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insight

Collateral Damage

THE SUBPRIME MELTDOWN AND ITS IMPACT ON THE INSURANCE INDUSTRY

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Letter from Milliman CEO Pat Grannan

A major risk event—the subprime meltdown—has emerged since our last issue of *Insight*, and it has proven to be the most contagious financial downturn in recent memory. The meltdown was hardly unpredictable—we discussed the ramifications of exotic mortgage products in these pages several years ago—but that does not make the fallout any easier to absorb. We touch on some of the implications for insurers in our cover story, "Collateral Damage."

The subprime meltdown is an example of the downside risks inherent in a highly interconnected financial world. There are positive examples of this complexity as well, some of which are illustrated in this latest issue.

- The accelerating pace of change in communications technology is creating new opportunities and leading to a savvier workforce, as discussed by a team of benefit communication consultants in "Mind the Gap."

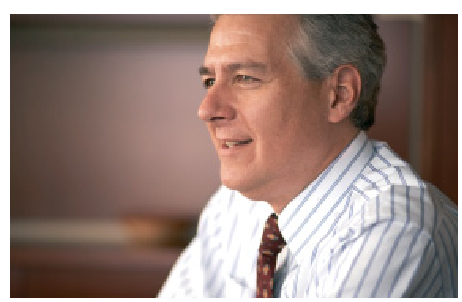
- Grid computing is opening up a new frontier in risk modeling, a trend that will accelerate as the world's largest software company helps make previously unthinkable analytic horsepower available to companies large and small.

As our world's problems become more complex, so too do the solutions. It's called progress.

Thanks for your readership.

Pat Grannan

PATRICK GRANNAN
Milliman Chief Executive Officer

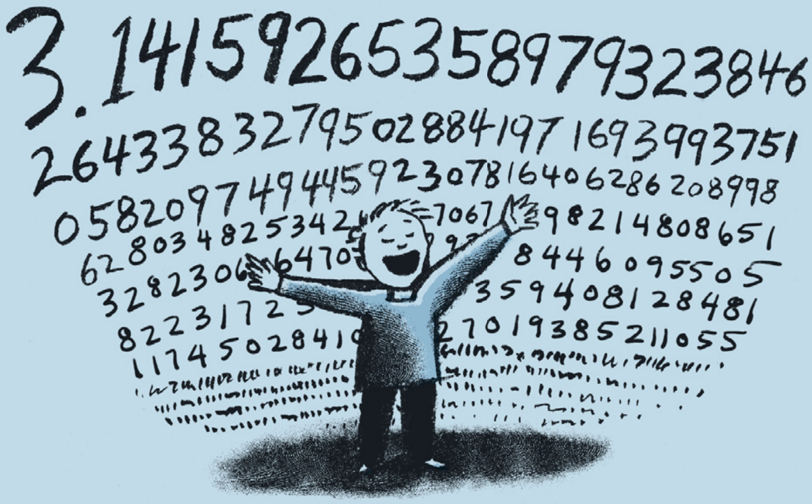


BY THE NUMBERS...

The Prime of Their Lives. Cicadas, the large-winged insects that appear en masse and can create a racket that—at more than 90 decibels—rivals the noise from a jackhammer, spend the majority of their lives as grubs underground. The broods emerge to breed every 13 or 17 years, depending on the species. Is it merely coincidence that 13 and 17 are prime numbers? Some mathematicians say no, and claim the bizarre timing of the cicada life cycle is specifically designed to help avoid predators. Cicadas that emerged every 12 years, for example, would meet up with predators that appear every two, three, four, six, or 12 years. But not so for 13- and 17-year cicadas. Over a 200-year period, these broods would face a 2% lower incidence of predators than would cicadas with 14- or 15-year cycles.[1]

Hot, Hot, Hot. Direct property damage from fires continued its upward spiral in 2005, climbing from $4.7 billion to $10.6 billion, according to the National Fire Protection Association. Total fire costs, which include both fire loss figures and all related fire prevention spending, reached an estimated $231 billion to $278 billion in 2004. Of those costs, property losses accounted for just $11.7 billion. The remaining total comprised net insurance coverage costs ($16.2 billion), fire department costs ($28.3 billion), fire protection building costs ($41.3 billion), other economic costs ($38.5 billion), the value of volunteer firefighters' time (between $52 billion and $99 billion), and estimated cost equivalents for fire-related deaths and injuries ($41.9 billion).

Down to Earth. In December of 2007, a horrifying accident took a miraculous turn for a New York City window washer. Alcides Moreno was on the job atop a skyscraper when his scaffolding cables snapped. During the 500-foot fall, he reached a terminal velocity of 124 mph—and lived. How? Moreno clung to his 16-foot scaffolding platform as he fell, and its large surface area created wind resistance and drag. The 1,250-pound scaffolding also absorbed some of the shock of the fall, as did Moreno's extremities. Although he broke both legs and an arm, the landing prevented what might have been fatal damage to his pelvis, spine, or head.[2] Surprisingly, the construction workers prone to such falls rank only fourth among occupations with the largest number of injuries and illnesses. Topping the list are non-construction laborers, drivers of heavy trucks, and nursing aides and orderlies.[3]



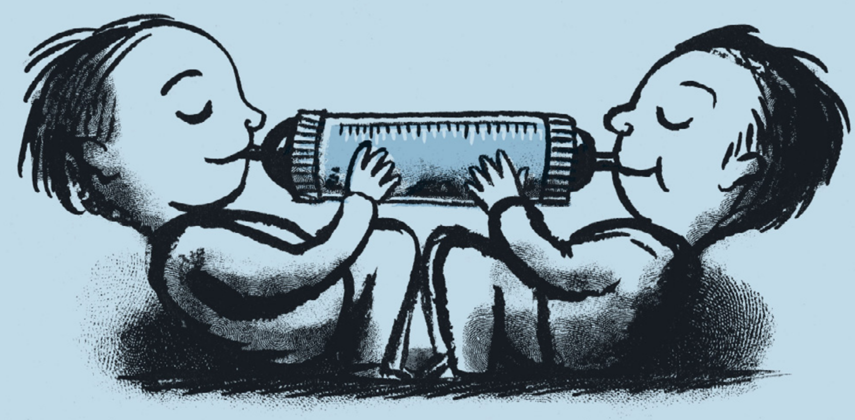
Have Your Pi and Eat It, Too. Japanese mathematician Yasumasa Kanada has set nine of the past 11 world records for calculating digits of pi. His 2002 record, set after more than 600 hours of number-crunching on a Hitachi supercomputer, still stands at 1.2411 trillion digits. A record for memorizing digits of pi was set in 2006 by retired Japanese engineer Akira Haraguchi, who recited 100,000 digits.[4] If you're still not full of pi, you might take part in Pi Day, an unofficial holiday that honors the mathematical constant. The celebration is held on March 14 at 1:59 p.m. and 26 seconds to mark the first seven digits of pi (3.1415926). March 14 is also Albert Einstein's birthday.

Second Thoughts. Leap seconds, like leap years, are used because the rotation of the Earth does not exactly match the time measurement of stable atomic clocks. The rotation of the Earth slows constantly and the solar day increases by about 1.7 milliseconds every century, largely because of tidal friction. But the Earth's rotation is unpredictable in the long term, and because the mean solar day has actually become one millisecond shorter since 2000, fewer leap seconds have been necessary. In fact, the Civil Global Positioning System Service Interface Committee recently proposed eliminating leap seconds and redefining the atomic time standard Coordinated Universal Time as a continuous time scale.

Got some facts or figures you'd like to share with us? Write us at insightmagazine@milliman.com.

Security Alert. Rented households are burglarized about 50% more often than owned households, according to a U.S. Bureau of Justice Statistics National Crime Victimization Survey. Not surprisingly, houses without security systems are about three times more likely to experience a break-in than homes that have security systems. While an alarm system may not be affordable or practicable for most renters, insurance is a different matter. A poll conducted by the Insurance Research Council in 2006 found that homeowners insurance covered some 96% of U.S. homes, while only 43% of renters carried renters insurance.

1. "Invasion of the Brood," *The Economist*, May 6, 2004.
2. Charles Euchner, "Falling Man," *Newsweek*, January 10, 2008.
3. U.S. Department of Labor, Bureau of Labor Statistics, *Top Ten Occupations with the Largest Number of Injuries and Illnesses,* 2006.
4. Otake, Tomoko, "How can anyone remember 100,000 numbers?" *The Japan Times*, December 17, 2006.



Twinsville. The likelihood of having twins currently stands at about three births in 100, or 3%, according to the National Center for Health Statistics. The probability increases with the mother's age, however. Women over 45 have a 17% chance of having twins, and women over 50 have odds of about one in nine. Odder still, twin birth rates in Massachusetts and Connecticut are at least 25% higher than the national rate, a 1999 study found. In Hawaii, by contrast, the rate of multiple births was about 30% lower than the national average. Of course, a cross-country move won't actually change your chances of having a multiple birth; other factors, like the prevalence of fertility treatments, may be at play. It just goes to show that, when presented out of context, statistics can be used to prove almost any point.

