

12th Annual Wharton – Oliver Wyman Risk Roundtable

Bank Failures and Survivability of the Financial System: Thoughts on Regulatory Reform

**The Wharton School
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Keynote Address

Andrew Kuritzkes

**Partner and head of North American Public Policy Practice
Oliver Wyman**

Andrew Kuritzkes of Oliver Wyman opened the 12th Wharton-Oliver Wyman Risk Roundtable by noting that the previous eleven Roundtables had “celebrated advances in risk management.” However, while enhancements in finance theory, better data capture, and more sophisticated risk models had “pushed out the frontiers of risk management and made the financial world a safer place,” he said, this year’s conference was going to be focused on “the limitations of risk management “and “the failure of practitioners to get it right.”

He noted that the last Wharton conference was held during the period of the “phony war,” which occurred after Bear Stearns’ demise and before Lehman’s failure. In the ensuing year, he went on, seven of the top 20 US financial institutions have joined Bear Stearns in either failing, coming under government control, or being forced into a government-assisted merger. (These seven were Fannie Mae, Freddie Mac, Lehman Brothers, AIG, Washington Mutual, Wachovia, and Merrill Lynch.) The assets of the eight firms that failed under Kuritzkes’ definition totaled \$5.4 trillion, equal to nearly 25 percent of the assets of all regulated financial institutions in the U.S.

He added that the financial services industry has been “quasi-nationalized,” since the \$250 billion of TARP capital injected into banks amounted to about 20 percent of the Tier I capital in the U.S. banking system. The Treasury has essentially said that the 19 largest bank holdings companies are now too big to fail, with those 19 “including bank holding companies of convenience,” such as GMAC, American Express, and MetLife. In addition to the eight top-20 financial institutions that failed, Citibank and Bank of America sought assistance through the TARP program.

Kuritzkes noted that this crisis “has launched a cottage industry of reports by academic, government, and industry experts dedicated to what went wrong and how to fix the system.” While there is a surprising degree of convergence across the proposals, Kuritzkes said, these reports have failed to note that “large financial institutions have failed with much higher frequency than generally perceived.” He added, “If we accept this fact, then we should also expect that current reform proposals are unlikely to legislate big bank, or non-bank, failures out of existence.

Kuritzkes said he had conducted a “back of the envelope empirical exercise” in which he identified all of the failures among global top 100 financial institutions that had occurred over the last 20 years, and 26 financial institutions were on this list. These failures include the eight U.S. firms and eight large European firms that failed in 2008, plus five Japanese banks that failed in the late 1990s, two Swedish banks from that country’s 1991-92 banking crisis, plus Crédit Lyonnais in 1994 and others. He emphasized that this list did not include failures of firms too small to qualify for the global top 100 institutions, such as Northern Rock and National City Bank in 2008 as well as Baring Brothers, Drexel Burnham, Barings, and BCCI.

These 26 financial institution failures over 20 years provide an annualized default rate of 1.3%, he noted, while the median credit rating of top 100 firms as of 2007 was A+, a credit rating consistent with a default rate of less than five basis points. “Thus the actual default rate for top 100 firms is more than 20 times higher than that implied by credit ratings,” he noted.

Given the number of failures, he went on, “What is surprising is that we’re surprised by how often large banks fail.” He cited research he had undertaken with Til Schuermann of the Federal Reserve Bank of New York which found that a regulatory capital requirement of eight per cent protects banks at only a 99.7% solvency level, which is consistent with a BBB rating, not an A+ rating. By the same token, using four percent common equity as the capital that really matters, as the Federal Reserve did in its recent stress tests, this capital ratio protects banks at the 99.0% -- or B -- level.

He noted that CDS spreads suggest that the market doesn’t believe that default risk for financial institutions is as low as implied by ratings. At the last quarter-end before each of the eight US institutions failed, their ratings were all still A- or better and yet their CDS spreads averaged over 300 basis points.

Kuritzkes argued that “the fact that banking crisis recur frequently, and that as many as one in a 100 large banks can be expected to fail each year, has significant implications for policy reform. To me, it says that we should start treating banks as if they were cars, rather than planes.”

He noted that “when we board airplanes, we like to think they’re virtually crash-proof.” Airplane crashes “are regarded as freak occurrences,” he said, “and to a large extent they are.” By contrast, it is understood that no matter how well designed cars are, or how well engineered roads may be, “we cannot reduce the incidence of car crashes to near zero.” Instead, the last 40 years have been spent trying to improve the survivability of cars and their passengers in the event of a crash through such measures as requiring seat belts, introducing safety glass, and installing air bags.

In a similar way, he argued, the high rate of large bank failures “tells us that bank failures are a recurring feature of our financial system.” While there are – and should be -- continuing efforts to keep banks from repeating mistakes that lead to failures, he said it is inevitable that “there will be another set of unknowns that cause a new round of bank failures at some point in the future.”

As a result, the imperative should be to find policy solutions that can make the financial system better able to survive bank failures. While there is no shortage of recommendations for regulatory reform in response to the financial crisis, he noted, many of these recommendations focus on failings at the individual firm level. He offered “three sets of reforms that I think are critical for improving the system’s survivability, and should therefore be a top priority.”

Number one on his list was **a resolution regime** for non-bank financial institutions.

He called it “inexcusable that we had no orderly mechanism” for allowing three nonbanks – Bear Stearns, Lehman, AIG – to fail. While he endorsed letting a firm fail when the costs of excessive risk-taking or lax governance or bad luck are internalized among a firm’s equity and debtholders, he said there is a need for a mechanism to reduce the externalities of a disorderly unwinding of systemically important financial firms.

He said the Committee on Capital Markets Regulation offers the clearest prescription on this point. It argues for Prompt Corrective Action authority to be extended to non-bank financial institutions, including bank holding companies. A resolution agency would be empowered to place a failing financial institution in receivership before market panic sets in. The receivership authority should allow for the immediate netting of counterparty positions, the orderly unwinding of trades, the sale of assets and businesses, and, where necessary, government bridge financing. The ultimate costs and losses would be borne by shareholders and debtholders.

He emphasized that “resolution must reinforce, rather than supplant, market discipline,” and he said the role model should be the receivership of IndyMac, whose assets were managed by the FDIC until the bank could be sold to a private equity group while losses were borne by shareholders and uninsured debtholders.

