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Research UPDATE

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RESEARCH AND MARKET ANALYSIS GROUP

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Barriers to Consolidated Risk Management Systems Are Likely to Fall

In the past, financial firms that have considered implementing consolidated risk management systems have faced a number of obstacles. However, a new study suggests that many of these obstacles could very well be overcome ("The Challenges of Risk Management in Diversified Financial Companies," ***Economic Policy Review***, vol. 7, no. 1).

Authors Christine Cumming and Beverly Hirtle observe that financial firms support the concept of a coordinated process for measuring and managing risk on a firmwide basis—known as consolidated risk management. Yet the firms traditionally have taken a more segmented approach to risk measurement and control, and few if any have fully developed consolidated risk management systems in place today.

The absence of these systems, according to the study, can be attributed largely to the cost of integrating information across business lines and the existence of regulatory barriers to moving capital and liquidity within a financial firm. The authors explain that both factors affect the trade-off between the value derived from consolidated risk management and the expense of constructing these complex systems. They add that substantial technical hurdles must also be overcome in order to develop risk management systems that span a wide range of businesses and types of risk.

Despite these obstacles, Cumming and Hirtle contend that the barriers to consolidated risk management are likely to fall in the coming months and years. For evidence, they point to the advances in information technology and financial engineering that have made it possible to quantify risks more precisely, as well as to the mergers in the financial services industry that have resulted in significant consolidation. Furthermore, the authors note that the recently enacted Gramm-Leach-Bliley Act could heighten interest in consolidated risk management by opening the door to once-prohibited combinations of financial activities.

Also in This Issue…

Study Examines the Use of Credit Risk Models to Develop Regulatory Capital Standards

In 1996, the Basel Committee on Banking Supervision adopted a new set of capital requirements to cover market risk exposure from banks' trading activities. For the first time, the requirements were based on banks' internal risk measurement models. Since then, banks and other financial institutions have made strides in developing statistical models to measure other types of risk, most notably credit risk.

In a new study, authors Beverly Hirtle, Mark Levonian, Marc Saidenberg, Stefan Walter, and David Wright investigate whether banks' internal credit risk models could be used as the basis for developing regulatory minimum capital standards ("Using Credit Risk Models for Regulatory Capital: Issues and Options," ***Economic Policy Review***, vol. 7, no. 1). By providing an overview of the features that an internal-models (IM) approach to regulatory capital is apt to include, the authors hope to stimulate discussion about the many practical and conceptual issues involved in structuring a workable IM regulatory capital regime for credit risk.

Hirtle and her coauthors explain that the IM framework for credit risk, like the framework for market risk, would likely have three main components: a set of prudential standards defining the risk estimate to be used in the capital charge, a set of model standards describing the elements that a comprehensive credit risk model would incorporate, and validation techniques that could be used by supervisors and banks to ensure that model estimates are reasonably accurate and comparable across institutions. The various ways in which the components could be specified are illustrated.

The authors also point to the significant challenges faced by banks and supervisors in developing IM capital standards for credit risk. These involve the further technical development of credit risk models, the accumulation of better data, and the refinement of validation techniques for assessing the accuracy of the models.

The study emphasizes that the benefits and challenges presented by an internal-models approach to regulatory capital must be understood by all parties. Accordingly, continued discussion among supervisors, financial institutions, research economists, and others will be key in developing a workable regulatory capital system based on banks' internal credit risk models, conclude the authors.

Publications and Papers

The Research and Market Analysis Group produces a wide range of publications:

- ***The Economic Policy Review***—a policy-oriented research journal focusing on macroeconomic, banking, and financial market topics.
- ***Current Issues in Economics and Finance***—a newsletter-style publication offering concise and timely analyses of economic and financial topics.
- ***Second District Highlights***—a regional supplement to ***Current Issues*** covering financial and economic developments in the Federal Reserve System's Second District.
- ***Staff Reports***—technical papers intended for publication in leading economic and finance journals. This series is available only in electronic form.
- ***Publications & Other Research***—an annual catalogue of the Group's research output.

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Did the Nation's Growing Trade Deficit Result from an Economic Expansion?

The strong growth of the U.S. economy between 1996 and 1999 coincided with a near-tripling of the nation's trade deficit. In an analysis of these trends, authors Stefan Papaioannou and Kei-Mu Yi determine how much of the deterioration in the deficit can be attributed the economy's cyclical expansion.

