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Risk Intelligence

By Shaun Wang

STANDING AT THE BEGINNING OF 2009, I dare to make a statement: “The financial world as we knew has ended in year 2008. We are in a forever-changed world with a set of new mega events that will exhibit explosive risk dynamics with a very different set of risk parameters. Laggards who are slow to recognize this new reality will be unpleasantly shocked by the shaking and unprepared for the new opportunities.”

A year ago, very few anticipated the collapse of Wall Street titans such as Leman Brothers, AIG and Fannie Mae. Sophisticated risk models failed to predict the severity of credit crunch due to massive asset write downs. It begs the question: what could have been done differently with risk modeling? The answer lies in risk intelligence. The recent subprime mortgage crisis underscores the need for better risk intelligence. I would even say that for the risk management profession, the biggest lesson from the subprime mortgage crisis is an over-reliance on risk models, while ignoring the art and practice of risk intelligence.

All models are wrong; some are more useful than others. Our economic system has too many interacting variables and complex dynamics. After witnessing the recent financial crisis, Dr. Alan Greenspan offered his wisdom: “we will never have a perfect model of risk.” Actuaries and financial engineers should recognize this reality and not put too much faith in models. Here is my advice: Stop searching for a perfect model; start using risk intelligence to complement your risk models.

Risk models, in the conventional sense, need to be based on sound mathematical frameworks; this noble “scientific requirement” also brings a curse of inherent limitation (that is, where one is constrained within a box). In contrast, risk intelligence is not limited to any fixed methodological framework. While risk models often fit data to a sound mathematical theory at the surface, risk intelligence takes an in-depth approach by examining structures underneath the data. As an example, if we fit house price data during the 2002-2007 time period to mathematical curves, we may project the upward trend well into future years. However, if we look at the large U.S. trade deficits, reliance on foreign money to fund escalating U.S. national and household debts, and the sloppy underwriting and

speculative buying in the housing sector, we could find many clues for a housing bubble. Some fund managers took a hard look at the structure of the economy and anticipated that this bubbling trend was not sustainable. They were the first to smell “fish” when signs of stress with subprime mortgages and Alt “A” mortgages were revealed.

Risk intelligence requires curious minds that proactively pick out bits and pieces of signals from noises. Here I give a success story.

Mr. Hongbin Song was working in the United States for Fannie Mae in 2007. One day he went to get coffee from the office lounge, as part of his daily routine. He suddenly realized that the coffee was no longer free. With an alert mind, he immediately called some colleagues within Fannie Mae to find out what was going on. He smelled “fish” and soon he resigned and returned to China where he gave his predictions that U.S. Financial Crisis was coming. Indeed. A few months later, Fannie Mae collapsed. Mr. Song is now one of the best known economists in China.

Risk Intelligence Requires a Bigger Framework: This point was articulated well by Todd Davies: “Most managers feel well equipped to understand and respond to the regular crises that emerge day to day. Risk management processes have permeated most organizations which give middle management a sense of comfort that they have things broadly under control. But those who read the financial press will be aware that there are a series of emerging state changes which are not picked up by their normal risk management processes. As such, directors and chief executives reviewing their risk profiles often feel that all of this effort in risk management is missing the big picture. Business managers are too busy in day to day routines and don’t have a framework to personally develop a cohesive understanding of key events that need to be watched, and how to frame the emergence of such events. Without the capability to frame these events they



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are at risk of being out of touch and time to act appropriately, and open to losing the initiative to leverage potential opportunity.” It is my observation that most senior managers can benefit from broad-based training on the various economic big pictures.

Data and Information: Conceptually, we need to differentiate data and information. Actuarial and financial risk models are based on past events within a fairly static set of parameters. In a fast changing world, these parameters have changed and therefore their predictive capabilities have also changed. Similarly, past financial market data reflects an old regime, and would not necessarily be indicative of new regimes. As put it by Tom Freeman (CRO of Suntrust): “I learned that you can scrub the data all you want, but as soon as you’re done scrubbing, the data is out of date. You have to have a process that ensures the data is updated upon origination and modification.” Recognizing the fast pace of changes and the new regime we are in, it is imperative to rely more on fresh field data to calibrate risk models.

