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Comments by

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I appreciate the opportunity to comment on these three papers.<sup>1</sup> They illuminate the sources and effects of the current financial market turmoil, and I learned a considerable amount from reading them and thinking about their implications. Instead of providing detailed comments on each paper, I'd like to draw out the relationships among them and, in the process, comment a little on the papers and their implications. To foreshadow: I will be highlighting the role of leverage--in the household sector and in financial intermediaries--as a critical factor in understanding the buildup of excesses and their unwinding.

At the beginning of the chain of causation is the housing cycle in the United States. Chip Case points out the difference between this housing cycle and others over past decades and asks why the difference developed. One culprit he identifies is changes in the financial system that affected the way that mortgage credit is made available to borrowers. A key element of these changes, and one that accounts for a good part of the subsequent effects of the financial system and the economy, is the rise in leverage in housing finance. As Case notes, for several years, mortgage indebtedness rose substantially relative to the value of owner-occupied housing. The willingness of lenders to tolerate--or, in some cases, encourage--huge increases in loan-to-value ratios added to the demand for housing, especially by people who normally might have had the savings to enter the market, and contributed to the rise in home prices.

One reason for the loosening of standards was the expectation that house prices would continue to rise--and even more certainly that they could not fall in all regions at the same time,

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<sup>1</sup> The views I express are my own and not necessarily those of other members of the Board of Governors. The three papers discussed and their authors are as follows: (1) "Financial Regulation in a System Context," by Stephen Morris and Hyun Song Shin, professors of economics at Princeton University; (2) "Beyond Leveraged Losses: The Balance Sheet Effects of the Home Price Downturn," by Jan Hatzius, chief U.S. economist at Goldman Sachs; and (3) "The Central Role of House Prices in the Financial Crisis: How Will the Market Clear?" by Karl Case, professor of economics at Wellesley College. Information about the 2008 Fall Conference on the Brookings Papers on Economic Activity is available at [www.brookings.edu/economics/bpea/bpea\\_conferencepapers\\_fall2008.aspx](http://www.brookings.edu/economics/bpea/bpea_conferencepapers_fall2008.aspx).

supporting diversification through securitization. Rising prices would enable lenders to recoup their funds even if the borrower was unable to service the loan, mostly because the borrower would be able to obtain extra cash through refinancing. Expectations of house price appreciation facilitated and interacted with the increasing complexity of mortgage securities, including multiple securitizations of the same loan, which made it virtually impossible for ultimate lenders to monitor the creditworthiness of borrowers--a task they, in effect, had outsourced to credit rating agencies. The absence of investor caution and due diligence was especially noticeable for the highest-rated tranches of securitized debt.

Elevated leverage in housing markets has meant that as prices have fallen, lenders have had to absorb an unusually high proportion of the losses. As Case points out, foreclosures by lenders have added to the downward pressure on those prices. Conceptually, such price declines moving down the demand curve for housing services could accelerate and cushion the adjustment in activity necessitated by previous overbuilding. I am encouraged that Case finds the pace of declines abating in a number of markets. However, partly owing to the feedback of price declines on lenders, mortgage conditions have tightened some since the late spring readings he is using for his conclusion, and in my view, the jury is still out on whether housing prices are close to finding a bottom.

The heavy involvement of financial intermediaries in amplifying the housing boom and the subsequent economic effects of the bust brings me to the Morris and Shin paper, which raises a host of important issues related to the systemic aspects of financial intermediation and the lessons from the recent turmoil. As they emphasize, one of the important lessons has been the greater-than-expected vulnerability of secured financing when intermediaries are engaged in maturity, credit, and liquidity transformation. Recall that the turmoil first came onto the balance

sheets of the banks through the collapse of the asset-backed commercial paper market last fall before it affected the funding of investment banks through the triparty repurchase agreement market. The new vulnerability results importantly from the extension of secured short-term financing to increasingly illiquid and riskier long-term assets. As uncertainty about the liquidity and creditworthiness of those assets--especially related to mortgage-backed securities--was called into question, lenders became more concerned about the possibility that they might end up owning the underlying assets, and they raised haircuts or simply refused to roll over loans.

Clearly, as Morris and Shin point out, what we have learned about various risks implies the need for intermediaries to build greater liquidity and capital buffers in good times, as well as to improve their abilities to manage their risks. And those larger buffers would help to offset the moral hazard that may have been created through the expansion of our liquidity facilities. Getting the micro-prudential piece right--having each institution adequately protected--would go a long way toward making the whole system more robust and resilient.

