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

An Arbitrage-Free Generalized Nelson-Siegel Term Structure Model

Jens H.E. Christensen and
Glenn D. Rudebusch, with
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Forthcoming in
The Econometrics Journal.

The Svensson generalization of the popular Nelson-Siegel term structure model is widely used by practitioners and central banks. Unfortunately, like the original Nelson-Siegel specification, this generalization, in its dynamic form, does not enforce arbitrage-free consistency over time. Indeed, we show that the factor loadings of the Svensson generalization cannot be obtained in a standard finance arbitrage-free affine term structure representation. Therefore, we introduce a closely related generalized Nelson-Siegel model on which the no-arbitrage condition can be imposed. We estimate this new arbitrage-free generalized Nelson-Siegel model and demonstrate its tractability and good in-sample fit.

Happiness, Unhappiness, and Suicide: An Empirical Assessment

Mary C. Daly
Daniel J. Wilson

Forthcoming in *Journal of the European Economic Association.*

The use of subjective well-being (SWB) data for investigating the nature of individual preferences has increased tremendously in recent years. There has been much debate about the cross-sectional and time-series patterns found in these data, particularly with respect to the relationship between SWB and relative status. Part of this debate concerns how well SWB data measures true utility or preferences. In a recent paper, Daly, Wilson, and Johnson (2007) propose using data on suicide as a revealed preference (outcome-based) measure of well-being and find strong evidence that reference-group income negatively affects suicide risk. In this paper, we compare and contrast the empirical patterns of SWB and suicide data. We find that the two have very little in common in aggregate data (time series and cross-sectional), but have a strikingly strong relationship in terms of their determinants in individual-level, multivariate regressions. This latter result cross-validates suicide and SWB micro data as useful and complementary indicators of latent utility.

Robust Control with Commitment: A Modification to Hansen-Sargent

Richard Dennis

Published in *Journal of Economic Dynamics and Control* 32(7) (July 2008) pp. 2,061–2,084.

I examine the Hansen and Sargent (2003) formulation of the robust Stackelberg problem and show that their method of constructing the approximating equilibrium is generally invalid. I then turn to the Hansen and Sargent (2007) treatment, which, responding to the problems raised in this paper, changes subtly, but importantly, how the robust Stackelberg problem is formulated. In the context of Hansen and Sargent (2007), I prove, first, that their method for obtaining the approximating equilibrium is now equivalent to the one developed in this paper, and, second, that the worst-case specification errors are not subject to a time-consistency problem. In the context of the Erceg et al. (2000), sticky wage/sticky price model, I find that a robust central bank will fear primarily that the supply side of its approximating model is misspecified and that robustness affects importantly central bank promises about future policy.

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

Learning and Optimal Monetary Policy

Richard Dennis, with
Federico Ravenna,
University of California, Santa Cruz

Published in *Journal of Economic Dynamics and Control* 32(6) (June 2008) pp. 1,964–1,994.

To conduct policy efficiently, central banks must use available data to infer, or learn, the relevant structural relationships in the economy. However, because a central bank's policy affects economic outcomes, the chosen policy may help or hinder its efforts to learn. This paper examines whether real-time learning allows a central bank to learn the economy's underlying structure and studies the impact that learning has on the performance of optimal policies under a variety of learning environments. Our main results are as follows. First, when monetary policy is formulated as an optimal discretionary targeting rule, we find that the rational expectations equilibrium and the optimal policy are real-time learnable. This result is robust to a range of assumptions concerning private-sector learning behavior. Second, when policy is set with discretion, learning can lead to outcomes that are better than if the model parameters are known. Finally, if the private sector is learning, then unannounced changes to the policy regime, particularly changes to the inflation target, can raise policy loss considerably.

Sterilization, Monetary Policy, and Global Financial Integration

Reuven Glick, with
Joshua Aizenman,
University of California, Santa Cruz

Forthcoming in *Review of International Economics.*

This paper investigates the changing pattern and efficacy of sterilization within emerging market countries as they liberalize markets and integrate with the world economy. We estimate the marginal propensity to sterilize foreign asset accumulation associated with net balance of payments inflows, across countries and over time. We find that the extent of sterilization of foreign reserve inflows has risen in recent years to varying degrees in Asia as well as in Latin America, consistent with greater concerns about the potential inflationary impact of reserve inflows. We also find that sterilization depends on the composition of balance of payments inflows.

