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Research Update

Research and Statistics Group www.newyorkfed.org/research

Study Finds Important Similarities among Nonprime Mortgage Borrowers

The U.S. boom in nonprime mortgage lending between 2004 and 2006 was quickly followed by a swift rise in delinquencies and defaults on the loans. Evidence from the current downturn suggests that reductions in borrower equity are major contributors to delinquencies and defaults. Accordingly, policymakers with their eyes on the foreclosure crisis are crafting policies that rely to some extent on measures of *negative* equity, in which the value of a property is below the mortgage balance.

A new study of the nonprime mortgage market supports earlier findings on the relationship between negative equity—which is affected by the time and place of mortgage origination and the existence of subordinate liens on the property—and default ("Below the Line: Estimates of Negative Equity among Nonprime Mortgage Borrowers," *Economic Policy Review*, forthcoming).

Authors Andrew F. Haughwout and Ebiere Okah estimate negative equity as of December 2008, describe the sources of negative equity, and summarize the characteristics of borrowers below the equity line. Combining information from house price indexes with data on individual loans, the authors gauge the prevalence and magnitude of negative equity across a range of dimensions, such as the location of the property and the year the mortgage originated.

The study finds that nonprime borrowers who are "below the line" share several traits. These borrowers took out loans near the housing market peak and had mortgages with high loan-to-value ratios, usually achieved with subordinate

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liens. The authors also find that borrowers with a mortgage exceeding the value of their house are twice as likely as positive equity borrowers to be seriously delinquent on their first-lien mortgage.

Haughwout and Okah show that while negative equity loans exist in most U.S. metro areas, they are disproportionately concentrated in housing markets that experienced especially large swings in house price appreciation, particularly in California. They estimate that three California metro areas account for more than a quarter of the negative equity mortgages in their sample. Moreover, "because of the higher balances on these mortgages, the loans account for nearly half of the overall difference between house values and mortgage balances."

In addition, the authors use information from housing price futures contracts to estimate the path of negative equity beyond 2009. Their results suggest that if house prices fall an additional 10 percent from December 2008 levels, "approximately 1.5 million new nonprime borrowers would see their house value fall below their current mortgage balance" and the aggregate value of negative equity among nonprime borrowers could reach $135 billion.

The article is available at www.newyorkfed.org/research/epr/09v15n1/0907haug.html.

Publications and Papers

The Research and Statistics Group produces a wide range of publications:

- *The Economic Policy Review*—a policy-oriented journal focusing on economic and financial market issues.
- *EPR Executive Summaries*—online versions of selected *Economic Policy Review* articles, in abridged form.
- *Current Issues in Economics and Finance*—concise studies of topical economic and financial issues.
- *Second District Highlights*—a regional supplement to *Current Issues*.
- *Staff Reports*—technical papers intended for publication in leading economic and finance journals, available only online.
- *Publications and Other Research*—an annual catalogue of our research output.

New Timelines Document Policy Responses to Global Financial Crisis

Since mid-2007, policymakers have put forth a range of initiatives to address the global financial crisis. To illustrate the unfolding of events and the various policy responses, the Research Group has introduced a website featuring domestic and international timelines of the crisis. The timelines catalogue the key announcements of the Federal Reserve, foreign central banks, and other domestic and foreign government agencies.

The timelines represent a unique central repository of value to economists, analysts, policymakers, educators, and others wishing to track the progress of the crisis. The domestic timeline begins in June 2007, showing the lead-up to and development of events in the United States as well as the government responses; the international timeline focuses on the G-7 responses since the intensification of the crisis in the fall of 2008. The event entries in the timelines link to documents offering more information.

The timelines are available at www.newyorkfed.org/research/global_economy/policyresponses.html and will be updated at the beginning of each month. ■

Most Downloaded Publications

Listed below are the most sought after Research Group articles and papers from the New York Fed's website and from the Bank's page on the Social Science Research Network site (www.ssrn.com/link/FRB-New-York.html).