Precision and Accuracy: Consider all risks facing an enterprise, there may be only 30 percent of the risks are readily quantifiable. It is not logical to spend all efforts to get more precise answers on this 30 percent of the risks, while forgetting about the other 70 percent of the risks or leaving them to clueless guesses. A precise answer may only give the appearance of the more accurate knowledge about the risk. This is my main criticism of the superficially high Value-at-Risk thresholds. While Bear Sterns, Lehmann brothers and AIG all had capitalization beyond the 99.9 percent Value-at-Risk, it did not stop them from failing, it just masked reality by false metrics.

In the same way, mathematical sophistication does not necessarily make a model more accurate. One mathematical model that has gained popularity lately is the “regime switching” model, with built-in probabilities of switching from one regime to another. The model does not live up to its name, since it does not give any guidance on when regime switching is going to take place. It is only through good risk intelligence that we can be the first to recognize a new regime.

Potential Risk in Our Attitude: It is essential for us to maintain an objective state of mind which is not polluted by our desires, incentives or preferences. People tend to be attracted to signals that confirm to their established beliefs, and tend to ignore signals or predictions they dislike. Some criticized the “sloppiness” of rating agencies in rating structured products. When easy rating was generating handsome revenues, people turned a blind eye on a simple question: “What if the house price increase turns to negative?” Risk Intelligence does not require a rigorous scientific methodology, but it requires a scientific attitude—be objective.

Based on my risk intelligence, I expect another major wave of market downturns in the first half of 2009 (asset write downs, wild swings in stock prices, and massive corporate bankruptcies). While it is difficult to predict the specific timing and outcome of various events, one thing is quite certain: the next wave of downturns (and rebounds) will be “fast and furious.” Nevertheless, when I talked to some of my fund manager friends, my message was not welcome because this is not what they want to hear.

HOW TO BUILD A RISK INTELLIGENCE SYSTEM

Here are some steps to follow:

1. Perform broad environment scanning, review firm’s business model, and select key indicators to look out for emerging risks of strategic importance to the firm. Such indicators should be updated periodically given the fast changes in the economic environment.
2. Develop a system information gathering process, from front-end risk origination and back-office monitoring, with the appropriate feedback loops.
3. Establish a broad conceptual framework to integrate both quantitative and qualitative data.
4. Offer a channel that encourages and rewards independent and out-of-box risk intelligence from employees and external parties.

Implications in Regulatory Framework: The current regulatory framework is based on compliance-type model

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validations, rather than based on risk intelligence. This is a major shortcoming, since most existing metrics consist of lagging indicators. Without proactively relying risk intelligence, regulatory metrics may be too slow to anticipate emerging risks. New regulation should adopt risk intelligence as a major tool.

Emerging Risks: As I said above, I expect that the next wave of economic downturns in the first half of 2009 to be fast and furious. This is based a study of several impending forces. Many insurance companies are monitoring their investment portfolios, only realizing that not only stocks, but the once safe investments (high grade corporate bonds, Muni, MBS, etc.) are now subject to huge swings in value. Unfortunately companies are already locked in for a bumpy ride from the burst of the housing bubble (where they were too late to get off the train). However, now we do have a precious time window to prepare for the next emerging bubble. In the medium term, I see the next emerging bubble as the U.S. dollar itself (in the medium term I do not forecast a total collapse of the U.S. dollar, but there will be significant

devaluations along with wild volatilities). The burst of the U.S. dollar bubble could well bring hyper-inflation. Insurance companies should begin carefully evaluate their risks associated with U.S. Treasury, and stress test for potential losses due to dramatic interest rate hikes along with foreign exchange volatilities. Insurance companies also need to carefully review any asset-liability mismatches. For property-casualty companies, there may be significant cost inflation associated with their insurance liabilities. As a hedge for hyper-inflation, insurance companies should consider investing in inflation-resistant asset classes, including various commodities, currency baskets, and TIPS. TIPS is an inflation-indexed treasury bond, it hedges against inflation risk, but does not fully hedge currency risk. Regulators should allow insurance companies to use more current tools to hedge inflation risk. For example, regulators could allow for baskets of currencies and commodities within the asset portfolio of insurance companies. ♦

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