) the risk contribution to the Canadian banking sector exhibits " home bias ", that is, cross-country risk contribution tends to be smaller than domestic risk contribution.

The Cyclicality of Sales, Regular and Effective Prices: Business Cycle and Policy Implications

We study the cyclical properties of sales, regular price changes and average prices paid by consumers ("effective" prices) using data on prices and quantities sold for numerous retailers across many U.S. metropolitan areas. Inflation in the effective prices paid by consumers declines significantly with higher unemployment while little change occurs in the inflation rate of prices posted by retailers. This

difference reflects the reallocation of household expenditures across retailers, a feature of the data which we document and quantify, rather than sales. We propose a simple model with household store-switching and assess its implications for business cycles and policymaker

House Prices, Consumption and the Role of Non-Mortgage Debt

This paper examines the relationship between house prices and consumption, through the use of debt. Using unique Canadian household-level data that reports the uses of debt, we begin by looking at the relationship between house prices and debt. Using quantile regression, we find a positive and significant relationship between regional house prices and total household debt all along the conditional debt distribution. This suggests that the household-level relationship between house prices and debt goes beyond the purchase of real estate. We then find a positive

A General Equilibrium Model with Banks and Default on Loans.

During the recent financial crisis in the U.S., banks reduced new business lending amidst concerns about borrowers' ability to repay. At the same time, firms facing higher borrowing costs alongside a worsening economic outlook reduced investment. To explain these aggregate business cycle patterns, I develop a model with households, banks and firms. I assume that a bank's ability to raise deposits is constrained by a limited commitment problem and that, furthermore, loans to firms involve default risk. In this environment, changes in loan rates affect the size of the business sector. I explore how banks influence the behavior of households and firms and find that both productivity and financial shocks lead to counter-cyclical default and interest rate spreads. I examine the implications of a government capital injection designed to mitigate the effect of negative productivity and financial shocks in the spirit of the Troubled Asset Relief Program (TARP). I find that the stabilizing effect of such policy interventions hinges on the source of the shock. In particular, a capital injection is less effective against aggregate productivity shocks because easing banks' lending stance only weakly stimulates firms'demand for loans when aggregate productivity falls. In contrast, a capital injection can counteract the adverse effect of financial shocks on the supply of loans. Finally, I measure aggregate productivity and financial shocks to evaluate the role of each in the

business cycle. I find that the contribution of aggregate productivity shocks in aggregate output and investment is large until mid-2008. Financial shocks explain 65% of the fall in investment and 55% of the fall in output in the first quarter of 2009.