Papaioannou and Yi conclude that cyclical forces accounted for almost a third of the increase in the trade deficit between 1996 and 1999; however, other factors played a larger role ("The Effects of a Booming Economy on the U.S. Trade Deficit," ***Current Issues in Economics and Finance***, vol. 7, no. 2).

The authors explain that from 1996 to 1999, the U.S. trade deficit expanded from $89 billion to a record $254 billion. During this period, the United States experienced average annual GDP growth of 4.2 percent, while its major trading partners saw average output growth rates fall as low as -0.2 percent. This disparity in growth, according to the authors, led to a rapid rise in imports by the United States coupled with a slow rise in exports, trends that contributed to the deterioration in the nation's trade deficit. The authors infer from these trends that the deficit would have been smaller if the U.S. economy had grown at a slower rate or if the other economies had grown faster.

To ascertain how much smaller the trade deficit might have been, Papaioannou and Yi develop an approximation of the U.S. economy's effect on the deficit between 1996 and 1999. They compute a "potential output" trade balance, which is the actual trade balance adjusted to exclude the effects of an economy's cyclical expansion and contraction. By calculating the difference between the actual and potential output trade balances, the authors are able to determine the contribution of cyclical forces to the worsening of the U.S. trade deficit.

Papaioannou and Yi find that cyclical forces in the United States most certainly had an impact on the trade deficit, accounting for $45 billion of the $142 billion increase during the 1996-99 period. Yet they also find that the deficit would have risen by $97 billion without the contribution of these forces. Accordingly, the authors suggest that other factors are helping to drive the expanding trade deficit. They contend that the country's robust economic growth had its greatest effect on the U.S. trade balance between 1996 and 1998. However, in 1999, noncyclical forces—such as changes in interest rates, exchange rates, and productivity—made a much larger contribution to the increase in the trade deficit.

Other New Publications

- ***Publications & Other Research***: The 2000 edition of our annual catalogue lists all of the papers appearing in our research series as well as many of the papers published by our staff in economic and finance journals, conference volumes, and scholarly books.
  www.newyorkfed.org/rmaghome/otherres/

- ***The Regional Economy of Upstate New York***: This quarterly newsletter, produced by the New York Fed's Buffalo branch, focuses on issues of importance to upstate New York. The winter and spring issues—"Small Businesses in Upstate New York Rank Barriers to Growth" and "The Information Technology Industry in New York State," respectively—are now available.
  www.newyorkfed.org/rmaghome/regional/newsletter.html

Papers Presented by Economists in the Research and Market Analysis Group

The following papers were presented at the American Economic Association's 2001 Annual Meeting, held in New Orleans, Louisiana, January 5-7:

"National Border Effects and Heterogeneous Fixed Costs of International Trade," *Carolyn Evans*.

The paper shows that previous estimates of the effects of national borders on trade may overstate the magnitude and impact of ad valorem trade barriers, owing to the omission of the effects of fixed costs of trade that vary across firms.

"Robust Optimal Monetary Policy in a Forward-Looking Model with Parameter and Shock Uncertainty," *Marc Giannoni*.

The study argues that the robust optimal rule is likely to involve stronger responses in the interest rate when changes in inflation, the output gap, and the lagged interest rate occur amid—rather than in the absence of—parameter uncertainty.

"Exchange Rate Pass-Through: A Micro or Macro Phenomenon?" *Linda Goldberg*. With Jose Campa.

The authors find that although exchange rate pass-through into import prices has declined in the United States, such declines are not observed across countries, and there is no compelling evidence that pass-through changes are systematically related to macro variables.

"Gender Differences in the Labor Market Effects of the Dollar," *Linda Goldberg and Joseph Tracy*.

The authors show that women, like men, experience a relatively greater wage response to exchange rates at the time of job transitions; for both genders, the strongest effects are observed among the less educated workers.

"Inventories and the Information Revolution: Implications for Output Volatility," *James Kahn and Margaret McConnell*. With Gabriel Perez Quiros.

The paper shows that the increased stability of the aggregate economy is also a feature of most two-digit durable goods and some nondurable goods industries; this stability has been accompanied by sharp declines in inventory-to-sales ratios in these industries.

"The Reduced Volatility of the U.S. Economy: Policy or Progress?" *James Kahn and Margaret McConnell*. With Gabriel Perez Quiros.

Technological progress in inventory control techniques is shown to explain the reduced volatility of the U.S. economy over the past two decades, and it may account for the improved performance of monetary policy over this period.

