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Program Report

The Global Financial Crisis: A Selective Review of Recent Research in the International Finance and Macroeconomics Program

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In recent months, many members of the NBER's International Finance and Macroeconomics (IFM) program have turned their attention to the financial crisis that erupted in the United States in 2007 and spread to the global economy in 2008 and 2009. Since my last program review, in 2004, IFM program members have produced nearly one hundred working papers per year on a wide variety of topics. It would be impossible to summarize that enormous body of work in just a few pages. Instead of trying to touch on all of the topics studied by IFM researchers, this survey presents a focused summary of research from the past year that is relevant to the global financial crisis. All of the working papers in the IFM program can be found on the NBER's publications webpage using the "working papers by program" feature.

Origins of the U.S. Financial Crisis

Markus K. Brunnermeier[1]; Douglas W. Diamond and Raghuram Rajan[2]; and John B. Taylor have offered useful overviews of the origins and progress of the crisis.[3]

One view is that the bubble-like conditions that set the stage for the sub-prime mortgage crisis of 2007 were created by low U.S. interest rates during 2003–6 — whether because of easy monetary policy

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by the Fed, a savings glut among foreigners, or under-perceptions of risk by investors in general. The resulting "search for yield" during this period sent waves of money into alternative assets, including high-interest foreign currencies,[4] commodities,[5] and especially housing.[6]

Various analytical tools, ranging from Dynamic Stochastic General Equilibrium models to Irving Fisher's debt deflation theory, have been brought to bear on the crisis that erupted in 2007.[7] Hui Tong and Shang-Jin Wei develop a methodology to study whether and how a financial-sector crisis can spill over to the real economy and apply it to the case of the subprime mortgage crisis.[8] Kimie Harada and Takatoshi Ito look back at the experience of Japan at the end of the 1990s to shed light on whether the motivation for bank mergers was gains in efficiency or exploitation of too-big-to-fail bailouts.[9]

Consequences for the Real Economy

Robert J. Barro and José Ursúa study the relationship between sharp declines in stock market values and economic activity using a sample of 25 nations for the period since World War I. They conclude that conditional on a non-wartime stock market decline of more than 25 percent, which the United States experienced in 2008 and early 2009, the probability of a 10 percent decline in real economic activity is 20 percent, and the probability of a 25 percent decline in real activity is 3 percent.[10] In a series of influential papers, Carmen Reinhart and Kenneth S. Rogoff have studied the historical record of countries experiencing severe financial crises. They report that real housing price declines average 35 percent stretched out over six years from peak to trough, while equity price collapses average 55 percent over a downturn of about three and a half years. The unemployment rate rises by an average of 7 percentage points over the down phase of the cycle and output falls by an average of over 9 percent. The real value of government debt tends to explode, rising an average 86 percent, because of lost tax revenues.[11] Reinhart and Rogoff also find that the historical patterns of banking crises in middle-to-low-income countries have been similar to those in rich countries.[12]

Spread of the Crisis throughout the Global Banking System

Initially it was hoped that the rest of the world, or at least newly robust emerging markets, would be "decoupled" from the crisis in the Anglo-American economies.[13] But in 2008 the crisis spread worldwide, in part via the banking system. Nicola Cetorelli and Linda S. Goldberg study the globalization of U.S. banks and the international propagation of domestic liquidity shocks to lending by affiliated banks abroad.[14] An analysis of market-judged creditworthiness of banks by Barry Eichengreen, Ashoka Mody, Milan Nedeljkovic, and Lucio Sarno shows that international interdependence rose from the outbreak of the Subprime Crisis in 2007 through the rescue of Bear Stearns, and that it attained a new high with the failure of Lehman Brothers in the Fall of 2008.[15]

What Determines Which Countries Are Worst Hit by the Crisis?

What policies can countries adopt ahead of time to make themselves less vulnerable to crises? Ethan Ilzetzki and Carlos Vegh confirm the longstanding view that fiscal policy in developing countries tends to be procyclical, thereby exacerbating macroeconomic swings.[16] Much research shows the danger of incurring liabilities that are denominated in foreign currency.[17] Some emerging market countries learned the currency mismatch lesson after the crises of 1994–2002, but some others in Central and Eastern Europe borrowed in foreign currency during the subsequent cycle.[18]

A short time ago, it appeared that many countries, especially Asians and oil exporters, were holding a puzzlingly high level of reserves.[19] But Joshua Aizenman concludes that now the global liquidity crisis has illustrated that foreign exchange reserves provide important self insurance.[20] Reserve accumulation is a way of saving windfall gains in export revenue for a rainy day. Sovereign wealth funds also can play this role.[21] Similarly, Maurice Obstfeld, Jay Shambaugh, and Alan M. Taylor conclude that countries that built up large precautionary holdings of reserves after the East Asia crisis of the late 1990s were less likely to experience large depreciations in the "Panic of 2008."[22] Swap lines also can substitute for reserves to some extent, particularly in the case of those emerging market countries lucky enough to have secured contingent lines of credit from the Federal Reserve in 2008.[23]

Re-examining Financial Liberalization

The long-term trend worldwide has been away from the traditional "home bias" in portfolio investment,[24]and toward financial integration and diversification.[25] Even India, for example, has opened its capital account.[26]

The severity of the current crisis, however, just like the emerging market crises of the 1990s, has raised the question of whether modern liberalized financial markets are more of a curse than a blessing.[27] Sometimes the doubts are phrased as a challenge to the "Washington consensus" in favor of free markets generally.[28] Carmen and Vincent Reinhart find that global factors, such as U.S. interest rates, have been a driver of the global capital flow cycle since 1960, and that capital inflow booms are no blessing for either advanced or emerging market economies.[29] Enrique Mendoza and Marco Terrones explore how credit booms lead to rising asset prices, and in the case of emerging markets are often preceded by capital inflows and followed by financial crises.[30] Sebastian Edwards finds that external crises have been more costly in Latin America than in the rest of the world.[31] Cross-country regressions by Eswar Prasad and Rajan suggest little connection from foreign capital inflows to more rapid economic growth for developing countries and emerging markets.[32]

Some research still finds that financial liberalization improves standard measures of economic performance. Indrit Hoxha, Sebnem Kalemli-Ozcan, and Dietrich Vollrath are a recent example of research in this spirit.[33] In a series of papers, Peter B. Henry has documented the effects of a country opening its stock market to foreign investors.[34] In theory, financial markets should allow efficient risk-sharing. Indeed, Kalemli-Ozcan, Elias Papaioannou, and José Luis Peydró find that financial integration leads to a lower degree of business cycle synchronization.[35] Andrew K. Rose and Mark Spiegel find that proximity to major international financial centers seems to reduce business cycle volatility.[36] But many find that theoretical predictions of risk-sharing benefits are not supported by the data.[37]

Conditions under which Capital Inflows are Beneficial

A recurrent theme in research on financial integration is that the aggregate size of capital inflows is not as important as the conditions under which they take place. M. Ayhan Kose, Prasad, and Terrones provide a comprehensive analysis of the relationship between financial openness and total factor productivity (TFP) growth. They find strong evidence that inflows of FDI and portfolio equity boost a country's TFP growth, but that external debt is negatively correlated with TFP growth.[38]

Obstfeld argues that, for capital globalization to be beneficial, countries need to undertake reforms that curtail the power of entrenched economic interests.[39] Edwards's results indicate that relaxing capital controls increases the likelihood of experiencing a sudden stop, in particular, if it comes ahead of other reforms.[40] Other recent papers confirm that financial liberalization is good for economic

performance if countries have reached a certain level of development, particularly with respect to institutions and the rule of law. Kose, Prasad, and Ashley Taylor find that the benefits from financial openness increasingly dominate the drawbacks once certain identifiable threshold conditions in measures of financial depth and institutional quality are satisfied.[41] Similarly, Aizenman, Menzie D. Chinn, and Hiro Ito find that greater financial openness with a high level of financial development can reduce or increase output volatility, depending on whether the level of financial development is high or low.[42]

Do U.S. Current Account Deficits Reflect Unsustainably Low National Saving, or a Comparative Advantage in Supplying High-Quality Assets?

If local banks and other financial intermediaries cannot effectively convert savings into high-return investment without the benefit of institutions that support investor rights and the rule of law, then countries lacking those conditions might put their funds into countries that have them. Traditionally, the United States has been presumed to have these institutions — corporate governance, securities markets, accounting standards, rating agencies — and developing countries have been presumed to lack them. This then would account for the puzzle of "capital flowing uphill" from poor countries to rich.[43] Jiandong Ju and Wei find that financial capital tends to flow from economies with low-quality institutions to those with high-quality institutions.[44]

The purported superiority of U.S. financial institutions and assets also has provided one line of argument for those who believe that the chronic U.S. current account deficits are fully sustainable. Among those who argue that the United States has been appropriately exploiting its comparative advantage in supplying high-quality assets to the rest of the world are Kristin Forbes;[45] Ricardo J. Caballero, Emmanuel Farhi, and Pierre-Olivier Gourinchas;[46] and Mendoza, Vincenzo Quadrini, and Jose-Victor Rios-Rull.[47]

Recurrent upward revaluations in the dollar price of U.S. overseas assets in effect have financed a substantial fraction of recent U.S. deficits.[48] Some believe that the valuation effects are not an unsustainable coincidence, but rather a component of the sustainable returns that the United States enjoys as an "exorbitant privilege," as world banker[49] or as supplier of the premier international reserve currency.[50] Stephanie Curcuru, Charles Thomas, and Frank Warnock, offer counterarguments — based on detailed knowledge of the balance of payments statistics — to the idea that large and persistent current account deficits are easily financed as an exorbitant privilege that the United States can take for granted.[51]

Also on the opposite side from the sustainability view are those who have been arguing for some years that, because large trade and current account deficits of the United States cannot continue indefinitely, the dollar eventually will fall, as private investors and governments become unwilling to accept the risk of increasing amounts of dollars in their portfolios. Prominent examples include Obstfeld and Rogoff[52] and Martin Feldstein.[53] Some even suggest that the dollar's role as dominant reserve currency eventually could be lost.[54]

The eruption of the financial crisis in the United States in mid-2007 has not helped to resolve the conflict between the view that the U.S. current account deficit reflects an unsustainably low rate of national saving and the view that it is a manifestation of the superior quality of assets that the United States is able to offer the world. On the one hand, recent revelations about the myriad shortcomings of U.S. financial institutions seem to argue against the latter view.

On the other hand, still in the "sustainable" camp, Caballero, Farhi, and Gourinchas now argue that the persistent global imbalances and the subprime crisis both stem from a global environment where sound and liquid financial assets are in scarce supply.[55] Caballero and Arvind Krishnamurthy argue that precisely because the assets that the United States has sold to foreigners are its riskless ones (Treasury bills), in accordance with its comparative advantage, Americans have been left holding the "toxic waste," and that this is what has led to the most severe financial crisis since the Great Depression.[56]

Michael Dooley, David Folkerts-Landau, and Peter M. Garber point out that the surprising strength of international demand for U.S. dollars in 2008 undercuts the view that the current crisis is the long-predicted day of reckoning for an unsustainable current account.[57] They proclaim that the current account imbalance did not cause the crisis, in the context of their theory that the Chinese authorities deliberately and sustainably continue to buy dollars to keep their currency undervalued as part of an export-led development strategy.[58] Some see the U.S. current account deficit, capital inflows, and low interest rates, and even the crisis itself, as having originated in a "global savings glut,"[59] stemming largely from China.[60] Even if this view were right, it would leave open the question as to how long the global imbalances are sustainable.[61]

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1 *"Deciphering the Liquidity and Credit Crunch 2007–08," NBER Working Paper No. 14612, December 2008.*

2 *"The Credit Crisis: Conjectures about Causes and Remedies," NBER Working Paper No. 14739, February 2009; and "Fear of Fire Sales and the Credit Freeze," NBER Working Paper No. 14925, April 2009.*

3 *"The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong,"*

NBER Working Paper No. 14631, January 2009. Also, J. B. Taylor and J. C. Williams, "A Black Swan in the Money Market," NBER Working Paper No. 13943, April 2008.

[4] *This is the famous "carry trade," in which an investor goes short in low-interest-rate currencies and goes long in high-interest-rate currencies: M. Pojarliev and R.M. Levich, "Trades of the Living Dead: Style Differences, Style Persistence and Performance of Currency Fund Managers," NBER Working Paper No. 14355, September 2008; A. Craig Burnside, M.S. Eichenbaum, I. Kleshchelski, and S. Rebelo, "Do Peso Problems Explain the Returns to the Carry Trade?" NBER Working Paper No. 14054, June 2008; M.K. Brunnermeier, S. Nagel, and L.H. Pedersen, "Carry Trades and Currency Crashes," NBER Working Paper No. 14473, November 2008; H. Lustig, N. Roussanov,and A. Verdelhan , "Common Risk Factors in Currency Markets," NBER Working Paper No.14082, June 2008.*

[5] *J.A. Frankel , "The Effect of Monetary Policy on Real Commodity Prices," in* Asset Prices and Monetary Policy, *John Y. Campbell, ed., U.Chicago Press, 2008.*

[6] *J. Aizenman and Y. Jinjarak, "Current Account Patterns and National Real Estate Markets," NBER Working Paper No. 13921, April 2008, finds a strong positive association between current account deficits and the real increase in real estate prices. Also, W. H. Buiter "Housing Wealth Isn't Wealth," NBER Working Paper No. 14204, July 2008.*

[7] *E. G. Mendoza, "Sudden Stops, Financial Crises and Leverage: A Fisherian Deflation of Tobin's Q," NBER Working Paper No. 14444, October 2008.*

[8] *NBER Working Paper No. 14205, July 2008.*

[9] *"Did Mergers Help Japanese Mega-Banks Avoid Failure? Analysis of the Distance to Default of Banks," NBER Working Paper No. 14518, December 2008.*

[10] *"Stock-Market Crashes and Depressions," NBER Working Paper No. 14760, February 2009.*

[11] *"The Aftermath of Financial Crises," NBER Working Paper No. 14656, January 2009.*

[12] *In "Banking Crises: An Equal Opportunity Menace," NBER No. 14587, December 2008. The crises considered stretch back to the Napoleonic Wars.*

[13] *M.A. Kose, C. Otrok, and E.S. Prasad, "Global Business Cycles: Convergence or Decoupling?" NBER Working Paper No. 14292, October 2008.*

[14] *"Banking Globalization, Monetary Transmission, and the Lending Channel," NBER Working Paper No. 14101, June 2008.*

[15] *"How the Subprime Crisis Went Global: Evidence from Bank Credit Default Swap Spreads," NBER Working Paper No. 14904, April 2009.*

[16] *"Procyclical Fiscal Policy in Developing Countries: Truth or Fiction?" NBER Working Paper No. 14191, July 2008.*

[17] *For example, G. A. Calvo, A. Izquierdo, and L. Mejía, "Systemic Sudden Stops: The Relevance of Balance-Sheet Effects and Financial Integration," NBER Working Paper No. 14026, May 2008.*