COLLATERAL DAMAGE

THE SUBPRIME MELTDOWN AND ITS IMPACT ON THE INSURANCE INDUSTRY

BY JOY A. SCHWARTZMAN, FCAS, MAAA, AND MICHAEL C. SCHMITZ, FCAS, MAAA

Prior to the collapse of the subprime residential mortgage-backed securities (RMBS) market, few people outside of the insurance industry or Wall Street were even aware of monoline financial guaranty insurers, the companies that guarantee the principal and interest of mortgages, bonds, and other financial debt instruments. Today it is difficult to pick up a newspaper without seeing something about the "meltdown" in the subprime RMBS market and the disproportionate economic damage it is causing.

As we prepare to go to press (April), the meltdown in subprime mortgage and collateralized debt obligations (CDOs) has spread out quickly from RMBS to threaten the financial stability of not only the insurers that guarantee mortgages but the entire debt market, affecting everything from credit cards to student loans to public works projects. The most dramatic fallout to date has been the sudden illiquidity of investment bank Bear Stearns, the associated buyout by JPMorgan Chase, and the federal backstop of certain Bear Stearns underperforming assets.

Some have characterized the situation as another example of "the perfect storm," wherein a series of small, individually unlikely events begins a chain reaction leading to disaster. A more appropriate model is described in Nassim Nicholas Taleb's book *The Black Swan: The Impact of the Highly Improbable,*[1] which argues that history is marked by random, unpredicted events—followed by people trying to explain away the randomness after the fact.

1 Taleb defines a black swan as an event with the following three attributes: It lies outside the realm of regular expectations; it carries an extreme impact; and, after the fact, it is deemed to be explainable and predictable. Examples of a black swan noted by Taleb are 9/11 and the success of Google.

What Exactly Happened to Subprime?

What happened is easy to describe. How deep it will go and what it might mean in the long term for financial markets and the economy is far more difficult to predict.

The residential real estate market became overheated, with home prices constantly rising in a persistently low-interest-rate environment. Loans were inexpensive and easy to obtain. Many people who had not previously been able to buy homes fell victim to the "teaser" interest rates of adjustable-rate mortgages (ARMs).

As the property collateralizing them continued to rise in value, mortgages appeared to be a low-risk investment. Adding to the sense of security, debt insurance was cheap and readily available. At the same time, the debt market was becoming more complex and securitized, with a sharp rise in the number and variety of structured credits such as CDOs and credit derivatives such as credit default swaps (CDSs).

The subsequent surge in mortgage funding fueled additional home price appreciation, which encouraged still more euphoric borrowing and further investing in the mortgage-backed security market, which further inflated the mortgage/housing bubble.

The situation fostered undisciplined lending and instances of outright fraud in the residential mortgage market. Subprime loans to borrowers with less favorable credit histories multiplied. Property was purchased with no money down and sketchy credit checks. ARMs and interest-only and payment-option loans (where unpaid interest can be added to the principal) proliferated. Nearly 23% of all mortgages taken out in 2005 were interest-only ARMs, and more than 8% were payment-option ARMs. In some markets, the numbers were much higher: In California, 34% of all new mortgages in 2005 were interest-only.[2]

Subprime loans were also bundled together and sold, divided into tranches comprising different levels of risk and interest rates. The higher-level tranches of subprime mortgage pools could receive an AAA rating and were attractive to pension funds. Meanwhile, the lower tranches were attractive to hedge funds and other investors inclined to take on greater risk in order to capture a higher yield in a low-interest-rate environment.

As long as housing prices continued to rise, the situation appeared to be a good deal for all concerned—home ownership was made available to more people and investors profited.

When housing prices began to fall and bad-credit borrowers began to miss payments in 2007, it all started to unravel. Unable to borrow further against their properties, mortgagees began to default, often walking away from their properties. Banks and mortgage companies could not recoup their losses by selling reclaimed homes in a real estate market that was rapidly losing value. Wall Street investment firms and hedge funds saw the value of their CDOs plummet and began to take losses. Total write-downs and other credit losses for the largest financial services firms total an estimated $163 billion.[3] These losses have led to the sale of other assets to meet margin calls and cash needs, resulting in the de-leveraging that is customary during the bust phase of bubbles.

> The effects of the meltdown are already beginning to ripple out from financial guaranty and mortgage guaranty insurers to companies that write other types of insurance.

Bond Insurance: An Unfolding Story

As we write, financial guaranty insurers[4] have been particularly affected. These bond insurers have taken billions of dollars of write-offs on their financial statements. The losses have included both reserves for credit impairments in which insurers expect to pay claims and even larger mark-to-market losses on their credit derivative portfolios, which include credit default swaps on collateralized debt obligations.

The strain of these losses and market conditions is calling the financial guaranty insurers' AAA ratings into question. Rating agencies have threatened to downgrade and, in some cases, actually have downgraded some of the largest financial guaranty insurance companies. Downgrades coupled with market conditions have triggered liquidation of collateral assets by financial institutions holding securities backed by mortgages and insured by the companies, forcing them to dump even more assets onto a market with little demand for risky assets. Downgrades have also put pressure on municipal bonds, which are more stable but are insured by the same financial guaranty insurance companies, making it both more expensive and more difficult for states and localities to raise money for public projects.

Monoline mortgage guaranty insurers have also taken billion-dollar losses in the form of direct payments on defaulted mortgages combined with large reserves for expected future defaults, which has led the rating agencies to reassess the ratings of some mortgage guaranty insurers. These insurers typically maintain a minimum AA- rating in order to insure loans purchased by the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), and most have been rated either AA or AA-. However, the rating agencies recently downgraded several of the mortgage guaranty insurers to levels below AA-. In response, Freddie Mac requested that those companies submit a remediation plan within 90 days to restore their AA- ratings. Ironically, the demand for mortgage insurance has surged as alternative forms of credit enhancement have largely disappeared and the mortgage insurers have tightened their underwriting guidelines.

Credit conditions continue to tighten, making credit card, student loan, auto, and other debt more expensive and difficult to obtain. This affects the availability of credit, even to borrowers with good histories.

The sudden liquidity crisis at Bear Stearns, which occurred with stunning speed and prompted a remarkably swift intervention by the Federal Reserve and rival bank JPMorgan, was an unprecedented event and a major shock to the financial system, demonstrating just how deep, far-reaching, and serious the ramifications of the crisis could be.

And there may be more to come. The world's largest bond fund company, PIMCO, reports massive resets of certain rates totaling $30 billion to $60 billion per month in resets throughout 2008. PIMCO indicates that some of the resets from the initially low teaser rates could range from 400 to 700 basis points and anticipates that the economy will be affected by these resets throughout 2008 and 2009 with potentially more homeowners defaulting on their loans if/when they become unaffordable.

As we write, proposals from different quarters for a possible bailout of the bond insurance industry come and go, receiving mixed responses from the players. Some insurers are considering radical surgery to isolate the damage — cutting the CDO and mortgage-backed segments of their books off from their more stable municipal bond businesses, splitting into two companies. At least two monolines are claiming the right to cancel payments on some guarantees they wrote, claiming their counterparties fraudulently entered into credit default swaps. Warren Buffett, chairman of Berkshire Hathaway Inc., has stepped in and started his own bond insurance company to help municipalities and states obtain insurance for their public debt, offering as much as $800 billion in secondary insurance.

But one thing is certain even at this stage: The effects of the meltdown are already beginning to ripple out from financial guaranty and mortgage guaranty insurers to companies that write other types of insurance. To begin with, various insurance companies in all areas of the business are also investors with different levels of exposure to asset-backed securities. Beyond that, directors and officers (D&O), professional liability errors and omissions (E&O), life, title, and other lines are beginning to feel the effects of the crisis, as class action and other litigation abounds and housing prices plummet.

Assessing the Ripple Effect

DIRECTORS AND OFFICERS/PROFESSIONAL LIABILITY ERRORS AND OMISSIONS There are mixed views from industry insiders at this point about the impact of the subprime situation on D&O and E&O loss costs, pricing, and availability.

There was a sharp up-tick in the filing of securities class action suits related to subprime issues during the latter half of 2007. One hundred companies were sued from July through December 2007, reversing a trend of eight consecutive quarters of below-average litigation, according to Stanford Law School, which tracks such actions.[5] The financial services sector was hardest hit, with 47 companies sued in 2007, more than quadruple the number from the year before. Sixty-eight percent of those cases (32) involve allegations related to the subprime market.[6] The collapse of Bear Stearns, to take just one event, is certain to prompt a number of lawsuits in 2008.