Collateral Damage: Trade Disruption and the Economic Impact of War

Reuven Glick, with
Alan Taylor,
University of California, Davis

Forthcoming in *Review of Economics and Statistics.*

Conventional wisdom in economic history suggests that conflict between countries can be enormously disruptive of economic activity, especially international trade. Yet nothing is known empirically about these effects in large samples. We study the effects of war on bilateral trade for almost all countries with available data extending back to 1870. Using the gravity model, we estimate the contemporaneous and lagged effects of wars on the trade of belligerent nations and neutrals, controlling for other determinants of trade. We find large and persistent impacts of wars on trade, and hence on national and global economic welfare. A rough accounting indicates that such costs might be of the same order of magnitude as the "direct" costs of war, such as lost human capital, as illustrated by case studies of World War I and World War II.

Sovereign Debt Crises and Credit to the Private Sector

Galina B. Hale, with
Carlos Arteta,
Federal Reserve Board of Governors

Published in *Journal of International Economics* 74(1) (January 2008) pp. 53–69.

We use micro-level data to analyze emerging markets' private sector access to international debt markets during sovereign debt crises. We find that these crises are systematically accompanied by a decline in foreign credit to domestic private firms, both during debt renegotiations and for over two years after restructuring agreements are reached. This decline is large, statistically significant, and robust. We find that this effect is concentrated in the nonfinancial sector and is different for firms in the exporting and in the non-exporting sectors. We also find that the magnitude of the effect depends on the type of debt restructuring agreement.

Are There Productivity Spillovers from Foreign Direct Investment in China?

Galina B. Hale, with
Cheryl Long, *Colgate University*

Forthcoming in *Pacific Economic Review.*

We review previous literature on productivity spillovers of foreign direct investment (FDI) in China and conduct our own analysis using a firm-level data set from a World Bank survey. We find that the evidence of FDI spillovers on the productivity of Chinese domestic firms is mixed, with many positive results largely due to aggregation bias or failure to control for endogeneity of FDI. Attempting over 6000 specifications which take into account forward and backward linkages, we fail to find evidence of systematic positive productivity spillovers from FDI in China.

The Decision to First Enter the Public Bond Market: The Role of Firm Reputation, Funding Choices, and Bank Relationships

Galina B. Hale, with
João Santos, *FRB New York*

Published in *Journal of Banking and Finance* 32(9) (September 2008) pp. 1,928–1,940.

This paper uses survival analysis to investigate the timing of a firm's decision to issue for the first time in the public bond market. We find that firms that are more creditworthy and have higher demand for external funds issue their first public bond earlier. We also find that issuing private bonds or taking out syndicated loans is associated with a faster entry to the public bond market. According to our results, the relationships that firms develop with investment banks in connection with their private bond issues and syndicated loans further speed up their entry to the public bond market. Finally, we find that a firm's reputation has a "U-shaped" effect on the timing of a firm's bond IPO. Consistent with Diamond's reputational theory, firms that establish a track record of high creditworthiness, as well as those that establish a track record of low creditworthiness, enter the public bond market earlier than firms with intermediate reputation.

Do Banks Price Their Informational Monopoly?

Galina B. Hale, with
João Santos, *FRB New York*

Forthcoming in
Journal of Financial Economics.

Modern corporate finance theory argues that, although bank monitoring is beneficial to borrowers, it also allows banks to use the information they gain through monitoring to "hold-up" borrowers for higher interest rates. In this paper, we seek empirical evidence for this information hold-up cost. Since new information about a firm's creditworthiness is revealed at the time of its first issue in the public bond market, it follows that after firms undertake their bond IPO, banks with an exploitable information advantage will be forced to adjust their loan interest rates downwards, particularly for firms that are revealed to be safe. We test this hypothesis by comparing banks' loan pricing policies before and after borrowers gain access to public bond markets. To isolate the information hold-up cost we further compare the change in the loan policies between borrowers that already had a credit rating at the time of their bond IPO and borrowers that get their first credit rating at that time. Our findings show that firms are able to borrow at lower interest rates after their bond IPO and that these savings are larger for safer firms. We also find that, among safe firms, those that get their first credit rating at the time of their bond IPO benefit from larger interest rate savings than those that already had a credit rating. These findings provide support for the hypothesis that banks price their informational monopoly. Finally, we find that while entering the public bond market may reduce these informational rents, it is also costly to firms because they have to pay higher underwriting costs on their IPO bond.

Lobbies and Technology Diffusion

Bart Hobijn, with
Diego Comin, *Harvard Business School*

Forthcoming in
Review of Economics and Statistics.

