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

Forthcoming in *Exchange Rate Dynamics: A New Open Economy Macroeconomics Perspective,* eds. Jean-Olivier Hairault and Thepthida Sopraseuth. 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.

Employment Declines among People with Disabilities: Population Movements, Isolated Experience, or Broad Policy Concern?

Mary C. Daly, with
Andrew J. Houtenville,
Cornell University

Published in *The Decline in Employment of People with Disabilities,* eds. D. Stapleton and R. Burkhauser. Kalamazoo, MI: Upjohn, pp. 87–129.

We look beyond the overall decline in employment among working-age people with disabilities in the 1990s to track the importance of three factors on the observed changes: (1) trends among key subgroups, especially those with employment-risk factors other than disability; (2) population shifts towards subgroups with lower-than-average employment rates; and (3) changes in self-reported health status. Our analysis is based on cross-sectional data from the Current Population Survey. Our results suggest that the decline was broad-based, present in a wide range of demographic and educational subgroups. In terms of population shifts, we find no evidence that compositional changes in the population with disabilities account for the average employment decline during the 1990s. In contrast, we find that compositional changes were important to the increase in employment among those with disabilities during the 1980s. Finally, we show that self-reported health among those with disabilities remained relatively stable in the latter half of the 1990s, making changes in health status an unlikely cause of declining employment rates.

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

Left Behind: SSI in the Era of Welfare Reform

Mary C. Daly, with
Richard V. Burkhauser,
Cornell University

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http://www.ssc.wisc.edu/irp/focus/foc223.pdf

SSI was established in 1972, born out of a compromise at the time between those wanting to provide a guaranteed income floor and those wishing to limit it to individuals not expected to work: the aged, blind, and disabled. SSI is now the largest federal means-tested program in the United States, serving a population dominated by low-income adults and children with disabilities. With other forms of federal support devolving to state programs (e.g., welfare), policymakers pressing to redefine social expectations about who should and should not work, and the Americans with Disabilities Act guaranteeing people with disabilities the right to employment, the goals and design of SSI have come under scrutiny. In this article we review the role that SSI has played to this point and consider the directions SSI might take in a work-dominated welfare environment where people with disabilities increasingly wish to be included in the labor market.

Economic Outcomes of Working-Age People over the Business Cycle: An Examination of the 1980s and 1990s

Mary C. Daly, with
Richard V. Burkhauser,
Cornell University
Andrew J. Houtenville,
Cornell University
Nigar Nargis,
Cornell University

Forthcoming in
Social Science Quarterly.

We examine the rate of employment and the household income of the working-age population (aged 25–61) with and without disabilities over the business cycles of the 1980s and 1990s using data from the March Current Population Survey and the National Health Interview Survey. In general, we find that while the employment of working-age men and women with and without disabilities exhibited a procyclical trend during the 1980s business cycle, this was not the case during the 1990s expansion. During the 1990s, the employment of working-age men and women without disabilities continued to be procyclical, but the employment rates of their counterparts with disabilities declined over the entire 1990s business cycle. Although increases in disability transfer income replaced a significant fraction of their lost earnings, the household income of men and women with disabilities fell relative to the rest of the population over the decade.

Earnings Mobility and Instability

Mary C. Daly, with
Greg J. Duncan,
Northwestern University

Forthcoming in
Review of Income and Wealth.

We study earnings mobility and instability using data from the Panel Study of Income Dynamics. Our main contribution is to update mobility and instability calculations to include data from the 1990s, although we also provide a number of tests of robustness across mobility and instability indicators and sample definitions. All in all, we find few trends in earnings mobility and instability that persist over the 27-year period we study. As with Gottschalk and Moffitt, we find an increase in earnings instability since the 1970s, particularly among younger workers. However, we find no evidence that instability continued to increase throughout the 1980s and early 1990s. With regard to mobility, we find greater upward mobility and less downward mobility of middle-income workers in the 1980s relative to the 1970s. The former trend appears to have reversed itself by the middle of the 1990s. Employment-based indicators are consistent with the earnings-based indicators in showing increased employment instability between the 1970s and later periods.