We already know that D&O rates for financial services firms rose almost 20% in the fourth quarter of 2007 when compared against fourth-quarter rates for 2006.

Despite these numbers, there are views that the D&O/E&O industry conditions will not be largely influenced by the subprime mortgage crisis. "There may be losses," Paul Newsome, a managing director and insurance analyst at Sandler O'Neill and Partners, told National Public Radio's *MarketWatch*, "but the results may be so good overall in the D&O business that this might not show up on the radar much."

Any optimism in this sector is based in part on the general and long-term trend of fewer securities class action suits over the last decade, the result of the 1995 Private Securities Litigation Reform Act (PSLRA). Even with the recent spike arising from the subprime market meltdown, the current level of total activity in securities class action filings is still 14% below the average for the 10 years prior, 1997 to 2006.

Others point out that when it comes to D&O/E&O, "the sting is in the tail," and that it could take years for the full effect of the subprime situation to hit the market. Reinsurance broker Guy Carpenter believes total subprime losses to D&O alone could top $3 billion, while other analysts have estimated that the damage could reach $9 billion.[7]

This view was reaffirmed in April, when Fitch Ratings estimated $3 billion to $4 billion in D&O liability and E&O claims related to litigation stemming from the subprime mortgage crisis. Fitch noted further that "insurers' potential losses could be substantially higher if credit issues spread to sectors not directly tied to the subprime mortgage market or if market conditions lead to increased bankruptcies."

TITLE INSURANCE According to Paul J. Struzzieri, a principal and consulting actuary in the New York property and casualty practice of Milliman, the primary effect of the deterioration of the subprime mortgage market on title insurance companies is the loss of business and revenue they are suffering as the housing market softens and fewer homeowners refinance.

A.M. Best confirms, reporting that demand for title insurance is down significantly as the current subprime situation depresses the housing market and makes loan origination more difficult.[8] On March 22, however, *U.S. News and World Report* noted that the title insurance industry was the U.S. stock market's "top-performing industry so far" in 2008. Morningstar analyst Jim Ryan told the publication that title insurance firms "are very well capitalized companies with huge reserves that can wait out bad times."

Struzzieri points out one trend in the title insurance industry that highlights increased efforts by lenders trying to recover losses from insurance policies. "Title insurance companies often issue closing protection letters (CPLs), which reimburse the lender for losses incurred in connection with closings of real estate transactions conducted by an agent of the insurer," he says.

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2 Veena Trehan, *The Mortgage Market: What Happened?,* NPR.org, April 26, 2007.
3 Swiss Re Limits Subprime Damage, *International Herald Tribune,* February 29, 2008.
4 Also referred to as bond insurers or monoline insurers throughout this article.
5 *Subprime litigation may dent D&O insurers*, MarketWatch, Jan. 3, 2008.
6 Ibid.
7 *Guy Carpenter Specialty Practice Briefing,* November 2007, Guy Carpenter & Company LLC.
8 "A.M. Best Special Report: Insurance Industry's Subprime Exposure May Be Modest, But Contagion Is Certain," Claims-Portal.com, www.claims-portal.com/npps/print.cfm?nppage=1786&tfn=story12131649.txt.

FOUR QUESTIONS

ABOUT SECRETARY HENRY PAULSON'S PROPOSAL FOR AN OPTIONAL FEDERAL CHARTER (OFC)

As part of his blueprint for financial services reform in the wake of the subprime meltdown, Treasury Secretary Henry Paulson proposed an optional federal charter for the insurance industry, an intermediate step that would lead to the creation of a new Office of National Insurance (ONI) within the Treasury Department. ONI would have broad powers to address "international issues" and "competitiveness."

Q.

WASN'T LEGISLATION SIMILAR TO SECRETARY PAULSON'S PROPOSAL INTRODUCED IN CONGRESS LAST YEAR, BEFORE SUBPRIME BECAME AN ISSUE? WHAT'S THE CONNECTION TO SUBPRIME?

A.

It is true that neither the issue nor the proposal is new, and the relationship to subprime is tangential at best. This proposal is the latest move in a tug of war that has been going on for more than a hundred years between those who favor the existing state-based system of insurance regulation and those who would like to see greater federal involvement. In 1869, the Supreme Court held in *Paul v. Virginia* that insurance was not interstate commerce and should be regulated by the states. In 1944, *Paul v. Virginia* was overturned, prompting Congress to pass the McCarran-Fergusson Act, giving insurers limited exemption from antitrust laws and preserving states' role as primary regulators. The solvency crises of the 1980s and early 1990s and the passage of Gramm-Leach-Bliley in 1999 added fuel to the debate. More recently, growing criticism that the current system is out of date and stifles competition has led to increasing pressure for some kind of overhaul.

Q.

WHAT KIND OF REGULATORY IMPACT CAN WE EXPECT FROM SECRETARY PAULSON'S PROPOSAL, ASSUMING IT GOES FORWARD?

A.

Very little in the short term; the process will take some time. Ultimately, the proposal calls for a dual regulatory scheme with oversight shared between the states and the federal government, much like the current banking system. Under Treasury's proposal, state-based regulation would continue for those companies electing not to be regulated at the national level.

Q.

WHAT HAS BEEN THE RESPONSE OF THE INDUSTRY TO SECRETARY PAULSON'S PROPOSAL?

A.

Mixed. Large national companies tend to favor a federal system while smaller companies and trade groups representing brokers and individual agents generally would like to see the state system retained. Both groups admit there are competitive and international issues that need to be addressed, but opponents of the Optional Federal Charter (OFC) would like to see the state system revamped to make it more competitive before bringing in any federal component.

Q.

WHAT ARE THE COMPETITIVE AND INTERNATIONAL ISSUES DRIVING THE PROPOSAL, AND WHAT EFFECT COULD AN OFC HAVE ON COMPETITIVENESS?

A.

Proponents point out that responding to 51 different sets of regulatory requirements is burdensome for national and international companies doing business in the United States. Those opposed suggest that competitiveness will actually suffer under a federal scheme, as it could lower the regulatory burden for large and international companies, encouraging them to enter state markets they have heretofore avoided, undercutting costs and putting smaller insurers out of business.

Regardless of whether Secretary Paulson's proposal becomes law in its entirety, the meltdown in subprime will earn its status as a "black swan" event if, in its wake, the U.S. insurance regulatory system finally adopts the federal oversight it has been considering for decades.

"Historically, most CPL claims brought against title insurance companies have involved fraud, dishonesty, or negligence on the part of the agent in handling the lender's funds, or, to a lesser extent, when the agent fails to comply with the lender's written closing instructions. Recently, however, lenders have been using the 'failure to comply with written closing instructions' portion of the CPL coverage with increasing frequency. For example, title insurers have seen sharp increases in CPL claims seeking recovery for what lenders have lost in real estate transactions involving foreclosures and defaults, alleging that the agent didn't follow every single instruction to the letter. Often, the claims are made even when the failure to precisely follow the closing instructions did not lead or contribute to the loss."

So far, Struzzieri says, it is too early to tell if the lenders' claims using this strategy will be successful, but title insurers are nonetheless expending resources responding to these claims. The title industry has responded by tightening the CPL language in an attempt to restrict recoveries to situations where the failure to follow instructions relates to the status of the title or the priority of the mortgage. Therefore, while Struzzieri believes that this is not destined to become a major problem for title insurers in the future, it is indicative of how fervently all those who have suffered losses are looking for ways to make someone else pay.

LIFE INSURANCE An article by two of our Milliman colleagues, Steven I. Schreiber and Philip Simpson,[9] notes that as much as $15 billion of securities has been issued to capital market investors on transactions involving life insurance risks. Most of these deals have included a "wrap" from a financial guarantor, making the securities more attractive to investors. The availability of these wraps has been reduced significantly as a result of the subprime mortgage and CDO troubles, making it difficult to bring new transactions to market with a wrap.

Posing the question, Is this the end of the road for the life securitization market or just "a bump in the road?", Schreiber and Simpson come down solidly on the side of the bump. "The difficulties the financial guarantors are facing do not change the fact that there are real benefits to insurers from these transactions." The market for life securitizations still exists, even in the absence of wraps, as demonstrated by the successful value-in-force (VIF) transactions completed by Bank of Ireland and Unum in October 2007.[10] The bump in the road is not going to bring life securitizations to a halt.

Short term, Schreiber and Simpson expect to see insurers placing more business in private transactions, which may entail:

- Banks providing the funding
- The wrapped market coming back in the long term
- More transactions being placed in unwrapped tranches

"[G]iven the interest and needs of insurance companies, we do expect to see continued development in the structured life insurance marketplace," say Schreiber and Simpson.

A Difficult Event to Characterize

Like a true black swan event as described by Taleb, the causes and ramifications of the subprime meltdown are complex. But unlike a black swan, the initiating event—the collapse of the subprime mortgage market itself—was not an unpredictable outlier.

