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Insurance investment in a challenging global environment

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Executive summary

In the wake of the financial crisis, insurers are rethinking how they invest.

Asset management, well executed, significantly enhances an insurer's profitability and benefits policyholders. The global financial crisis and its aftershocks are provoking insurers to rethink the way they invest. This re-examination comes at a critical juncture for the industry, which faces numerous investment challenges.

Insurance assets, USD 22.6 trillion worldwide, are a vital resource ...

Collectively, insurers are a leading institutional investor, holding USD 22.6 trillion of assets (at year-end 2009). As an industry, insurers invest for the long term and manage their assets conservatively and prudently, providing a stabilising benefit to society.

... that must be managed with a systematic investment process.

In particular, insurers have in place sound, systematic and objective processes for setting investment policy. The processes reflect the goals and constraints that are specific to the insurance company, its lines of business and its countries of operation. They also reflect the insurer's liability constraints as well as the availability of matching investment instruments. Although insurers invest in a way that differs fundamentally from other financial institutions, the guiding principle of investing is the same: Modern Portfolio Theory (MPT) and Asset-Liability Management (ALM).

Regulatory changes threaten to distort insurers' investment decisions.

Trends in motion prior to the financial crisis are leading to regulatory changes that may affect insurers' investment strategies. Developments such as the changes in accounting standards, increased regulatory and capital requirements, and higher capital charges on some investments may encourage insurers to allocate more of their assets to government securities at a time when yields are extremely low and sovereign bonds are no longer fail-safe investments.

Excessive investment in government bonds would cost insurers a massive amount of income ...

Over-investing in low-risk, low-return securities reduces insurers' investment returns. For US insurers, a requirement to allocate half of assets to Treasury bills and half to Treasury bonds would have reduced returns by 1.5% a year from 1991-2008. A similar return reduction on USD 22.6 trillion of global insurance assets would cost the industry some USD 340 billion a year.

... and deprive many people of the benefits of insurance.

Poor investment performance would make the sector less attractive to shareholders and bondholders, thereby raising insurers' cost of capital. More importantly, it would make insurance products less competitive. Pensioners would receive lower monthly checks and annuities would become a less appealing investment option. Some consumers would scale back their use of insurance products such as annuities, and invest in other, riskier, assets. This would deprive them of the benefit of the industry's investment expertise.

Recent developments have prompted executives to focus more on asset management issues such as...

...crisis preparedness

... equity investing

...emerging market opportunities

...inflation risk

...demographic impacts

...and third party asset management.

The financial crisis has affected insurers primarily through their investments, prompting executives to ask many questions about asset management. In addressing these, the report notes:

- Insurers need to manage their investments with an awareness that crises occur regularly
- For some insurers, investing in equities can improve their overall risk profiles
- Emerging markets offer insurers many investment opportunities
- Insurers can partially mitigate inflation risk by investing in commodities, real estate and inflation-indexed bonds
- Demographic shifts appear to affect asset returns, but the scale and timing of these impacts is uncertain
- A growing number of insurers are using third party asset managers

Introduction

Disagreeable data are streaming out of the computers of Becker Securities and Merrill Lynch and all the other performance measurement firms... Contrary to their oft articulated goal of outperforming the market averages, investment managers are not beating the market: The market is beating them.

Charles Ellis, "The Loser's Game", *Financial Analysts Journal*, July/August 1975

Recent market turmoil has prompted insurers to revisit their asset management approaches.

The two market collapses of the past decade have spurred many insurers to rethink their approach to investing. When markets rise rapidly and steadily, seeing only short term dips, as in the 1990s, it becomes easy to confuse investment savvy with a bull market. But the recent market turmoil has forced many insurers to reassess their investment and risk management capabilities. In the US and Canada, insurers outsourced a record 176 mandates last year, for the management of USD 71bn in assets. This included 15 mandates of USD 1bn or more. Total general account insurance assets outsourced grew last year from USD 798bn to USD 1 032bn.[1]

This re-examination comes at a critical juncture for the industry.

This reassessment comes as the industry faces numerous investment challenges. Bond yields in safe haven countries like Germany and the US are at record lows, and are even lower in Japan. Escalating national debt has heightened the financial vulnerability of sovereigns. In this environment, some insurers are rethinking their growing commitments to "risk-free" sovereign debt. Others are seeking new opportunities, particularly in the emerging markets.

The crisis has also inspired regulatory reform – much of it good, but some potentially overdone.

The financial crisis has also spurred regulators and policymakers to rethink insurance supervision. Many of the steps they are taking will strengthen the industry by improving transparency and coordination among supervisors. But some developments run the risk of hindering industry performance. A particular challenge is a confluence of forces – mark-to-market accounting; discounting with risk-free rates; and heightened capital, regulatory and ratings standards – that is pressuring insurers to allocate more assets to lower-risk, lower-return investments. Such regulation, if overdone, would reduce insurers' investment returns, which could prove costly to policyholders, shareholders and society.

Plan of this *sigma*.