This paper explores whether lobbies slow down technology diffusion. To answer this question, we exploit the differential effect of various institutional attributes that should affect the costs of erecting barriers when the new technology has a technologically close predecessor but not otherwise. We implement this test in a unique data set compiled by us that covers the diffusion of 20 technologies for 23 countries over the past two centuries. We find that each of the relevant institutional variables that affect the costs of erecting barriers has a significantly larger effect on the diffusion of technologies with a competing predecessor technology than when no such technology exists. These effects are quantitatively important. Thus, we conclude that lobbies are an important barrier to technology adoption and to development.

A New Approach to Measuring Technology with an Application to the Shape of the Diffusion Curves

Bart Hobijn, with
Diego Comin, *Harvard Business School*
Emilie Rovito, *FRB New York*

Published in *Journal of Technology Transfer* 33(2) (April 2008) pp. 187–207.

This paper documents the sources and measures of the cross-country historical adoption technology (CHAT) data set that covers the diffusion of about 115 technologies in over 150 countries over the last 200 years. We use this comprehensive data set to explore the shape of the diffusion curves. Our main finding is that, once the intensive margin is measured, technologies do not diffuse in a logistic way.

Technology Usage Lags

Bart Hobijn, with
Diego Comin, *Harvard Business School*
Emilie Rovito, *FRB New York*

Published in *Journal of Economic Growth* 13(4) (December 2008) pp. 237–256.

We present evidence on the differences in the intensity with which 10 major technologies are used in 185 countries across the world. We do so by calculating how many years ago these technologies were used in the U.S. at the same intensity as they are used in the countries in our sample. We denote these time lags as technology usage lags and compare them with lags in real GDP per capita. We find that (i) technology usage lags are large, often comparable to lags in real GDP per capita, (ii) usage lags are highly correlated with lags in per-capita income, and (iii) usage lags are highly correlated across technologies. The productivity differentials between the state-of-the-art technologies that we consider and the ones they replace combined with the usage lags that we document lead us to infer that technology usage disparities might account for a large part of cross-country total factor productivity differentials.

Using Securities Market Information for Bank Supervisory Monitoring

John Krainer
Jose A. Lopez

Published in *International Journal of Central Banking* 4(1) (March 2008) pp. 125–164.

U.S. bank supervisors conduct comprehensive inspections of bank holding companies and assign them a supervisory rating, known as a BOPEC rating prior to 2005, meant to summarize their overall condition. We develop an empirical model of these BOPEC ratings that combines supervisory and securities market information. Securities market variables, such as stock returns and bond yield spreads, improve the model's in-sample fit. Debt market variables provide more information on supervisory ratings for banks closer to default, while equity market variables provide useful information on ratings for banks further from default. The out-of-sample accuracy of the model with securities market variables is little different from that of a model based on supervisory variables alone. However, the model with securities market information identifies additional ratings downgrades, which are of particular importance to bank supervisors who are concerned with systemic risk and contagion.

Asset Price Persistence and Real Estate Market Illiquidity: Evidence from Japanese Land Values

John Krainer and
Mark M. Spiegel, with
Nobuyoshi Yamori, *Nagoya University*

Forthcoming in *Real Estate Economics*.

We develop an overlapping generations model of the real estate market in which search frictions and a debt overhang combine to generate price persistence and illiquidity. Illiquidity stems from heterogeneity in agent real estate valuations. The variance of agent valuations determines how quickly prices adjust following a shock to fundamentals. We examine the predictions of the model by studying depreciation in Japanese land values subsequent to the 1990 stock market crash. Commercial land values fell much more quickly than residential land values. As we would posit that the variance of buyer valuations would be greater for residential real estate than for commercial real estate, this model matches the Japanese experience.

Time-Varying U.S. Inflation Dynamics and the New Keynesian Phillips Curve

Kevin J. Lansing

Forthcoming in
Review of Economic Dynamics.

This paper introduces a form of boundedly rational inflation expectations in the New Keynesian Phillips curve. The representative agent is assumed to behave as an econometrician, employing a time-series model for inflation that allows for both permanent and temporary shocks. The near-unity coefficient on expected inflation in the Phillips curve causes the agent's perception of a unit root in inflation to become close to self-fulfilling. In a "consistent expectations equilibrium," the value of the Kalman gain parameter in the agent's forecast rule is pinned down using the observed autocorrelation of inflation changes. The forecast errors observed by the agent are close to white noise, making it difficult for the agent to detect a misspecification of the forecast rule. I show that this simple model of inflation expectations can generate time-varying persistence and volatility that is broadly similar to that observed in long-run U.S. data. Model-based values for expected inflation track well with movements in survey-based measures of U.S. expected inflation. In numerical simulations, the model can generate pronounced low-frequency swings in the level of inflation that are driven solely by expectational feedback, not by changes in monetary policy.

