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The Mental Health Divide:

MENDING THE SPLIT BETWEEN MIND AND BODY

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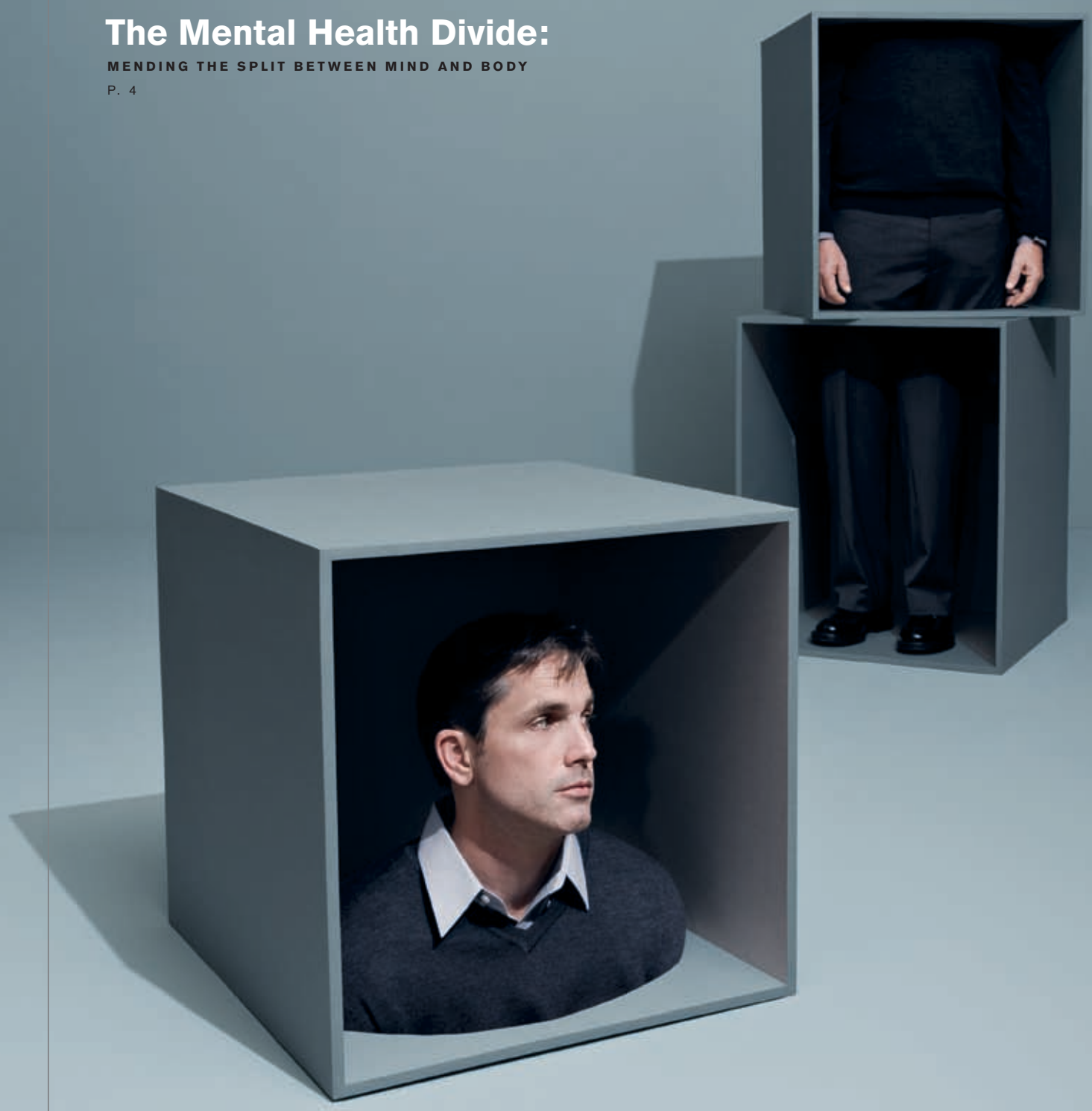

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Letter From Milliman CEO Pat Grannan

Milliman is celebrating its 60th anniversary this year. It's humbling to look back over the years and consider the contributions from all of the professionals who got us to where we are today.

No single quality can be credited for 60 years of excellence, but if I had to pick one that is manifest in virtually everything we say and do, it would be independence. Since the firm's founding, Milliman's professionals have shared a commitment to independent thinking and objective consulting.

This is evidenced in the slate of articles in this latest issue of *Insight*. Our cover story, "The Mental Health Divide: Mending the Split Between Mind and Body," by Steve Melek, has a distinct point of view as it makes the case for rethinking the delivery of mental healthcare in the U.S. If I were to poll our consultants, I'm sure there would be some who believe another approach to mental healthcare is in order; however, I doubt that any would dispute that Steve's work on mental healthcare parity is of the highest caliber and that his story ought to be told. That is the beauty of a truly independent culture: We don't all have to agree in order to see the value of each other's perspectives.

There is a similar example of independence in the article by Ginny Boggs and Suzanne Smith, about the massive changes in 403(b) plans, a popular type of retirement plan for not-for-profit organizations. The authors raise some questions about the fees built into annuity-type products, even though our life insurance practice works extensively with clients who provide annuity products.

While I am aware of the possibility of a negative reaction from annuity providers, I would be more concerned if we allowed a conflict of interest to take root, interfering with our consultants' ability to provide the full benefit of their thinking and expertise to their clients. If we continue to provide that type of consulting to our clients, I have no doubt that, 60 years from now, Milliman will have cause for further celebration.

Pat Grannan

PATRICK GRANNAN

Milliman Chief Executive Officer

BY THE NUMBERS...

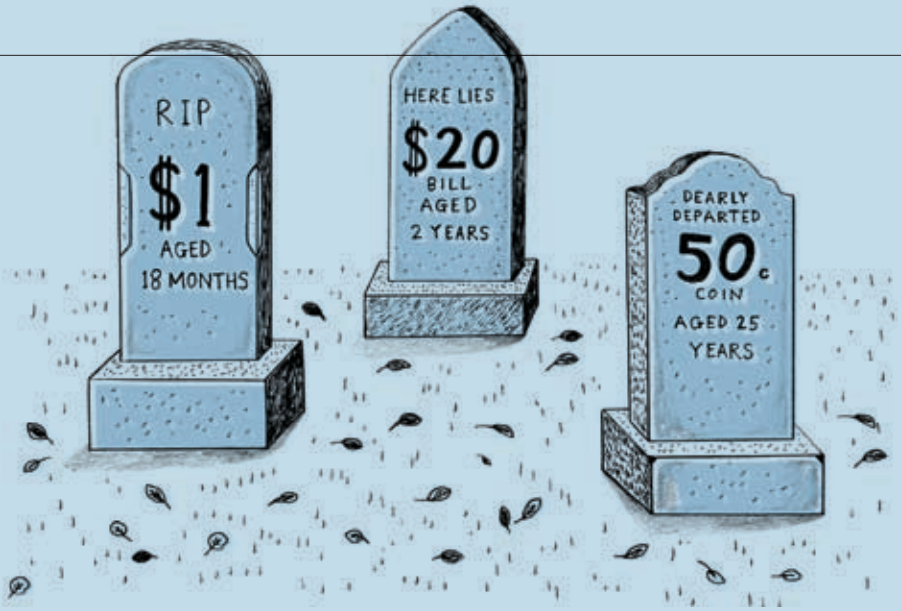
Fortunate Cookie. While it came as no surprise that someone won the $13.8 million jackpot in a March 2005 Powerball drawing, lottery officials became suspicious when the second-place prizes of $100,000 and $500,000 drew a record 110 claimants. The lottery includes players from 29 states, but usually awards only four or five second prizes to players who match the first five of six numbers in the drawing. It turns out that the winning numbers of 22, 28, 32, 33, and 39 were extra-sweet that day because they'd also been printed on a fortune cookie message manufactured at a cookie vendor in New York City. Many of the second-place claimants who beat the one-in-three-million odds of matching the five numbers said they had taken a lottery tip from their fortune cookies. As further proof, the majority of the winners picked 40 as their sixth lottery number, but the actual winning Powerball number was 42.[2]

