JOINT RISK MANAGEMENT SECTION

Canadian Institute of Actuaries
Casualty Actuarial Society
Society of Actuaries

ISSUE 24 ■ MARCH 2012

Risk management

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Issue Number 24 • MARCH 2012`

Published by the Joint Risk Management Section Council of Canadian Institute of Actuaries, Casualty Actuarial Society and Society of Actuaries.

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JOINT RISK MANAGEMENT SECTION

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ARTICLES NEEDED FOR RISK MANAGEMENT

Your help and participation is needed and welcomed. All articles will include a byline to give you full credit for your effort. If you would like to submit an article, please contact Ross Bowen, editor, at *Ross.Bowen@allianzlife.com*.

The next issues of *Risk Management* will be published:

PUBLICATION DATES	SUBMISSION DEADLINES
August 2012	May 1, 2012
December 2012	September 3, 2012

PREFERRED FORMAT

In order to efficiently handle articles, please use the following format when submitting articles:

- Word document
- Article length 500-2,000 words
- Author photo (quality must be 300 DPI)
- Name, title, company, city, state and email
- One pull quote (sentence/fragment) for every 500 words
- Times New Roman, 10-point
- Original PowerPoint or Excel files for complex exhibits

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Letter from the Editors

By Ross Bowen and Pierre Tournier

WELCOME TO THIS ISSUE OF *RISK MANAGEMENT!*

In this issue our submissions will discuss a variety of topics, from drivers of the financial crisis to the risks actuaries face when working in a consulting position.

We are proud to republish the top three papers from the most recent call for papers, "Risk Management: Part Two–Systemic Risk, Financial Reform, and Moving Forward from the Financial Crisis," which were originally published in January 2011. These papers are:

- First Prize: "The Financial Crisis: Why Won't We use the F-(raud) Word?" By Louise Francis
- Second Prize: "Perfect Sunrise – A Warning Before the Perfect Storm" By Max Rudolph
- Third Prize: "Who Dares Oppose a Boom?" By David Markel

Louise Francis' winning paper, "The Financial Crisis: Why Won't We Use the F-(raud) Word?" is about the role of moral hazard in the financial crisis. Incentives, culture and regulation of market participants are tied to behavior that contributed to the financial crisis.

"Perfect Sunrise: A Warning Before the Perfect Storm" by Max Rudolph comments on the cyclicality of booms and busts over the last 100 years. This paper first frames the discussion from a behavioral perspective, and then poses possible solutions to reduce these systemic drivers.

David Merkel's paper, "Who Dares Oppose a Boom?" was also recognized in the call for papers. It discusses the cause of the recent boom and bust, and why such events are endemic to human nature. He presents his thoughts to regulators for creating an early warning system to detect potential asset bubbles.

"Credit Crisis Lesson for Modelers" by Parr Schoolman discusses the challenges and pitfalls of modeling complex systems on sparse data. Specifically, the paper looks at the sub prime bubble and how both insufficient data and model simplification led to modeling error.

"Five Factors That Courts Consider When Deciding Whether to Enforce Limitation of Liability Provisions in Professional Service Agreements" by Joshua Maggard reviews some of the legal risks professional service firms face. This paper provides examples of how service agreements can be structured to mitigate future litigation.

"Insurance Companies' Highly Controlled Use of Derivatives Has Also Resulted in Protection from the Rogue Trader Problem" by Ed Toy is a fascinating commentary on how sound regulation has reduced insurers' exposure to rogue trading, while others in the financial services industry have suffered humiliating and crippling losses due to employee malfeasance. This paper reviews past banking trading scandals and compares them to the environment present in insurance companies.

Enjoy this issue. ■

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How is Your Risk Appetite These Days?

By Stuart Wason

DEFINING OUR APPETITE FOR RISK IS A FUNDAMENTAL ELEMENT of risk management (ERM). Risk appetite defines the risks we are prepared to assume (or alternatively those we deliberatively choose not to assume) as well as the overall magnitude or size of those risks that we are prepared to manage. I am sure that events of the last few years have caused many a risk manager or insurer to question their previous ERM risk appetite statements.

Closely associated with risk appetite is the accompanying need for risk tolerances or limits to be applied for the risks assumed. One analogy that helps to make clear the difference between risk appetite and risk tolerance is highway driving speed. For example, a driver may make a conscious decision to travel at speeds that exceed the speed limit (i.e., their risk appetite) however, to avoid undue risk to others on the road or speeding tickets, the driver limits their excess over the speed limit to 10 or 20 kilometers (for those metric users!) per hour (i.e., their risk tolerance).

Stuart F. Wason, FSA, CERA, FCIA, MAAA, HONFIA, is senior director at the Office of the Superintendent of Financial Institutions Canada in Toronto, ON. He can be reached *stuart.wason@osfi-bsif.gc.ca.*

As fundamental elements of ERM, the determination of risk appetite and risk tolerances properly require board level approval. Consequently, we might hope that once put in place, the appetite and tolerances would stand the test of time and require infrequent adjustment. However, the last few years have provided us with several examples of game changing circumstances requiring senior risk officers, CEO's and even boards to pay closer attention to their risk appetites and consider significant changes to their company's business models as a result. These companies found themselves in increasingly difficult positions as they accumulated risk positions unexpected by their existing (but now out of date) risk appetites and tolerances.

Examples of risks which have caused property and casualty insurers to reconsider their business models and their risk appetites include terrorism, climate change and asbestos. Consider the risk of water damage to homes and businesses (whether by rain, storm, flooding, wind or sewer back-up, etc.) for a moment. Our planet and the communities we serve are increasingly more densely populated with structures being built on increasingly challenging terrain (hillsides, flood prone land, etc.). When combined with increasingly volatile and changing weather patterns yet continuing high customer expectations for loss coverage, there is a need for property and casualty insurers to regularly review their risk appetites.

For life insurers, the examples may be different but the importance of properly defining risk appetite remains the same. The inexorable shift in customer base brought about by demographic trends (e.g., baby boom, Generation X, etc.) has shaped the products sold by insurers over the decades. Recent decades have witnessed the increasing sale of wealth management products including increasingly complex versions of variable annuity products (at least in North America). These very popular products have also exposed writers of these products to non-diversifiable market risk, sometimes in considerable amounts. These products mark a change from "traditional" life insurance products commonly considered to constitute diversifiable risks (at least with respect to mortality). However, as we experience continued market turbulence, increasing asset default risk on many fronts and a long continuing period of very low interest rates, the blocks of in-force traditional insurance face significant economic challenges. Several life insurers and their boards have had to react quickly in recent years to these significant changes in their risk exposures. These challenges will likely result in significant alterations by life insurers in their strategy, definition of their risk appetite (/ risk tolerance) and in their business models going forward.

It is important to remember that risk mitigation via such mechanisms as reinsurance or hedging (just two examples) is an important tool in risk management but it is not a substitute for proper definition of the risk appetite. Risk mitigation tends to transform risk exposure from one type to another, not eliminate risk completely. For example, reinsurance tends to transform types of insurance risk into counterparty risk with the reinsurer.

In summary, while we might think that risk appetite should be fixed, it requires careful periodic review, due to changing insurer but also broader industry, economic, climatic, demographic, etc. trends.

How is your risk appetite these days? Do you have an ERM blind spot? ■

The Financial Crisis: Why Won't We Use the F-(raud) Word?

By Louise Francis

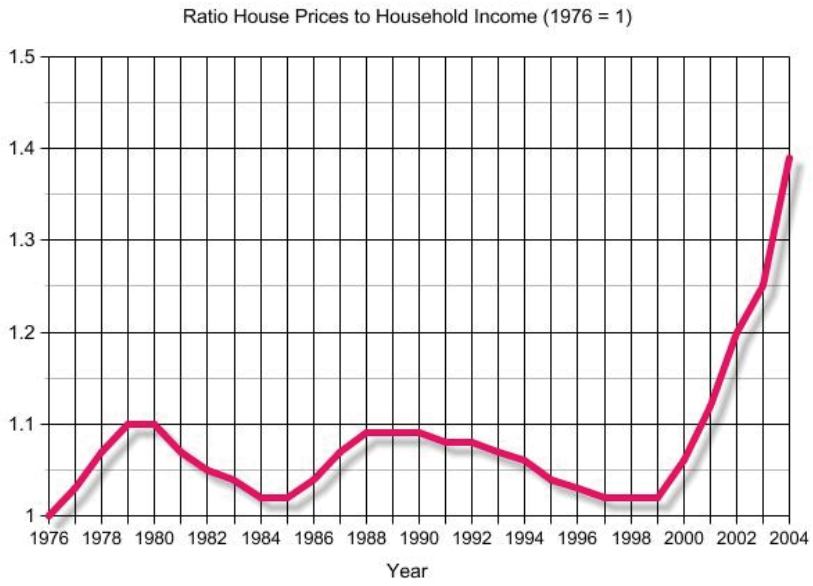
Editor's Note: *This essay originally appeared in the "Systemic Risk, Financial Reform, and Moving Forward from the Financial Crisis" essay e-book in January 2011.*

IN THE LATE 1980S AND EARLY 1990S many parts of the United States experienced a housing bubble followed by a bust. The history of the bubble as manifested in southern California is cataloged in "History of a Housing Bubble,"[1] where newspaper headlines change from "Housing Sales Boom Keeps Inventories Slim" in 1986 to "County's New Home Sales Plunge 42 Percent in Quarter" in 1991. In the mid 2000s another housing bubble occurred in many parts of the United States and the bursting of that bubble, beginning approximately in 2007, precipitated a global financial crisis (GFC).

The Joint Risk Management Section[2] (JRMS) also sponsored a research project "The Financial Crisis and Lessons Learned for Insurers."[3] The project placed primary blame on the key assumption utilized both by modelers and the banks when they assessed and priced the massive risk that caused the crisis. That assumption was that housing prices never go down. "This optimistic belief was shared by policymakers, economists, and market participants in general, permeated the models used by rating agencies to assign inflated ratings to securities built from subprime mortgages, and was reinforced, for a time, in market prices through a self-fulfilling prophecy."[4] What is most stunning about this assumption is that it refutes the actual lived experience of many people, i.e., the housing bubble and bust in the late '80s and early '90s. In addition, publically available statistics could readily have been used to carefully assess the critical assumptions about housing prices. An example displaying housing prices relative to median household income is shown in Chart 1.

