RESEARCH RAP

A Wrap-Up of Recent Working Papers From the Federal Reserve Bank of Philadelphia

Issue 2003

DATA REVISIONS AND THE IDENTIFICATION OF MONETARY POLICY SHOCKS

Monetary policy research using time-series methods has been criticized for using revised data that were not known to anyone during the actual period of empirical analysis. The Philadelphia Fed's real-time data set, developed by Dean Croushore and Tom Stark, however, gives researchers access to the original data releases that would have been used by analysts and policymakers in a given time period. How much of a difference, then, does this information make to empirical analyses of monetary policy shocks?

This paper considers two approaches to addressing the fact that the macroeconomic data sets of econometricians are changing over time because of data revisions. The first approach is to assess the sensitivity of vector autoregression (VAR) estimates across different data vintages. The second approach considers a statistical model of data revisions and implements an alternative, real-time estimation strategy to overcome errors-in-variables biases. The authors conclude that the use of revised data in VAR analyses of monetary policy shocks may not be a serious limitation.

Working Paper 03-1, "Data Revisions and the Identification of Monetary Policy Shocks," Dean Croushore, University of Richmond, formerly Federal Reserve Bank of Philadelphia, and Charles L. Evans, Federal Reserve Bank of Chicago

THE EFFECTS OF A BABY BOOM ON STOCK PRICES AND CAPITAL ACCUMULATION IN THE PRESENCE OF SOCIAL SECURITY

Is the stock market boom a result of the baby boom? In this paper Andrew B. Abel examines the long-term sustained increase in the value of the stock market over the period since 1980. He develops an overlapping generations model in which a baby boom is modeled as a high realization of a random birth rate and the price of capital is determined endogenously. A baby boom increases national saving and investment and thus causes an increase in the price of capital. The price of capital is mean-reverting, so the initial increase in the price of capital is followed by a decrease.

Social Security, according to the author, can potentially affect national saving and investment, though in the long run, it does not affect the price of capital.

Working Paper 03-2, "The Effects of a Baby Boom on Stock Prices and Capital Accumulation in the Presence of Social Security," Andrew B. Abel, The Wharton School of the University of Pennsylvania, NBER, and Visiting Scholar, Federal Reserve Bank of Philadelphia

NON-EXCLUSIVE CONTRACTS, COLLATERALIZED TRADE, AND A THEORY OF AN EXCHANGE

Liquid markets in which agents have limited capacity to sign exclusive contracts, as well as imperfect knowledge of previous transactions by others, raise the risk of an agent's promising the same asset to multiple counterparties and subsequently defaulting. In this paper, Yaron Leitner shows that in such markets an exchange can arise as a very simple type of intermediary whose only role is to set limits on the number of contracts that agents can report. In addition, reporting can be voluntary. In some cases, these limits must be nonbinding in equilibrium, and reported trades must not be made public. A costly alternative to an exchange is collateralized trade, and the gains from an exchange increase when agents have more intangible capital, or when markets are more liquid.

Working Paper 03-3, "Non-Exclusive Contracts, Collateralized Trade, and a Theory of an Exchange," Yaron Leitner, Federal Reserve Bank of Philadelphia

BACKWARD-LOOKING INTEREST-RATE RULES, INTEREST-RATE SMOOTHING, AND MACROECONOMIC INSTABILITY

Research on the ability of interest-rate rules for monetary policy to stabilize the economy has stressed the perils of linking interest rates to forecasts of future inflation. Such rules have been found to give rise to aggregate fluctuations because expectations are self-fulfilling. In response to this, additional research has focused on the stabilizing properties of interest-rate rules whereby the central bank responds to a past measure of inflation. The view that has emerged is that backward-looking rules contribute to protecting the economy from fluctuations driven by expectations.

A common characteristic of existing studies that arrive at this conclusion is their focus on local analysis. The authors of this paper conduct a more global analysis and find that backward-looking interest-rate feedback rules do not guarantee that fluctuations are dampened. The authors' analysis also indicates that policy rules whereby the interest rate is set as a function of the past interest rate and current inflation are likely to ensure global stability provided the coefficient on lagged interest rates is greater than unity.