Exploring the Role of the Real Exchange Rate in Australian Monetary Policy

Richard Dennis

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An important issue in small open economies is whether policymakers should respond to exchange rate movements when they formulate monetary policy. Microfounded models tend to suggest that there is little to be gained from responding to exchange rate movements, and the literature has largely concluded that such a response is unnecessary, or even undesirable. This paper examines this issue using an estimated model of the Australian economy. In contrast to microfounded models, according to this model policymakers should allow for movements in the real exchange rate and the terms-of-trade when they set interest rates. Further, taking real exchange rate movements into account appears even more important with price level targeting than with inflation targeting.

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. We 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.

Communications Equipment: What Has Happened to Prices?

Mark Doms

Forthcoming in *Measuring Capital in the New Economy.* Chicago: University of Chicago Press.

Presented at the Conference on Research in Income and Wealth, NBER, Washington, D.C., April 26–27, 2002.

This paper examines the prices for communications equipment, an important component of information technology. Unlike prices for computers, which officially fall sharply every year, the official prices for communications equipment have barely budged over the past decade. This paper combines earlier work on prices for several segments of communications equipment with new results for public exchanges, fiber-optic equipment, and modems. The results suggest that prices for communications equipment fall much faster than official statistics would indicate, but not as fast as computers. The results presented in this paper, if incorporated into the National Income and Product Accounts, would decrease multifactor productivity growth by about 0.1 percentage point per year and increase the contribution of capital deepening by a like amount. Also, GDP growth would be boosted marginally.

How Fast Do Personal Computers Depreciate? Concepts and New Estimates

Mark Doms, with
Wendy E. Dunn,
Federal Reserve Board of Governors
Stephen D. Oliner,
Federal Reserve Board of Governors
Daniel E. Sichel,
Federal Reserve Board of Governors

Forthcoming in *Tax Policy and the Economy,* Volume 18, ed. James Poterba. Cambridge, MA: MIT Press.

Presented at the NBER Conference on Tax Policy and the Economy, Washington, DC, November 4, 2003.

This paper provides new estimates of depreciation rates for personal computers 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.

Capital Controls and Exchange Rate Instability in Developing Countries

Reuven Glick, with
Michael Hutchison,
University of California, Santa Cruz

Forthcoming in *Journal of International Money and Finance.*

A large literature on the appropriate sequencing of financial liberalization suggests that removing capital controls prematurely may contribute to currency instability. This paper investigates whether legal restrictions on international capital flows are associated with greater currency stability. We employ a comprehensive panel data set of 69 developing economies over the 1975–1997 period, identifying 160 currency crises. We control for macroeconomic, political, and institutional characteristics that influence the probability of a currency crisis, employ alternative measures of restrictions on international payments, and account for possible joint causality between the likelihood of a currency attack and the imposition of capital controls. We find evidence that restrictions on capital flows do not effectively insulate economies from currency problems; rather, countries with less restrictive capital controls and more liberalized regimes appear to be less prone to speculative attacks.

Incorporating Equity Market Information into Supervisory Monitoring Models

John Krainer
Jose A. Lopez

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

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 easily combines supervisory and equity market information. We find that the model's forecasts anticipate supervisory ratings 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.

Forecasting Bank Supervisory Ratings Using Securities Market Information

John Krainer
Jose A. Lopez

Forthcoming in *FRB Chicago Bank Structure and Competition Conference Proceedings.*

Approximately once a year, bank supervisors in the United States conduct a comprehensive on-site inspection of a bank holding company and assign it a supervisory rating meant to summarize its overall condition. We develop an empirical forecasting model of these ratings that combines accounting and financial market data. We find that securities market variables, such as stock returns and changes in bond yield spreads, improve the model's in-sample fit. Both equity and debt market variables appear to be useful for explaining upgrades and downgrades. We conclude that stock and bond market investors possess different but complementary information about bank holding company condition. In an out-of-sample forecasting exercise, we find that the forecast accuracy of the model with both equity and debt variables is little different from the accuracy of a model based on accounting and lagged supervisory data alone.

