



THE EQUITY PREMIUM AND RETURN ON ASSETS

Recent empirical work documents a decline in the U.S. equity premium and a decline in the standard deviation of real output growth. The author investigates the link between aggregate risk and the asset returns in a dynamic production-based asset-pricing model. When calibrated to match asset return moments, the model implies that the post-1984 reduction in TFP shock volatility of 60 percent gives rise to a 40 percent decline in the equity premium. Lower macroeconomic risk post-1984 can account for a substantial fraction of the decline in the equity premium.

Working Paper 06-1, "Macroeconomic Volatility and the Equity Premium," Keith Sill, Federal Reserve Bank of Philadelphia

EXPLORING THE DYNAMICS OF PREDATORY LENDING

Regulators express growing concern over "predatory lending," which the authors take to mean lending that reduces the expected utility of borrowers. They present a rational model of consumer credit in which such lending is possible, and they identify the circumstances in which it arises with and without competition. Predatory

lending is associated with imperfect competition, highly collateralized loans, and poorly informed borrowers. Under most circumstances competition among lenders eliminates predatory lending.

Working Paper 06-2, "Predatory Lending in a Rational World," Philip Bond, The Wharton School, University of Pennsylvania, and Visiting Scholar, Federal Reserve Bank of Philadelphia; David K. Musto, The Wharton School, University of Pennsylvania; and Bilge Yilmaz, The Wharton School, University of Pennsylvania

DEVELOPING EMPIRICALLY VIABLE MODELS

The time series fit of dynamic stochastic general equilibrium (DSGE) models often suffers from restrictions on the long-run dynamics that are at odds with the data. Relaxing these restrictions can close the gap between DSGE models and vector autoregressions. This paper modifies a simple stochastic growth model by incorporating permanent labor supply shocks that can generate a unit root in hours worked. Using Bayesian methods the authors estimate two versions of the DSGE model: the standard specification in which hours worked are stationary and the modified version with

permanent labor supply shocks. They find that the data support the latter specification.

Working Paper 06-3, "Non-Stationary Hours in a DSGE Model," Yongsung Chang, Seoul National University; Taeyoung Doh, University of Pennsylvania; and Frank Schorfheide, University of Pennsylvania, CEPR, and Visiting Scholar, Federal Reserve Bank of Philadelphia

POLICY ANALYSIS AND POTENTIALLY MISSPECIFIED MODELS

This paper proposes a novel method for conducting policy analysis with potentially misspecified dynamic stochastic general equilibrium (DSGE) models and applies it to a New Keynesian DSGE model along the lines of Christiano, Eichenbaum, and Evans (JPE2005) and Smets and Wouters (JEEA2003). The authors first quantify the degree of model misspecification and then illustrate its implications for the performance of different interest-rate feedback rules. The authors find that many of the prescriptions derived from the DSGE model are robust to model misspecification.

Working Paper 06-4, "Monetary Policy Analysis with Potentially Misspecified Models," Marco Del Negro, Federal Reserve Bank of Atlanta, and Frank Schorfheide, University of Pennsylvania, and Visiting Scholar, Federal Reserve Bank of Philadelphia

REVIEWING ESTIMATION AND EVALUATION TECHNIQUES IN DSGE MODELS

This paper reviews Bayesian methods that have been developed in recent years to estimate and evaluate dynamic stochastic general equilibrium (DSGE) models. The authors consider the estimation of linearized DSGE models, the evaluation of models based on Bayesian model checking, posterior odds comparisons, and comparisons to vector autoregressions, as well as the nonlinear estimation based on a second-order accurate model solution. These methods are applied to data generated from correctly specified and misspeci-

fied linearized DSGE models, and a DSGE model that was solved with a second-order perturbation method.