Working Paper 03-4, "Backward-Looking Interest-Rate Rules, Interest-Rate Smoothing, and Macroeconomic Instability," Jess Benhabib, New York University; Stephanie Schmitt-Grohe, Rutgers University, CEPR, and NBER; and Martin Uribe, University of Pennsylvania, NBER, and Visiting Scholar, Federal Reserve Bank of Philadelphia

HOW STRONG IS CO-MOVEMENT IN EMPLOYMENT OVER THE BUSINESS CYCLE?

In this paper, the authors measure the degree of business-cycle co-movement in quarterly industry employment at state and regional levels. The analysis covers the years 1942 to 1995, a period that includes 10 national business cycles as defined by the National Bureau of Economic Research. The data indicate that there is co-movement in the business cycle across industries and across states but the degree of co-movement is relatively weak. The results suggest that the degree of co-movement across business cycles has risen over time and as regions have grown in geographic size. The authors present evidence that the measured degree of co-movement is sensitive to the chosen periodicity of the data and that there is much greater cohesion across states for a given industry than across different industries within a state.

An investigation into the sources of cross-state variation in the level of business cycle co-movements reveals that important determinants include the strength of input-output linkages within each state, the different effects of monetary policy actions on each state's employment, and the degree of industrial diversity within a state.

Working Paper 03-5, "How Strong Is Co-Movement in Employment Over the Business Cycle? Evidence from State/Industry Data," Gerald A. Carlino, Federal Reserve Bank of Philadelphia, and Robert H. DeFina, Villanova University

THE VALUE OF RECOURSE TO ASSET-BACKED SECURITIES

This paper uses data from revolving credit card securitizations to show that, if a bank gets into a position where implicit recourse has become necessary, then actually providing that recourse may benefit short- and long-term stock returns and long-term operating performance of sponsors. The paper suggests that this result may come about because those sponsors providing the recourse do not seem to have high default or insolvency risk. However, sponsors providing recourse do experience an abnormal delay in their normal issuance cycle around the event. Therefore, the authors conclude that recourse may have beneficial effects for sponsors by revealing that the shocks that made recourse necessary are transitory.

Working Paper 03-6, "What Is the Value of Recourse to Asset-Backed Securities? A Clinical Study of Credit Card Banks," Eric J. Higgins, Kansas State University, and Joseph R. Mason, Drexel University, and Visiting Scholar, Federal Reserve Bank of Philadelphia

CREDIT CARD SECURITIZATION AND REGULATORY ARBITRAGE

This paper explores the motivations and desirability of off-balance-sheet financing of credit card receivables by banks. The authors explore three related issues: the degree to which securitizations result in the transfer of risk out of the originating bank, the extent to which securitization permits banks to economize on capital by avoiding regulatory minimum capital requirements, and whether banks' avoidance of minimum capital regulation through securitization with implicit recourse has been undesirable from a regulatory standpoint.

The authors show that this intermediation structure could be motivated either by efficient contracting, which would be desirable, or by abuse of the safety net, which would be undesirable. They find that securitization results in some transfer of risk out of the originating bank but that risk remains in the securitizing bank as a result of implicit recourse. The authors also find, however, that securitizing banks set their capital relative to managed assets according to market perceptions of their risk. When managing their risk, they do not seem to be motivated by maximizing implicit subsidies related to the government safety net.

Working Paper 03-7, "Credit Card Securitization and Regulatory Arbitrage," Charles W. Calomiris, Columbia University, and NBER; and Joseph R. Mason, Drexel University, and Visiting Scholar, Federal Reserve Bank of Philadelphia

A SHORT-TERM MODEL OF THE FED'S PORTFOLIO CHOICE

What would happen if the Federal Reserve were to change the assets in its portfolio? In this paper, Dean Croushore creates a model in which the Fed, instead of using open-market operations in Treasury securities to increase the monetary base, engages in open-market operations in private securities or uses discount loans via a mechanism that allows banks to borrow as much as they would like at a fixed discount rate. The model demonstrates how a change in the Fed's portfolio would affect the economy's general equilibrium at a given point in time.

