

Testimony of

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before the

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on

**“Risk Management and Its Implications for Systemic Risk”**

Chairman Reed, Ranking Member Allard and Members of the Subcommittee on Securities, Insurance and Investment: I am pleased and honored to be invited to testify here today. I would like to address four questions in my allotted time: (1) how did Basel I contribute to the current crisis and would Basel II have prevented it? (2) What weaknesses in Basel II have been highlighted by the crisis? (3) What lessons have been learned by risk managers and regulators? (4) What additional regulatory tools need to be developed to limit systemic risk without exacerbating moral hazard?

1. How did Basel I contribute to the current crisis and would Basel II have prevented it?

Basel I created strong incentives for banks to engage in regulatory capital arbitrage by shifting assets off their balance sheets and into special purpose entities (SPEs) that were often, largely outside the scrutiny of creditors, regulators and analysts. For example, subprime mortgages were subject to a 100% risk weight, which meant that banks would need to hold Tier 1 capital equal to at least 4% of the book value of the subprime mortgage so long as it was held on their balance sheet. However, if the bank created a special purpose entity, it could shift the subprime mortgage off its balance sheet, pool it with other assets and back the pool of assets with a line of credit with a maturity of less than 1 year. So long as the line of credit was revocable and for less than one year, it would not be subject to a capital charge. Yet the line of credit was one of the features that enabled the SPE to sell slices of the pool of assets to a wide variety of institutions in capital markets worldwide. This technique enabled banks to use their regulatory capital much more efficiently and to increase their revenues from originating and securitizing assets and often from servicing the special purpose entity as well. Securitization created many benefits for banks and their customers, but overtime it became increasingly complex and less transparent with the result that it turned out to be much less effective risk transfer mechanism than many banks apparently believed.

Optimists assert that Pillar 1 of Basel II would have reduced the incentives for securitization by requiring a modest capital charge for back-up facilities of 364 days or less. I am skeptical that this would have had much impact because the US implemented this kind of rule in 2004 and it did not restrain Citi who sponsored 7 SIVs, more than any other bank.

Optimists also argue that Pillar 2 of Basel II enhances the scope for regulators to require capital above the regulatory minimum if they believe that a bank is exposed to risks that are not well-captured by Pillar 1 capital charges. I am skeptical that this will have much practical importance because bank supervisors have very little leverage vis-à-vis profitable banks that appear to be in good condition. The British Financial Services Authority (FSA) certainly failed to make use of this power in the case of Northern Rock. Just weeks before Northern Rock's collapse the FSA authorized the bank to adopt the internal Ratings Based approach to Basel II, which reduced its capital requirements by 30% and enabled the bank to increase its dividends

by a similar amount. There is no indication that the FSA sought to impose an additional Pillar 2 capital charge because they believed that the Pillar 1 charge was too low, or because they believed the bank was imprudently exposed to a liquidity shock or because they believed the bank's business model was excessively risky, although all of these rationales would have been plausible.

Finally, optimists argue that Pillar 3 of Basel II will enhance disclosure and market discipline. But Pillar 3 does not require disclosure about SPEs or contingent commitments. And the authorities have not dealt with the crisis in a way that is likely to enhance market discipline. Around the world the supervisory authorities have taken care to protect all creditors and counterparties at faltering institutions. This is true of the way the German authorities dealt with IKB, the UK authorities dealt with Northern Rock and the US authorities dealt with Bear Stearns.

2. What defects in Basel II have been highlighted by the crisis? The crisis has revealed weaknesses in all three Pillars of Basel II. With regard to Pillar 1 both the Standardized Approach and the Internal Ratings Based Approaches to establishing capital charges need to be reconsidered. The Standardized Approach relies heavily on external ratings to establish capital charges. We have seen that this can lead to unintended, regulatory-induced, pressures for institutions to press for innovations that will yield highly-rated credit with higher returns. Even though most sophisticated practitioners knew that an A-rated corporate debt was less risky than an A-rated CDO, the Standardized Approach failed to capture the distinction. Still worse, if the ratings agencies substantially underestimate the riskiness of a whole class of securities as has been the case with CDOs, it can introduce a new element of systemic risk that would not exist if each individual bank were making its own, independent credit evaluation with oversight from its regulator.