Not What You Expected. In the United States, babies born in 2004 have a life expectancy of 77.9 years, ranking the U.S. 42nd worldwide in life expectancy. That's down from the 11th best life expectancy just 20 years ago. Who's number one? Andorra, of course. In this tiny mountain kingdom located between France and Spain, residents can expect to live for an average of 83.5 years.[1]

It's in the Cards. Diners Club, the first independent credit card company, was established in 1950, but co-founder Frank McNamara sold his company shares to his partners just two years later because he considered the card concept to be just a passing fad.[3] However, the trend continued to sweep the nation. Bank credit card interest and fee income tripled during the 1990s,[4] and by 2003, credit or debit cards were being used for more than 2.3 billion transactions per month. As of 2005, U.S. consumers held more than 691 million cards.[5]

Social (In)security. 078-05-1120 is arguably the most popular Social Security number of all time. In 1938, just two years after the first Social Security numbers were issued, manufacturer E.H. Ferree of Lockport, N.Y., used a sample Social Security card insert to promote its wallets, sold at Woolworth's and other department stores. The card's number actually belonged to Hilda Schrader Whitcher, a secretary at the company, but thousands of people who purchased the wallets adopted it as their own, as they did not yet understand how the new Social Security system worked or how the numbers were given out. In 1943, the event reached its peak, when a reported 5,755 people were using Hilda's number. Although the Social Security Administration voided the number, its use was reported as late as 1977. In total, more than 40,000 people have used the so-called "Woolworth number" as their own.[6]

1 *New York Times*, August 12, 2007.
2 Snopes.com.
3 About.com, 20th Century History, http://history1900s.about.com.
4 The Motley Fool, www.fool.com.
5 U.S. Government Accountability Office, "Credit Cards: Increased Complexity in Rates and Fees Heightens Need for More Effective Disclosures to Consumers," September 2006.
6 Snopes.com.
7 Federal Reserve Bank of Atlanta, www.frbatlanta.org.
8 MSN.com, Health and Fitness, http://health.msn.com.
9 *Albert Lea Tribune*, July 13, 2007.
10 *Sioux City Journal*, July 28, 2007.
11 LiveScience.com, January 6, 2005.
12 http://www.cnn.com/TECH/space/9907/28/asteroid.newser/
13 Associated Press, June 20, 2007.



Old Money. Your personal savings may last you a lifetime, but actual money doesn't last forever. The average lifespan for a $20 bill is two years, and for a $1 bill, just 18 months. A coin has an expected average life of 25 years.[7] At present, less than 1% of U.S. currency in circulation is counterfeit; about 75% of counterfeit bills are seized before they ever reach the public. After the Civil War, however, an estimated 33% to 50% of all paper currency in circulation in the country was counterfeit. The U.S. Secret Service was established in 1865 specifically to eliminate the threat of counterfeit money.

Country Roads, Take Me Home. The next time you're trapped in city gridlock, console yourself with these statistics: A study released in 2005 by the National Highway Traffic Safety Administration found that there were about 42% more fatal traffic accidents on rural roads than in urban areas.[8] Similar findings turned up in a University of Minnesota study, which found that 72% of traffic fatalities in the state occurred on country roads.[9] Faster travel speeds coupled with twisting, two-lane roads certainly add a tinge of danger to that relaxing drive in the country. If you throw in vehicle collisions with deer, which do an estimated $1 billion in damage and kill about 200 people every year, rural roads lose much of their charm.[10]

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

Catch a Falling Star. In 1994, the odds of being killed by an asteroid collision were estimated at about 1 in 20,000. Today, some scientists say those odds have declined to 1 in 500,000, largely because research shows that recently discovered asteroids will never hit the Earth. Others maintain that the odds of an asteroid apocalypse are more like 1 in 50,000, as remaining undiscovered asteroids may yet be a threat.[11] Still other less optimistic skywatchers claim there is a 1 in 3 chance that an asteroid strike severe enough to cause local damage on Earth will occur sometime during the next 100 years.[12] To date, 840 potentially impact-prone asteroids have been charted. But how close is close? Two "near misses" in February 2007 actually passed about 1 million miles from the Earth. And one of the most recent threats, the asteroid Apophis that was discovered in 2004, has about a 1 in 45,000 chance of hitting Earth; researchers predict that it will miss its mark by 20,000 miles.

Life's a Beach. In case you're planning to go chill out on the beach in an effort to stop thinking about asteroid collisions and car accidents, be forewarned that strange new seaside perils are cropping up all the time. "Recreational sand hole deaths," in which people are killed when sand collapses on top of them, are apparently more common than you'd think. In one survey of reported incidents, 16 sand hole or sand tunnel deaths occurred in the United States between 1990 and 2006, making them more frequent than fatal shark attacks. The investigators tallied 31 such deaths reported since 1985 in the U.S., U.K., Australia, and New Zealand. In another 21 cases, bystanders rescued the victims before the swiftly collapsing sand could swallow them up.[13]

THE MENTAL HEALTH DIVIDE:

MENDING THE SPLIT BETWEEN MIND AND BODY

BY STEVE MELEK, FSA, MAAA

"OUR PROBLEMS ARE MAN-MADE, THEREFORE THEY MAY BE SOLVED BY MAN. AND MAN CAN BE AS BIG AS HE WANTS. NO PROBLEM OF HUMAN DESTINY IS BEYOND HUMAN BEINGS."

– JOHN F. KENNEDY

Depression and other major mental and substance-related illnesses can have a paralyzing effect on an otherwise healthy person. As hope and optimism fade, so does the urge to stay healthy. Depression can compound the severity of a problem for people with chronic physical illnesses, who can cost two to three times as much to treat if they are depressed. And depression itself can lead to poor health, as it often leaves people unmotivated and causes high-risk patients to ignore prevention or necessary treatments, opening the door to chronic and acute illness.

The symbiotic relationship between behavioral health and physical health is often not recognized. Instead, the behavioral healthcare environment that has emerged in the last two decades has largely ignored the interconnectedness between mind and body. It doesn't have to be this way. Indeed, a dramatic transformation for the healthcare industry is ahead as a handful of insurers and employers are beginning to identify the opportunities and economic incentives related to (1) providing benefits for behavioral illnesses on par with physical illnesses, and (2) integrating medical and behavioral healthcare for insured populations.

The split between mind and body in healthcare has been a problem for years, but has been convenient to ignore because, over the last two decades, costs for the care of behavioral disorders fell remarkably as managed-care business practices streamlined the behavioral healthcare industry. More recently, evidence has emerged about the adverse long-term medical effects of untreated behavioral disorders. These two dynamics now combine to suggest that parity in mental and physical health coverage — essentially, financing both on the same basis — would result in a very small added healthcare cost at worst, and quite possibly, a net reduction in total costs.

The first part of this mental healthcare transformation is embodied by the House behavioral health parity bill, the Paul Wellstone Mental Health and Addiction Equity Act of 2007, and the Senate behavioral health parity bill, the Mental Health Parity Act of 2007. To appreciate the impact of these bills and the benefits of behavioral healthcare parity, it is useful to look back at how the current behavioral healthcare situation developed.

Behavioral Healthcare Carve-Outs: 170 Million Served

The managed-care approach to behavioral healthcare was not built in a day. In the 1980s, before managed behavioral

healthcare existed, insurance cost trends for mental health and substance-related disorders were much higher than for mainstream physical healthcare.

Inpatient treatment might have lasted weeks, if not months; recurrence rates were very high, especially with chemical dependency; and behavioral healthcare delivery was criticized as being subjective. At that time, 10 different behavioral professionals might offer 10 different remedies for depression, as compared with treatment for a common physical ailment such as appendicitis, which is almost always fairly straightforward. There was more mystique around behavioral healthcare than around medical care in general.