Lewis[6] makes clear that some investment professionals were stunned at the impropriety of the assumption and believed that at least some of the principals involved knew or suspected that a bubble was underway and that mortgage-related assets were overpriced. The widespread use of inappropriate assumptions invites an examination of the behavior of individual actors in the GFC. Numerous authors have implicated incentive compensation and moral hazard as playing a key role in the GFC. For instance the publication *Risk Management: Current Financial Crisis, Lessons Learned and Future Implications* sponsored by the JRMS presented the views of 35 authors about the roots of the GFC. Some of the causes cited by authors included:

Chart 1: Ratio of House Price to Household Income[5]



- moral hazard resulting from transferring risk to others, through securitization, leading to a complete failure to underwrite and manage the risks
- compensation incentives that encouraged taking on imprudent risk exposures
- systemic failure of regulatory system
- lack of confidence resulting from accounting opacity and gimmickry
- a bubble of historic proportions that could have been predicted from information available to bank managers and regulators at the time
- inappropriate use of models without consideration of their limitations and without scrutinizing their assumptions for reasonableness

The items on this list are suggestive of significant lapses in good management (accompanied by accommodative lapses in good regulation), if not outright fraud. Compared to past financial debacles, such as the S&L crisis and the Enron bankruptcy, the role of fraud in the GFC seems not to have received much

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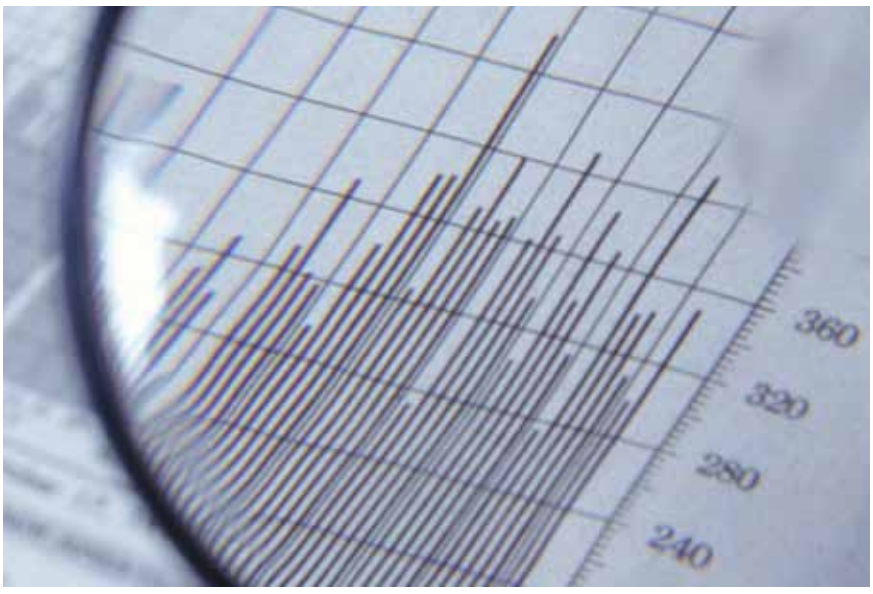
CONTINUED ON **PAGE 6**

The Financial Crisis: Why Won't We Use the F-(raud) Word? | from Page 5

scrutiny. Even in Senate hearings that were highly critical of some of the large investment firms' behavior, there seems to have been an unwillingness to use the F-(raud) word[7].

A former regulator (during the S&L crisis) William Black[8] has been very outspoken about the role of fraud in the GFC. A brief list of some of the evidence of fraud is:

- The regulator of Long Beach (a WaMu subsidiary) found it to be one of the 13 worst institutions in 1997 through 2003[9]. In 2003, the company had so much trouble that WaMu temporarily stopped securitizations from it. However, operations were soon resumed, and Long Beach was to cost WaMu many billions of dollars in losses.
- Lewis documented that the rating agencies performed a minimal analysis of the mortgage securities underlying the pools they rated and refused to develop detailed databases that could have been used for a rigorous evaluation of mortgage loan portfolios.
- Levin and Black[10] cite a memo of S&P management to their employees demanding that they not request loan level data from the companies. Black accuses the rating agencies, as well as the managements of companies that securitized the loans of having a "don't ask, don't tell" policy that limited their exposure to negative data and information that would contradict the high-quality ratings that were assigned.
- Lewis describes how the investment banks devised strategies to convince the credit rating agencies to assign A or better ratings to subprime pools that did not merit the high ratings. These securities could then be packaged and sold to pension funds and ordinary investors as high-quality fixed investment products.
- Black (2010) refers to certain kinds of mortgages, such as those dubbed by the industry as "liar loans," as negative expected value products. That is, the product is structured so as to create adverse selection that guarantees a loss.
- The investigative journalism organization ProPublica[11] published a report describing how a hedge fund named Magnitar colluded with brokers and investment banks to select some of the most toxic securities to be included in Collateralized Debt Obligations that they then bet against using credit default swaps (CDSs). Their investigation indicated that the Magnitar deals helped to keep the bubble going for an extra two years.



Many Americans have been angered at the extravagant compensation reaped by the managements of the firms that caused the crisis. Prins[12] reported that the CEOs of three firms that experienced subprime related problems, Countrywide, Merrill Lynch and Citigroup, earned a total of $460 million between 2002 and 2006.

A key environmental condition necessary for financial fraud to become widespread is toleration on the part of legislators and regulators. Markopolis[13] observed that a revolving door exists between the SEC and Wall Street, with inexperienced employees expecting to spend a few years as regulators followed by a move to much more lucrative jobs on Wall Street with the firms they were regulating. Black notes that for the past couple of decades federal regulators have been hostile to enforcement of anti-fraud regulations. He notes that the regulators believe that fraud regulation is unnecessary as the market will ultimately correct such abuses, despite abundant evidence from such debacles as the S&L crisis, Enron and other early 2000s frauds, as well a the

recent Madoff Ponzi scheme, that refutes this belief. The anti-regulatory ideology is responsible for some of the legislation that fostered the GFC, such as the elimination of Glass-Stiegel and the passage of the Commodities Futures Modernization Act (that prohibited regulating derivatives such as CDSs).

William Black is one of only a very few academics in calling for routine monitoring for fraud and suggests that the SEC needs a "chief criminologist." He points out the SEC is a law enforcement agency, but it is predominantly staffed with lawyers and economists with little expertise in fraud. It therefore needs staff with the experience, expertise and desire to pursue fraud (which will require eliminating the revolving door). He believes that the task of detecting fraud is relatively simple, as "red flag" indicators of fraud are well known and the information required is relatively easy to gather and review.

The Financial Reform bill of 2010 creates new systemic risk regulation. The systemic risk regulator is empowered to collect data, recommend new regulations and intervene when a company is considered to pose a risk. However, much of the new regulatory authority is invested with the Federal Reserve, an organization that some believe enabled the GFC and repeatedly refused to intervene. As Black pointed out, the Fed has the power to intervene in the subprime crisis but chose not to. It knew of deceptive accounting manipulations perpetrated by Lehman[14], but chose not to make them change their published financials. Its previous chair Alan Greenspan bluntly told another regulator, Brooksly Bourne[15], that he does not believe in pursuing and prosecuting fraud. Such a fraud friendly environment is bound to enable and even promote fraud. Thus, the author feels that the recently passed financial reforms may be ineffective in addressing a key factor in the GFC: fraud.

Regulators must search for and prosecute fraud. Increasing the emphasis on enforcement and on detecting fraud before it creates a system-wide crisis can be accomplished without any new legislation, though legislative changes in the late 1990s and early 2000s appear to have removed some barriers to fraud. The author of this essay suggests that if fraud is not addressed, future crises, perhaps even worse ones, will occur. ■

END NOTES:

[1] *http://rntl.net/history_of_a_housing_bubble.htm*
[2] a collaboration of the Society of Actuaries, Casualty Actuarial Society and Canadian Institute of Actuaries
[3] Klein R., Ma G., Ulm E., Wei X. and Zanjani G., "The Financial Crisis, Lessons Learned for Insurers", 2009, *http://www.soa.org/research/research-projects/finance-investment/research-fin-crisis.aspx*
[4] ibid., Klein et al, 2009, Executive Summary
[5] Graph from *http://photos1.blogger.com/photoInclude/img/243/2888/640/Ratio.jpg*
[6] Lewis, Michael, *The Big Short*, 2010.
[7] Levin, Statement to Senate Permanent Committee on Investigations, April, 2010
[8] Black is author of the book *The Best Way to Rob a Bank is to Own One*, that describes his experience with fraud during the S&L crisis, and lessons that should have been learned from it
[9] Levin, 2010
[10] Black, William, interview by Bill Moyers, Bill Moyers Journal, April 23, 2010, Black William, "Epidemics of Control Frauds Lead to Intensifying Financial Crises", 2010, *www.ssrn.com*
[11] Eisenger and Berstein, "The Magnitar Trade: How One Hedge Fund Keptthe Bubble Going", *www.propublica.org*, April, 2010.
[12] Prins, N, It Takes a Pillage, 2009.
[13] Markopolis, H. *No One Would Listen*, 2010.
[14] Valukas, Anton, "Report of the Anton R Velukas, Examiner", United States Bankruptcy Court, March, 2010
[15] Zacchino, N and Scheer, R, "The Woman Who Blew the Whistle on Wall Street", Ms Magazine Fall 2009

Who Dares Oppose a Boom

By David Merkel

Editor's Note: *This essay originally appeared in the "Systemic Risk, Financial Reform, and Moving Forward from the Financial Crisis" essay e-book in January 2011.*

AT THE VERY HEART OF FINANCIAL REGULATORY REFORM, an error was made at the very beginning. As is common in American culture, the assumption was made that our laws and regulations were inadequate, rather than existing laws and regulations were inadequately enforced. As such, the law that was eventually passed largely strengthened the strictures against the crimes that happened.

But, the same regulators were left in place. Almost no one was fired for the incompetence demonstrated in not using the regulations that already existed for preventing shoddy loan underwriting. The SEC had the right to set capital ratios at 12 to 1, but waived that right and allowed the investment banks to be unlimited in their leverage. The GSEs took far too much credit risk, but who, if anyone, was fired for allowing them to do so? Or, who was fired for doing so?