The major losses sustained by some of the most sophisticated participants in the subprime-related debt market raise troubling questions about the accuracy of internal models. Despite the fact that these institutions had billions of dollars at stake, the models were unable to deal with the complexity of many of the instruments created in the securitization process. Part of the problem was lack of appropriate data to estimate such models. But more fundamentally, the models were not designed to capture changes in the liquidity of marketable instruments.

This latter problem extended to VaR-like models widely used to establish capital charges in the trading book. Although these models have performed well in past crises, they proved inadequate to deal with credit-risk sensitive instruments which suddenly became illiquid.

With regard to Pillar 2, the largely qualitative treatment of liquidity risk is ineffectual in preparing banks to deal with asset/liability management problems under stress. Moreover, Pillar 2 fails to deal with reputational risk which motivated several firms to risk billions of dollars

to salvage SPEs that they were not legally obligated to save. More fundamentally, Pillar 2 ignores business risk despite the fact that it has been responsible for 18% of the volatility in US bank earnings – three times as much as market risk, which is included in Pillar 1 capital charges.<sup>1</sup>

Finally, with regard to Pillar 3, the new disclosures are inadequate to help external investors understand the exposure of individual banks to structured debt or SPEs. Moreover, the implementation of Basel II will make it increasingly difficult to compare capital adequacy across banks across countries. For example, banks within the European Union will have more than one hundred implementation choices. Moreover, differences across banks in internal models can lead to different capital charges for the same asset. This undermines transparency of risk exposures and capital adequacy and impedes the functioning of interbank markets. Finally, despite efforts to achieve convergence between US GAAP and International Financial Accounting Standards, substantial differences remain which impede comparisons across banks that compete with each other around the world. For example, Deutsche Bank was obliged by EU regulation to shift from US GAAP to International Financial Reporting Standards (IFRS) and consequently we learned in January 2006 that its trading assets, which were €448 billion under US GAAP, amounted to €1,010 under IFRS.

### 3. What lessons have been learned by risk managers and regulators?

Losses are often an important stimulus for learning and there has certainly been a considerable amount of learning by losing in the banking industry over the past year. Comparisons between banks that sustained relatively small losses and those that sustained substantial losses reveal a number of weaknesses in risk management in the latter. First with regard to risk identification and analysis, we observed wide disparities in the timing and quality of information available to senior managers with regard to how quickly the danger was assessed, how quickly the firm could evaluate its exposures across all products and how quickly management could act to limit or reduce its exposures. Although with the benefit of hindsight it is possible to identify warning signs early in 2006, the entire banking industry should have taken note of the subprime-related losses that HSBC announced in February 2007. Yet several firms continued to securitize and buy subprime-related debt until mid year. Some large, complex institutions had substantial difficulty aggregating information across the institutions. For example, one firm withdrew from subprime lending in 2004 because they viewed it to be too risky, while another unit of the same firm continued to buy sub-prime related securities.

Several firms experienced difficulty assessing liquidity risk. It appeared that the treasury function was not fully integrated in the risk management system and so there was often little contingency planning for off-balance sheet commitments or reputational commitments such as

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<sup>1</sup> See A. Kuritzkes and Til Schuermann, "What We Know, Don't Know and Can't Know About Bank Risk: A View from the Trenches," Working Paper, Wharton Financial Institutions Center, 2006.

funding sponsored money market mutual funds to enable them to avoid “breaking the buck.” In some cases, this also involved funding sponsored hedge funds. Finally there is little evidence of contingency planning for loss of access to capital markets. Moreover, the process for evaluation of new products seemed to lack rigorous risk analysis. Several firms failed to improve the risk control infrastructure to keep up with their firms’ increased appetite for risk.