New York Fed, second-quarter 2009:

- "Understanding the Securitization of Subprime Mortgage Credit," by Adam B. Ashcraft and Til Schuermann (*Staff Reports*, no. 318, March 2008) – 3,626 downloads
- "The Yield Curve as a Predictor of U.S. Recessions," by Arturo Estrella and Frederic S. Mishkin (*Current Issues in Economics and Finance*, vol. 2, no. 7, June 1996) – 2,796 downloads
- "The Yield Curve as a Leading Indicator: Some Practical Issues," by Arturo Estrella and Mary R. Trubin (*Current Issues in Economics and Finance*, vol. 12, no. 5, July/August 2006) – 1,401 downloads

SSRN, second-quarter 2009:

- "Understanding the Securitization of Subprime Mortgage Credit," by Adam B. Ashcraft and Til Schuermann (*Staff Reports*, no. 318, March 2008) – 1,219 downloads
- "Pass-Through of Exchange Rates and Import Prices to Domestic Inflation in Some Industrialized Economies," by Jonathan McCarthy (*Staff Reports*, no. 111, September 2000) – 239 downloads
- "Portfolio Credit Risk," by Thomas C. Wilson (*Economic Policy Review*, vol. 4, no. 3, October 1998) – 202 downloads

For lists of the top-ten downloads, visit www.newyorkfed.org/research/top_downloaded/index.html.

New Titles in the *Staff Reports* Series

The following new staff reports are available at www.newyorkfed.org/research/staff_reports.

MACROECONOMICS AND GROWTH

No. 375, June 2009
Credit Quantity and Credit Quality: Bank Competition and Capital Accumulation
Nicola Cetorelli and Pietro F. Peretto

This paper shows that bank competition has an intrinsically ambiguous effect on capital accumulation and economic growth. It further demonstrates that banking market structure can be responsible for the emergence of development traps in economies that would otherwise be characterized by unique steady-state equilibria. These predictions explain the conflicting evidence gathered from recent empirical studies of how bank competition affects the real economy. Cetorelli and Peretto's results were obtained by developing a dynamic general-equilibrium model of capital accumulation in which banks operate in a Cournot oligopoly. The presence of more banks leads to a higher quantity of credit available to entrepreneurs, but also to diminished incentives to screen loan applicants and thus to poorer capital allocation. The authors also show that conditioning on economic parameters describing the quality of the entrepreneurial population resolves the theoretical ambiguity.

MICROECONOMICS

No. 373, May 2009
Barriers to Household Risk Management: Evidence from India
Shawn Cole, Xavier Giné, Jeremy Tobacman, Petia Topalova, Robert Townsend, and James Vickery

Financial engineering offers the potential to significantly reduce the consumption fluctuations faced by individuals, households, and firms. Yet much of this potential remains unfulfilled. This paper studies the adoption of an innovative rainfall insurance product designed to compensate low-income Indian farmers in the event of insufficient rainfall during the primary monsoon season. Cole et al. first document that only 5-10 percent of households purchase the insurance, even though they overwhelmingly cite rainfall variability as their most significant risk. They then conduct a series of randomized field experiments to test theories of low product adoption. Insurance purchase is sensitive to price, with an estimated extensive price elasticity of demand ranging between -0.66 and -0.88. Credit constraints are a key barrier to participation, a result also consistent with household self-reports. The authors find mixed evidence that subtle psychological manipulations affect purchases and no evidence that modest attempts at financial education affect household participation.

BANKING AND FINANCE

No. 368, April 2009
Subprime Mortgage Pricing: The Impact of Race, Ethnicity, and Gender on the Cost of Borrowing
Andrew Haughwout, Christopher Mayer, and Joseph Tracy

Some observers have argued that minority borrowers and neighborhoods were targeted for expensive credit in 2004-06, the peak period for subprime lending. To investigate this claim, the authors use a new data set that merges demographic information on subprime borrowers with information on their mortgages. They find no evidence of adverse pricing by race, ethnicity, or gender in either the initial rate or the reset margin. Indeed, minority borrowers appear to pay slightly lower rates, as do borrowers in Zip codes with a larger percentage of black or Hispanic residents or higher unemployment. Mortgage rates are also lower in locations with higher rates of house price appreciation. Although these results suggest some economies of scale in subprime lending, the authors caution that they are unable to measure points and fees at loan origination, and the data do not indicate whether borrowers might have qualified for less expensive conforming mortgages.

No. 369, April 2009

The Impact of Tax Law Changes on Bank Dividend Policy, Sell-offs, Organizational Form, and Industry Structure

Hamid Mehran and Michael Suher

This paper investigates the effect of a 1996 tax law change allowing commercial banks to elect S-corporation status. By the end of 2007, roughly one in three banks had opted for or converted to S status. The authors analyze the effect on bank dividend payouts. They also examine the effect S-corporation status has on a community bank's likelihood of sell-off and measure a firm's sensitivity to tax rates based on its choice of organizational form. Mehran and Suher document that dividend payouts increase substantially after a bank's conversion to S status. Moreover, community banks that convert are significantly less likely to be sold than their C-corporation peers. The study estimates a tax rate elasticity of conversion in the range of 2 to 3 percent for every 1-percentage-point change in relative tax rates. Overall, Subchapter S status is shown to have significant effects on bank conduct and industry structure.