"Optimal Interest Rate Rules and Exchange Rate Pass-Through," *Paolo Pesenti*. With Giancarlo Corsetti.

Optimal policy rules are found to deviate from output gap stabilization because a strict adherence to this goal would make foreign producers' markups in the domestic market suboptimally volatile, thus inducing higher average import prices as a function of exchange rate pass-through.

"Information Technology and the U.S. Productivity Revival: What Do the Industry Data Say?" *Kevin Stiroh*.

This paper finds a strong link between information technology investment and productivity growth across U.S. industries in the late 1990s. The majority of aggregate productivity gains come from those industries that either produce or use information technology, with relatively little contribution from the remaining industries.

"On the Distributional Effects of Exchange Rate Fluctuations," *Cédric Tille*.

This study analyzes how the impact of exchange rate fluctuations differs across sectors, and shows that the countrywide effects mask a significant degree of sectoral heterogeneity.

"International Trade and Business Cycles: Is Vertical Specialization the Missing Link?" *Kei-Mu Yi*. With Ayhan Kose.

The authors find that the standard international business cycle model cannot explain the stylized fact that countries that trade more with each other tend to have more strongly correlated business cycles.

These papers were also presented recently:

"Financial Market Implications of the Federal Debt Paydown," *Michael Fleming*. 17th Annual Risk Management Conference, sponsored by the Chicago Board of Trade, the Chicago Board Options Exchange, and the Chicago Mercantile Exchange, Coronado, California, February 2.

The author describes how U.S. Treasury market participants are adjusting to the federal debt paydown by moving away from Treasuries and toward other financial assets.

"When Is U.S. Bank Lending to Emerging Markets Volatile?" *Linda Goldberg*. NBER Conference on Currency Crisis Prevention, Islamorada, Florida, January 12.

The volatility of banks' lending to specific countries is found to be linked to changes in macroeconomic fundamentals and the types of banks engaged in lending.

We've Changed Our Web Site Address

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"The Effect of Inflation on Wage Adjustments in Firm-Level Data: Grease or Sand?" *Erica Groshen*. European Central Bank Labour Market Workshop, Frankfurt, Germany, December 19, 2000. With Mark Schweitzer.

The authors find clear empirical support for a model of wage-setting that predicts the existence of independent occupational and employer wage change components that can be linked to inflation's disruptive (sand) and beneficial (grease) effects, respectively.

"The Role of Large Players in Currency Crises," *Paolo Pesenti*. NBER Conference on Currency Crisis Prevention, Islamorada, Florida, January 12. With Giancarlo Corsetti and Nouriel Roubini.

This paper reconsiders the role that large traders such as hedge funds and other highly leveraged institutions play in determining and propagating financial and currency volatility.

"Can Vertical Specialization Explain the Growth of World Trade?" *Kei-Mu Yi*. University of Rochester Department of Economics Seminar, Rochester, New York, December 7, 2000.

The author finds that if the standard models of international trade are modified to include vertical specialization, the models can do a much better job of explaining the growth of world trade over the past half-century.

New Titles in the *Staff Reports* Series

The following new ***Staff Reports*** are available at **www.newyorkfed.org/rmaghome/staff_rp/**.

Macroeconomics and Growth

No. 115

Information Technology and the U.S. Productivity Revival: What Do the Industry Data Say?

Kevin J. Stiroh

This study examines the link between information technology (IT) and the U.S. productivity revival of the late 1990s. Industry-level data show a broad productivity resurgence that reflects the production and use of IT. The most IT-intensive industries experienced significantly larger productivity gains than other industries, and a wide variety of econometric tests show a strong correlation between IT capital accumulation and labor productivity. To quantify the aggregate impact of IT use and IT production, the author presents a novel decomposition of aggregate labor productivity. He shows that virtually all of the aggregate productivity acceleration can be traced to the industries that either produce or use information technology most intensively, with essentially no contribution from the industries that are less involved in the IT revolution.

No. 117

Structural Change in U.S. Wage Determination

Robert W. Rich and Donald Rissmiller

This paper provides an empirical investigation into the determinants and stability of the aggregate wage inflation process in the United States over the 1967-2000 period. Using compensation per hour as the measure of wages, the authors specify a Phillips curve model that links wage growth to its past values as well as to the unemployment rate, price inflation, labor productivity growth, and an additional set of labor market variables. Their results do not reject the hypothesis that real wages and labor productivity move proportionally in the long run. More important, endogenous structural break tests provide little evidence of model instability. The authors conclude that aggregate wage determination has remained stable over the past thirty years and that any recent shift in the inflation-unemployment relationship reflects developments outside the labor market.

