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**A Minsky Meltdown:
Lessons for Central Bankers¹**

It's a great pleasure to speak to this distinguished group at a conference named for Hyman P. Minsky. My last talk here took place 13 years ago when I served on the Fed's Board of Governors. My topic then was "The 'New' Science of Credit Risk Management at Financial Institutions." It described innovations that I expected to improve the measurement and management of risk. My talk today is titled "A Minsky Meltdown: Lessons for Central Bankers." I won't dwell on the irony of that. Suffice it to say that, with the financial world in turmoil, Minsky's work has become required reading. It is getting the recognition it richly deserves. The dramatic events of the past year and a half are a classic case of the kind of systemic breakdown that he—and relatively few others—envisioned.

Central to Minsky's view of how financial meltdowns occur, of course, are "asset price bubbles." This evening I will revisit the ongoing debate over whether central banks should act to counter such bubbles and discuss "lessons learned." This issue seems especially compelling now that it's evident that episodes of exuberance, like the ones that led to our bond and house price bubbles, can be time bombs that cause catastrophic damage to the economy when they explode. Indeed, in view of the financial mess we're living through, I found it fascinating to read Minsky

¹ I would like to thank John Judd and Sam Zuckerman for exceptional assistance in preparing these remarks.

again and reexamine my own views about central bank responses to speculative financial booms. My thoughts on this have changed somewhat, as I will explain.²

As always, my comments are my own and do not necessarily reflect those of my colleagues in the Federal Reserve System.

Minsky and the current crisis

One of the critical features of Minsky's world view is that borrowers, lenders, and regulators are lulled into complacency as asset prices rise.³ It was not so long ago—though it seems like a lifetime—that many of us were trying to figure out why investors were demanding so little compensation for risk. For example, long-term interest rates were well below what appeared consistent with the expected future path of short-term rates. This phenomenon, which ended abruptly in mid-2007, was famously characterized by then-Chairman Greenspan as a “conundrum.”⁴ Credit spreads too were razor thin. But for Minsky, this behavior of interest rates and loan pricing might not have been so puzzling. He might have pointed out that such a sense of safety on the part of investors is characteristic of financial booms. The incaution that reigned by the middle of this decade had been fed by roughly twenty years of the so-called “great moderation,” when most industrialized economies experienced steady growth and low and stable inflation. Moreover, the world economy had shaken off the effects of the bursting of an earlier asset price bubble—the technology stock boom—with comparatively little damage.

² I want to give credit to PIMCO's always-astute Paul McCulley—who gave last year's keynote address—for leading the Minsky revival and pointing out the relevance of Minsky's work to our current financial troubles.

³ For example, see Hyman P. Minsky, “The Financial Instability Hypothesis,” The Jerome Levy Economics Institute of Bard College, Working Paper No. 74, May 1992 (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=161024); and Robert Pollin, “The Relevance of Hyman Minsky,” *Challenge*, March/April 1997.

⁴ Alan Greenspan, “Federal Reserve Board's semiannual Monetary Policy Report to the Congress,” testimony before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, February 16, 2005. (<http://www.federalreserve.gov/Boarddocs/hh/2005/february/testimony.htm>)

Chairman Bernanke has argued that other factors besides complacency were responsible for low interest rates in this period.⁵ A glut of foreign saving mainly generated in developing countries such as China and India fueled demand for dollar-denominated assets. This ample supply of foreign savings combined with a low U.S. personal saving rate, large U.S. government deficits, and high productivity gains to produce a huge current account deficit. As a result, vast quantities of funds began “sloshing around” in our economy seeking investment projects.

Fed monetary policy may also have contributed to the U.S. credit boom and the associated house price bubble by maintaining a highly accommodative stance from 2002 to 2004.⁶ This accommodative stance was motivated by what Greenspan called “risk management policy,” in which, to reduce the possibility of deflation, the funds rate was held below the level that would otherwise have been chosen to promote a return to full employment.⁷ In effect, the Fed took a calculated risk. It took out some insurance to lower the chances of a potentially devastating deflationary episode. The cost of that insurance was an increased possibility of overheating the economy. These policy actions arguably played some role in our house price bubble. But they clearly were not the only factor, since such bubbles appeared in many countries that did not have highly accommodative monetary policies.