Working Paper 06-5, "Bayesian Analysis of DSGE Models," Sungbae An, University of Pennsylvania, and Frank Schorfheide, University of Pennsylvania, and Visiting Scholar, Federal Reserve Bank of Philadelphia

THE RELATIONSHIP BETWEEN INCENTIVES TO INVENT AND INCENTIVES TO PATENT

This paper develops a simple duopoly model in which investments in R&D and patents are inputs in the production of firm rents. Patents are necessary to appropriate the returns to the firm's own R&D, but patents also create potential claims against the rents of rival firms. Analysis of the model reveals a general necessary condition for the existence of a positive correlation between the firm's R&D intensity and the number of patents it obtains. When that condition is violated, changes in exogenous parameters that induce an increase in firms' patenting can also induce a decline in R&D intensity. Such a negative relationship is more likely when (1) there is sufficient overlap in firms' technologies so that each firm's inventions are likely to infringe the patents of another firm, (2) firms are sufficiently R&D intensive, and (3) patents are cheap relative to both the cost of R&D and the value of final output.

Working Paper 06-6, "When Do More Patents Reduce R&D?," Robert Hunt, Federal Reserve Bank of Philadelphia

REVISING ESTIMATES OF THE CPI FOR TENANT RENTS

Until the end of 1977, the U.S. consumer price index for rents tended to omit rent increases when units had a change of tenants or were vacant, biasing inflation estimates downward. Beginning in 1978, the Bureau of Labor Statistics (BLS) implemented a series of methodological changes that reduced this

nonresponse bias, but substantial bias remained until 1985. The authors set up a model of nonresponse bias, parameterize it, and test it using a BLS microdata set for rents. From 1940 to 1985, the official BLS CPI-W price index for tenant rents rose 3.6 percent annually; the authors argue that it should have risen 5.0 percent annually. Rents in 1940 should be only half as much as their official relative price; this has important consequences for historical measures of rent-house-price ratios and for the growth of real consumption.

Working Paper 06-7, "The CPI for Rents: A Case of Understated Inflation," Theodore M. Crone and Leonard Nakamura, Federal Reserve Bank of Philadelphia, and Richard Voith, Econsult Corporation

DEVELOPING A SIMPLE STATE-DEPENDENT PRICING MODEL

The authors develop an analytically tractable Phillips curve based on state-dependent pricing. They differ from the existing literature by considering a local approximation around a zero inflation steady state and introducing idiosyncratic shocks. The resulting Phillips curve is a simple variation of the conventional time-dependent Calvo formulation but with some important differences. First, the model is able to match the micro evidence on both the magnitude and timing of price adjustments. Second, holding constant the frequency of price adjustment, the authors' state-dependent model exhibits greater flexibility in the aggregate price level than does the time-dependent model. On the other hand, with real rigidities present, this state-dependent pricing framework can exhibit considerable nominal stickiness, of the same order of magnitude suggested by a conventional time-dependent model.

Working Paper 06-8, "A Phillips Curve with an Ss Foundation," Mark Gertler, New York University and NBER, and John Leahy, New York University, NBER, and Visiting Scholar, Federal Reserve Bank of Philadelphia

NONTRADED GOODS AND THE BEHAVIOR OF EXCHANGE RATES

Empirical evidence suggests that movements in international relative prices (such as the real exchange rate) are large and persistent. Nontraded goods, both in the form of final consumption goods and as an input into the production of final tradable goods, are an important aspect behind international relative price movements. In this paper, the authors show that nontraded goods have important implications for exchange rate behavior, even though fluctuations in the relative price of nontraded goods account for a relatively small fraction of real exchange rate movements. In their quantitative study, nontraded goods magnify the volatility of exchange rates when compared to the model without nontraded goods. Cross-country correlations and the correlation of exchange rates with other macro variables are closer in line with the data. In addition, contrary to a large literature, standard alternative assumptions about the currency in which firms price their goods are virtually inconsequential for the properties of aggregate variables in the authors' model, other than the terms of trade.

