Abstracts of Articles Accepted in Journals, Books, and Conference Volumes*

Net Foreign Assets and Exchange Rate Dynamics: The Monetary Model Revisited

Michele Cavallo, with
Fabio Ghironi, *Boston College*

Published in *Exchange Rate Dynamics: A New Open Economy Macroeconomics Perspective,* eds. Jean-Olivier Hairault and Thepthida Sopraseuth, pp. 3–54. London: Routledge, 2004.

We develop a two-country, flexible-price model of exchange rate determination with incomplete asset markets and stationary net foreign assets. We compare exchange rate dynamics in the traditional case of exogenous money supplies and under endogenous interest rate setting. We show that the nominal exchange rate depends on the stock of real net foreign assets in both cases. Thus, shocks that cause holdings of net foreign assets to change generate movements of the exchange rate over time. The exchange rate exhibits a unit root when central banks set interest rates to react to inflation. Endogenous monetary policy and asset dynamics have consequences for exchange rate overshooting. A persistent relative productivity shock results in delayed overshooting. A persistent relative interest rate shock generates undershooting.

The Improving Relative Status of Black Men

Mary C. Daly, with
Kenneth Couch,
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Forthcoming in
Journal of Income Distribution.

Using data from the Current Population Survey, we examine recent trends in the relative economic status of black men. Our findings point to gains in the relative wages of black men (compared to whites) during the 1990s, especially among younger workers. In 1989, the average black male worker (experienced or not) earned about 69 percent as much per week as the average white male worker. In 2001, the average younger black worker was earning about 86 percent as much as an equally experienced white male; black males at all experience levels earned 72 percent as much as the average white in 2001. Greater occupational diversity and a reduction in unobserved skill differences and/or labor market discrimination explain much of the trend. For both younger and older workers, general wage inequality tempered the rate of wage convergence between blacks and whites during the 1990s, although the effects were less pronounced than during the 1980s.

Inequality and Poverty in the United States: The Effects of Rising Dispersion of Men's Earnings and Changing Family Behavior

Mary C. Daly
Robert G. Valletta

Forthcoming in *Economica.*

Using semiparametric density estimation techniques, we analyze the contribution of rising dispersion of men's earnings and related changes in family behavior to increasing inequality in the distribution of family income in the United States. For the period 1969 to 1989, rising dispersion of men's earnings and changing family structure can account for most of the rise in family income inequality. By contrast, rising labor force participation by women offset the trend towards increased inequality. Inequality grew at a slower rate in the 1990s than in earlier decades, largely due to stabilization in the relative earnings of men from low-income families.

*The abstracts are arranged alphabetically by FRB San Francisco authors, whose names are in boldface.

Inferring Policy Objectives from Economic Outcomes

Richard Dennis

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Estimated policy rules are reduced-form equations that are silent on many important policy questions. However, a structural understanding of monetary policy can be obtained by estimating a policymaker's objective function. The paper derives conditions under which the parameters in a policymaker's policy objective function can be identified and estimated. I apply these conditions to a New Keynesian sticky-price model of the U.S. economy. The results show that the implicit inflation target and the relative weight placed on interest rate smoothing both declined when Paul Volcker was appointed Federal Reserve chairman.

The Policy Preferences of the U.S. Federal Reserve

Richard Dennis

Forthcoming in *Journal of Applied Econometrics.*

In this paper I model and explain U.S. macroeconomic outcomes subject to the discipline that monetary policy is set optimally. Exploiting the restrictions that come from optimal policymaking, I estimate the parameters in the Federal Reserve's policy objective function together with the parameters in its optimization constraints. For the period following Volcker's appointment as chairman, I estimate the implicit inflation target to be around 1.4 percent and show that policymakers assigned a significant weight to interest rate smoothing. I show that the estimated optimal policy provides a good description of U.S. data for the 1980s and 1990s.

Solving for Optimal Simple Rules in Rational Expectations Models

Richard Dennis

Published in *Journal of Economic Dynamics and Control* 28(8) (June 2004) pp. 1,635–1,660.

