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## ESTIMATING THE ELASTICITY OF LABOR SUPPLY: HOME PRODUCTION, DEMOGRAPHICS, AND HOUSEHOLD CHARACTERISTICS

This paper revisits the argument, posed by Rupert, Rogerson, and Wright (2000), that estimates of the intertemporal elasticity of labor supply that do not account for home production are biased downward. The author uses the American Time Use Survey, a richer and more comprehensive data source than those used previously, to replicate their analysis, but he also explores how other factors interact with household and market work hours to affect the elasticity of labor supply. An exact replication of their analysis yields an elasticity of about 0.4, somewhat larger than previously estimated. Once the author accounts for demographics and household characteristics, particularly the number of children in the household, the estimate is essentially zero. This is true even when accommodating extensive-margin labor adjustments. Households' biological inability to smooth childbearing over the life cycle and the resulting income effect on market work hours drive this result.

*Working Paper 10-3, "Revisiting the Role of Home Production in Life-Cycle Labor Supply," R. Jason Faberman, Federal Reserve Bank of Philadelphia*

## EXPLAINING OUTPUT VARIABILITY ACROSS COUNTRIES

Inference about common international stochastic trends and interest rates is gained using a small open-economy model, data from seven developed countries, and Bayesian methods. Shocks to these common factors explain up to 17 percent of the variability of output in several economies. Country-specific preference and premium disturbances account for the bulk of the volatility observed in the data. There is substantial heterogeneity in the estimated structural parameters as well as stochastic processes for the countries in the sample. This diversity translates into a rich array of impulse responses across countries. According to the model, the recent low international interest rates might have initially deepened the decline of GDP in several developed economies.

*Working Paper 10-4, "Common Factors in Small Open Economies: Inference and Consequences," Pablo Guerron-Quintana, Federal Reserve Bank of Philadelphia*

## MONITORING MACROECONOMIC ACTIVITY IN REAL TIME

The authors sketch a framework for monitoring macroeconomic activity in real time and push it in new directions. In particular, they focus not only on real activity, which has received the

most attention to date, but also on inflation and its interaction with real activity. As for the recent recession, the authors find that (1) it likely ended around July 2009; (2) its most extreme aspects concern a real activity decline that was unusually long but less unusually deep, and an inflation decline that was unusually deep but brief; and (3) its real activity and inflation interactions were strongly positive, consistent with an adverse demand shock.

*Working Paper 10-5, "Real-Time Macroeconomic Monitoring: Real Activity, Inflation, and Interactions," S. Boraĝan Aruoba, University of Maryland, and Visiting Scholar, Federal Reserve Bank of Philadelphia, and Francis X. Diebold, University of Pennsylvania, and Visiting Scholar, Federal Reserve Bank of Philadelphia*

### **EXPECTATIONS AND MACROECONOMIC FLUCTUATIONS**

Using survey-based measures of future U.S. economic activity from the Livingston Survey and the Survey of Professional Forecasters, the authors study how changes in expectations, and their interaction with monetary policy, contribute to fluctuations in macroeconomic aggregates. They find that changes in expected future economic activity are a quantitatively important driver of economic fluctuations: a perception that good times are ahead typically leads to a significant rise in current measures of economic activity and inflation. The authors also find that the short-term interest rate rises in response to expectations of good times as monetary policy tightens. Their results provide quantitative evidence on the importance of expectations-driven business cycles and on the role that monetary policy plays in shaping them.

*Working Paper 10-6, "Expectations and Economic Fluctuations: An Analysis Using Survey Data," Sylvain Leduc, Federal Reserve Bank of San Francisco, and Keith Sill, Federal Reserve Bank of Philadelphia*

### **PROVIDING INCENTIVES TO DETER FRAUD**

Social and private insurance schemes rely on legal action to deter fraud and tax evasion. This observation guides the authors to introduce a random state verification technology in a dynamic economy with private information. With some probability, an agent's skill level becomes known to the planner, who prescribes a punishment if the agent is caught misreporting. The authors show how deferring consumption can ease the

provision of incentives. As a result, the marginal benefit may be below the marginal cost of investment in the constrained-efficient allocation, suggesting a subsidy on savings. They characterize conditions such that the intertemporal wedge is negative in finite horizon economies. In an infinite horizon economy, the authors find that the constrained-efficient allocation converges to a high level of consumption, full insurance, and no labor distortions for any probability of state verification.