A second goal Kuritzkes put forward was **reducing counterparty risk**: Because the potential for financial contagion is directly proportional to the degree of counterparty risk, he recommended several steps to reduce counterparty exposures and monitor firm interconnectedness going forward.

The starting point is the effort already underway to introduce a clearinghouse for Credit Default Swaps (CDS). He applauded widely supported proposals to develop a broader centralized credit counterparty to encompass other OTC derivatives and move standardized OTC contracts onto exchanges.

But he called CDS and OTC derivatives “today’s risk problem, not tomorrow’s,” and he emphasized the need “to be vigilant to make sure that new concentrations of counterparty exposures do not emerge in a way that can threaten system-wide stability. He added that the industry and regulators deserve credit for their efforts in the LTCM case to mitigate the counterparty risks of hedge funds.

One way for supervisors and the market to police counterparty exposure going forward is through disclosure of risk positions. Kuritzkes noted that the Squam Lake Working Group calls for financial firms to be required to provide supervisors with granular information about risk exposures on a quarterly basis – including sensitivities to common macro risk factors. The information would be also released to the market on a lagged basis so that the market could do a better job of evaluating risk concentrations.

But Kuritzkes warned that standalone risk measures are insufficient to reflect the interconnectedness that’s at the heart of systemic risk. He described what he called “an intriguing new risk metric” proposed by Adrian and Brunnermeier and endorsed by the Geneva Report called CoVAR, a measure of conditional Value at Risk. This metric estimates the marginal contribution to financial system risk (or asset price volatility) of a particular firm being in distress.

Whether through CoVAR or vastly improved reporting of risks, he said, regulators need an ability to actively monitor the degree of counterparty exposure across firms and the sensitivities to common risk factors on a real time basis. For the monitoring to be effective, it has to be comprehensive and incorporate pockets of non-traditional exposure, such as off-

balance-sheet SIVs and conduits, monoline insurers' financial guarantees, and securities lending. He said he agreed with Adrian and Brunnermeier that there is also a need for a mechanism that impose a systemic risk charge as a means of “discouraging firms from becoming too big, too complex, or too interconnected to fail.”

The third area he focused on was **countercyclical capital**: According to Kuritzkes, “There is now widespread recognition that Basel’s fixed capital requirements exacerbate system-wide credit contraction by forcing banks to raise capital in a downturn as losses mount. While this is a perfectly logical response for each bank individually, the cumulative pressure of banks needing to raise capital when it is most expensive – or to shed assets – to meet a fixed capital requirement is to withdraw lending capacity when it is most needed.” He called this pro-cyclical tendency “a key way that pain in the banking sector is transmitted to the real economy.”

Kuritzkes said “there is a chorus of support” for introducing time-varying capital requirements to dampen the effects of losses on bank lending capacity. He endorsed proposals offered by the Turner Review and the Financial Stability Forum to replace Basel’s fixed capital requirement with pro-cyclical capital ratios that would be meaningfully higher in boom years and lower during downturns.

He added that there is a variant of the counter-cyclical capital proposal, advocated by Kayshap, Rajan, and Stein, under which banks could hold contingent capital in the form of CAT insurance. In their proposal, this catastrophic coverage would be pre-funded by investors, such as sovereign wealth funds, which were outside of the banking system. The insurance would pay off in the event that system-wide losses reached a pre-defined trigger. This pre-subscribed CAT capital would act as an automatic stabilizer by injecting new sources of capital into the banking system to counteract the contractionary effects of widening losses.

Kuritzkes said that his three sets of proposals “should go a long way toward making the system more resilient.” While these proposals may not reduce the social costs of financial failures to zero, he argued, “They should prevent a repeat of the financial pile-ups we experienced last year.”

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Open Discussion of Regulation of Financial Institutions: Options, Pitfalls, and Opportunities

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The Conference's first formal session provided an opportunity to put forward questions based on Kuritzkes' keynote address. One member of the audience sought elaboration on Kuritzkes analogy with automobiles and airplanes. "What I was trying to draw out," he said, "is that there is an inevitability of future bank failures no matter how hard we try to improve bank risk management." As a result, he argued, while steps should be taken "to improve the survivability" of individual banks, he emphasized the need to "make system more survivable," and he added that the "policy failure" was that "we weren't able to prevent system-wide knock-ons."

Kuritzkes acknowledged that there are many steps which can be taken to prevent individual bank failures. A starting point would be an "improvement of incentive structures," he noted, adding that, "I think we have to improve risk governance top down -- that can make a significant difference." He also noted the importance of regulations on capital, and added, "We need to move our attention from the asset side of balance sheet and pay much more attention to the liability on balance sheets." He pointed to such issues as the structure of funding and maturity transformation mismatches

Another member of the audience raised the issue of rating agencies, which he called the "weak link in the chain." There was agreement that the rating agencies lacked the capability to accurately rate new structured products. They were "always a step behind Wall Street," one member of the audience said, adding that their incentive structure probably compounded the problem of ratings. Audience members agreed there is a need to lessen investor dependency on rating agencies, and one way to achieve this is to remove reference to rating agencies in Basel II as well as in assorted financial regulations. The goal should be to shift more responsibility to the internal rating processes at banks and investment firms. Kuritzkes said that there have been proposals to license rating professionals and to create a more robust market for ratings to replace "the oligopoly that we now have."

When one member of the audience took issue with Kuritzkes' tally of financial institution failures, Kuritzkes acknowledged that his definition of failure was "somewhat arbitrary and judgmental." His list of failed institutions included those that were forced into government-assisted mergers or receivership or taken over by government. But he reiterated that eight U.S. institutions met those criteria in recent months -- Bear Stearns, Fannie Mae, Freddie Mac, Lehman Brothers, Washington Mutual, Wachovia, AIG, and Merrill Lynch -- as did 18 other institutions.

An audience member noted that the Turner Review coming out of the FSA in the UK asked if the financial system was facing a paradigm change. He said the current financial crisis challenged a number of shibboleths, such as:

- Market prices are good indicators of value
- Risk characteristics of financial markets can be inferred from mathematical analysis
- Market discipline can be used as an effective tool in limiting risk taking
- Competition will winnow out any actions that are not effective....