Firms also experienced problems within the traditional risk silos. The crisis exposed some of the limitations of VaR-like analysis, particularly for dealing with illiquid, instruments exposed to credit risks. There was also a lack of attention to basis risk in hedging and a misplaced emphasis on net exposures to the exclusion of attention to gross exposures. Moreover, stress testing and scenario analysis had failed to prepare some institutions for the conditions that actually occurred.

The crisis also exposed several weaknesses in credit risk analysis. First and foremost was a failure to comprehend the deterioration in underwriting standards that occurred. But in addition, many firms had trouble tracking a multiplicity of exposures to various borrowers and counterparties.

The crisis also exposed several weaknesses in operational risk. In many cases management information systems were simply too slow to provide timely information about exposures to a variety of products, counterparties and creditors. Moreover some firms had not established a rigorous system for pricing level three assets so that the same asset might be priced differently in the bank’s own portfolio than if it were priced as collateral for a counterparty.

The crisis also exposed problems across the traditional risk management silos. Many firms had failed to realign risk management to deal with the convergence of risk types in new products such as sub-prime related debt. Moreover, there was an inability to anticipate correlations across types of risk and a failure to conduct broad and deep cross-disciplinary discussion about the relevant risk facing the firm. The traditional silos got in the way of coherent and comprehensive risk management.

The Basel Committee of Bank Supervisors, the Financial Stability Forum and the President’s Working Group on Financial Markets have all issued papers highlighting some of the key problems they have identified and promising future reforms that will be unveiled and implemented at a future date. The regulatory authorities have been very reluctant to implement changes quickly lest they exacerbate the current crisis. It’s impractical to discuss these proposals until they are made explicit, but I would like to highlight a regulatory reform that has not been discussed – the lack of appropriate tools to resolve some systemically important institutions.

4. What additional regulatory tools need to be developed to limit systemic risk without exacerbating moral hazard?

In March, with the hastily improvised rescue of Bear Stearns the Fed crossed a regulatory Rubicon without the appropriate set of weapons. The traditional US view had been the investment banks do not pose systemic risk because they are unlikely to be subject to a run since customer funds are carefully segregated from those of the firm. Moreover, it was thought that since investment banks hold mainly marketable securities, they should be able to deleverage rapidly without suffering illiquidity costs in the event of a funding shock. Moreover, access to systemically important clearing and settlement systems was through large banks. The Demise of Drexel Burnham Lambert in 1990 seemed to confirm this view. Although the Bank of England and the Fed did help facilitate unwinding some of Drexel's positions by acting as honest brokers, there was no bailout. Spillovers were so minimal that the stock market actually rose the day the Drexel declared bankruptcy.

The EU has long maintained the opposite view. This is partly because most of the largest European banks have long had the full range of securities powers and the largest US investment banks have established banking operations in Europe. The EU has insisted that the largest US investment banks be subject to consolidated prudential oversight comparable to that applied to large US banks. While rejecting the option of Fed supervision as a Financial Services Holding Company, the five leading investment banks agreed to become Consolidated Supervised Entities subject to Basel II-like capital standards at the holding company level with oversight by the SEC.

Since the demise of Drexel Burnham investment bank portfolios have shifted dramatically in favor of lower quality, less liquid assets making it much more difficult to deleverage without experiencing illiquidity costs in the event of a funding shock. Investment banks have also become much more international drawing funds from around the world. While this enhances diversification of funding, it increases coordination costs in the event of a funding shock. Investment banks have also become much more leveraged with Bear Stearns leading the way with net leverage that was more than 30 times equity. Investment had also greatly increased their reliance on third party repos to fund their balance sheets. In 1990 secured repo credit was 13% of federally insured deposits. By 2007 it had become 60% of federally insured deposits. And investment banks have had increasing involvement in over-the-counter derivatives markets, especially the Credit Default Swap market which now exceeds \$60 trillion in outstanding notional contracts.