Early cost-reduction attempts by health insurers called for limits on covered services because insurers couldn't control how behavioral healthcare was administered. For chemical dependency, a common limit was a lifetime cap of only two stays in an addiction recovery facility—a simple way to address high recurrence rates.

With managed care, payers used two tools in the traditional medical sector: utilization management and bargaining directly with providers to lower their prices via network contracts. But the "how to" of applying these techniques to behavioral healthcare treatment was initially unclear.

Some behavioral healthcare professionals, often clinicians, saw a business opportunity. Organizations that later became known as managed behavioral healthcare organizations (MBHOs) began sprouting up to "carve out" the behavioral healthcare benefits from health plans. Typical health plans developed their own managed-care approach to physical healthcare, but rarely had the expertise to do so for behavioral healthcare. The MBHOs filled this void. These MBHOs would contract with health plans to receive a flat dollar amount per insured member per month (capitation) and manage the behavioral service risk within this budget.

This approach delegated the financial risk of insuring behavioral healthcare to the behavioral specialty companies. It became the MBHO's responsibility to build the specialty behavioral network, manage the behavioral healthcare services, pay the providers, provide customer service, and generally do everything a health plan does, but with an exclusive focus on behavioral healthcare benefits.

MBHOs grew rapidly from the mid-1980s to the late 1990s, when they served 170 million people insured by managed-care plans. These specialty behavioral healthcare organizations had financial incentives to reduce costs through utilization management and aggressive provider contracting; they even steered certain patients back into the physical healthcare system. Through effective specialty behavioral healthcare management, cost trends dropped for several years, which was the initial goal of health insurance payers. But this trend had other adverse impacts.

Adverse Effects of the Growth of MBHOs

The growth of this carve-out sector was not without its unintended consequences, not the least of which was that it truly separated the mind from the body in healthcare delivery. Because the carve-out sector is typically completely separate from the rest of the medical industry, treatment of the mind takes place in isolation from treatment of the rest of the patient. The same disconnect applies to physical health, and even problems with the brain are often treated as part of physical healthcare with little consideration of their effect on behavioral health.

This divided system misaligns patients' incentives for healthy outcomes and the overall well-being of patients suffering from behavioral disorders. Although the behavioral healthcare sector is much more effective at treating and curing behavioral disorders, insurance plans require the patient to pay more to obtain treatment within the specialty behavioral healthcare sector. And because insurance plans pay carve-outs a flat monthly fee per insured member regardless of how many patients they treat, carve-outs make more money if patients instead seek treatment within the traditional medical sector, where they typically obtain prescription medication for their disorders. Many of these medications have great promise yet turn out to be ineffectively used.

The outcomes are horrible. Only eight out of 100 patients suffering from behavioral disorders receive minimally effective treatment in the dual system that exists today. Sixty of these 100 patients receive no treatment for their disorders. And because behavioral disorders very often manifest through pain and other physical symptoms, patients often seek treatments for such physical ailments in general medical settings, without effective treatment for the root cause. In general medical settings, the percentage of patients that receive minimally effective treatment for their behavioral disorders is just 13%.[1]

The impact of behavioral illness goes beyond health insurance costs. A depressed person completes one or two fewer hours' worth of work per day than someone who is not depressed, a phenomenon known as "presenteeism." Sick days, disabilities, and on-the-job accidents also increase for employees with behavioral disorders.

Affordable Parity

Fifteen years ago, the estimated cost of mandating behavioral healthcare parity would have swallowed the profit margins of most health insurance plans. But the trend in specialty behavioral healthcare has been one of dramatically falling costs, and recent estimates of parity costs are considerably lower today than those of a dozen years ago, when the Clinton administration pushed reform efforts.

The direct effects of parity on the cost of healthcare plans come in two forms. First, cost sharing for behavioral health

1 P.S. Wang, M. Lane, M. Olfson, H.A. Pincus, K.B. Wells, R.C. Kessler, "Twelve-month Use of Mental Health Services in the U.S.: Results From the National Co-morbidity Survey Replication," *Archives of General Psychiatry,* 2005.

Status Check: Mental Health

- The number of Americans with diagnosable behavioral disorders has stayed fairly stable in recent years, at about 22%. But of 100 such patients, only 10 seek treatment in the specialty behavioral healthcare sector. Only four to five of these 10 receive minimally effective treatment that leads to recovery.[2]
- Of the remaining 90 patients, 60 receive no specific treatment for their behavioral disorders, and many are not at all aware of the underlying behavioral disorder that is contributing to their reduced health status. The remaining 30 patients seek treatment from their primary-care physicians. Of those 30, only four get minimally effective, evidence-based treatment that leads to recovery.[3]
- Of patients diagnosed with depression, some 80% initially seek treatment for pain. Depression can manifest itself through physical symptoms like headaches, stomachaches, back pain, and joint pain.
- A patient with diabetes and depression costs twice as much to treat on average as a diabetic who is not depressed. Of that extra cost, 80% is for treating the physical ailment that is exacerbated by the depression. With some chronic medical illnesses, a depressed patient can cost three times as much as a non-depressed patient.[4]
- In the primary-care sector, the typical treatment for a patient diagnosed with mental health disorders is a psychotropic drug prescription, often with very little education about what to expect from the drugs and how long before they become effective. Many antidepressants require two months of daily doses to become effective, and six months of daily doses to fully achieve remission of the mental disorder. Most come with side effects that make the patients feel worse long before they feel better. One-third of patients don't even finish the first month of their prescriptions.
- Most behavioral disorders are curable if treated properly with professional therapy, drug treatments, or a combination of both, yet only eight out of 100 patients receive minimally effective treatment in the dual system that exists today.

FIGURE 1. TYPICAL COST INEQUITY IN MENTAL HEALTHCARE

TYPE OF CARE	Surgery for appendicitis	Mental health treatment (inpatient)
DEDUCTIBLE	$250	$2,000
COPAY	For primary-care doctor: $10	For mental health professional: $25–$50
INSURANCE COVERAGE	90% of surgery costs, up to $1,000 out-of-pocket limit	70% of treatment costs, up to $5,000 out-of-pocket limit

services would be made equal to the cost-sharing provisions for physical care, which would raise insured healthcare costs. Second, the benefit limits that most plans apply to mental health conditions—like annual caps on therapy sessions or hospital stays—would be removed, also bringing the potential to raise insured healthcare costs.

The insurance industry had feared that removing these annual caps would provide a blank check for beneficiaries to over-use behavioral services. But the behavioral healthcare industry has transformed so dramatically over the last two decades that this "Chicken Little" prediction is highly unlikely.

For example, many plans have annual inpatient day limits, such as 60 days per year, on hospital stays for behavioral disorders. But admissions rarely last longer than 10 days. To break the limit, patients would have to be readmitted several times in the same year, and have relatively long inpatient stays. This may be common among pop stars or fugitives, but for the average (managed) behavioral health patient is very unlikely.

Higher insured out-of-pocket payments and policy limits have created great obstacles for people who actually need the specialty behavioral care (see Figure 1). These limits were put in place to purposely raise the cost to patients and prevent the runaway utilization of services at a time when excessive utilization was a real problem. But cases of runaway demand and high utilization are rare when these benefits are managed.

Additionally, for employers, while parity may require slightly more up-front spending on behavioral healthcare services, it could save two to three times the extra expenditures in reduced absenteeism and disability costs, lower accident rates among employees, and improve productivity in the workplace.

Policy Wrangling

Estimates of the potential industry-wide cost increases from mandated behavioral healthcare parity have fallen from 3% or 4% in the early 1990s to 0.6% or lower today, based on a recent Milliman study. The 0.6% cost impact of parity is based on a scenario that assumes plans do not increase their utilization management of behavioral benefits. If all plans increased their utilization management in response to mandated parity, costs could rise by less than 0.1%. The Congressional Budget Office agrees, recently reporting a 0.4% estimated cost impact. None of these analyses consider the effect of cost offsets from savings in other healthcare services, such as the potential for reduced visits to primary-care doctors or emergency rooms. All of these estimates are aggregates, and the impact for particular programs can vary.