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This paper presents algorithms that solve for optimal simple monetary policy rules in rational expectations models with precommitment and discretion. The algorithms are applied to the models in Fuhrer (1997), Clarida et al. (1999), and Rudebusch (2002) to examine the efficiency properties of operational policy rules. I show that optimized Taylor-type rules perform well in these models, but that, aside from the Fuhrer–Moore model, this result is sensitive to whether the central bank can respond to current period shocks. Taylor-type rules that are operational in the sense that they do not respond to current period information are found to be highly inefficient in the Rudebusch model and in the Clarida et al. model.

How Fast Do Personal Computers Depreciate? Concepts and New Estimates

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Federal Reserve Board of Governors
Stephen D. Oliner,
Federal Reserve Board of Governors
Daniel E. Sichel,
Federal Reserve Board of Governors

Published in *Tax Policy and the Economy,* Vol. 18, pp. 37–79, ed. James Poterba. Cambridge, MA: MIT Press, 2004.

This paper provides new estimates of depreciation rates for personal computers (PCs) using an extensive database on prices of used PCs. Our results show that PCs lose roughly half their remaining value, on average, with each additional year of use. We decompose that decline into age-related depreciation and a revaluation effect, where the latter effect is driven by the steep ongoing drop in the constant-quality prices of newly introduced PCs. Our results are directly applicable for measuring the depreciation of PCs in the National Income and Product Accounts (NIPA)—and were incorporated into the December 2003 comprehensive NIPA revision. Regarding tax policy, our estimates suggest that the current tax depreciation schedule for PCs is about right in a zero-inflation environment. However, because the tax code is not indexed for inflation, the tax allowances would be too small in present value for inflation rates above the very low level now prevailing.

Prices for Local Area Network Equipment

Mark E. Doms, with
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Carnegie Mellon University

Forthcoming in
Information Economics and Policy.

In this paper we examine quality-adjusted prices for local area network (LAN) equipment. Hedonic regressions are used to estimate price changes for the two largest classes of LAN equipment, routers and switches. A matched model was used for LAN cards, and the prices for hubs were inferred by using an economic relationship to switches. Overall, we find that prices for the four groups of LAN equipment fell at a 17 percent annual rate between 1995 and 2000. These results stand in sharp contrast to the producer price index for communications equipment that is nearly flat over the 1990s.

Information Technology Investment and Firm Performance in U.S. Retail Trade

Mark E. Doms, with
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Shawn Klimek, *U.S. Census Bureau*

Published in *Economics of Innovation and New Technology* 13(7) (October 2004) pp. 595–613.

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http://www.tandf.co.uk/journals/titles/10438599.asp

We examine the relationship between investments in information technology (IT) and retail firm performance. We use untapped firm and establishment micro data from the Censuses of Retail Trade and the Assets and Expenditures Survey. We show that large firms account for most retail IT investment, employment, and establishment growth. We find evidence of a significant relationship between IT investment intensity and productivity growth.

Incorporating Equity Market Information into Supervisory Monitoring Models

John Krainer
Jose A. Lopez

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We examine whether equity market variables, such as stock returns and equity-based default probabilities, are useful to U.S. bank supervisors for assessing the condition of domestic bank holding companies. We develop a model of supervisory ratings that combines supervisory and equity market information. We find that the model's forecasts anticipate supervisory rating changes by up to four quarters. Relative to simply using supervisory variables, the inclusion of equity market variables in the model does not improve forecast accuracy. However, we argue that equity market information should still be useful for forecasting supervisory ratings and should be incorporated into supervisory monitoring models.