Working Paper 06-9, "Nontraded Goods, Market Segmentation, and Exchange Rates," Michael Dotsey, Federal Reserve Bank of Philadelphia, and Margarida Duarte, Federal Reserve Bank of Richmond

INTERPRETING THE LINK BETWEEN TECHNOLOGY AND HUMAN CAPITAL

The positive correlations found between computer use and human capital are often interpreted as evidence that the adoption of computers has raised the relative demand for skilled labor, the widely touted hypothesis of skill-biased technological change. However, several models argue that the skill intensity of technology is endogenously determined by the relative supply of skilled labor. The authors use instruments for the supply of human capital coupled with a rich data

set on computer usage by businesses to show that the supply of human capital is an important determinant of the adoption of personal computers. Their results suggest that great caution must be exercised in placing economic interpretations on the correlations often found between technology and human capital.

Working Paper 06-10, "Labor Supply and Personal Computer Adoption," Mark Doms, Federal Reserve Bank of San Francisco, and Ethan Lewis, Federal Reserve Bank of Philadelphia

USING THE NATIONAL INCOME ACCOUNTS TO QUANTIFY ECONOMIC ACTIVITY

This article presents a brief overview of the national income accounts. It summarizes the main parts of accounts and situates them within the efforts of economists to quantify economic activity and economic well-being. The author argues that these statistics are necessarily provisional and imperfect but nevertheless extremely useful. Some current directions for economic research seeking to extend the accounts are also discussed.

Working Paper 06-11, "National Income Accounts," Leonard Nakamura, Federal Reserve Bank of Philadelphia

UNDERSTANDING THE GREAT DEPRESSION

What caused the worldwide collapse in output from 1929 to 1933? Why was the recovery from the trough of 1933 so protracted for the U.S.? How costly was the decline in terms of welfare? Was the decline preventable? These are some of the questions that have motivated economists to study the Great Depression. In this paper, the authors review some of the economic literature that attempts to answer these questions.

Working Paper 06-12, "Monetary and Financial Forces in the Great Depression," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia, and Dean Corbae, University of Texas at Austin

EXTENDING THE JOB MATCHING MODEL

In the U.S. labor market, the vacancy-unemployment ratio and employment react sluggishly to productivity shocks. The authors show that the job matching model in its standard form cannot reproduce these patterns due to excessively rapid vacancy responses. Extending the model to incorporate sunk costs for vacancy creation yields highly realistic dynamics. Creation costs induce entrant firms to smooth the adjustment of new openings following a shock, leading the stock of vacancies to react sluggishly.

Working Paper 06-13, "Job Matching and Propagation," Shigeru Fujita, Federal Reserve Bank of Philadelphia, and Garey Ramey, University of California, San Diego

THE LINK BETWEEN EMPLOYMENT DENSITY AND PATENT INTENSITY

Economists, beginning with Alfred Marshall, have studied the significance of cities in the production and exploitation of information externalities that, today, we call knowledge spillovers. This paper presents robust evidence of those effects. The authors show that patent intensity — the per capita invention rate — is positively related to the density of employment in the highly urbanized portion of metropolitan areas. All else equal, a city with twice the employment density (jobs per square mile) of another city will exhibit a patent intensity (patents per capita) that is 20 percent higher. Patent intensity is maximized at an employment density of about 2,200 jobs per square mile. A city with a more competitive market structure or one that is not too large (a population less than 1 million) will also have a higher patent intensity. These findings confirm the widely held view that the nation's densest locations play an important role in creating the flow of ideas that generate innovation and growth.