As Minsky’s financial instability hypothesis suggests, when optimism is high and ample funds are available for investment, investors tend to migrate from the safe hedge end of the Minsky spectrum to the risky speculative and Ponzi end. Indeed, in the current episode,

⁵ Ben S. Bernanke, “The Global Saving Glut and the U.S. Current Account Deficit,” remarks at the Sandridge Lecture, Virginia Association of Economics, Richmond, Virginia, March 10, 2005. (<http://www.federalreserve.gov/boarddocs/speeches/2005/200503102/>)

⁶ John B. Taylor, “The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong,” NBER Working Paper No. 14631, January 2009. (<http://www.nber.org/papers/w14631>)

⁷ Alan Greenspan, “Monetary Policy under Uncertainty,” remarks at a symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 29, 2003. (<http://www.federalreserve.gov/boarddocs/speeches/2003/20030829/default.htm>)

investors tried to raise returns by increasing leverage and sacrificing liquidity through short-term—sometimes overnight—debt financing. Simultaneously, new and fancy methods of financial engineering allowed widespread and complex securitization of many types of assets, most famously in subprime lending. In addition, exotic derivatives, such as credit default swaps, were thought to dilute risk by spreading it widely. These new financial products provided the basis for an illusion of low risk, a misconception that was amplified by the inaccurate analyses of the rating agencies. This created a new wrinkle that even Minsky may not have imagined. Some of the investors who put money into highly risky assets were blithely unaware of how far out on a limb they had gone. Many of those who thought they were in the hedge category were shocked to discover that, in fact, they were speculative or Ponzi units.

At the same time, securitization added distance between borrowers and lenders. As a result, underwriting standards were significantly relaxed. Much of this financing was done in the “shadow banking system,” consisting of entities that acted a lot like banks—albeit very highly leveraged and illiquid banks—but were outside the bank regulatory net. Although these developments reached an extreme state in the U.S. subprime mortgage market, risky practices were employed broadly in the U.S. financial system. And this activity extended far beyond our borders as players throughout the global financial system eagerly participated. As banks and their large, nonbank competitors became involved in ever more complicated securitizations, they began to employ sophisticated “new tools” to measure and manage the credit risks flowing from these transactions. But those tools—which I described in my speech 13 years ago—proved insufficient for the task.

This cult of risky behavior was not limited to financial institutions. U.S. households enthusiastically leveraged themselves to the hilt. The personal saving rate, which had been

falling for over a decade, hovered only slightly above zero from mid-2005 to mid-2007. A good deal of this leverage came in the form of mortgage debt. The vast use of exotic mortgages—such as subprime, interest-only, low-doc and no-doc, and option-ARMs—offers an example of Minsky’s Ponzi finance, in which a loan can only be refinanced if the price of the underlying asset increases. In fact, many subprime loans were explicitly designed to be good for the borrower only if they could be refinanced at a lower rate, a benefit limited to those who established a pattern of regular payments and built reasonable equity in their homes.

In retrospect, it’s not surprising that these developments led to unsustainable increases in bond prices and house prices. Once those prices started to go down, we were quickly in the midst of a Minsky meltdown. The financial engineering that was thought to hedge risks probably would have worked beautifully if individual investors had faced shocks that were uncorrelated with those of their counterparties. But declines in bond and house prices hit everyone in the same way, inflicting actual and expected credit losses broadly across the financial system. Moreover, the complexity of securitized credit instruments meant that it was difficult to identify who the actual loan holders might be. Meanwhile, asset write-downs reduced equity cushions of financial firms and increased their leverage just when growing risks made those firms seek less leverage, not more. When they tried to sell assets into illiquid markets, prices fell further, generating yet more selling pressure in a loss spiral that kept intensifying. We experienced a “perfect storm” in financial markets: runs on highly vulnerable and systemically important financial institutions; dysfunction in most securitized credit markets; a reduction in interbank lending; higher interest rates for all but the safest borrowers, matched by near-zero yields on Treasury bills; lower equity values; and a restricted supply of credit from financial institutions.

Once this massive credit crunch hit, it didn't take long before we were in a recession. The recession, in turn, deepened the credit crunch as demand and employment fell, and credit losses of financial institutions surged. Indeed, we have been in the grips of precisely this adverse feedback loop for more than a year. A process of balance sheet deleveraging has spread to nearly every corner of the economy. Consumers are pulling back on purchases, especially on durable goods, to build their savings. Businesses are cancelling planned investments and laying off workers to preserve cash. And, financial institutions are shrinking assets to bolster capital and improve their chances of weathering the current storm. Once again, Minsky understood this dynamic. He spoke of the paradox of deleveraging, in which precautions that may be smart for individuals and firms—and indeed essential to return the economy to a normal state—nevertheless magnify the distress of the economy as a whole.