Despite the massive scale of insurance investments and the many challenges they pose, the current business and academic literature offers precious little guidance on the subject. This *sigma* provides a perspective on insurance asset management that reflects the special character of insurers. The next section explores why insurers follow a rigorous investment process and what that entails. The report then considers current regulatory developments and the potential impact of over-regulation on industry investment performance. Next, the report addresses several of the pressing asset management questions confronting insurance executives. The final section draws some conclusions.

[1] Data on mandates are from Eager, Davis & Holmes, "Insurance Asset Outsourcing Analysis", March 2010, whose authors estimate that the data cover about half of the market. Data on assets under management are from the 2010 *Insurance Asset Manager* annual survey.

The practice of insurance asset management

Managing insurance assets requires considerable expertise.

Given the massive scale of their investments, managing them properly is of utmost importance to insurers. A failure to do so – whether due to mismanagement, mis-aligned incentives, or inappropriate insurance regulation – would impinge on the mechanisms through which insurers help to finance the global economy. This section first documents the size of global insurance investments and their geographic distribution. It then describes the unique goals, priorities and constraints that distinguish insurers from other financial intermediaries and make insurance asset management particularly challenging. Next, it discusses some of the techniques that insurers use to overcome these unique asset management challenges. Finally, it explains the sound and objective processes that insurers use to manage their investments.

Insurance investing: plenty at stake

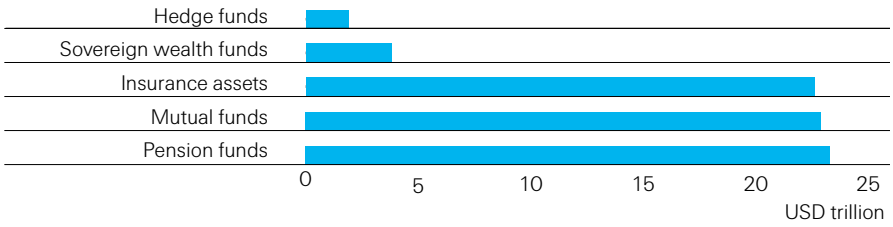
Insurers are long-established, low-profile institutional investors.

Insurance has been called the "Rodney Dangerfield of the financial services sector": it gets no respect. Compared with hedge funds and sovereign wealth funds, which have attracted considerable attention in recent years, insurers have kept a low profile as long-established institutional investors. Market observers often fail to appreciate the scale of insurance investments. Moreover, insurers are long-term investors, providing a stabilising influence during times of market volatility.[2]

Insurers are among the world's largest investors, with USD 22.6tr in assets.

At year-end 2009, industry assets totalled USD 22.6 trillion, or some 12% of global financial assets.[3] The industry's total assets are in line with pension and mutual funds and more than six times the size of sovereign wealth funds (see Figure 1).

Figure 1
Asset holdings of major institutional investors, year-end 2009, USD trillion



Sources: Insurers – Swiss Re Economic Research & Consulting estimates; hedge funds – HedgeFund Intelligence; mutual funds – Investment Company Institute; pension funds - Towers Watson; sovereign wealth funds – Sovereign Wealth Funds Institute.

[2] "Systemic Risk in Insurance: An analysis of insurance and financial stability," The Geneva Association, March 2010, pp. 20, 36.

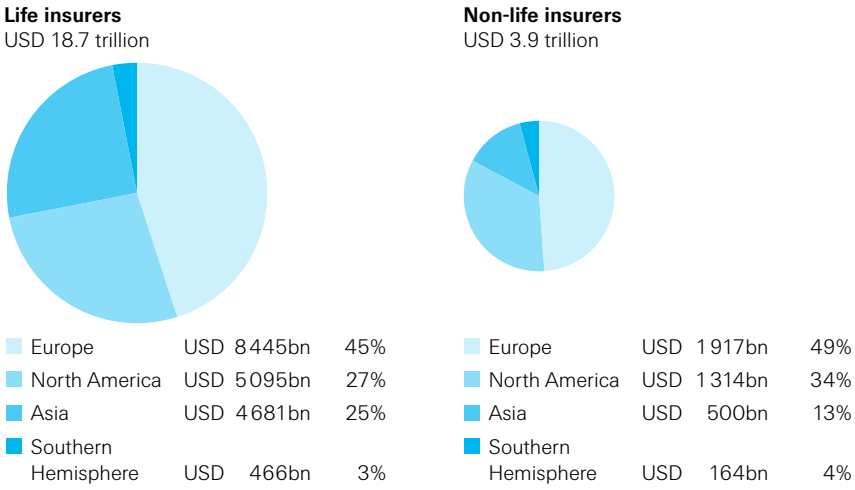
[3] According to McKinsey, the value of global financial assets totalled USD178 trillion in 2008. Here, it is assumed that global financial assets recovered in 2009 to a level halfway between their 2008 low (USD178 trillion) and the 2007 peak (USD194 trillion), i.e. USD 186 trillion.

Almost half of global insurance assets are held in Europe.

Geographical distribution of insurance assets

Europe has USD 10.4 trillion in insurance assets, almost half of the world total. North America and Asia-Pacific hold USD 6.4 trillion and USD 5.2 trillion, respectively. Oceania, Latin America and Africa together hold just 3% of the world insurance assets (see Figure 2).

