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Program Report

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

Jeffrey A. Frankel*

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. Brunnermeier¹; Douglas W. Diamond and Raghuram Rajan²; 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, ²⁴and 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 risksharing. 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 banker⁴⁹ 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 Rogoff³² 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

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,"

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

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 lowinterest-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.

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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.

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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.

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

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 ³² ^aA 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.

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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.

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Globalization, and Macroeconomic Vulnerability," NBER Working Paper No. 14384, October 2008.
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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 rela-

*Case and Paxson are Research Associates in the NBER's Program on Children and professors of economics at Princeton University. Their profiles appear later in this issue. tionship 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-