The U.S. economy just entered the sixth quarter of recession. Economic activity and employment are contracting sharply, with weakness evident in every major sector aside from the federal government. Financial markets and institutions remain highly stressed, notwithstanding a few welcome signs of stability due mainly to Federal Reserve and federal government credit policies. The negative dynamics between the real and financial sides of the economy have created severe downside risks. While we've seen some tentative signs of improvement in the economic data very recently, it's still impossible to know how deep the contraction will ultimately be.

As I mentioned earlier, the Minsky meltdown is global in nature, reflecting the ever-increasing interconnectedness of financial markets and institutions around the world. The recession is the first during the postwar period to see simultaneous contractions in output in Europe, Japan, and North America. Economic growth in these areas has weakened sharply as the

financial pain has spread and the U.S. recession has spilled over to our trading partners. Forecasts for growth in Europe and Japan in 2009 are now even weaker than for the United States. What's more, many developing nations face stark challenges as markets for their products have dried up and capital inflows have abruptly halted, making debt refinancing—if necessary—difficult, if not impossible. The global nature of the downturn raises the odds that the recession will be prolonged, since neither we nor our trade partners can look to a boost from foreign demand.

Bubbles and monetary policy

The severity of these financial and economic problems creates a very strong case for government and central bank action. I'm encouraged that we are seeing an almost unprecedented outpouring of innovative fiscal and monetary policies aimed at resolving the crisis. Of course, fiscal stimulus played a central role in Minsky's policy prescriptions for combating economic cycles. Minsky also emphasized the importance of lender-of-last-resort interventions by the Federal Reserve, and this is a tool we have relied on heavily. I believe that Minsky would also approve of the Fed's current "credit easing" policies. Since the intensification of the financial crisis last fall, the Fed has expanded its balance sheet from around \$850 billion to just over \$2 trillion and has announced programs that are likely to take it yet higher. In effect, the government is easing the financial fallout resulting from virulent deleveraging throughout the private sector by increasing its own leverage in a partial and temporary offset.⁸

⁸ Paul McCulley has emphasized the importance of such a government role to address what he refers to as the "reverse Minsky journey." See "Saving Capitalistic Banking from Itself," Global Central Bank Focus, PIMCO, February 2009.

However, as I said at the beginning of my talk, this evening I want to address another question that has been the subject of much debate for many years: Should central banks attempt to deflate asset price bubbles before they get big enough to cause big problems? Until recently, most central bankers would have said no. They would have argued that policy should focus solely on inflation, employment, and output goals—even in the midst of an apparent asset-price bubble.⁹ That was the view that prevailed during the tech stock bubble and I myself have supported this approach in the past. However, now that we face the tangible and tragic consequences of the bursting of the house price bubble, I think it is time to take another look.

Let me briefly review the arguments for and against policies aimed at counteracting bubbles. The conventional wisdom generally followed by the Fed and central banks in most inflation-targeting countries is that monetary policy should respond to an asset price only to the extent that it will affect the future path of output and inflation, which are the proper concerns of monetary policy.¹⁰ For example, a surging stock market can be expected to lead to stronger demand for goods and services by raising the wealth of households and reducing the cost of capital for businesses. As a result, higher stock prices mean that the stance of monetary policy needs to be tighter, but only enough to offset the macroeconomic consequences on aggregate demand created by a larger stock of wealth. In other words, policy would not respond to the stock market boom itself, but only to the consequences of the boom on the macroeconomy.

(<http://www.pimco.com/LeftNav/Featured+Market+Commentary/FF/2009/GCB+February+2009+McCulley+Savin+Capitalistic+Banking.htm>)

⁹ Donald L. Kohn, “Monetary Policy and Asset Prices Revisited,” speech at the Cato Institute’s 26th Annual Monetary Policy Conference, Washington, D.C., November 19, 2008 (<http://www.federalreserve.gov/newsevents/speech/kohn20081119a.htm>); Frederick S. Mishkin, “How Should We Respond to Asset Price Bubbles,” speech at the Wharton Financial Institutions Center and Oliver Wyman Institute’s Annual Financial Risk Roundtable, Philadelphia, Pennsylvania, May 15, 2008. (<http://www.federalreserve.gov/newsevents/speech/mishkin20080515a.htm>)

¹⁰ Glenn D. Rudebusch, “Monetary Policy and Asset Price Bubbles,” *FRBSF Economic Letter* 2005-18, August 5, 2005. (<http://www.frbsf.org/publications/economics/letter/2005/el2005-18.html>)

However, other observers argue that monetary authorities must consider responding directly to an asset price bubble when one is detected. This is because—as we are witnessing—bursting bubbles can seriously harm economic performance, and monetary policy is hard-pressed to respond effectively after the fact. Therefore, central banks may prefer to try to eliminate, or at least reduce the size of, this threat directly. Under this approach, policymakers would push interest rates higher than would be indicated under conventional policy. The result, of course, would be that output and employment would be reduced in the near-term, which is the price of mitigating the risk of serious financial and economic turmoil later on.