Figure 2
Insurance investments, by region, year-end 2009, USD billion



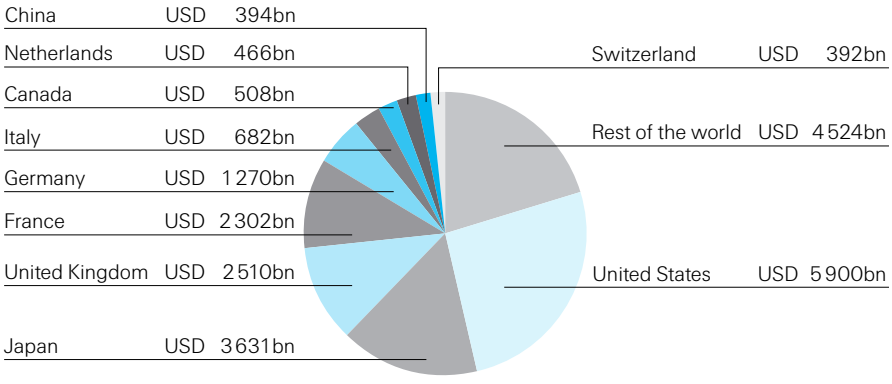
Notes: The market composition of each region is based on Swiss Re *sigma* No 2/2010, "World insurance in 2009". In some markets, composite insurers are grouped under either life or non-life sector. For markets where official statistics are not available, assets are estimated based on insurance premiums. The sizes of the pies reflect the relative asset sizes of the two sectors.

Source: Swiss Re Economic Research & Consulting estimates based on national insurance statistics.

Due to the savings component of life products, life companies hold the lion's share of insurance assets.

Due to the savings component of life products, life insurance assets far exceed non-life assets. At year-end 2009, life companies held USD 18.7 trillion in investments, one-third of which was held in separate accounts[4]; non-life insurers held the remaining USD 3.9 trillion.

Figure 3
Distribution of insurance assets (life and non-life) by country, year-end 2009



Source: Swiss Re Economic Research & Consulting estimates based on national insurance statistics.

[4] A separate account is an account held at a life insurer in conjunction with a variable annuity or life contract. Separate account assets are allocated to a variety of investments (such as stocks and bonds) at the discretion of the policyholder and are not subject to the regulatory requirements that apply to general account assets. The proportion of separate account assets was estimated based on twelve markets for which official separate account data are available. These markets account for 92% of the world's total life assets.

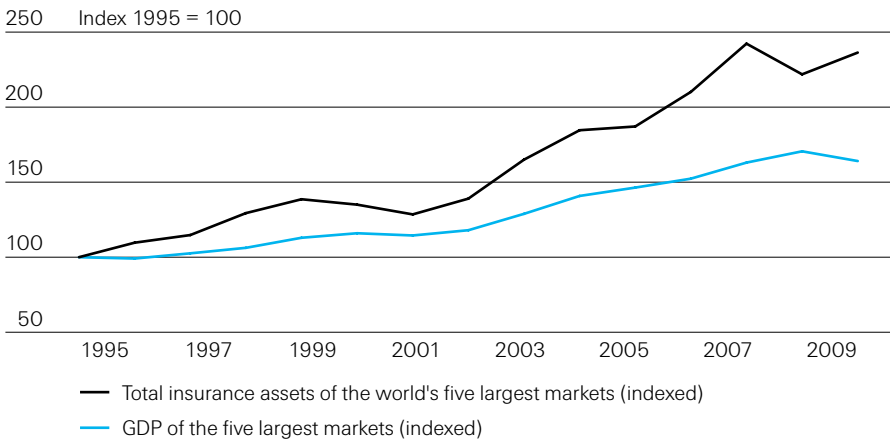
US, Japan, UK and France hold more than 60% of world insurance assets.

The four largest national markets – US, Japan, UK and France – hold more than 60%, or USD 14.3 trillion, of world insurance assets (see Figure 3). China, with USD 394 billion of insurance assets, is the only emerging market among the world's ten largest. Because insurance business in the newly industrialised economies and emerging markets is growing rapidly, Taiwan (USD 320 billion), South Korea (USD 318 billion), South Africa (USD 170 billion) and India (USD 148 billion) may also soon rank among the world's largest markets.

Insurance assets have grown faster than the general economy.

Insurance assets have grown faster than the general economy. From 1995 to 2009, the nominal value of insurance assets in the five largest markets (US, Japan, UK, France and Germany) increased from USD 6.6 billion to USD 15.6 billion, an annual compound rate of 6.3% (see Figure 4). During this period, the aggregate GDP of these economies in nominal USD terms grew by 3.6% per year.[5]

Figure 4
Growth of nominal insurance assets and GDP, five largest insurance markets, 1995–2009



Notes: The largest five markets are the US, Japan, UK, France and Germany. Values of insurance assets and GDP are converted into USD based on the current-year market exchange rates. The data series are expressed as indices (1995=100).

Sources: Swiss Re Economic Research & Consulting; national insurance and income statistics.