No. 370, May 2009

Precautionary Reserves and the Interbank Market

Adam Ashcraft, James McAndrews, and David Skeie

Liquidity hoarding by banks and extreme volatility of the fed funds rate have been widely seen as severely disrupting the interbank market and the broader financial system during the 2007-08 financial crisis. Using data on intraday account balances held by banks at the Federal Reserve and Fedwire interbank transactions to estimate all overnight fed funds trades, the authors present empirical evidence on banks' precautionary hoarding of reserves, their reluctance to lend, and extreme fed funds rate volatility. They develop a model with credit and liquidity frictions in the interbank market consistent with the empirical results. Their theoretical results show that banks rationally hold excess reserves intraday and overnight as a precautionary measure against liquidity shocks. Moreover, the intraday fed funds rate can spike above the discount rate and crash to near zero. Apparent anomalies during the financial crisis may be seen as stark but natural outcomes of the model of the interbank market.

No. 371, May 2009

Bank Liquidity, Interbank Markets, and Monetary Policy

Xavier Freixas, Antoine Martin, and David Skeie

A major lesson of the recent financial crisis is that the ability of banks to withstand liquidity shocks and to provide lending to one another is crucial for financial stability. This paper studies the functioning of the interbank lending market and the optimal policy of a central bank in response to both idiosyncratic and aggregate shocks. In particular, it considers how the interbank market affects a bank's choice between holding liquid assets ex ante and acquiring such assets in the market ex post. The authors show that a central bank should use different tools to manage different types of shocks. Specifically, it should respond to idiosyncratic shocks by lowering the interest rate in the interbank market and address aggregate shocks by injecting liquid assets into the banking system. They also show that failure to adopt the optimal policy can lead to financial fragility.

No. 372, May 2009
Credit Default Swap Auctions
Jean Helwege, Samuel Maurer, Asani Sarkar, and Yuan Wang

The rapid growth of the credit default swap (CDS) market and the increased number of defaults in recent years have led to major changes in the way CDS contracts are settled when default occurs. Auctions are increasingly the mechanism used to settle these contracts, replacing physical transfers of defaulted bonds between CDS sellers and buyers. Indeed, auctions will now become a standard feature of recent CDS contracts. This paper examines all CDS auctions conducted to date and evaluates their efficacy by comparing the auction outcomes with the underlying bond prices in the secondary market. The auctions appear to have served their purpose, as the authors find no evidence of inefficiency: Participation is high, open interest is low, and auction prices are close to prices observed in the bond market before and after each auction. The authors qualify their conclusions by noting that relatively few auctions have taken place thus far.

No. 374, May 2009
The Persistent Effects of a False News Shock
Carlos Carvalho, Nicholas Klagge, and Emanuel Moench

In September 2008, a six-year-old article about the 2002 bankruptcy of United Airlines' parent company resurfaced on the Internet and was mistakenly believed to be reporting a new bankruptcy filing by the company. The parent company's stock price dropped by as much as 76 percent in just a few minutes, before NASDAQ halted trading. After the "news" had been identified as false, the price rebounded, but still ended the day 11.2 percent below the previous close. The authors use this natural experiment and a simple asset-pricing model to study the aftermath of this false news shock. They find that, after three trading sessions, the company's stock was still trading below the two-standard-deviation confidence band implied by the model and that it returned to within one standard deviation only during the sixth session. On the seventh day after the episode, the stock was trading at exactly the level predicted by the model.

No. 376, June 2009
Financial Visibility and the Decision to Go Private
Hamid Mehran and Stavros Peristiani

Many companies that privatized between 1990 and 2007 were fairly young public firms, often with the same management team making the crucial restructuring decisions both at the time of the initial public offering (IPO) and the buyout. Mehran and Peristiani investigate the determinants of the decision to go private over a firm's public life cycle. Their evidence reveals that firms with declining growth in analyst coverage, falling institutional ownership, and low stock turnover were more likely to go private and opted to do so sooner. The authors argue that a primary reason behind the decision of IPO firms to abandon their public listing was a failure to attract a critical mass of financial visibility and investor interest. Consistent with earlier literature, they also find strong support for Jensen's free-cash-flow hypothesis, which argues that these corporate restructurings are a useful tool in capital markets for mitigating agency problems between insiders and outside shareholders.