Working Paper 03-8, "A Short-Term Model of the Fed's Portfolio Choice," Dean Croushore, Federal Reserve Bank of Philadelphia

URBAN DECLINE & HOUSING REINVESTMENT

In the latter half of the 20th century, many American cities, such as Detroit, Cleveland, and Philadelphia, suffered a significant decay in much of their housing stock. In this paper, Albert Saiz and Joseph Gyourko examine the decay in the housing markets of declining areas and ask whether this process is exclusively demand driven or whether the supply side of the housing market plays a meaningful role.

The authors find that construction costs are not sensitive to building activity, suggesting that the supply of structures is very elastic. The paper shows that unions and regional factors significantly influence construction costs across areas, with income and regulatory effort playing lesser roles. The authors present evidence on the relationships among house prices, construction costs, and reinvestment. Their results imply that supply-side policies that generated a 10 percent reduction in construction costs could have a considerable impact on housing reinvestment in some areas.

Working Paper 03-9, "Urban Decline and Housing Reinvestment: The Role of Construction Costs and the Supply Side," Albert Saiz, University of Pennsylvania, formerly Federal Reserve Bank of Philadelphia; Joseph Gyourko, University of Pennsylvania

THE ECONOMICS OF PAYMENT CARD NETWORKS

General-purpose payment cards – Visa or MasterCard, ATM cards, and debit cards – are ubiquitous in the United States, displacing the paper check at the point of sale. This paper, by Robert M. Hunt, describes how payment cards work and explains how the market for consumer payment methods differs from most other markets that economists study. These differences have implications for when, why, and how the rules of antitrust law — which regulate how firms may exercise market power — should be applied to this industry.

Payment cards have two important distinguishing features. First, they exhibit network externalities — payment cards are more valuable to consumers when more merchants accept them. Second, thousands of banks and other firms provide payment card services to millions of cardholders and merchants who accept the cards. Payment networks coordinate the behavior of banks, merchants, and consumers by setting certain prices and rules. The challenge for policymakers is deciding whether a network's pricing strategy and rules are likely to advance or retard economic efficiency. However, a network that exercises market power may stimulate the development of superior payment technologies, hastening its own replacement.

Working Paper 03-10, "An Introduction to the Economics of Payment Card Networks," Robert M. Hunt, Federal Reserve Bank of Philadelphia

GLOBAL WELFARE IN PHARMACEUTICAL PATENTING

This paper, by F. M. Scherer, revisits the question of whether global welfare is higher under a uniform worldwide system of pharmaceutical product patents or with international rules allowing low-income nations to free ride on the discoveries of firms in wealthy nations. Key variables include the extent to which free riding reduces the discovery of new drugs; the rent potential of rich, as compared to poor, nations; the ratio of the marginal utility of income in poor, as compared to rich, nations; and the competitive environment within which R&D decisions are made.

Global welfare, according to the author, is higher with free riding over plausible discovery impairment and income utility combinations, especially when rent-seeking behavior leads to an expansion of R&D outlays exhausting appropriable rents.

Working Paper 03-11, "A Note of Global Welfare in Pharmaceutical Patenting," F.M. Scherer, Harvard University, Princeton University, and Visiting Scholar, Federal Reserve Bank of Philadelphia

IMMIGRATION AND HOUSING RENTS IN AMERICAN CITIES

Immigration is one of the most important factors in the demographic evolution of the United States. Immigrants and their offspring will account for as much as two thirds of population growth from 1995 to 2050. Its effects will be particularly salient in the areas where immigrants cluster, especially the major American metropolitan areas, such as New York, Los Angeles, and Miami. In this paper, Albert Saiz questions, "What is the local impact of such immigration inflows in American cities?"

While many economists look to wage impacts to study the local impact of immigration, Saiz looks to the housing market and finds an impact on the purchasing power of renters that is an order of magnitude larger than the estimates from the wage literature. Such results aid in understanding the local distributive impact of immigration and the link between immigration and the residential location decision of natives.

