Testimony of Richard Bookstaber

Submitted to the Congress of the United States, House Financial Services Committee
For the Hearing: "Systemic Risk: Examining Regulators Ability to Respond to Threats to the Financial System"
October 2, 2007

Mr. Chairman and members of the committee, I thank you for the opportunity to testify today. My name is Richard Bookstaber. Until this June I ran a quantitative equity hedge fund at FrontPoint Partners. I have also worked extensively in risk management. In the 1990's I was in charge of market risk management at Morgan Stanley and then oversaw firm-wide risk management at Salomon Brothers. Following that, I oversaw risk management at two buy-side firms, Moore Capital Management and Ziff Brothers Investments. I am also the author of a recently published book, A Demon of Our Own Design – Markets, Hedge Funds, and the Perils of Financial Innovation.

1. The challenges facing U.S. financial regulators charged with supervising the modern financial system

I believe the threats to the financial system stem largely from two increasingly dominant market characteristics. The first is the complexity of the markets. The second is the tendency for the markets to move rapidly into a crisis mode with little time or opportunity to intervene. Borrowing from engineering nomenclature, I refer to this second characteristic as tight coupling. The challenges in supervising the financial system, and particularly in safeguarding against market crises and systemic risk, are centered in dealing with these two characteristics.

Market Complexity as a Source of Crisis

Complexity means that an event can propagate in nonlinear and unanticipated ways. An example of a complex system from the realm of engineering is the operation of a nuclear power plant, where a minor event like a clogged pressure-release valve (as occurred at Three Mile Island) or a shift in the combination of steam production and fuel temperature (as at Chernobyl) can cascade into a meltdown.

For financial markets, complexity comes through derivatives and other innovative products. Many derivatives have nonlinear payoffs, so that a small move in the market might lead to a small move in the price of the derivative in one instance and to a much larger move in the price in another. Many derivatives also lead to unexpected and sometimes unnatural linkages between instruments and markets.

We observed this in the subprime market meltdown. Subprimes were included in various CDOs along with other types of mortgages and corporate bonds. Like a kid who brings his cold to a birthday party, the sickly subprime mortgages mingled with these other instruments. The result was contagion between markets. Investors that have to reduce their derivatives exposure or hedge their exposure by taking positions in the underlying bonds will look at them as part of a CDO. It doesn't matter if one of the underlying bonds is issued by an AA-rated energy company

and another by a BB financial; the bonds in a given package will move in lockstep. And although subprime happens to be the culprit this time around, any one of the markets involved in the CDO packaging could have started things off.

Tight Coupling and Market Shocks

Tight coupling is a term I have borrowed from systems engineering. A tightly coupled process progresses from one stage to the next with no opportunity to intervene. If things are moving out of control, you can't pull an emergency lever and stop the process while a committee convenes to analyze the situation. Examples of tightly coupled processes include a space shuttle launch, a nuclear power plant moving toward criticality and even something as prosaic as the process of baking bread.

In financial markets tight coupling comes from the feedback between mechanistic trading, price changes and subsequent trading based on the price changes. The mechanistic trading can result from a computer-driven program, like what we saw with portfolio insurance during the 1987 crash. Or, more commonly, it can result from the effects of leverage. When things start to go badly for a highly leveraged fund, its collateral can drop to the point that its lenders force it to start selling assets. This selling can lead to a drop in prices leading the collateral to decline further, forcing yet more sales. The resulting downward cycle is exactly what we saw with the demise of LTCM.

And it gets worse. Just like complexity, the tight coupling born of leverage can lead to surprising linkages between markets. High leverage in one market can end up devastating another unrelated and perfectly healthy market. This happens when a market under stress becomes illiquid and fund managers must look to other markets: If you can't sell what you want to sell, you sell what you can. This puts pressure on markets that have nothing to do with the original problem, other than that they happened to be home to securities held by a fund in trouble. Now other highly leveraged funds with similar exposure in these markets are forced to sell, and the cycle continues. Looking back again at LTCM, the trigger for LTCM's failure was a default in the Russian debt market, a market where LTCM had little if any exposure. The point is that ultimately most financial crises have to do with who owns what, who is under pressure and what else they own.