High Exchange-Rate Volatility and Low Pass-Through

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Giancarlo Corsetti,
European University Institute
Luca Dedola, *European Central Bank*

Forthcoming in
Journal of Monetary Economics.

Two specifications of an open-economy model are shown to generate high exchange-rate volatility and low exchange-rate pass-through (ERPT). In the model, price discrimination causes ERPT to be incomplete in both the short and the long run. In the short run, a small amount of nominal rigidities is enough to reduce ERPT sharply; still, exchange-rate depreciation worsens the terms of trade, consistent with the evidence. Possible biases from omitted variables and measurement error in the ERPT empirical literature (due to data limitations) are investigated using model-generated time series. Estimates of ERPT coefficients can be quite different from true parameters and are sensitive to the shocks driving the economies. Estimates can nonetheless detect key structural features of the models.

International Risk Sharing and the Transmission of Productivity Shocks

Sylvain Leduc, with
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European University Institute
Luca Dedola, *European Central Bank*

Published in *Review of Economic Studies*
75(2) (April 2008) pp. 443–473.

This paper shows that standard international business cycle models can be reconciled with the empirical evidence on the lack of consumption risk sharing. First, we show analytically that with incomplete asset markets productivity disturbances can have large uninsurable effects on wealth, depending on the value of the trade elasticity and shock persistence. Second, we investigate these findings quantitatively in a model calibrated to the U.S. economy. With the low trade elasticity estimated via a method of moments procedure, the consumption risk of productivity shocks is magnified by high terms of trade and real exchange rate (RER) volatility. Strong wealth effects in response to shocks raise the demand for domestic goods above supply, crowding out external demand and appreciating the terms of trade and the RER. Building upon the literature on incomplete markets, we then show that similar results are obtained when productivity shocks are nearly permanent, provided the trade elasticity is set equal to the high values consistent with micro-estimates. Under both approaches the model accounts for the low and negative correlation between the RER and relative (domestic to foreign) consumption in the data—the "Backus–Smith puzzle."

Optimal Monetary Policy and the Sources of Local-Currency Price Stability

Sylvain Leduc, with
Giancarlo Corsetti,
European University Institute
Luca Dedola, *European Central Bank*

Published in *International Dimensions of Monetary Policy*, eds. J. Gali and M. Gertler, Chicago: University of Chicago Press (2008).

We analyze the policy trade-offs generated by local currency price stability of imports in economies where upstream producers strategically interact with downstream firms selling the final goods to consumers. We study the effects of staggered price setting at the downstream level on the optimal price (and markup) chosen by upstream producers and show that downstream price movements affect the desired markup of upstream producers, magnifying their price response to shocks. We revisit the international dimensions of optimal monetary policy, unveiling an argument in favor of consumer price stability as the main prescription for monetary policy. Since stable consumer prices feed back into a low volatility of markups among upstream producers, this contains inefficient deviations from the law of one price at the border. However, efficient stabilization of different CPI components will not generally result in perfect stabilization of headline inflation. National policies optimally respond to the same shocks in a similar way, thus containing volatility of the terms of trade, but not necessarily of the real exchange rate. The latter will be more volatile, among other things, the larger the home bias in expenditure and the content of local inputs in consumer goods.

Productivity, External Balance, and Exchange Rates: Evidence on the Transmission Mechanism among G-7 Countries

Sylvain Leduc, with
Giancarlo Corsetti,
European University Institute
Luca Dedola, *European Central Bank*

Published in *NBER International Seminar on Macroeconomics 2006,* Cambridge, MA: MIT Press Book (2008) pp. 117–194.

This paper investigates the international transmission of productivity shocks in a sample of five G-7 countries. For each country, using long-run restrictions, we identify shocks that permanently increase domestic labor productivity in manufacturing (our measure of tradables) relative to an aggregate of other industrial countries including the rest of the G-7. We find that, consistent with standard theory, these shocks raise relative consumption, deteriorate net exports, and raise the relative price of nontradables—in full accord with the Harrod-Balassa-Samuelson hypothesis. Moreover, the deterioration of the external account is fairly persistent, especially for the U.S. The response of the real exchange rate and (our proxy for) the terms of trade differs across countries: while both relative prices depreciate in Italy and the U.K. (smaller and more open economies), they appreciate in the U.S. and Japan (the largest and least open economies in our sample); results are, however, inconclusive for Germany. These findings question a common view in the literature, that a country's terms of trade fall when its output grows, thus providing a mechanism to contain differences in national wealth when productivity levels do not converge. They enhance our understanding of important episodes such as the strong real appreciation of the dollar as the U.S. productivity growth accelerated in the second half of the 1990s. They also provide an empirical contribution to the current debate on the adjustment of the U.S. current account position. Contrary to widespread presumptions, productivity growth in the U.S. tradable sector does not necessarily improve the U.S. trade deficit nor deteriorate the U.S. terms of trade, at least in the short and medium run.