Working Paper 03-12, "Immigration and Housing Rents in American Cities," Albert Saiz, University of Pennsylvania, formerly Federal Reserve Bank of Philadelphia

APPLYING EFFICIENCY MEASUREMENT TECHNIQUES TO CENTRAL BANKS

Efficiency measurement is frequently used to assess the performance of financial institutions. In this paper, Loretta J. Mester reviews the standard methods of measuring the efficiency of financial institutions and discusses some of the issues that arise when attempting to apply standard efficiency methods to central banks.

In the U.S., central bank activities include monetary policy, bank supervision and regulation, and payment services. In certain cases, such as the provision of check clearing operations or ACH, the standard efficiency measurement techniques can and have been successfully applied. However, the uniqueness of many central banking activities, the difficulty in measuring some of the central banking outputs, and the complicated and multiple objectives pursued by central banks complicates the application of the standard efficiency measurement techniques to the majority of central banking activities. There are some insights to be gained by thinking of central bank production using the efficiency model.

Working Paper 03-13, "Applying Efficiency Measurement Techniques to Central Banks," Loretta J. Mester, Federal Reserve Bank of Philadelphia

THE MACROECONOMICS OF U.S. CONSUMER BANKRUPTCY CHOICE

Because of the surge in U.S. personal defaults, Congress has recently debated bankruptcy reform legislation that would have required a means test for Chapter 7 filers. This paper, by Wenli Li and Pierre-Daniel Sarte, explores the effects of such a reform in a model where bankruptcy options and production are explicitly taken into account.

The authors find that means testing would not improve upon current bankruptcy provisions, and, at best, leaves aggregate filings, output, and welfare unchanged. However, they find that a tightening of existing bankruptcy laws, in the form of lower Chapter 7 asset exemptions, can be welfare improving. Their analysis also suggests that eliminating bankruptcy entirely would cause significant declines in both output and welfare.

Working Paper 03-14, "The Macroeconomics of U.S. Consumer Bankruptcy Choice: Chapter 7 or Chapter 13?" Wenli Li, Federal Reserve Bank of Philadelphia; and Pierre-Daniel Sarte, Federal Reserve Bank of Richmond

GROWTH EFFECTS OF PROGRESSIVE TAXES

In this paper, Wenli Li and Pierre-Daniel Sarte study the effects of progressive taxes, that is, marginal tax rates that rise with income, in conventional endogenous growth models augmented to include households who have different preferences. In such a framework the authors are able to distinguish between marginal tax rates and the empirical proxies typically used for these rates, such as the share of tax revenue, or government expenditures, in GDP. The analysis then illustrates how the endogenous nature of such proxy variables causes them to be weakly correlated, or even increase, with economic growth.

Additionally, while the authors' analysis indicates that the growth effects of tax changes have likely been small in the U.S., they find that cross-country differences in tax codes can explain more than a 2.5 percent variation in growth rates.

Working Paper 03-15, "Growth Effects of Progressive Taxes," Wenli Li, Federal Reserve Bank of Philadelphia, and Pierre-Daniel Sarte, Federal Reserve Bank of Richmond

COST SAVINGS FROM ELECTRONIC PAYMENTS AND ATMS IN EUROPE

Electronic payments, including point-of-sale purchases, bill payments, and direct deposit, are considerably cheaper for banking institutions than their paper-based alternatives. Similarly, ATMs provide a more cost-efficient manner of delivering certain depositor services than do branch offices. In this paper, authors David Humphrey, Magnus Willesson, Göran Bergendahl, and Ted Lindblom attempt to determine the change in bank operating costs from the shift to electronic payments and ATM use in Europe. They conduct a statistical analysis that relates cross-country national banking system operating costs to national information on the transaction volume of four different types of payment instruments, numbers of ATMs, and banking offices, as well as labor and capital input prices in a panel data set.

The authors discovered that as the share of electronic payments in 12 European countries rose from 0.43 in 1987 to 0.79 in 1999 and ATMs expanded while the number of bank branches remained constant, bank operating costs are estimated to be $32 billion lower than they otherwise might have been, saving 0.38 percent of the 12 nations' GDP.

