

The Democratization of Risk Management

By Michael C. Schmitz and Susan J. Forray

This year's financial crisis was described by Alan Greenspan as a once-in-a-century event. Similarly, the floods in the Midwest of this past summer were described as 500-year floods. Both characterizations, and both events, serve to remind us of the difficulty in predicting such calamities and in gauging their ultimate scope and effects. Just think: How many once-in-a-century events have occurred this decade?

For the most part, actuaries accept as necessary a key assumption underlying the majority of their work—that historical patterns have predictive value for the future. Yet, paradoxically, it's also understood that assumptions are not precise, that models sometimes fail, and that the only certainty attached to any point estimate is that, once experience is factored in, the actual number is sure to be different.

The current financial crisis reminds us of risk's supremacy, while leaving us with several key lessons that can help all of us better manage risk in the future.

1. Models Are Not Perfect

Most of us know it already: Models are imperfect approximations of reality. They are valuable, *but incomplete*, abstractions and only as good as their underlying assumptions. Actuaries are well-positioned to build more robust models and to assist in understanding the assumptions and limitations of those models.

In some cases, models may be incomplete partly because they rely on a relatively shallow pool of data. Mortgage credit risk models based on limited data from years with consistently rising home prices might have suggested only limited risk. However, with more robust data over a broader range of economic conditions, a good deal more risk would be evident. There are strategies to build more uncertainty into models, but they are based at least partly on judgment calls.

Risk management efforts can be jeopardized when managers blindly rely on models without regard to the amount of data underlying them and the reasonableness of the assumptions. One cannot forget that the risk illustrated by the model will only be the risk that has been present historically, or judgmentally added into the model by its developer.

Models are often subject to their greatest limitations just when they are needed the most. For example, one might be more inclined to build a model to assist in pricing an excess layer than to price a primary layer—where historical data by itself may be considered sufficient. However, the volatility inherent in any excess layer may not lend itself easily to modeling, and could easily be over- or underestimated. Similarly, mortgage credit risk models that have too little tail risk built into them would result in a leveraged understatement of risk in the mezzanine and higher layers of mortgage-backed securities.

As actuaries, our role is to assess the reasonableness of the projections in any model we build, as well as to communicate the uncertainty inherent in the model to others. The use of models should be accompanied by specialized professional judgment concerning those models and the risks they are intended to capture.

2. Troubles With Bubbles

The housing bubble, at its root, was not difficult to observe. By comparing house prices relative to income and other measures of affordability¹, even over 75 years or more,² it became clear that these prices were surging. Something unprecedented was occurring. Risky mortgage products never boded well in this context and indeed these same products pushed the bubble further.

But even when it's possible to identify economic bubbles, it's very hard, almost impossible, to predict when they

¹ "What Happens When Credit Risks Come Home to Roost?" Michael C. Schmitz and Kyle S. Mrotek, *Insight Magazine*, Autumn 2006.

² *Irrational Exuberance*, Robert J. Shiller, Princeton University Press, 2005 (p. 13).

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will deflate, and how that deflation will manifest itself. The further economic fundamentals get out of balance—that is, the bigger the bubbles get—the more unpredictable, severe and widespread the ultimate fallout becomes.

That makes this lesson one that's simple to understand, yet extremely difficult to implement. Once a bubble has been recognized, that's the time for mechanisms of caution and prudence to kick in, even in the face of exuberance—especially in the face of exuberance.

3. The Importance of Staying Hydrated

Global liquidity flowing into mortgage assets to chase yield during a low-interest-rate environment was instrumental in fueling the bubble. This cheap funding to mortgage distributors facilitated the expansion into risky mortgage products.

Once lost, liquidity can be difficult to regain. The liquidity of mortgage assets went out the window when many decided that borrowers could not be counted on to pay their mortgages and when house prices began to decline. More broadly, the capacity of some entities backstopping them was called into question as well. As a result, a downward spiral ensued as these entities were first required to post more collateral, then subsequently downgraded, and in turn required to post more collateral again in response to the downgrades.

At the same time, the market for mortgage assets was drying up, causing difficulties in converting these assets to cash, and making it increasingly difficult to raise that collateral. As the stressed entities were forced to raise cash to cover their shortfalls in capital and liquidity, some requisitely sold into a declining market, exacerbating the spiral.

Liquidity (and trust) is plentiful until it's not—it can evaporate with blazing speed and only returns slowly.

4. Saving For a Rainy Day

Maintaining cash reserves to address unexpected emergencies is, of course, a basic tenet of commercial or personal finance and this lesson also applies to capital management. In the same way that an individual might build a cash cushion, they should also plan for the instability of our cyclical economy. But instead, there is a tendency for the good times to get very good, as people and companies leverage their balance sheets and take on more debt in order to maximize the advantage of participating in the market rise.

Then, as markets fall again, the bad times get very bad; de-leveraging can cause a downward turn in the market to accelerate as market participants rapidly sell off declining assets to avoid being caught short by their debt. For example, many companies participated in stock repurchase plans during the boom years when their stocks were at their heights only to find themselves trying to raise money in the teeth of the crisis with their stock prices significantly down from their highs.

Also caught up in the financial downturn is the federal government. If the federal government is the risk manager of last resort, it might be expected to manage symmetrically so as to strive for price stability. It might be expected to lean into booms by raising interest rates and reducing the federal debt. However, fiscal deficits grew leading up to the crisis and some say central bankers have opted for a preemptive asymmetric monetary policy³, in which rates were quickly lowered during downswings in the economy, but only slowly increased during upswings.

All of these factors created a more challenging position, because what's generally needed in a financial calamity is loose monetary policy and fiscal stimulus. Indeed, we've seen radical intervention of late, and the scale of the crisis has thus far assisted with a relatively cheap governmental

³ *The Origin of Financial Crises: Central Banks, Credit Bubbles, and the Efficient Market Fallacy*, George Cooper, Vintage Books, 2008.

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borrowing cost through the flight of investors to treasury securities. However, one hopes that the seeds for the next crisis are not being sown by debt-financing the country's stimulus and bailout packages. Much attention is being paid to counter-cyclical capital regimes in light of the current crisis.

5. Risky Business Is Everyone's Business

Finally, it's important to recognize that unsafe or excessively risky practices can become everyone's problem. In this case, it's not just the buyers and sellers who are affected:

- The neighbors of homeowners and real estate speculators who borrowed beyond their means now see their own property value falling as these homeowners are foreclosed upon, their homes possibly vacant and boarded up
- Subsidiaries and affiliates, whose product units, while entirely solvent in their own right, were brought down by the financial obligations of parent companies who had taken excessively risky mortgage positions

- Competitors, who now experience difficulty raising money because of the endemic problems in capital markets, including liquidity drying up, and waning confidence in the financial markets
- The public, forced to bail out troubled entities perceived as too big to fail, and facing large reductions in the value of their own investments

Risk is contagious, which means every single employee and citizen has a vested interest in taking on the role of chief risk officer. The cost of bailouts falls on all of us. Thus these bailouts come to the financial industry with the quid pro quo of greater regulation and supervision. However, it is critical that such regulatory initiatives are carefully crafted to improve safeguards to systemic risks and transparency without stifling innovation. Indeed, the insurance industry can take a leadership role in designing and distributing new products that allow individuals and companies alike to manage risk in a more effective way.⁴ Actuaries have much to offer in this endeavor.

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⁴ For example, see Robert J. Shiller's suggestions of home equity and livelihood insurance and continuous workout mortgages as part of his prescription for the democratization of finance in *The Subprime Solution*, Princeton University Press, 2008.