Impact of Deposit Rate Deregulation in Hong Kong on the Market Value of Commercial Banks

Simon Kwan

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This paper examines the effects of a series of events leading up to the deregulation of deposit interest rates in Hong Kong on the market value of banks. All the evidence suggests that banks earned rents from deposit interest rate rules, and deregulation would lower these rents and hence bank market values. On average, the total abnormal return due to interest rate deregulation was around negative 4 percent. There is some evidence that large banks and banks with high deposit-to-asset ratios suffered a bigger drop in value, suggesting that these banks enjoyed a bigger subsidy under the interest rate rules.

Operating Performance of Banks among Asian Economies: An International and Time Series Comparison

Simon Kwan

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Per unit bank operating costs are found to vary significantly across Asian countries and over time. The strong correlation between per unit labor cost and physical capital cost suggests that there exist systematic differences in bank operating efficiency across countries. The declining operating costs between 1992 and 1997 are consistent with improving operating performance. Since 1997, the run-up in operating costs coincided with the Asian financial crisis, suggesting that banks incurred additional costs to deal with problem loans while outputs declined simultaneously. Labor cost share is also found to decline significantly between 1997 and 1999, perhaps because banks were able to cut labor force faster than physical capital. Significant differences in labor cost share across countries suggest cross-country differences in bank production functions. The positive relation between labor cost share and wage rate indicates that banks using more labor is due to labor force productivity, rather than labor being cheap.

Market Evidence on the Opaqueness of Banking Firms' Assets

Simon Kwan, with
Mark J. Flannery,
University of Florida, Gainesville
M. Nimalendran,
University of Florida, Gainesville

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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.

Forward-Looking Behavior and Optimal Discretionary Monetary Policy

Kevin Lansing
Bharat Trehan

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This paper derives a closed-form solution for the optimal discretionary monetary policy in a small macroeconomic model that allows for varying degrees of forward-looking behavior. We show that a more forward-looking aggregate demand equation serves to attenuate the response to inflation and the output gap in the optimal interest rate rule. In contrast, a more forward-looking real interest rate equation serves to magnify the response to both variables. A more forward-looking Phillips curve serves to attenuate the response to inflation but magnify the response to the output gap. The results have implications for studies that attempt to reconcile estimated versions of the central bank's policy rule with optimal discretionary monetary policy. In particular, a successful reconciliation is likely to require a different degree of forward-looking behavior in each part of the model economy.

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

Kevin Lansing, with
Steven P. Cassou,
Kansas State University

Published in *Economic Inquiry* 42(2) (April 2004) pp. 194–213.

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This paper develops a quantitative general equilibrium model to assess the growth effects of adopting a flat tax plan similar to the one proposed by Hall and Rabushka (1995). Using parameters calibrated to match the level and slope of the U.S. tax schedule and other features of the U.S. economy, 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. For the endogenous-growth version of the 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. We find that 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. For the neoclassical growth model, we find that the transition dynamics following the adoption of a flat tax can be quite lengthy. In the years immediately following the reform, the economy's output trajectory is quite similar to that of the endogenous growth model. In both versions of the model, shifting to a flat tax initially produces a growth slowdown due to the higher post-reform tax rate that is

needed to maintain revenue neutrality. After about six years, the additional capital accumulation induced by changes in the tax code allows the post-reform output trajectory to overtake the pre-reform trend.

Globally Stabilizing Fiscal Policy Rules

Kevin Lansing, with
Jang-Ting Guo,
University of California, Riverside

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This paper demonstrates how fiscal policy rules can be designed to eliminate all forms of endogenous fluctuations in a one-sector growth model with increasing returns-to-scale. When the policy rules are implemented, agents' optimal decisions depend only on the current state of the economy and not on any expected future states. This property shuts down the mechanism for expectations-driven fluctuations. The proposed policy rules ensure a globally unique and stable equilibrium, regardless of the degree of increasing returns.

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

Jose A. Lopez

Forthcoming in *Journal of Financial Intermediation.*

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. We examine the empirical relationship between this parameter and 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.

Formulating the Imputed Cost of Equity Capital for Priced Services at Federal Reserve Banks

Jose A. Lopez, with
Edward J. Green, *FRB Chicago*
Zhenyu Wang, *Columbia University*

Published in *FRB New York Economic Policy Review* 9(3) (September) pp. 55–81.