Investment-Specific Technological Change, Skill Accumulation, and Wage Inequality

Zheng Liu, with
Hui He, *University of Hawaii*

Published in *Review of Economic Dynamics* 11(2) (April 2008) pp. 314–334.

Wage inequality between education groups in the United States has increased substantially since the early 1980s. The relative number of college-educated workers has also increased dramatically in the postwar period. This paper presents a unified framework where the dynamics of both skill accumulation and wage inequality arise as an equilibrium outcome driven by measured investment-specific technological change. Working through equipment-skill complementarity and endogenous skill accumulation, the model does well in capturing the steady growth in the relative quantity of skilled labor during the postwar period and the substantial rise in wage inequality after the early 1980s. Based on the calibrated model, we examine the quantitative effects of some hypothetical tax-policy reforms on skill accumulation, wage inequality, and welfare.

Learning, Adaptive Expectations, and Technology Shocks

Zheng Liu, with
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Tao Zha, *FRB Atlanta*

Forthcoming in *The Economic Journal*.

This study explores the macroeconomic implications of adaptive expectations in a standard growth model. We show that the self-confirming equilibrium under adaptive expectations is the same as the steady-state rational expectations equilibrium for all admissible parameter values, but that dynamics around the steady state are substantially different between the two equilibria. The differences are driven mainly by the dampened wealth effect and the strengthened intertemporal substitution effect, not by escapes emphasized by Williams (2003). Consequently, adaptive expectations can be an important source of frictions that amplify and propagate technology shocks and seem promising for generating plausible labor market dynamics.

Gains from International Monetary Policy Coordination: Does It Pay to Be Different?

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Universitat Autònoma de Barcelona

Published in *Journal of Economic Dynamics and Control* 32(7) (July 2008) pp. 2,085–2,117.

In a two-country world where each country has a traded and a nontraded sector and each sector has sticky prices, optimal independent policy in general cannot replicate the natural-rate allocations. There are potential welfare gains from coordination since the planner under a cooperating regime internalizes a terms-of-trade externality that independent policymakers overlook. If the countries have symmetric trading structures, however, the gains from coordination are quantitatively small. With asymmetric trading structures, the gains can be sizable since, in addition to internalizing the terms-of-trade externality, the planner optimally engineers a terms-of-trade bias that favors the country with a larger traded sector.

Asymmetric Expectation Effects of Regime Shifts in Monetary Policy

Zheng Liu, with
Daniel Waggoner, *FRB Atlanta*
Tao Zha, *FRB Atlanta*

Forthcoming in
Review of Economic Dynamics.

This paper addresses two substantive issues: (1) Does the magnitude of the expectation effect of regime switching in monetary policy depend on a particular policy regime? (2) Under which regime is the expectation effect quantitatively important? Using two canonical dynamic stochastic general equilibrium models, we show that there exists asymmetry in the expectation effect across regimes. The expectation effect under the dovish policy regime is quantitatively more important than that under the hawkish regime. These results suggest that the possibility of regime shifts in monetary policy can have important effects on rational agents' expectation formation and on equilibrium dynamics. They offer a theoretical explanation for the empirical possibility that a policy shift from the dovish regime to the hawkish regime may not be the main source of substantial reductions in the volatilities of inflation and output.

Empirical Analysis of the Average Asset Correlation for Real Estate Investment Trusts

Jose A. Lopez

Forthcoming in *Quantitative Finance.*

The credit risk capital requirements within the current Basel II Accord are based on the asymptotic single risk factor (ASRF) approach. The asset correlation parameter, defined as an obligor's sensitivity to the ASRF, is a key driver within this approach, and its average values for different types of obligors are to be set by regulators. Specifically, for commercial real estate (CRE) lending, the average asset correlations are to be determined using formulas for either income-producing real estate or high-volatility commercial real estate. In this paper, the value of this parameter was empirically examined using portfolios of U.S. publicly traded real estate investment trusts as a proxy for CRE lending more generally. CRE lending as a whole was found to have the same calibrated average asset correlation as corporate lending, providing support for the recent U.S. regulatory decision to treat these two lending categories similarly for regulatory capital purposes. However, the calibrated values for CRE categories, such as multifamily residential or office lending, varied in important ways. The comparison of calibrated and regulatory values of the average asset correlations for these categories suggests that the current regulatory formulas generate parameter values that may be too high in most cases.