No. 377, June 2009
Globalized Banks: Lending to Emerging Markets in the Crisis
Nicola Cetorelli and Linda S. Goldberg

Global banks played a significant role in the transmission of the current crisis to emerging-market economies. Flows between global banks and emerging markets include both cross-border lending, which has long been recognized as responding significantly to shocks at home or abroad, and internal capital-market lending, which is the internal flow of funds within a banking organization (such as between the organization's headquarters and its offices in foreign locations). Adverse liquidity shocks to developed-country banking, such as those that occurred in the United States in 2007 and 2008, have reduced lending in local markets through contractions in cross-border lending to banks and private agents and also through contractions in parent banks' support of foreign affiliates. Because all these forms of transmission impinge on the lending channel in recipient markets, the ownership structure of emerging-market banks does not by itself provide sufficient basis for identifying the degree of shock transmission from abroad. ■

Recently Published

Tobias Adrian. 2009. "Money, Liquidity, and Monetary Policy," with Hyun Song Shin. *American Economic Review* 99, no. 2 (May): 600-5. Papers and Proceedings of the 121st Annual Meeting of the American Economic Association.

Linda Goldberg. 2009. "Understanding Banking Sector Globalization." *IMF Staff Papers* 56, no. 1 (April): 171-97.

Beverly Hirtle. 2009. "Credit Derivatives and Bank Credit Supply." *Journal of Financial Intermediation* 18, no. 2 (April):125-50.

Tanju Yorulmazer. 2009. "On the Dynamics and Severity of Bank Runs: An Experimental Study," with Andrew Schotter. *Journal of Financial Intermediation* 18, no. 2 (April): 217-41. ■

Papers Presented by Economists in the Research and Statistics Group

"Liquidity and Congestion," Gara Afonso. Centro de Estudios Monetarios y Financieros seminar, Madrid, Spain, May 12. Also presented at a Universidad Carlos III de Madrid seminar, Madrid, Spain, May 18, and a Universitat Pompeu Fabra seminar, Barcelona, Spain, May 22.

"Systemic Risk and Liquidity in Payment Systems," Gara Afonso. Bank of Spain seminar, Madrid, Spain, May 14. With Hyun Song Shin. Also presented at an IESE Business School–Universidad de Navarra seminar, Barcelona, Spain, May 25; the Financial Intermediation Research Society Conference on Banking, Corporate Finance, and Intermediation, Prague, the Czech Republic, May 28; and the Tenth Annual Conference of the Association for Public Economic Theory, Galway, Ireland, June 19.

"Competition and Quality Upgrading," Mary Amiti. Centre for Economic Policy Research, European Research Workshop in International Trade, Madrid, Spain, June 1. With Amit Khandelwal.

"Aggregation and the PPP Puzzle in a Sticky-Price Model," Carlos Carvalho. Central Bank of Brazil Eleventh Annual Inflation Targeting Seminar, Rio de Janeiro, Brazil, May 15. With Fernanda Nechio.

"Estimating the Cross-Sectional Distribution of Price Stickiness from Aggregate Data," Carlos Carvalho. Bank of Canada seminar, Ottawa, Ontario, Canada, June 1. With Niels Dam. Also presented at the 2009 North American Summer Meeting of the Econometric Society, Boston, Massachusetts, June 7.

"Credit Market Competition and the Nature of Firms," Nicola Cetorelli. Brown University Department of Economics seminar, Providence, Rhode Island, April 15. Also presented at the Federal Reserve Bank of Chicago Forty-fifth Annual Conference on Bank Structure and Competition, Chicago, Illinois, May 6.

"Credit Frictions and Optimal Monetary Policy," Vasco Cúrdia. Bank of Canada seminar, Ottawa, Ontario, Canada, April 21. With Michael Woodford.

"The Dynamics of International Trade Invoicing," Linda Goldberg. European Central Bank–Bank of Canada seminar, Frankfurt, Germany, June 5. With Cédric Tille.

"Globalized Banks: Lending to Emerging Markets in the Crisis," Linda Goldberg. Banco de la República–National Deposit Institute of Colombia seminar, Bogotà. Colombia, May 29. With Nicola Cetorelli.

"Are Expectations about Economic Activity Self-Fulfilling? An Empirical Test," Christian Grisse. Thirteenth Annual International Conference on Macroeconomic Analysis and International Finance, held at the University of Crete, Rethymno, Crete, Greece, May 29.