Kuritzkes: said that each of these statements "were true in part, but not true in full," and he added that if we "accepted all of them, we would be a risk management nihilist;" He warned against concluding that financial innovation "is always bad." Kuritzkes added, "I'm sure we are on verge of changing thinking, but not I'm not sure it's a total paradigm shift..

One member of the audience said, “The new paradigm is an anti-paradigm -- it just says these things don’t work.”

The discussion turned to the dilemma created if banks are rated as double-B credits. “How can they make money if they must finance themselves at junk bond spreads?” one member of the audience asked. He added, “One reason we don’t regulate banks to make them crash-proof like planes, is that if they would have very large capital cushions, they would generate modest profit streams.”

He expressed concern about the impact on allocative efficiency if banking systems were too heavily capitalized. And as a result, he said, there is a need to accept the consequences of institutions that “are going to take higher risks and will have some failures. He noted that because of implicit bank subsidies in the form of governmental backstops, banks can raise capital at double-A rate when their standalone rate should be double-B.

Another member of the audience pointed to the impact of a “safer banking system on the low and moderate income population: It’s easy to sit back now and say we should never have allowed sub-prime mortgages and credit cards with high interest rates, but there is a question of access, and that’s a tough policy debate to have. We need to acknowledge there is another side to this coin.”

In contrast to Kuritzkes’ cars vs. planes analogy, another member of the audience suggested a comparison with electric utilities. There, too, there is an emphasis on the reliability of the system as a whole. But Professor Frank Diebold of the Wharton School said that the pace of innovation in financial services over the last quarter century “has been breathtaking,” while “electrical utilities are not exactly a hotbed of innovation.” Another member of the audience questioned the utilities analogy and said, said there is a “need to optimize across three dimensions: innovation, stability, and access.

After Kuritzkes had been asked a series of questions, he turned the tables and joined Professor Richard Herring of the Wharton School in asking the audience to respond to a number of questions.

The first question asked of the audience was whether a systemic risk regulator would be created. A show of hands indicated most audience members thought this would occur. What institutions would fall under this regulator’s purview? While regulation is now determined by an institution’s charter, most members of the audience agreed that other alternatives would be more effective.

If there were a systemic regulator, the audience was asked, should its list of systemically important institutions be made public? About a quarter of the audience said yes, while a slightly smaller percentage said no. One of those opposed said publicly identifying those at risk creates moral hazard, and he added that it was unclear whether an institution was facing excessive risk or not. “There is a lot to be said for having a spectrum” he noted. For his part, Kuritzkes said he “wouldn’t tell institutions that they were systemically important.”

It was noted that there are other criteria for bailing out a financial institution besides their importance to the system. In Philadelphia, for example, several decades ago First Pennsylvania was bailed out because it was an important bank locally, although not important to the national system. In thinking about which institutions might warrant rescuing, Professor Herring reminded the audience that markets “do not operate well under conditions of macro uncertainty.”

If there were a list of systemically important institutions, the audience was asked what tools should be used to supervise them. There was some support for imposing more stringent

requirements on capital, liquidity, and disclosure, but the most support was shown for “all of the above.” However, some members of the audience indicated that none of these remedies spoke to the problems. For example, one audience member said the best systemic protection would come from having a larger number of smaller institutions.

When asked what agency should act as a systemic risk regulator, many members of the audience agreed that the Fed would be a good candidate, while none supported giving the job to the Treasury Department. There was also interest in some kind of coordinating committee. But Herring argued that the case of Northern Rock in the UK reaffirmed that “crisis management by committee doesn’t work very well” because committees “diffuse accountability.” There was also concern expressed that if the Fed were put in charge, it would look at issues only from the standpoint of the banking system, but Herring said that the Fed is already “expanding its purview,” and it could broaden its focus in response to a role in overseeing non-banking institutions.

If there were a systemic risk regulator, most audience members agreed that it should have the power to take prompt corrective action even before there is a crisis. The discussion moved on to the issue of how to fund such a regulator: by assessing regulated institutions or by billing the Treasury -- and therefore the taxpayers. Most audience members supported the first alternative, but Kuritzkes warned, “It is virtually impossible to have an *ex ante* fund that is big enough to support a major institution.”

Should a systemic risk regulator have the power to compel institutions to simplify their corporate structures in order to make them easier to resolve? About half the audience thought this was appropriate, while some 20 percent disagreed.

The discussion then turned to ways in which currently important financial institutions could be made less of a systemic threat. There was support for all of the alternatives put forward, including more stringent capital and liquidity requirements, limits on size, better disclosure of counterparty risk and off balance sheet positions, and requiring simpler corporate structures that can be resolved more readily.

Audience members also indicated substantial agreement with the view that the current financial crisis would lead to changes in Basel II. For example, the definition of capital is likely to be altered in order to place greater emphasis on tangible common equity. The audience agreed there will be increases in disclosure requirements and charges for credit and liquidity risks.

In order to make Basel II less pro-cyclical, audience members generally agreed with the suggestions that weightings will have to be made less risk sensitive and provisioning will be made more pro-cyclical. Several members of the audience suggested that there would be a backing away from fair value accounting because it tends to have a pro-cyclical affect. Indeed some saw weighting being made less risk sensitive, which would completely reverse the basic thrust of Basel II.

When asked whether households would continue to de-leverage even after an economic recovery has begun, about a third of the audience said yes, suggesting that U.S. consumers won’t be the nation’s engine of growth. About 40 percent of the audience thought securitization would experience some revival, although it would depend on specific sectors. As one member of the audience put it, there would not be any additional “CDOs squared or SIVs in my lifetime.” But the plain vanilla securitizations that have disappeared will return if their structure makes it possible to evaluate the underlying instruments.

Most audience members agreed that the U.S. regulatory structure would be altered, but Herring warned this would be a difficult process “because there are so many entrenched interests.” Nonetheless many expected more centralization and rationalization in what one individual described as the current “Byzantine structure.” However, only a minority of the audience thought it would be best to have a single regulator. Others thought there is value in competition among regulators, even though there can be a problem of regulatory arbitrage.