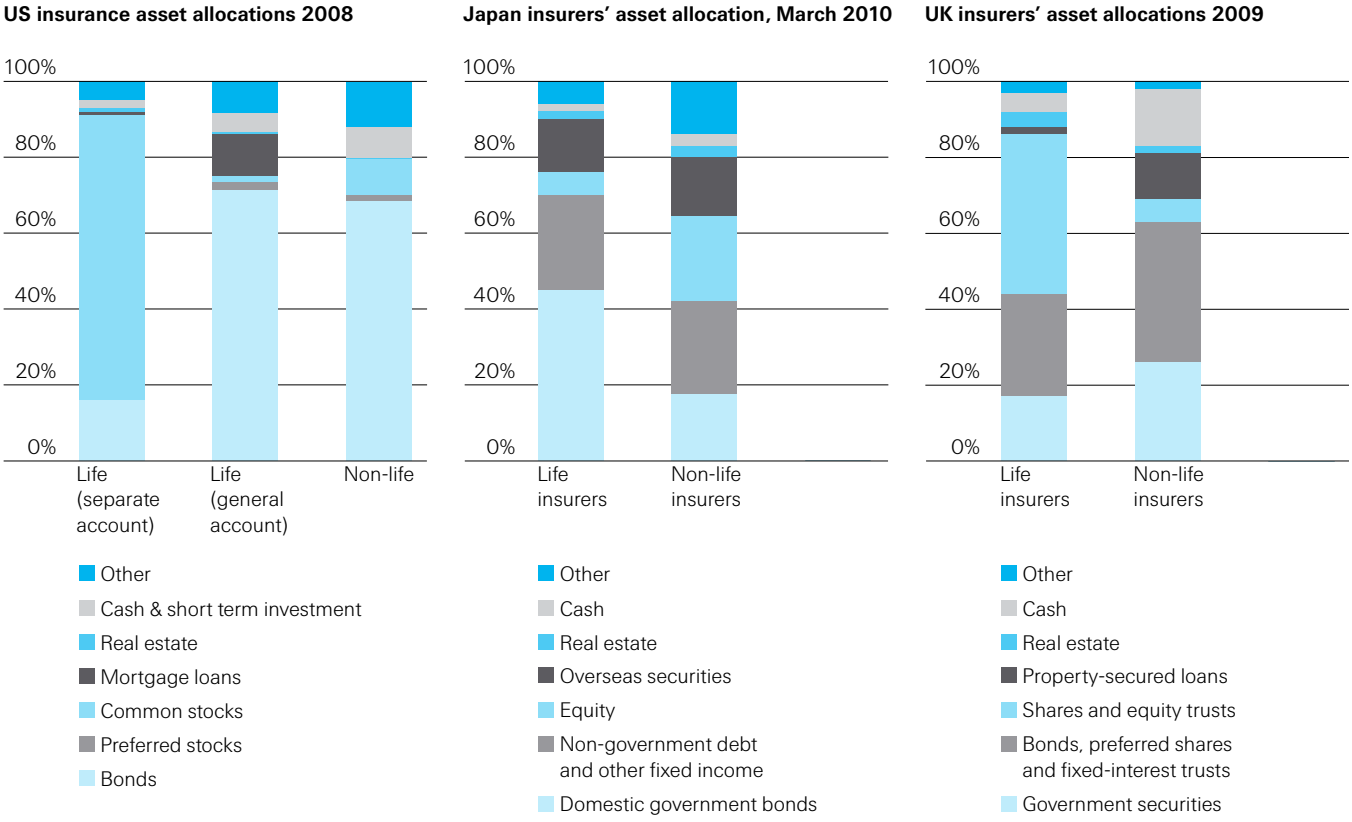
[5] The GDP growth rate reported here is the compound annual growth rate (CAGR) of aggregate USD-denominated nominal GDP of the five countries, converted using market exchange rates. It differs from the aggregate rates using the corresponding GDPs as weights (real CAGR 1995-2009: 1.9%; nominal: 3.3%).

Asset allocations of life and non-life insurers differ.

Insurance asset allocations

Insurers invest conservatively. Both life and non-life insurers hold most of their assets in government and highly-rated corporate bonds. Although the asset allocations of insurers reflect country-specific factors, a global comparison of these allocations highlights several key differences: non-life companies hold proportionally more cash and equities; in general, life companies hold more loans and fixed income instruments and less cash in their general accounts. Individual holders of separate accounts, by contrast, allocate a large share of their assets to common stocks (see Figure 5).

Figure 5
Asset allocations of life and non-life insurers, three largest markets, %



Sources: AM Best, Association of British Insurers, Life Insurance Association of Japan, Non-life Insurance Association of Japan, Swiss Re Economic Research & Consulting.

Life insurers invest heavily in government securities.

Life insurers invest heavily in government securities. For instance, Japanese life insurers allocate 46% of their portfolios to debt issued by national and municipal governments. Aside from this, a large part of their 14% allocation to overseas securities is in sovereign debt such as US Treasuries. UK life ("long-term") insurers have a far greater commitment to equity and equity trusts than UK non-life ("general") insurers. This reflects the high share of unit linked business in the UK, which accounted for 59% of assets in 2009.

Portfolio management basics

Insurers follow a formal investment process that entails planning, execution and feedback.