Many people sounded alarms about the potential instability of mortgage-backed securities well ahead of the event, including Milliman in these pages.[11]

There are direct and indirect consequences from the collapse of subprime. The direct consequences of the subprime meltdown were predictable: a housing recession, a tightening of credit, going forward perhaps more regulation from the federal government and less inclination among investors to buy into complex debt instruments (at least for the time being).

But the indirect or secondary consequences are too complex to predict with any confidence. For example, it is impossible to predict whether or not another event like the collapse of Bear Stearns could worsen and extend the severe loss of confidence affecting the capital markets and ratings agencies, making it even more difficult for the economy to bounce back in the near term.

There are more surprises in store and much still to learn before we will know with any certainty what the full and long-term impact of the sudden deterioration of the mortgage market might be on the insurance industry and the overall economy.

What we can say for certain is that the insurance industry, along with the entire financial community, will emerge from the subprime debacle with a renewed awareness of risk, and may even end up being stronger for the experience. **M**

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MICHAEL SCHMITZ *is a principal and consulting actuary in the Milwaukee office of Milliman. His practice focuses on financial risks such as mortgage guaranty, financial guaranty, and credit enhancement products. He has assisted large U.S. banks in their management of credit risk. In addition to working with financial guaranty insurers, he has consulted to the majority of the insurers that comprise the private mortgage insurance industry.*

9 Steven Schreiber and Philip Simpson, "Insurance-linked Securities: A Bump in the Road," *International Investment & Securities Review 2008*, Euromoney Yearbooks.

10 Bank of Ireland obtained Equity Core Tier 1 capital credit for its VIF, while Unum used a block of disability income policies to redeploy capital and improve return on equity by approximately 70 basis points.

11 Michael Schmitz and Kyle Mrotek, "What Happens When Credit Risks Come Home to Roost?" *Insight*, November 1, 2006.


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CHARTING A COURSE

HOW ENTERPRISE RISK MANAGEMENT CAN BALANCE RISKS, IMPROVE OPERATIONS, AND CREATE VALUE

BY JAY GLACY, ASA, MAAA, CFA, CERA

Enterprise risk management (ERM) projects often fail to achieve their potential value. In many cases, the full measure of that value is never even recognized. That is because most discussions of ERM tell only half of the story—the half that's about preparing for and protecting against risks that can threaten the solvency of an enterprise. This is certainly a worthy goal. Companies that analyze and plan for "tail" risk are better able to preserve their value in the long term than those who don't. But focusing exclusively on value preservation misses an even more compelling opportunity—to use ERM to create operational and financial advantages by optimizing assets, balancing product lines, introducing risk-aware governance, and more.

Applied in this way, ERM becomes a tool for maximizing the ability of insurance companies (or any enterprise) to take on risk-bearing profit opportunities. Instead of solely quantifying the minimum level of required capital to prevent insolvency at certain confidence levels, ERM as value creator optimally allocates scarce resources (including capital) to enable companies to take advantage of the maximum number of business opportunities. At its best, ERM improves decision making, helps to increase the company's value, and balances risks in the most resource-efficient ways.

We start with a definition of ERM that includes its role in the creation of value: *Enterprise risk management is a comprehensive, distributed framework for the risk-conscious deployment of capital in localized decision making.*

In practice, this definition of ERM leads to a distinct approach with identifiable features. It is:

DISTRIBUTED: With this definition, we immediately expand the field of ERM from a narrow group of executives or specialists to many of the people who make up the organization. In this approach, ERM is designed as a mechanism to support good business decisions throughout the company. That enables risk management to be proactive rather than reactive. Using ERM only at the highest levels of decision making robs the discipline of much of its power to create and preserve value. Every day, every product-design, marketing, operational, or financial decision that is made has the potential to affect a company's risk position. Risk awareness should be distributed throughout an organization so that it can have the most beneficial impact on the hundreds of daily choices that make up the real life of a company. This allows risks to be managed at the moment rather than tallied up after the fact. More importantly, adopting a distributed approach is the first step toward transforming ERM into a value creator, as it incentivizes and empowers people to make the best possible decisions.

INFORMATION-DRIVEN: One of the central goals of ERM is to widen the range of risks that an organization considers. If risk-influenced decision making is distributed, it must also be accompanied by a comprehensive picture of companywide risks. Managers attempting to make risk-conscious decisions without a full complement of information are still shooting in the dark. Therefore, they must have the means to gather that information and a framework for interpreting and communicating it. Here is another instance of ERM as value creator: It encourages the company to adopt systems that give people the information they need to make the right decisions.

OPERATIONALLY INTEGRATED: Making the best decisions in light of enterprise risk is not easy, and, in fact, not everyone will have the knowledge or skill to make those decisions. Operationally, a value-driven ERM framework looks very different from a system with a siloed approach. Value-driven ERM must be supported by a strong governance framework that guides and monitors the actions of every decision maker. That framework consists of ERM policies and procedures that can be followed by individuals throughout the organization; roles, responsibilities, and reporting structures to create accountability for implementing the policies and procedures; and the establishment of best practices, expressed as operational controls and guidelines. These structures must be responsive to changing company and market conditions if they are to avoid ossifying into a rigid system that does more harm than good.

Modeling Risk

In the ERM field, one of Milliman's key tools is a new methodology called CRisALIS.™ The idea behind CRisALIS is to help companies elucidate and quantify what at first appears to be an impossible tangle of complex risks. By concisely mapping the total universe of risks and the relationships among them, CRisALIS supports:

- Better quantitative modeling
- Defining acceptable levels of given risks depending on their impact on the total risk profile
- The development of "early warning" systems that monitor key risk drivers and alert decision makers to potential crises before they happen

They must also be aligned with corporate culture to ensure observance and adherence.

The result is a way of doing ERM that goes beyond the remediation of risk exposures to enable the following:

EMPOWERMENT, giving people the information, authority, and structure they need to make the best, most organizationally aware decisions.

DISCERNMENT, giving decision makers the perspective they need to seek comparative context among the broad range of risks (both financial and non-financial) they face.

CONVICTION, increasing the confidence with which companies determine and deploy correct levels of risk capital in light of balance sheet interactions.

CONSENSUS, helping partners, customers, and regulators understand and support decisions that affect risk.

Economic Capital

Economic capital (EC) models are central to ERM. In keeping with our definition of ERM as a means to create value by distributing risk awareness and decision making throughout an enterprise, we define economic capital thus: *Economic capital is the balance sheet power that ensures the long-range economic vitality of the enterprise and its ability to seize risk-bearing profit opportunities.*

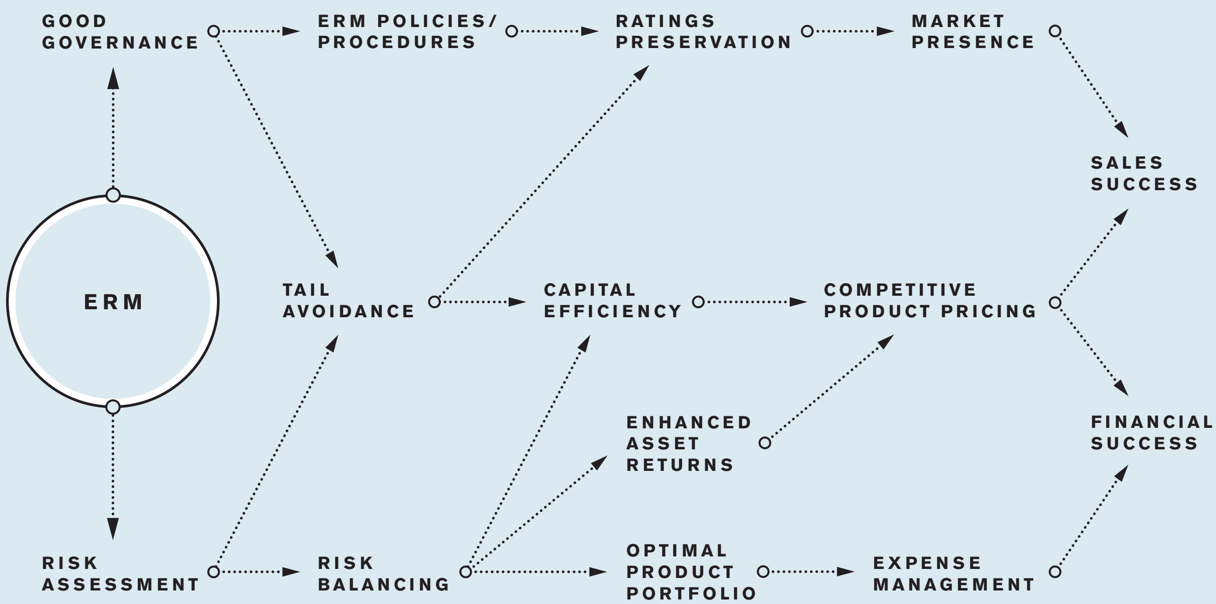
The first part of this definition is the one that is discussed most often. EC is characterized as a better, more sophisticated way to measure the resources necessary to ensure solvency in tail-risk situations. The second half is what distinguishes value-driven ERM from other approaches: ERM is a means to maximize opportunity and value in a risky world. Understanding resource needs under extreme conditions is part of the equation; understanding how risks are interrelated and can exacerbate or offset one another completes it.