What are the issues that separate the anti-bubble monetary policy activists from the skeptics? First, some of those who oppose such policy question whether bubbles even exist. They maintain that asset prices reflect the collective information and wisdom of traders in organized markets. Trying to deflate an apparent bubble would go against precisely those “experts” who best understand the fundamental factors underlying asset prices. It seems to me though that this argument is particularly difficult to defend in light of the poor decisions and widespread dysfunction we have seen in many markets during the current turmoil.

Second, even if bubbles do occur, it’s an open question whether policymakers can identify them in time to act effectively. Bubbles are not easy to detect because estimates of the underlying fundamentals are imprecise. For example, in the case of house prices, it is common to estimate fundamental values by looking at the ratio of house prices to rents, which can be thought of as equivalent to a dividend-price ratio for the stock market.¹¹ If this ratio rises significantly above its fundamental, or long-run, value, the possibility of a bubble should be considered. Indeed, from 2002 to early 2006, this ratio zoomed to about 90 percent above its

¹¹ Joshua Gallin, “The Long-Run Relationship between House Prices and Rents,” Finance and Economics Discussion Series 2004-50, Board of Governors of the Federal Reserve System, Washington, D.C. (forthcoming in *Real Estate Economics*). (<http://www.federalreserve.gov/pubs/feds/2004/200450/200450abs.html>)

long-run value, far outstripping any previous level. Nonetheless, even when house prices were soaring, some experts doubted that a bubble existed. That said, by 2005 I think most people understood that—at a minimum—there was a substantial risk that houses had become overvalued. Even at that point though, many thought the correction in house prices would be slow, not the rapid adjustment that did occur.¹²

Now, even if we accept that we can identify bubbles as they happen, another question arises: Is the threat so serious that a monetary response is imperative? It would make sense for monetary policy makers to intervene only if the fallout were likely to be quite severe and difficult to deal with after the fact. We know that the effects of booms and busts in asset prices sometimes show themselves with significant lags. In those cases, conventional policy approaches can be effective. For example, fluctuations in equity prices generally affect wealth and consumer demand quite gradually. A central bank may prefer to adjust short-term interest rates after the bubble bursts to counter the depressing effects on demand. The tech stock bubble seems to fit this mold. The price-dividend ratio for these stocks reached dizzying heights and many observers were convinced that a crash was inevitable. But monetary policy makers did not try to stop the relentless climb of tech stock prices, although they raised interest rates toward the end of the period to dampen emerging inflationary pressures. Instead, it was only after tech stocks collapsed that policy eased to offset the negative wealth effect and, as unemployment rose, to help return the economy to full employment. The recession at the beginning of the decade was fairly mild and did not involve pervasive financial market disruptions.

¹² Kristopher Gerardi, Andreas Lehnert, Shane M. Sherlund, and Paul Willen, “Making Sense of the Subprime Crisis,” *Brookings Papers on Economic Activity*, Fall 2008, pp. 69–160. (http://www.brookings.edu/economics/bpea/~media/Files/Programs/ES/BPEA/2008_fall_bpea_papers/2008_fall_bpea_gerardi_sherlund_lehnert_willen.pdf)

Still, just like infections, some bursting asset price bubbles are more virulent than others. The current recession is a case in point. As house prices have plunged, the turmoil has been transmitted to the economy much more quickly and violently than interest rate policy has been able to offset.

You'll recognize right away that the assets at risk in the tech stock bubble were equities, while the volatile assets in the current crisis involve debt instruments held widely by global financial institutions. It may be that credit booms, such as the one that spurred house price and bond price increases, hold more dangerous systemic risks than other asset bubbles. By their nature, credit booms are especially prone to generating powerful adverse feedback loops between financial markets and real economic activity. It follows then, that if all asset bubbles are not created equal, policymakers could decide to intervene only in those cases that seem especially dangerous.