The trouble is this: during boom times, it is virtually impossible to get regulators to oppose politicians who are being lobbied by financial services organizations when they are making gobs of money, and it all seems riskless, as the bubble expands. This is endemic to human nature; it is politically impossible to oppose booms. I for one wrote extensively about the coming housing bust, but all I received was derision. I wrote about the blowup coming in subprime residential mortgage bonds, but all I got was a yawn.

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So, unless we get a new set of regulators that are willing to be junkyard dogs, I don't care what laws we put in place. Laws are only as good as those that are willing to enforce them.

PROBLEMS WITH THE FINANCIAL REGULATORY REFORM BILL

Aside from a lack of change in the regulatory apparatus and personnel, my biggest difficulty with financial regulatory reform bill was a lack of change dealing with risk-based liquidity. We don't get runs on banks because of the insurance from the FDIC. But banks often find themselves facing a run if they use a lot of repo funding. Funding long-term assets short term is a recipe for disaster. The bill made no effective change with respect to this.

And though there will be higher levels of capital required of banks, which is good, there was not enough thought given to the riskiness of assets and how much capital they require. Basel III basically kept the same structure as Basel II, but did not make significant corrections to the differences in risk regarding assets. Further, they still allow companies to evaluate their own risks, rather than having a conservative and standardized approach for evaluating risk.

And to the degree that Americans believe that the financial regulatory reform bill will it prove the situation, it has given them a false sense of security. And that could be the worst problem of all.

CREATING AN EARLY WARNING SYSTEM

There is great demand for an early warning system that could highlight whether systemic risk is getting too high for the financial economy overall, or whether risk is getting too high for any given subclass of financial risks in the economy. I am happy to say that creating an early warning system would be easy. Consider the differences between fresh produce and financial assets:

- **Time horizon**—fresh produce is perishable, whereas most risky assets are long-dated, or in the case of equities, have indefinite lives.
- **Ease of creation**—new securities can be created easily, but farming takes time and effort.
- **Excess supply vs. excess demand**—with a bumper crop, there is excess supply, and the supply is typically high quality. Now to induce buyers to buy more than they usually do, the price must be low. With financial assets, demand drives the process. Collateralized debt obligations were profitable to create, and that led to a bid for risky debt instruments. The same was true for many structured products. The demand for yield, disregarding safety, created a lot of risky debt and derivatives.

- **Low supply vs. low demand**—with a bad crop, there is inadequate supply, and the supply is typically low quality. Prices are high because of scarcity. With financial assets, low demand makes the process freeze. What few deals are getting done are probably good ones. Same for commercial and residential mortgage lending. Only the best deals are getting done.

Fresh produce is what it is, a perishable commodity, where quantity and quality are positively correlated, and pricing is negatively correlated. Financial assets don't perish rapidly, quantity and quality are negatively correlated, and pricing is often positively correlated to the quantity of assets issued, since the demand for assets varies more than the supply. Whereas, with fresh produce, the supply varies more than the demand.

When I was a corporate bond manager, one of the first things that I learned was that when issuance is heavy, typically future performance will be bad. Whenever there is high growth in debt in any sector of the economy, it is usually a sign that a mania is going on. But it is very hard for a corporate bond manager who is benchmarked to an index to underweight the hot sector.

It is also very hard for a loan underwriter at a bank to stay conservative when he is being pushed for volume growth from his superiors, and most of his competitors are being liberal as anything. It is hard for anyone in the financial services arena to not follow the prevailing tendency to lower credit standards during a boom.

So if I were to give advice to the new office studying systemic risk, I would give this one very simple bit of advice: look for the sector where debt is growing faster than what is ordinary. It's that simple.

If they want to get a little more complex, I would tell them this: when a boom begins, typically the assets in question are fairly valued, and are reasonably financed. There is also positive cash flow from buying the asset and financing it ordinarily. But as the boom progresses, it becomes harder to get positive cash flow from buying the asset and financing it, because the asset price has risen. At this point, a

compromise is made. The buyer of the asset will use more debt and less equity, and/or, he will shorten the terms of the lending, buying a long-term asset, but financing it short-term.

Near the end of the boom, there is no positive short-term cash flow to be found, and the continuing rise in asset prices has momentum. Some economic players become willing to buy the asset in question at prices so high that they suffer negative cash flow. They must feed the asset in order to hold it.

It is at that point that bubbles typically pop, because the resources necessary to finance the bubble exceed the cash flows that the assets can generate. And so I would say to the new office studying systemic risk that they should look for situations where people are relying on capital gains in order to make money. Anytime an arbitrage goes negative, it is a red flag.

The new financial regulatory reform bill did create an office for analyzing systemic risk, and created a council that supposedly will manage it. Would it be smart to concentrate the efforts into one leader who will both analyze and control systemic risk?

CONTINUED ON **PAGE 10**

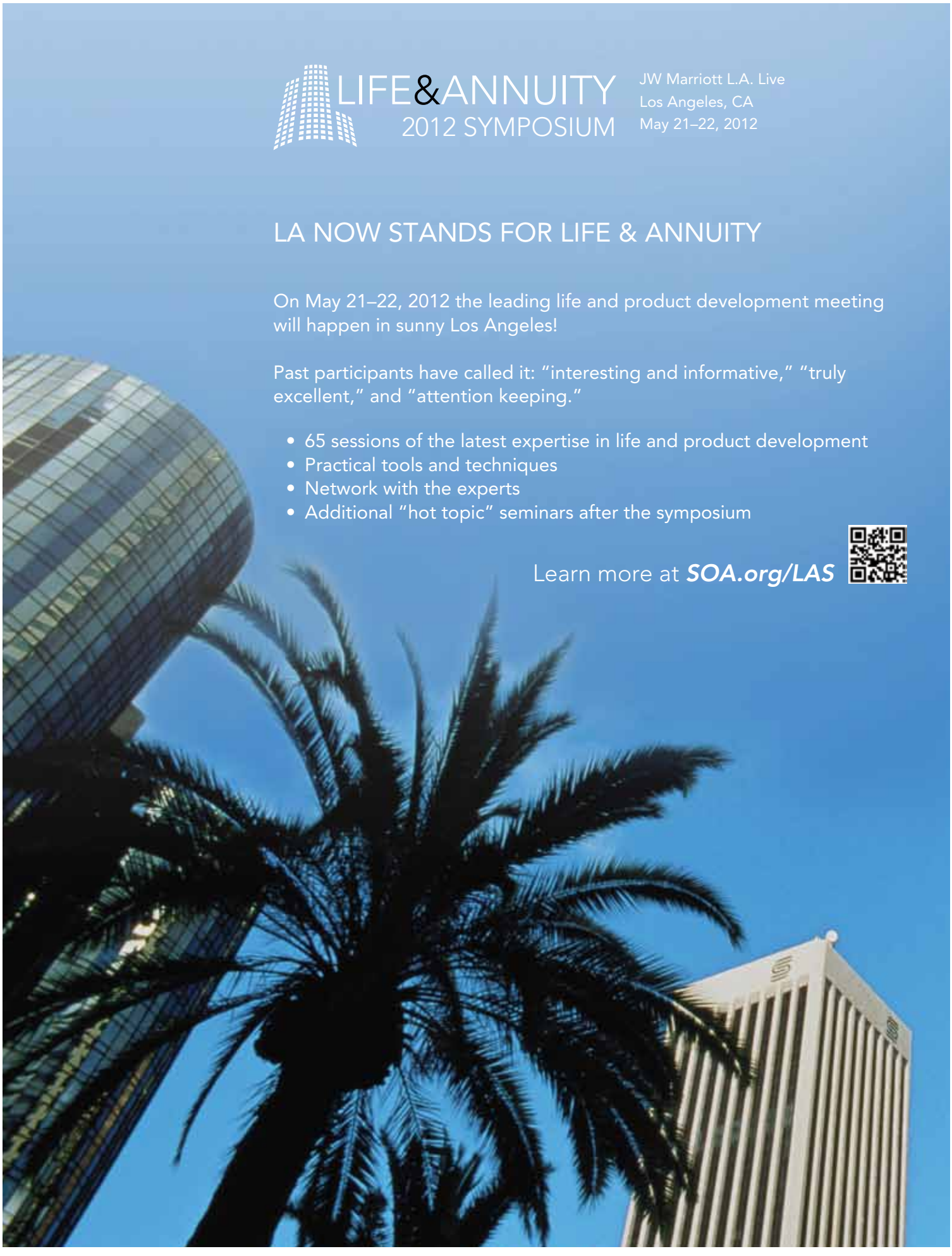
Who Dares Oppose a Boom | from Page 9

For better or worse, Americans tend to look for one strong leader who will lead them out of their problems. Anyone who might be chief risk officer of the United States, would have to have control over the Federal Reserve, which creates most of the systemic risk that we have through its monetary policy, and its lack of leadership in overseeing the banks. I don't think it's politically possible to put a risk manager in charge of the Fed, though it might be desirable to do so. The Federal Reserve always gets what it wants.

SUMMARY

I don't have a lot of hope that the current financial regulatory reform bill will improve matters much. The same regulators are in place, who did not use the laws that they had available to them to prevent the last crisis. Systemic risk can be prevented if regulators focus on areas where debt is growing dramatically, and where cash flow from buying and borrowing is diminishing dramatically. But it is intensely difficult to stand in the way of a boom, and tell everyone "Stop!" The politics just don't favor it.

Finally, it would be difficult to create a chief risk officer of the United States. The current politics do not favor creating such a strong office, because it would have to control the Federal Reserve. ■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Credit Crisis Lessons for Modelers

By Parr Schoolman

Editors Note: *This essay originally appeared in the "Risk Management : The Current Financial Crisis, Lessons learned and Future Implications" essay e-book in December 2008.*

DOES THE CREDIT CRISIS MEAN THE HERALDED AGE OF THE Quant has passed? Much of the blame for the current credit crisis is being laid at the feet of the analysts responsible for modeling and evaluating the innovative debt securities driving the massive losses for financial institutions. How was the modeling of these securities so wrong?

Parr Schoolman FCAS, is vice president at Aon Benefield Analystics. He can be reached at *parr.schoolman@aon.com.*

An article recently published by four Federal Reserve economists, "Making Sense of the Subprime Crisis,"[1] provides some insight into what information was available for analysts during 2005 and 2006, the time period of loan origination associated with the most toxic segment of the subprime securities. The falsely optimistic pitch to investors could have been based upon the following points:

1. **The subprime market fundamentals were considered to be strong.** Lending in this market had evolved toward subsidiaries of large, reputable financial services companies, replacing the small, thinly capitalized lenders of the 1990s. Lenders were increasing the use of quantitative models based on credit scores for loan underwriting, which were demonstrating an improvement in average FICO scores for subprime borrowers. Furthermore, the historical performance of subprime mortgage securities had shown them to have more stable credit ratings than similarly rated corporate bonds. With increased use of automated underwriting, improved credit score transparency and more reputable lenders, the performance of subprime securities was expected to remain strong.