[18] *The mistake was repeated by Hungary; it could be interpreted as a failed "convergence play" among central European countries considered to be on the path to joining the euro and thus another instance of the carry trade. Poland has done somewhat better: B. Eichengreen and K. Steiner, "Is Poland at Risk of a Boom-and-Bust Cycle in the Run-Up to Euro Adoption?" NBER Working Paper No. 14438, October 2008.*

[19] *For example, D. Rodrik, "The Social Cost of Foreign Exchange Reserves," NBER Working Paper No. 11952, January 2006; and M. Obstfeld, J.C. Shambaugh, and A.M. Taylor, "Financial Stability, the Trilemma, and International Reserves," NBER Working Paper No. 14217, August 2008.*

[20] *"On the Paradox of Prudential Regulations in the Globalized Economy: International Reserves and the Crisis — A Reassessment," NBER Working Paper No. 14779, March 2009. "The deleveraging triggered by the crisis implies that countries that hoarded reserves have been reaping the benefits."*

[21] *J. Aizenman and R. Glick , "Sovereign Wealth Funds: Stylized Facts about their Determinants and Governance," NBER Working Paper No. 14562, December 2008.*

[22] *"Financial Instability, Reserves, and Central Bank Swap Lines in the Panic of 2008," NBER Working Paper No. 14826, March 2009.*

[23] *J. Aizenman and G. K. Pasricha, "Selective Swap Arrangements and the Global Financial Crisis: Analysis and Interpretation," NBER Working Paper No. 14821, March 2009.*

[24] *H. Hau and H. Rey, "Home Bias at the Fund Level," NBER Working Paper No. 14172, July 2008; and P. Benigno and S. Nisticò, "International Portfolio Allocation under Model Uncertainty," NBER Working Paper No. 14734, February 2009; E. van Wincoop and F.E.Warnock, "Is Home Bias in Assets Related to Home Bias in Goods?" NBER Working Paper No. 12728, December 2006.*

[25] *H.Hau and H. Rey, "Global Portfolio Rebalancing Under the Microscope," NBER Working Paper No. 14165, July 2008.*

[26] *E.S. Prasad, "Some New Perspectives on India's Approach to Capital Account Liberalization," NBER Working Paper No. 14658, January 2009.*

[27] *G.L. Kaminsky, "Crises and Sudden Stops: Evidence from International Bond and Syndicated-Loan Markets," NBER Working Paper No. 14249, August 2008. A variety of country experiences were considered in* Capital Controls and Capital Flows in Emerging Economies: Policies, Practices and Consequences, *edited by Sebastian Edwards (University of*

Chicago Press, 2007).

[28] *A. Estevadeordal and A.M Taylor, "Is the Washington Consensus Dead? Growth, Openness, and the Great Liberalization, 1970s–2000s," NBER Working Paper No.14264, August 2008.*

[29] *"Capital Flow Bonanzas: An Encompassing View of the Past and Present," NBER Working Paper No. 14321, September 2008. In* NBER International Seminar on Macroeconomics: 2008 *(University of Chicago Press).*

[30] *"An Anatomy of Credit Booms: Evidence from Macro Aggregates and Micro Data," NBER Working Paper No. 14049, May 2008.*

[31] *NBER Working Paper No.14034, May 2008.*

[32] *"A Pragmatic Approach to Capital Account Liberalization," NBER Working Paper No.14051, June 2008"*

[33] *"How big are the Gains from International Financial Integration?" NBER Working Paper No. 14636, January 2009. Also F.S. Mishkin, NBER Working Paper No. 13948, April 2008.*

[34] *For example, P.B.Henry and D.Sasson, "Capital Account Liberalization, Real Wages, and Productivity," NBER Working Paper No. 13880, March 2008.*

[35] *NBER Working Paper No. 14887, April 2009.*

[36] *"International Financial Remoteness and Macroeconomic Volatility," NBER Working Paper No. 14336, September 2008.*

[37] *For example, M.B. Devereux, G. W. Smith, and J. Yetman "Consumption and Real Exchange Rates in Professional Forecasts," NBER Working Paper No. 14795, March 2009.*

[38] *"Does Openness to International Financial Flows Raise Productivity Growth?" NBER Working Paper No. 14558, December 2008*

[39] *"International Finance and Growth in Developing Countries: What Have We Learned?," NBER Working Paper No. 14691, February 2009.*

[40] *"Sequencing of Reforms Financial Globalization, and Macroeconomic Vulnerability," NBER Working Paper No. 14384, October 2008.*

[41] *"Threshold Conditions in the Process of International Financial Integration," NBER Working Paper No. 14916, April 2009.*

[42] *"Assessing the Emerging Global Financial Architecture: Measuring the Trilemma's Configurations over Time," NBER Working Paper No. 14533, December 2008. Also G. Bekaert, C.R. Harvey, and C. Lundblad, "Financial Openness and Productivity," NBER Working Paper No. 14843, April 2009.*

[43] *For example, A. Chari, W. Chen, and K.M.E.Dominguez examine the recent upsurge in acquisitions of U.S. firms, by companies located in emerging markets in "Foreign Ownership and Firm Performance: Emerging-Market Acquisitions in the United States, NBER Working Paper No. 14786, March 2009.*

[44] *"When Is Quality of Financial System a Source of Comparative Advantage?" NBER Working Paper No. 13984, May 2008.*

[45] *"Why Do Foreigners Invest in the United States?" NBER Working Paper No. 13908, April 2008.*

[46] *"An Equilibrium Model of 'Global Imbalances' and Low Interest Rates," NBER Working Papers 11996, 2006;* American Economic Review, *98(1), pp. 358–93, March 2008: "Intermediation rents...pay for the trade deficits."*

[47] *"Financial Integration, Financial Deepness and Global Imbalances," NBER Working Paper No. 12909, February 2007; and "On the Welfare Implications of Financial Globalization without Financial Development," NBER Working Paper No. 13412, September 2007.*

[48] *P. Lane and G. M. Feretti, "A Global Perspective on External Positions," NBER Working Paper No. 11589, September 2005, in* G7 Current Account Imbalances: Sustainability and Adjustment, *R.H.Clarida ed., University of Chicago Press, 2007, pp. 67–10; and M.B. Devereux and A. Sutherland, "Valuation Effects and the Dynamics of Net External Assets," NBER Working Paper No. 14794, March 2009.*

[49] *P. Gourinchas and H. Rey, "From World Banker to World Venture Capitalist: U.S. External Adjustment and the Exorbitant Privilege," in* G7 Current Account Imbalances: Sustainability and Adjustment, *pp. 11–66.*

[50] *M. Canzoneri, R.E. Cumby, B. Diba, and D. Lopez-Salido, "The Macroeconomic Implications of a Key Currency," NBER Working Paper No. 14242, August 2008.*

[51] *"Current Account Sustainability and Relative Reliability," NBER Working Paper No. 14295, September 2008. In* NBER International Seminar on Macroeconomics 2008, *University of Chicago Press.*

[52] *"The Unsustainable US Current Account Position Revisited," NBER Working Paper No. 10869, November 2004.*

[53] *"Resolving the Global Imbalance: The Dollar and the U.S. Saving Rate," NBER Working Paper No. 13952, April 2008. Feldstein identified the root problem as low U.S. saving rates, associated with the housing boom and mortgage refinancing with equity withdrawal.*

[54] *M.D. Chinn and J.A. Frankel, "The Euro May Over the Next 15 Years Surpass the Dollar as Leading International Currency," NBER Working Paper No. 13909, April 2008... much as pound sterling had to cede its premier currency status to the dollar after World War I: B. Eichengreen and M. Flandreau , "The Rise and Fall of the Dollar, or When Did the Dollar Replace Sterling as the Leading International Currency?" NBER Working Paper No. 14154, July 2008.*

[55] *Financial Crash, Commodity Prices and Global Imbalances," NBER Working Paper No. 14521, December 2008.*

[56] *"Global Imbalances and Financial Fragility," NBER Working Paper No.*

14688, January 2009.
[57] *"Bretton Woods II Still Defines the International Monetary System," NBER Working Paper No. 14731 February 2009.*
[58] *Yin-Wong Cheung, Menzie Chinn, and Eiji Fujii evaluate the claim, made by American politicians, that the Chinese yuan is undervalued in "Pitfalls in Measuring Exchange Rate Misalignment: The Yuan and Other Currencies," NBER Working Paper No.14168, July 2008. Also see, "China's Current Account and Exchange Rate," NBER Working Paper No. 14673, January 2009, to be published in* China's Growing Role in World Trade, *R.C. Feenstra and S.J-.Wei, editors. I test whether/how China has altered its dollar peg over the last four years in "New Estimation of China's Exchange Rate Regime," NBER Working Paper No. 14700, February 2009, forthcoming in* Pacific Economic Review, *2009.*
[59] *H. Choi, N. Mark, and D. Sul, "Endogenous Discounting, the World Saving Glut and the U.S. Current Account," NBER Working Paper No. 13571, and* Journal of International Economics, *vol. 75(1), May 2008.*
[60] *Marcos Chamon and Eswar Prasad analyze the high Chinese saving rates in "Why are Saving Rates of Urban Households in China Rising?" NBER Working Paper No. 14546, December 2008.*
[61] *Joshua Aizenman and Yothin Jinjarak project a large drop in China's current account surplus over the next six years in "The US as the 'Demander of Last Resort' and its Implications on China's Current Account," NBER Working Paper No. 14453, October 2008.*

Research Summaries

Causes and Consequences of Early Life Health

Anne Case and Christina Paxson*

On average, wealthy people live longer and have less illness and disease than poor people. This has been well documented across countries, within countries at a point in time, and over time as economic growth occurs. And, the positive correlation between income and health is not limited to the bottom end of the income distribution. Indeed, the *gradient* in health status — the phenomenon that relatively wealthier people have better health and longevity — is evident throughout the income distribution.

However, the causes of the relationship between income and health are difficult to untangle in adults, and there is little consensus about the relative importance of mechanisms that lead from low income to poor health versus those that lead from poor health to low income. For this reason, we investigate the association between household income and children's health. By focusing on children, we can eliminate the channel running from health to income: generally, children in the United States do not contribute to family income, so lower earnings of children cannot explain the correlation between poor health in childhood and low family income (although children might reduce parental labor supply, a point we address in our work).

In a series of papers, we explore the links running from low income to poor health in childhood, and document the role of health in the intergenerational transmission of poverty: children born into poorer families experience poorer childhood health, lower investments in human capital, and poorer health in adulthood, all of which are associated with poorer employment opportunities and lower earnings in middle age — the time at which they themselves become parents.

Socioeconomic Status and Health in Childhood

Using several large, nationally representative datasets — including mul-

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tiple rounds of the National Health Interview Survey, the Panel Study of Income Dynamics, and the National Health and Nutrition Examination Survey — we find that children's health in the United States is positively related to household income, and that the relationship between household income and children's health status becomes more pronounced as children grow older.[1] This continues to be true when we control for a rich set of parental and household characteristics. Moreover, children's health is most closely related to long-run average household income, and it appears that the adverse health effects of lower permanent income accumulate over children's lives. Poorer children arrive at the doorstep of adulthood in poorer health and with lower educational attainment — the latter, in part, as a consequence of poor health.

Mechanisms

A large component of the relationship between income and children's health can be explained by the arrival and effect of chronic health conditions in childhood. Children from lower-income households are more likely than wealthy children to experience some (although not all) chronic health conditions. In addition, among U.S. children with the same health conditions, those who are richer are reported to be in better health than those who are poorer, suggesting that the chronic conditions of wealthier children are less severe, or are better managed. While this may be because poorer children are less likely to be covered by health insurance, the evidence from research we conducted using data from the Health Survey of England suggests that this is unlikely to be the explanation.[2] Although children in the United Kingdom all have access to medical care through Britain's National Health Service, the income gradient in children's health increases with age by the same amount there as in the United States. We find that the effects of chronic conditions on health status are *larger* in the English sample than in the American sample, and that income plays a larger role in buffering children's health from the effects of chronic conditions in England.

Children born into wealthier households also are taller on average, at every age, in both the United States and the United Kingdom — partly the result of healthier environments and better nutrition. It has long been recognized that taller people are employed in higher status professions and earn more money. Armed with these facts, we set out to discover the extent to which the better labor market outcomes of taller adults can be traced to their childhood experiences.[3] As early as age 3 — before schooling has had a chance to play a role — and throughout childhood, taller children perform significantly better on cognitive tests. The correlation between height in childhood and adulthood is approximately 0.7 for both men and women, so tall children are much more likely to become tall adults. While both genetics and environment have a role to play in the relationship between height and cognition, environmental factors appear to be responsible for two-thirds of the height-intelligence correlation, according to research conducted on cross-trait (height and intelligence), cross-twin correlations between monozygotic and dizygotic twin pairs.

Economic Consequences of Early Life Health

Having documented the association between early life socioeconomic status, health in childhood, height, and cognitive function, we also were interested in measuring the impact of childhood health and cognitive function on outcomes over the life course. We quantified the lasting effects of childhood health and economic circumstances on adult health, employment, and socioeconomic status, using data from the 1958 British birth cohort that has been followed from birth (all children born in England, Scotland, and Wales in the same week of 1958) into middle age.[4] Controlling for parental income, education and social class, we find that children who experience poorer uterine environments and poorer health in childhood have significantly lower educational attainment, poorer health, and lower socioeconomic status as adults. Moreover, prenatal and childhood health both appear to have direct effects on health and economic status in middle age: controlling for educational attainment and for socioeconomic status and health in earlier adulthood, we find that markers of prenatal and childhood health are significant predictors of health and economic status at age 42.

For both the United States and the United Kingdom, we find that the association between height and earnings is economically significant. For the United States, results from the PSID indicate that an increase in men's heights from the 25th to the 75th percentile of the height distribution — an increase of four inches — is associated with an increase in earnings of nearly 10 percent. Furthermore, this association is not driven by lower earnings of unusually short people, but rather is observed throughout the range of heights. Although men earn more than women on average at all heights, the average increase in earnings with height is similar for men and women. We were able to use two British birth cohorts — the 1958 and 1970 cohorts, both followed through time — to document the association between cognitive function in childhood (measured at several points in time), height in adulthood, and earnings. We find that the "height premium" in the labor market — in which each inch of height is associated with approximately 2 percent higher earnings — is largely explained by test scores in childhood. These

results are consistent with taller individuals earning more on average, not because of their height *per se*, but rather because of the cognitive skills with which height is correlated. We corroborate our findings from the British birth cohorts with those from the British Household Panel Study (BHPS), which allowed us to look at individuals of all working ages.[5] We find in the BHPS that each inch of height is associated with a 1.5 percent increase in wages on average in the United Kingdom, for both men and women. Half of the premium can be explained by the association between height and educational attainment among BHPS participants. Of the remaining premium, half can be explained by taller individuals selecting into higher status occupations and industries. These effects are consistent with our earlier findings: that taller individuals on average have greater cognitive function, which manifests in greater educational attainment and better labor market opportunities.