Value-driven ERM asks EC to answer more sophisticated questions than "How much risk capital do we need to set aside?" As with ERM in general, EC should inform decision making at the level of individual projects and products on a daily basis. Two questions that permit EC this enlarged role are:

1. WHAT IS THE ECONOMIC RETURN ON A PROSPECTIVE PROJECT IN RELATION TO THE RISK CAPITAL IT COMMANDS? By its nature, an EC model can quantify the relationship between a specific project and the enterprise's existing risk profile. Using EC in this way enables a company to evaluate projects based on consistent, coherent, and comparable criteria. If a project will unfavorably affect risk capital profiles, it can be modified or abandoned.

2. WHAT IS THE OPTIMAL ARRANGEMENT OF ASSETS AND LIABILITIES GIVEN MY BUSINESS SITUATION AND APPETITE FOR RISK? By using EC to answer this question,

ERM's Progression Through an Organization



the range of potential solutions to a given risk situation is broadened. Instead of merely abandoning a risk-bearing project, EC enables decision makers to contemplate how they can mitigate risk through shifting investments and products that balance one another. EC does this by objectively determining how product-line and asset interactions add or destroy value. The goal is to optimize the asset/liability portfolio to maximize the ratio of project value to required capital.

The Right Tools for the Job

Discussions of ERM tend to become opaque rather quickly, and it is not our intention to cloud already murky waters. Our unique approach to ERM arises from experience in the field, watching companies implement ERM tools in ways that add to the burden of management without creating value for the organization beyond regulatory compliance. *When ERM is implemented as an empirical, enterprise-wide, governance-conscious system, it can create an operational environment that allows a company to maximize opportunity, minimize misallocated capital, and help to ensure solvency in tail-risk scenarios.*

The diagram on this page maps the movement of the ERM process through the organization. This diagram graphically represents the assertion that good ERM drives two types of initiatives: analytical (risk assessment) and operational (good governance). Analysis alone can help address balance sheet issues but cannot effect operational change, which is crucial for minimizing tail risk, enhancing returns, and demonstrating risk awareness to ratings agencies and the marketplace. Operational change in the absence of numeric analysis can create more risk than it ameliorates, especially in the financial and insurance industries, where risks and the relationships among them are complex and interrelated.

On the other hand, *when operational and analytical ERM initiatives work together under the guiding principle of value creation, the results can be transformative*. Integrated, distributed, profit-focused ERM can give companies real competitive advantages both immediately and in the long term. The key is to stop seeing ERM as compliance drudgery or a cost center and start seeing it for what it is: a tool for making better decisions. **M**

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INBOX-OPEN
pls c me ASAP re Q2 rpt :-)
SPACE

MIND THE GAP

ENGAGING A NEW GENERATION OF EMPLOYEES

BY DENISE FOSTER AND PAUL HARRIETHA

Getting the attention of the workforce has never been more challenging — or interesting. The relatively recent birth of the digital age has changed the employment landscape considerably. At the same time, the corresponding proliferation of technology and resulting connectivity has had a profound effect on workers' expectations and employee communications.

Baby Boomers, who currently dominate the senior ranks in many organizations, are looking for effective ways to connect with their new-generation employees and recruits. What they are discovering is that the line between the generations is defined by more than a seemingly innate comfort with technology and gadgetry, and that the key to effective communication extends beyond the development of funky Web sites or the delivery of electronic media.

As each new group of workers enters the workforce, some sort of generational shift takes place. Like the cohorts that preceded them, new-generation employees — often referred to as Millennials or the Internet Generation (iGen) — are, in a word, *different*. They are entering the workforce with unique identities, values, characteristics, behaviors, and skills based largely on their experiences and life-defining events. Consistent with their generational identity, they are motivated by different factors and rewards (real and intrinsic) than their Baby Boomer bosses — and enter the employment relationship with an entirely different set of needs and expectations.

The New Generation

Millennials have a strong self-image. They feel confident in their ability to make an immediate contribution and have no intention of falling into the same bureaucratic and autocratic systems that have defined North American business for the better part of a century. These employees want meaningful employment and an immediate say in how the employment relationship will unfold.

And why not? Millennials are generally better equipped than their superiors to manage technology in an increasingly technology-driven world. They're the first generation to grow up in a near cashless society where transactions are primarily electronic. They do and learn online; they have a vast amount of information at their fingertips; they have a can-get-it-now attitude as a result. Paper is definitely passé.

Peer-to-peer communication begins to define Millennials' needs and expectations. They're loyal not to a company or even a supervisor, but to each other. They don't look to authority figures for credible information, but rather vet it through community discussions in social forums such as Facebook, MySpace, Wikipedia, and their favorite blogs. It's a matter of peer approval rather than peer pressure.

Organizations intent on attracting and retaining these new-generation employees must be prepared to explore these differences, to better understand what makes the new generation tick, and to adapt existing (often long-standing) systems. And they need to do so despite the fact that the change will be difficult for some.

Considering the Cohorts

To understand the potential challenges associated with integrating Millennials smoothly into the workforce, first consider the landscape—and the likely generation cross-section of employees seeking to influence the workplace:

TRADITIONALISTS (AGE 63–86) want to build their legacy in the workplace. They were shaped by the military model of command and control. They grew up listening to the radio as a family and sacrificing for World War II. The 1929 stock market crash taught them that nothing is safe, so they feel lucky to have a job and they keep it for life.

BABY BOOMERS (AGE 44–62) want to put their stamp on things in the workplace. They grew up watching television together. There was a sense of optimism as minorities and women fought for (and gained) more rights. Because of the number of Baby Boomers born, they competed fiercely for jobs—and are now very loyal employees, willing to work long hours. In exchange, they feel entitled to what they are "owed."

GEN XERS (AGE 28–43) want to maintain independence. They grew up recording television shows and watching them when they wanted, sometimes watching shows together. Instead of competing for work themselves, they see employers competing for their talent. Attraction and retention have become priorities for employers. Gen Xers job hop, looking for a better "deal," and don't appreciate the authoritarian-type manager. They rely on cell phones and are no longer tied to the desk. Computers connect people more across the nation and world; people a cubicle away talk less. Work-life balance is a priority for Gen Xers.

MILLENNIALS/IGEN (AGE 8–27) want to find work that has meaning. They watch television programs together less and less. Instant messaging, iPods, blogs, and social media (Facebook, MySpace) have changed the way they play, work, and think. They access what they want when they want online. Attention spans are short because Millennials are constantly stimulated by various media—which also means that they multitask easily. They expect rewards and recognition for just participating. They want control, information, collaboration, and recognition—and they want it now.

Each cohort is a product of its time and experience. Events and people of these times shape employees' thoughts, perceptions, values, beliefs, and behaviors. This means they have distinct differences in how they respond to authority, commit to their organizations, interact with each other, manage work and employees, and learn.

Obviously, these important differences will influence the success of employee communications, especially when you note how and where employees access their information. This has never been more true than when you consider the Millennials.

Welcoming the Millennials

Successful employers will recognize the need to tailor communication practices and tools to engage this new generation, particularly when they consider that effective communication relies on the interplay of three key variables. In descending order of importance, they are:

A Call to Action

A recent survey conducted by the International Association of Business Communicators came to a disturbing conclusion: Many organizations are failing to engage their younger employees and connect with them through effective communications.

- 64% of respondents say that top management at their organization does not understand Millennials' viewpoints and communication preferences.
- More than 75% of respondents acknowledge that existing communications methods do not effectively connect with the younger workforce.
- 90% understand the potential risks their organization will face if communications technologies and strategies are not updated.
- 74% say that no significant efforts have been made to modify existing communications systems.

Source: *IABC Pulse Survey March–April 2008*

LEADERSHIP

- *Currently:* Operating within a formal hierarchy, traditionalists and Baby Boomers generally take their cues from their official leaders within the organization. They are good soldiers willing and able to do largely what they are told.
- *Get ready:* Without the same respect for authoritative structures, new-generation employees are more inclined to question direction and to place their faith in unofficial leaders, immediate managers, and other team members. A community of peers is more credible than senior leaders.
- *What to do:* Organizations must be prepared to communicate more directly with employees and front-line managers — and to anticipate the inevitable push-back that the new-generation employees provide.