Insurers, like other financial institutions, have a formal process to assure that they invest in a way that meets their needs and objectives, subject to the constraints they face – most significantly, their obligation to pay claims promptly.[6] The process must be flexible enough to adapt to changing market conditions and to accommodate a wide range of asset classes – corporate bonds, government bonds, loans, equities, real estate and other alternative assets. It consists of three steps: planning, execution and feedback.

Planning

Planning entails balancing objectives with constraints.

Identifying investment objectives

The first planning task is to identify an insurer's investment objectives and constraints. Life and non-life companies typically have three investment objectives:

- to fund future claims and benefits by maintaining liquidity and generating income;
- to earn strong investment returns to support the competitive pricing of non-life products and to provide attractive returns to annuitants and life policyholders; and
- to contribute to the growth of surplus, thereby generating attractive returns for shareholders

Insurance investments are subject to a complex web of restrictions.

Investment constraints of insurers

Numerous constraints - both internal and external - limit an insurer's investment choices. The scope, complexity and restrictiveness of these constraints distinguish the investment activities of insurers from those of other investors. Stated mathematically, constructing an investment portfolio is an exercise in optimisation with multiple constraints. These constraints relate to liquidity, time horizon, currencies, taxes, regulation, credit ratings and reporting standards.[7]

Insurance portfolios must be liquid, ...

Liquidity. Although insurance premiums and investment cash flows are the main sources of an insurer's liquidity, the publicly-traded securities it holds also provide liquidity. Insurers therefore limit their exposure to illiquid assets such as private placement bonds, mortgage loans, real estate and private equity.

... and have duration in line with liabilities.

Time horizon. Insurers invest in securities whose payouts are timed to match their expected policyholder obligations.

Some insurers must hedge currency risks.

Currencies. Insurers operating in multiple jurisdictions may find that their optimal investment portfolio is denominated in a mix of currencies that differs from the currencies in which their liabilities are denominated. This makes hedging foreign exchange risk vital.

Taxes influence investment choices.

Taxes. The way that investment income is taxed influences insurers' asset allocations.

[6] This idea of an investment process has been developed and promoted by the CFA Institute, an international association of investment professionals.

[7] Asset-Liability Management, the mechanism for meeting these constraints, is discussed below.

Regulation limits asset choices and allocations.

Regulation. Regulation specifies how much insurers can allocate to various investments. Moreover, risk-based capital requirements could make it prohibitively expensive to hold certain assets.

Rating firm capital models create additional investment constraints.

Credit ratings. Rating firm capital adequacy models, though similar to those of regulators, often differ in important aspects, creating additional restrictions.

Accounting and statutory reporting standards also influence investment decisions.

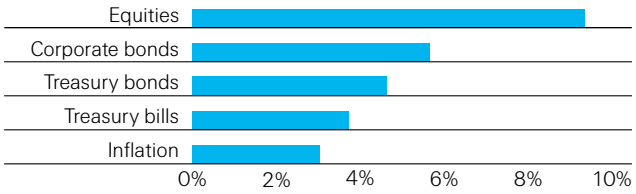
Reporting standards: The move to market-consistent valuation of assets and liabilities, though beneficial, has sometimes been inconsistently applied. This can artificially introduce volatility to balance sheets and income statements, affecting investment decisions.

Setting capital market return expectations based on history...

Setting capital market return expectations

A key component of the planning process involves estimating the risks and future expected returns of the various asset classes in which an insurer invests. Although these estimates are rooted in history, past realised returns are an imperfect indicator of current prospective returns. Historically, US equities have outperformed Treasury bills by 5.7% per year over the long term (see Figure 6). This outperformance, whose precise magnitude has varied by time and place, has had a compelling cumulative impact.[8]

Figure 6
Historical total returns by asset class, US, 1900–2010



Notes: Returns are through October 29, 2010.

Sources: Deutsche Bank, "100 Years of Corporate Bond Returns Revisited", November 5, 2008; Barclays Capital; Standard & Poor's; and Bureau of Labor Statistics.

...is a key part of the planning process.

In the planning step, the insurer must determine its own set of capital market expectations. Part of this exercise is deciding which asset classes to include and how to define them. Table 1 provides an example of an institutional investor's capital market assumptions. Note how, consistent with the idea that financial markets are largely (though not perfectly) efficient, the asset classes with the highest expected returns generally entail the most risk.

Table 1
Capital market expectations, Yale endowment

Asset class	Expected real return	Risk
Fixed income	2%	10.0%
Merger arbitrage	6%	10.0%
Real assets	6%	13.6%
Value-driven strategies	6%	15.0%
Developed markets equity	6%	20.0%
Emerging markets equity	8%	25.0%
Private equity	11%	27.7%

Notes: "Risk" is the standard deviation of future annual returns.
"Real assets" includes real estate, oil and gas, and timberland.

Source: Yale Endowment Update, 2009.

[8] Some observers argue that an overreliance on US stock market history, because it is widely available, may introduce "survivorship bias": the tendency for data to be most readily available for the markets that performed the best. To address this concern, Dimson, Marsh, and Staunton examined returns from 1900–2009 in 17 major equity markets (Credit Suisse *Global Investment Returns Yearbook* 2010). They find that equities outperformed bills in each market, by amounts that range from 2.5%–6.8% per year. The global average was 4.2% per year.