Bear was widely viewed as in precarious condition after the blow-up of two of its sub-prime related hedge funds in June of 2007. Its share price plummeted rapidly, but still regulators and Bear's management team were caught off-guard by its rapid demise in the second week of March. Its prime brokerage specialty became a liability as hedge funds withdrew. Some OTC derivatives counterparties sought to replace trades with Bear by new

contracts with other dealers. Lenders would not engage in stock lending and tri-party repos with Bear and some banks refused to clear for Bear.

To avert a bankruptcy filing by Bear, the Fed hastily improvised a subsidized merger with JPMorgan Chase. The Fed was motivated by fears of the likely consequences of a bankruptcy filing by Bear. Stays are central to the bankruptcy process of resolving nonbanks, but they can generate substantial systemic spillovers if the nonbank institution is heavily engaged in financial markets. Clients and counterparties may lose access to funds and cause problems for their own clients and counterparties. Viable borrowers may lose access to collateral and undrawn credit lines. The lack of clarity regarding positions vis-à-vis the insolvent nonbank may transmit problems to counterparties who will be unable to undertake the appropriate hedges and may cause dislocations in interbank markets as traders attempt to assess the ultimate damage. The Fed's key concern was damage to the primary dealer market that facilitates the government's borrowing.

If Bear Stearns had been a bank, the Fed, working with the FDIC, would have had the appropriate tools to deal with this problem. Banks are subject to prompt corrective action measures with mandatory triggers for regulatory intervention to ensure a market solution to a faltering bank's problems. They also have the obligation to intervene quickly and decisively before a bank is insolvent and, most importantly, the FDIC has the option of establishing a bridge bank to continue systemically important services until the optimal resolution can be accomplished. The bridge bank allows time to design and implement the optimal resolution and allows all potential buyers additional time to perform due diligence. This regulatory tool was introduced in the US in 1987, but has subsequently been adopted in Korea, Taiwan and Japan.

This model, which currently focuses on insured depository institutions, would need to be redesigned for investment banks. One of the key issues that would need to be confronted is what entities should discipline investment banks? Shareholders face a very different payoff function than creditors or counterparties. They are primarily concerned with maximizing the net present value of the investment bank, not the externalities the bank may impose in the event of failure. But creditors and counterparties internalize these losses. Moreover, relative to supervisors, they have superior incentives and technical ability to monitor the investment bank. A well-constructed bridge bank would ensure that at least some of these creditors and counterparties continue to have an incentive to monitor and discipline the investment bank.

Now that the Fed has crossed the regulatory Rubicon, it must be better prepared to deal with the next failure. Better resolution policies deserve an urgent position on the policy agenda both in the United States and abroad. For market discipline to be effective, regulators should be able to safeguard the financial system from spillovers following the failure of even the

largest, most complicated, most inter-connected financial system. No firm should be regarded as too-inter-connected to fail.

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Affairs Subcommittee On Securities, Insurance And Investment**

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by

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Senator Reed: Professor Herring please proceed.

Professor Herring. Thank you very much. Good afternoon, Chairman Reed. I am grateful for and honored by the invitation to testify here today.

I would like to address four questions in my allotted time. First, how did Basel I contribute to the crisis, and would Basel II have prevented it? Second, what weaknesses in Basel II have been highlighted by the crisis? Third, what lessons have been learned by risk managers and regulators? And, fourth, what additional regulatory tools need to be developed to limit systemic risk without exacerbating moral hazard?

First, how did Basel I contribute to the current crisis? Basel I created very strong incentives for regulatory arbitrage, and subprime mortgages were a very good example of the process. If a bank wished to hold a subprime mortgage on its own balance sheet, it would be charged a full 100-percent risk weight. On the other hand, if it created a special purpose entity off balance sheet and backed it up with a line of credit that was revocable and under 365 days, it would have a 0-percent capital charge. So by simply underwriting a subprime mortgage and selling it to the special purpose entity, it could do that a number of times using its capital much more efficiently, generating fees for not only originating the loans but also servicing the loans and creating what was, in effect, an off-balance-sheet banking system.