2. Do regulators have the tools they need to meet these challenges?

The starting point for grappling with systemic risk, and in particular with dealing with the threats that come from innovative products on the one hand and from high leverage on the other, is getting the right data. And we do not have much of the data we need.

For example, can we lay out the intricate web of counterparty risk for swaps and derivatives – who owes what to whom? Can we monitor the amount of leverage being employed by various types of hedge funds? Can we tell, even after that fact, the nature of the positions or strategies that are concentrated in specific types of market participants? At this point, we cannot. And so we cannot map out how a failure in one segment of the financial market might propagate out to affect other segments. Nor can we learn from past market crises, because we cannot recreate what occurred.

It is as if the NTSB were not given flight recorders or allowed to investigate the crash site, or the NRC were not allowed access to nuclear power facilities. For example, in a few days in early August many quantitative long/short equity hedge funds suffered large losses, in some cases of over 30 percent. We do not know what set off the wave of these losses or why the losses affected so many of these funds. We suspect high leverage was a culprit and the triggering event was somehow related to the subprime and credit stresses, but we do not know because we do not have the relevant data.

I suggest three steps to improve the tools for meeting the regulatory challenges.

The first step is to create a committee to review the types of data that would be necessary to evaluate market dislocations and to monitor system risk at the broad market level. I have mentioned a few of the areas of critical data above.

The second step is to determine the necessary powers to allow the regulatory bodies to access these data. The most glaring area where such powers are absent is in the realm of the hedge funds. There are arguments made against providing position transparency to regulators because of the sensitivity of this information. The issues are real, but that said, many hedge funds already provide their positions to third party risk management providers, and thus it seems hard to argue against also providing them to a government regulator. In any case, much critical information does not require drilling down to the position level details. We should also consider how to extend regulatory powers to compel banks and investment banks to provide counterparty and inventory data. On a technical note, with the use of modern extensible mark-up languages there is little difficulty in establishing protocols for data to be provided efficiently.

The third step is to create a regulatory body, a government-level risk manager with a role perhaps modeled after that of industry-level risk managers, that can use these data to monitor potential systemic threats and to investigate and learn from market failures.

3. What changes should be contemplated to our regulatory system?

In speaking to the question of regulation, let me start by confirming the premise: The markets require regulation. There are clear profit incentives for the banks and investment banks to facilitate, even to encourage, leverage, just as there are strong profit incentives for them to design and market innovative products. And there are competitive pressures for hedge funds and others to avail themselves of these. But on the margin, each decision to increase leverage and to create an innovative product adds to the potential for market crises and systemic risk by increasing the tight coupling and complexity of the market. The business decisions do not take this into account. In other words, there is an unpriced negative externality to the actions of market participants. And unpriced negative externalities require intervention.

Reducing leverage and market complexity

Insofar as complexity and leverage are critical components of market crises, regulation needs to address these two factors. If we allow leverage to mount and allow new derivatives and swaps to grow unfettered, and then try to impose regulation above that, we will fail. Indeed, if the potential for systemic risk stems from market complexity, adding layers of regulation might actually make matters worse by increasing the overall complexity of the financial system. This may seem to be an abstract argument, but a number of crises in other industries – including ValuJet, Chernobyl and Three Mile Island – occurred due to complications that arose from mandated safety measures.

Often a hedge fund manager is faced with the choice of either increasing leverage to try to meet target returns or see his business diminish. There are thus strong incentives to push leverage to the edge. This is especially the case because few hedge funds face an accounting of their use of leverage; few provide any data on the level of leverage in their portfolios. Since high leverage is the most common source of market cascades, where forced selling leads to price drops which leads to more forced selling, the first step in addressing tight coupling is to control the leverage employed by hedge funds and others.