International

No. 116

Exchange Rates and Wages

Linda Goldberg and Joseph Tracy

The authors offer an explanation for the paradoxical finding that industry wages are significantly more responsive to exchange rate changes than industry employment is. Using 1976-98 Current Population Survey data, they find that the main mechanism for exchange rate effects on wages occurs through job turnover, and this phenomenon strongly affects the wages of workers undergoing such transitions. By contrast, workers who remain with the same employer are found to experience little, if any, wage impacts from exchange rate shocks. In addition, the least educated workers—who also change jobs most often—are found to shoulder the largest adjustments to exchange rates.

No. 119

When Is U.S. Bank Lending to Emerging Markets Volatile?

Linda Goldberg

This study characterizes the size and portfolio diversification patterns of U.S. banks engaging in foreign lending and explores the determinants of fluctuations in U.S. bank claims on a broad set of countries. Claims on Latin American and Asian emerging markets, and on industrialized countries, are found to be sensitive to U.S. macroeconomic conditions. When the United States grows rapidly, there is substitution between claims on industrialized countries and claims on the United States. The response pattern of claims on emerging markets to U.S. conditions is found to differ across banks of different sizes and across emerging markets. The study also finds that, unlike U.S. bank claims on industrialized countries, claims on emerging markets are not highly sensitive to local-country GDP and interest rates.

Microeconomics

No. 118

What's Driving the New Economy? The Benefits of Workplace Innovation

Sandra E. Black and Lisa M. Lynch

Using a representative sample of U.S. firms surveyed in 1993 and 1996, the authors examine the relationship between workplace innovations and productivity and wages. They find that firms that reengineer their workplaces and incorporate more high-performance practices experience higher productivity. In an examination of wage determinants within these firms, the authors find that reengineering a workplace to incorporate more high-performance practices leads to higher wages. However, increased use of profit sharing is found to result in lower regular pay for employees, especially technical and clerical/sales workers.

Banking and Finance

No. 120

Financial Market Implications of the Federal Debt Paydown

Michael J. Fleming

The author describes how the U.S. Treasury securities market is reacting to the paydown of the federal debt. He explains that because many of the features that make Treasuries an attractive benchmark are likely to be adversely affected, market participants are moving toward agency debt securities, corporate debt securities, and interest rate swaps as reference and hedging benchmarks. He also explains that the Federal Reserve is taking steps to adjust its portfolio in response to the paydown, and suggests that the steps will have little effect on monetary policy.

Recently Published

Linda Goldberg. 2001. "International Trade and Factor Mobility: An Empirical Investigation," with Michael Klein. In Guillermo Calvo, Rudiger Dornbusch, and Maurice Obstfeld, eds., ***Money, Capital Mobility, and Trade: Essays in Honor of Robert Mundell***, 273-302. Cambridge, Mass.: MIT Press.

Linda Goldberg, ed. 2001. ***Topics in Empirical International Economics: A Festschrift in Honor of Robert E. Lipsey***. Coeditor, Magnus Blomstrom. Chicago: University of Chicago Press.

James Kahn. 2001. "Finite Horizons, Political Economy, and Growth," with J. S. Lim. ***Review of Economic Dynamics*** 4, no. 1 (January): 1-25.

Simon Potter. 2001. "Are Apparent Findings of Nonlinearity Due to Structural Instability in Economic Time Series?" with Gary Koop. ***Econometrics Journal*** 4, no. 1 (January): 37-55.

Asani Sarkar. 2001. "Liquidity Supply and Volatility: Futures Market Evidence," with Peter Locke. ***Journal of Futures Markets*** 21, no. 1 (January): 1-7.

Cédric Tille. 2001. "The Role of Consumption Substitutability in the International Transmission of Shocks." ***Journal of International Economics*** 53, no. 2 (April): 421-4.

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Economic Policy Review, Vol. 7

No. 1
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Christine M. Cumming and Beverly J. Hirtle

Using Credit Risk Models for Regulatory Capital: Issues and Options
Beverly Hirtle, Mark Levonian, Marc Saidenberg, Stefan Walter, and David Wright

What Drives Productivity Growth?
Kevin J. Stiroh

Actual Federal Reserve Policy Behavior and Interest Rate Rules
Ray C. Fair

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