According to the 1980 Monetary Control Act, the Federal Reserve Banks must establish fees for their priced services to recover all operating costs as well as the imputed costs of capital and taxes that would be incurred by a profit-making firm. Since 2002, the Federal Reserve has made fundamental changes to the calculations used to set the imputed costs. This article describes and analyzes the current approach, which is based on a simple average of three methods as applied to a peer group of bank holding companies. The methods estimate the cost of equity capital from three perspectives—the historical average of comparable accounting earnings, the discounted value of expected future cash flows, and the equilibrium price of investment risk as per the capital asset pricing model. The authors show that the current approach also provides stable and sensible estimates of the cost of equity capital over the past 20 years.

Assessing the Lucas Critique in Monetary Policy Models

Glenn Rudebusch

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

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.

Estimating the Euler Equation for Output

Glenn Rudebusch, with
Jeffrey Fuhrer, *FRB Boston*

Forthcoming in *Journal of Monetary Economics.*

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.

Currency Boards, Dollarized Liabilities, and Monetary Policy Credibility

Mark Spiegel
Diego Valderrama

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The recent collapse of the Argentine currency board raises new questions about the desirability of formal fixed exchange rate regimes. This paper examines the relative performance of a currency board with costly abandonment in the presence of dollarized liabilities to a fully discretionary regime. Our results demonstrate that neither regime necessarily dominates with only idiosyncratic firm shocks, but discretion unambiguously dominates with the addition of shocks to the dollar–euro rate. The relatively strong performance of the discretionary regime in this model stems from the benign impact of dollarized liabilities on the monetary authority's time-inconsistency problem.

Sterilization Costs and Exchange Rate Targeting

Mark Spiegel, with
Kenneth Kletzer,
University of California, Santa Cruz

Forthcoming in *Journal of International Money and Finance.*

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.

The Impact of Japan's Financial Stabilization Laws on Bank Equity Values

Mark Spiegel, with
Nobuyoshi Yamori, *Nagoya University*

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In the fall of 1998, two important financial regulatory reform acts were passed in Japan. The Financial Reconstruction Act created a bridge bank scheme and provided funds for the resolution of failed banks. The Rapid Recapitalization Act provided funds for the assistance of troubled banks. These acts provided government assistance to the banking sector and called for reforms aimed at strengthening the regulatory environment. Using an event study framework, we examine the anticipated impact of these regulatory reforms. Our evidence suggests that the Financial Reconstruction Act was expected to hurt large banks, while the anticipated impact of the act by financial strength was mixed. In contrast, the anticipated impact of the Rapid Recapitalization Act was expected to be anti-reform, as news favorable to its passage disproportionately favored large and weak Japanese banks.

Financial Turbulence and the Japanese Main Bank Relationship

Mark Spiegel, with
Nobuyoshi Yamori, *Nagoya University*

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Under the Japanese "main bank" relationship, a bank holds equity in a firm and plays a leading role in its decisionmaking and financing. This may leave a firm dependent on its main bank for financing due to its information advantage over other potential lenders. This dependency may be particularly severe during episodes of financial turbulence. We examine the sensitivity of returns on portfolios of Japanese firm equity to the returns of their main banks using a three-factor arbitrage-pricing model. We find no significant dependence when coefficient values are held constant over the entire sample. However, the data strongly suggest a structural break in the relationship subsequent to the last quarter of 1997, a turbulent period for Japanese financial markets. When a structural break is introduced, main bank sensitivity increases after the break, usually to significantly positive levels.

Measuring the Natural Rate of Interest

John C. Williams, with
Thomas Laubach,
Federal Reserve Board of Governors

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The natural rate of interest—the real interest rate consistent with output equaling its natural rate and stable inflation—plays a central role in macroeconomic theory and monetary policy. Estimation of the natural rate of interest, however, has received little attention. We apply the Kalman filter to estimate jointly time-varying natural rates of interest and output and trend growth. We find a close link between the natural rate of interest and the trend growth rate, as predicted by theory. Estimates of the natural rate of interest, however, are very imprecise and subject to considerable real-time measurement error.