Execution: Establishing asset allocations

Insurers allocate assets based on Modern Portfolio Theory and Asset-Liability Management.

To establish asset allocations that are consistent with the company's investment objectives and liability constraints, insurers typically use Modern Portfolio Theory and Asset-Liability Management.

Modern Portfolio Theory (MPT)

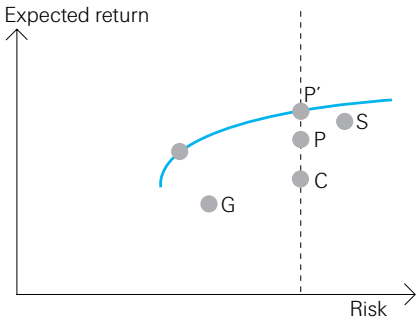
Modern Portfolio Theory considers each investment in a portfolio context, ...

Modern Portfolio Theory (MPT), developed in the 1950s by Nobel laureates Harry Markowitz and William Sharpe, has in recent decades become best practice among asset managers. A central insight of MPT is the concept of an *efficient investment portfolio*, defined as one that maximises expected return for a given level of risk. Efficient portfolios are optimally diversified in a manner that takes into account the risk and expected return of each investment as well as the correlations between these investments. The set of efficient portfolios is called the *efficient frontier*.[9]

... enabling insurers to optimally diversify their investments.

A simple example can illustrate this framework. Consider an insurer that invests in three asset classes: government bonds, corporate bonds and stocks. Government bonds pay the lowest return and are safest; stocks earn the highest expected return but are the riskiest. The risk and return of each asset class is denoted by a point: G for government bonds, C for corporate bonds and S for stocks (see Figure 7). The insurer might invest only in corporate bonds. But by diversifying optimally across the three asset classes, it can earn a higher expected return with the same level of risk, such as at point P. By diversifying across even more asset classes, such as emerging market equities and real estate, the insurer can build portfolios that earn still higher expected returns at no added risk. The one with the highest expected return (point P') is an efficient portfolio.

Figure 7
The efficient frontier



Source: Edwin Elton and Martin Gruber, *Modern Portfolio Theory and Investment Analysis*, 2010.

[9] Further specifics on MPT can be found in any of numerous texts, such as Edwin Elton and Martin Gruber, *Modern Portfolio Theory and Investment Analysis*, 2010. William Goetzmann offers a primer, "An Introduction to Investment Theory", at: http://viking.som.yale.edu/will/web_pages/will/finman540/classnotes/notes.html

Asset-Liability Management (ALM) helps insurers meet their obligations, ...

Asset-Liability Management (ALM)

Because insurers must evaluate investments in the context of their insurance obligations, MPT only partially meets their needs. Asset-Liability Management (ALM) provides the broader perspective that insurers need when investing. ALM is an ongoing process of devising and implementing strategies related to liabilities as well as assets to achieve financial objectives for a given set of risk tolerances and constraints.

... making it the *sine qua non* of insurance asset management.

The basic value proposition of an insurer is the confidence its policyholders have in its ability to pay claims and benefits. ALM is the *sine qua* non of insurance asset management, enabling insurers to manage their portfolios in a way that assures that claims are met.

ALM helps insurers manage cash flows and interest rate risk.

ALM provides a framework for simultaneously managing multiple risks, such as liquidity and interest rate risk. Key concerns of ALM include cash flow management and interest rate risk management.

Cash flow matching involves matching investment income to expected liabilities.

Cash flow management

Because an insurer must ensure that its cash flows suffice to meet its obligations, cash flow matching is an important aspect of insurance investment. In principle, an insurer's liabilities can be "backed" by a portfolio of bonds that mature at exactly the times when its liabilities fall due. But because the timing and level of insurance payments is inherently uncertain, cash flow matching cannot be precise.

Deviating from perfect matching may generate incremental returns.

Another limitation of cash flow matching is that it is costly. Committing to match the cash flows of assets to liabilities precisely would force an insurer to invest in government bonds whose returns are less than it could earn in other assets such as corporate bonds, stocks or real estate. Even when investing solely in bonds, many insurers consciously elect to create a mismatch between assets and liabilities, within a certain tolerance level, if doing so can generate incremental returns.

Through duration matching, ALM minimises ...

Interest rate risk management

Another key consideration for ALM is the impact of interest rate movements on both sides of the balance sheet. For an insurer that perfectly matches the timing of its asset and liability cash flows, interest rate fluctuations pose no economic risk. But because these matches are in practice imperfect, insurance companies follow an investment discipline known as *immunisation*. This can be achieved with a technique called *duration matching*.

... an insurer's interest rate risk.

The duration of a bond, or portfolio of bonds, measures how sensitive its value is to changes in interest rates. If, for example, a stream of liability payments has a six-year duration, each 1% decrease in interest rates will increase the present value of these liabilities by 6%.[10] If this set of liabilities is offset with investments whose duration is also six years, they too will rise by 6% – a perfect hedge.

Convexity matching complements duration matching.

But duration matching is not a complete solution. Even if assets and liabilities initially have the same duration, these durations will drift apart when interest rates change, a phenomenon known as curve risk. The pace at which a portfolio's duration changes in response to interest rate movements is known as its *convexity*.[11] By matching the convexity of its assets and liabilities, an insurer preserves the duration match – as best as possible – even when interest rates fluctuate.