But Morris and Shin would go further; they would impose additional requirements on institutions to take account of the externalities for the system created when common shocks impair markets and credit availability by provoking widespread actions to preserve shareholder value. They would do this through a higher liquidity requirement and through the imposition of a leverage ratio on investment banks, which is already in place for commercial banks.

I agree with the authors, and with Chairman Bernanke, that we need to consider the level of buffers that is appropriate to ameliorate systemic risk. That said, a host of difficult judgments are inherent in how we establish such a system, and I'll raise just a few on a very general level. One set concerns the size of the buffers. How far into the tail should intermediaries be required to insure themselves? Shouldn't the Federal Reserve take some of the liquidity tail risk to

facilitate intermediation of illiquid credits, as was intended at our founding? Moreover, the larger the regulatory tax, the more likely it is that activity will migrate to unregulated sectors in an environment of fluid and free capital movements. How can we gain better assurance of systemic stability when we are unlikely to be able to continuously extend the reach of regulation, and will it be sufficient to deepen the moats around the core institutions? In this regard, the leverage ratio gives incentives to move some activities away from regulated institutions.

A second question is, How we can structure these requirements and other aspects of regulation to damp, rather than reinforce, the natural procyclical tendencies of the financial system? Among the challenges will be encouraging firms and supervisors to comfortably allow buffers to be eroded in bad times. Interestingly, prompt corrective action under the Federal Deposit Insurance Corporation Improvement Act of 1991 was intended, in part, to induce an element of countercyclical behavior by banks. It gives banks an incentive to build excess capital--on both a risk-based and leverage ratio basis--in good times to avoid prompt corrective action when circumstances are less favorable. Now that we are in the latter state of the world, a study of how commercial banks are viewing capital ratios, including the leverage ratio, could inform consideration of the Morris and Shin proposal.

The Morris and Shin paper also provides a framework for thinking about the Federal Reserve's credit facilities. On page 9, they note that liquidity makes borrowers feel more robust and lenders less likely to withdraw, raising the odds for a more stable equilibrium for the entire system. That is exactly what we have been trying to do with our various discount lending facilities. The assurance of the availability of liquidity to sound institutions against good collateral should counter the greater uncertainty and risk aversion that have impaired normal arbitrage and intermediary functions by making those institutions more willing to extend credit

and take positions in the process of making markets. It should also assure other creditors of those institutions that illiquid markets will not impede the repayment of their loans, and therefore make them more willing to keep lending. A number of markets remain disrupted and illiquid. But I believe that they would have been even more illiquid and the risk of disruptive runs even greater without our various facilities; that's certainly what market participants are telling us.

Jan Hatzius is trying to gauge the combined effects on spending of the losses generated by the effects of the decline in housing prices outlined in the Case paper and the impulse for deleveraging in the financial sector inherent in the processes discussed by Morris and Shin. To restore capital ratios depleted by mortgage losses and to raise those ratios even further in order to reduce leverage to safer levels demanded by counterparties, banks and other lenders need to reduce assets. They do so by tightening terms and standards across a broad array of credit--and we have seen this behavior reflected in our surveys of bank lending officers and in various spreads and other measures of risk perceptions, risk aversion, and reduced supply of credit at benchmark interest rates. In the current circumstances, some of the tightening we have seen has been in anticipation of possible adverse events in the economy and in confidence toward the financial sector. These types of actions not only move up the demand-for-credit curve, but they also bolster profits going forward to cover potential write-offs and to attract new equity capital. Pressures on profits arise not only from write-offs, but also because some sources of earnings, like securitization of mortgages or leveraged loans, are no longer available.

In the steady state, lenders will get greater returns for taking risk than they did two years ago, intermediaries will be less leveraged and better capitalized, and the financial system will be more robust and resilient to shocks. The transition to the new steady state, however, as lenders

deleverage and protect themselves against various downside risks, involves some overshooting--making terms and standards tighter than will be necessary over the long run.

This story is completely consistent with the one told in the Hatzius paper, which relies mostly on quantity relationships to gauge the possible effects on gross domestic product (GDP). My instinct has been to go from the actual and expected indicators of tightening supply, such as the instrumental variables used in the paper, directly to estimates of the effects of that supply shift on GDP. Measures of flows would fall out of that exercise, but not be its focus. And I have questions about the stability and reliability of the debt-GDP relationship used in the forecasts at the end of the paper. But I will admit that we are in uncharted waters here, and the navigators shouldn't discard any potential information about the location of the shoals.

The message of the paper is that restraint on credit supplies is likely to persist because intermediaries have some way to go to rebuild their balance sheets. The process of adjustment to a safer, more resilient financial system is going to take a while. I agree with this observation.