EAD Calibration for Corporate Credit Lines

Jose A. Lopez, with
Gabriel Jimenez, *Bank of Spain*
Jesus Saurina, *Bank of Spain*

Forthcoming in *Journal of Risk Management in Financial Institutions.*

Managing the credit risk inherent to a corporate credit line is similar to that of a term loan, but with one key difference. For both instruments, the bank should know the borrower's probability of default and the facility's loss given default. However, since a credit line allows the borrowers to draw down the committed funds according to their own needs, the bank must also have a measure of the line's exposure at default (EAD). In fact, EAD is one of the key parameters used for regulatory capital calculations within the Basel II framework. Yet, relatively few empirical studies of EAD for corporate credit lines have been published, mainly due to a lack of data. A primary goal of this article is to provide calibrated values for use in EAD calculations for corporate credit lines. Our study is based on the Spanish credit register, which provides a census of all corporate lending within Spain over the last 20 years. The length and breadth of this data set allows us to provide the most comprehensive overview of corporate credit line use and EAD calculations to date. Our analysis shows that defaulting firms have significantly higher credit line usage rates and EAD values up to five years prior to their actual default. Furthermore, we find that there are important variations in EAD values due to credit line size, collateralization, and maturity. While our results are derived from data for a single country, they should provide useful benchmarks for further academic, business, and policy research into this underdeveloped area of credit risk management.

Empirical Analysis of Corporate Credit Lines

Jose A. Lopez, with
Gabriel Jimenez, *Bank of Spain*
Jesus Saurina, *Bank of Spain*

Forthcoming in *Review of Financial Studies.*

Since bank credit lines are a major source of corporate funding, we examine the determinants of their usage with a comprehensive database of Spanish corporate credit lines. A line's default status is a key factor driving its usage, which increases as firm financial conditions worsen. Firms with prior defaults access their credit lines less, suggesting that bank monitoring influences firms' usage decisions. Line usage has an aging effect that causes it to decrease by roughly 10 percent per year of its life. Lender characteristics, such as the length of a firm's banking relationships, as well as macroeconomic conditions affect usage decisions.

Examining the Bond Premium Puzzle with a DSGE Model

Glenn D. Rudebusch
Eric T. Swanson

Published in *Journal of Monetary Economics* 55, Supplement 1 (October 2008) pp. S111–S126.

The basic inability of standard theoretical models to generate a sufficiently large and variable nominal bond risk premium has been termed the "bond premium puzzle." We show that the term premium on long-term bonds in the canonical dynamic stochastic general equilibrium (DSGE) model used in macroeconomics is far too small and stable relative to the data. We find that introducing long-memory habits in consumption as well as labor market frictions can help fit the term premium, but only by seriously distorting the DSGE model's ability to fit other macroeconomic variables, such as the real wage; therefore, the bond premium puzzle remains.

Revealing the Secrets of the Temple: The Value of Publishing Central Bank Interest Rate Projections

Glenn D. Rudebusch
John C. Williams

Published in *Asset Prices and Monetary Policy*, ed. J.Y. Campbell. Chicago: University of Chicago Press (2008) pp. 247–284.

The modern view of monetary policy stresses its role in shaping the entire yield curve of interest rates in order to achieve various macroeconomic objectives. A crucial element of this process involves guiding financial market expectations of future central bank actions. Recently, a few central banks have started to explicitly signal their future policy intentions to the public, and two of these banks have even begun publishing their internal interest rate projections. We examine the macroeconomic effects of direct revelation of a central bank's expectations about the future path of the policy rate. We show that, in an economy where private agents have imperfect information about the determination of monetary policy, central bank communication of interest rate projections can help shape financial market expectations and may improve macroeconomic performance.

A Macro-Finance Model of the Term Structure, Monetary Policy, and the Economy

Glenn D. Rudebusch, with
Tao Wu, *FRB Dallas*

Published in *The Economic Journal* 118(530) (July 2008) pp. 906–926.