Would Basel II have actually prevented the problem? Optimists assert that Pillar 1 of Basel II would have reduced the incentives by requiring a modest capital charge for the short-term line of credit backing up the SPE. I am skeptical about whether that would have actually made much difference because the U.S. has had that sort of rule in place for a couple of years, and Citibank actually had more SIVs than any other bank. It seemed not to have slowed them down at all.

Optimists also claim that Pillar 2 of Basel II is designed to prevent this sort of abuse from taking place. It enhances the scope for regulators to require capital above the regulatory minimum if they believe that the bank is exposed to some risks that are not well captured by Pillar 1 capital charges.

Again, I am skeptical that this will have much practical importance because bank supervisors have a very tough time in criticizing or disciplining banks that appear to be in good condition and are highly profitable. It has never been very effective.

We have, in fact, a very good recent example of just how ineffective it can be. Only weeks before Northern Rock collapsed, the Financial Services Authority in Great Britain authorized Northern Rock to use the IRB approach under Basel II, which reduced its capital requirement by about 30 percent, which was divided out to shareholders. There is absolutely no evidence that the FSA even contemplated adding a Pillar 2 capital charge to compensate for it, although it could have done so on grounds that the Pillar 1 charge was inadequate or that the bank was exposed to an illiquidity shock or that its business model was simply too risky. But none of those things happened, and I think it is, in fact, very unrealistic to expect supervisors to prevail in such circumstances.

Finally, optimists say that Pillar 3, market discipline, would make a big difference because you would have better disclosure and better market discipline. I am skeptical on both counts again. Pillar 3, as currently configured, does not really contemplate disclosure about SPEs or contingent commitments that would be at all useful to external creditors, although I understand that may well change at mid-year. Moreover, the way in which the authorities have dealt with this crisis has not really led to greater incentives for market discipline. In each of the cases--IKB in Germany, Northern Rock in the U.K., and Bear Stearns in the US--the authorities have acted in such a way that all counterparties and all creditors have been thoroughly protected from the consequences of a default. And so there is really no incentive for market discipline in that.

What are some of the defects in Basel II that have been highlighted by the crisis? I think the crisis has revealed defects in each and every pillar. Pillar 1 has two ways of levying capital charges. The simple way is the Standardized Approach, and the Standardized Approach relies very heavily on ratings by the ratings agencies. This strikes me as having two problems, one of them rather subtle and the other, very obvious.

The subtle problem is that the whole incentive for giving good, honest credit ratings changed markedly when the investors stopped paying for them, essentially, and it is made even worse when the demand for credit ratings is coming from regulated institutions that get lighter capital charges if they get better credit ratings. So I think it adds to the pressures that tend to distort the credit rating system and led to a world in which we have structured credits and corporate credits bearing the same letter grades, even though they are strikingly different in actual risk.

More importantly, however, I think that relying on ratings may introduce an element of systemic risk that we did not have before. If the ratings agencies get it wrong for an entire category of securities that are widely held, then that can be a systemic problem as opposed to simply getting it wrong for a corporation or even a country, which usually has a much lesser effect on the broader system.

Pillar 2 is problematic because its treatment of liquidity is very qualitative. I have not yet had a chance to study the new guidance from Basel, but certainly improvements are welcome. More importantly, Pillar 2 leaves out any attention to reputational risk, yet it was concern over reputational risk that led a number of institutions to spend billions of dollars to take securities back into their books or to prop up funds. This happened with money market mutual funds. It happened even with some hedge funds. But probably most importantly of all, Pillar 2 completely ignores business risk, yet business risk has been responsible for about 18 percent of the volatility of U.S. bank earnings over time, and it is the fundamental reason that any business will hold capital. Yet it is entirely ignored by the Basel system.