Only a few members of the audience thought the SEC and CFTC would be consolidated, but a larger number thought the OCC and OTS would be merged. About 20 percent of the audience thought there would be optional federal charters for life insurance companies. And about a third of the audience agreed that regulation would end up reducing profit margins at financial institutions by reducing leverage and constraining maturity transformation.

The audience was also asked about the stress tests that had recently been undergone by 19 financial institutions. About half the audience thought stress tests and the publication of their results were likely to become a standard part of the regulatory tool kit

This discussion foreshadowed remarks by Til Schuermann, a vice president at the Federal Reserve Bank of New York, who was deeply involved in mounting the recent stress tests. This “Supervisory Capital Assessment Program” focused on “the quantity and quality of capital” at these institutions “under a baseline and adverse scenario through 2010,” Schuermann explained. He said the purpose and motivation of SCAP was to “reduce uncertainty” about the banking sector’s health in more adverse outcomes and enhance confidence

To achieve passing grades, he said, an institution was expected to achieve a Tier 1 risk-based capital ratio of at least six percent and a tangible common equity risk-based ratio of at least four percent at the end of 2010 under two different scenarios. Those that do not would have to develop a detailed capital plan by June 8, 2009, and implement it by November 9, 2009.

Schuermann noted that the “baseline scenario” and the “more adverse scenario” each revolved around three major economic variables: real GDP, civilian unemployment rates, and house prices. In the case of housing prices, the baseline scenario was a 14 percent decline in prices in 2009 and a four percent decline in 2010. The more adverse scenario saw a 22 percent decline this year and a seven percent decline in 2010. While the stress test had a two year horizon, loan loss reserves were considered for a third year, he noted.

He pointed out that there were structural differences among the 19 institutions that added complexity to SCAP: Two of the 19, Goldman Sachs and Morgan Stanley, were former investment banks rather than lenders, “and if we just focused on credit losses for investment banks, we would get a small number,” he said. Two other financial institutions, American Express and GMAC, were part of larger entities. The two former investment banks, along with Bank of America, Citibank, and JP Morgan Chase, “were large trading houses,” he noted, so these five “had to not only account for mark-to-market losses but also account for increase in counter party credit risk.”

Schuermann noted that loss rates were given in ranges, and he added that there were expectations of substantial loan losses, combined with significant losses on trading positions at the five institutions with large trading portfolios. But he said there were modest losses on securities, reflecting the sizable markdowns that had already been taken.

There were significant differences across firms, he noted. In the case of residential first mortgages, for example, one of the banks had “a pool of dicier mortgages from an acquisition.” In calculating capital needs, he noted, losses don’t translate directly to capital needs due to differences in starting capital levels,

The tests showed that ten of the 19 needed additional capital, totaling \$74.6 billion. He added that there had been considerable “bargaining” as the institutions sought to reduce the amount of capital that they were expected to raise. A number of firms have capital actions already in train that will address the gap, he said. There are also sales of assets and businesses that will reduce the need for capital.

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Roundtable II. Risk Governance and Incentives: Problems and Emerging Best-Practice Private Solutions

**Francis X. Diebold, Miller Professor and Co-Director
Wharton Financial Institutions Center**

**Robert E. Chappell, Chairman, CEO, and President
The Penn Mutual Life Insurance Company**

**John Drzik
President and CEO
Oliver Wyman**

**Matthew Richardson
Simon Professor and Director,
Salomon Center
New York University**

**Rene Stulz
Reese Professor and Director
Dice Center for Financial Economics
Ohio State University**

Professor Frank Diebold of the Wharton Financial Institutions Center said this session was “moving toward the giant elephant in the room,” i.e. the issues of incentive compensation for managers of financial institutions and the moral hazard raised in assisting troubled institutions. “How do we incent people to do the right thing, whatever that might be?” Diebold asked.

Professor Matthew Richardson of New York University focused his remarks on governance issues at financial institutions, noting that one example of these issues was the way financial institutions “exploited loopholes in capital requirements to take a huge asymmetric bet on credit.” He said this was done through the use of such mechanisms as off balance sheet vehicles, credit enhancements, and buying under- priced protection from the monocline credit insurance companies and from AIG. These insurers ended up holding more

than \$1 trillion of asset risk with one tenth the capital that would typically be required to underpin it.

Richardson said these actions resembled “writing an out-of-the-money put option on the aggregate market.” Why did banks do this? He noted that the premiums that were being generated from these activities “were booked as profits with no accounting for the credit risks related to these securities; so you had this short term view of creating alpha.” He added that when the risky actions of large numbers of banks were added up, “you get to pretty big numbers.” He cited a UBS report on governance which found that from February, 2006 to June 2007, the bank had increased the level of risky assets \$5 billion to \$50 billion, and he attributed this kind of ramping up of risk exposures to the compensation available to those who championed this course.

Richardson also noted that “this fake alpha is so pro-cyclical.” Consequently, when there is a substantial shock to the system and banks need capital the most, they have the least chance of raising it on attractive terms. Richardson argued that the beneficiaries of fake alpha included shareholders as well as management, while taxpayers ended up bearing the risk. Richardson said there is substantial evidence that boards of directors were encouraging risk taking. He suggested that “the most important thing to kill this incentive” to pursue excessive risk is to “bring back discipline to the market.” He welcomed the existence of deposit insurance and other government guarantees, but he said these need to be priced correctly in order to force institutions to assume appropriate risks. He expressed concern that this was “not necessarily” the direction in which regulators were moving.

In addition to enhancing market discipline, Richardson also proposed changes in compensation structures. He advocated multiyear bonus payouts in which good performance would be offset by bad performance. He added that most institutions would like to be there, and governmental “suasion” could help move them in the right direction. But he said the question of how reforms could be sustained is more difficult, and he expressed reluctance to have compensation rules written into law because every situation is unique.

Richardson’s third focal point was the accounting system, which he said “encourages fake alpha.” He offered support for a more risk-based system, particularly if there is a retreat from the recent emphasis on mark to market accounting. But Richardson expressed concern about governance proposals that were coming from Washington because of the many differences between financial institutions. He argued that limits on compensation and restructuring of incentives would turn out better if they were developed within institutions rather than imposed on them.