Working Paper 03-16, "Cost Savings from Electronic Payments and ATMs in Europe," David Humphrey, Florida State University, and Visiting Scholar, Federal Reserve Bank of Philadelphia; Magnus Willesson, Göran Bergendahl, and Ted Lindblom, University of Gothenburg, Gothenburg, Sweden

AN EMPIRICAL LOOK AT SOFTWARE PATENTS

Over the last 30 years, federal courts, and to a lesser extent the U.S. Patent and Trademark Office, have made it easier to obtain patents on inventions that use software. In this paper, authors James Bessen and Robert M. Hunt explore the general characteristics of software patenting over the last two decades to determine 1) if software patents are equivalent in value and cost to other patents, and 2) if the availability of software patents has stimulated private R&D spending.

According to the authors, 15 percent of all patents granted today are software patents. Software patents are acquired primarily by manufacturing firms and large firms. Only 6 percent of software patents are assigned to software publishers. The authors find that software patents are now relatively inexpensive, when compared to other patents. They also find that, during the 1990s, firms that focused on software patenting significantly increased their overall rate of patenting. At the same time the research intensity of these firms, relative to all other firms, declined. The authors conclude that a variety of explanations are consistent with these patterns, but the simple incentive theory of patents — that granting more and stronger property rights encourages more investment in R&D — is not one of them.

Working Paper 03-17, "An Empirical Look at Software Patents," James Bessen, Research on Innovation; and Robert M. Hunt, Federal Reserve Bank of Philadelphia

THE CYCLICAL BEHAVIOR OF STATE EMPLOYMENT DURING THE POSTWAR PERIOD

In this paper, Gerald Carlino, Robert DeFina, and Keith Sill document a substantial decline in the volatility of employment measured at business-cycle frequencies over the postwar period and examine some possible sources of the decline. Using a unique data set on quarterly employment levels by state and industry, the authors find that the decline stems largely from a drop in the volatility of employment shocks and that the decline is widespread across industries and states.

Their analysis indicates that fluctuations in the average size of employment shocks have been a major influence, although the reasons for the smaller shocks are not well understood. The authors find that industry and demographic structure affected volatility, though the effect is small.

Given the substantial impact of the decline in the size of employment shocks, the authors suggest further research to determine its possible causes.

Working Paper No. 03-18, "Postwar Period Changes in Employment Volatility: New Evidence from State/Industry Panel Data," Gerald Carlino, Federal Reserve Bank of Philadelphia; Robert DeFina, Villanova University; and Keith Sill, Federal Reserve Bank of Philadelphia

INTERNATIONAL RISK-SHARING AND THE TRANSMISSION OF PRODUCTIVITY SHOCKS

A puzzling aspect of international finance is that real exchange rates are volatile and, in contradiction to efficient risk-sharing, negatively correlated with relative consumption across countries. This paper, by Giancarlo Corsetti, Luca Dedola, and Sylvain Leduc, shows that a model with incomplete markets and a low price elasticity of imports can account for these properties of real exchange rates. The low price elasticity stems from introducing distribution services, which drives a wedge between producer and consumer prices and lowers the impact of terms-of-trade changes on optimal agents' decisions.

Working Paper 03-19, "International Risk-Sharing and the Transmission of Productivity Shocks," Giancarlo Corsetti, European Univerisity Institute, and CEPR; Luca Dedola, Bank of Italy; and Sylvain Leduc, Federal Reserve Bank of Philadelphia

ON THE WELFARE GAINS OF ELIMINATING A SMALL LIKELIHOOD OF ECONOMIC CRISES

In this paper, Satyajit Chatterjee and Dean Corbae estimate the benefit of stabilization policies designed to prevent the occurrence of a Depression-style collapse of economic activity. The authors estimate the probability of the U.S. moving into a Depression-like state to be once in every 83 years. Despite the small probability of the U.S. encountering such a Depression-style event, the authors argue that the welfare gain from setting it to zero can range between 1 percent and 7 percent of annual consumption, in perpetuity. The authors note that these estimates are large in comparison to welfare costs typically found for microeconomic distortions, suggesting there may be a net benefit to policies directed toward preventing economic instability.