2. **Subprime securities were expected to have less interest rate risk than prime mortgage securities**. Prime mortgage borrowers had demonstrated a tendency to refinance their loan and pay off their existing loan when interest rates decreased. This correlation to interest rate changes was problematic for investors because it increased the interest rate risk for these securities. Subprime loans demonstrated a more stable prepayment rate, as their refinancing tended to be less correlated with market interest rates, and more correlated with individual borrower financial difficulty. This source of prepayment was diversifiable for a large pool of independent borrowers. Furthermore, as much as 80 percent of subprime mortgages contained prepayment penalties,[2] further reducing the likelihood of the mortgages to be refinanced if interest rates decreased. These features reduced the perceived interest rate risk of subprime securities, making them arguably a safer investment than a prime mortgage security with the same credit rating.

3. **The strong housing market was expected to minimize the downside risk of subprime loans.** The data typically used to evaluate these securities went back to 1998. Data prior to 1998 was not thought to be as relevant due to the changes in the industry regarding loan originators and the more automated underwriting process. Unfortunately, that time period did not contain a recession, nor did it contain a period of sustained home price declines. A Citigroup December 2005 report is quoted as stating:

   > "the risk of national decline in home prices appears remote. The annual HPA has never been negative in the United States going back to 1992."

   Home price appreciation (aka HPA) all the way back to 1992 has not been negative. What could possibly go wrong?

The basics of this story look very familiar to what occurred in the P&C insurance industry during the depths of the soft market of the late 1990s. Underwriters and brokers were making assertions that the re-underwriting of books would mean that future results would be better than historical loss experience indicated. Changes in claim handling were also expected to reduce the future development that standard actuarial loss triangle methods were predicting. Management teams were proclaiming that the diversifying of their portfolios into new lines of business would reduce the risk of loss as well. Wall Street errors of the current crisis echo these soft market mistakes of the P&C industry. Both Wall Street and the insurance industry have demonstrated

"Complex models can provide a false sense of security, hiding the evidence that the entire range of indications may hinge on one or two key assumptions."

a propensity for underestimating risk, although the bankers seemed to have discovered a way to receive an extra zero or two at the end of their paychecks while doing so. Going forward, what can those who attempt to quantify risk for a living learn from these missteps? First, recognize that the accuracy of a model is limited to the accuracy of the input assumptions. Complex models can provide a false sense of security, hiding the evidence that the entire range of indications may hinge on one or two key assumptions. Use data-driven assumptions, making sure the time series includes stressed environments when possible. If a model of underwriting risk indicates that the probability of accident year combined ratios experienced from 1998 to 2000 is remote, it is not a realistic model.

Second, stress test key assumptions. In most insurance risk modeling exercises, the correlation assumptions between lines of business and between other risk elements drives the tail of the results. These correlation assumptions should be transparent, while the model needs to be able to stress test the impact of increased correlation between risk elements. Each new market crisis demonstrates that correlation in stressed environments is much higher than historical averages would indicate.

Finally, understand the limits of the data being used and acknowledge the resulting uncertainty. A model built on five to 10 years of data provides limited information about a 100-year PML. Many analysts of subprime securities recognized that using data since 1998 was less than ideal and not fully representative of all possible scenarios. Extrapolating beyond the historical data, they made reasonable estimates of the potential losses to securities backed by subprime loans if home prices were to decrease. However, their biggest mistake was to underestimate the probability of U.S. housing prices dropping nearly 20 percent from 2006 to 2008 in the largest metro areas. This error demonstrates that the quantification of remote probabilities is more difficult than the quantification of possibilities.

To further illustrate this point, Nassim Taleb presents the clever story of a turkey being raised on a farm in his book The Black Swan. Every day of its life, when a turkey sees the farmer, it gets fed. Based upon that experience, when the turkey sees the farmer coming out of the farmhouse the day before Thanksgiving, it sees no reason to be concerned. This very big error in judgment regarding the risk posed by the farmer is driven by the fact that the turkey's prior experience period did not include a Thanksgiving.

To make sure the end users of model projections do not make the same errors in judgment as the turkey, modelers should maintain the humility to document the limits of the data underlying their model, providing transparent summaries of the key assumptions and their impact to the uncertainty of the estimates. Don't mistake modeled probabilities for real world results.

What Thanksgiving is your model potentially missing? What are you doing to address it? ■

END NOTES:

[1] K. Gerardi, A. Lehnert, S. Sherlund and P. Willen, "Making Sense of the Subprime Crisis," Sept. 5, 2008.
[2] G. Gorton, "The Panic of 2007," Aug. 4, 2008.

Five Factors That Courts Consider When Deciding Whether to Enforce Limitation of Liability Provisions in Professional Service Agreements

By Joshua D. Maggard, Esq.

THE SCENARIO: Your professional services firm has just been sued by its (formerly) good client, alleging $500 million for your (alleged) negligence, malpractice, and breach of contract. Your firm's standard professional services agreement contains a provision limiting liability to $50,000. You breathe a sigh of relief and rush to report that the $500 million crisis has been averted, right?

THE ANSWER: Well…maybe. The good news is that most courts in most states will enforce these provisions under the theory of freedom to contract.[1] The bad news is that most courts are skeptical of these provisions and will invalidate anything they decide is "unconscionable."[2] Your chosen profession may also be a problem, as courts may be reluctant to permit professional services firms to limit their liability to clients.[3] Nor is it any exaggeration to say that the stakes are potentially staggering. In 2011, one actuarial firm was held liable for $73 million in damages for "lost" pension contributions and investment earnings, in a suit brought by its client of twenty-two years.[4] The firm did not have any limitation of liability provision in its contract, severely undercutting the argument that the parties never contemplated such exposure for its professional services.

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Limitations of liability provisions are consequently important, but are obviously only helpful to the extent they are enforceable. Fortunately, courts generally consider the same five factors when deciding whether to uphold the provision, and firms should carefully review and implement these factors into their limitation of liability provisions *before* the $500 million suit is brought.

THE FIVE FACTORS

(1) THE AMOUNT: Is the Liability Limit Unreasonably Low?

The first factor is driven by the bottom line—is the limitation amount reasonable or is it unconscionably low? Unsurprisingly, this determination varies wildly based on the jurisdiction and the judge; while some courts have enforced low limitations even in the face of high asserted damages, finding that this result is *precisely* what the parties contemplated,[5] other courts have invalidated provisions on the grounds that the amount is unconscionably low.[6] Although not always clearly articulated, the policy rationale is that low liability amounts "remove the incentive to perform with due care."[7]

The key to getting the provision enforced is convincing the court that the limitation is not unreasonably low. One effective strategy for accomplishing this is demonstrating that anything over the limitation of liability would be unreasonably *high*. Courts frequently look to the amount of the fees as a proxy for the amount of risk assumed by the contracting party, and explicitly tying the limitation of liability to the fees that the parties agreed were reasonable for the services is an effective approach.[8] This can be done by setting a limit of some multiple of the actual fees received and also including language in the contract that these fees "do not contemplate the Firm becoming involved in legal proceedings that would expose the Firm to open-ended liability." The parties can also make clear in the contract itself that the compensation for professional services reflects the allocation of risk agreed to by the parties, which courts have found to be a compelling reason for enforcing a limitation of liability tied to those fees. This first factor is a crucial one, and significant time should be spent to ensure that a court will not invalidate the parties' agreement to cap liability at an amount that is too low.

(2) THE PLACEMENT: Is the Provision Conspicuous, Concise, and Clear?

Another major factor that courts consider is whether the provision is conspicuous and understandable, or whether it is instead buried in the contract, either by physical placement or extensive legalese. The rationale behind this factor is confirming that *both* parties were aware of and in agreement with the limitation provision, and courts generally consider this question using a "reasonable person" standard.[9] If a reasonable person would not notice the provision or understand its significance when reading through the contract, there is a significant chance that a court will invalidate it.

To make sure the provision is conspicuous, firms should place the limitation of liability in a separately-numbered provision, under a bold heading entitled "**Limitation of**

Liability." The provision should be short and clear, and may be further emphasized by using different fonts, font sizes, or color. Interestingly, however, the use of all capital letters has been found to actually reduce emphasis, presumably for the same reason we tune out people yelling on talk radio stations. This second factor is also very important, because courts may strike down an otherwise-reasonable limitation amount if the provision containing it is inconspicuous or unclear.

(3) THE FORMATION: Did the Parties Negotiate the Provision?

Under the third factor, courts review the particulars of how the parties reached agreement concerning the provision. While the second factor considers whether a "reasonable person" would consider the provision conspicuous, courts may still strike down a provision where there is evidence the provision was not the product of good faith negotiation between both parties. This concern is particularly compelling where the provision is included in a contract of adhesion, or where contract is found to involve public interests or services.[10]

As a result, firms must take steps to demonstrate that the provision was willingly and knowingly entered by both parties. The primary strategy is to draw specific attention to the provision within the contract itself, which can be done in a number of ways, including: having both parties initial next to the provision, referencing the provision in correspondence sent to the client, referencing and incorporating the provision in connection with fee negotiations, and placing a statement immediately above the signature block that "this contract contains a limitation of liability provision which has been read and consented to by both parties." In fact, firms should consider doing *all* of these steps, and retain any drafts and modifications of the provision negotiated between the parties. As the primary concern under this third factor is whether both parties understood and consented to the limitation, the more opportunities that the firm has to establish these facts, the likelier it is that the provision will be enforced.

(4) THE CONTENT: What Liability is Limited?