As a result of parity, cost increases could be as high as 2% to 3% for some plans, such as those without managed care that have very little existing behavioral healthcare coverage. But these plans make up less than 5% of all group plans.

Two competing bills in Congress that would establish parity, S. 558 in the Senate and H.R. 1424 in the House, have received objections on the basis that attempts to achieve parity would result in runaway costs. But according to the Milliman analysis, the House's more extensive Wellstone Act would raise individual premiums by between $0.03 and $2.40 per insured person per month.

Today, as treatment costs have continued to fall dramatically in the carve-out sector, the parity argument is no longer over high costs or whether it is the right thing to do, but over which parity bill in Congress is better. The House bill is a bit more comprehensive than the Senate bill, but projected costs are comparable. To an outsider, the debate has apparently shifted from costs to politics.

Parity would help improve access, but what's really needed is an integrated healthcare delivery system, one where medical and behavioral healthcare providers deliver coordinated healthcare in a collaborative fashion. Evidence is beginning to suggest that the long-term costs of not treating behavioral health problems, or solely treating them in isolation from other medical issues, may result in total healthcare costs that are much higher than necessary. In medical settings, patients may seek repeated and ineffective care from medical or surgical physicians, rather than more effective specialized care from specialty behavioral professionals.

Twenty-five percent to 40% of patients with a chronic, costly physical condition also have a diagnosable psychological disorder — that's a rate 50% to 100% higher than in the general population, and these are often severe cases.[5] What's more, a disorder like depression can exacerbate a physical illness and lead to increased medical costs. Integrating behavioral healthcare with the rest of the mainstream healthcare system may help catch these double-whammy situations before they do lasting damage to patients and drive up overall healthcare costs. This is the second part of the transformation beginning to occur in the delivery of behavioral healthcare.

Changing the Status Quo

Three core elements of the behavioral healthcare system must each be altered in order to achieve a truly integrated approach:

- Benefit financing, which parity goes a long way toward improving
- Integrated case and disease management that addresses patients with physical and behavioral disorders
- Day-to-day recognition and responsibility for both physical and behavioral outcomes by all treating clinicians

Many healthcare professionals now argue that ineffective or nonexistent behavioral treatment negatively affects the healthcare system as a whole — and the employers and workers who support and depend on it. This hypothesis is gaining support, although the longitudinal studies to provide conclusive evidence of this are still in the early stages.

Fully integrating the behavioral health system with the rest of the mainstream healthcare system could take a generation to complete, just as it took a generation for the MBHOs to prove that specialty behavioral healthcare could be provided at a reasonable cost. But for the time being, the 92 patients out of 100 diagnosable ones who aren't getting minimally effective treatment are adding costs to health plans and the employers who sponsor them.[6,7,8] M

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3 Wang et al., op. cit.
4 Milliman proprietary research.
5 W. Katon, M. Von Korff, E. Lin, P. Lipscomb, J. Russo, E. Wagner, E. Polk, "Distressed High Users of Medical Care: DSM III-R Diagnoses and Treatment Needs," *General Hospital Psychiatry,* 1990.
6 R.C. Kessler, O. Demler, R.G. Frank, et al., "Prevalence and Treatment of Mental Disorders, 1990 to 2003," *New England Journal of Medicine,* 2005.
7 W.E. Narrow, D.S. Rae, L.N. Robins, D.A. Regier, "Revised Prevalence Estimates of Mental Disorders in the United States: Using a Clinical Significance Criterion to Reconcile Two Survey Estimates," *Archives of General Psychiatry,* February 2002.
8 P.S. Wang, O. Demler, R.C. Kessler, "Adequacy of Treatment for Serious Mental Illness in the United States," *American Journal of Public Health,* 2002.

TARGETED RISK TOLERANCE:

AN INTRODUCTION TO ECONOMIC CAPITAL

BY MARC SLUTZKY, FSA, MAAA, AND JAMES STOLTZFUS, FSA, MAAA

How much risk should an enterprise carry? Most insurers would say: "As much as possible to maximize returns without jeopardizing the financial solvency of the enterprise." But this approach fails to recognize the individual risk tolerance of investors, bondholders, regulators, and insurance company decision-makers, each of whom have their own perspective of risk. Nor does it take into account the sophistication called for by increasingly volatile markets and ever-demanding regulatory standards. Defining risk and determining an appropriate risk profile has become a complicated process, requiring far more robust and dynamic tools. This is why economic capital analysis holds so much promise for insurers.

Determining economic capital is perhaps the most fundamental risk-management activity that an enterprise undertakes, for it seeks to quantify the amount of capital that an enterprise needs as a financial cushion against potential losses. What is an adequate level of capital given the risks that the enterprise has or may assume? Is its capital allocated effectively among its products? Or are low-performing products eating up too much capital, while top performers go hunting for resources? How these questions are answered affects not only the financial solvency of the enterprise but also its ability to compete. Maintaining insufficient capital jeopardizes the viability of the enterprise. Retaining too much capital or allocating it ineffectively hampers the enterprise's ability to compete.

From maximizing return for equity investors to minimizing risk for policyholders and regulators, insurers are often pulled in different directions in an effort to define an acceptable level of risk for the enterprise. Economic capital gives managers a realistic approach with which to evaluate and integrate the risks the organization faces.

A Leap Forward in Risk Assessment

One of the primary advantages that economic capital models have over conventional tools is their capacity to quantify the risk-reward tradeoff of an insurer's strategic choices. Based on stochastic or probabilistic analysis, economic capital models provide a distribution of loss outcomes for different risk scenarios. In analyzing these loss scenarios, managers can compare the risks associated with a product, for example, and quantify its capital needs.

This ability is a huge advance over conventional tools that typically provide a limited range of loss outcomes with no

Risk Categories

information about the probabilities that those losses will occur. With conventional tools, each loss outcome within the range has an equal chance of occurring.

Traditional deterministic (or formulaic) methods may have been adequate at one time, but as profit margins narrow and markets become increasingly skittish, insurers have sought out more sophisticated risk-assessment tools that could measure the impact of risk scenarios on their strategic choices. How would their products react if interest rates spiked or if the stock market tanked? Which product would suffer? How much? Which products would hold up?

Implied in these questions is the need to know whether the products in a portfolio have an offsetting effect under a given loss scenario. If an increase in interest rates bolsters the performance of an insurer's disability products, for example, but depresses annuity results, what are the offsetting benefits? Traditional measures lacked the capacity to quantify the diversification benefits of an insurer's product portfolio; this is a crucial blind spot, as correlating diversification benefits can lower (or in some cases increase) an insurer's capital needs.

Conventional tools, which rely heavily on industry ratios and averages, don't allow managers to look beyond general comparisons of capital adequacy.

Economic capital gives managers a realistic approach with which to evaluate and integrate the risks the organization faces.

Entering an Information-rich Age

Economic capital models overcome many of these shortcomings because of the rich information they provide about the probability of loss outcomes.

Economic capital models generate potentially thousands of loss scenarios, which are compiled to form loss distributions. However, only a narrow band of extreme scenarios — those worst-case outcomes in the tail of the distribution — are analyzed to determine their impact. This process allows an insurer to examine a product's loss probabilities and better understand the loss characteristic of a product. In this way, managers can hone their risk tolerance and risk appetite and then determine whether the capital allocated to a product line is worth the risk.

Moreover, loss-distribution scenarios are also aggregated across product lines, an advancement that allows managers to determine whether offsetting or diversification benefits will mitigate certain risks or if losses across lines will deepen under a certain loss scenario. Managers' view of risk is expanded to the potential linked or diversification effects among a company's products. Instead of trying to approximate capital allocations using industry averages, an insurer — now armed with a virtual universe of losses — can manage its capital based on its unique risk and product profile.

This ability shifts the management paradigm to a risk-adjusted platform. Decisions pertaining to reinsurance, investment hedging strategies, product portfolio, and entry into new products or markets can now be grounded in a quantified analysis of the potential trade-off between risk and reward of a decision rather than on vague notions of risk.