The impact of early health and environment, as measured by height, continues to have an effect later in life. We investigate the relationship between height, cognitive function, and health status at older ages, using longitudinal data collected by the Health and Retirement Study (HRS).[6] We use several waves of data from the HRS to document the extent to which height is associated with more favorable outcomes for individuals above the age of 50. We find that taller men and women have greater cognitive function on average, measured on a wide variety of dimensions. They report significantly fewer difficulties with activities of daily living, on average, and significantly greater health and mental health. We find too that the greater educational attainment of taller adults followed by the HRS could explain their better cognitive outcomes at older ages. However, in the absence of data from cradle to grave on cognition, it is not possible to know this. One possibility is that education plays a causal role in helping individuals to maintain cognitive ability over time. Another is that higher educational attainment reflects better early-life cognitive ability, which persists into old age. Yet another explanation is that educational attainment is a better marker for early-life economic advantage than are respondents' own reports of childhood socioeconomic status. Future research that uses data on cohorts followed from early to late life may shed light on which of these mechanisms are at work.

How does early life socioeconomic status protect children's health? We have not seen mothers paste dollar bills to their children to keep them healthy — we suspect that studying interactions between mothers, who are generally the gatekeepers for children's health, and the health care system may yield additional insights.

[1] *A. Case, D. Lubotsky. and C. Paxson, "Economic Status and Health in Childhood: The Origins of the Gradient," NBER Working Paper No. 8344, June 2001, and* American Economic Review *92(5) (December 2002), pp. 1308–34.*

[2] *A. Case, D. Lee, and C. Paxson, "The Income Gradient in Children's Health: A Comment on Currie, Shields, and Wheatley Price," NBER Working Paper No. 13495, October 2007, and* Journal of Health Economics *27(3) (January 2008), pp. 801–7.*

[3] *A. Case and C. Paxson, "Stature and Status: Height, Ability and Labor Market Outcomes," NBER Working Paper No. 12466, August 2006, and* Journal of Political Economy *116(3) (June 2008), pp. 499–532.*

[4] *A. Case, A. Fertig, and C. Paxson, "The Lasting Impact of Childhood Health and Circumstance," NBER Working Paper No. 9788, June 2003, and* Journal of Health Economics *24 (January 2005), pp. 365–89.*

[5] *A. Case, C. Paxson, and M. Islam, "Making Sense of the Labor Market Height Premium: Evidence from the British Household Panel Study," NBER Working Paper No. 14007, May 2008, and* Economic Letters *102(3) (December 2008), pp.174–6.*

[6] *A. Case and C. Paxson, "Height, Health and Cognitive Function at Older Ages,"* American Economic Review Papers and Proceedings *98(2) (May 2008), pp. 463–7.*

The Supply Side of Housing Markets

Joseph Gyourko*

For a long time there has been an imbalance in what we know about housing markets — we understand much more about housing demand than housing supply. This has been driven in part by policy interests, although data availability also has played a role. Fortunately, this knowledge gap has begun to narrow in recent years, allowing for a much better understanding of housing markets in general. Given the importance of housing in the economy, and the recent dramatic swings in home prices, better insights into the residential market are very helpful, both to policymakers and to households.

Economists understand that supply, not just demand, is critical to understanding housing markets. High prices always reflect the intersection of strong demand and limited supply. If demand in a market is weak, then prices cannot be high, no matter what the supply. And, if supply is unrestricted, then prices cannot be much higher than production costs, no matter what the demand. In practice, the strong negative correlation between housing permits and the level of house prices across markets makes clear that supply-side conditions matter.[1] The highest price markets tend to have the least permitting. If demand alone differed across markets, then we would expect to see abundant new construction in the costly markets. We do not, and the most intense new construction occurs in lower priced markets, indicating that supply conditions vary across markets. In particular, supply appears to be restricted in many high price metropolitan areas.

Prices have escalated relative to production costs in various markets over time, with the temporal and spatial patterns roughly as follows: in 1970, there was no metropolitan area (including New York City and San Francisco) in the United States in which average house prices exceeded fundamental production costs by more than 20 percent. Fundamental production costs are defined as the sum of the physical costs of construction for a basic, modest quality home, plus a 20 percent land share, plus a 17 percent gross profit margin on structure and land costs for the builder (which is typical over the cycle). By the 1980 census, mean house prices had become much higher than production costs in the major metropolitan areas along the coast of California. A similar phenomenon occurred during the 1980s in many east coast markets running from Washington, D.C. to Boston. The 1990s saw the expansion of this pattern to a very few interior markets, such as Austin and Denver. Even so, average house prices are still quite close to fundamental production costs in most metropolitan areas.[2]

Local Regulation and the "Zoning Tax"

Local building regulations and zoning codes could explain at least part of this pattern. Essentially, local regulation acts as a "zoning tax" — raising the price of housing above what it would be in the absence of supply restrictions.[3] The research approach to gauging the size of the zoning tax has been to estimate the marginal cost of producing a home and then compare that cost with the actual market value of the house. More specifically, standard neoclassical economics indicates that the price that households are willing to pay for an extra square foot of lot size (the intensive margin) should equal the price of land underlying existing homes (the extensive margin). If this were not the case, and homeowners did not value the land on their plots very much, then they could subdivide and sell off part of their plot to someone else.

Our calculations suggest that effective zoning tax rates are quite high in many coastal markets, sometimes reaching over 50 percent, because actual market prices far exceed the hedonic estimates of the value of an extra square foot of land.[4] However, the same analysis indicates that in most markets the zoning tax is minimal, which is consistent with elastic housing supplies in many interior markets. If new supply is forthcoming in sufficient magnitude to readily satisfy new demand, then local regulation does not really bind, and prices cannot be influenced much by whatever rules are on the books.

While the qualitative nature of those results probably accords with the priors of most economists, it turns out to be very difficult to precisely measure the impact of local regulation on prices. For one thing, the increasing complexity of the local regulatory environment makes accurate measurement difficult. Another key constraint is that accurate comparison requires knowledge of land prices. More specifically, one needs to be able to compare the "free market" price of land with existing values. The problem is that there are virtually no observed trades of residential land parcels.[5]

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There are various estimation strategies to deal with this latter issue, but another option is to study a market in which no additional land is required to produce an extra housing unit. Edward Glaeser, Raven Saks, and I did just that in our analysis of the condominium market in Manhattan.[6] For single family homes, new production necessarily includes costs associated with acquiring and preparing the land on which the marginal home sits. In the case of multifamily structures, land and other site preparation costs often do not increase much, if at all, with small increases in the size of the building. The marginal cost of building up is accurately measured by the physical construction costs of an extra floor, because no new land is needed to add another floor of condominium units. In our study of the Manhattan market, Glaeser, Saks, and I documented very large gaps between the market price of condominiums and the marginal cost of producing another floor of such units. Over the roughly two decade period for which we had data (from 1984–2002), unit prices were roughly twice fundamental production costs, indicating a zoning tax rate of about 50 percent for that market.

Whether any given regulatory tax can be justified on efficiency grounds is a tough question to answer. In urban economics, a distinguished literature on zoning, which emphasizes the need for land use controls to internalize the social costs of new development, strongly suggests that the optimal tax rate is positive. However, in our analysis of Manhattan, Glaeser, Saks, and I conclude that there is no set of negative externalities (whether aesthetic, congestion, or fiscal related) that could come close to justifying the 50 percent zoning tax in that market. Manhattan is among the easier markets to analyze in this respect because it is not credible (in my opinion, anyway) for its residents to claim that adding a few more housing units will destroy the unique, bucolic nature of the island. That claim might be true in a low-density suburb with a two-acre minimum lot size restriction, where the utility loss to existing residents could be very high. This is not to say that any claim of high costs from new development should be believed at face value — only that it is difficult in some settings to rigorously apply standard cost-benefit techniques to the problem.

Housing Supply and the Nature of Urban Growth

More broadly, theory and the data indicate that the supply side of housing markets is mediating both urban growth and decline. Whether housing supply is elastic or inelastic plays a huge role in defining what urban success looks like.[7] If supply is elastic, then strong demand shows up in growing populations amid much home building. This is the story of the rise of the Sunbelt. However, latent demand is strong in many large coastal markets such as Boston, New York, and San Francisco, even though population growth is relatively low, and very few net new housing units are built in these areas. In this version of urban success, growing demand gets reflected in high land prices.

This may have important social and economic implications that clearly are worthy of further study by economists. The urban agglomerations along our coasts are thought to be the most productive in the nation. Effectively restricting entry into these areas by not allowing much housing production necessarily pushes growth to other markets that may not be as productive.[8] To the extent that binding local land use controls raise house prices, financial constraints also facilitate more spatial sorting along income lines. This already is evident across communities within metropolitan areas. Chris Mayer, Todd Sinai, and I have suggested that it is occurring across metropolitan areas, with some becoming "superstars" that can have higher long-run average appreciation rates as long as supply is sufficiently restricted and the nation keeps generating enough rich people with some taste for these superstar markets.[9]

Restrictive supply also helps define the nature of urban decline. Glaeser and I show that the durable nature of housing, combined with the fact that the supply schedule is inelastic when demand falls below fundamental production costs, largely explains the fact that urban decline is so long and steady in nature.[10] The negative demand shocks experienced by markets such as Detroit lead to very low house prices that help hold people. The durability of housing makes population loss a very slow process. Our work also suggests that cheap housing is relatively more attractive to the poor, which helps to account for the high poverty concentrations in declining markets.

Housing Supply and Housing Bubbles

Understanding the supply side of housing markets also is helpful in making sense of housing bubbles. According to the model of housing bubbles proposed in a recent paper with Glaeser and Albert Saiz, bubbles are more difficult to start and sustain in less constrained markets with elastic housing supplies.[11] In the major house price run-up of the 1980s, high real price appreciation only occurred in markets with inelastic supply. One of the unique features of the most recent boom is that enormous price growth occurred in elastic markets, such as Phoenix and Las Vegas, which produced increasingly larger amounts of housing during the price run-up. The best indicator of a bubble I know of is a wide and growing gap between house prices and fundamental production costs in a market with elastic supply. The data also show that before the recent bubble, mean prices in these elastically supplied markets almost always were very close to production costs. Hence, we should expect prices

to fall to the level of production costs in these particular markets. The state of demand, not supply, will largely determine which happens to prices in the most inelastically supplied markets.

Directions for Future Research

While much has been learned about housing supply in recent years, much remains to be done. Data collection involving measurement of the local regulatory environment should be at the top of the "to do" list. Glaeser and a group of Harvard students have amassed a wealth of information on zoning and land use controls over time for much of the Greater Boston area.[12] This type of detailed description of the local environment is incredibly time consuming, and will be hard to replicate, but it would be very useful to have similar pictures of other markets. Anita Summers, Saiz, and I took a different path in creating the Wharton Residential Land Use Regulation Index.[13] This involved a national data collection effort. The benefit of our data is that they cover over 2,000 communities across all major metropolitan areas. The cost is that valuable detail on the local environment had to be sacrificed to generate the much larger number of observations. We are re-surveying our communities now, so that research on changes over time soon will be possible.

Better estimates of local supply elasticities also are needed. Supply heterogeneity clearly is important, so we need to carefully measure its variation.[14] Next, it is important that research fully integrate heterogeneous supply into a well-specified general equilibrium model of housing market dynamics. There are efforts being made here, but much more remains to be done if we are to truly understand housing market changes, which are dynamic in nature.[15] Finally, we need to understand better why constraints on supply develop in some markets, but not in others. There is interesting work on the political economy of this issue[16], but again, much remains to be done.

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[1] *See Figure 2-11 in E. L. Glaeser and J. Gyourko,* Rethinking Federal Housing Policy, *The AEI Press, Washington, DC (2008).*

[2] *For more detail on the time pattern of house prices relative to production costs see E. L. Glaeser, J. Gyourko, and R. Saks, "Why Have House Prices Gone Up?"* American Economic Review, *Vol. 95, No. 2 (May 2005a), pp. 329–33, and "Why Is Manhattan So Expensive? Regulation and the Rise in House Prices",* Journal of Law & Economics, *Vol. 48, No. 2 (October 2005b), pp. 331–70.*

[3] *This was the term that Glaeser and I used in our research, but it should be interpreted as applying to any local land use restriction, not just those related to zoning. See E. L. Glaeser and J. Gyourko, "The Impact of Zoning on Housing Affordability",* Economic Policy Review, *Federal Reserve Bank of New York, Vol. 9, No. 2 (June 2003), pp. 21–39.*

[4] *For a more detailed discussion of how to implement this type of analysis, see E. L. Glaeser and J. Gyourko, "The Impact of Zoning on Housing Affordability."*

[5] *For one exception to this, see the data on land values in the New York City market in A. Haughwout, J. Orr, and D. Bedoll, "The Price of Land in the New York Metropolitan Area,"* Current Issues in Economics and Finance, *April/May 2008, Federal Reserve Bank of New York.*

[6] *E. L. Glaeser, J. Gyourko, and R. Saks, "Why Is Manhattan So Expensive?", supra.*

[7] *E. L. Glaeser, J. Gyourko, and R. Saks, "Urban Growth and Housing Supply,"* Journal of Economic Geography, *Vol. 6, No. 1 (January 2006), pp. 71–89.*

[8] *Glaeser and Tobio (2008) argue that the rise of the Southern Sunbelt markets largely is the result of allowing plentiful, cheap housing, not because of a better amenity set or fundamentally higher productivity. See E. L. Glaeser and K. Tobio, "The Rise of the Sunbelt,"* Southern Economic Journal, *Vol. 74, No. 3 (2008), pp. 610–43.*

[9] *J. Gyourko, C. Mayer, and T. Sinai, "Superstar Cities," NBER Working Paper No. 12355, revised July 2006.*

[10] *E. L. Glaeser and J. Gyourko, "Urban Decline and Durable Housing,"* Journal of Political Economy, *Vol. 113(2) (2005), pp. 345–75.*

[11] *E. L. Glaeser, J. Gyourko, and A. Saiz, "Housing Supply and Housing Bubbles",* Journal of Urban Economics, *Vol. 64, No. 2 (2008), pp. 693–729.*

[12] *E. L. Glaeser and B. Ward, "The Causes and Consequences of Land Use Regulation: Evidence from Greater Boston",* Journal of Urban Economics, *Vol. 65, No. 3 (2009), pp. 265–78.*

[13] *J. Gyourko, A. Summers, and A. Saiz, "A New Measure of the Local Regulatory Environment for Housing Markets",* Urban Studies, *Vol. 45, No. 3 (2008), pp. 693–729.*

[14] *A. Saiz, "On Local Housing Supply Elasticity," Working Paper, The Wharton School, University of Pennsylvania, 2008.*

[15] *E. L. Glaeser and J. Gyourko, "Housing Dynamics," NBER Working Paper No. 12787, December 2006, and S. V. Nieuwerburgh and P.-O. Weill, "Why Has House Price Dispersion Gone Up?" NBER Working Paper No. 12538, September 2006.*

[16] *F. Ortalo-Magne and A. Prat, "The Political Economy of Housing Supply," Sticerd Working Paper TE/2007/512, June 2007.*

The Importance of Financial Literacy

Annamaria Lusardi*

How much do individuals know?