Robert Chappell of Penn Mutual offered a practitioner’s perspective on risk management, noting that at a life insurance company, “one of the things we worry about is risk mitigation because we’re making guarantees against mortality and tradeoffs against interest rates.” He added that insurance companies have a long tradition of managing mortality and interest rate risks, and “we have a sense about ourselves as real risk managers.

But he went on to note that Penn Mutual has been adding various kinds of equities guarantees to its insurance products, and this involved “risks we were not used to.” As a result, a few years ago, Penn Mutual decided it needed a risk management program. A representative of the company visited executives at a number of other financial institutions and asked them how they thought their risk management activities ranked on scale of one to ten. Lehman Brothers said they were an eight, as did Hartford Insurance; Goldman Sachs put themselves at nine, Bank of America at seven, and Wachovia at five.

He noted that the Lehman program was centralized as was Goldman's, while the others weren't. Chappell added that the Hartford program was consultative, while at Lehman and Goldman, the risk management program was focused on oversight. In addition, the Goldman approach was very quantitative while others were qualitative, and risk managers at Lehman, Goldman, and the Hartford had access to substantial amounts of data, while the risk management programs at other firms did not. He pointed out that since then the rating agencies have shown greater interest in the risk management process. In March 2008, he pointed out, a rating agency said that the Hartford's risk management program was "strong overall, with an enterprise risk management culture that "permeates the organization," but since then the company's rating has been lowered.

Chappell attributed much of the excess risk taking at financial firms to their compensation structures, but he said "incentives are part of the culture." He said risk management needs the right people, process, and controls, "and if those all fail, you better have a lot of capital." He added that it is not always possible to know how people and processes are going to behave, and he emphasized the importance of key people understanding the risks they are taking on.

Chappell noted that "operational risk is a big deal for us." While the company uses such risk management measures as VAR and economic value, "at end of day," he said, "those are just tools for us to manage the people.

Turning to compensation practices, Chappell suggested that firms structure incentives so that "if you outperform by x, you get so much, and beyond that, you don't get any more, so people don't swing for the fences. Don't set it up so in three years they can make a ton of money and get out." He also recommended that annual bonuses be paid in stock that takes three years to vest." Amid the focus on processes and procedures, he said, "getting the culture in place is the thing we sometimes miss. It's hard because you don't make money without taking on more risk and "market takes you where you take on more risk." Insurance companies are taking on more risk as they seek to offer more guaranteed outcomes, he added.

John Drzik, the chairman and CEO of Oliver Wyman said that just as those driving cars don't want to crash but know there will be some crashes, executives at financial institutions know taking some bets will increase their speed and therefore the probability of a crash. But there was excessive risk taking, and he sought to determine "what went wrong with risk governance." He identified six key problems.

- The failure at the top to ask the right questions.
- A misplaced reliance on models
- The disconnect between risk and growth strategies
- A time horizon in such areas as risk analysis and incentives that was too short-term
- Limited focus on the liability side of the balance sheet
- Risk management functions that lacked clear organizational standing

In order to provide more effective risk governance, Drzik suggested repositioning risk oversight and management organizationally in order to establish and empower firmwide risk committees and upgrade the capabilities of the risk oversight organization. He also called for integrating risk and strategy so that companies have a risk appetite that is "compatible with their growth expectations."

Drzik proposed separating “risk management” and “risk oversight” in order to clarify responsibilities. And he advocated reshaping analytics to put more emphasis on stress and scenario analyses, to incorporate longer time horizons, and to include greater attention to the liability side of the balance sheet.

Turning to compensation practices, he noted that the media has focused on compensation levels of senior executives, but he emphasized the need to pay closer attention to “the risk takers’ compensation rather than the executive level.” He also stressed the need to look at “the process and governance of compensation rather than the level.”

These efforts must be supported with an incentive structure that rewards risk management as well as by a visible senior management commitment to risk management and mechanisms to create an institutional memory, Drzik said.

He suggested that there were four key “structural gaps” in the compensation structure at many firms:

- The first was weak compensation governance. This was reflected in limited links between risk oversight and compensation governance, as well as insufficient bottom-up risk controls to limit excessive risk taking.
- A second area was the structure of executive and risk-taker compensation, as characterized by a mismatch between the front and back office functions as well as a lack of linkages to firm-wide results.
- A third shortcoming was the limited use of risk adjustments in determining compensation. There was little “risk accountability” in performance measurement.
- And the fourth structural gap Drzik noted was the “short-termism” of payout currencies. There was a mismatch between the deferral horizon and the risk holding period, and little ability to claw back

Drzik compared the industry’s self-assessment of its compensation principles with those of the Institute of International Finance, and he said there were many shortcomings. Most notably, only 11 percent of firms said they were fully aligned with the IIF’s proposal that the “payout of compensation incentives should be based on risk-adjusted and cost of capital-adjusted profit and phased, where possible, to coincide with the risk time horizon of such profit.”

But Drzik said that many firms are aiming to address the gaps and shortcomings. He said the key industry areas for change were aligning compensation with the risk time horizon and increasing the use of risk-adjusted metrics for generating and allocating bonuses. According to Drzik, change is likely to take place now because of collective pressures on financial firms. But, he said, “When times get good again, will this memory erode?”

René Stulz said there is often confusion about risk management. He said it is “not about eliminating bad outcomes or taking less risk but rather about “taking the amount of risk that maximizes firm value.”

He emphasized that risk management at the firm level “should focus on shareholder wealth subject to regulatory constraints. The impact of the firm’s activities on systemic risk is only relevant as it affects shareholder value.

He also said that *ex post facto* outcomes are not the criterion by which to judge risk management: Bad outcomes are not necessarily evidence of poor governance. Stulz noted that a paper he had written with Andrea Beltratti examined 108 banks in 21 countries with

more than \$50 billion in assets, and they found that better governance is actually a predictor of worse returns for financial institutions during the recent crisis.s

Moreover, in a paper he had written with Rudi Fahlenbrach, Stulz said they looked at “better CEO incentives” as measured in terms of ownership of shares and convexity of compensation coming from options, and they found that “better incentives“ are “associated with poorer returns.” He added that they had found no evidence that convexity of compensation coming from options led to worse returns. If anything, he said, “It tends to go in the other way.”