Finally, with regard to Pillar 3, the new disclosures are not adequate to help external investors understand the exposures of individual banks to either structured debt or SPEs. But, more fundamentally, I think Basel II is actually making it more difficult to compare capital adequacy across banks, both within countries and especially across countries. Part of this is because Basel II comes with lots of implementation options. The Europeans have well over 100 different options, which have to be understood to know what the capital ratio actually means. Moreover, differences in risk models mean that the very same asset held in two different banks may well have a different capital charge associated with it, which also makes it very hard to compare across banks.

And, finally, although there have been attempts to achieve convergence between U.S. GAAP and IFRS or International Financial Accounting Standards, there are still huge differences. We got a glimpse of it recently when Deutsche Bank was obliged to go back to IFRS, having made the transition to U.S. GAAP previously. In January 2006, its trading position was €448 billion under U.S. GAAP, yet the same position counted as more than €1 trillion under IFRS. And that, too, creates problems in making comparisons across banks.

What are the lessons that have been learned by risk managers and regulators? Lessons are an important stimulus for learning, and they have certainly been a considerable amount of learning by losing over this time. One of the problems has been simply one of having the right information and acting on it. It is terrifically difficult for a very large, complicated institution to be able to actually understand its exposures across a wide range of business units. The studies we have seen that compare the banks that have done reasonably well in the current crisis with those that have not usually find the better-performing institutions have much better management information systems. And beyond that is what you do with the information, a number of firms had the information on hand, but did not act on it very quickly.

It is a matter of debate how soon you should have seen this coming, but I think the losses that were reported by HSBC in February of 2007 were a time when any bank should have known that there was serious trouble ahead. And yet we saw several institutions continuing to increase their participation in the market.

Several firms experienced great difficulty in assessing liquidity risk. It appears that often the treasury function was not really fully integrated in the risk management system, and so there was little contingency planning for off-balance-sheet commitments or reputational commitments, such as funding sponsored money market mutual funds to enable them to avoid "breaking the buck." In some cases, support also involved sponsored hedge funds as well.

Firms also experienced problems within the traditional risk silos, market risk, credit risk, and operational risk. The crisis exposed some of the limitations of value-at-risk or VaR-like analysis, particularly in dealing with illiquid instruments that are exposed to credit risk.

They also showed a lack of attention to basis risk in hedging. There were correlations that simply collapsed in the new crisis, and firms were very slow to realize that the changes were happening.

Stress test scenarios also failed to prepare some institutions for the conditions that actually occurred. The crisis also exposed weaknesses in credit risk analysis. First and foremost was the failure to comprehend the deterioration in underwriting standards that occurred. But in addition, many firms had trouble tracking their multiplicity of exposures to various borrowers and counterparties, and in a very big, complicated bank, it is a major challenge.

With regard to operational risk, I've already commented on the weakness of many management information systems that were simply too slow to provide timely information about exposures across counterparties and products. But, also, I think there were problems in the lack of rigor in pricing systems. You could sometimes see the same asset priced differently if it were held in the firm's own portfolio or if it were being priced as collateral for a counterparty.

The crisis also exposed problems across the traditional risk management silos in firms that simply failed to realign their management to deal with the convergence of risk types in new products such as subprime-related debt. And there was a failure to anticipate the correlations across these risk types.

I won't comment on what the regulators may have learned because you have just heard from them directly, and I think they are still in the process of letting us know what they have concluded. What I would like to conclude with, however, is a weapon that I think is essential but is missing from the regulatory arsenal.