Even if the first three factors are satisfied and the provision would be generally enforceable in most situations, a court may still decide that the provision does not apply to the particular case before it. Several courts have closely parsed language and refused to enforce a provision that did not specify it applied, for example, to *both* tort and contract actions.[11]

As a result, the provision should clearly state that the limitation of liability applies to any legal or equitable claim brought by the plaintiff, whether brought under tort, contract, malpractice, fiduciary duty, statutory, or under any other legal theory. Firms can also include language specifying that regardless of the legal theory pursued, neither party is liable for loss of profit, consequential, punitive or similar damages, and that multiple claims arising out of the same services shall be considered as a single loss for limitation purposes. Finally, many states prohibit limitations of liability for certain types of conduct, including gross negligence or willful and wanton conduct, and firms should review their ability to enter into agreements regarding this type of conduct in each jurisdiction.[12] The fourth factor considers whether an otherwise-valid provision applies under specific circumstances and to specific parties; it would obviously be cold comfort to realize that an invalidated provision would apply in 99 percent of situations.

(5) THE SCOPE: Whom Does the Provision Cover?

Finally, an otherwise air-tight provision may still be invalidated if it is not clear that the respective parties

CONTINUED ON **PAGE 16**

Five Factors That Courts Consider … | from Page 15

are covered by the limitation provision. As a result, both parties should decide *whom* will be covered by the provision: only the firm, its officers and directors, all employees, or some subset. Courts have carefully parsed these agreements and have sometimes excluded certain types of employees from the agreement—or even all *non-signatories* entirely.13 In cases where the provision is construed to only benefit the firm, plaintiffs may be able to sue the professional directly to circumvent the limitation of liability.14 Firms should address this issue by specifically defining all entities that are covered under the provision, whether or not they are actual signatories to the contract. If it appears likely that personal liability could be an issue, parties may also include an agreement not to personally name employees, directors and officers in any future lawsuit. This fifth factor confirms that all parties to the litigation were intended to be covered by the limitation provision.

CONCLUSION

So, will your firm be able to rely on its limitation of liability provision and avoid the potential $500 million judgment? While the most important, and least-controllable, factor is the proclivities of the individual judge who will control your case, there is a much better chance of enforcing a provision that is the product of careful consideration and implementation of the above five factors. Parties should confirm that existing provisions (1) set a reasonable limit, (2) are conspicuously placed in the contract, (3) are the product of documented negotiation, (4) clearly set out the liability to which they apply, and (5) cover everyone the parties intend to be covered. You may never be able to entirely escape liability in litigation, but with careful drafting, and the right judge, you should be able to limit it. ■

END NOTES:

1 The vast majority of states have upheld these provisions, albeit with varying levels of confidence. A handful of states, including Florida, Georgia, Nevada, New Jersey, and Tennessee, have cast doubts on the enforceability of limitations of liability provisions, at least in certain contexts. There is also a key distinction between provisions that entirely *eliminate* liability and those that merely *limit* liability. Unfortunately, many courts do not properly distinguish between these two types of provisions, and this article consequently focuses on the general factors courts may consider when faced with either provision. Careful review of the governing law in each jurisdiction is obviously necessary before entering into any contract.

2 *See, e.g., Lucier v. Williams,* 366 N.J. Super. 485 (App. Div. 2004) (noting "courts have not hesitated to strike limited liability clauses that are unconscionable or in violation of public policy"); *Kugler v. Romain,* 58 N.J. 522, 543 (1971) (unconscionability is an "amorphous concept obviously designed to establish a broad business ethic").

3 *See, e.g., Moransais v. Heathman,* 744 So.2d 973 (Fla. 1999) (noting it was "questionable" whether a professional "could legally or ethically limit a client's remedies by contract in the same way that a manufacturer could do with a purchaser in a purely commercial setting"); *Porubiansky v. Emory University,* 275 S.E.2d 163 (Ga. App. 1980) (a "professional person should not be permitted to retreat behind the protective shield of an exculpatory clause and insist that he or she is not then answerable for his or her own negligence"); Lucier, 366 N.J. Super. at 496 (provisions "are particularly disfavored with professional service contracts").

4 *See Milliman, Inc. v. Maryland State Retirement and Pension System,* 25 A.3d 988 (Md. App. 2011).

5 *See, e.g., 1800 Ocotillo, LLC v. WLB Group, Inc.,* 196 P.3d 222 (Ariz. 2008) (enforcing surveying firm's provision limiting liability to $14,242 in case alleging $1 million); *Schietinger v. Taucher Cronacher Prof. Engineers,* 40 A.D.3d 954 (N.Y. 2d Dept. 2007) (enforcing inspection company's provision limiting liability to its $1,705 fee); *Burns & Roe, Inc. v. Central Maine Power,* 659 F. Supp. 141 (D. Me. 1987) (enforcing provision in boiler inspector's contract limiting liability to 50% of fee earned); *City Exp., Inc. v. Express Partners,* 959 P.2d 836 (Haw. 1998) (Hawaii law "encourages" parties "to negotiate the limits of liability in a contractual situation" and holds them "to the terms of their agreement"); *SME Indus., Inc. v. Thompson et al.,* 28 P.3d 669 (Utah 2001) (noting "importance of the parties' right to negotiate the terms of a contract" and Utah's economic loss doctrine "encourages the parties to negotiate the limits of liability in a contractual situation").

6 *Pitts v. Watkins,* 905 So.2d 553 (Miss. 2005) (invalidating provision limiting home inspector's damages to $265 fee, finding it would leave the customer without an effective remedy for injury); Estey v. MacKenzie Eng'g Inc., 927 P.2d 86 (Or. 1997) (striking provision limiting liability to $200, which would "effectively immunize" defendant in action for $350,000).

END NOTES CONT.:

7 *Valhal Corp. v. Sullivan Assoc., Inc.*, 44 F.3d 195 (3d Cir. 1995) (upholding architectural firm's provision, stating "limitation of liability clauses are not disfavored under Pennsylvania law; especially when contained in contracts between informed business entities dealing at arm's length, and there has been no injury to person or property").

8 See, e.g., Moore & Assoc. v. Jones & Carter, Inc., Case No. 3:05-0167 (M.D. Tenn. Dec. 13, 2005) (unpublished) (client "was charged a lower fee and in return for that lower fee," agreed to limit "total aggregate liability" to the amount paid for services).

9 A provision should "attract the attention of a reasonable person when he looks at it." Dresser Inds., Inc. v. Page Petroleum, Inc., 853 S.W.2d 505 (Tex. 1993).

10 Hanks v. Powder Ridge Restaurant Corp., 276 Conn. 314 (2005) (voiding provision in ski resort's adhesion contract as against public policy); Rozeboom v. N.W. Bell Tel. Co., 358 N.W.2d 241 (S.D. 1984) (although provisions are not per se improper, court refused to enforce provision in contract for yellow pages advertisement because of difference in bargaining power); contrast SNET Information Services, Inc. v. O'Neal, 2011 WL 1366667 (Conn. Super. Ct. Mar. 15, 2011) (unpublished) (public policy concerns do not apply where "both parties represent sophisticated business entities").

11 *See, e.g., W. William Graham, Inc. v. City of Cave City,* 709 S.W.2d 94 (Ark. 1986) (strictly construing provision as not applying to damages for breach of contract); *DCR Inc. v. Peak Alarm Co.*, 663 P.2d 433 (Utah 1983) (parties can limit liability for both tort and contract only where the provision clearly expresses this intent).

12 *See, e.g., Chadwick v. Colt Ross Outfitters, Inc.,* 100 P.3d 465 (Colo. 2004) (parties may not limit liability for willful or wanton conduct); *Colonial Properties Realty Ltd. Partnership v. Lowder Const. Co., Inc,* 256 Ga.App. 106 (2002) (provisions cannot "relieve a party from liability for acts of gross negligence").

13 *See, e.g., In re Elizabeth Roper Carter,* 2010 WL 5396581 (Ala. Dec. 30, 2010); *Burns & Roe, Inc. v. Central Maine Power,* 659 F. Supp. 141 (D. Me. 1987).

14 *See, e.g., Witt v. La Gorce Country Club, Inc.*, 35 So.3d 1033 (Fla. App. 2010) (professional geologist was held *personally* liable for $4 million despite the fact that his firm had entered into a contract limiting liability).

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Insurance Companies' Highly Controlled Use of Derivatives Has Also Resulted in Protection from the Rogue Trader Problem

By Edward L. Toy

Editor's Note: *This article was previously published by the National Association of Insurance Commissioners (NAIC). It has been reprinted with permission.*

SUMMARY

Unauthorized trading scandals — commonly referred to as "rogue trading" — have been occurring periodically in financial markets in recent years. While the institutions that have been the victims of these schemes claim to have devoted considerable resources in an attempt to avoid this problem, these schemes continue occurring with a disturbing amount of regularity. The most recent scandal, involving Kweku Adoboli at UBS, cost UBS $2.3 billion in losses that were incurred on unauthorized trades. There is a line of similar scandals that have occurred over the years, at least one of which resulted in the failure of a major financial firm.

The question of why these scandals keep occurring despite the efforts of the firms to avoid them remains an interesting one. Firms have primarily attempted to limit these occurrences by improving compliance controls through the addition of more and better systems and staff. Examples of improvements that can be made are post-trade functions of valuations and collateral management, which can benefit from operational and technological improvements. One of the most important improvements is a robust and transparent valuation process, especially for over-the-counter derivatives that are hard to value and have no published daily exchange price that can be used for valuation purposes. However, the valuation of derivatives is always a challenge, especially for those that are out of the mainstream or have unusual or complex terms. Banking rules recommend that trading and other bank staff take a consecutive two-week mandatory vacation. The idea is that, over that time period, other individuals in the organization will have an opportunity to come across any unauthorized trades in the normal course of business.

However, these improvements might not always be sufficient. For example, UBS had a previous unauthorized trading problem in its London office during 2006 and 2007, for which the United Kingdom's Financial Services Authority fined UBS its third-largest ever fine for systems and controls failures. UBS attempted to improve its systems and controls after this situation, but a much larger problem occurred only a few years later in the same office.

We believe that there are specific characteristics leading to the emergence of rogue trading situations. In this article, we discuss these characteristics and how they contribute to the occurrence of the problem.

The interesting question also arises regarding the fact that no meaningful rogue trading problem has been reported in the insurance industry. This is despite the fact that the insurance industry is large, manages a significant book of assets and liabilities, and, in some cases, enters into numerous transactions daily. Insurance companies with an active derivatives program typically include it as part of a hedging program, and the derivative transactions are defined by the needs of the hedging program, not the market views of the derivatives trader or other considerations. In this case, a derivatives trader is part of a larger risk-management organization and is not a profit center trying to maximize its reported profits. Consequently, the dynamics of these two different situations are very different.