Risk and Return of Publicly Held versus Privately Owned Banks

Simon H. Kwan

Published in FRB New York *Economic Policy Review* 10(2) (September 2004) pp. 97–107.
http://www.ny.frb.org/research/epr/2004n2.html

The author divides bank holding companies (BHCs) into four size classes, then categorizes each BHC according to public or private ownership. He compares the performance and risk across publicly held and privately owned BHCs between 1986 and 2000 and in five-year windows therein. For the largest BHCs, returns on assets and operating costs do not depend on ownership, but for the smaller BHCs, returns on assets are lower and operating costs are higher for those that are publicly owned. Small public BHCs also hold more capital than do small private ones.

The X-Efficiency of Commercial Banks in Hong Kong

Simon H. Kwan

Forthcoming in *Journal of Banking and Finance.*

Using the stochastic frontier approach to investigate the cost efficiency of commercial banks in Hong Kong, this paper found that the average X-efficiency of Hong Kong banks was about 16 to 30 percent of observed total costs. However, X-efficiency was found to decline over time, indicating that Hong Kong banks were operating closer to the cost frontier than before, consistent with technological innovations in the banking industry. Furthermore, the average large bank was found to be less efficient than the average small bank, but the size effect appears to be related to differences in portfolio characteristics among different size banks.

Market Evidence on the Opaqueness of Banking Firms' Assets

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We assess the market microstructure properties of U.S. banking firms' equity to determine whether they exhibit more or less evidence of asset opaqueness than similar-sized nonbanking firms. The evidence indicates that large bank holding companies (BHCs), traded on the NYSE, have very similar trading properties to their matched nonfinancial firms. In contrast, smaller BHCs, traded on NASDAQ, trade much less frequently despite having very similar spreads. Analysis of IBES earnings forecasts indicates that banking assets are not unusually opaque; they are simply boring. The implications for regulatory policy and future market microstructure research are discussed.

Growth Effects of Shifting from a Graduated-Rate Tax System to a Flat Tax

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We compute the growth effects of adopting a revenue-neutral flat tax for both a human capital-based endogenous growth model and a standard neoclassical growth model. Long-run growth effects are decomposed into the parts attributable to the flattening of the marginal tax schedule, the full expensing of physical-capital investment, and the elimination of double taxation of business income. The most important element of the reform is the flattening of the marginal tax schedule. Without this element, the combined effects of the other parts of the reform can actually reduce long-run growth. In the years immediately following the reform, the transition dynamics implied by the neoclassical growth model are quite similar to that of the endogenous growth model.

Tax Reform with Useful Public Expenditures

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Steven P. Cassou,
Kansas State University

Forthcoming in *Journal of Public Economic Theory.*

This paper examines the economic effects of tax reform in an endogenous growth model that allows for two types of useful public expenditures; one type contributes to human capital formation while the other provides direct utility to households. We show that the optimal fiscal policy calls for full expensing of private investments, which shifts the tax base to private consumption. The efficient levels of public investment and public consumption relative to output are uniquely pinned down by parameters that govern both technology and preferences. In general, implementing the optimal fiscal policy requires a change in the size of government. If a tax reform holds the size of government fixed to satisfy a revenue-neutrality constraint, then the reform will be suboptimal; theory alone cannot tell us if welfare will be improved. For some calibrations of the model, we find that commonly proposed versions of revenue-neutral tax reforms can result in large welfare gains. For other quite plausible calibrations, the exact same reform can

result in tiny or even negative welfare gains as the revenue-neutrality constraint becomes more severely binding. Comparing across calibrations, we find that the welfare rankings of various reforms can change, depending on parameter values. Overall, our results highlight the uncertainty surrounding the potential welfare benefits of fundamental U.S. tax reform.

The Empirical Relationship between Average Asset Correlation, Firm Probability of Default, and Asset Size

Jose A. Lopez

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The asymptotic single risk factor approach is a framework for determining regulatory capital charges for credit risk, and it has become an integral part of the second Basel Accord. Within this approach, a key parameter is the average asset correlation. I examine the empirical relationship between this parameter, firm probability of default, and firm asset size measured by the book value of assets. Using data from year-end 2000, credit portfolios consisting of U.S., Japanese, and European firms are analyzed. The empirical results suggest that average asset correlation is a decreasing function of probability of default and an increasing function of asset size. The results suggest that these factors may need to be accounted for in the final calculation of regulatory capital requirements for credit risk.