As Good As It Gets

A model is only as good as its underlying assumptions. For some exposures, estimates of loss have been fairly reliable. Over the decades, mortality data have shown that this exposure behaves in relatively predictable ways, allowing for a high level of confidence in the loss estimates. The same holds true for a number of other exposures, such as morbidity or voluntary surrenders.

But the reliability of projections related to strategic and operational risks has long worried insurers. Many catastrophic risks seem to take shape out of thin air, making for pie-in-the-sky projections. How do you estimate losses stemming from the malfunction of a hedging software program that goes undetected for months? How deep would losses be if a back-up computer system should fail to kick in when needed? Or if a pandemic emerged amid an already jittery stock market? Losses would be severe, but conventional models left managers wondering how severe. And if a model couldn't quantify risk, how could an insurer manage it?

Using the bottom-up approach made possible in economic capital models, the analysis of these high-impact, low-frequency operational and strategic risks has become grounded in reality. This new approach relies on the premises that, despite their volatile nature, many operational and strategic risks emerge over time. By tracking the chain of events that precipitate an eventual blowup, managers can gain an understanding of which levers trigger certain events and what costs are associated with each phase in the development of the risk. This process promotes the assignment of more realistic probabilities to once-elusive operational and strategic risks.

An equally important feature of economic capital models is their ability to integrate catastrophe loss estimates into the overall analysis. Unlike earlier economic models that merely tacked on a crude estimate of an enterprise's strategic and operational risks, economic capital models incorporate more realistic risk estimates into the model's overall framework, and thus remove many concerns about a model's risk-assessment capabilities.

Model uncertainty will always surround risk assessment. However, recent advances in how businesses think about their risk make it possible for managers to quantify risk with more confidence than before. With increasingly credible tools comes the ability to define and explain an enterprise's risk tolerances down the level of command and among its external stakeholders. And as awareness of the risk tolerances spreads throughout the organization, insurers can move ever closer to true enterprise risk management. M

Traditional measures lacked the capacity to quantify the diversification benefits of an insurer's product portfolio; this is a crucial blind spot, as correlating diversification benefits can lower (or in some cases increase) an insurer's capital needs.

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THINGS FALL APART:

THE LONG LIFE OF CONSTRUCTION DEFECT LIABILITY

BY WILLIAM AZZARA

Construction defect (CD) claims are unusually complex. The staggering cost of litigation related to CD has hammered insurers underwriting residential construction in high-growth states including California, Nevada, Arizona, Colorado, Florida, the Carolinas, Texas, and Washington. Residential construction includes condominiums, townhouses, and planned communities consisting of multiple single-family dwellings. Whenever a housing area experiences a lot of population growth and expansion, there is a huge demand for new housing. Despite the recent credit crunch and the mortgage lending crisis, the U.S. housing boom is still going strong in many areas.

Unfortunately, there are never enough quality tradesmen to do the job properly. Builders sometimes turn to unskilled labor or cut corners in other ways. They may not inspect each home as it is built, an expensive proposition in a tract development. The result is predictable: Issues crop up due to shoddy workmanship, if not sooner, then later.

Even so, without a hostile litigation environment, there would be less of a problem. In California, where the issue arose in the 1980s, the plaintiffs bar has been very knowledgeable and well-versed in ways of extracting money from builders and insurers—something that has not yet happened in states like Georgia. In fact, CD has become a cottage industry. Even though they are on the side of the carriers, legal defense firms make even more money than the plaintiffs. Making the CD problem go away is not in the interest of either group.

As a result, CD has become the second-biggest insurance expense for builders, behind workers' compensation. But a solution—or at least a coping mechanism—may be at hand. A combination of actuarial scrutiny, savvy underwriting, and effective claims analysis can lead to better management of CD risk.

What Is Construction Defect?

CD is one of two classes of claims that fall under general liability insurance for residential homebuilders. Sudden or accidental claims that result from premises or operations exposures are the other type.

A CD claim is typically related to a defect in design or construction material that does not cause a problem until years after the home was built—sometimes seven years or longer. Claims are typically based on problems that are perceived as dating back to the time the dwelling was built.

Take, for example, a window installer who uses an improper sealant. Over time, this may allow water intrusion that ultimately damages the internal studs as well as the interior of the home, resulting in the need to replace or re-spackle the sheet rock.

But here's the hitch: *Not all damages are covered by insurance.* In this example, the insurer pays for the *result* of the window installer's faulty work but not for his *own* work product. That means that if the windows need to be replaced, the insurer is not liable. But if the water seepage damages the wall or creeps into the floor, the insurer foots the bill. Of course, regardless of whether or not the builder has insurance, it still has a responsibility to the homeowner to tend to the problem.

How much of the damage is attributable to work product and how much is resultant or consequential damage? That's the million-dollar question. It's part and parcel of a CD claim, but it's not as straightforward as it may seem. This is why a damage investigation on these claims is more important than a liability investigation. It's not uncommon for plaintiffs to write up 200 pages of damages—all of which must be rebutted by an insurer's own experts. Legal expenses snowball and usually exceed the indemnity or losses.

But it's not always the insurer or general contractor (GC) that absorbs those expenses. Historically, general contractors' policies have not covered subcontractors. That said, subcontractors have often agreed to name the GCs and developers as additional insureds on their policies. In addition, their subs' contracts require them to indemnify and hold developers or GCs harmless for damages arising out of their work. The GCs and developers, in turn, have tendered their defenses for all their subcontractors. The result is that the so-called "mow and blow" subcontractors have paid a huge amount of the expense but incurred very little of the loss.

How does this happen? Let's assume that damages occur because of leaks in the roof or windows. The subcontractor that did the landscaping is brought into the lawsuit under the terms of his subcontract. It is clear that the landscaper is not at fault, but he has to pay defense costs or a portion of the defense costs just like all the other subcontractors—some of whom may have had a real role in causing the damages.

This situation reflects a significant mismatch between expenses and losses. But expenses, of course, *become* losses, because the carrier is often willing to pay to get out from under the expense burden.

Compounding the issue is the popularity of wrap policies, under which a single insurer covers construction work performed by all parties. Wrap policies have helped to streamline claims processing and reduce the frequency of claims, but because what would have been several different claims are now bundled into one monster claim, the policies have also increased the severity of the CD claims that do appear. According to a developer in Northern California, insurance for CD using a wrap policy cost him "$20,000 per door."

Estimating Liabilities: A Tricky Business

A builder's obligation to a homeowner starts when he builds the house. The clock starts ticking when he actually sells the home and continues for a period of time equal to the statute of limitations. In some states, the statute of limitations or repose is 12 years—or more.

There can be a reporting lag of up to six years between the time a policy is issued and when a CD claim has been reported and all the facts of the case are known. If a lawsuit ensues, a discovery period can take another two years before an insurer knows what kind of exposure it faces, and it may be another three years before the case settles. In the end, it may be 15 years from the time a policy is issued to the time a claim against it is settled.

But that's just the beginning of how difficult it may be for an actuary to assess the CD risk. It's not uncommon for a builder to switch insurers during the period in which a statute of limitations or repose lasts. So another key question that potentially muddies the waters is how to determine which insurer is responsible for what.

One reason it's so difficult for actuaries to estimate an insurer's past liability or forecast it into the future is that most clients don't have 15 years of data—nor is there very good benchmark data available. Also, policy terms change frequently, so losses that were covered in the past may not be covered on newer policies.

So what's the upshot? Even with a benign line of business like personal automobile liability, which is normally predictable, actuaries still just *estimate* losses. There is always a range around that estimate due to uncertainty. But the uncertainties related to CD-based litigation exacerbate the uncertainty of any "best estimate." Reasonable reserve ranges sometimes vary by 50% or more. In addition, observed loss ratios in some states have been as high as 400%—and reported loss ratios reach higher still in the U.K.

Underwriting CD: Understanding Risk

Mitigating the nightmare that actuaries face when they try to estimate a carrier's liability begins with the underwriter. Given the disparity from one state to another, any CD underwriting activity must begin with a thorough understanding of the situation in the state for which coverage is being written.