Stulz argued that many bank executives seemed to take the view that “the market made me do it.” As a result of increased emphasis on market performance, he said, CEOs have to do what the market values “even if they know better.” He warned that market-based governance increases herding and decreases investment in assessing market mistakes. Stulz also said that mark-to-market accounting has made financial reporting even more sensitive to market mistakes.

He argued that the expected return on projects should compensate for risk “deadweight costs.” The measure of contribution to deadweight costs is the risk capital required to leave the firm as is with a new project. Risk capital must be set to have a probability of default at high rating.

Stulz said there were several problems associated with existing practices. And he questioned whether analysts really get the tail of the firm-wide loss distribution right.

Stulz went on to offer several recommendations. For example, he said a financial firm’s management needed to “figure out the types of crises you want to survive.” The firm should construct appropriate scenarios, and they should incorporate the need to fund liquidity into these scenarios and use them to allocate capital.

During the question and answer period, a former broker at Lehman Brothers noted that as the firm got larger, top management became far removed from line activities. He asked whether the partnership model is best for firms involved in trading, and he added that perhaps large banks should not be involved in trading. He acknowledged that the partnership model could require selling stock over time, but he said there is a difference between “building a business and promoting the stock price.”

Chappell of Penn Mutual reiterated that people throughout an organization must have a risk/reward appetite that matches that of the organization. And Stulz said that derivatives and trading are not part of “narrow banking model,” yet these activities migrate to the insured portions of the bank, and in this way “we all pay for it.” He added that the model of investment banks as publicly traded corporations failed in the financial crisis and “they all wanted to become banks.”

Richardson noted that any type of new system is going to have to address the over-the-counter derivatives problem, and he said “the hope” is to develop a system “that has greater transparency,” and this may alleviate some risks.

One member of the audience asked whether it is reasonable to assume the stability of the underlying processes which drive the time series observations that are modeled to provide the framework for defining risk. Stulz said, “You can’t do it all with statistical models; you have to survive certain outcomes.” He added, “If you think about this, what was probability that housing prices would fall by 30%? It happens once in a thousand years, so it seems to me you would just want to have scenarios where that takes place and see where it leads you. To me, that would be part of the answer.” As for increased transparency for derivatives, he noted

these instruments can be tailored to help individual institutions manage risk, and he expressed concern about steps that might “kill off that sector of the market.”

Professor Diebold asked whether the emphasis should be on encouraging best practices or stiffening regulation. Stulz noted that risk professionals are creating a bank of scenarios that firms can use, and Drzik said individual institutions “should have strong incentives to bring in scenario analysis as well as statistical models. He saw a need for more models grounded in historical time series and built on more fundamental factors.

One member of the audience talked about behavioral issues, and Drzik said “part of the issue is CEOs are under pressure from a lot of sources,” including securities analysts and investors. For corporate managements seeking to meet expectations, he added, it is easy to ignore warnings: “It takes a lot in the face of those types of pressures to listen to risk indicators telling you to go in the opposite direction.” Chappell emphasized that “competitive pressures are enormous -- It’s hard to go against the grain.” Richardson added that falling investment yields prompted many institutions to lever up in order to get higher returns.

The discussion moved to the role of boards of directors in controlling risks, and Stulz said additional education for boards of directors “would be helpful” in reining in corporate managers. Drzik added that “there is a role for greater risk experience on boards. Risk oversight tends to be delegated to a board’s audit committee, he said, but, “This needs to be reengineered to a different spot on the board, where there is more risk experience.”

Another member of the audience noted that financial service firms are often structured into divisions that are run fairly independently, and he asked how this complicates the governance process. Drzik said these structural realities require efforts to link the resource allocation and risk management discussions more closely. He said the current dialogue is “often based on earnings or earning growth without reference to the amount of risk they need to take to achieve that; these need to be tied in more tightly.”

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Roundtable III: Next Generation Quantitative Approaches

Ugur Koyluoglu
Partner
Oliver Wyman

Peter Christoffersen,
Professor, McGill University
Research Fellow, Wharton Financial Institutions Center

Nicholas Kiefer
Ta-Chung Liu Professor
Cornell University

Ray Iwanowski
Former Managing Director and Co-Chief Investment Officer, Quantitative Strategies
Goldman Sachs Asset Management

Lakshmi Shyam-Sunder

**Director of Corporate Risk
International Finance Corporation**

Professor Nicholas Kiefer of Cornell University opened the session on “Next Generation Quantitative Approaches” by examining the merits of adding scenario analyses to statistical analyses. He noted that concerns about the limitations of statistical evidence not only comes up in connection with default estimations but also in assessing operations risks.

Kiefer said that many responses to a lack of data can be problematic. For example, when data is limited, he said, banks may “reclassify things into buckets where there is data,” and that does not necessarily advance analytical understanding.

He went on to offer an example involving the estimation of default probability for a portfolio of safe assets. Rather than modeling uncertainty through probabilities, he examined the role of talking to an expert about what that expert knows and then quantifying the expert’s estimates “in a sensible way.” Bayesian estimates can have a sound and logical basis, he noted, even when other data is sparse.

Kiefer said uncertainty should be quantified using probabilities, and he added that the key is to predict defaults or losses with probabilities expressed in a probability distribution. The parameters of the distribution are typically estimated from historical data. Once uncertainty is measured in probabilities, he noted there are several applications related to estimating default rates.

But he said the use of judgment can help to inform the likelihood function. Kiefer noted that in addition to the data, there is information available in the form of expert opinion, and this information can be organized and incorporated in the analysis. He warned that experts are “usually too confident but sometimes too cautious.” Consequently, feedback and robustness analysis or validation are crucial.

Ray Iwanowski, the former Co-Chief Investment Officer for Quantitative Strategies at Goldman Sachs Asset Management (GSAM), offered a practitioner’s perspective on the outlook for quantitative investment approaches. Iwanowski, who spent 12 years at GSAM, said that he had been involved in an investment process “that makes all or most decisions based on quantitative models,” and he contrasted this with traditional managers who often have models but don’t rely heavily on them in making decisions. He added that at GSAM his portfolios were invested in a wide range of asset classes and made extensive use of derivatives. Overall, he noted, “We had a lot of success in delivering returns for our clients,” but he also said their quantitative approach “had some tough periods,” including the interval from the summer of 2006 through the end of 2007. While GSAM’s quantitative approach “did OK in 2008” and had positive returns during the first few months of 2009, Iwanowski described this period as “the most difficult market environment during my entire career.