Evaluating Interest Rate Covariance Models within a Value-at-Risk Framework

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http://jfec.oupjournals.org/

A key component of managing international interest rate portfolios is forecasts of the covariances between national interest rates and accompanying exchange rates. How should portfolio managers choose among the large number of covariance forecasting models available? We find that covariance matrix forecasts generated by models incorporating interest-rate level volatility effects perform best with respect to statistical loss functions. However, within a value-at-risk (VaR) framework, the relative performance of the covariance matrix forecasts depends greatly on the VaR distributional assumption, and forecasts based just on weighted averages of past observations perform best. In addition, portfolio variance forecasts that ignore the covariance matrix generate the lowest regulatory capital charge, a key economic decision variable for commercial banks. Our results provide empirical support for the commonly used VaR models based on simple covariance matrix forecasts and distributional assumptions.

Assessing the Lucas Critique in Monetary Policy Models

Glenn D. Rudebusch

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Empirical estimates of monetary policy rules suggest that the behavior of U.S. monetary policymakers changed during the past few decades. However, for that same time period, statistical analyses of lagged representations of the economy, such as VARs, often have not rejected the null of structural stability. These two sets of empirical results appear to contradict the Lucas critique. This paper reconciles these results with the Lucas critique by showing that the apparent policy invariance of reduced forms is consistent with the magnitude of historical policy shifts and the relative insensitivity of the reduced forms of plausible forward-looking macroeconomic specifications to policy shifts.

The Macroeconomy and the Yield Curve: A Dynamic Latent Factor Approach

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Forthcoming in
Journal of Econometrics.

We estimate a model that summarizes the yield curve using latent factors (specifically, level, slope, and curvature) and also includes observable macroeconomic variables (specifically, real activity, inflation, and the monetary policy instrument). Our goal is to provide a characterization of the dynamic interactions between the macroeconomy and the yield curve. We find strong evidence of the effects of macro variables on future movements in the yield curve and evidence for a reverse influence as well. We also relate our results to the expectations hypothesis.

Modeling Bond Yields in Finance and Macroeconomics

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Forthcoming in
American Economic Review.

From a macroeconomic perspective, the short-term interest rate is a policy instrument under the direct control of the central bank. From a finance perspective, long rates are risk-adjusted averages of expected future short rates. Thus, as illustrated by much recent research, a joint macro-finance modeling strategy will provide the most comprehensive understanding of the term structure of interest rates. We discuss various questions that arise in this research, and we also present a new examination of the relationship between two prominent dynamic, latent factor models in this literature: the Nelson-Siegel and affine no-arbitrage term structure models.

Estimating the Euler Equation for Output

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New Keynesian macroeconomic models have generally emphasized that expectations of future output are a key factor in determining current output. The theoretical motivation for such forward-looking behavior relies on a straightforward generalization of the well-known Euler equation for consumption. In this paper, we use maximum likelihood and generalized method of moments (GMM) methods to explore the empirical importance of output expectations. We find little evidence that rational expectations of future output help determine current output, especially after taking into account the small-sample bias in GMM.

Using a Long-Term Interest Rate as the Monetary Policy Instrument

Glenn D. Rudebusch
John C. Williams, with
Bruce McGough,
Oregon State University

Forthcoming in
Journal of Monetary Economics.

Using a short-term interest rate as the monetary policy instrument can be problematic near its zero bound constraint. An alternative strategy is to use a long-term interest rate as the policy instrument. We find, when Taylor-type policy rules are used to set the long rate in a standard New Keynesian model, indeterminacy—that is, multiple rational expectations equilibria—may often result. However, a policy rule with a long rate policy instrument that responds in a “forward-looking” fashion to inflation expectations can avoid the problem of indeterminacy.