[10] Another, mathematically equivalent, way to define duration is: the average time to payment for a series of cash flows, such as those from a bond or bond portfolio. For an illustration and a fuller discussion of ALM, see Swiss Re *sigma*, No. 6/2000, "Asset-liability management for insurers".

[11] Duration is the first derivative of a portfolio's value with respect to interest rates; convexity is the second derivative.

The use of derivatives

Derivatives are a valuable ALM tool for insurers.

Derivatives, financial instruments whose value depends on the value of an underlying security, commodity, or other financial instrument, are an invaluable tool for insurance ALM. Derivatives provide a means of managing a variety of firm-wide risk exposures. For example, an insurer can hedge its exposure to interest rate movements by entering into a fixed-floating rate swap, in which it exchanges a series of fixed payments for payments whose value is tied to a current market rate such as LIBOR. It can also hedge its credit risk and foreign exchange risk exposures with derivatives. Moreover, life companies commonly use derivatives to hedge risks embedded in savings products.

The use of derivatives by insurers is widespread and on the rise.

Derivatives are widely used by large insurers throughout the world. A Swiss Re study found that, in 2002, all of the 25 largest US life companies and 13 of the 25 largest P&C companies used derivatives. Moreover, a recent survey finds that the use of derivatives to manage risk is on the rise at major life companies.[12] Of seven US life companies with sizable variable annuity businesses, six reported greater derivative use over the past three years. In addition, all the survey participants expected increased future derivative use to mitigate risks unrelated to variable annuities.

Derivatives offer several advantages …

Derivatives offer several advantages relative to underlying securities such as stocks and bonds. In many instances, insurers find that derivatives provide a faster, more cost-effective or more tax-efficient way to manage risks. Derivatives are also more liquid than many other classes of financial assets, such as corporate bonds.

… that must be weighed against the challenges they raise.

Insurers must weigh the risk management benefits of derivatives usage against the challenges it raises. These include:

- counterparty risk
- liquidity risk
- tail risk
- the need for accurate valuation methodologies
- exposure to regulatory, rating and accounting uncertainties

Feedback: Performance evaluation

Investment performance cannot be judged based only on returns, due to …

Another fundamental aspect of insurance asset management is the ongoing evaluation of how effectively an insurer is investing. The realised level of investment returns, though clearly important, is an insufficient indicator of performance for several reasons:

… "noise" and risk, …

1. There is a large element of randomness, or "noise" in realised investment returns. A well-executed investment strategy might fare poorly in a given year, while an inappropriate strategy might be highly profitable. It generally takes years of historical returns to establish clearly whether an investment approach is adding value. Moreover, looking just at returns fails to account for the amount of risk assumed. An insurer can increase its average long-run returns by using more leverage or by investing in higher risk/higher return asset classes.

… ALM and liquidity concerns …

2. The level of returns an insurer achieves provides little indication of how well it is fulfilling its core investment goals of funding liabilities and maintaining liquidity.

… and the impact of constraints.

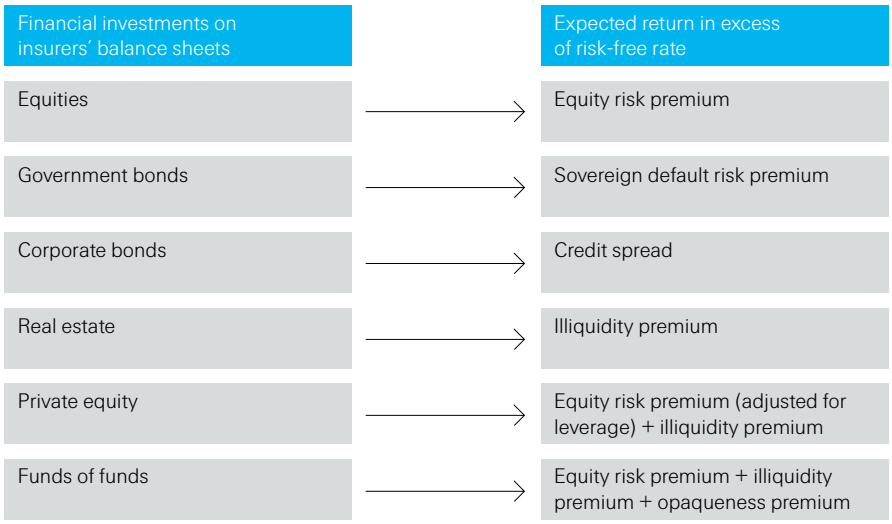
3. An evaluation of an insurer's investment performance must also take into account the investment constraints that the company faces.

[12] Swiss Re *insights*, "The use of derivatives in the US insurance market", October 2003; and Andrew Kligerman *et al*, "UBS Hedging Survey Takeaways", UBS Investment Research, 13 September 2010.

Performance measurement is on a risk-adjusted basis.