"Higher Order Beliefs and the Comovement of Asset Prices," Christian Grisse. New York University International Economics Seminar, New York City, April 21.

"International Financial Transmission: Emerging and Mature Markets," Christian Grisse. Seventh INFINITI Conference on International Finance, held at Trinity College Dublin, Dublin, Ireland, June 9. With Guillermo Felices and Jing Yang.

"Fundamentals-Based Exchange Rate Prediction Revisited," Jan Groen. 2009 North American Summer Meeting of the Econometric Society, Boston, Massachusetts, June 6.

"Commodity Prices, Commodity Currencies, and Global Economic Developments," Jan Groen and Paolo Pesenti. NBER Twentieth Annual East Asian Seminar on Economics, Hong Kong, June 26.

"Unemployment Dynamics in the OECD," Ayşegül Şahin. 2009 Midwest Macroeconomics Meetings, Indiana University, Bloomington, Indiana, May 16. With Michael Elsby and Bart Hobijn. Also presented at a Yonsei University seminar, Seoul, Korea, June 5.

"Credit Default Swap Auctions," Asani Sarkar. World Research Group conference, New York City, April 20. With Jean Helwege, Samuel Maurer, and Yuan Wang.

"Evolution of Risk and the Federal Reserve's Responses to the Crisis," Asani Sarkar. Bank of England Seminar Series, London, United Kingdom, May 19. Also presented at a University of Leicester annual workshop, Leicester, United Kingdom, May 21.

"Exchange Rate Risk, Transaction Costs, and the Forward-Bias Puzzle," Asani Sarkar. Seventh INFINITI Conference on International Finance, held at Trinity College Dublin, Dublin, Ireland, June 8. With Angelo Ranaldo.

"Bank Liquidity, Interbank Markets, and Monetary Policy," David Skeie. Universitat Pompeu Fabra seminar, Barcelona, Spain, June 3. With Xavier Freixas and Antoine Martin. Also presented at the 2009 Western Finance Association Annual Meetings, San Diego, California, June 19.

"CONDI: A Cost-of-Nominal-Distortions Index," Andrea Tambalotti. University of Pavia seminar, Pavia, Italy, April 7. With Stefano Eusepi and Bart Hobijn. Also presented at seminars at Goethe University, Frankfurt, Germany, April 21; the European Central Bank, Frankfurt, Germany, April 22; Bocconi University, Milan, Italy, April 30; Einaudi Institute for Economics and Finance, Rome, Italy, May 4; the Bank of Italy, Rome, Italy, May 6; LUISS (Libera Università Internazionale degli Studi Sociali) Guido Carli, Rome, Italy, May 7; Bilkent University, Ankara, Turkey, May 15; and Sveriges Riksbank, Stockholm, Sweden, May 27.

"Rethinking the Measurement of Household Inflation Expectations: Preliminary Findings," Wilbert van der Klaauw. Laval University seminar, Québec City, Québec, Canada, April 25. With Wändi Bruine de Bruin, Michael Bryan, Simon Potter, and Giorgio Topa.

"Rollover Risk and Market Freezes," Tanju Yorulmazer. Financial Intermediation Research Society Conference on Banking, Corporate Finance, and Intermediation, Prague, the Czech Republic, May 28. With Viral Acharya and Douglas Gale. Also presented at the 2009 Western Finance Association Annual Meetings, San Diego, California, June 18.

"College Major Choice and the Gender Gap," Basit Zafar. Fourteenth Annual Meetings of the Society of Labor Economists, Boston, Massachusetts, May 9.

"How Do College Students Form Expectations?" Basit Zafar. CIRPÉE (Centre Interuniversitaire sur le Risque, les Politiques Économiques, et l'Emploi) Workshop on Subjective Beliefs in Econometric Models, Laval University, Québec City, Québec, Canada, April 25. Also presented at the 2009 North American Summer Meeting of the Econometric Society, Boston, Massachusetts, June 7. ■

Research and Statistics Group Publications and Papers: April-June 2009

Publications are available at www.newyorkfed.org/research/publication_annuals/index.html.

ECONOMIC POLICY REVIEW

Forthcoming

Why Did FDR's Bank Holiday Succeed?
William L. Silber

Below the Line: Estimates of Negative Equity among Nonprime Mortgage Borrowers
Andrew F. Haughwout and Ebiere Okah

STAFF REPORTS

No. 368, April 2009
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