We believe that the absence of this issue in the insurance industry is not merely a lucky coincidence. The absence of the rogue trading problem with insurers is, instead, the result of specific insurance company characteristics and the state-based insurance regulatory framework. While the continuing future absence of such scandals in the insurance industry is in no way preordained, we believe that rogue trading is unlikely to become a meaningful problem in the insurance industry due to the following factors.

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WHAT IS A ROGUE TRADER AND WHY DO WE CARE?

Every few years, if not more often, a new story surfaces of a rogue trader who has caused large and unexpected losses for a financial institution or corporation. The media becomes full of stories describing what happened to cause the problem, which trader did it and how the fraud was accomplished. Typically, the trader's aggrieved employer says that, despite its herculean best

CONTINUED ON **PAGE 20**

Insurance Companies' Highly Controlled … | from Page 19

efforts and controls, somehow the trader outwitted all of these combined efforts. The trader instead entered into unauthorized trades that eventually incurred a substantial and unauthorized loss for the employer.

Typically, the trader is employed by a bank or securities dealer. As detailed in the following table listing the 10 largest rogue trading losses of all time, only two of these cases did not occur at a financial institution where the rogue trader was in a primarily trading position. In such a trading heavy position, the rogue trader has the opportunity to engage in numerous trades, and, therefore, has a considerable ability to hide improper trades in the midst of many authorized trades. In the two remaining cases, the traders worked for firms heavily involved in physical commodity supplies (copper and jet fuel).

TABLE 1: Largest Rogue Trader Losses

TRADER NAME	DATE	AMOUNT LOST	PRIMARY BEHAVIORS EXHIBITED	INSTITUTION	MARKET ACTIVITY	JAIL SENTENCE
NICK LEESON	1995	£827 Million leading to bank failure	Hidden transactions; lack of segregation of duties	Barings Bank	Nikkei Index Futures	6.5 Years Jail
TOSHIHIDE IGUCHI	1995	$1.1 Billion	Misappropriation of funds; lack of segregation of duties	Resona Holdings	U.S. Treasury Bonds	4 Years Jail
YASUO HAMANAKA	1996	$2.6 Billion	Fraud; forgery; market manipulation; inadequate controls	Sumitomo Corporation	Copper	8 Years Jail
JOHN RUSNAK	2002	$691 Million	Poor systems; inadequate controls; unclear management responsibilities	Allied Irish Banks	Foreign Exchange Options	7.5 Years Jail
GIANNI GRAY, DAVID BULLEN, VINCE FICARRA, LUKE DUFFY	2003 Oct-2004 Jan	AU 5360 Million	Inadequate controls; hidden transactions; system manipulation	National Australia Bank	Foreign Exchange Options	16 Months Jail, 3 years and 8 Months Jail, 2 Years and 4 Months Jail, 2 Years and 5 Months Jail
CHEN JIULIN	2005	$550 Million	Wrote unauthorized call options contracts on jet fuel; inadequate controls; fraudulent assets	China Aviation Oil	Jet Fuel Futures	4 years and 3 Months Jail
JEROME KERVIEL	2006-2008	£4.9 Billion	Hidden Transactions; inadequate controls; fraudulent documents; system manipulation	Societe Générale	European Stock Index Futures	5 Years Prison of which 2 years are suspended—may still appeal ruling
BORIS PICANO-NACCI	2008 Oct	£751 Million	Unauthorized positions; inadequate controls; warnings disregarded	Groupe Caisse d'Epargne	Equity Derivatives	Investigation in progress
KWEKU ADOBOLI	2011	$2.3 Billion	Inadequate controls; no confirmations for trades; had extensive back office experience and knowledge	UBS	S&P 500, DAX, and Euro Stoxx Index Futures	Investigation in progress

Source: Wikipedia; National Association of Insurance Commissioners

"Why have insurance companies been conspicuously absent from the list of rogue trading scandal victims?"

TYPES OF ROGUE TRADES

Each rogue trading situation is unique, given its circumstances and the proclivities of the perpetrator. Nonetheless, we can still discuss some common themes that can be found in the development and operation of such a scheme.

(1) *Hiding trades:* Probably the simplest of all approaches, when viable, is to hide trades as long as possible from the victim. To hide a trade, the trader must be able to keep the trade from being recorded in the institution's financial processing system for a period of time. This can be successfully accomplished only when the institution is not required to make a payment or take some other action shortly after the trade is made. Examples of cases where it might be difficult to hide a trade are when initial collateral must be posted, variation margin payments must be made, and final settlement takes place. One alleged case where this happened was a mortgage trader at Merrill Lynch in 1987 by the name of Howard Rubin. He was reported to have hidden certain trades from the firm and, by the time they were discovered, the firm had lost $250 million, one of the largest trading losses in Wall Street history at that point in time.

(2) *Weaknesses in the financial reporting system:* Another approach is to identify weaknesses in the company's financial reporting system than can be manipulated to the trader's advantage and then take advantage of these issues. An example of this is Joseph Jett, a trader at Kidder, Peabody & Co. during 1994. Jett entered into complex trades that the financial reporting system incorrectly determined were profitable to the firm when they were not. These trades were forward reconstitutions of U.S. Treasury bonds using Treasury STRIPS (separate trading of registered interest and principle securities). While these trades never had the possibility of being profitable due to their complexity and errors in the financial reporting system, it was believed for a considerable time period that these trades were profitable. Kidder, Peabody & Co. said that it lost $75 million on these transactions.

(3) *Misappropriation of assets:* A third fraudulent activity can be the misappropriation of assets used to facilitate improper trading activities. The situation at MF Global Holdings Ltd., which has received much press in recent weeks, started as a possibly questionable and aggressive trading strategy, but, based on publicly available information, it was appropriately initially authorized. However, over time, as the trades turned "bad" and lost hundreds of millions of dollars, MF Global may have begun to illegally use customer assets to support the losing trade. While the precise details of this situation remain unclear, the firm is now said to be missing at least $1.2 billion in customer-owned assets, which may have been lost in supporting the firm's trading positions. A similar situation occurred in the Daiwa Bank case, when U.S. Treasury bonds were misappropriated to cover losses occurring on unauthorized trades.

(4) *Breakdowns in separation of duties:* One of the most important rules in stopping unauthorized trading is a thoughtful separation of duties in the trading and financial reporting process. A cardinal rule is that a trader should not also have financial reporting or clearance responsibilities for his/her own trades. When these overlaps occur, they are an open invitation for fraud. Examples of this were the case with Nick Leeson at Barings Bank and Toshihide Iguchi at Daiwa Bank. The ability to both trade the book and control its reporting enabled both of them to run unauthorized trading schemes for a prolonged period of time.

(5) *Bogus trades:* Often, rogue traders will say they have entered into nonexistent trades (called "bogus trades") for a variety of purposes. One reason to have a bogus trade is to make it look as though the trader's book is better hedged than it really is. A good example of this approach is John Rusnak of Allfirst Financial. He reported the existence of bogus currency option trades that, in actuality, never took place with counterparties. These bogus option positions made it look as though his book was balanced, although, in fact, it was not. Rusnak incurred $691 million in currency trading losses for his employer before the fraud was discovered.

THE USE OF DERIVATIVES IN ROGUE TRADING

Often, these unauthorized trades and their associated

CONTINUED ON **PAGE 22**

Insurance Companies' Highly Controlled … | from Page 21

losses are in connection with positions in some form of derivatives contracts. Of the 10 largest rogue trading losses of all time, all but one case was primarily or heavily related to some kind of derivatives trading.

In the sole non-derivatives case (Toshihide Iguchi), the trader eventually confessed his losses to his Daiwa Bank superiors regarding 11 years' worth of unauthorized trading in U.S. Treasury bonds that resulted in $1.1 billion in losses. However, at that point, bank management asked the trader to remain silent as the bank attempted to conceal the loss. Five months later, Daiwa Bank was forced to plead guilty to 16 counts of federal felony charges, and paid a $340 million fine to the U.S. government, the largest criminal fine in history, and was required to stop doing business in the United States. In this scandal, Iguchi made 30,000 unauthorized trades in U.S. Treasury securities in an effort to offset losses he had incurred. While trading, he simultaneously had back-office responsibilities, making the scandal feasible.

The types of derivatives involved in these transactions included a variety of different derivatives: equities, foreign exchange and jet fuel, and consisted of both futures and options. The specific types of derivatives involved in each case depended primarily on the specific market with which the trader was actively involved.

The most recent rogue trader case is that of Kweku Adoboli, who recently lost $2.3 billion on unauthorized trades. However, he is but one case in a long line of rogue trader stories. Other traders having been accused of similar unauthorized activities in the past, including Jérôme Kerviel at Société Générale, who lost the bank an astonishing $7.1 billion; Nick Leeson at Barings Bank, who caused the failure of the more than a century old institution through unauthorized trading; and Yasuo Hamanaka of Sumitomo Corporation of Japan, who lost $2.6 billion in copper trades. These are but a few names from a long list of traders who evaded their employers' controls and entered into unauthorized trades, resulting in substantial unauthorized employer trading losses.

Each rogue trading situation is unique, but they do have certain common characteristics. The most recent one, Kweku Adoboli, according to press reports, was supposed to have taken only modest market positions in his position on UBS' "Delta One" trading desk that facilitated client requested trades. Delta One is an industry term used to describe the trading of a class of financial derivative that have no optionality and, as such, have a delta of (or very close to) one; that is to say that, for a given percentage move in the price of the underlying asset, there will be a near identical move in the price of the derivative. These products include equity swaps, forwards, futures and exchange-traded funds (ETF).

Adoboli was not supposed to take meaningful trading positions. According to the New York Times, Adoboli worked in UBS' European equities division, and focused on ETFs, or baskets of securities that aim to track a specific stock index or commodities. It is reported that Adoboli's long and short positions were supposed to be closely balanced, with little expected gain or loss regardless of the direction of market movements. Consequently, a major loss by a trader in a low-profile position such as his was particularly unexpected at UBS. However, Adoboli had extensive back-office experience at UBS, so he had extensive expertise on how he could successfully evade UBS' trading controls. This is highly valuable expertise for a trader desirous of evading the firm's trading limits. It is also highly dangerous for the firm, because a trader with this knowledge might be able to skillfully avoid the firm's back-office procedures and controls, substantially raising the likelihood that the trader might be able to avoid the firm's trading controls long enough to result in major problems for the employer.