This article develops and estimates a macro-finance model that combines a canonical affine no-arbitrage finance specification of the term structure of interest rates with standard macroeconomic aggregate relationships for output and inflation. Based on this combination of yield curve and macroeconomic structure and data, we obtain several interesting results: (1) the latent term structure factors from no-arbitrage finance models appear to have important macroeconomic and monetary policy underpinnings, (2) there is no evidence of a slow partial adjustment of the policy interest rate by the central bank, and (3) both forward-looking and backward-looking elements play roles in macroeconomic dynamics.

Financial Globalization and Monetary Policy Discipline

Mark M. Spiegel

Forthcoming in *IMF Staff Papers*.

The literature appears to have reached a consensus that financial globalization has had a "disciplining effect" on monetary policy, as it has reduced the returns from—and hence the temptation for—using monetary policy to stabilize output. As a result, monetary policy over recent years has placed more emphasis on stabilizing inflation, resulting in reduced inflation and greater output stability. However, this consensus has not been accompanied by convincing empirical evidence that such a relationship exists. One reason is likely to be that de facto measures of financial globalization are endogenous, and that instruments for financial globalization are elusive. In this paper, I introduce a new instrument, financial remoteness, as a plausibly exogenous instrument for financial openness. I examine the relationship between financial globalization and median inflation levels over an 11-year cross section from 1994 through 2004, as well as a panel of 5-year median inflation levels between 1980 and 2004. The results confirm a negative relationship between median inflation and financial globalization in the base specification, but this relationship is sensitive to the inclusion of conditioning variables or country fixed effects, precluding any strong inferences.

Monetary and Financial Integration: Evidence from the EMU

Mark M. Spiegel

Forthcoming in *Journal of the Japanese and International Economies.*

This paper examines the impact of European Monetary Union (EMU) accession on bilateral Portuguese international borrowing patterns. Using a difference-in-differences methodology, I demonstrate that Portugal's accession to the EMU was accompanied by a change in its borrowing pattern in favor of borrowing from its EMU partner nations. This extends the evidence in the literature that overall international borrowing is facilitated by the creation of a monetary union and raises the issue of financial diversion. The results are shown to survive a wide variety of robustness checks and are corroborated by preliminary evidence concerning Greece's accession to EMU in 2001.

Monetary and Financial Integration in the EMU: Push or Pull?

Mark M. Spiegel

Forthcoming in *Review of International Economics.*

A number of studies have recently noted that monetary integration in the European Monetary Union (EMU) has been accompanied by increased financial integration. This paper examines the channels through which monetary union increased financial integration, using international panel data on bilateral international commercial bank claims from 1998–2006. I decompose the relative increase in bilateral commercial bank claims among union members following monetary integration into three possible channels: a "borrower effect," as a country's EMU membership may leave its borrowers more creditworthy in the eyes of foreign lenders; a "creditor effect," as membership in a monetary union may increase the attractiveness of a nation's commercial banks as intermediaries, perhaps through increased scale economies enjoyed by commercial banks themselves or through an improved regulatory environment after the advent of monetary union; and a "pairwise effect," as joint membership in a monetary union increases the quality of intermediation between borrowers and creditors when both are in the same union. This pairwise effect could be attributed to mitigated currency risk stemming from monetary integration, but may also indicate that monetary union integration increases borrowing capacity. I decompose the data into a series of difference-in-differences specifications to isolate these three channels and find that the pairwise effect is the primary source of increased financial integration. This result is robust to a number of sensitivity exercises used to address concerns frequently associated with difference-in-differences specifications, such as serial correlation and issues associated with the timing of the intervention.

Moderate Inflation and the Deflation-Depression Link

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

Forthcoming in *Journal of Money, Credit, and Banking.*

In a recent paper, Atkeson and Kehoe (2004) demonstrated the lack of a robust empirical relationship between inflation and growth for a cross-section of countries with 19th and 20th century data, concluding that the historical evidence only provides weak support for the contention that deflation episodes are harmful to economic growth. In this paper, we revisit this relationship by allowing for inflation and growth to have a nonlinear specification dependent on inflation levels. In particular, we allow for the possibility that high inflation is negatively correlated with growth, while a positive relationship exists over the range of negative to moderate inflation. Our results confirm a positive relationship between inflation and growth at moderate inflation levels, and support the contention that the relationship between inflation and growth is nonlinear over the entire sample range.

Economic Spillovers from International Environmental Cooperation

Mark M. Spiegel, with
Andrew Rose,
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Prospects for international environmental cooperation often seem dim, as agreement must hew to the lowest common denominator. This column identifies economic gains from environmental commitments via reputational spillovers and their impact on capital flows. The evidence suggests that nations have more to gain from cooperation than they may realize.