REWARDS

- *Currently:* Organizations use traditional reward structures, including monetary rewards, to attract, retain, and motivate employees.
- *Get ready:* Research indicates that new-generation employees tend to be less career-focused and money-driven than their older colleagues, which means that cash-incentive and service-based programs will be of less interest to them.
- *What to do:* Look closely at your work environment, management structures, development opportunities, and broader reward programs. Do they address the needs and expectations of new-generation employees? Millennials are looking for meaningful work and a place where they can collaborate and contribute. Can employees influence their work and workplace? Is their input valued and acted upon?

SUPPORTING MEDIA

- *Currently:* Employees are bombarded with push media every day (print and e-mail, primarily) because organizations lack the policies, processes, and infrastructure to create a "pull communication environment" where employees can quickly access the information they need or want. Employee communication is credible when it comes from a manager/supervisor, a familiar department (like human resources), or senior leadership.
- *Get ready:* Millennials disregard information *pushed* at them; they prefer to get it themselves and want unobstructed access to it (or they want to sign up to receive information that is relevant and meaningful to them). Employee communication is credible when it has been vetted through their peers.
- *What to do:* An overwhelming majority of new-generation employees want real-time, on-demand, peer-to-peer, highly personalized communications available online.

As the war for talent rages on, there is little doubt that Millennials will continue to exert their influence in the workplace and employers will struggle to find balance between traditional business practices and more progressive ones. Ultimately, employers must provide management structures and communication systems that are functional and effective for the existing ranks of workers, but that address the growing demand for technology-driven, interactive, peer-based, and personalized communications that appeal to new-generation employees and recruits.

If we accept the premise that employees are the functional core of a company, employee engagement remains a key to operational success. Business leaders intent on winning the employment game have little choice but to invest the time and effort required to understand and respond to employees' communication needs — even if those needs challenge the leaders' own generational identities and sensibilities. M

Effective Communication for the New Generation

BUILD IT OR BUY IT. If you don't provide peer-to-peer communication through vehicles like wikis or blogs, your employees will build their own. Your employees and customers are online whether you want them to be or not, and the conversations extend beyond your city and state – they're global and public. You may as well control some of the process and understand what they think and believe along the way.

GET EMPLOYEES' INPUT AND ACT ON IT. Conduct focus groups or surveys and ask meaningful actionable questions. Communicate what you learned and discuss how employees' input affects their jobs and the company's business strategy.

PERSONALIZE IT. Don't waste your time with off-the-shelf communications. Create a customized approach (and media) that can effectively meet the specific needs of your employees.

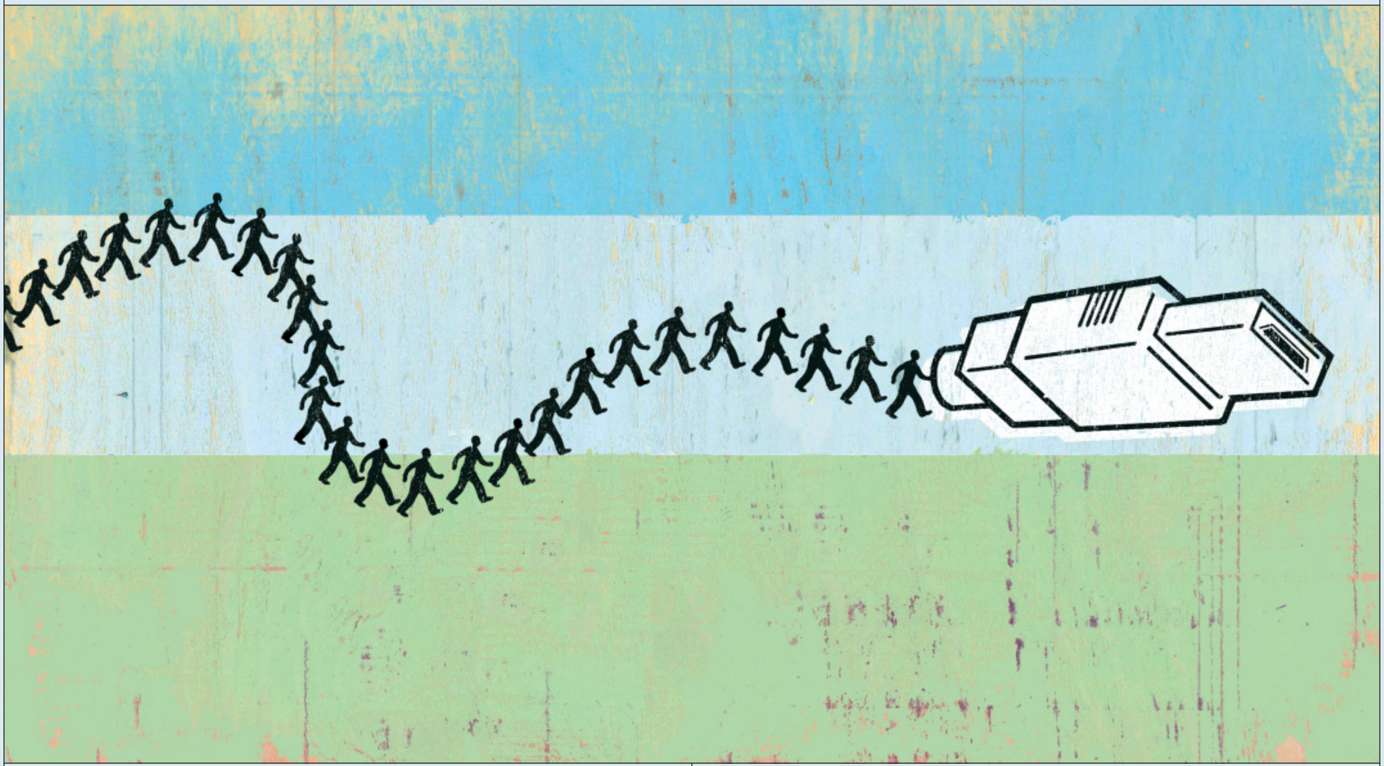
DENISE FOSTER *is a principal and the practice leader of the Employee Communication department in the Seattle office of Milliman. With 17 years of experience in member communications, her specific areas of expertise include healthcare, retirement, and member research. She has advised organizations in both the public and private sector, many with a significant union presence.*

PAUL HARRIETHA *is a principal and communications practice leader with Eckler Ltd., Milliman's associated firm in Canada and the Caribbean. He specializes in change management, member engagement, and the communication of total reward programs. Over the past 20 years, Paul has designed and implemented strategic communication programs for a range of clients in both the private and public sectors.*

ACTUARIAL HIGH-PERFORMANCE COMPUTING

INCREASINGLY ACCESSIBLE AND INDISPENSABLE

BY PAT RENZI AND JIM BRACKETT



What does running an insurance risk model have in common with ray tracing to create photorealistic computer graphics? Millions of data points and the technology it takes to analyze them.

Today, competitive pressures and regulatory changes in the life insurance industry are demanding increasingly complex analysis and, as a result, more sophisticated actuarial tools. But knowing what needs to be understood and having the technology to analyze it are often two different things.

Milliman has created programs that generate financial projections to support highly complex risk analysis. Dedicated cluster computing has become an essential tool for this level of modeling, but the costs have been prohibitive to many in the insurance industry. Recently, Milliman teamed with Microsoft® to provide a scalable cluster computing solution that opens the door to highly sophisticated analyses to nearly everyone in the insurance business, both large and small companies.

* * *

A BRIEF HISTORY OF CLUSTERING It was only 20 years ago that insurers began running seven scenarios to model risk and return, up from a long-time standard of evaluating a single scenario. Over the years, technology has provided the industry with tools to increase the accuracy of projections, and eventually insurers began running 50 scenarios. In today's highly demanding risk-analysis environment, it can now take 1,000 scenarios and millions of data points to effectively manage risk and return. In fact, a *1,000-scenario model with reserves and capital based on 1,000 paths at each valuation point for a 30-year monthly projection requires the cash flows for each policy to be projected 360 million times*.

For the insurance industry, modeling continues to grow more sophisticated. Some of today's complex models exceed the capabilities of desktop computers and even enterprise computing resources. To meet these challenges, actuaries harness computing power through a multitude of machines, or a high-performance computer cluster. There are companies that are running stochastic and nested stochastic projections on clusters with as many as 1,500 PCs.

A 1,000-scenario model with reserves and capital based on 1,000 paths at each valuation point for a 30-year monthly projection requires the cash flows for each policy to be projected 360 million times.

That level of sophisticated analysis is familiar ground to a range of industries. Oil and gas exploration is the oldest and largest user of high-performance computing, with some estimating that as many as 30,000 servers have been employed by a single company for seismic analysis and reservoir modeling. High-performance computing is used for molecular modeling and protein folding in drug design, and it is playing a critical role in the world's largest particle physics microscope, the Large Hadron Collider.