In another instructive example, Nick Leeson began his career at Barings Bank after first having been denied a broker's license in the U.K. because of fraud on his license application. According to reports, Leeson initially made unauthorized trades on Nikkei 225-related derivatives contracts in Singapore that were highly profitable for Barings, so the firm had reason to suspect the activity.

Barings also allowed Leeson to both trade for his account, and to also simultaneously have responsibility for settling his own trades. But Barings management did nothing, even after an internal memo warned about the risk of him being simultaneously a trader and settlement officer: "We are in danger of setting up a system that will prove disastrous." These dual functions should always be done by two different people as a control

measure. Instead, his dual role made it much easier for Leeson to hide losses from his superiors for a sufficiently lengthy period. In the end, Leeson's trading losses reached $1.4 billion, twice the bank's available trading capital, and resulted in the firm's failure.

It seems that losses are noticed far more quickly than profits, given their impact on the company's financial statements; hence, the rogue trader's desire to keep trading losses off of the company's reported financials as long as possible, if and when they occur. Consequently, these rogue trading losses often appear, only when they become too large hide.

WHY ARE INSURANCE COMPANIES DIFFERENT?

Insurance companies are major financial markets participants. They are also often significant derivatives users, although still small relative to the overall size of the various derivatives markets. The question then naturally arises: Why have insurance companies been conspicuously absent from the list of rogue trading scandal victims?

Given the frequency of these issues at other major financial institutions and market participants, why have insurers not had a problem similar to those found in other financial institutions? What institutional factors that cause rogue trading scandals to occur at other institutions do not exist at insurance companies? While it is not possible to say definitively why something does not occur, we believe that there are indeed logical reasons why insurance companies have been spared this problem to date. Below we discuss seven factors that we believe can help explain the reasons that rogue trading has not been a meaningful issue for the insurance industry.

Regulation: Insurance companies are subject to strict and detailed regulations regarding the permitted use of derivatives. These requirements include the submission and prior approval of a derivatives use plan (DUP) to the company's domestic state insurance department, which serves as the insurance company's primary regulator. The regulatory derivatives controls for an insurer can be quite strict. The NAIC Derivative Instruments Model Regulation (#282) sets standards for the prudent use of derivative instruments by insurance companies. It requires insurance companies to establish written guidelines for transacting in derivative instruments. Internal control procedures must be outlined, describing elements such as the monitoring of derivative positions and the credit risk-management process. These guidelines and procedures are typically set forth in a DUP.

For example, at a New York state-domiciled insurer, the insurer's board of directors (or a committee thereof) is charged with the responsibility for supervising such investments. This committee must (a) authorize the transactions; (b) ensure that all individuals conducting, monitoring, controlling and auditing derivative transactions are suitably qualified and have appropriate levels of knowledge and experience; and (c) approve a DUP outlining how these transactions will be conducted. If these determinations are made by a board committee, the minutes of the committee reflecting these determinations must be recorded and a report must be submitted to the board of directors for its review at the next meeting of the board.

In addition, most of the states' insurance laws have specific requirements related to the use of derivatives. Generally, the use of derivatives is limited to three objectives: (1) hedging; (2) income generation; and (3) replication. Each of these three objectives comes with its own set of associated regulatory and detailed reporting requirements. In some cases, an insurer may also be permitted to use derivatives in its investment "basket." However, investment baskets are strictly limited in size. The detailed insurance company reporting requirements are especially important, because the detailed level and public nature of this reporting would greatly complicate the efforts of a rogue trader at an insurance company to keep these activities hidden. The investment transactions of an insurance company are highly transparent, including its derivatives transactions. At an insurance company, all transactions — regardless of term and including intra-period transactions — must be reported in detail, and this transaction reporting becomes information in regular publicly disclosed regulatory filings. This extraordinary level of trading information transparency is nearly unheard of in almost every other

CONTINUED ON **PAGE 24**

Insurance Companies' Highly Controlled … | from Page 23

form of financial institution. Given these complications, it would seem unlikely that a rogue trader would voluntarily elect to use an insurance company to book unauthorized derivatives trades. However, it remains possible that a non-insurance entity in the same group might be used for this purpose.

Compensation: A common theme in rogue trading scandals is that the trader at the center of the scandal believes that he would be favorably compensated for earning a significant trading profit for his employer. Once the trader believes this is the case, the trader could have a considerable incentive to engage in any form of activity generating meaningful profits for his employer. Obviously, the vast majority of traders working in such an environment know better than to cross the line into unauthorized trading, despite their incentive structure. However, as with most rules, there are always those individuals that take the opportunity to cross the line into inappropriate behavior if it might benefit them. If and when the trader has crossed the line, and if his trades have gone bad, the trader may have considerable incentive to attempt to reverse the loss before it is discovered and appropriate disciplinary action is taken. Insurance reporting and valuation play a significant role here, because every trade is publicly reported. And, while the market values for positions are reported, not all derivatives are marked-to-market for financial statement purposes.

A leading factor protecting insurers from rogue trading is the expectation that trader compensation at insurers is rarely designed to incentivize trading profit maximization. In addition, the compensation of insurance investment professionals is structured much differently than that of a trader at a bank or broker-dealer. Therefore, the insurance company trader has little incentive to engage in unauthorized trading activity in an effort to boost reported profitability. While external investment managers are also used by insurance companies, it is our belief that this is unlikely to add meaningful additional rogue trading derivatives risk to the client insurer. First, external investment managers are predominantly used by medium-size and smaller insurers. Second, the use of derivatives is heavily skewed to the largest companies in the industry. The combination of these two factors would indicate that the potential for a rogue trader should be small in this venue. Third, external managers are rarely compensated for trading profits per se, but are more focused instead on other performance metrics, such as relative investment performance. So, again, we think it would be unlikely for external managers to be the site of a derivatives-based rogue trading problem.

Trading volume: It is much easier to hide a few unauthorized trades in between a large volume of authorized trades, such as those occurring at an active broker-dealer. A handful of unauthorized trades could go unnoticed if they are carefully sprinkled in between dozens of legitimate, authorized trades. Consequently, a trader at a volume shop (such as a broker-dealer or market making desk), might have considerably greater opportunity to disguise trades in a high-volume trading environment than does the insurance company trader in a low-volume environment. In a low-volume environment, such as an insurer, it becomes much harder for one or more unauthorized trades, and especially a large number of them, to go undetected, making it much harder to engage in unauthorized trading without it being rapidly identified as such.

Profitability: Broker-dealers routinely attempt and expect to earn a significant portion of their operating income via trading and realized gains. The reporting of trading gains and losses is expected in the ordinary course of business. Consequently, at a broker-dealer, a rogue trader making a profitable (or unprofitable) trade might not be immediately identified as such. This would permit the activity to continue for an indefinite period, until the problem is identified and stopped, possibly not until a large loss occurs. In contrast, the vast majority of investment activity at most insurers is intended to generate investment income, rather than realized trading gains. Consequently, the realization of significant and regular trading gains (or losses) coming out of a single trader's activity would likely trigger considerable scrutiny long before a major unauthorized loss occurred. Because most insurance companies' use of derivatives is for hedging, other activity would be quickly noticed. And, with effective hedging, the financial reporting for both the hedge itself as well as the hedged item is combined, so there should be no profits to be reported benefiting the rogue trader.

Financial reporting: At an insurer's trading desk, the financial reporting process is relatively simple. Positions are carried on the books and marked-to-market daily. If, somehow, the trader manages to corrupt or entirely evade the employer's relatively simple unidimensional financial reporting system, the trader might have the opportunity to have the unauthorized trades remain undetected for a considerable time period.

In particular, statutory reporting contains detailed requirements regarding transaction reporting. Rogue trading is more likely to become a problem in a market where transactions may not be cash settled in a short time period, such as for some longer-term derivatives contracts that are not marked-to-market on a regular basis. For derivative transactions, just a few of the trade details that must be reported on the insurer's Schedule DB include the trade date, description, trade size and counterparty. This information must be regularly submitted by the insurer to its domestic insurance regulator. This includes all trades, including those that are opened and closed during the same quarterly reporting period. The report, along with all of its details, also becomes a public document subject to inspection by the public. The combination of regulatory reporting, as well as the public nature of this reporting process, makes it exceptionally difficult for rogue trading to occur in an insurance company environment. This is particularly true for rogue trading schemes that may evolve and grow slowly over time, becoming a significant problem only with the passage of a considerable amount of time.

Counterparties: A trade at an insurance company, as a "buy side" client, always has an external counterparty on the other side of the trade. In a few cases, insurers may "cross" a trade internally without the involvement of an external party, but this would be a rare occurrence. Even then, trade tickets and the normal accounting process would still be required at the insurer to appropriately keep track of the transaction. However, at a broker-dealer, it is more common for a transaction to be internal to the firm without the involvement of an external third party. Once the transaction involves an external counterparty, the ability of the trader to keep the transactions from being detected and outside of the normal financial reporting process becomes more challenging and unlikely, making rogue trading difficult to accomplish in an insurance environment.

Confirmations: Trade confirmation is a process whereby the two parties to a transaction formally compare the details of an agreed-upon transaction to confirm that the trade is mutually and identically understood by both parties. Through the use of the trade-confirmation process, trade discrepancies or misunderstandings should be quickly identified and, ideally, rapidly resolved. The details of the actual trade confirmation process itself can vary, depending on the specifics of the transaction. In some cases, especially where both sides of the transaction are internal to the same institution, the confirmation process may not function as it normally would, thereby giving the rogue trader an opportunity to "game" the system. Additionally, it has been reported that not all transactions are immediately confirmed with the counterparty, again giving the rogue trader room to take advantage of the system until the trade is to be confirmed. This lack of trade confirmations that permit trades to be hidden for a meaningful time period is what happened in the Kweku Adoboli case, allowing him to run up a large loss position before it was recognized by UBS.

In an ideal trade confirmation environment, the confirmation is a highly automated process, facilitated by an external vendor that can verify a trade's authenticity and correctness by comparing matching trade information submitted by each party to the trade.

The rogue trader will, by necessity, need to identify methods to manage the employer's confirmation and compliance system so as to be able to implement the unauthorized trading scheme without being caught. An important part of the effort might be to identify a method for getting an unauthorized trade confirmed with the trade's alleged counterparty without triggering compliance alarms.