In March, with the hastily improvised bailout of Bear Stearns, the Fed crossed a regulatory Rubicon without the right weapons. They were very concerned that Bear was going to apply for bankruptcy, and we know that under a bankruptcy filing, the central feature is to impose stays. Stays can be incredibly disruptive in a firm that trades actively in markets and has primarily financial assets. Although stays certainly have their merit in helping the courts understand who owes what to whom and how to get the best price, the problem in imposing stays in this kind of firm is that it can generate very substantial systemic spillovers. Clients and counterparties may lose access to their funds, and that causes problems for their own clients and counterparties in addition. And the lack of clarity regarding hedge positions also may transmit problems to other counterparties.

If Bear had been a bank, the Fed, working with the FDIC, would have had a highly appropriate tool for dealing with the problem. Bridge banks, which Congress developed during the late 1980s and have subsequently been adopted by the Japanese and the Koreans would have

enabled the regulators--and it is not clear exactly which regulator in this case because the legislation did not contemplate investment banks--to take over the institution temporarily, continue the systemically important features, and impose discipline on some counterparties that should have been monitoring more carefully.

Now that the Fed has actually crossed this regulatory Rubicon, it really needs to be better prepared for the next failure, even though we hope it does not come. Better resolution policies I think deserve a really urgent position on the policy agenda for both the United States and globally as well.

Senator Reed: Thank you very much, Professor Herring. Professor Herring, as you pointed out, FSA with respect to Northern Rock seemed to--I guess the moral of the story, there is no perfect form of regulation.

Prof. Herring: Yes, I think that model does not look quite as sparkling as it did perhaps a year ago, although I am in general agreement with the point that Mr. Bookstaber is making. The kinds of improvements that appear to be contemplated are really more in the line of refining and adding to what is already an enormously prescriptive system. We have moved from a very loose system in some sense to something that is enormously detailed and hideously complex. And the kinds of improvements we see indicated in some of these documents, although the details are really not available to us on the outside, strike me as heading in the direction of still more complexity and a still more prescriptive setting.

I agree that fundamentally it is a losing game. The regulators are never going to be quick enough or astute enough or have enough resources to catch up with the very innovative capital markets and bankers.

What should be done? Well, it seems to me that the regulators have to enlist the assistance of market discipline. Market discipline is the only real prospect for keeping up with the incredible speed of innovations going on in these institutions.

Now, you have to ask where that market discipline should come from, and it probably would not be the shareholders, because the shareholders have a very different payoff function

than society or creditors or the regulators. They will want to try to maximize the present value of their investment, but they have no incentive to take account of spillover effects.

On the other hand, creditors and counterparties do. Creditors and counterparties have a lot at stake if they actually believe that they are going to have to live with their choices. But my concern about the trend of bailouts over the last year is that creditors and counterparties are being pretty much assured that if it is a very large, very complicated institution, they are not going to have to worry. And I think that makes the system fundamentally more dangerous. I think we need to work toward a system where absolutely no institution is too big, too complicated, or too interconnected to fail. And I think, in fact, we should have live, active plans to unwind any one institution, and that means planning communications with press officers and knowing exactly who does what when. In that event you have some real prospect of market discipline. And if you use the bridge bank kind of format, you can do it without having massive disruptions and spillovers in other markets.

Senator Reed: Thank you.

Mr. Herring: I would certainly agree with Kevin's point. In addition, I think one might try to rethink how stress tests are devised. Typically, regulators are very reluctant to specify particular stress tests because they feel the institution will know what is most appropriate for its own conditions. But I think there is room for both. The regulators really ought to have, at the same time, in order to evaluate systemic effects, really ought to have at reports from all institutions regarding particular stress scenarios so that they can anticipate what the market-wide consequences might be.

I think there is another source of systemic risk that has sort of crept into the system without anybody paying much attention to it, and that is the sheer institutional complexity of our larger institutions. One of our institutions, for example, has 2,400 majority-owned subsidiaries and they are in more than 90 different countries. It presents an incredible obstacle, I think, to the managers of that institution, but surely to the outside world to understand an institution's risk exposures. And I think that there is a great merit in greater simplicity in institutional structure as well as in looking at stress tests that will cover all institutions.

Senator Reed: Thank you.