The Performance of Forecast-Based Monetary Policy Rules under Model Uncertainty

John C. Williams, with
Andrew Levin,
Federal Reserve Board of Governors
Volker Wieland,
Goethe University

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We investigate the performance of forecast-based monetary policy rules using five macroeconomic models that reflect a wide range of views on aggregate dynamics. We identify the key characteristics of rules that are robust to model uncertainty; such rules respond to the one-year-ahead inflation forecast and to the current output gap and incorporate a substantial degree of policy inertia. In contrast, rules with longer forecast horizons are less robust and are prone to generating indeterminacy. Finally, we identify a robust benchmark rule that performs very well in all five models over a wide range of policy preferences.

Robust Monetary Policy with Competing Reference Models

John C. Williams, with
Andrew T. Levin,
Federal Reserve Board of Governors

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The existing literature on robust monetary policy rules has largely focused on the case in which the policymaker has a single reference model while the true economy lies within a specified neighborhood of the reference model. In this paper, we show that such rules may perform very poorly in the more general case in which non-nested models represent competing perspectives about controversial issues such as expectations formation and inflation persistence. Using Bayesian and minimax strategies, we then consider whether any simple rule can provide robust performance across such divergent representations of the economy. We find that a robust outcome is attainable only in cases where the objective function places substantial weight on stabilizing both output and inflation; in contrast, we are unable to find a robust policy rule when the sole policy objective is to stabilize inflation. We analyze these results using a new diagnostic approach, namely, by quantifying the fault tolerance of each model economy with respect to deviations from optimal policy.

Embodying Embodiment in a Structural, Macroeconomic Input-Output Model

Daniel J. Wilson

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Economic Systems Research 15(3)
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In this paper, I develop a regression-based system of labor productivity equations that account for capital-embodied technological change, and I incorporate this system into IDLIFT, a structural, macroeconomic input-output model of the U.S. economy. Builders of regression-based forecasting models have long had difficulty finding labor productivity equations that exhibit the "Solowian" property that movements in investment should cause accompanying movements in labor productivity. The production theory developed by Solow and others dictates that this causation is driven by the effect of traditional capital deepening as well as technological change embodied in capital. Lack of measurement of the latter has hampered the ability of researchers to estimate properly the productivity-investment relationship. Recent research by Wilson (2001) has alleviated this difficulty by estimating industry-level embodied technological change. In this paper, I utilize those estimates to construct capital stocks adjusted for technological change and then use these adjusted stocks to estimate Solow-type labor productivity equations. It is shown that replacing IDLIFT's former productivity equations, based on changes in output and time trends, with the new equations, results in a convergence between the dynamic behavior of the model and that predicted by traditional (Solowian) production theory.

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 large differences in investment composition. Second, we explain these differences as being based on each equipment type's intrinsic efficiency, as well as on its degree of complementarity with other factors whose abundance differ across countries. Third, we examine the implications of investment composition for development accounting, i.e., for explaining the cross-country variation in income per capita.

Quantifying Embodied Technological Change

Daniel J. Wilson, with
Plutarchos Sakellaris,
University of Maryland

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We estimate the rate of embodied technological change directly from plant-level manufacturing data on current output and input choices along with histories on their vintages of equipment investment. Our estimates range between 8 percent and 17 percent for the typical U.S. manufacturing plant during the years 1972–1996. Any number in this range is substantially larger than is conventionally accepted with some important implications. First, the role of investment-specific technological change as an engine of growth is even larger than previously estimated. Second, existing producer durable price indexes do not adequately account for quality change. As a result, measured capital stock growth is biased. Third, if accurate, the Hulten and Wykoff (1981) economic depreciation rates may primarily reflect obsolescence.

Stylized Facts on Nominal Term Structure and Business Cycles: An Empirical VAR Study

Tao Wu

Published in *Applied Economics* 35(8) (May 20) pp. 901–906.

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This paper examines the importance of various macroeconomic shocks in explaining the movement of the term structure of nominal bond yields in the post-war U.S., as well as the channels through which such macro shocks influence the yield curve, using a structural vector autoregressive model. The results show that the monetary policy and the aggregate supply shocks are important determinants of the nominal term structure. Moreover, the monetary policy innovations have a large but transitory effect on the nominal bond yields, primarily by changing the slope of the yield curve, and the aggregate supply shocks from the private sector have a more persistent effect on the level of the yield curve but have little effect on the slope of the yield curve.