Iwanowski said that he has been “a strong believer in the use of quantitative models” calling them, “perhaps the best way to help investors find sources of return, to manage and understand risks, and to assist in the construction of portfolios.” He noted that “even non-quants have increasingly turned to quantitative approaches, particular in the portfolio construction process.

Quantitative approaches have been subjected to substantial criticism in recent months, he said, but he argued that some of this criticism is unfair because it grows out of “a misunderstanding of what it is reasonable to expect models to deliver.” According to Iwanowski, there is an “unjustified mystique” attached to quantitative approaches, as if they

were “too complicated for the rest of us to understand.” He argued that quants are actually only specifying widely accepted concepts and developing platforms that are “systematic, coherent, and unbiased.”

Investing in this fashion has risks, he warned, adding, “One is that model can go wrong temporarily or permanently.” Because many models have failed in recent months, Iwanowski said some critics have branded quants as “dogmatic and backward looking,” but he noted that “quant models had no monopoly on being wrong; others ran into very similar problems.” He explained that models are supposed to be “a reasonable approximation of reality,” and they can go astray if the assumptions or calibrations are wrong, or if the world changes. In particular, he said, correlations in the investment world “are noisy and the underlying structures change over time.”

He acknowledged that clients have been disappointed by recent investment results, and GSAM was “forced to self reflect.” Iwanowski said popular opinion on what went wrong with quants has been that the models ignored “the existence of fat tail.” But he argued that quants don’t always assume a normal distribution, and in fact, “the idea of fat tails in assets classes was part of our process.” He added that the possibility of cataclysmic events that affect all asset classes was accounted for. But Iwanowski said, “the biggest thing we didn’t foresee was how big and how crowded our space was and how similar our process was to other people who did what we did.” At those moments when “all of the people in our space decided to get out at once,” he said, this “forced us to take actions that exacerbated our situation.”

According to Iwanowski, another problem with the GSAM process was that “it wasn’t dynamic enough.” While quantitative discipline keeps investors from “doing something impulsive,” there can be problems if “there is something going on in the market that is fundamentally different. GSAM responded by becoming more dynamic in its risk estimation process.

Iwanowski said that 2008 “shows us there are a lot of other broader modeling issues that we need to look at,” including developing better models of cash liquidity needs and counterparty credit risks. Iwanowski concluded his remarks by noting, “I think quant investing is a good thing; using quant methods is a good things, but post ’08, we did self-reflect a lot.”

Lakshmi Shyam-Sunder of the International Finance Corporation noted that the IFC has been attempting to use Economic Capital models to guide its decision-making in determining capital adequacy as well as capital allocation and limit setting. This approach “helps us become more rigorous,” she said.

The IFC has not moved fully to a pure economic capital approach in assessing its overall capital adequacy and developing its risk based limits, and she said “in some ways, we were lucky we didn’t move to a pure model risk; some simple common sense measures did us a good of good.”

The IFC, a part of the World Bank Group which makes equity investments in private sector companies, has a long term investment perspective she said. Capital adequacy is not only defined as the total amount of resources available to cover expected and unexpected losses, she noted: “We’re triple-A rated, so we need extra capital because in times of stress we don’t want to cut back, and we want to keep our triple a rating.”

Shyam-Sunder said the issues in establishing aggregate capital adequacy include determining the optimal level of buffer to maintain and determining how to relate that buffer

for stress events to the economic capital model. She said the IFC was attempting to determine whether capital adequacy and liquidity needed to be modeled separately or to be integrated. And she added that liquidity has become an increasingly important issue for the IFC and added that the institution was concerned about falling into the same trap as some commercial firms.

She went on to examine what she saw as the major issues in *ex ante* capital allocation. These included such issues as determining whether the buffer should be kept at the corporate level or factored into allocations. The IFC was also weighing whether stress capital should be related to business unit capital.

Shyam-Sunder noted that previous RAROC and capital levels may not be appropriate for expansion, adding that capital used varies dynamically “with other moving parts of portfolio.” The IFC has also had to grapple with the question of the extent to which it should allocate capital on the basis of economic sectors or on country exposures.

Other issues she listed included whether or not hurdle rates should vary by industry and how to deal with *ex ante* capital allocation versus *ex post* capital consumption. As the IFC seeks to make its Economic Capital models more robust, it has a wide range of issues to integrate into a consistent framework. In addition to the issues of model building, she said, there are also a range of important data issues.

Peter Christoffersen of McGill University discussed the opportunities to obtain market insights using options market data regarding volatility and skewness. He contrasted the information offered by the option markets to VAR and other “backward looking” metrics. He described research in which daily S&P 500 returns were standardized by using the VIX, the CBOE’s market volatility index, in daily units for the period from the beginning of 1990 through May 18, 2009. This research indicated that risk managers would be well advised to use the VIX or other dynamic volatility proxies to condition their risk models. The data looks non-normal, he said, but when conditioned by a volatility model, the data no longer seem very unusual because the volatility dynamics removes non-normality.

Christoffersen said that VIX sensitivity should be seen as a risk factor, and it should be incorporated into risk management models. He added that stocks with a high sensitivity to changes in the VIX had low average returns. This is not simply a size effect or a book-to-market effect, he argued. The CAP-M alpha and the Fama-French three-factor alpha are both negative for high VIX sensitivity firms, and vice versa. The upshot is that “VIX risk is rewarded” and “equity portfolio managers should incorporate VIX sensitivity when doing portfolio allocation,” Christoffersen said.

He went on to suggest that there was substantial information offered by the options market beyond the VIX. For example, he cited research showing that any payoff function could be replicated by a bond, the stock, and a portfolio of out-of-the-money options. The VIX is “just a special case of this,” he said, in which the payoff function is equal to the squared return.

He cited research by French, Groth, and Kolari discussing construction of a hybrid market beta using the historical return correlation between equity and the market and the option-implied volatilities from the equity and index options. Christoffersen warned that equity index options did not exist before 1983, so long term data is limited.