International Financial Remoteness and Macroeconomic Volatility

Mark M. Spiegel, with
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Forthcoming in
Journal of Development Economics.

This paper shows that proximity to major international financial centers seems to reduce business cycle volatility. In particular, we show that countries that are further from major locations of international financial activity systematically experience more volatile growth rates in both output and consumption, even after accounting for domestic financial depth, political institutions, and other controls. Our results are relatively robust in the sense that more financially remote countries are more volatile, though the results are not always statistically significant. The comparative strength of this finding is in contrast to the more ambiguous evidence found in the literature.

Non-Economic Engagement and International Exchange: The Case of Environmental Treaties

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

Forthcoming in *Journal of Money, Credit, and Banking.*

We examine the role of non-economic partnerships in promoting international economic exchange. Since far-sighted countries are more willing to join costly international partnerships such as environmental treaties, environmental engagement tends to encourage international lending. Countries with such non-economic partnerships also find it easier to engage in economic exchanges since they face the possibility that debt default might also spill over to hinder their non-economic relationships. We present a theoretical model of these ideas, and then verify their empirical importance using a bilateral cross-section of data on international crossholdings of assets and environmental treaties. Our results support the notion that international environmental cooperation facilitates economic exchange.

Futures Prices as Risk-Adjusted Forecasts of Monetary Policy

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Published in *Journal of Monetary Economics* 55(4) (May 2008) pp. 677–691.

Many researchers have used federal funds futures rates as measures of financial markets' expectations of future monetary policy. However, to the extent that federal funds futures reflect risk premia, these measures require some adjustment. In this paper, we document that excess returns on federal funds futures have been positive on average and strongly countercyclical. In particular, excess returns are surprisingly well predicted by macroeconomic indicators such as employment growth and financial business-cycle indicators such as Treasury yield spreads and corporate bond spreads. Excess returns on eurodollar futures display similar patterns. We document that simply ignoring these risk premia significantly biases forecasts of the future path of monetary policy. We also show that risk premia matter for some futures-based measures of monetary policy shocks used in the literature.

Welfare-Maximizing Monetary Policy under Parameter Uncertainty

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Thomas Laubach, *Federal Reserve Board*

Forthcoming in
Journal of Applied Econometrics.

This paper examines welfare-maximizing monetary policy in an estimated micro-founded general equilibrium model of the U.S. economy where the policymaker faces uncertainty about model parameters. Uncertainty about parameters describing preferences and technology implies uncertainty about the model's dynamics, utility-based welfare criterion, and the "natural" rates of output and interest that would prevail absent nominal rigidities. We estimate the degree of uncertainty regarding natural rates due to parameter uncertainty. We find that optimal Taylor rules under parameter uncertainty respond less to the output gap and more to price inflation than would be optimal absent parameter uncertainty. We also show that policy rules that focus solely on stabilizing wages and prices yield welfare outcomes very close to the first-best.

Imperfect Knowledge and the Pitfalls of Optimal Control

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Forthcoming in *Monetary Policy under Uncertainty and Learning*,
eds. K. Schmidt-Hebbel and C. Walsh.
Series on Central Banking, Analysis, and Economic Policies, Central Bank of Chile.

This paper examines the robustness characteristics of optimal control policies derived under the assumption of rational expectations to alternative models of expectations formation and uncertainty about the natural rates of interest and unemployment. We assume that agents have imperfect knowledge about the precise structure of the economy and form expectations using a forecasting model that they continuously update based on incoming data. We also allow for central bank uncertainty regarding the natural rates of interest and unemployment. We find that the optimal control policy derived under the assumption of perfect knowledge about the structure of the economy can perform poorly when knowledge is imperfect. These problems are exacerbated by natural rate uncertainty, even when the central bank's estimates of natural rates are efficient. We show that the optimal control approach can be made more robust to the presence of imperfect knowledge by de-emphasizing the stabilization of real economic activity and interest rates relative to inflation in the central bank loss function. That is, robustness to the presence of imperfect knowledge about the economy provides an incentive to employ a "conservative" central banker. We then examine two types of simple monetary policy rules from the literature that have been found to be robust to model misspecification in other contexts. We find that these policies are robust to the alternative models of learning that we study and natural rate uncertainty. We also find that they outperform the optimal control policy and generally perform as well as the robust optimal control policy that places less weight on stabilizing economic activity and interest rates.