Increasingly, individuals are in charge of securing their own financial well-being after retirement. With the shift from defined benefit to defined contribution pensions, today's workers must decide both how much to save and how to allocate their retirement wealth. Financial markets have become more complex and individuals are faced with a proliferation of new investment products. Investment opportunities have expanded beyond national borders, permitting individuals to invest in a broad range of assets and currencies. However, as the financial crisis has made clear, it is very hard to navigate this new financial system, and the consequences of mistakes can be devastating. How well equipped are individuals to make financial decisions and how much do individuals know about economics and finance?

Very few datasets provide information about financial literacy, and those that do often do not have any facts about saving and financial decisionmaking. To address this, Olivia Mitchell and I designed a module on financial literacy for the Health and Retirement Study (HRS), a survey that provides information on people 50 and older.[1] We aimed to assess their knowledge of basic concepts that lay at the basis of saving and portfolio-choice decisions, such as interest compounding, inflation, and risk diversification. The results from that initial module were striking: only one-third of respondents could do simple interest rate calculations and appeared to understand the effects of inflation and the workings of risk diversification. What is surprising is not that people lack financial knowledge, but rather how little people know about basic economic concepts. Financial illiteracy is not only widespread but is particularly severe in certain demographic groups. Two groups that stand out from our analysis are the elderly and women; both of them display very low knowledge.[2]

These findings are not unique to this survey or to this particular age group. We have confirmed these findings using different datasets, different methods of data collection, and different age groups. For example, we find low rates of numeracy among younger individuals (Early Baby Boomers)[3] and in the entire U.S. population.[4] Moreover, such results are not limited to the United States. With several co-authors, I examined financial literacy in the Netherlands using the same questions that I used in the U.S. HRS.[5] Like American households, Dutch households also exhibit fairly low levels of financial knowledge.[6]

Together with Peter Tufano, I also have assessed financial knowledge that is specifically related to debt, or *debt literacy*.[7] Our aim was to evaluate respondents' knowledge of the workings of interest compounding and credit cards and their ability to compare borrowing options and choose those with lower rates. We found that even though most individuals deal frequently with credit cards and other forms of borrowing, only a minority of individuals in the United States possess basic financial knowledge relating to debt. For example, only one-third of respondents in a representative sample of the U.S. population know that they cannot eliminate credit card debt by paying a minimum amount equivalent to the interest payments.

In this survey, we were able to go one step further in our analysis to compare *actual* financial knowledge (as determined by responses to our debt-literacy questions) to *self-assessed* knowledge, which was determined by asking respondents to rate their own financial knowledge. In stark contrast to responses to the questions measuring actual knowledge, the majority of individuals give themselves high knowledge ratings, pointing to a gulf between how much people actually know and how much they think they know. Two other findings stand out in our analysis: we find that women display low debt literacy, based on responses to our questions measuring actual financial knowledge, and that they give themselves low ratings when assessing their own financial knowledge. In contrast, elderly respondents rank the lowest in terms of actual financial knowledge but the highest in terms of self-assessed knowledge. This may explain the prevalence of financial scams perpetrated against the elderly.

Does financial knowledge matter?

Even with little personal knowledge, individuals can avoid making mistakes by consulting with those who are more knowledgeable, including financial professionals. It is not enough to recognize that financial knowledge is low; we must also understand whether financial literacy matters in decisionmaking. Addressing this question is particularly difficult because financial literacy is not distributed randomly

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in the population: those who possess high levels of literacy are likely to possess characteristics, such as high talents and ability, or patience, which also are correlated with financial decisionmaking. Moreover, individuals may choose to invest in acquiring financial knowledge; thus, financial literacy itself can be a choice variable. And, it may be that those who have high wealth, rich pensions, or investments in financial markets care more about improving their financial knowledge.

In my work, I have examined a set of outcomes that are related to wealth accumulation. In many of my papers, I documented that significant numbers of workers do not plan for retirement, even when they are not far away from it.[8] Yet planning for retirement pays off: those who plan end up with twice as much wealth as those who do not. Looking at retirement planning data thus represents an easy and direct way to test the predictions of a simple version of the life-cycle model. According to this model, people should be forward-looking: they should look ahead, anticipate the drop in income after retirement, and calculate how much they need to save in order to maintain a constant stream of consumption over their lifetime. However, these calculations are not easy. They require the ability to make projections about future variables (such as income growth, inflation, and pension benefits) as well as the ability to determine present discounted values. In my work, I have examined whether individuals do make these calculations and whether financial literacy affects their ability to do so.

In the module we designed for the 2004 HRS, Olivia Mitchell and I added a question that asked whether individuals had ever tried to calculate how much they need to save for retirement. While respondents to the HRS are only five to ten years away from retirement, only around 30 percent of them had calculated how much they needed to save. Moreover, we found a strong link between retirement planning behavior and financial literacy: it is disproportionately those who can make interest rate calculations and who possess some sophisticated knowledge who reported having calculated how much they need to save for retirement. However, as mentioned above, one cannot rule out the possibility that it is the desire to plan for retirement that results in individuals making an effort to increase their financial knowledge, rather than financial knowledge causing individuals to plan for retirement.

To be able to disentangle this nexus of causality, we re-examined the link between financial literacy and planning. In another paper using data from the Rand American Life Panel, a survey in which we inserted the same questions that we designed for the HRS,[9] we use the fact that several U.S. states mandated financial literacy education in high school to measure respondents' exogenous exposure to financial education. The decision to mandate financial education is mostly the result of a political process. Moreover, states differed in what they mandated and the year the mandate went into effect. We also considered the amount of resources that were devoted to education across states, because mandates can be ineffective if few resources are allocated to training teachers and implementing new courses. We found that individuals who were born in states that mandated financial education in high school were more likely to display higher financial knowledge later in life. Moreover, respondents who received their education in states that not only mandated financial education but also had higher per pupil education spending had higher levels of financial knowledge. Most importantly, after instrumenting financial literacy with mandates across states, interacted with the amount of education expenses per pupil, we found a strong positive relationship between financial literacy and retirement planning, even stronger than the simple estimates based on HRS data. This finding is consistent with another important paper in this area of research: Bernheim, Garrett, and Maki (2001) showed that individuals who were exposed to financial education in high school had higher savings later in life.[10] Given that retirement planning is a powerful proxy for wealth, there is now a body of evidence supporting the effects of financial literacy on wealth holdings.

In the debt literacy paper, I demonstrated that debt literacy can be linked to a variety of financial experiences, from borrowing on credit cards to using payday lending or pawn shops, to investing in stocks and mutual funds, or simply having a checking account. That paper emphasizes the fact that individuals make many financial decisions and that those decisions are highly interrelated. For example, those who always pay credit card bills in full are less likely to use other high-cost means of borrowing, such as payday loans. Conversely, those who only pay the minimum amount due on their credit cards are more likely to use other costly forms of borrowing. This means that financial literacy can have an effect above and beyond the single financial decisionmaking variable — for example, wealth accumulation, participation in the stock market, having a checking account — which we normally study when assessing the impact of financial literacy on behavior. Thus, to fully capture the effect of literacy on financial behavior, it is important to look at a rich set of financial experiences.

How to increase the effectiveness of financial education

Having shown that financial literacy is very low and that it affects financial behavior, we naturally arrive at the question of what can be done to raise financial knowledge and which programs can influence saving and wealth accumulation. This is the topic I pursued in my newly published book, *Overcoming the Saving Slump: How to Increase the*

Effectiveness of Financial Education and Saving Programs (University of Chicago Press, 2008). There are two ideal venues for the delivery of financial education: schools and the workplace. The book provides an overview of financial knowledge among high school students and shows that it is not only the adult population but also the young who lack basic financial knowledge. Given the benefits that financial literacy brings, there may be advantages to introducing financial literacy into high school curricula. The book also offers an evaluation of employer-provided financial education programs. The evidence, so far, is mixed, but as the book argues, we cannot necessarily learn much from existing programs. Workplace programs commonly offer very limited interventions, such as a one-time retirement seminar or one benefit fair. It is hard to imagine that such interventions can do much to combat widespread financial illiteracy; a one-time, one-size-fits-all seminar can hardly be an adequate response to the problem of widespread financial illiteracy among U.S. workers. The book provides evidence that programs that offer multiple financial education sessions have been effective in stimulating saving among low-income workers, who are normally those least likely to save. It also shows that women are particularly receptive to financial education programs. Given that women tend to display low levels of literacy, these findings suggest that targeted education programs can raise financial literacy among the population groups that are most in need of improved financial literacy.

The book also shows that one way to promote saving is to facilitate and simplify the decisionmaking process, including helping workers to implement saving plans. A recurrent result of financial education programs is that, although they seem to affect the intentions of workers, many of whom report plans to modify their saving or investment behavior after attending a seminar, these intentions do not always translate into actions. This provides some explanation for why retirement planning seems to have such a large effect on saving. As some psychologists have argued, devising a plan of action makes it more likely for individuals to follow through on intentions. If this mechanism is important, it may be possible to devise cost-effective ways to stimulate saving. The book describes a program that I have implemented at Dartmouth College in collaboration with a professor of marketing from the Tuck School of Business and the vice president for Finance and Administration at Dartmouth.[11] We provided new hires (non-faculty employees) with a planning aid. This is simply a double-sided sheet that describes the steps that new employees have to take to enroll in a supplementary retirement account (SRA). It also provides information that employees would otherwise have to collect in order to open an SRA. Thus the planning aid simplifies decisionmaking, which can be particularly useful for those with low financial literacy. Having clear guidelines on what needs to be done in order to open an SRA also makes it easier to translate intentions into actions. Finally, the program provides information when it is needed, that is, when decisions about pensions have to be made. Preliminary evidence shows that this simple intervention doubled the enrollment into SRAs at Dartmouth. It also shows that, by recognizing the many difficulties that people face when making saving decisions — from limited financial literacy to barriers to implementing saving plans — we may hope to increase the effectiveness of financial education programs.

In a world of increased individual financial responsibility, where workers are in charge of their financial well-being and where financial markets offer new and complex financial products, financial literacy is essential. Just as it has proven to be impossible to succeed in the modern world without the ability to read and write (literacy), so it will be impossible to succeed in the present-day financial system without knowing the abc's of economics and finance (financial literacy).

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[1] *See the review and discussion of these questions in A. Lusardi, "Financial Literacy: An Essential Tool for Informed Consumer Choice?" NBER Working Paper No. 14084, June 2008.*

[2] *See A. Lusardi and O. Mitchell, "Planning and Financial Literacy: How Do Women Fare?" NBER Working Paper No. 13750, January 2008, and* American Economic Review *98(2), 2008, pp. 413–17.*

[3] *See A. Lusardi and O. Mitchell, "Baby Boomer Retirement Security: the Roles of Planning, Financial Literacy and Housing Wealth," NBER Working Paper No. 12585, October 2006, and* Journal of Monetary Economics *54, 2007, pp. 205–24.*

[4] *See A. Lusardi and O. Mitchell, "How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness," unpublished paper, March 2009.*

[5] *See M. van Rooij, A. Lusardi, and R. Alessie, "Financial Literacy and Stock Market Participation," NBER Working Paper No. 13565, October 2007.*

[6] *The questions we have designed for the U.S. HRS have now been added to several national surveys. In addition to the Dutch DNB Household Survey, they have been added to the German SAVE, the Italian Household Income and Wealth, the World Bank Russia Survey, a survey of pension providers in Mexico, and a survey of entrepreneurs in Sri Lanka. It is therefore possible to perform international comparisons.*

[7] *See A. Lusardi and P. Tufano, "Debt Literacy, Financial Experiences, and Overindebtedness," NBER Working Paper No. 14808, March 2009.*

[8] *See A. Lusardi, "Household Saving Behavior: The Role of Financial Literacy, Information, and Financial Education Programs," NBER Working Paper No. 13824, February 2008,*

and forthcoming in Implications of Behavioral Economics for Economic Policy.

[9] *See A. Lusardi and O. Mitchell, "How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness," unpublished paper, March 2009.*

[10] *D. Bernheim, D. Garrett, and D. Maki, "Education and Saving: The Long-term Effects of High School Financial Curriculum Mandates,"* Journal of Public Economics *85, 2001, pp. 435–565.*

[11] *See A. Lusardi, P. Keller, and A. Keller, "New Ways to Make People Save: A Social Marketing Approach," NBER Working Paper No .14715, February 2009, and chapter 7 of the book,* Overcoming the Saving Slump: How to Increase the Effectiveness of Financial Education and Saving Programs, *University of Chicago Press, 2008, pp. 209–36.*

Taxes and Market Work: A Cross-Country Comparison

Richard Rogerson*

Time devoted to work varies greatly among OECD countries. In Belgium, France, and Germany for example, total hours of market work relative to population are roughly 30 percent lower than in the United States, Japan, and Australia. The issue is not simply one of "European" versus "non-European" countries, as there are also large differences within Europe. Hours of work in Spain and Sweden are roughly midway between the two previously mentioned groups, and in Switzerland, hours of work are almost the same as in the United States. These differences dwarf the changes in hours of work that are associated with typical business cycle fluctuations. Because labor is one of the key inputs in production, time devoted to market work is a key determinant of the material well being of individuals in an economy. Identifying the factors that lead to such different outcomes in apparently similar economies promises important insights relevant for many public policy discussions.

Rogerson is an NBER Research Associate and a professor of economics at Arizona State University. His profile appears later in this issue.

Time-Series Changes

As a first step, it is informative to look at the evolution of hours of work over time. Have these large differences been around for decades, or are they a more recent phenomenon? The answer to this question should provide important information about where to look for possible explanations. It turns out that these differences have not always been present. Comparable data exist going back to the mid-1950s, and at that time, hours of work in France and Germany were actually higher than they were in the United States. Specifically, whereas hours of work in the United States today are roughly similar to what they were in the mid-1950s, in France and Germany they have declined by more than 35 percent. The timing of this decline is also of interest — the pattern that one finds in these countries (as well as many others) is that there is a relatively constant rate of decline from the mid-1950s and lasting through the mid-1980s, at which time hours of work tend to flatten out.[1] The time-series analysis suggests that the key to understanding why hours of work are so different across countries today is to understand why hours of work have changed so differently across countries since the mid-1950s.