As an example of a situation in which information from the options market might be more useful than historical beta, Christoffersen cited the Pfizer/Warner Lambert merger.

While the historical beta was in negative territory, the option-implied data stays in “reasonable territory,” he noted

While Christoffersen focused on ways to move from option implied volatility and skewness to option implied market betas in the equities market, he noted that it was possible to “extrapolate to other markets.”

Dale Gray, a senior risk expert at the International Monetary Fund, explained the ways in which the IMF uses option prices to build contingent claims models for financial institutions. Dale, who was working at the IMF during the mid-1990s Asian crisis, said he and his IMF colleagues felt they were “blindsided -- we didn’t know where this crisis came from.” One reason for this, Dale argued, was that macro economists only look at the “income statements” of countries, but Dale advocated also examining the risk-adjusted “balance sheets” for countries. One of the building blocks in these balance sheets is contingent claims models, in which risky debt is a put option. He made reference to a 1977 paper by Robert Merton which showed how to model contingent liabilities.

Dale said that the commercial banks based in a country represent contingent liabilities for the home country government because the government is committed to supporting the banks. He called this a system with compound options, and in such a setting, “You can have a shock to borrowers, and it goes through the system and risk amplifies.” This was the case in Thailand, he noted, adding, “You don’t have to invoke black swans when you’ve got compound options.”

While the contingent claims models are typically focused on financial institutions, Dale said, “We’ve got a lot further and see a lot of funds using equity options to calculate higher moments.” Dale noted that if an observer looks at the skews from options associated with financial institutions, there was significant skew in 2002-03. Starting in 2003 when the Federal Reserve Board lowered interest rates, “there were 18 months of no left-hand skew in financial institutions options, and this could be an indicator for central bankers because no one is protecting themselves from equity risk in financial institutions,” he said. As a result, he went on, “this must be in a period of exuberance.” And indeed, in 2006, he said, “We suddenly see massive correlation and left-wing tails,” and there is a pickup in what he called “fire sale risk and counter party risk.” Dale noted that much of the work he was discussing is reported in the IMF’s recently published *Global Financial Stability Report*.

Dale said his latest work is focused on looking at contingent claims models of financial institutions and identifying guarantees affecting credit default swap spreads for these institutions. He said Freddie Mac and Fannie Mae provided “pretty dramatic examples” because the week before they were essentially placed in receivership, their securities were trading at a wide spread, but it narrowed as the market saw government assuming a significant share of their risks.

Dale emphasized that contingent claims analysis can be quite helpful in seeing “what risks governments are taking on their balance sheet,” and he added that this approach could be used “with a multi-variant dependent structure to get measure of government’s contingent liability exposure to the banks.” The information can be broken out a bank-by-bank basis, he said. Dale added that this approach provided “an alternative to the co-VAR type of approaches.”

He cited Martin Wolf’s comment that economic analysts need to do a better job of understanding the processes that unfold in financial markets. Monetary economists look at monetary policy while financial economists and regulators look at Basel II capital ratios “and

then only in the regulated banking system,” he said. But Dale warned that “economics defies compartmentalization.” It is important to take financial risk models -- especially the contingent claims models -- and link them to macro econ models in different ways. Some analysts “have even gone so far as to include some of these forward looking systemic risk measures in monetary policy models,” he noted, and this improves the functioning of these models.

During the question-and-answer period, Iwanowski was asked about more dynamic ways of examining counterparty risk, and he said that this category of risk “is the next big issue -- it hasn’t been resolved by the buy-side.” He noted that quantitative investors had been assessing counterparties in derivatives transactions “largely by how well collateralized they were.” He added that as GSAM grew, it was concerned about transparency issues because the firm didn’t want to show its hand with counterparties;

Kiefer was asked how to determine who qualified as an expert in his approach, and he said this kind of determination “is done in practice every day.” The proposed expert “has to show some basis for his opinion” that goes beyond basic education and experience, and the arguments justifying his or her beliefs must satisfy other experts, even if they don’t agree with the expert’s conclusions. Kiefer was also asked if he would advocate “rolling back Basel II,” and he said he thought its requirements “are completely unattainable.” But he said he didn’t detect any movement to back away from Basel II.

A member of the audience said, “It is impossible to think about systematic risk without thinking about liquidity and other issues.” Dale noted that in relating monetary policy and financial stability models to contingent claim balance sheets, it is possible to see that “there are multiple levers for trying to keep the system stable.” He asked, “Where are the macro risk mgrs attached to the Fed or Treasury or both? Who will look at all these sectors? To me that is the way we need to go forward.”

Another member of the audience noted that there continue to be business cycles “although people thought they would go away,” and he said, “the real central question is in old fashioned second order differential equations -- where is the turning point and do we believe in ability to forecast a turning point?” Dale said analysts “can do better by linking some of these kinds of data together” in order to achieve a macro financial approach, but he warned that it will remain difficult to forecast the future. Kiefer added that forecasting is difficult because each turning point is preceded by different events. And Christoffersen said that there are a number of models for forecasting volatility, and the best may use the VIX or other metrics, but when investors look at implied volatility in the options market, many models have a central limit that results in “normality happening too soon in the model.” He argued that there is more non-normality left; but there is not enough historical information put to use in these analyses. .

Iwanowski agreed that options markets can provide a great deal of information, but he warned that there are numerous trading effects in markets, “and if you ran book of business using that, you might find yourself trading too much.” He added, “There tends to be a bias in implied volatility; it is higher than real volatility.”

Another member of the audience noted that “we put a lot of weight on expert opinion, but research says they’re not much better than the public at forecasting complex events.” Kiefer said this gets to the question of what is an expert and that determination has to be done carefully; He agreed there are “pitfalls” in relying on expert opinion, but he argued this approach “is at least as good as data.”

Shyam-Sunder was asked about how she factors in business cycle issues, and she replied that ideally the IFC would like to use a five year time horizon, “but we didn’t feel we could do that, so we use two years.” She said capital ratios were also “a tricky question” for the IFC because “it is not really like a commercial bank.” She noted that about 45 percent of the IFC’s portfolio is comprised of equities, many of which are not actively traded.

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