Working Paper 06-14, "Urban Density and the Rate of Invention," Gerald Carlino, Satyajit Chatterjee, and Robert Hunt, Federal Reserve Bank of Philadelphia

TEST SCORES, SCHOOL QUALITY, AND HOUSE PRICES

The expansion of state-mandated tests in the 1990s and the testing requirements of the No Child Left Behind Act have supplied researchers with an abundance of data on test scores that can be used as measures of school quality. This paper uses the state-mandated test scores for 5th grade and 11th grade in Montgomery County, Pennsylvania, to examine three issues about the capitalization of school quality into house prices: (1) At what level do prospective home buyers evaluate the quality of local public education — at the district level or the level of the neighborhood school? (2) After accounting for student achievement as reflected in test scores, are other aspects of the local public school system, such as class size or expenditures, capitalized into the value of a house? (3) Are the positive results the author gets for the capitalization of school quality into house prices due simply to the correlation between high test scores and other desirable neighborhood characteristics? The results of the author's investigation suggest that to home buyers, some test-score averages are significantly better indicators of the quality of the local public school system than others. In particular, home buyers seem to evaluate the quality of public education at the district level rather than at the level of the local school. Class size at the high-school level has some independent effect on house prices, but not class size at the elementary school level. And once student achievement is accounted for, expenditures per pupil have no further effect on house prices. Finally, restricting the sample to similar neighborhoods along school district boundaries confirms earlier results for high school test scores but not for elementary school scores.

Working Paper 06-15, "Capitalization of the Quality of Local Public Schools: What Do Home Buyers Value?," Theodore M. Crone, Federal Reserve Bank of Philadelphia

DIVERGENT INCOME PERFORMANCE IN TWO INDIAN STATES

In this paper the authors study the economic evolution between 1960 and 1995 of two states in India: Maharashtra and West Bengal. In 1960, West Bengal's per capita income exceeded that of Maharashtra. By 1995, it had fallen to just 69 percent of Maharashtra's per capita income. The authors employ a "wedge" methodology based on the first-order conditions of a multisector neoclassical growth model to ascertain the sources of the divergent economic performances. Their diagnostic analysis reveals that a large part of West Bengal's development woes can be attributed to: (a) low sectoral productivity, especially in manufacturing and services; and (b) sectoral misallocation in labor markets. These patterns, together with additional evidence on developments in the labor market, the manufacturing sector, and voting behavior, suggest a systematic worsening of the business environment in manufacturing in West Bengal during this period.

Working Paper 06-16, "A Tale of Two States: Maharashtra and West Bengal," Amartya Lahiri, University of British Columbia, and Kei-Mu Yi, Federal Reserve Bank of Philadelphia

THE CYCLICALITY OF JOB LOSS AND HIRING

In this paper the authors study the cyclical behavior of job loss and hiring using CPS worker flow data, adjusted for margin error and time aggregation error. The band pass filter is used to isolate cyclical components. The authors consider both total worker flows and transition hazard rates within a unified framework. Their results provide overwhelming support for a "separation-driven" view of employment adjustment, whereby total job loss and hiring rise sharply during economic downturns, initiated by increases in the job loss hazard rate. Worker flows and transition hazard rates are highly volatile at business cycle frequencies. These patterns are especially strong

among prime-age workers. For young workers, job loss and hiring adjust procyclically due to movements into and out of the labor force.

Working Paper 06-17, "The Cyclicalities of Job Loss and Hiring," Shigeru Fujita, Federal Reserve Bank of Philadelphia, and Garey Ramey, University of California, San Diego

CALCULATING THE BENEFITS OF STABILIZATION POLICIES

The potential benefit of policies that eliminate a small likelihood of economic crises is calculated. An economic crisis is defined as an increase in unemployment of the magnitude observed during the Great Depression. For the U.S., the maximum-likelihood estimate of entering a depression is found to be about once every 83 years. The welfare gain from setting this small probability to zero can range between 1 and 7 percent of annual consumption in perpetuity. For most estimates, more than half of these large gains result from a reduction in individual consumption volatility.