That brings up a fourth point: even if a dangerous asset price bubble is detected and action to rein it in is warranted, conventional monetary policy may not be the best approach. It's true that moderate increases in the policy interest rate might constrain the bubble and reduce the risk of severe macroeconomic dislocation. In the current episode, higher short-term interest rates probably would have restrained the demand for housing by raising mortgage interest rates, and this might have slowed the pace of house price increases. In addition, as Hyun Song Shin and his coauthors have noted in important work related to Minsky's, tighter monetary policy may be associated with reduced leverage and slower credit growth, especially in securitized markets.¹³ Thus, monetary policy that leans against bubble expansion may also enhance financial stability by slowing credit booms and lowering overall leverage.

¹³ Tobias Adrian and Hyun Song Shin, "Money, Liquidity, and Monetary Policy," *American Economic Review Papers and Proceedings*, forthcoming.

Nonetheless, these linkages remain controversial and bubbles may not be predictably susceptible to interest rate policy actions. And there's a question of collateral damage. Even if higher interest rates take some air out of a bubble, such a strategy may have an unacceptably depressing effect on the economy as a whole. There is also the harm that can result from "type 2 errors," when policymakers respond to asset price developments that, with the benefit of hindsight, turn out not to have been bubbles at all. For both of these reasons, central bankers may be better off avoiding monetary strategies and instead relying on more targeted and lower-cost alternative approaches to manage bubbles, such as financial regulatory and supervisory tools. I will turn to that topic in just a minute.

In summary, when it comes to using monetary policy to deflate asset bubbles, we must acknowledge the difficulty of identifying bubbles, and uncertainties in the relationship between monetary policy and financial stability. At the same time though, policymakers often must act on the basis of incomplete knowledge. What has become patently obvious is that not dealing with certain kinds of bubbles before they get big can have grave consequences. This lends more weight to arguments in favor of attempting to mitigate bubbles, especially when a credit boom is the driving factor. I would not advocate making it a regular practice to use monetary policy to lean against asset price bubbles. However recent experience has made me more open to action. I can now imagine circumstances that would justify leaning against a bubble with tighter monetary policy. Clearly further research may help clarify these issues.¹⁴

¹⁴ The following conference volumes provide an introduction and references to the research literature now available: *Asset Price Bubbles: The Implications for Monetary, Regulatory, and International Policies*, ed. William Hunter, George Kaufman, and Michael Pomerleano (Cambridge, MA: MIT Press, 2003); *Asset Prices and Monetary Policy*, ed. Anthony Richards and Tim Robinson (Reserve Bank of Australia, 2003). (<http://www.rba.gov.au/PublicationsAndResearch/Conferences/2003/index.html>)

Another important tool for financial stability

Regardless of one's views on using monetary policy to reduce bubbles, it seems plain that supervisory and regulatory policies could help prevent the kinds of problems we now face. Indeed, this was one of Minsky's major prescriptions for mitigating financial instability. I am heartened that there is now widespread agreement among policymakers and in Congress on the need to overhaul our supervisory and regulatory system, and broad agreement on the basic elements of reform.¹⁵

Many of the proposals under discussion are intended to strengthen micro-prudential supervision. Micro-prudential supervision aims to insure that individual financial institutions, including any firm with access to the safety net, but particularly those that are systemically important, are well managed and avoid excessive risk. The current system of supervision is characterized by uneven and fragmented supervision, and it's riddled with gaps that enhance the opportunity for regulatory arbitrage. Such arbitrage was a central component in the excessive risk-taking that led to our current problems. It is now widely agreed that such gaps and overlaps must be eliminated, and systemically important institutions—whether banks, insurance firms, investment firms, or hedge funds—should be subject to consolidated supervision by a single agency. Systemic institutions would be defined by key characteristics, such as size, leverage, reliance on short-term funding, importance as sources of credit or liquidity, and

¹⁵ See, for example, Timothy Geithner, Testimony before the House Financial Services Committee, March 26, 2009 (<http://www.ustreas.gov/press/releases/tg67.htm>); Ben S. Bernanke, "Financial Reform to Address Systemic Risk," speech at the Council on Foreign Relations, March 10, 2009 (<http://www.federalreserve.gov/newsevents/speech/bernanke20090310a.htm>); Daniel K. Tarullo, "Modernizing Bank Supervision and Regulation," testimony before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, March 19, 2009 (<http://www.federalreserve.gov/newsevents/testimony/tarullo20090319a.htm>); Group of Thirty, "Financial Reform: A Framework for Financial Stability," January 2009 (<http://www.group30.org/pubs/recommendations.pdf>); Markus Brunnermeier, Andrew Crockett, Charles Goodhart, Avinash D. Persaud, and Hyun Shin, "The Fundamental Principles of Financial Regulation" *Geneva Reports on the World Economy* 11, January 2009 (<http://www.voxeu.org/reports/Geneva11.pdf>); "Special Report on Regulatory Reform," Congressional Oversight Panel, January 2009 (<http://cop.senate.gov/documents/cop-012909-report-regulatoryreform.pdf>).