*Working Paper 10-7, "Fraud Deterrence in Dynamic Mirrleesian Economies," Roc Armenter, Federal Reserve Bank of Philadelphia, and Thomas M. Mertens, New York University*

### **TRANSFERRING RISK THROUGH LOAN SALE AND SECURITIZATION**

Depository institutions may use information advantages along dimensions not observed or considered by outside parties to "cream-skim," meaning to transfer risk to naïve, uninformed, or unconcerned investors through the sale or securitization process. This paper examines whether "cream-skimming" behavior was common practice in the subprime mortgage securitization market prior to its collapse in 2007. Using Home Mortgage Disclosure Act data merged with data on subprime loan delinquency by ZIP code, the authors examine the bank decision to sell (securitize) subprime mortgages originated in 2005 and 2006. They find that the likelihood of sale increases with risk along dimensions observable to banks but not likely observed or considered by investors. Thus, in the context of the subprime lending boom, the evidence supports the cream-skimming view.

*Working Paper 10-8, "Cream-Skimming' in Subprime Mortgage Securitizations: Which Subprime Mortgage Loans Were Sold by Depository Institutions Prior to the Crisis of 2007?" Paul Calem, Federal Reserve Board of Governors; Christopher Henderson, Federal Reserve Bank of Philadelphia; and Jonathan Liles, Freddie Mac*

### **AN ALTERNATIVE APPROACH TO MEASURING BANK COMPETITION**

Measuring banking competition using the HHI, Lerner index, or H-statistic can give conflicting results. Borrowing from frontier analysis, the authors provide an alternative approach and apply it to Spain over 1992-2005. Controlling for differences in asset composition, productivity, scale economies, risk, and business cycle

influences, they find no differences in competition between commercial and savings banks nor between large and small institutions, but the authors conclude that competition weakened after 2000. This appears related to strong loan demand where real loan-deposit rate spreads rose and fees were stable for activities where scale economies should have been realized.

*Working Paper 10-9, "A Revenue-Based Frontier Measure of Banking Competition," Santiago Carbó, University of Granada, Spain; David Humphrey, Florida State University, and Visiting Scholar, Federal Reserve Bank of Philadelphia; and Francisco Rodriguez, University of Granada, Spain*

### **CHANGE IN ICEBERG COSTS AND THE RISE IN U.S. MANUFACTURING EXPORTS**

The authors study the rise in U.S. manufacturing exports from 1987 to 2002 through the lens of a monopolistically competitive model with heterogeneous producers and sunk costs of exporting. Using the model, they infer that iceberg costs fell nearly 27 percent in this period. Given this change in iceberg costs, the authors use the model to calculate the predicted increase in trade. Contrary to the findings in Yi (2003), they find that the exports should have grown an additional 70 percent (78.7 vs. 46.4). The model overpredicts export growth partly because it misses the shift in manufacturing to relatively small establishments that did not invest in becoming exporters. Contrary to the theory, employment was largely reallocated from very large establishments, those with more than 2,500 employees, toward very small manufacturing establishments, those with fewer than 100 employees. The authors also find that very little of the contraction in U.S. manufacturing employment can be attributed to trade.

*Working Paper 10-10, "Do Falling Iceberg Costs Explain Recent U.S. Export Growth?" George Alessandria, Federal Reserve Bank of Philadelphia, and Horag Choi, University of Auckland*

### **OPTIMAL CAPITAL INCOME TAXATION**

This paper quantitatively investigates the optimal capital income taxation in the general equilibrium overlapping generations model, which incorporates characteristics of housing and the U.S. preferential tax treatment for owner-occupied housing. Housing tax policy is found to have a substantial effect on

how capital income should be taxed. Given the U.S. preferential tax treatment for owner-occupied housing, the optimal capital income tax rate is close to zero, contrary to the high optimal capital income tax rate implied by models without housing. A lower capital income tax rate implies a narrowed tax wedge between housing and non-housing capital, which indirectly nullifies the subsidies (taxes) for homeowners (renters) and corrects the over-investment to housing.