Working Paper 06-18, "On the Aggregate Welfare Cost of Great Depression Unemployment," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia, and Dean Corbae, University of Texas, Austin

REAL-TIME DATA AND INFLATION FORECASTS

This paper evaluates inflation forecasts from the Livingston Survey and the Survey of Professional Forecasters, using the real-time data set for macroeconomists as a source of real-time data. The author examines the magnitude and patterns of revisions to the inflation rate based on the output price index and describe what data to use as "actuals" in evaluating forecasts. He then runs tests on the forecasts from the surveys to see how good they are, using a variety of actuals. The author finds that much of the empirical work from 20 years ago was a misleading guide to the quality of forecasts because of unique events during the earlier

sample period. Repeating that empirical work over a longer sample period shows no bias or other problems in the forecasts. The use of real-time data also matters for some key tests on some variables. If a forecaster had used the empirical results from the late 1970s and early 1980s to adjust survey forecasts of inflation, forecast errors would have increased substantially.

Working Paper 06-19, "An Evaluation of Inflation Forecasts from Surveys Using Real-Time Data," Dean Croushore, University of Richmond, and Visiting Scholar, Federal Reserve Bank of Philadelphia

AGGLOMERATION ECONOMIES AND THE SPATIAL CONCENTRATION OF EMPLOYMENT

This paper seeks to quantify the contribution of agglomeration economies to the spatial concentration of U.S. employment. A spatial macroeconomic model with heterogeneous localities and agglomeration economies is developed and calibrated to U.S. data on the spatial distribution of employment. The model is used to answer the question: By how much would the spatial concentration of employment decline if agglomeration economies were counterfactually suppressed? For the most plausible calibration, the answer is about 48 percent. More generally, the general equilibrium contribution of agglomeration economies appears to be substantial, with empirically defensible calibrations yielding estimates between 40 and 60 percent.

Working Paper 06-20, "A Quantitative Assessment of the Role of Agglomeration Economies in the Spatial Concentration of U.S. Employment," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia

HOW DO ENFORCEMENT COSTS AFFECT THE OWN VS. LEASE DECISION?

The authors develop a legal contract enforcement theory of the own versus lease decision. The allocation of ownership rights will minimize enforcement costs when the legal system is inefficient. In particular,

when legal enforcement of contracts is costly, there will be a shift from arrangements that rely on such enforcement (such as a rental agreement) toward other forms that do not (such as direct ownership). The authors then test this prediction and show that costly enforcement of rental contracts hampers the development of the rental housing market in a cross-section of countries. They argue that this association is not the result of reverse causation from a developed rental market to more investor-protective enforcement and is not driven by alternative institutional channels. The results provide supportive evidence on the importance of legal contract enforcement for market development and the optimal allocation of property rights.

Working Paper 06-21, "Owning Versus Leasing: Do Courts Matter?," Pablo Casas-Arce, Universitat Pompeu Fabra, and Albert Saiz, The Wharton School, University of Pennsylvania, and Visiting Scholar, Federal Reserve Bank of Philadelphia

IMMIGRATION AND NEIGHBORHOOD DYNAMICS

What impact does immigration have on neighborhood dynamics? Within metropolitan areas, the authors find that housing values have grown relatively more

slowly in neighborhoods of immigrant settlement. They propose three nonexclusive explanations: changes in housing quality, reverse causality, or the hypothesis that natives find immigrant neighbors relatively less attractive (native flight). To instrument for the actual number of new immigrants, the authors deploy a geographic diffusion model that predicts the number of new immigrants in a neighborhood using lagged densities of the foreign-born in surrounding neighborhoods. Subject to the validity of their instruments, the evidence is consistent with a causal interpretation of an impact from growing immigration density to native flight and relatively slower housing price appreciation. Further evidence indicates that these results may be driven more by the demand for residential segregation based on race and education than by foreignness per se.

Working Paper 06-22, "Immigration and the Neighborhood," Albert Saiz, The Wharton School, University of Pennsylvania, and Visiting Scholar, Federal Reserve Bank of Philadelphia, and Susan Wachter, The Wharton School, University of Pennsylvania



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