A Digression: A Comparison with Unemployment Evolutions

The relationship between differences in hours of work across countries and differences in unemployment across countries is also noteworthy. A large literature has documented and studied the fact that unemployment in many European countries exceeds that in the United States, and that this difference has emerged over the last 30 years. Is that observation just another way of presenting the same information? The answer is a resounding "no." In a 2006 paper[2], I document that from a pure accounting perspective only a very small fraction of the differences in hours of work are explained by differences in unemployment. For example, if we transferred unemployed workers in France into employment to reduce the unemployment rate in France to the U.S. level, and we had these workers work the same number of hours as the average French worker, then the difference between hours of work in France and the United States

would drop from around 30 percent to around 27 percent.

Labor Taxes as a Driving Force

The time-series evidence has important implications for screening the potential forces behind the quite different time-series changes in hours worked across countries. In particular, we are looking for driving forces that change at a fairly steady rate from the mid-1950s to the mid-1980s, exhibit sizeable differences in the extent of this change across countries, and are plausibly linked to labor supply. One obvious candidate is labor taxes (including payroll taxes and consumption taxes in addition to labor income taxes). On the theoretical side, basic economic theory tells us that labor taxes used to fund transfer payments, either in kind or monetary, create a disincentive for individuals to work. And on the empirical side, between the mid-1950s and the mid-1980s there was substantial growth in the size of government, as measured either by total government receipts or total government outlays relative to GDP. Additionally, there is substantial variation in the extent of this growth across countries. Because labor taxes are the dominant source of government revenues, these patterns are also found in the evolution of labor taxes.

Lee Ohanian, Andrea Raffo, and I assess the extent to which increased labor taxes can account for the very different evolution of hours worked across countries.[3] Using the framework of a standard growth model, we analyze aggregate time series for output, hours of work, consumption, and labor taxes for 15 countries over the period 1956–2004. We find that the timing and magnitude of changes in labor taxes can explain a large share of the timing and magnitude in changes in hours of work in the group of 15 countries that we studied.[4] While this research suggests that labor taxes may be the dominant source of differences in hours of work across countries, it does not say that labor taxes can explain all of the changes in hours of work; one important byproduct of this research was isolating those cases in which other factors also must have been at play. We still need to identify the other quantitatively important factors.

We also find that once one takes taxes into account, the experiences of some countries, such as those in Scandinavia, seemed puzzling in the opposite sense. That is, our framework suggests that hours of work should have declined by even more in these countries than it did. Put somewhat differently, it seems that taxes were having less effect in Scandinavia than elsewhere. In a 2007 paper[5] I argue that understanding this requires a closer look at how governments spend tax revenues. A distinguishing feature of government expenditures in Scandinavia is the relatively large share of spending on "family policies" including such things as subsidized day care and elderly care. These programs are very important in the analysis of tax distortions to labor supply: whereas taxes on labor tend to discourage individuals from working in the market, these types of programs serve to subsidize market activity, thereby undoing some of the distortions associated with high tax rates on labor.

The Elasticity of Labor Supply

If differences in labor taxes are an important component of the explanation for the large differences in hours of work across countries, then it is implicitly the case that individual labor supply is responding quite significantly to changes in tax rates. A long literature in labor economics that examines hours of work of prime-aged males has routinely found that labor supply effects are small. How can one reconcile these two findings? Building on earlier work with Edward Prescott[6], Johanna Wallenius and I take up this issue.[7] We show that the earlier findings from the labor literature often have been misinterpreted. While these studies show that the response for prime-aged individuals is small, we argue that this is perfectly consistent with a large overall response in hours worked if individuals choose to spend a shorter fraction of their life in employment, either by delaying entry into the labor force and/or retiring early. In fact, a key result from our analysis is that the aggregate response to a change in taxes is large, independent of the response of prime-aged individuals.

In addition to reconciling the cross-country evidence with the literature on labor supply, this work has two additional interesting implications. First, it implies that all of the employment differences across countries should show up as differences for young and old individuals. In fact, this is exactly what one finds if one compares France, Germany, and Belgium with the United States. Second, it predicts that higher labor taxes lead to both lower employment rates and lower hours of work for employed individuals, another feature that is found in the data. In a different setting, Lei Fang and I argue that this observation can distinguish labor taxes from many other distortions that one might suspect to be of importance.[8]

Sectoral Differences in Hours of Work

These last results suggest that it is likely to be of interest to go beyond the aggregate data in looking for supporting evidence on the role of various distortions. Another case in point has to do with the sectoral differences in hours of work across countries. In a paper published in 2007[9], I look at differences in hours of work across three broad sectors: agriculture, industry, and services. A remarkable finding emerges if one compares the evolution of sec-

toral and aggregate hours of work for continental Europe with the United States. Virtually all of the relative decline in hours of work in Europe can be attributed to the fact that as Europe has caught up to the United States in terms of productivity, it has failed to develop a market service sector like the United States. I show that this pattern is also consistent with labor taxes being the dominant driving force. The underlying economic argument is a simple one: in addition to distorting the decision between consumption and leisure, taxes also distort the decision of whether to perform certain activities oneself (which economists refer to as home production) or to purchase them in the market. Important examples of home production include cooking meals, cleaning one's house, and taking care of one's children or other family members. All of these services can also be purchased in the market. Taxes on labor create an incentive for individuals to do more of these activities for themselves, since time spent in home production is not taxed.[10] It follows that one would expect the largest differences in hours worked to occur in those sectors that have the greatest scope for home production. Cross-country data on differences in time devoted to home production are consistent this prediction.[11]

Summary and Future Work

I believe that the work summarized here points to differences in labor taxes as an important source of the very large differences in hours of work across countries. This explanation fits well with time-series evidence for aggregate hours of work across countries, cross-country differences in employment rates over the life cycle, and hours worked across sectors, as well as cross-country differences in time devoted to home production. Nonetheless, there is still a need for additional work. One important direction is more explicit analysis of the actual tax and transfer programs in place across countries in models that allow for important sources of heterogeneity and how they interact with the detailed features of tax and transfer systems. I continue to work on these issues.

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[1] *These patterns and many others are documented in R. Rogerson, "Understanding Differences in Hours Worked",* Review of Economic Dynamics *9 (2006), pp. 365–409.*

[2] *Ibid.*

[3] *L. Ohanian, A. Raffo, and R. Rogerson, "Long-Term Changes in Labor Supply and Taxes: Evidence from OECD Countries, 1956–2004", NBER Working Paper No. 12786, December 2006, and* Journal of Monetary Economics *55 (2008), pp. 1353–62.*

[4] *This work represents a generalization of the earlier findings in E. Prescott, "Why Do Americans Work so Much More than Europeans?"* Federal Reserve Bank of Minneapolis Quarterly Review *28 (2004), pp.2–13.*

[5] *R. Rogerson, "Taxes and Market Work: Is Scandinavia an Outlier?" NBER Working Paper No. 12890, February 2007, and* Economic Theory *32 (2007), pp. 59–85.*

[6] *E. Prescott, R. Rogerson, and J. Wallenius, "Lifetime Aggregate Labor Supply with Endogenous Workweek Length"* Review of Economic Dynamics *12 (2009), pp. 23–36.*

[7] *R. Rogerson and J. Wallenius, "Micro and Macro Elasticities in a Life Cycle Model with Taxes", NBER Working Paper No. 13017, April 2007, forthcoming in* Journal of Economic Theory.

[8] *L. Fang and R. Rogerson, "Policy Analysis in a Matching Model with Intensive and Extensive Margins," NBER Working Paper No. 13007, April 2007, forthcoming in* International Economic Review.

[9] *R. Rogerson, "Structural Transformation and the Deterioration of European Labor Market Outcomes", NBER Working Paper No.12889, February 2007, and* Journal of Political Economy *116 (2008), pp. 235–59.*

[10] *For evidence on this see S. Davis and M. Henrekson, "Tax Effects on Work Activity, Industry Mix and Shadow Economy Size: Evidence from Rich Country Comparisons", NBER Working Paper No. 10509, May 2004.*

[11] *See, for example, R. Freeman and R. Schettkat, "Marketization of Household Production and the EU-US Gap in Work,"* Economic Policy *20 (2005), pp. 6–50.*

NBER Profile: *Anne C. Case*

Anne C. Case is a Research Associate in the NBER's Programs on Children, Education, Aging, and Public Economics. She is also the Alexander Stewart 1886 Professor of Economics and Public Affairs at Princeton University, where she is the Director of the Research Program in Development Studies.

Case is currently a member of the executive committee of the American Economic Association; the Economic Reference Group for UNAIDS; and the research committee of the World Bank. She is an affiliate of the South African Labour Development Research Unit at the University of Cape Town and of the Africa Centre for Health and Population Studies in South Africa. She has published extensively in the fields of development, health, political economy and labor economics.

Case received a B.A. from the State University of New York at Albany, an M.P.A. from the Woodrow Wilson School and a Ph.D. in economics from Princeton University. Her recent work examines the effects of HIV and AIDS on health service delivery in Africa; the impact of orphanhood on educational attainment; social determinants of childhood health; and the impact of early life health and nutrition on health and cognitive function over the life course.

When she's not working, she and her husband (NBER Research Associate Angus Deaton) enjoy cooking with friends, and bragging about their grandchildren.

NBER Profile: *Joseph Gyourko*

Joseph Gyourko is an NBER Research Associate in the Program on Public Economics and the Martin Bucksbaum Professor of Real Estate and Finance at The Wharton School of the University of Pennsylvania. He also serves as Director of the Zell/Lurie Real Estate Center at Wharton and is Chair of the Real Estate Department.

Gyourko received his undergraduate degree from Duke University and his Ph.D. in economics from the University of Chicago. He has been on the Wharton faculty since 1984, and became affiliated with the NBER in 2006. His research interests include real estate finance and investments, urban economics, and housing markets.

Gyourko serves on various journal editorial boards, and helps to coordinate the Economics of Real Estate & Local Public Finance seminar at the NBER's Summer Institute. He is looking forward to helping to coordinate a new NBER research effort on housing markets and the financial crisis.

Gyourko is married and has two children. In his spare time, he is a Phillies fan.

NBER Profile: *Annamaria Lusardi*

Annamaria Lusardi is a professor of economics at Dartmouth College and a Research Associate in the NBER's Program on the Economics of Aging. She has taught at Dartmouth College, Princeton University, the University of Chicago Public Policy School, and the University of Chicago's Booth School of Business. From January until June 2008, she was a visiting scholar at the Harvard Business School.

Lusardi holds a Ph.D. degree in Economics from Princeton University and a B.A. in Economics from Bocconi University, Milan, Italy. Her main areas of research are saving, Social Security and pensions, financial literacy and financial education, and entrepreneurship. Her book, *Overcoming The Saving Slump: How To Increase The Effectiveness Of Financial Education And Saving Programs,* was published by the University of Chicago Press in 2008.

She has also won numerous research awards. Among them is a research fellowship from the Irving B. Harris Graduate School of Public Policy Studies at the University of Chicago, a faculty fellowship from the John M. Olin Foundation, and a junior and senior faculty fellowship from Dartmouth College. Together with Olivia Mitchell, she is the recipient of the Fidelity Pyramid Prize, awarded to authors of published applied research that best helps address the goal of improving lifelong financial well-being for Americans.

In her free time, she enjoys reading, running, going to the Metropolitan Opera, and traveling to Italy as often as possible.

NBER Profile: *Christina H. Paxson*

Christina H. Paxson is a Research Associate in the NBER's Programs on Aging, Children, Healthcare, and Education. She is also the Hughes-Rogers Professor of Economics and Public Affairs at Princeton University.

Paxson is the founding director of the Center for Health and Wellbeing, an interdisciplinary health research center in the Woodrow Wilson School of Public and International Affairs. She is also a Senior Editor of *The Future of Children,* and a Research Associate of Princeton's Office of Population Research. She is the director of Princeton's Health Grand Challenges program, and the principal investigator for Princeton's NIH-funded Center for the Demography of Aging.

Paxson's research interests are in the areas of applied economics, health, and development economics. Her current research focuses on economic status and health outcomes over the life course in both developed and developing countries. She has investigated the effects of early life environments on children's cognitive development in the United States, the United Kingdom, and Ecuador, as well as the long-run effects of early life health problems on economic status in adulthood.

Paxson received her B.A. from Swarthmore College, and her Masters' and Ph.D. from Columbia University. She has spent her entire professional career at Princeton, except for a visiting professorship at the Wharton School, University of Pennsylvania, in 1999.

Paxson has two children: a 12-year-old son, and another son who is a junior at Swarthmore College. She is married to Ari Gabinet, an attorney with Vanguard.

NBER Profile: *Richard Rogerson*

Richard Rogerson is a Research Associate in the NBER's Program on Economic Fluctuations and Growth and a Professor of Economics at Arizona State University. He received his B.Sc. at the University of Alberta in 1979 and his Ph.D. in Economics from the University of Minnesota in 1984.

Rogerson began his academic career at the University of Rochester, and prior to moving to ASU in 2001 held positions at New York University, Stanford University, the University of Minnesota, and the University of Pennsylvania. His areas of specialization are labor economics and macroeconomics. His current research focuses on issues related to labor supply, with a particular emphasis on the effects of tax and transfer programs, as well as development. He has recently completed two terms as co-editor of the *American Economic Review* and is currently an Associate Editor of the *Review of Economic Dynamics* and a member of the Board of Editors for the *American Economic Journal: Macroeconomics.*

Rogerson lives in Fountain Hills, AZ with his wife Ninette Hupp, and their three "kids" — two beagles (Shadow and Zeke) and a calico cat (Zuzu). When not working, he enjoys both traveling with his wife and spending time at home with his wife and kids.