Working Paper 03-20, "On the Welfare Gains of Eliminating a Small Likelihood of Economic Crises: A Case for Stabilization Policies?" Satyajit Chatterjee, Federal Reserve Bank of Philadelphia, and Dean Corbae, University of Texas

THE EVOLUTION OF THE PHILADELPHIA STOCK EXCHANGE: 1964-2002

This paper, by John P. Caskey, analyzes the evolution of the Philadelphia Stock Exchange (PHLX) — America's oldest — over the period from 1964 through 2002. In doing so, it addresses one central question: During this period, how did the PHLX manage to attract a sufficient volume of trading orders to support its members and cover its operating costs?

In answering this question, the paper provides a detailed analysis of how one small securities exchange adapted in the face of seismic shifts in its competitive environment. Caskey outlines four distinct eras of the PHLX and also profiles the major changes that occurred in the structure of U.S. securities markets over the past several decades. Additionally, he examines the role that the largely overlooked regional exchanges have played in securities markets over the past few decades.

Working Paper 03-21, "The Evolution of the Philadelphia Stock Exchange: 1964-2002," John P. Caskey, Swarthmore College, and Visiting Scholar, Federal Reserve Bank of Philadelphia

ACCOUNTING FOR THE DECLINE IN U.S. VOLATILITY

Since the mid-1980s, the volatility of the U.S. economy has been much lower than it was during the prior 20-year period. Although the exact cause of this increased stability has yet to be determined, many economists point to a sudden shift in monetary policy. In this paper, Keith Sill and Sylvain Leduc use a dynamic general equilibrium model to examine the contribution of monetary policy and exogenous shocks — oil supply and total factor productivity — to the postwar volatility pattern for U.S. output.

They find that the change in monetary policy played a relatively small role in the postwar volatility decline, accounting for only 10 to 15 percent of the drop in real output volatility, while oil shocks played no part in lowering volatility. They find, instead, evidence supporting the theory that smaller shocks are the principal cause of the more stable economy after 1984.

Working Paper 03-22, "Monetary Policy, Oil Shocks, and TFP: Accounting for the Decline in U.S. Volatility," Keith Sill and Sylvain Leduc, Federal Reserve Bank of Philadelphia

A NEW DEFINITION OF ECONOMIC REGIONS IN THE UNITED STATES

Current research on regional business cycles has relied almost exclusively on the Bureau of Economic Analysis' grouping of the U.S. states into eight regions. This definition of regions, created in the 1950s, was primarily based on several measures of socioeconomic similarities among the states at a point in time. In this paper, Ted Crone proposes a new definition of U.S. regions – based on the similarity of state business cycles from 1979 to 2002.

Multi-state regions based on similarities at a specific point in time may not be the appropriate set of observations for regional business-cycle research. Crone applies cluster analysis to the cyclical components of recently created coincident indexes for the states to define regions containing states with common business cycles. This alternative definition of regions is likely to provide a better grouping of states for research on differences in cyclical behavior across regions.

Working Paper 03-23, "An Alternative Definition of Economic Regions in the U.S. Based on Similarities in State Business Cycles," Theodore M. Crone, Federal Reserve Bank of Philadelphia

AGGLOMERATION ECONOMIES AND THE SPATIAL CONCENTRATION OF U.S. EMPLOYMENT

The bulk of economic activity in an industrially developed country takes place in densely settled areas that make up a small portion of a country's overall territory. Such spatial concentration is believed to result from two sources: reliance on a certain natural resource and the cost advantages that result from such concentration. In this paper, Satyajit Chatterjee develops a general equilibrium model to determine how much of the spatial concentration of the United States can be attributed to these sources.

He finds that the results of the "spatial accounting" performed in this study depend on the details of the model used. The critical detail pertains to how the model rationalizes the stability of low-density localities. If it is rationalized via an appeal to restrictions on labor mobility, the accounting implies that the bulk of spatial concentration results from an unequal distribution of natural advantages. If it is rationalized via an agglomeration threshold (an employment level below which local increasing returns do not operate), the model implies that the bulk of the spatial concentration results from increasing returns.

Working Paper 03-24, "On the Contribution of Agglomeration Economies to the Spatial Concentration of U.S. Employment," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia

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