Solvency Runs, Sunspot Runs, and International Bailouts

Mark M. Spiegel

Published in *Journal of International Economics* 65(1) (January 2005) pp. 203–219.

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This paper introduces a model of intervention by an international financial institution (IFI) under asymmetric information. The IFI is unable to distinguish between runs due to fundamentals and those which are the result of pure sunspots. However, it maximizes global welfare by offering a relending package consistent with generating a separating equilibrium, where voluntary creditor participation implies that underlying fundamentals are good. The need for direct IFI lending in the package is shown to depend on the commitment capacity of creditors. This adverse selection problem provides an alternative rationale for Bagehot's principle of last-resort lending at high rates of interest to the moral hazard motivation commonly found in the literature.

Human Capital and Technology Diffusion

Mark M. Spiegel, with
Jess Benhabib, *New York University*

Forthcoming in *Handbook of Economic Growth,* vol. 4, eds. P. Aghion and S. Durlauf. Amsterdam: North Holland.

This paper generalizes the Nelson-Phelps catch-up model of technology diffusion. We allow for the possibility that the pattern of technology diffusion can be exponential, which would predict that nations would exhibit positive catch-up with the leader nation, or logistic, in which a country with a sufficiently small capital stock may exhibit slower total factor productivity growth than the leader nation. We derive a nonlinear specification for total factor productivity growth that nests these two specifications. We estimate this specification for a cross-section of nations from 1960 through 1995. Our results support the logistic specification and are robust to a number of sensitivity checks. Our model also appears to predict slow total factor productivity growth well. Of the 27 nations that we identify as lacking the critical human capital levels needed to achieve faster total factor productivity growth than the leader nation in 1960, 22 did achieve lower growth over the next 35 years.

Sterilization Costs and Exchange Rate Targeting

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We examine the movements of exchange rates and capital inflows in an environment where an optimizing central bank pursuing the joint goals of inflation and output targeting engages in costly sterilization activities. Our results predict that, when faced with increased sterilization costs, the central bank will choose to limit its sterilization activities, allowing target variables, such as the nominal exchange rate, to adjust. We then test the predictions of a linearized version of the saddle-path solution to the model for a cross-country panel of developing countries. We use OLS, IV, and GMM specifications to allow for the endogeneity of capital inflows. Our results confirm that monetary policy does respond to sterilization costs.

A Gravity Model of Sovereign Lending: Trade, Default, and Credit

Mark M. Spiegel, with
Andrew Rose,
University of California, Berkeley

Published in *International Monetary Fund Staff Papers* 51, Special Issue (2004) pp. 50–63.

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One reason why countries service their external debts is the fear that default might lead to shrinkage of international trade. If so, then creditors should systematically lend more to countries with which they share closer trade links. We develop a simple theoretical model to capture this intuition, then test and corroborate this idea.

Determinants of Voluntary Bank Disclosure: Evidence from Japanese Shinkin Banks

Mark M. Spiegel, with
Nobuyoshi Yamori, *Nagoya University*

Forthcoming in *Economic Stagnation and Recovery in Japan,* eds. M. Hutchison and F. Westermann. Cambridge, MA: MIT Press.

Disclosure is widely regarded as a necessary condition for market discipline in a modern financial sector. However, the determinants of disclosure decisions are still unknown, particularly among banks. This paper investigates the determinants of disclosure by Japanese Shinkin banks in 1996 and 1997. This period is unique because disclosure of nonperforming loans was voluntary for Shinkin banks at this time. We find that banks with more serious bad loan problems, more leverage, and less competitive pressure, and smaller banks were less likely to choose to disclose voluntarily. These results suggest that there may be a role for compulsory disclosure, as weak banks appear to avoid voluntary disclosure disproportionately.

The Evolution of Bank Resolution Policies in Japan: Evidence from Market Equity Values

Mark M. Spiegel, with
Nobuyoshi Yamori, *Nagoya University*

Published in *The Journal of Financial Research* 27(1) (Spring 2004) pp. 115–132.