The CD underwriter needs to understand the risk environment, including the following:

- The extent of involvement of plaintiffs' law firms
- The specific state's case law and statute of limitations
- The state's "right to repair" laws, which require homeowners and their builders to communicate before a lawsuit is filed
- "Your work" exclusions, which preclude coverage for property damage caused by a breach of contract
- The situation in "continuous trigger" states, in which the insurer is hit by claims on houses built in prior years that the carrier did not intend to cover

All these state-by-state specifics make it difficult to even define an occurrence of CD. In fact, any attempt to formulate a uniform approach to CD has been thwarted by a lack of agreement over what constitutes construction defect and when it occurred.

A savvy underwriter then faces a tough question: How to manage CD risks from an underwriting perspective?

Underwriters can begin by pricing realistically—at levels commensurate with exposure. In the process, CD coverage should be engineered defensively. Examples of this include:

POLICY LANGUAGE. Changing the wording to better define or narrow exposure can reduce the carrier's risk. The price of coverage can also be altered, in some cases by as much as 25% to 40% below or above the state's manual rate.

POLICY EXCLUSIONS. Common CD exclusions for synthetic stucco and mold have contributed to the litigation explosion and massive losses that carriers have accrued.

RECOGNIZING THE COST OF DESIGN-BUILD. This approach merges the design and construction phases of a project, thereby decreasing the overall time required. This approach carries new CD risk, however, as design subcontractors are introduced into the equation.

WARRANTIES. The CD warranty solutions offered by some insurers are agreements between the builder and the customer that constitute a good-faith effort to deal with as much damage as possible via a warranty mechanism, thereby limiting the amount of litigation that takes place and reducing the overall cost impact of CD.

Once the policy is written, underwriters can insist on certain loss- and risk-control mechanisms—essentially ensuring appropriate attention to risk throughout the process. These may include an evaluation of subcontractors and the GC's relationship with them, a third-party peer review of new buildings before they are turned over to the owners, and an increased focus on the builder's own quality control and customer service functions.

Finally, it is essential that underwriters learn from past mistakes by analyzing claims data. Underwriters generally review between seven and 10 years of claims, which can reveal how a builder has changed the practices responsible for those claims.

Controlling Risk Through Improved Claims Analysis

Improving the claims analysis process itself can also help. A major reason that insurers have suffered heavy losses on CD is that claims personnel do not always use the endorsements and exceptions that were put in place to protect the insurer. If carriers don't employ people who understand these exclusions and endorsements and possess the skills to use them, they will end up in unnecessary litigation resulting in unnecessary loss and payments. In addition, the investigation conducted to determine a policyholder's involvement on a project is frequently inadequate and results in delays in estimating appropriate case reserves.

That said, certain endorsements are further complicating the CD claims environment. The big culprit here is "additional insured" endorsements. When developers or GCs hire tradesmen or subs, they require that they be named as additional insureds on the sub's policy. When the developer or GC is served with a suit, the additional insurer endorsement wraps those subs into the claim—even if they had nothing to do with the damage. Thus, every suit facing the developer or GC becomes the problem of every sub that worked on the project. Often, the subs do not end up paying any loss, but they will pay expenses because they are still involved in the litigation process. This situation has created a kind of CD cost shift. Developers' costs are down 20% to 30%; GCs, subs, and others have seen their costs go up.

To date, courts have ruled that additional insured endorsements are unambiguous. There is no way around them for GCs or subs. The prevalence of these endorsements across the CD universe complicates what already was a convoluted claims atmosphere.

In light of this complexity, what can be done to control risk at the claims end? A few questions need to be asked:

- Can lessons to be learned from claims data?
- When faced with a claim, does the builder perform its own damage assessment?
- If data is available, what is the typical lag between policy issuance and claim occurrence? How much time passes between the occurrence of a claim and when it is reported? How long until settlement?
- Is the insurer's or organization's customer service acceptable to claimants, or is it creating friction that might escalate a claim?
- How might warranties be used to help control claims?

CD presents a difficult-to-manage risk, one that continues to evolve in the face of tort reform, building booms, and increased attention to the complexity of the problem. Because claims can appear years after construction is completed, the CD trend shows no sign of a slowdown. As owners, general contractors, and subcontractors wrangle over who owns the risk, actuaries, underwriters, and claims specialists try to stay several steps ahead of them. They should all get used to the shuffle: The complication is here to stay. **M**

For an expanded version of this article, go to www.milliman.com/perspective/insight-magazine/.

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NEW AND IMPROVED:

BIGGEST CHANGE TO 403(b) PLANS IN 40 YEARS

BY GINNY BOGGS, QPA, QKA, QPFC, AND SUZANNE SMITH, JD, CPC, CEBS

For anyone watching the emerging rules and regulations governing retirement plans in our country, the last year or two have provided plenty of action: new ERISA rules for 401(k)s, the Pension Protection Act of 2006, and new rules from the Financial Accounting Standards Board (FASB) and the Government Accounting Standards Board (GASB). Now 403(b)s join the wave of change sweeping the retirement world, with the IRS issuing the first new regulations for these plans in more than 40 years. While the changes facing the 403(b) landscape may seem remote to those who do not use these kinds of plans, they are actually quite instructive. The new regulations are similar to the rules that apply to 401(k)s and are expected to mirror dynamics from across the industry—transparency, fee disclosure, and the growing need for fiduciary scrutiny, to name a few. In this sense, changes to 403(b)s are indicative of larger pressures facing the retirement environment in the U.S.

Although 403(b)s are not as widely recognized as 401(k)s, we all know someone who has such a plan. Created to serve employees of certain tax-exempt organizations, 403(b)s have become a standard investment vehicle for teachers, museum curators, healthcare professionals, and others who work for certain nonprofit organizations. Today, employees of nonprofits have about $680 billion invested in 403(b) plans.[1] Yet the plans have received little regulatory oversight since they were first created, and many have become unwieldy and inefficient; "403(b)" and "fiduciary" have rarely occurred in the same sentence because employers have not been concerned about fiduciary responsibility for 403(b)s. This is no longer the case with the new regulations.

403(b) Plans: Where We've Been

At the start, fixed and variable annuities were the only investment products available in 403(b) plans. Plan management was handled primarily by the companies offering the products and, in many cases, employers' compliance responsibilities were confined to ensuring contribution limits. Often 403(b)s have not even had a written plan document. Without clear guidelines to follow, many employers responded to vendor suggestions or employee requests for products and ended up offering more and more options. As time went on, many plans became loaded

1 "IRS OKs changes to 403(b) plans," *The Mercury News*, August 22, 2007.

with myriad investment products (frequently annuities) from numerous vendors.

In the 1970s, 403(b)s were opened to mutual fund investments, but to a certain extent the die was cast. Today annuities are still the predominant investment option, and the choice of available annuity products is often overwhelming to plan participants. Many 403(b)s have operated almost as if they were in a retail environment, instead of as an employer-sponsored plan.

403(b) Plans: Where We're Going

On Jan. 1, 2009, the new IRS regulations will go into effect. The rules are far-reaching and will bring significant changes to 403(b) plans, creating new fiduciary responsibilities for employers and very likely a new level of competitiveness to the market and a much better product for plan participants.

Foremost among the new rules is that 403(b)s must have a written plan document and must be operated according to the plan's written terms, similar to 401(k) plans. This means that employers for the first time will be required to review and describe all the investment options available under their 403(b) plans. In many cases, this will be a daunting task.

A substantial number of employers likely will opt to bring in a single organization to handle recordkeeping and administrative services. It also is likely that once employers are required to take stock of and list all available vendors and investments, they will significantly limit the options they make available in their plans in the future. For companies that have provided products to 403(b) plans over the years, this could signal a change in business. With the regulatory guidelines for 403(b)s being structured more like 401(k)s, nonprofit employers may well start looking for fee structures similar to those found in the private sector.

The 403(b) Difference

Both 401(k) and 403(b) plans allow workers to set aside pretax money that grows tax-deferred until it is withdrawn at retirement. In some cases, employers offer matching or other contributions for their 403(b) plans.