Conferences

Twenty-fourth Annual Conference on Macroeconomics

The NBER's Twenty-fourth Annual Conference on Macroeconomics, organizer by Research Associates Daron Acemoglu of MIT, Kenneth Rogoff of Harvard University, and Michael Woodford of Columbia University, took place in Cambridge on April 10 and 11. These papers were discussed:

- **John Geanakoplos,** Yale University, "The Leverage Cycle"
- **Christopher Foote** and **Lorenz Goette,** Federal Reserve Bank of Boston; **Kristopher Gerardi,** Federal Reserve Bank of Atlanta, and **Paul Willen,** Federal Reserve Bank of Boston and NBER, "Reducing Foreclosures"
- **Effi Benmelech,** Harvard University and NBER, and **Jennifer Dlugosz**, Harvard University, "The Credit Rating Crisis"
- **Fatih Guvenen,** University of Minnesota and NBER, and **Burhanettin Kuruscu,** University of Texas at Austin, "A Quantitative Analysis of the Evolution of the U.S. Wage Distribution: 1970–2000"
- **George-Marios Angeletos,** MIT and NBER, and **Jennifer La'O,** MIT, "Noisy Business Cycles"
- **Paul Beaudry,** University of British Columbia and NBER, and **Bernd Lucke,** University of Hamburg, "Letting Different Views about Business Cycles Compete"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/Macro09/summary.html

Innovation Policy and the Economy

The NBER's tenth annual Conference on Innovation Policy and the Economy took place in Washington on April 14. The conference was organized by NBER Research Associates Adam B. Jaffe of Brandeis University, Joshua Lerner of Harvard University, and Scott Stern of Northwestern University. The following papers were discussed:

- **Michael Kremer**, Harvard University and NBER, and **Heidi Williams**, Harvard University, "Incentivizing Innovation: Adding to the Toolkit"
- **Felix Oberholzer-Gee**, Harvard University, and **Koleman Strumpf**, University of Kansas, "File-Sharing and Copyright"
- **Antoinette Schoar**, MIT and NBER, "Globalization of Entrepreneurship"
- **Paula E. Stephan**, Georgia State University and NBER, "The 'I's' Have It: Immigration and Innovation, the Perspective from Academe"
- **Iain M. Cockburn**, Boston University and NBER, and **Matthew J. Slaughter**, Dartmouth College and NBER, "The Global Location of Biopharmaceutical Knowledge Activity: New Findings, New Questions"

- **Jerry Thursby**, Georgia Institute of Technology, and **Marie Thursby**, Georgia Institute of Technology and NBER, "University Licensing: Harnessing or Tarnishing Faculty Research?"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/IPEs09/summary.html

Cities and Entrepreneurship

An NBER Conference on Cities and Entrepreneurship, organized by Edward L. Glaeser, NBER and Harvard University, Stuart Rosenthal of Syracuse University, and William Strange of the University of Toronto, took place in Cambridge on May 1 and 2. These papers were discussed:

- **Ajay Agrawal**, University of Toronto and NBER; **Iain Cockburn**, Boston University and NBER; and **Carlos Rosell**, Department of Finance, Canada, "Not Invented Here: Creative Myopia and Company Towns"
- **William R. Kerr**, Harvard University, "How Important Is Local Innovation for Entrepreneurship? An Assessment through U.S. Scientific Immigration"
- **Paul Gompers** and **Josh Lerner**, Harvard University and NBER; **Anna Kovner**, Federal Reserve Bank of New York; and **Henry Chen**, Harvard University, "Buy Local? The Geography of Successful and Unsuccessful Venture Capital Expansion"
- **Jed Kolko**, PPIC, and **David Neumark**, University of California, Irvine and NBER, "Does Local Business Ownership Stabilize Employment?"
- **Michael Dahl**, University of Aalborg, and **Olav Sorenson**, University of Toronto, "The Migration of Technical Workers"
- **Mark Doms**, Federal Reserve Bank of San Francisco; **Ethan Lewis**, Dartmouth College; and **Alicia Robb**, University of California, Santa Cruz, "Local Labor Market Endowments, New Business Characteristics, and Performance"
- **Edward L. Glaeser**, and **Giacomo A. M. Ponzetto** and **William R. Kerr**, Harvard University, "Geographic Amenities and the Agglomeration of Innovation Entrepreneurship"
- **Steven Klepper**, Carnegie Mellon University, "The Origin and Growth of Industry Clusters: The Making of Silicon Valley and Detroit"
- **John Haltiwanger**, University of Maryland and NBER, and **Ron Jarmin** and **C.J. Krizan**, U.S. Census Bureau, "Mom & Pop Meet Big Box: Complements or Substitutes?"
- **Amanda Ross** and **Stuart Rosenthal**, Syracuse University, "Violent Crime, Entrepreneurship, and Vibrant Cities"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/CEs09/summary.html

Competition and Government Intervention in the Airline Industry

An NBER/Universities Research Conference on "Competition and Government Intervention in the Airline Industry" took place in Cambridge on May 15. NBER Research Associates Severin Borenstein, University of California, Berkeley, and Dennis Carlton, University of Chicago, organized the conference and chose these papers for discussion:

- **Silke J. Forbes**, University of California, San Diego, and **Mara Lederman**, University of Toronto, "Does Vertical Integration Affect Firm Performance? Evidence from the Airline Industry"
- **Steven L. Puller**, Texas A&M University and NBER; and **Anirban Sengupta** and **Steven N. Wiggins**, Texas A&M University, "Testing Theories of Scarcity Pricing and Price Dispersion in the Airline Industry"
- **James D. Dana**, Jr., Northeastern University, and **Eugene Orlov**, Compass Lexecon, "Internet Penetration and Capacity Utilization in the U.S. Airline Industry"
- **Alessandro Gavazza**, New York University, "The Role of Trading Frictions in Real Asset Markets"
- **Jan K. Brueckner**, University of California, Irvine, "Price vs. Quantity-Based Approaches to Airport Congestion Management"
- **Itai Ater**, Tel Aviv University, "Internalization of Congestion at U.S. Hub Airports"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/URCs09/summary.html

Climate Change: Past and Present

NBER Research Associates Gary D. Libecap, University of California, Santa Barbara, and Richard H. Steckel, Ohio State University, organized an NBER Conference on "Climate Change: Past and Present." The May 30 and 31 gathering took place in Cambridge. These papers were discussed:

- **John Landon-Lane**, Rutgers University; **Hugh Rockoff**, Rutgers University and NBER, and **Richard H. Steckel**, "Droughts, Floods, and Financial Markets in the United States"
- **Karen Clay**, Carnegie Mellon University, and **Werner Troesken**, George Mason University and NBER, "Did Frederick Brodie Discover the World's First Environmental Kuznets Curve, and If So, Why Should Anyone Really Care?"
- **Price V. Fishback** and **Paul W. Rhode**, University of Arizona and NBER; **Trevor Kollman**, University of Arizona; **Michael Haines**, Colgate College and NBER; and **Melissa Thomasson**, Miami University and NBER, "The Trials of Job: Impact of Climate Change and Weather on Infant and Non-Infant Death Rates During the Great Depression"
- **Anin Aroonruengsawat** and **Maximillian Auffhammer**, University of California, Berkeley, "Impacts of Climate Change on Residential Electricity Consumption: Evidence from Billing Data"
- **Morgan Kelly** and **Cormac O'Grada**, University College, Dublin, "Did Climate Matter? The Little Ice Age and European Growth"

- **Michael J. Roberts**, North Carolina State University, and **Wolfram Schlenker**, Columbia University and NBER, "The Evolution of Heat Tolerance of Corn: Implications for Climate Change"
- **Price V. Fishback** and **Paul W. Rhode**, and **Jonathan Fox**, University of Arizona, "The Economic Response to Climate Change in the Farm Sector: The United States, 1895–1969"
- **Alan L. Olmstead**, University of California, Davis and NBER, and **Paul W. Rhode**, "Adjusting to Climatic Variation: Historical Perspectives from North American Agricultural Development"
- **Zeynep K. Hansen**, Boise State University and NBER; **Gary D. Libecap**; and **Scott E. Lowe**, Boise State University, "Climate Variability and Water Infrastructure: Historical Experience in the Western United States"
- **Robert S. Pindyck**, MIT and NBER, "Uncertainty, Extreme Outcomes, and Climate Change Policy"
- **Richard Sutch**, University of California, Riverside and NBER, "The Impact of the 1936 Corn-Belt Drought on American Farmers' Adoption of Hybrid Corn"
- **Raghav Gaiha**, University of Delhi, India; **Kenneth Hill** and **Vani S. Kulkarni**, Harvard University; and **Antanu Mathur**, International Fund for Agricultural Development, "On Devastating Droughts"
- **Martin Weitzman**, Harvard University and NBER, "Additive Damages, Fat Tailed Climate Dynamics, and Uncertain Discounting"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/CCPP/summary.html

NBER News

Saez Receives John Bates Clark Medal

NBER Research Associate Emmanuel Saez received the American Economics Association's John Bates Clark Medal for 2010. This award, which was historically awarded every other year but will be awarded annually starting in 2010, is presented to the economist under the age of 40 who has made the most substantial contribution to economic thought and knowledge. The prize citation identifies Saez's work on optimal tax theory, behavioral responses to taxation, the distribution of income, and the analysis of retirement plans as the basis for this award.

Saez is a faculty member at the University of California, Berkeley, and a member of the NBER's Public Economics Program. He received his Ph.D. from MIT in 1999 and became an NBER Faculty Research Fellow in the same year. He joined the economics department at Berkeley in 2002, and was promoted to NBER Research Associate in 2003.

Other current NBER Research Associates who have received the Clark Medal include Daniel McFadden, Martin Feldstein, Joseph Stiglitz, James Heckman, Jerry Hausman, Sanford Grossman, Paul Krugman, David Card, Kevin Murphy, Andrei Shleifer, Steven Levitt, Daron Acemoglu, and Susan Athey. Gary Becker, who was an NBER affiliate from 1957 until 1979, and Lawrence Summers, who is currently a Research Associate on leave, also won the Clark Medal, as did the late Milton Friedman and Zvi Griliches, both of whom were NBER affiliates for substantial parts of their careers.

Program and Working Group Meetings

National Security

The NBER's Working Group on the Economics of National Security, directed by NBER President-Emeritus Martin Feldstein of Harvard University, met in Cambridge on February 24. The following papers were discussed:

- **Effie Benmelech**, Harvard University and NBER; **Claude Berrebi,** RAND Corporation; and **Esteban F. Klor**, Hebrew University, "Economic Conditions and the Quality of Suicide Terrorism"
- **Nayantara Hensel**, U.S. Naval Postgraduate School, "Globalization and the U.S. Defense Industrial Postgraduate School Base"
- **Jonathan Lipow**, Oberlin University, and **Peter Berck**, University of California, Berkeley, "Did Monetary Forces Turn the Tide in Iraq?"
- **Diana Lien, Aline Quester,** and **Robert Shuford**, Center for Naval Analyses, "Marine Corps Deployment Tempo and Retention from FY04 to FY07"
- **Eli Berman**, University of California, San Diego and NBER, "Religious Radicalism and Violence in the Modern World"
- **Radha Iyengar**, London School of Economics and NBER, and **Jonathan Monten**, Yale University, "The Impact of Reconstruction Spending on the Labor Market for Insurgents"
- **Jim Hosek** and **Francisco Martorell**, RAND Corporation, "How Have Deployments during the War on Terrorism Affected Re-Enlistments?"
- **Christopher Blattman,** Yale University, and **Edward Miguel**, University of California, Berkeley and NBER, "Civil War"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/ENSs09/summary.html

Cohort Studies

The NBER's Working Group on Cohort Studies met in Cambridge on March 6. Group Director Dora Costa, NBER and University of California, Los Angeles, organized the meeting. These papers were discussed:

- **Daron Acemoglu**, MIT and NBER; **David Autor**, MIT and NBER; and **Amanda Pallais**, MIT, "Assessing the Rising Return to Education and Ability: Evidence from Army Veterans"
- **Grant Miller**, Stanford University and NBER; **Diana Pinto**, Pontificia Universidad Javeriana; and **Marcos Vera-Hernández**, University College London, "Supply- vs. Demand-Side Rationing in Developing Country Health Insurance: Evidence from Colombia's Régimen Subsidiado"

- **Laura Bierut** and **Richard Grucza**, Washington University, St. Louis, and **Karen Norberg,** Washington University, St. Louis and NBER, "Adolescence as a Sensitive Period: Long-Term Effects of Minimum Purchase Age Laws on Alcohol and Drug Use Disorders"

- **Price V. Fishback**, University of Arizona and NBER, and **Melissa Thomasson**, Miami University and NBER, "The Effects of Experiencing the Great Depression as a Child on Socioeconomic and Health Outcomes"

- **James Feyrer**, Dartmouth College; **Dimitra Politi**, Brown University; and **David N. Weil**, Brown University and NBER, "The Economic Effects of Micronutrient Deficiency: Evidence from Salt Iodization in the United States"

- **John Brown**, Clark University, "Fertility Control with Imperfect Methods: Strategies of Family Building and the Choice of Technique during the German Fertility Transition, 1885–1915"

- **Martha J. Bailey**, University of Michigan and NBER, and **Nzinga Broussard**, Claremont McKenna College, "The Impact of Federal Family Planning Grants Under the War on Poverty"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/CSs09/summary.html

Development of the American Economy

The NBER's Program on the Development of the American Economy met in Cambridge on March 7. Program Director Claudia Goldin, of NBER and Harvard University, organized the meeting. These papers were discussed:

- **Dora L. Costa**, University of California, Los Angeles and NBER, "The Rise of Retirement among African Americans: Wealth and Social Security Effects"

- **Jeremy Atack**, Vanderbilt University and NBER; **Fred Bateman**, University of Georgia; **Michael Haines**, Colgate University and NBER; and **Robert Margo**, Boston University and NBER, "Did Railroads Induce or Follow Economic Growth? Urbanization and Population Growth in the American Midwest, 1850–60" (NBER Working Paper No. 14640)

- **Chiaki Moriguchi**, Northwestern University and NBER, "From Pragmatic to Sentimental Adoption: Child Adoption in the United States, 1880–1930"

- **Trevon Logan**, Ohio State University and NBER, and **Paul Rhode**, University of Arizona and NBER, "Moveable Feasts: A New Approach to Endogenizing Tastes"

- **Petra Moser**, Stanford University and NBER, and **Alessandra Voena**, Stanford University, "Compulsory Licensing: Evidence from the Trading-with-the-Enemy Act"

- **Peter Temin**, MIT and NBER, "Changes in Labor Relations during the New Deal and War"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/daes09/summary.html

International Finance and Macroeconomics

The NBER's Program on International Finance and Macroeconomics met in Cambridge on March 13. Roberto Chang, NBER and Rutgers University, and Kristin Forbes, NBER and MIT, organized this program:

- **Sebnem Kalemli-Ozcan**, University of Houston and NBER; **Vadym Volosovych,** Florida Atlantic University; and **Bent Sorensen**, University of Houston, "Deep Financial Integration and Volatility"
- **Charles Engel**, University of Wisconsin and NBER, "Currency Misalignments and Optimal Monetary Policy: A Reexamination"
- **Menzie D. Chinn**, University of Wisconsin and NBER, and **Michael J. Moore**, Queen's University, "Private Information and the Monetary Model of Exchange Rates: Evidence from a Novel Data Set" (NBER Working Paper No. 14175)
- **Andrew K. Rose**, University of California, Berkeley and NBER, and **Mark M. Spiegel**, Federal Reserve Bank of San Francisco, "The Olympic Effect"
- **Emine Boz**, IMF; **Christian Daude**, OECD; and **C. Bora Durdu**, Federal Reserve Board, "Emerging Market Business Cycles Revisited: Learning About the Trend"
- **Yuriy Gorodnichenko**, University of California, Berkeley and NBER; **Enrique G. Mendoza**, University of Maryland and NBER; and **Linda L. Tesar**, University of Michigan and NBER, "The Finnish Great Depression: From Russia with Love"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/ifms09/summary.html

Asset Pricing

NBER's Program on Asset Pricing met in Chicago on March 20. NBER Research Associates Markus K. Brunnermeier and Jose A. Scheinkman of Princeton University organized this program:

- **Francis A. Longstaff**, University of California, Los Angeles and NBER, and **Jiang Wang**, MIT and NBER, "Asset Pricing and the Credit Market"
- **Dimitrios Vayanos**, London School of Economics and NBER, and **Paul Woolley**, London School of Economics, "An Institutional Theory of Momentum and Reversal"
- **Bernard Dumas**, University of Lausanne and NBER, and **Andrew Layasoff**, Boston University, "Incomplete-Market Equilibria Solved Recursively on an Event Tree"(NBER Working Paper No. 14629)
- **Nicolae Garleanu**, University of California, Berkeley and NBER; **Leonid Kogan**, MIT and NBER; and **Stavros Panageas**, University of Chicago, "The Demographic of Innovation and Asset Returns"
- Panel Discussion: "Rethinking Asset Pricing: Lessons from the current financial crisis"

  Is the divide between asset pricing and corporate finance useful? Is a framework based on a single representative agent still appropriate? Does asset pricing focus too much on specification of preferences and too little on frictions/constraints/liquidity? Should we switch to an "Institutional Finance" paradigm?