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We examine the evidence in equity markets concerning bank regulatory policies in Japan from 1995 to 1999. Our results support the presence of information-based contagion in Japanese equity markets. When the failure of a bank of certain regulatory status was announced, it adversely affected excess returns on banks with equal or lower levels of regulatory protection. Market participants therefore initially behaved as if only second regional and smaller banks would be allowed to fail. As the situation deteriorated, however, banks that traditionally enjoyed greater regulatory protection were also perceived to lose their too-big-to-fail status.

Implications of Intellectual Property Rights for Dynamic Gains from Trade

Diego Valderrama, with
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Forthcoming in
American Economic Review Papers and Proceedings.

A simple intellectual property rights (IPR) framework is introduced into a dynamic quality ladder model of technological diffusion between innovating firms in one country and imitating firms in another country. The presence of technological spillovers and feedback effects between firms in the two countries demonstrates that preferred IPR regimes are ones that positively affect world growth and, hence, welfare in both countries. Most existing models of international IPRs, however, generally find that high intellectual property enforcement in the imitating country leads to welfare gains in the innovating country at the expense of the imitating country. A well-designed IPR regime imposed at the time of trade liberalization will be welfare-enhancing for both regions relative to trade liberalization without IPR enforcement. Moreover, the preferred IPR regime will be one that maintains competition from imitative activity but enforces some remuneration to innovators for the spillovers they generate.

A Submerging Labor Market Institution? Unions and the Nonwage Aspects of Work

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University of Michigan

Published in *Emerging Labor Market Institutions for the Twenty-First Century,* eds. R. Freeman, J. Hersch, and L. Mishel, pp. 231–263. Chicago: NBER and University of Chicago Press, 2005.

Using data from a variety of different sources and straightforward econometric methods, we investigate the differences between union and non-union jobs. Despite the substantial decline in union membership and collective bargaining over the last 20 years, union jobs continue to differ from comparable non-union jobs in regard to readily observable nonwage characteristics. In general, union workers work fewer hours per week and fewer weeks per year, and they spend more time on vacation and more time away from work due to their own illness or the illness of a family member. They also are more likely to be offered and to be covered by employer-provided health insurance, more likely to receive retiree health benefits from their employer, more likely to be offered and to be covered by a pension plan, and more likely to receive dental insurance, long-term disability plans, paid sick leave, maternity leave, and paid vacation time. The size of some of these gaps, however, appears to have declined over time.

Robust Estimation and Monetary Policy with Unobserved Structural Change

John C. Williams

Forthcoming in *Models and Monetary Policy,* conference proceedings.

This paper considers the joint problem of model estimation and implementation of monetary policy in the face of uncertainty regarding the process of structural change in the economy. I model unobserved structural change through time variation in the natural rates of interest and unemployment. I show that certainty equivalent optimal policies perform poorly when there is model uncertainty about the natural rate processes. I then examine the properties of combined estimation methods and policy rules that are robust to this type of model uncertainty. I find that weighted averages of sample means perform well as estimators of natural rates. The optimal policy under uncertainty responds more aggressively to inflation and less so to the perceived unemployment gap than the certainty equivalent policy. This robust estimation/policy combination is highly effective at mitigating the effects of natural rate mismeasurement.

Investment, Capacity, and Uncertainty: A Putty-Clay Approach

John C. Williams, with
Simon Gilchrist, *Boston University*

Forthcoming in
Review of Economic Dynamics.

We embed the microeconomic decisions associated with investment under uncertainty, capacity utilization, and machine replacement in a general equilibrium model based on putty-clay technology. In the presence of irreversible factor proportions, a mean-preserving spread in the productivity of investment reduces investment at the project level, but raises aggregate investment, productivity, and output. Increases in uncertainty have important dynamic implications, causing sustained increases in investment and hours and a medium-term expansion in the growth rate of labor productivity.