And just as mutual fund investments in 401(k) plans have been under scrutiny for hidden fees that erode plan participants' retirement savings, the fees charged for investment products in many 403(b) plans will likely become a hot issue as employers begin looking at their plans more closely.

But in the case of 403(b)s, the hidden fees tend to be even higher because of outdated rules, the confusing fee structures of many annuity investments, and a legacy system of investment options that has not kept up with the market.

Besides the higher fees, the variable annuities that often dominate 403(b) plans also typically carry with them additional charges, such as high surrender charges if the money is withdrawn within a certain number of years and annual contract charges. The result of the higher overall costs of the average annuity-type investments compared to the average mutual funds is lower investment returns, translating to fewer retirement dollars.

For instance, assuming contributions of $250 a month over 35 years with an annualized rate of return of 8%, the average variable annuity would grow to only $334,787 after 35 years, while the average managed mutual fund would grow to $441,774 and the average index fund would grow to $534,231—differences of $106,987 and $199,444, respectively.[2]

The new regulations impose due diligence and compliance criteria that require employers to assume a greater fiduciary role. As a result, employers must act in the best interest of plan participants, which means not only keeping track of but also weighing the costs of various investment options.

Like private-sector employers that offer 401(k) plans, it is in the best interest of employers offering 403(b) plans to create an investment policy statement with guidelines for selecting, monitoring, and evaluating plan investment options, as well as forming an investment committee that meets regularly to review investment performance, plan expenses, and employee education, and keeps well-documented minutes of each meeting.

The new 403(b) regulations will provide employers with an incentive and structure for selecting best-of-class investment options and potentially enhancing their plans' performance significantly.

A Boost in Participation

The ability to invest in products with clear and competitive fee structures and understandable performance is likely to boost participation in 403(b) plans. It also is likely that enrollment will be boosted just by reducing the number of options. Some 403(b) plans have had hundreds of investment choices. Most were annuity-type products and the average participant has been ill-equipped to make informed, discerning choices. Not wanting to make the wrong decision, some participants opted out just because of the sheer volume of options.

The stepped-up fiduciary responsibilities for employers increase their liabilities, and the IRS has signaled that it will be ramping up its audits of 403(b) plans.

2 Average annual fees for variable annuity—Variable Annuity Research and Data Service (VARDS), a unit of Morningstar, Inc.; average annual fees for mutual funds—categories analyzed by Morningstar.

Now, with the incentive to move to a single, unified platform for all 403(b) investments, employers will be better able to develop a communication strategy for employees, helping to educate them about appropriate investment allocation strategies for their various life stages.

The new IRS regulations also require universal availability for employees, ensuring that nonprofit employers make retirement savings opportunities available to most workers. Currently, employees whose schedules are irregular, such as substitute teachers and visiting professors, could be excluded because they sometimes work fewer than 20 hours a week. The new regulations require coverage for these employees once they work 1,000 hours in a year.

Besides being universally available, the new regulations require that the 403(b) plan be effectively available. That means that if an employee is eligible to participate in the plan but has not been effectively notified that he or she may participate, the IRS will not consider it available. The new regulations require an employer to provide an annual meaningful notice to all eligible employees of their rights to participate in a 403(b) plan.

What Comes Next

Because 403(b) plans have been largely unscrutinized for many years—and some have evolved into highly complicated investment platforms—the transition is not going to be easy for a number of employers.

For some, the first challenge may be to get their arms around the investment options currently offered in their plans. With multiple investment providers offering numerous products, as well as accounting and recordkeeping services delivered by multiple firms, it could initially be difficult for some to track down their plan's holdings.

There also will be strategic choices to be made. If, for instance, employers choose to reduce their options or change them entirely, they may have to weigh the costs of surrender charges for terminating contracts that typically run for terms of five to seven years.

What is certain is that employers will be looking hard at their 403(b) plans in the next year, as they have only until the end of 2008 to prepare for the new rules. The stepped-up fiduciary responsibilities for employers increase their liabilities, and the IRS has signaled that it will be ramping up its audits of 403(b) plans.

Similar to recent reform in 401(k) plans, the new IRS regulations governing 403(b) plans will likely continue the trend among plan sponsors to seek unbiased, outside expertise in managing their companies' retirement plans. Increasingly—and particularly in the face of so many regulatory and accounting changes—many companies now look to firms with extensive benefits expertise to perform audits of their investment plans and advise them on a wide range of investment options.

As retirement plans become more and more focused on compliance, there is a growing trend toward a single platform for plan administration. For employers offering 403(b) plans, this would mean a dramatic shift from the multiple-vendor model that most currently employ. Employees could benefit from an easy transfer among all investment options, at-a-glance information on their total 403(b) position, consolidated participant statements, and a Web site for all 403(b) money. In other words, tomorrow's 403(b) plan may look a lot like today's 401(k) plan!

The need to create a comprehensive written plan document opens the door to a fresh perspective on 403(b)s, and nonprofit employers have the opportunity to take advantage of the shift to greater fee transparency and open investment architecture. They and their employees deserve the best that the market has to offer as they prepare for their hard-earned retirements. **M**

Assuming contributions of $250 a month over 35 years with an annualized rate of return of 8%, the average variable annuity would grow to only $334,787 after 35 years, while the average managed mutual fund would grow to $441,774 and the average index fund would grow to $534,231—differences of $106,987 and $199,444, respectively.

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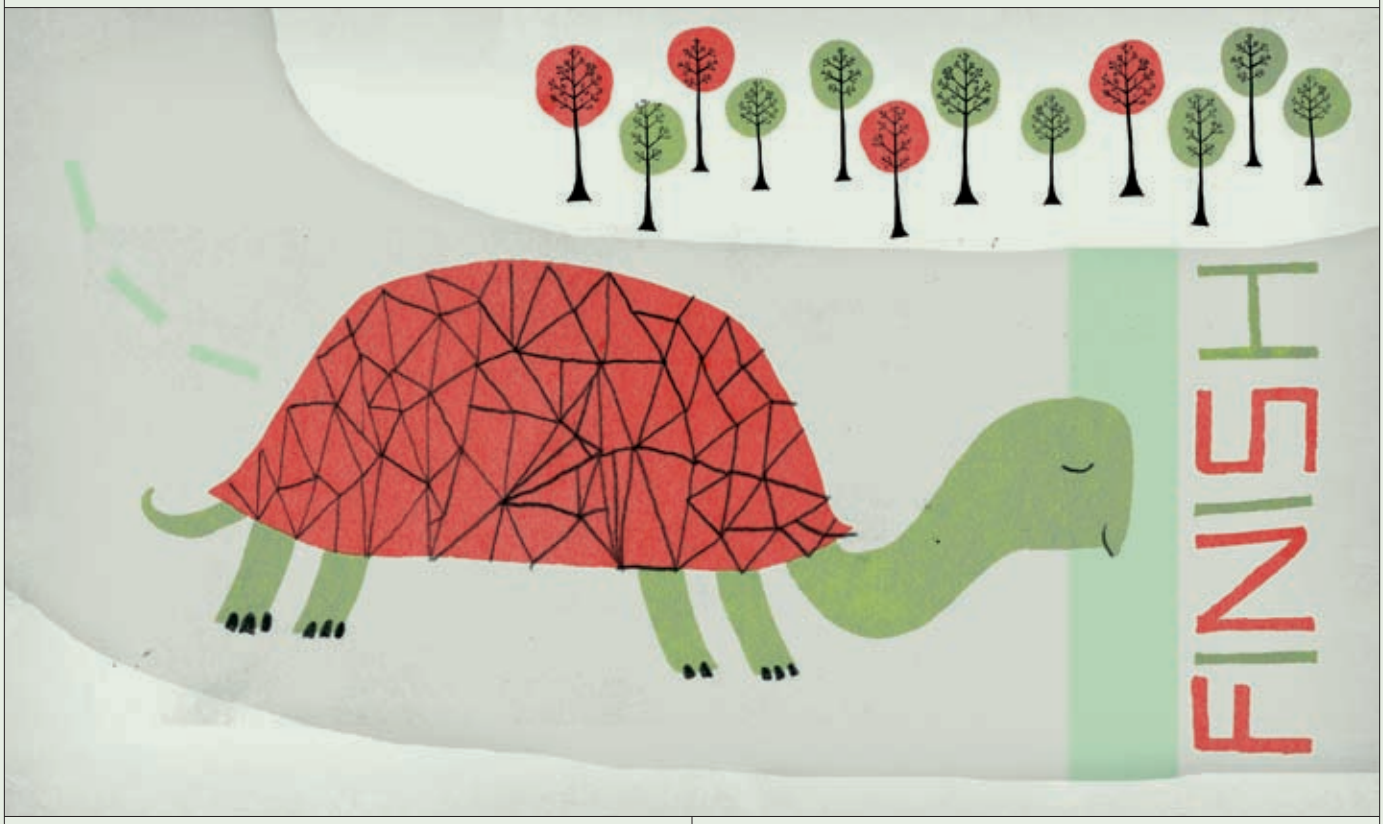
SLOW AND STEADY:

A MEASURED APPROACH TO PENSION FUNDING

BY MARYANN DiMAGGIO



Plan sponsors are getting the message: They're pulling risky investment strategies off the table in response to the Pension Protection Act (PPA), pending accounting rule changes, and this year's volatile marketplace.

By way of background, the PPA sets new funding standards and defines the discount rate to be used for valuing pension liabilities. The Financial Accounting Standards Board (FASB), which sets accounting rules, recently enacted new changes that will result in pension liabilities being shown on the financial statements, rather than in a footnote, so that changes in pension liabilities (and their corresponding assets) will directly affect companies' financial statements. These changes, coupled with recent market volatility, have brought the potential for volatility in plan funding levels to the forefront of pension discussions.

In response to this new climate, many sponsors of defined benefit (DB) plans are shifting their investment focus to longer-duration bonds and similar investments, and are also employing strategies such as liability-driven investing (LDI), which seeks to better match the risk/return profile of assets to pension payout liabilities. Because pension obligations are typically long-dated and span far out into the future (see graph on page 23), their values are very sensitive to changes in interest rates.

With LDI, the objective is to have the market value of assets move in tandem with increases (or decreases) in liabilities. Because liability obligations are sensitive to changes in interest rates, the asset portfolio must also be structured with similar interest-rate sensitivity. Without LDI, assets and liabilities may respond differently to market movements, which could result in volatility to the plan's funded status (the difference between the liabilities and the assets).

The new regulations and accounting changes, coupled with unprecedented levels of pension plan underfunding in recent years, have resulted in a fundamental adjustment in how companies fund

Plans now understand that they need to adjust how they manage their employee retirement investments or risk seeing pension volatility reflected on their financial statements.

their pension plans. Plans now understand that they need to adjust how they manage their employee retirement investments or risk seeing pension volatility reflected on their financial statements.

The industry-wide aversion to investment risk contrasts with the 1990s, when many funds relied on the booming stock market to grow their pension funds and eschewed the opportunity to fully fund their pensions or set aside extra for a rainy day. However, when the equity market declined for several years earlier this decade, and liabilities increased under a declining interest-rate environment, many retirement plans became underfunded.

The level of pension plan underfunding was a wake-up call to plan sponsors, the public, regulators, and legislators. Thus came the PPA, which established more stringent funding standards for DB plans (with the precise prescribed levels expected to be mandated for 2008 and beyond). The new law also defines the discount rate to be used for liabilities. What used to be a single rate associated with high-quality bonds now factors in the yield curve, including short-, intermediate-, and long-term discount rates, which allow for a more precise calculation of the value of liabilities.

* * *

NOW MORE THAN EVER, LDI MATTERS Given this new, stringent environment for pension funds, LDI or an LDI-like strategy works precisely because it is designed to reduce the volatility of a pension's funded status.

The extent to which high-quality, longer-term bonds are used will make it easier for the sponsor to meet its pension obligations, regardless of the market environment. By moving to longer-term bonds (and comparable investments)—including 10-, 20-, or 30-year-maturity bonds, versus five-year bonds—the fund profile more closely matches the fund's liabilities (pension benefit obligations). Thus, if interest rates move, causing liabilities to change, the bond portfolio mirrors those moves. Instead of tolerating the asset return volatility of the past, an LDI strategy allows the fluctuations in assets to be matched (or nearly matched) with the fluctuations in liabilities.

An LDI strategy makes sense even in the most turbulent of environments. For plan sponsor management, it means less of a chance for negative funded status news that must be reported to the CFO and CEO and also be reflected in the financial statements.

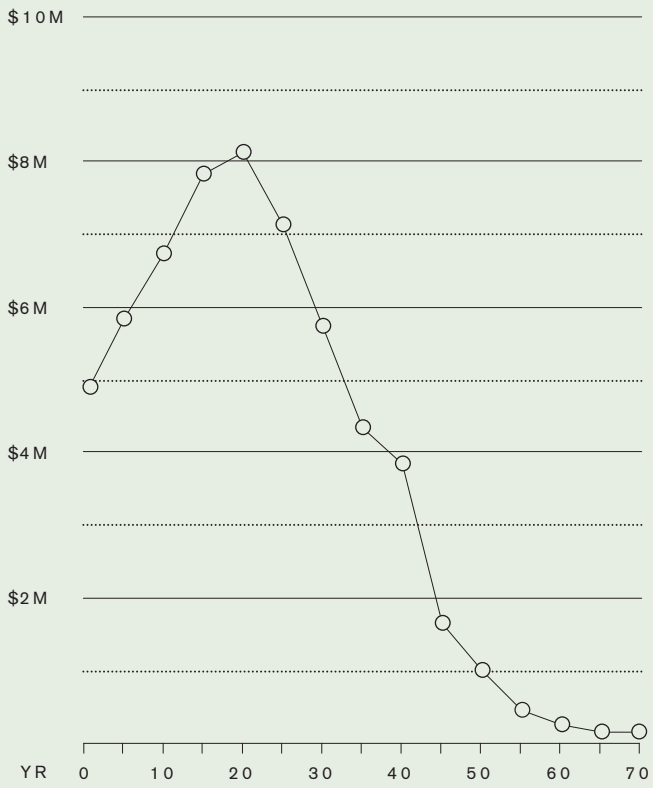
* * *

BREAK-OUT APPROACH The underlying principle of LDI is to manage the variability between asset performance and the performance of liabilities. LDI doesn't mean that a plan sponsor has to precisely match duration or cash flow of its liability obligations. Instead, LDI is a balanced approach where a plan sponsor can reduce fund volatility while also utilizing some assets that generate more attractive risk-adjusted returns. Each pension plan has different characteristics, which necessitate a customized approach in managing assets.

For example, one approach under LDI divides portfolios into two parts, with one portion allotted to high-return-generating (albeit more risky) investments, and the second part allotted to assets (long-duration bonds or swaps) designed to match the performance of liabilities.

Ultimately, asset allocation and the decision on how much capital to commit to safer versus more aggressive investments depends on the plan sponsor's risk tolerance and the funded status of the plan, along with the characteristics of the workforce covered by the plan. Liability-driven investing opens up the options for sponsors in this new day of pension fund management. **M**

EXPECTED BENEFIT PAYMENTS FOR A SAMPLE DB PLAN
(IN MILLIONS)



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Milliman, whose corporate offices are in Seattle, serves the full spectrum of business, financial, government, and union organizations. Founded in 1947 as Milliman & Robertson, the company has 47 offices in principal cities in the United States and worldwide. Milliman employs more than 2,000 people, including a professional staff of more than 900 qualified consultants and actuaries. The firm has consulting practices in employee benefits, healthcare, life insurance/financial services, and property and casualty insurance. Milliman's employee benefits practice is a member of Abelica Global, an international organization of independent consulting firms serving clients around the globe. For further information visit www.milliman.com.

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