interconnectedness in the financial system—not by the kinds of charters they have. Another critical shortcoming of the current system is that it lacks any legal process to enable supervisors of financial conglomerates and nonbanks to wind down the activities of failed firms in an orderly fashion. The need for a resolution framework that would permit such wind-downs of systemically important firms is also widely accepted.

The current crisis has afforded plentiful opportunities for supervisors to reflect on the effectiveness of our current system of micro-prudential supervision. The “lessons learned” will undoubtedly enhance its conduct going forward.¹⁶ But, regardless of how well micro-prudential supervision is executed, on its own it will never be adequate to safeguard the economy from the destructive boom and bust cycles that Minsky considered endemic in capitalistic systems. Analogous to Keynes’ paradox of thrift, the assumption that safe institutions automatically result in a safe system reflects a fallacy of composition. Thus, macro-prudential supervision—to protect the system as a whole—is needed to mitigate financial crises.

The roles of micro- and macro-prudential supervision are fundamentally different. In principle, many individual institutions could be managing risk reasonably well, while the system as a whole remained vulnerable due to interconnections among financial institutions that could lead to contagious cycles of loss and illiquidity. For example, it is prudent for institutions to sell risky assets and pay off debt when a decline in asset prices depletes capital. But the simultaneous behavior of many institutions to protect themselves in this way only intensifies the decline in prices. Moreover, when many institutions try to de-lever simultaneously, market

¹⁶ See President’s Working Group on Financial Markets, “Policy Statement on Financial Market Developments,” March 13, 2008 (http://www.treas.gov/press/releases/reports/pwgpolicystatemkkturmoil_03122008.pdf); Financial Stability Forum, “Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience,” April 7, 2008 (http://www.fsforum.org/publications/r_0804.pdf); Senior Supervisors Group, “Observations on Risk Management Practices during the Recent Market Turbulence,” March 6, 2008. (http://www.newyorkfed.org/newsevents/news/banking/2008/SSG_Risk_Mgt_doc_final.pdf)

liquidity can instantly evaporate. Systemic risk is endogenous to the working of the financial system.

Capital requirements could serve as a key tool of macro-prudential supervision. Most proposals for regulatory reform would impose higher capital requirements on systemically important institutions and also design them to vary in a procyclical manner. In other words, capital requirements would rise in economic upswings, so that institutions would build strength in good times, and they would fall in recessions. This pattern would counteract the natural tendency of leverage to amplify business cycle swings—serving as a kind of “automatic stabilizer” for the financial system. Financial stability might also be enhanced by reforming the accounting rules governing loan loss reserves. A more forward-looking system for reserving against such losses could make regulatory capital less sensitive to economic fluctuations.¹⁷ In addition, most proposals for financial reform emphasize the need for stronger liquidity standards. The funding of long-term assets with short-term, often overnight liabilities, is a source of systemic vulnerability. One interesting recent proposal would disincent overreliance on short-term funding by relating an institution’s capital charges to the degree of maturity mismatch between its assets and liabilities.¹⁸ There has been considerable discussion recently of the need for a new macro-prudential or “financial stability” supervisor—whether the Fed or some other agency—with responsibility to monitor, assess, and mitigate systemic risks in the financial system as a whole.

At this stage, the proposed reforms involve broad principles. The translation of those principles into a detailed supervisory program will be challenging, to say the least. But I am

¹⁷ See Eric S. Rosengren, “Addressing the Credit Crisis and Restructuring the Financial Regulatory System: Lessons from Japan,” speech to the Institute of International Bankers Annual Washington Conference, Washington, D.C., March 2, 2009. (<http://www.bos.frb.org/news/speeches/rosengren/2009/030209.htm>)

¹⁸ Markus Brunnermeier et al., 2009. (<http://www.voxeu.org/reports/Geneva11.pdf>)

hopeful that the lessons we have learned will help us build a more effective system to head off financial crises. If we are successful, then we will have gone a long way toward preventing another Minsky meltdown.