Alternatively, the trader's objective may instead be to enter fake trades into the system that never really occurred so the system will think these trades actually occurred with a counterparty, thereby offsetting some

CONTINUED ON **PAGE 26**

Insurance Companies' Highly Controlled … | from Page 25

other risk on the trader's book. In a case like this, the rogue trader would not want the trade confirmed, because, obviously, there is no counterparty available for confirming the trade. In this case, the trader would want to identify a method to keep the trade from going through the trade-confirmation process. To do this, the trader might try to find a counterparty or product for the trade that does not use the normal confirmation process. That way, the trader can attempt to keep the trade from entering the employer's normal recordkeeping system for an extended time period.

In both cases, the rogue trader manages the trade-confirmation process to his benefit. Manipulation of trade confirmations is inherently harder to successfully accomplish in an environment such as an insurance company, where almost every trade has an external counterparty and trades are expected to be confirmed with the counterparty as a matter of course. However, according to the Financial Times, a trader such as Kweku Adoboli could take advantage of the fact that, for certain European ETF transactions, trade confirmations are not issued until after trade settlement has taken place. Market practice also permitted UBS to receive payment for a trade before the transaction was confirmed and possibly entered into the trading system books and records. Kweku Adoboli took advantage of this situation to implement a trading scheme that allowed him to evade detection for a considerable time period. U.S. insurance companies are typically not involved with the ETF market. Even more important, when they are involved, their involvement is as a normal ETF holder, not as an ETF sponsor or authorized participant involved in the ETF creation process (the areas with which the problem with Kweku Adoboli occurred).

A CHECKLIST OF CONTROL DEFICIENCIES THAT CAN LEAD TO UNDETECTED UNAUTHORIZED POSITIONS

As we have seen, a company having adequate and well implemented controls is a vitally important defense against unauthorized trading activities. It is difficult, if not impossible, to have major problems arise if an institution has well developed and implemented controls. Crowe Horwath LLP has developed the following checklist, which can be used to review the control procedures at insurers. If any of these deficiencies are identified at the insurer, they should be rectified as soon as possible in order to minimize the likelihood of the occurrence of an unexpected trading problem. While any of these issues is, of course, of concern, combinations of more than one can be especially problematic and should be the focus of a meaningful amount of attention to ensure that nothing improper could be occurring at the institution.

TABLE 2:
Control Deficiencies Leading to Undetected Unauthorized Positions

1	Inappropriate system entitlements
2	Lack of mandatory trader vacation policy
3	Lack of review of gross trading positions
4	Inadequate controls over cancel & correct, as of, amendment and off-market transactions
5	Inadequate controls over trades booked with unspecified counterparties (temporary accounts)
6	Unidentified patterns in unmatched or unconfirmed trades
7	Lack of market risk profit & loss look backs
8	Insufficient treasury analysis

Source: Crowe Horwath LLP; Jonathan Marks and Brent Camery

CONCLUSION

While we certainly will not say that insurers are exempt from the risk of unauthorized trading and resulting unexpected trading losses, we do believe that there are sound reasons why this has not been a significant issue to date for the insurance industry.

Questions and comments are always welcomed. Please contact Ed Toy, (212) 386-1974, etoy@naic.org

Perfect Sunrise : A Warning Before the Perfect Storm

By Max J. Rudolph

Editor's Note: *This essay originally appeared in the "Systemic Risk, Financial Reform, and Moving Forward from the Financial Crisis" essay e-book in January 2011.*

THE TERM *PERFECT STORM* ORIGINALLY DESCRIBED INTENSE STORMS that seemed to find the most vulnerable areas. It was made popular by the Sebastian Junger book (and movie) that described a powerful hurricane that hit New England hard. This same term has increasingly been used to describe events during a financial crisis. Pundits claim that markets align in an unimaginable way, creating a *Perfect Storm* of risks that they were powerless to have predicted or prepared for.

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Asset managers describe these events as the rarest of rare events. Their models may predict a one in 10,000 year occurrence. Severe overuse of the term *Perfect Storm* has caused it to lose much of its original meaning.

SIMILARITIES TO EARLIER BUBBLES AND CRASHES

The Roaring '20s, Internet era and housing bubble each showed gains over several years and the familiar retort "It's different this time!" But it never is. Greed and easy money dominate the news at those times much as fear and dread dominate during crises.

Each of the three peacetime stock market drops since the creation of the Federal Reserve Bank system have something in common—they followed periods of low volatility and positive returns. Agreement about bubble formation appears only in hindsight, but positively correlated returns were there for all to see. A keen observer saw plenty of warning signs and made better decisions as a result. Surging financial markets eventually mean revert. Contrarian thinking that avoids the herd mentality can be used to seek out mispriced assets, earning a competitive advantage by challenging the consensus.

The period 2003-07 was one of consistently positive returns, from housing to stocks. Yet little concern about stars aligning was heard. Why? People like to hear good news. Those who warn of impending doom do not get invited to cocktail parties. It is safer for investors to follow the herd than to develop and act upon their own opinions. Few economists or analysts lose their job after agreeing with the misguided majority. The good times act as a warning. Much as a beautiful sunrise appears prior to a storm, outlier market returns provide indicators that should not be ignored.

DODD-FRANK REFORM

The recent Dodd-Frank financial reform legislation is a positive step toward reducing systemic risk, but does not go nearly far enough. These suggestions would improve outcomes if built into the regulations.

Improve transparency

Lack of transparency was a major factor in the recent crisis. Dodd-Frank requires more derivatives to trade on public exchanges. This is a good idea, but firms accepting counterparty risk should have knowledge of all material exposures. When government entities have insider knowledge of a firm's shaky finances, efforts should be made to disclose this information publicly. Institutional counterparty risk should never be fully guaranteed by the government. For a fully functioning financial system, counterparty risk must allow credit losses. The market will not reward investors with higher spreads if there is no downside risk.

Those who claim the ability to evaluate company financials including accrual items without fully disclosed assumptions and methods used are fooling themselves. Accrual accounting practices need improved transparency, and ideally this would include public peer review. Too many firms and regulators hide behind tightly defined rules that do not fully address the risks accepted.

Focus on the Risks Taken

Large investment banks were a focus of the recent crisis due to the risks they accepted. Too Big to Fail should be replaced by Too Risky Not to be Allowed to Fail. A firm's size should not be the primary driver for intervention. A firm that engages in proprietary trading should not be a candidate for government bailouts. Guarantees should cover retail deposits at utility-type banks. Regulations for banks with proprietary trading operations should focus on ways to orderly shut down a bankrupt firm. During the buildup to the recent crisis, investment bankers increased systemic risk by providing advice to other entities. They found buyers for securitized assets and recommended aggressive borrowing practices to investors. Dodd-Frank has opened the discussion about advisors having a fidu-

ciary responsibility to retail clients. This seems obvious and should be extended to investment bankers and institutional clients. All financial professionals should be held accountable through aligned incentives.

Compounding and interacting with other systemic risks is leverage. Large-scale borrowing practically guarantees eventual failure, especially when combined with short term funding that requires a continuously liquid market. The market can stay irrational longer than a borrower can stay solvent, and when trouble hits it quickly becomes clear that buying on margin allowed no room for error.

Required Capital and Stress Testing

Capital should be regulated at the group level, with regulation and peer review by teams of experts looking at prioritized risks across multiple time horizons. Growing risks should be addressed before their exposure levels become large.

Ideally, regulatory stress tests should focus on the primary systemic risk driver, concentration. When "all your eggs are in one basket" there is no built-in redundancy. Preventive measures include spreading the risks around, having multiple products, vendors, geographic locations and generally diversifying the risk. These risks will also interact, sometimes in unexpected ways. Contrarian thinkers should be welcomed as stress tests are developed. Their peer review will challenge assumptions, improve brainstorming activities, and ultimately help an entity make better decisions. Concentration risk also occurs based on the way regulators or risk managers view risk. A focus on a single metric or report will seem to work well until it doesn't work at all. For example, Value at Risk (VaR) is an excellent metric when used without the knowledge of the business unit being measured, but is easily manipulated when managers become aware of its use for incentive compensation. In another example, liquidity in short-term borrowing facilities was assumed to always be present and when it shut down surprised almost everyone.

SYSTEMIC RISKS

Some can identify systemic risks in advance, but it takes an independent mindset and broad latticework of knowledge and historic context. History does indeed repeat itself. The analyst must look skeptically at recent successes to see if they are sustainable. Those who identify

bubbles as they form will perform well over a long-time horizon but underperform in many periods. This will be hard for those in publicly traded firms, even though it provides a competitive advantage in the long run. Scenario planning looks at a variety of events that drive outcomes. This will help identify some unintended consequences of a seemingly benign product as it marginally interacts with existing business plans.

Regulators are tied to the political process, so an independent mindset at the new Financial Stability Oversight Council is unlikely to prevail. During boom times a politician's incentives are to feed the fire, not put it out. Congress works on a seniority system, so mere survival is rewarded with power. This discourages contrarian thought.

What should governments do to reduce future systemic risk events? Holding officials accountable for past actions would be a good start but is unlikely. The federal government should create an independent risk office that considers contrarian views as well as those of the major-

CONTINUED ON **PAGE 30**

Perfect Sunrise | from Page 29

ity to identify potential emerging risks and coordinate action plans. This office should be spread geographically around the world to avoid concentration of ideas such as occurs "inside the beltway" in Washington, DC. Systemic risks are best managed at the federal level with one regulator rather than with the states and multiple regulators. Fraud will find weak practices and exploit them.

Both countries and firms should debrief and look forward after events occur. The recent pandemic provided a great learning opportunity. What was done well, and by whom? What could be done better? Is this knowledge transferable to other risks? The value of having thought about an event is to maintain flexibility. Being able to adjust as events develop provides more value than a plan built around a single scenario that is unlikely to play out exactly as imagined.

CONCLUSION

When an outlier event occurs, it often follows a period of stability that lulls most into a false sense of security. Risk assessment is an art, not quantifiable science. Experience matters. Firms and countries alike should seek out views that disagree with the consensus and look for indicators that a change is near. Much like the sunrise that is beautiful to look at but warns of impending storms, boom times do not last forever and actually predict the eventual crash. Innovators make great wealth when the masses adopt their idea, but beware when followers join the party late in a bubble. Those who recognize the *Perfect Sunrise* as a warning are better able to reduce their risk exposures. Those who arrived late will enjoy the *Perfect Sunrise*, but when the storms come they will be pummeled by the next *Perfect Storm*. ■

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