* * *

THE NEW AFFORDABILITY For the widespread insurance industry, high-performance computer clusters come at a cost that most have not been able to afford. Even the deployment and maintenance of smaller-scale, 50-PC, high-performance computers demand an investment in hardware and expertise outside the reach of many insurance firms. In fact, some large companies struggle to dedicate the required resources.

Most small and mid-sized firms are working to keep up with this evolution in the industry, but the magnitude of the investment of resources it requires will pose challenges. To help provide a more cost-effective solution and, as a result, much greater access to important grid technology, Milliman worked with Microsoft to integrate its financial modeling tool, MG-ALFA® (Asset Liability Financial Analysis), with Windows Compute Cluster Server 2003. MG-ALFA supports complex stochastic and nested stochastic projections, which can require hundreds of hours of computing time without cluster computing. The integration of MG-ALFA with Microsoft's Windows Compute Cluster Server 2003 provides distribution of sophisticated analysis to clusters ranging from a single node to several thousand simultaneously.

Through the solution's integrated Job Scheduler, both job creation and submission can be performed directly from a desk-side application, which helps make complex models accessible to a wider swath of the industry.

"Microsoft and Milliman are working closely together to address the growing technological challenges presented by increasingly complex actuarial analysis," said Jeff Wierer, senior product manager of high-performance computing at Microsoft Corp. "Together, we're able to provide our customers with a solution using a familiar user interface that easily integrates with their existing system."

In order to make its solution more widely affordable, Microsoft released the Windows Compute Cluster Edition (CCE) of Windows Server 2003, which is fully compatible with existing 64-bit versions of Windows Server 2003 and runs a full range of actuarial modeling programs. This version of Windows Server significantly reduces the software cost for implementing high-performance computer clusters and can support processor counts in the hundreds or thousands. Microsoft combines CCE with the Microsoft Compute Cluster Pack (CCP) as the components of Windows Compute Cluster Server 2003. The system serves to control and mediate all access to cluster resources as well as provide a single point of management, deployment, and job scheduling for the computing cluster.

The ability to run highly sophisticated and specialized analyses quickly and accurately helps level the playing field. The digital divide of high-performance cluster computing has threatened to leave many in the insurance industry behind. Increasingly, fast and precise risk modeling is becoming mission-critical. Eventually, the information gained through high-performance cluster computing will likely be as central to the insurance industry as it is to theoretical physics and computer gaming. **M**

HIGH-PERFORMANCE, OVERNIGHT

The high-capacity analysis provided by cluster computing also is essential to run scenarios for market exposure hedging. Milliman's MG-Hedge® provides a market scenario generator that produces hundreds of millions of time series paths based either upon a risk-neutral methodology or upon a "realistic scenario" methodology. With this system, clients are able to look at risks based on their actual portfolios and determine the optimal course of action. *The sophisticated modeling provided by MG-Hedge – which for any given application might include stochastic volatility and/or stochastic interest rates in a stochastic-on-stochastic framework – requires analysis of sometimes billions of data points.*

MG-Hedge was designed from the beginning to model actual data over many "what-if" scenarios, rather than use aggregate data or make broad assumptions. With this type of analysis, as with insurance policy modeling, increasing the capacity for data processing provides better information and decisions. Running on numerous systems also provides the opportunity to maximize resiliency. If there is a problem with one computer, there are many others available to ensure that the integrity of the process is preserved.

In addition to processing enormous amounts of data, MG-Hedge must generate information that is highly time-sensitive. Our clients' hedging strategies need to be determined overnight. As a result, MG-Hedge was built to always run on high-performance cluster computing.

PAT RENZI *is a principal with the Seattle office of Milliman and is responsible for the oversight of the marketing, development, planning, and client service for Milliman's MG-ALFA product.*

JIM BRACKETT *manages the Milliman Financial Technology practice in Chicago. He and his team specialize in the implementation of high-performance, enterprise-scale distributed computing systems.*

BUY-SIDE VALUE

STRATEGY FOR MERGERS AND ACQUISITIONS

BY URB LEIMKUHLER, FCAS, MAAA

Following a classic hard market – in which it was difficult for most insurers *not* to make money – property and casualty prices have been declining markedly for the past few years. And as this soft market deepens, it will become even more difficult for property/casualty insurance companies to grow organically. Value buyers will perceive opportunities in pursuing acquisitions of companies and books of business, and some insurers may be forced to seek assistance from buyers in order to shore up their inadequate levels of capital. Separating the real opportunities from potential money pits will require a strong approach to analyzing company fundamentals, including due diligence.

Investing in property/casualty insurers can be fraught with peril. Chronically underperforming companies with inherent underwriting, claims, and other operational weaknesses can present major post-deal challenges to buyers. On another level, hidden claims and exposures, such as multiple-year construction defect claims, long-tail liability exposures, or catastrophe-prone property, can present devastating potential liabilities to a buyer. *But for the savvy buyer who can identify value pockets and avoid pitfalls, a deal can offer substantial returns.*

* * *

AVOIDING THE STAMPEDE In a high-stakes arena where sellers can have a distinct information advantage, a sound buy-side business strategy can help to level the playing field. It can enable buyers to rationally decide whether a deal makes sense, and once comfortable with an initial top-level review, how to systematically assess and value the target's operations. It can also help buyers avoid critical mistakes that typically lead to poor decisions.

All too often, poor decisions result from abbreviated due diligence and a rush to make arbitrary deadlines. Buyers often take shortcuts by focusing on historical data made available by the target without systematically assessing the dynamic nature of property/casualty operations – underwriting, pricing, distribution management, claims, reserving, reinsurance, etc. and the interaction among these key functions – and carefully examining balance sheet risks that may lurk in corners of the business. Shortcuts in data collection and examination – the cornerstone of due diligence – almost invariably return to haunt buyers, who can find themselves ill-prepared to manage unexpected setbacks after the deal closes. Most unwelcome surprises can be prevented by a well-thought-out strategy and action plan for due diligence.

Done properly, due diligence equips buyers with the needed information to effectively assess the target's operations and identify weaknesses as well as strengths, providing leverage that can be used to the buyer's advantage in negotiating price, conditions, or carve-outs in a deal. Armed with this information, buyers can gain an advantage in the negotiating process. Sellers themselves

may lack an awareness of inherent weaknesses in their operations or the significance of these weaknesses.

Uncovering these opportunities requires the use of a professional due diligence team that can thoroughly evaluate the insurer's core functions, including the following:

BUSINESS STRATEGY Is the core business strategy fundamentally sound? Does it contemplate a strong product/service offering, a viable overall market, and a dominant company position in the market?

UNDERWRITING What classes of business is the target insurer writing, and where? What is the profit potential and the downside for each? What market position does the insurer enjoy? What processes does the target use to capture and evaluate individual risk underwriting information so as to ensure good risk-selection decisions? How is the insurance coverage constructed? Does it open the door to problematic claims activity? How is underwriting performance monitored? Is the target insurer's catastrophic exposure reasonable, or should exposures in some markets be pared back or eliminated?

PRODUCT PRICING Have products been priced properly? Is pricing aligned with exposure? What, if any, level of market pricing power does the insurer enjoy? How reliable and valid is actuarial data used in pricing? Does pricing take into consideration prospective trends, such as an increase in hurricane activity, for which historical data does not take account? Have year-over-year pricing changes been monitored in order to facilitate a more comprehensive actuarial review of results?

DISTRIBUTION MANAGEMENT How strong is the target's network of agents with respect to the product and geographic objectives? Do agents value the company as a specialized market or do they see it as a commodity player? How have agents been managed and incentivized to achieve underwriting profitability? Does the target rely on managing general agents who report incomplete or delayed results that may cloud true profitability?

CLAIMS Is claims service perceived by agents and customers as a strength or as a weakness? Are adjusters assigned claims at their level of experience or training, or beyond this? Are staff levels adequate for the volume of claims? Are there inconsistencies and/or changes in the target's methodology for reserving claims? Do the target's claims practices inadvertently promote inadequate loss reserving?

ACTUARIAL LOSS RESERVING Have proper loss reserving techniques been applied? How agile are reserving practices in reflecting changes in the book of business or claims trends? Do loss-ratio forecasts lag changes in rates and terms?

CEDED REINSURANCE Is the target missing profit opportunities by reinsuring too much of its business or assuming exposures beyond its capital capacity? Has the business been reinsured with well-capitalized reinsurers? Have reinsurers and brokers provided value-added partnership services?

FINANCIAL AND INFORMATION TECHNOLOGY Are financial controls continually evaluated and maintained for adequacy? How adequate are systems that support core functions such as underwriting, policy processing, claims processing, actuarial analysis, reinsurance, and financial/statistical reporting? What management data has supported ongoing performance monitoring and decision making?