In terms of controlling innovative products, just because someone can design a new type of derivative or structured product doesn't mean they should. It is true that in the academic economist's view of the world they should, because each new product increases the set of contingencies that can be addressed by the market. But this ignores the implications these instruments have on the complexity of the market. On the margin they increase complexity of the markets and through that they increase the likelihood of crises.

I suggest the regulatory system actively engage in controlling leverage and in limiting the arms race of innovative products. This is a markedly different approach to regulation than is taken now. It is more invasive to the market and might face political hurdles that would make it impractical to execute. However, I believe the most effective regulation will address these key sources of market crisis head on.

Using circuit-breakers to stop a tightly coupled crisis

Regulators may be able to curb a systemic threat if they can break the tight coupling during an emerging crisis. We have had a number of successes in stemming the threats though this route. In the Crash of 1987, the seemingly inexorable downward cycle caused by the computer-driven selling of portfolio insurance programs was stemmed by the use of the so-called circuit breakers. The LTCM failure saw its systemic effects forestalled by the Federal Reserve's actions in bringing together a bank consortium and having them stop the demand for sales to meet collateral. In both of these cases a mechanism broke the tight coupling. Circuit breakers can provide breathing room so that those under pressure have time to negotiate with their creditors, seek sources of liquidity and capital, and strategize with their investors.

I suggest any regulatory solution include the ability for the regulator to invoke circuit breakers, by whatever guise, during periods of market crisis.

A "for-profit" approach to bailouts

There is an approach that we have seen executed with success in the private sector which suggests a new regulatory role. The large hedge fund Citadel has used its capital to buy up the assets of distressed firms, once with the failure of Amaranth and again with the failure of Sowood. Citadel's action was a bailout of the markets – by providing liquidity when many others in the market were unwilling to do so they helped stem a problem from getting worse, from propagating out further to affect other firms. It was not, however, a bailout of the troubled funds. Sowood and Amaranth are still out of business.

The point is that there are two types of bailouts. There are bailouts that keep the offending fund on it feet and in business. Arguably these sorts of bailouts create a moral hazard problem. But there is another sort of bailout that does not stand in the way of failure, but that still reduces the collateral damage. Citadel's were bailouts of the latter type.

I suggest the government consider a role for financial bailouts in these terms. To be specific, I suggest the government maintain a pool of capital on the ready to be the liquidity provider of last resort, to buy up assets of firms that are failing much as Citadel did for Amaranth and Sowood. (Of course, if a private entity is willing to step up to the plate, all the better). There would need to be a body with substantial market expertise to determine when this capital can be effectively applied. In this approach, there would be no moral hazard problems, since the firm would still fail. But the collateral damage would be contained; the market would be kept from going into crisis, the dominos would be kept from falling. And just as Citadel did in these cases, the taxpayer would have good odds of pocketing some profits.

5. Conclusion

In most fields, the hand of engineering leads to lower risk. We learn from our failures and year by year end up with safer bridges and buildings and cars and airplanes. But this does not seem to be the case for engineering in the financial markets. The results of financial engineering – the increasing sophistication of the markets, the complexity and the speed with which market events unfold and propagate – seem to be taking us in the wrong direction.

The lowly cockroach can teach us a few things about how to structure and regulate markets in order to better avoid systemic risk. The cockroach has existed over hundreds of millions of years, surviving as jungles have given way to deserts and deserts have been turned into cities. And it has survived with a simple, coarse defense mechanism. The cockroach does not make its escape by seeing, hearing or smelling. All it does is move in the opposite direction of any gust of wind hitting its legs. In any particular environment it would never win the 'best designed insect' award. But it always seems to be good enough to survive. Other insects might have been more fine-tuned for foraging or with camouflage perfectly suited to a particular environment, but few are as robust and capable of surviving in the face of inevitable changes.

We need to keep the cockroach in mind when we think of how to address systemic risk. We must rethink efforts that engineer and fine tune the markets in an attempt to seek out every advantage in the world as we see it today. When faced with the inevitable march of events that we cannot even anticipate, simpler financial instruments and less leverage will create a market that is more robust and survivable.