Panel members: **Lars P. Hansen** and **John H. Cochrane**, University of Chicago and NBER; **Darrell Duffie**, Stanford University and NBER; and **Peter Kyle**, University of Maryland

Summaries of these papers may be found at: http://www.nber.org/confer/2009/aps09/summary.html

Corporate Finance

The NBER's Program on Corporate Finance met in Chicago on March 20. Francisco Perez-Gonzalez, NBER and Stanford University, organized the meeting. These papers were discussed:

- **Elena Loutskina**, University of Virginia, and **Philip E. Strahan**, Boston College and NBER, "Informed and Uninformed Investment in Housing: The Downside of Diversification"
- **Rajkamal Iyer**, University of Amsterdam; **Asim Ijaz Khwaja** and **Erzo Luttmer**, Harvard University and NBER; and **Kelly Shue**, Harvard University, "Screening in Alternative Credit Markets: Can Individual Lenders Infer Borrower Credit-worthiness in Peer-to-Peer Lending?"
- **Adriano A. Rampini** and **S. Viswanathan**, Duke University, "Collateral and Capital Structure"
- **Alex Edmans**, University of Pennsylvania; **Xavier Gabaix**, New York University and NBER; **Tomasz Sadzik**, New York University; and **Yuliy Sannikov**, Princeton University, "Dynamic Incentive Accounts"
- **Joshua D. Rauh**, University of Chicago and NBER, and **Amir Sufi**, University of Chicago, "Capital Structure and Debt Structure"
- **Armen Hovakimian**, Baruch College; **Ayla Kayhan**, Securities and Exchange Commission; and **Sheridan Titman**, University of Texas, Austin and NBER, "Crediting Rating Targets"
- **Redouane Elkamhi**, University of Iowa; **Jan Ericsson**, McGill University; and **Christopher A. Parsons**, University of North Carolina, Chapel Hill, " The Cost of Financial Distress and the Timing of Default"
- **Isil Erel**, Ohio State University; **Brandon Julio**, London Business School; **Michael S. Weisbach**, Ohio State University and NBER; and **Woojin Kim**, Korea University Business School, "Financial Market Conditions and the Structure of Securities"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/cfs09/summary.html

Monetary Economics

The NBER's Program on Monetary Economics met at the Federal Reserve Bank of New York on March 20. NBER Research Associates Laurence Ball of Princeton University and Justin Wolfers of the University of Pennsylvania organized this program:

- **Francesco Trebbi** and **Atif R. Mian,** University of Chicago and NBER, and **Amir Sufi**, University of Chicago, "The Political Economy of the U.S. Mortgage Default Crisis"

- **Thomas Philippon**, New York University and NBER, and **Philipp Schnabl**, New York University, "Cost-Efficient Mechanisms against Debt Overhang"

- **Simon Gilchrist**, Boston University and NBER; **Vladimir Yankov**, Boston University; and **Egon Zakrajsek**, Federal Reserve Board, "Credit Market Shocks and Economic Fluctuations: Evidence from Corporate Bond and Stock Markets"

- **Carmen M. Reinhart**, University of Maryland and NBER, and **Kenneth S. Rogoff**, Harvard University and NBER, "Banking Crises: An Equal Opportunity Menace" (NBER Working Paper No. 14587)

- **Jonathan Parker** and **Annette Vissing-Jorgensen**, Northwestern University and NBER, "Who Bears Aggregate Fluctuations and How?" (NBER Working Paper No. 14665, summarized in April 2009 NBER Digest)

- **Olivier J. Blanchard**, International Monetary Fund, "Thoughts on the Financial Crisis"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/mes09/summary.html

Program on Technological Progress and Productivity Measurement

The NBER's Program on Technological Progress and Productivity Measurement met in Cambridge on March 20. Ernst R. Berndt, NBER and MIT, and Christopher R. Knittel, NBER and University of California, Davis, organized the meeting. These papers were discussed:

- **Jacques Mairesse**, INSEE and NBER; **Francesco Lissoni**, University of Brescia; **Fabio Montobbio**, Universita Bocconi; and **Michele Pezzoni**, University of Bergamo, "Determinants of Promotion and Scientific Productivity: A Study on Italian and French Academic Physicists"

- **Fiona Murray**, MIT; **Philippe Aghion**, Harvard University and NBER; **Julian Kolev**, Harvard University; **Scott Stern**, Northwestern University and NBER; and **Mathias Dewatripont**, Universite Libre de Bruxelles, "Of Mice and Academics: Examining the Effects of Openness on Innovation" (NBER Working Paper No. 14819)

- **Ashish Arora**, Duke University; **Lee G. Branstetter**, Carnegie Mellon University and NBER; and **Matej Drev**, Carnegie Mellon University, "The Great Realignment: How the Changing Technology of Technological Change in Information Technology Affected the US and Japanese IT Industries, 1983–1999"

- **Alexander J. Field**, Santa Clara University, "Should Capital Input Data Receive a Utilization Adjustment?"

- **Leonardo Iacovone**, The World Bank; **Beata Javorcik**, University of Oxford; **Wolfgang Keller**, University of Colorado and NBER; and **James Tybout**, Pennsylvania State University and NBER, "Supplier Responses to Wal-Mart's Invasion of Mexico"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/prs09/summary.html

Behavioral Finance

The NBER's Program on Behavioral Finance met in Chicago on March 21.Markus Brunnermeier, NBER and Princeton University, and Stefan Nagel, NBER and Stanford University, organized this program:

- **Mark Dean**, New York University, "Status Quo Bias in Large and Small Choice Sets"
- **Nicholas Barberis**, Yale University and NBER, "A Model of Casino Gambling"
- **Shimon Kogan**, University of Texas; **Anthony M. Kwasnica**, Pennsylvania State University; and **Roberto Weber**, Carnegie Mellon University, "Coordination in the Presence of Asset Markets"
- **Marianne Bertrand**, University of Chicago and NBER, and **Adair Morse**, University of Chicago, "Information Disclosure, Cognitive Biases, and Payday Borrowing"
- **Wei Xiong**, Princeton University and NBER, and **Jialin Yu**, Columbia University, "The Chinese Warrants Bubble"
- **Uday Rajan**, University of Michigan; **Amit Seru**, University of Chicago; and **Vikrant Vig**, London Business School, "The Failure of Models That Predict Failure: Distance, Incentives, and Defaults"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/bfs09/summary.html

International Trade and Investment

NBER's Program on International Trade and Investment met in Cambridge on March 27and 28. Program Director Robert C. Feenstra, University of California, Davis, organized the meeting. These papers were discussed:

- **Bernardo S. Blum** and **Ignatius J. Horstmann**, University of Toronto, and **Sebastian Claro**, Central Bank of Chile, "Intermediation and the Nature of Trade Costs: Theory and Evidence"
- **Gene M. Grossman** and **Esteban Rossi-Hansberg**, Princeton University and NBER, "Task Trade between Similar Countries"
- **Irene Brambilla**, Yale University and NBER; **Daniel Lederman**, World Bank; and **Guido Porto**, Universidad Nacional do La Plata, "The Quality of Trade: Exports, Export Destinations, and Wages"
- **Kalina Manova**, Stanford University and NBER, and **Zhiwei Zhang**, Hong Kong Monetary Authority, "Export Prices and Heterogeneous Firm Models"
- **Julian di Giovanni**, International Monetary Fund, and **Andrei A. Levchenko**, University of Michigan, "Firm Entry, Trade, and Welfare in Zipf's World"
- **Jiandong Ju**, International Monetary Fund, and **Shang-Jin Wei**, Columbia University and NBER, "When is the Quality of the Financial System a Source of Comparative Advantage?" (NBER Working Paper No. 13984)
- **Bruce A. Blonigen**, University of Oregon and NBER, "New Evidence on the Formation of Trade Policy Preferences"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/itis09/summary.html

Public Economics

The NBER's Program on Public Economics met in Cambridge on April 2 and 3. Program Directors Raj Chetty, University of California, Berkeley, and Amy Finkelstein, MIT, organized the meeting. These papers were discussed:

- **Peter Diamond**, MIT and NBER, and **Johannes Spinnewijn**, MIT, "Capital Income Taxes with Heterogeneous Discount Rates"
- **Benjamin A. Olken**, MIT and NBER, and **Monica Singhal**, Harvard University and NBER, "Informal Taxation"
- **Raj Chetty**, "Bounds on Elasticities with Optimization Frictions: An Application to Taxation and Labor Supply"
- **Alexander W. Blocker**, Boston University; **Laurence J. Kotlikoff**, Boston University and NBER; and **Stephen A. Ross**, MIT and NBER, "The True Cost of Social Security"
- **Kevin Milligan**, University of British Columbia and NBER, and **Mark Stabile**, University of Toronto, "Do Child Tax Benefits Affect the Well Being of Children? Evidence from Canadian Child Benefits" (NBER Working Paper No. 14624)
- **Marco Manacorda**, London School of Economics; **Edward Miguel**, University of California, Berkeley and NBER; and **Andrea Vigorito**, Universidad de la Republica, "Government Transfers and Political Support" (NBER Working Paper No. 14702)
- **Jonathan Gruber,** MIT and NBER, and **Jason Abaluck**, MIT, "Choice Inconsistencies among the Elderly: Evidence from Plan Choice in the Medicare Part D Program" (NBER Working Paper No. 14759)

Summaries of these papers may be found at: http://www.nber.org/confer/2009/pes09/summary.html

Program Meeting on Labor Studies and Environmental and Energy Economics

The NBER's Program on Labor Studies, directed by Richard B. Freeman of Harvard University, and the Program on Environmental and Energy Economics, directed by Don Fullerton of the University of Illinois, met jointly in Cambridge on April 17 and 18. NBER Faculty Research Fellow Olivier Deschenes of the University of California, Santa Barbara also served as an organizer of the joint meeting. These papers were discussed:

- **David Autor**, MIT and NBER; **Alan Manning**, London School of Economics; and **Christopher L. Smith**, MIT, "The Minimum Wage's Role in the Evolution of U.S. Wage Inequality over Three Decades"
- **Till Von Wachter**, Columbia University and NBER; **Jae Song**, Social Security Administration; and **Joyce Manchester**, Congressional Budget Office, "Long-Term Earnings Losses due to Mass Layoffs during the 1982 Recession: An Analysis Using U.S. Administrative Data from 1974 to 2004"
- **Mireille Jacobson**, University of California, Irvine and NBER, and **Heather Royer**, Case Western Reserve University, "Aftershocks: The Impact of Clinic Violence on Abortion Services"

- **Justin McCrary**, University of California, Berkeley and NBER, and **Matias Busso**, University of Michigan, "New Evidence on the Finite Sample Properties of Propensity Score Matching and Reweighting Estimates"
- **Avraham Y. Ebenstein**, Harvard University, "Water Pollution and Digestive Cancers in China"
- **Robin Burgess**, London School of Economics and NBER; **Olivier Deschenes**; **Dave Donaldson**, London School of Economics; and **Michael Greenstone**, MIT and NBER, "Weather and Death in India: Mechanisms and Implications of Climate Change"
- **Arik Levinson**, Georgetown University and NBER, "Valuing Air Quality Using Happiness Data"
- **Robert S. Pindyck**, MIT and NBER, "Uncertainty, Extreme Outcomes, and Climate Change Policy"
- **James Bushnell**, University of California, Berkeley and NBER, and **Yihsu Chen**, University of California, Merced, "Regulation, Allocation, and Leakage in Cap-and-Trade Markets for CO2"
- **Soren T. Anderson**, Michigan State University, "The Demand for Ethanol as a Gasoline Substitute"
- **Lucas W. Davis**, University of Michigan and NBER, and **Matthew E. Kahn**, University of California, Los Angeles and NBER, "International Trade in Used Vehicles: The Environmental Consequences of NAFTA"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/LSEEEs09/summary.html

Health Care

The NBER's Health Care Program met in Cambridge on April 21. NBER Research Associate Dana P. Goldman of RAND organized the meeting. These papers were discussed:

- **Darius Lakdawalla**, RAND and NBER, and **Wesley Yin**, University of Chicago and NBER, "Insurer Bargaining and Negotiated Pharmacy Drug Prices in Medicare Part D"
- **Frank R. Lichtenberg**, Columbia University and NBER, "The Quality of Medical Care, Behavioral Risk Factors, and Longevity Growth"
- **Marianne P. Bitler** and **Christopher Carpenter**, University of California, Irvine and NBER, "Insurance Mandates and Mammography"
- **Ashlesha Datar** and **Nancy Nicosia**, RAND, "Junk Food in Schools and Childhood Obesity: Much Ado about Nothing?"
- **Andreea Balan-Cohen**, Tufts University, "Sobering up: The Impact of the 1985–1988 Russian Anti-Alcohol Campaign on Child Health"
- **Amitabh Chandra**, Harvard University and NBER, and **Jonathan S. Skinner**, Dartmouth College and NBER, "Technology Growth and Expenditure Growth in Health Care"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/HCs09/summary.html

Education Program Meeting

NBER's Program on Education met in Cambridge on April 30. Program Director Caroline M. Hoxby of Stanford University organized the meeting. These papers were discussed:

- **Jonathan Gruber**, MIT and NBER; **Susan Dynarski**, University of Michigan and NBER; and **Danielle Li**, MIT, "Cheaper by the Dozen: Using Sibling Discounts at Catholic Schools to Estimate the Price Elasticity of Private School Attendance"
- **Philip Babcock** and **Kelly Bedard**, University of California, Santa Barbara, "Wage Gains from Failure: New Evidence on School Retention Policies and Long-run Outcomes"
- **Asim Khwaja**, Harvard University and NBER; **Tahir Andrabi**, Pomona College; and and **Jishnu Das**, The World Bank, "Report Cards: The Impact of Providing School and Child Test Scores on Educational Markets"
- **Felipe Barrera-Osorio** and **Dhushyanth Raju**, The World Bank, "Evaluating a Test-based Public Subsidy Program for Low-cost Private Schools: Regression-discontinuity Evidence from Pakistan"
- **Martin R. West**, Brown University, and **Ludger Wößmann**, University of Munich, "Every Catholic Child in a Catholic School: Historical Resistance to State Schooling, Contemporary Private Competition, and Student Achievement across Countries"
- **Scott Imberman**, University of Houston; **Adriana Kugler**, University of Houston and NBER; and **Bruce Sacerdote**, Dartmouth College and NBER, "Katrina's Children: A Natural Experiment in Peer Effects from Hurricane Evacuees"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/EDs09/summary.html