*Working Paper 10-11, "Optimal Capital Income Taxation with Housing," Makoto Nakajima, Federal Reserve Bank of Philadelphia*

### **A NEW APPROACH TO MODELING LONG-TERM DEBT**

In this paper, the authors present a new approach to incorporating long-term debt into equilibrium models of unsecured debt and default. They make three sets of contributions. First, the authors advance the theory of sovereign debt begun in Eaton and Gersovitz (1981) by proving the existence of an equilibrium price function with the property that the interest rate on debt is increasing in the amount borrowed. Second, using Argentina as a test case, they show that unlike a one-period debt model, their model of long-term debt is capable of accounting for the average external debt-to-output ratio, average spread on external debt, and the standard deviation of spreads for the 1993-2001 period, without any deterioration in the model's ability to account for Argentina's other cyclical facts. Third, the authors propose a new and very accurate method for solving the model.

*Working Paper 10-12, "Maturity, Indebtedness, and Default Risk," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia, and Burcu Eyigungor, Koç University*

### **MORTGAGE DEFAULT: ASSESSING THE ROLE OF NEGATIVE EQUITY AND ILLIQUIDITY**

This paper assesses the relative importance of two key drivers of mortgage default: negative equity and illiquidity. To do so, the authors combine loan-level mortgage data with detailed credit bureau information about the borrower's broader balance sheet. This gives them a direct way to measure illiquid borrowers: those with high credit card utilization rates. The authors find that both negative equity and illiquidity are significantly associated with mortgage default, with comparably sized marginal effects. Moreover, these two

factors interact with each other: The effect of illiquidity on default generally increases with high combined loan-to-value ratios (CLTV), though it is significant even for low CLTV. County-level unemployment shocks are also associated with higher default risk (though less so than high utilization) and strongly interact with CLTV. In addition, having a second mortgage implies significantly higher default risk, particularly for borrowers who have a first-mortgage LTV approaching 100 percent.

*Working Paper 10-13, "What 'Triggers' Mortgage Default?" Ronel Elul, Federal Reserve Bank of Philadelphia; Nicholas S. Souleles, University of Pennsylvania; Souphala Chomsisengphet, Office of the Comptroller of the Currency; Dennis Glennon, Office of the Comptroller of the Currency; and Robert Hunt, Federal Reserve Bank of Philadelphia*

#### **ACCOUNTING FOR TIME-VARYING VOLATILITY IN U.S. AGGREGATE DATA: STOCHASTIC VOLATILITY VS. CHANGES IN MONETARY POLICY**

This paper compares the role of stochastic volatility versus changes in monetary policy rules in accounting for the time-varying volatility of U.S. aggregate data. Of special interest to the authors is understanding the sources of the great moderation of business cycle fluctuations that the U.S. economy experienced between 1984 and 2007. To explore this issue, the authors build a medium-scale dynamic stochastic general equilibrium (DSGE) model with both stochastic volatility and parameter drifting in the Taylor rule and they estimate it non-linearly using U.S. data and Bayesian methods. Methodologically, the authors show how to confront such a rich model with the data by exploiting the structure of the high-order approximation to the decision rules that characterize

the equilibrium of the economy. Their main empirical findings are: 1) even after controlling for stochastic volatility (and there is a fair amount of it), there is overwhelming evidence of changes in monetary policy during the analyzed period; 2) however, these changes in monetary policy mattered little for the great moderation; 3) most of the great performance of the U.S. economy during the 1990s was a result of good shocks; and 4) the response of monetary policy to inflation under Burns, Miller, and Greenspan was similar, while it was much higher under Volcker.

*Working Paper 10-14, "Fortune or Virtue: Time-Variant Volatilities Versus Parameter Drifting," Jesus Fernandez-Villaverde, University of Pennsylvania; Pablo Guerron-Quintana, Federal Reserve Bank of Philadelphia; and Juan F. Rubio-Ramirez, Duke University and Federal Reserve Bank of Atlanta*

#### **ESTIMATING A DSGE MODEL TO EXAMINE RECENT U.S. MONETARY HISTORY**

The authors report the results of the estimation of a rich dynamic stochastic general equilibrium model of the U.S. economy with both stochastic volatility and parameter drifting in the Taylor rule. They use the results of this estimation to examine the recent monetary history of the U.S. and to interpret, through this lens, the sources of the rise and fall of the great American inflation from the late 1960s to the early 1980s and of the great moderation of business cycle fluctuations between 1984 and 2007.

*Working Paper 10-15, "Reading the Recent Monetary History of the U.S., 1959-2007," Jesus Fernandez-Villaverde, University of Pennsylvania; Pablo Guerron-Quintana, Federal Reserve Bank of Philadelphia; and Juan F. Rubio-Ramirez, Duke University and Federal Reserve Bank of Atlanta*