HUMAN RESOURCES How capable are the target's management and staff? How are managers and staff held accountable or rewarded for results? What training and development needs have been identified and what programs have been designed to meet these needs?

Performing such detailed analysis also helps bring rationality and perspective to negotiations. Enthusiastic buyers who make the fundamental mistake of shortchanging due diligence cede a major advantage to the seller.

* * *

A DONE DEAL? The substantial upside potential of a well-vetted deal can be lost because the buyer fails to hit the ground running and diligently follow through in implementing fundamental improvements uncovered during due diligence. In many cases, buyers behave as if closing the deal means the deal is done. On the contrary, it is just the beginning. Execution of the workout stage is critical to success of a deal and requires buy-side plans and timetables for post-sale, strategic change. In the post-deal stage, the buyer should separately address operational problems that easily can be fixed to yield quick returns and systemic deficiencies that require an investment of time and resources to produce results.

The soft market can be expected to present buyers with a wide range of opportunities for investment. Inherent in all property/casualty insurance transactions are issues that represent potential value creation and value destruction. Only with an effective strategic and analytical framework can a potential buyer navigate successfully from target identification through the due diligence stage to post-sale implementation. This is often the difference between a good deal and one that fails to deliver the expected value. M

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GROWING PAINS: CONSUMER-DRIVEN HEALTHCARE SAVINGS AND

THE NEED FOR BETTER INFORMATION

JACK BURKE, FSA, MAAA, BRUCE PYENSON, FSA, MAAA, AND ROB PIPICH, FSA, MAAA

Anyone paying attention has heard an awful lot of talk about the cost of healthcare. In recent years, a number of healthcare plans stepped forward with an innovative new strategy, which they dubbed a consumer-driven health plan (CDHP). The primary idea behind a CDHP is that an informed consumer of health services makes for a healthier, wiser, and more prudent consumer of those services. Enlisting the very people who benefit – and suffer – most from the fluctuating quality of health services would, according to CDHP theorists, introduce economic efficiencies throughout the healthcare system, to the benefit of everyone in terms of both health and costs.

With several years of actual CDHP data now on the books, we can begin to assess the impact and the efficacy of CDHPs. Milliman's Consumer-driven Impact Study (CDI), a risk-adjusted analysis of the impact of CDHPs at six U.S. companies, produced an interesting and varying picture of how these plans are doing. The high-level view may not be particularly surprising: a bunch of good news, a little bad/disappointing news, and a number of pending issues. *In short, the future of CDHP looks promising but work remains to be done*.

* * *

CDHP: A SUMMARY So what are CDHPs? Even if you work for an employer who already offers the option, you may not have a clear understanding. Healthcare plan policies, after all, are not known for their popularity as leisure reading.

CDHPs come in a variety of forms. For this discussion, CDHPs have, in theory, the following three core elements:

■ **A HIGH-DEDUCTIBLE HEALTH PLAN (HDHP) WITH A FUNDING ACCOUNT.** The funding account is either a health reimbursement arrangement (HRA) funded by the employer, or a health savings account (HSA) if accompanied by a *qualified* HDHP. HSAs can be funded by the employer or member and are portable, meaning that members take the funds along with them even if they go on to another job. The money in these accounts is designated to use for medical and health-related costs, with certain requirements and exclusions. An HDHP that accompanies an HSA is "qualified" if it meets criteria established in the Internal Revenue Code permitting the HSA to be tax-advantaged.

■ **PATIENT EDUCATION RESOURCES.** This is information made available to members, often via the Web and increasingly through various wellness programs, that helps them make better health choices for themselves. Most of the information falls into the category of prevention strategies, or even more simply, common sense: *Stop smoking. Lose weight. Exercise. Buckle up that seatbelt*. Most importantly, CDHP resources provide the critical and less obvious "here's how" piece, plus ongoing support.

■ **CONSUMER RESEARCH TOOLS.** These tools, also often available via the Web (or employer intranet) or by phone, are intended to help members compare and choose health service providers, such as physicians, specialists, and hospitals. They provide information about the quality of the providers as well as the costs, across a spectrum of specialties and procedures, offering members the opportunity to comparison shop and spend their healthcare dollars as wisely as possible.

* * *

ARE WE SAVING MONEY YET? With the costs of healthcare verging on crisis, the first thing employers understandably want to know about CDHP is, Has it stopped the bleeding? That is what the study intended to discover.

At first glance, CDHPs do appear to deliver dramatic savings. Looking more closely, however, many of the cost reductions are the result of favorable risk characteristics. When certain adjustments are made, the claims of savings actually begin to appear much more modest. But that doesn't mean there isn't good news in the overall mix:

■ **THE ACTUAL PAID CLAIMS PER MEMBER PER MONTH (PMPM) FOR CDHP POPULATIONS ARE VERY LOW.** In fact, CDHPs in the analysis paid in claims about half of what the richer benefits offered by the same employer paid. This is consistent with reported results in the media to date. But most CDHPs come with very high deductibles, which are expected to pay out less in claims. A better comparison is "allowed claims," the total that the plan and the member pay to providers.

■ **THE ACTUAL ALLOWED CLAIMS PMPM FOR THE CDHP POPULATION ARE ALSO LOW.** Allowed claims for CDHPs are about 41% lower than allowed claims in other health plans. These results were consistently lower across each CDHP, with reductions in claims ranging from 27% to 48%. This would appear to be a great result for CDHPs.

■ **THE RISK PROFILE OF THE POPULATION CHOOSING CDHPS IS YOUNGER AND HEALTHIER.** This is not surprising and could well be cause for further caution. Many new health plan products show favorable initial experience for this reason.

With time, some of the risk score difference between CDHPs and other plans, and thus their apparent savings, may diminish.

■ **OVERALL, CDHP RESULTS ARE MODESTLY BETTER AT CUTTING COSTS THAN OTHER PLANS.** After normalizing for risk factors, *the actual CDHP allowed claims are about 4.8% lower than would be predicted by typical risk and benefit design factors. Because high-deductible plans would be expected to lower utilization by 3.3% for these plan designs, the excess savings beyond those anticipated by all actuarial factors are about 1.5%. The savings, while modest, show that CDHPs have some inherent cost-reducing potential.*

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ENROLLMENT TO DATE: IT'S STILL EARLY The quantitative data in the CDI report come from six employers offering their employees a choice of CDHPs or non-CDHPs, involving a total of some 225,000 members. Of that, just more than 30,000 enrolled in a CDHP, for an average CDHP penetration of about 13.7%. The actual CDHP penetration ranged from 4.4% to 76%.

For employers, these modest rates of migration to CDHPs from non-CDHPs are consistent with historical models of change in healthcare products. The healthcare industry has seen similar patterns with the introductions of HMOs and other health plan strategies related to managed care, including point of service, PPOs, disease management programs, and, most recently, the move to wellness.

* * *

INFORMATION GAPS REMAIN As for the impact of patient education resources and consumer research tools in CDHPs, that picture is still murky, at least insofar as the CDI study was concerned. For all the employers we looked at, patient education resources promoting healthy lifestyles were directed at all employees. That meant that any impact on health status or savings would likely affect all participants equally, not just those choosing a CDHP. There are many indications, however, that wellness programs and the related widespread availability of useful health information to consumers are having only positive effects on both costs and health.

Perhaps the most significant gap at this point is in the availability and usefulness of consumer research tools. None of the employers in the study reported that their employees had access yet to information on provider quality, and only one employer said its employees had access to comparison information about provider costs. These are, obviously, critical components for health plans that call themselves consumer-driven. There are many good reasons for the lag in development of consumer research tools, not least of which are the security and privacy considerations involved in making this information available and useful on a wide scale.

But until these tools are produced and become available so that members can truly compare and shop for providers based on quality and cost, realized CDHP savings are likely to remain primarily limited to the patterns we are used to seeing in high-deductible plans.

* * *

FURTHER SAVINGS ACHIEVABLE Milliman's CDI study is the first multiemployer, multicarrier, actuarially adjusted study of CDHPs. It found that, after adjusting for expected savings across a variety of plan designs, employer practices, workforce characteristics, and carriers, actual savings from CDHPs are modest overall. Some plans, however, show significant savings, even after considering adjustments for known risk and plan design characteristics.

Ultimately, the study supports several predictions that others have made for CDHPs:

■ Young and healthy members, when given a choice, are choosing CDHPs.

■ The allowed claims and especially the paid claims reflect the lower risk.

■ The higher cost sharing encourages moderately lower utilization of healthcare.

We believe that further savings will be seen with the ongoing advent of patient education resources at many levels of availability. We also believe that significant savings are attainable when members are given consumer research tools to help them access good data on medical costs and quality. The early adopters in this study have likely seen only the benefits we would expect to see associated with high-deductible health plans. More is still to come. Stay tuned. **M**

To view the Milliman report on consumer-driven impact, go to milliman.com and search on "consumer-driven impact."

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