Program on Children

The NBER's Program on Children met in Cambridge on May 1. Program Director Jonathan Gruber of MIT organized the meeting. These papers were discussed:

- **Anna Aizer**, Brown University and NBER, and **Laura Stroud** and **Stephen Buka**, Brown University, "Maternal Poverty, Stress, and Child Well-Being: Evidence from Siblings"
- **Seema Jayachandran**, Stanford University and NBER, and **Ilyana Kuziemko**, Princeton University and NBER, "Why Do Mothers Breastfeed Girls Less than Boys? Evidence and Implications for Child Health in India"
- **David E. Frisvold**, Emory University, and **Julie C. Lumeng**, University of Michigan, "Expanding Exposure: Can Increasing the Daily Duration of Head Start Reduce Childhood Obesity?"
- **Ann Huff Stevens**, University of California, Davis and NBER, and **Jessamyn Schaller**, University of California, Davis, "Short-Run Effects of Parental Job Loss on Children's Academic Achievement"
- **Stacey Chen**, Royal Holloway University of London; **Yie-Chien Chen**, National Taiwan University; and **Jin-Tan Liu**, National Taiwan University and NBER, "Separate Effects of Sibling Gender and Family Size on Education: Methods and First Evidence"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/EDs09/summary.html

Higher Education

The NBER's Working Group on Higher Education met in Cambridge on May 1. Director Charles T. Clotfelter of Duke University organized the meeting. These papers were discussed:

- **Yona Rubinstein**, Brown University, and **Sheetal Sekhri**, University of Virginia, "Do Public Colleges in Developing Countries Provide Better Education than Private Ones? Evidence from General Education Sector in India"
- **Jason M. Lindo** and **Nicholas J. Sanders**, University of California, Davis, and **Philip Oreopoulos**, University of British Columbia and NBER, "Ability, Gender, and Performance Standards: Evidence from Academic Probation"
- **Philippe Aghion**, Harvard University and NBER; **Mathias Dewatripont**, Université Libre de Bruxelles; **Caroline M. Hoxby**, Stanford University and NBER; **Andreu Mas-Colell**, Universitat Pompeu Fabra; and **Andre Sapir**, Université Libre de Bruxelles, "The Governance and Performance of Research Universities: Evidence from Europe and the U.S." (NBER Working Paper No. 14851)
- **Scott E. Carrell** and **Marianne E. Page**, University of California, Davis and NBER, and **James E.West**, United States Air Force Academy, "Sex and Science: How Professor Gender Perpetuates the Gender Gap" (NBER Working Paper No. 14959)
- **Shulamit Kahn**, Boston University, and **Megan MacGarvie**, Boston University and NBER, "How Important is U.S. Location for Research in Science?"
- **Katja Maria Kaufmann**, Stanford University, "Understanding the Income Gradient in College Attendance in Mexico: The Role of Heterogeneity in Expected Returns to College"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/HIEDs09 /summary.html

International Trade and Organizations

The NBER's Working Group on International Trade and Organizations met in Cambridge on May 1. Pol Antràs, NBER and Harvard University, organized the meeting. These papers were discussed:

- **Andrew Atkeson** and **Ariel Burstein**, University of California, Los Angeles and NBER, "Innovation, Firm Dynamics, and International Trade"
- **Maria Guadalupe**, Columbia University and NBER, and **Julie Wulf**, Harvard University, "The Flattening Firm and Product Market Competition"
- **Federico Díez**, University of Wisconsin, "The Asymmetric Effects of Tariffs on Offshoring Industries: How North/South Tariffs Affect Intra-Firm Trade"
- **Wolfgang Keller**, University of Colorado and NBER, and **Stephen R. Yeaple**, Pennsylvania State University and NBER, "Global Production and Trade in the Knowledge Economy" (NBER Working Paper No. 14626)

Summaries of these papers may be found at: http://www.nber.org/confer/2009/ITOs09/summary.html

Health Economics

NBER's Program on Health Economics met in Cambridge on May 8. Program Director Michael Grossman of City University of New York Graduate Center and Theodore Joyce of Baruch College organized the meeting. These papers were discussed:

- **Joshua D. Angrist**, MIT and NBER; **Stacey H. Chen**, University of London; and **Brigham Frandsen**, MIT, "Did Vietnam Veterans Get Sicker in the 1990s?" (NBER Working Paper No. 14781)
- **Jay Bhattacharya**, Stanford University and NBER; **Thomas DeLeire**, University of Wisconsin; **Kanaka D. Shetty**, RAND Corporation; and **Chapin White**, Congressional Budget Office, "Changes in U.S. Hospitalization and Mortality Rates Following Smoking Bans"(NBER Working Paper No. 14790)
- **Partha Deb**, CUNY and NBER; **William T. Gallo**, Yale University; and **Jody L. Sindelar**, Yale University and NBER, "Involuntary Job Loss, Body Mass, and Alcohol Consumption"
- **Phillip B. Levine** and **Robin McKnight**, Wellesley College and NBER, and **Samantha Heep**, Wellesley College, "Public Policy, Health Insurance, and the Transition to Adulthood"
- **Robert Kaestner**, University of Illinois-Chicago and NBER, and **Jeffrey Silber**, University of Pennsylvania, "New Evidence on the Efficacy of Medicare Spending"
- **Gabriella Conti**, University of Chicago; **James J. Heckman**, University of Chicago and NBER; and **Sergio Urzua**, Northwestern University, "Early Endowments, Education, and Health"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/HEs09/summary.html

Market Design

The NBER's Working Group on Market Design met in Cambridge on May 15–16. The field of "market design" examines the reasons why market institutions fail and considers the properties of alternative mechanisms, in terms of efficiency, fairness, incentives, and complexity. Research on market design is influenced by ideas from industrial organization and microeconomic theory; it brings together theoretical, empirical, and experimental methods, with an aim of studying policy-relevant tradeoffs with practical consequences. Working Group co-directors Susan Athey of Harvard University and Parag A. Pathak of MIT organized the meeting. These papers were discussed:

- **Patrick Bajari**, University of Minnesota and NBER, and **Gregory Lewis**, Harvard University and NBER, "Procurement Contracting with Time Incentives: Theory and Evidence"
- **Francesco Decarolis**, University of Chicago, "When the Highest Bidder Loses the Auction: Theory and Evidence from Public Procurement"
- **Michael Ostrovsky**, Stanford University, "Information Aggregation in Dynamic Markets with Strategic Traders"
- **Luis Rayo**, University of Chicago, and **Ilya Segal**, Stanford University, "Optimal Information Disclosure"
- **Estelle Cantillon**, ECARES, and **Pai-Ling Yin**, MIT, "Competition between Exchanges: Lessons from the Battle of the Bund"

- **Itay P. Fainmesser**, Harvard University, "Community Structure and Market Outcomes: Towards a Theory of Repeated Games in Networks"
- **Maher Said**, Yale University, "Auctions with Dynamic Populations: Efficiency and Revenue Maximization"
- **Alex Gershkov** and **Paul Schweinzer**, University of Bonn, "When Queueing is better than Push and Shove"
- **Peter Cramton**, University of Maryland, "Spectrum Auction Design"
- **Jeremy Bulow** and **Jonathan Levin**, Stanford University and NBER, and **Paul Milgrom**, Stanford University, "Winning Play in Spectrum Auctions" (NBER Working Paper No. 14765)
- **Eric Budish**, Harvard University, "The Combinatorial Assignment Problem: Approximate Competitive Equilibrium from Equal Incomes"
- **John H. Kagel**, Ohio State University; **Yuanchuan Lien**, California Institute of Technology; and **Paul Milgrom**, "Ascending Prices and Package Bidding: A Theoretical and Experimental Analysis"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/MDs09/summary.html

Market Microstructure

The NBER's Working Group on Market Microstructure met in Cambridge on May 29. Organizers Charles I. Jones, NBER and Stanford University; Eugene Kandel, Hebrew University, Jerusalem; Group Director Bruce Lehmann of NBER and the University of California, San Diego; and Avanidhar Subrahmanyam, University of California, Los Angeles, chose these papers for discussion:

- **Ronnie Sadka**, Boston College, "Liquidity Risk and the Cross-Section of Hedge-Fund Returns"
- **Shane A. Corwin** and **Paul Schultz**, University of Notre Dame, "A Simple Way to Estimate Bid-Ask Spreads from Daily High and Low Prices"
- **Alain Chaboud**, **Erik Hjalmarsson**, and **Clara Vega**, Federal Reserve Board, and **Benjamin Chiquoine**, The Investment Fund for Foundations, "The Rise of the Machines: Algorithmic Trading in the Foreign Exchange Market"
- **Lawrence E. Harris**, University of Southern California; **Ethan Namvar**, University of California, Irvine; and **Blake Phillips**, University of Alberta, "Price Inflation and Wealth Transfer during the 2008 SEC Short-Sale Ban"
- **Zhi Da** and **Pengjie Gao**, University of Notre Dame, and **Joseph Engelberg**, University of North Carolina, "In Search of Attention"
- **Stewart Mayhew** and **Timothy McCormick**, Securities and Exchange Commission, and **Chester Spatt**, Carnegie Mellon University and NBER, "The Information Content of Market-on-Close Imbalances, the Specialist and NYSE Equity Prices"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/mms09/summary.html

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Social Security Policy in a Changing Environment

Social Security Policy in a Changing Environment, edited by Jeffrey R. Brown, Jeffrey B. Liebman, and David A. Wise, is now available from the University of Chicago Press. The price of the volume is $110.00.

In this NBER Conference Volume, an esteemed group of academic economists analyze how a changing economic and demographic environment will influence the social insurance programs that benefit elderly households. They also explore how these ongoing trends will affect future beneficiaries, under both the current Social Security program and potential reform options. The researchers examine trends in private sector retirement saving and health care costs, as well as the uncertain nature of future demographic, economic, and social trends — including marriage and divorce rates and female participation in the labor force. Recognizing the ambiguity of the environment in which the Social Security system must operate and evolve, this landmark book explores factors that policymakers must consider in designing policies that are resilient enough to survive in an economically and demographically uncertain society.

Jeffrey R. Brown and David A. Wise are NBER Research Associates in the Program on Aging, which Wise directs. Brown is also a Professor of Finance at the University of Illinois, Champaign-Urbana. Wise is the John F. Stambaugh Professor of Political Economy at Harvard University's Kennedy School. Liebman is the Executive Associate Director of the Office of Management and Budget and is on leave from the NBER. He was the Malcolm Wiener Professor of Public Policy at the Kennedy School.

International Trade in Services and Intangibles in the Era of Globalization

International Trade in Services and Intangibles in the Era of Globalization, edited by Marshall Reinsdorf and Matthew J. Slaughter, is available from the University of Chicago Press for $99.00.

Historically, quantitative measures of international exchange have focused on trade in tangible products or capital. However, services recently have become a larger portion of developed economies and international trade, and this trend likely will only increase in the future. This volume, one of NBER's Studies in Income and Wealth, examines new and emerging patterns of trade, especially the growing importance of transactions involving services or intangible assets such as intellectual property. A distinguished team of contributors analyzes the challenges involved in measuring trade in intangibles; the comparative advantages enjoyed by U.S. service industries; and the heightened international competition for jobs, capital investment, economic growth, and tax revenue that results from trade in services. This comprehensive volume will be required reading for scholars seeking to understand the rapidly changing global economy.

Reinsdorf is an economist with the U.S. Bureau of Economic Analysis. Slaughter is a Research Associate in the NBER's Program on International Trade and Investment and a Professor of International Economics at the Tuck School of Business at Dartmouth.

Innovation Policy and the Economy, Volume 9

Innovation Policy and the Economy, Volume 9, edited by Josh Lerner and Scott Stern, is available from the University of Chicago Press. This is the most recent in an annual series, reporting on a conference that provides a forum for research on the interactions among public policy, the innovation process, and the economy. It is priced at $58.00.

Volume 9 topics include: Congressional R and D spending on the physical sciences; intellectual property as a bargaining environment; pricing patents; and market design and innovation.

The authors are Research Associates in the NBER's Program on Productivity and Technological Change. Lerner is the Jacob H. Schiff Professor of Investment Banking at Harvard Business School. Stern is an Associate Professor of Management and Strategy at Northwestern University's Kellogg School of Management.

NBER Macroeconomics Annual 2008

NBER Macroeconomics Annual 2008, edited by Daron Acemoglu, Kenneth S. Rogoff, and Michael Woodford, is available from the University of Chicago Press for $90.00. This is the twenty-third conference volume in this series.

Among the topics discussed in this volume are: how the euro has changed monetary transmission; when improving health raises GDP; and, the role of technological progress in the formation of households as seen in trends in marriage and divorce since WWII. All three editors are NBER Research Associates in the Program on Economic Fluctuations and Growth. Acemoglu is at MIT, Rogoff at Harvard University, and Woodford at Columbia University.

NBER International Seminar on Macroeconomics 2008

NBER International Seminar on Macroeconomics 2008, edited by Jeffrey A. Frankel and Christopher Pissarides, is available from the University of Chicago Press for $90.00. This volume covers such topics as monetary policy in the open economy; exchange rate regimes and the extensive margin of trade; and plant-size distribution and cross-country income differences.

Frankel is an NBER Research Associate and the James W. Harpel Professor of Capital Formation and Growth at Harvard University. Pissarides is on the faculty of the London School of Economics.

Science and Engineering Careers in the United States: An Analysis of Markets and Employment

Science and Engineering Careers in the United States: An Analysis of Markets and Employment, edited by Richard B. Freeman and Daniel L. Goroff, will be available from the University of Chicago Press this summer. The price of this NBER Conference Report is $99.00.

At the beginning of this decade, there was an upsurge of national concern over the state of the science and engineering job market. This sparked a plethora of studies, commission reports, and a Presidential initiative, all stressing the importance of maintaining American competitiveness in these fields. However, this NBER volume marks the first major academic study probing the issues that underlie these concerns. It provides new information on the economics of the postgraduate science and engineering job market, addressing such topics as the factors that determine the supply of PhDs, the career paths they follow after graduation, and the creation and use of knowledge as it is reflected by the amount of papers and patents produced. A distinguished team of contributors also explores the tensions between industry and academe in recruiting graduates, the influx of foreign-born doctorates, and the success of female doctorates. *Science and Engineering Careers in the United States* will raise new questions about stimulating innovation and growth in the American economy.

Freeman directs NBER's Program of Research on Labor Studies and holds the Herbert Ascherman Chair in Economics at Harvard University. Goroff is a Program Director at the Alfred P. Sloan Foundation, currently on leave from Harvey Mudd College in Claremont, California.

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