The Decline of Activist Stabilization Policy: Natural Rate Misperceptions, Learning, and Expectations

John C. Williams, with
Athanasios Orphanides,
Federal Reserve Board of Governors

Forthcoming in *Journal of Economic Dynamics and Control.*

We develop an estimated model of the U.S. economy in which agents form expectations by continually updating their beliefs regarding the behavior of the economy and monetary policy. We explore the effects of policymakers' misperceptions of the natural rate of unemployment during the late 1960s and 1970s on the formation of expectations and macroeconomic outcomes. We find that the combination of monetary policy directed at tight stabilization of unemployment near its perceived natural rate and large real-time errors in estimates of the natural rate uprooted heretofore quiescent inflation expectations and contributed to poor macroeconomic performance. Had monetary policy reacted less aggressively to perceived unemployment gaps, inflation expectations would have remained anchored and the stagflation of the 1970s would have been avoided. Indeed, we find that less activist policies would have been more effective at stabilizing both inflation and unemployment. We argue that policymakers, learning from the experience of the 1970s, eschewed activist policies in favor of policies that concentrated on the achievement of price stability, contributing to the subsequent improvements in macroeconomic performance of the U.S. economy.

Imperfect Knowledge, Inflation Expectations, and Monetary Policy

John C. Williams, with
Athanasios Orphanides,
Federal Reserve Board of Governors

Published in *The Inflation-Targeting Debate,* eds. B. Bernanke and M. Woodford, pp. 201–234. Chicago: University of Chicago Press, 2004.

This paper investigates the role that imperfect knowledge about the structure of the economy plays in the formation of expectations, macroeconomic dynamics, and the efficient formulation of monetary policy. Economic agents rely on an adaptive learning technology to form expectations and to update continuously their beliefs regarding the dynamic structure of the economy based on incoming data. The process of perpetual learning introduces an additional layer of dynamic interaction between monetary policy and economic outcomes. We find that policies that would be efficient under rational expectations can perform poorly when knowledge is imperfect. In particular, policies that fail to maintain tight control over inflation are prone to episodes in which the public's expectations of inflation become uncoupled from the policy objective and stagflation results, in a pattern similar to that experienced in the United States during the 1970s. Our results highlight the value of effective communication of a central bank's inflation objective and of continued vigilance against inflation in anchoring inflation expectations and fostering macroeconomic stability.

Inflation Scares and Forecast-Based Monetary Policy

John C. Williams, with
Athanasios Orphanides,
Federal Reserve Board of Governors

Forthcoming in
Review of Economic Dynamics.

Central bankers frequently emphasize the critical importance of anchoring private inflation expectations for successful monetary policy and macroeconomic stabilization. In most monetary policy models, however, expectations are already anchored through the assumption of rational expectations and perfect knowledge of the economy. In this paper, we reexamine the role of inflation expectations by relaxing the assumption of rational expectations with perfect knowledge and positing, instead, that agents have imperfect knowledge of the precise structure of the economy and policymakers' preferences, and rely on a perpetual learning technology to form expectations. We find that with learning, disturbances can give rise to endogenous inflation scares, that is, significant and persistent deviations of inflation expectations from those implied by rational expectations, even at long horizons. The presence of learning increases the sensitivity of inflation expectations and the term structure of interest rates to economic shocks, in line with the empirical evidence. We also explore the role of private inflation expectations for the conduct of efficient monetary policy. Under rational expectations, inflation expectations equal a linear combination of macroeconomic variables and as such provide no additional information to the policymaker. In contrast, under learning, private inflation expectations follow a time-varying process and provide useful information for the conduct of monetary policy.

Importing Technology

Daniel J. Wilson, with
Francesco Caselli, *Harvard University*

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We look at disaggregated imports of various types of equipment to make inferences on cross-country differences in the composition of equipment investment. We make three contributions. First, we document strikingly large differences in investment composition. Second, we explain the differences as being based on each equipment type's degree of complementarity with other factors whose abundance differs across countries. Third, we show that the composition of capital has the potential to account for some of the large observed differences in total factor productivity across countries.