These observations have several implications for performance measurement. First, it must be on a risk-adjusted basis. Investments should be benchmarked against the risk-free rate plus a market risk premium assigned to each asset class, based on its risk characteristics (see Figure 8). The riskier the investment, the higher the return benchmark it must meet. Thus, any assessment of how well an insurer's investment portfolio has performed should take into account how volatile its portfolio returns were and, most importantly, how consistently these returns met the liability needs of the insurer.

Figure 8
Market risk premiums for various asset classes



Source: Swiss Re *sigma* No 3/2005, "Insurers' cost of capital and economic value creation: principles and practical implications".

Qualitative factors should also figure into performance evaluation.

Since investment returns are a necessary, but not sufficient, indicator of performance, other aspects of the investment process should also figure into an assessment.

- How sensible is the investment process?
- How closely does the portfolio manager follow it?
- Are the target asset allocations consistent with the needs of the insurer?
- Were the actual asset allocations consistent with these target allocations?
- Did the manager add value through:
  - Market timing?
  - Sector rotation?
  - Security selection?

Effective performance management facilitates ongoing improvement.

A thorough understanding of both the "soft" and "hard" aspects of investment performance enables an insurer to monitor and continuously improve its asset management practices.

Implications

To invest optimally, insurers must remain disciplined but flexible.

What does an investment process informed by MPT and ALM mean to insurers? Insurers are subject to unique goals, priorities and constraints that distinguish asset management for insurers from that of less-constrained investors. To perform optimally, insurance asset managers need the flexibility to invest prudently across a range of asset classes and to use derivatives to hedge risks. Any unnecessary restrictions on their ability to do so can compromise their investment performance and their ability to achieve the risk-return profile that best serves the needs of policyholders and shareholders. The next section considers current regulatory developments that threaten to hamper the investment performance of insurers.

Insurance investing in a changing regulatory environment

The financial crisis has inspired a wave of regulatory reform ....

The financial crisis was a real-life stress test that highlighted many of the vulnerabilities of financial markets. In its wake, policy makers throughout the world are actively debating how best to reform global financial regulation. Financial regulation is a delicate balancing act. Done properly, it promotes the transparency of financial institutions and guides them to make sound choices, while allowing them the flexibility to manage their businesses efficiently. But if overdone, regulation weakens the very institutions it seeks to protect. It can even put certain insurance business at risk, to the detriment of policyholders and society.

... that could have many unintended consequences.

This section briefly reviews how regulatory developments, ratings standards and accounting rules affect insurance investment. It then estimates the negative impact that de-risking can have on investment returns. Finally, it considers how earning lower investment returns would impede the competiveness of insurers.

Regulatory developments in the wake of the financial crisis

Many asset classes experienced 1-in-50 year declines in 2008.

An unusually strong downturn

The year 2008 was an extraordinary one for financial markets. Many asset classes experienced 1-in-50 year declines (see Table 2). Although government bonds fared especially well, many of the highly-rated fixed income securities in which insurers invested failed to rally along with government bonds, depriving insurers of the gains that typically offset stock price declines in a bear market. Investment-grade corporate bonds earned negative returns; returns to many AAA-rated structured securities were even more disappointing. As the crisis unfolded, industry capital was severely depleted.

Table 2
Performance of asset classes in 2008

Asset class	Total return	Context
Treasury bonds	14%	Best since 1995
Municipal bonds	–2%	Worst since 1994
Investment-grade corporate bonds	–3%	Worst since 1994
High-yield corporate bonds	–26%	Worst on record
Small cap US stocks	–34%	Worst since 1937
Large cap US stocks	–37%	Worst since 1931
Real estate stocks	–38%	Worst on record
Non-US developed country stocks	–43%	Worst on record
Emerging-market stocks	–53%	Worst on record

Notes: The asset classes are represented by the following indices (durations of bond indices are in parentheses): Treasury Bonds – Barclays Treasury Index (5.4 years); Municipal Bonds – Barclays Municipal Index (8.1); Investment-Grade Corporate Bonds – Barclays Credit Index (6.5); High-Yield Corporate Bonds – Merrill Lynch High Constrained Index (4.3); Small Cap U.S. Stocks – Ibbotson U.S. Small Cap Stock Index from 1926-1979, Russell 2000 Index from 1980-2008; Large Cap U.S. Stocks – S&P 500; Real Estate Stocks – NAREIT Equity Only Index; Non-US Developed-Country Stocks – MSCI EAFE Index; Emerging Market Stocks– MSCI Emerging Markets Index.

Source: Fidelity Management & Research Company.

Regulatory response to the crisis

The crisis has prompted financial regulatory reform.

The direct effects of the financial crisis have prompted a raft of initiatives to reform financial regulation. Although banks were the focus of this reform, it will also affect other financial institutions, including insurance companies.

Key focuses of reform include...
stress tests ...
capital adequacy ,...
reporting standards ...
and derivatives.

Four important trends in insurance regulation in the wake of the financial crisis are that:

1 when carrying out stress tests, insurance supervisors will apply more severe scenarios than they did before the crisis;
2 insurance supervisors and credit rating firms will take a tougher stance towards capital adequacy requirements;
3 changes in accounting standards will likely make income statements, and perhaps balance sheets, more volatile, causing insurers to alter their asset allocations; and
4 exposure to derivative instruments, though already tightly regulated, will be subject to closer surveillance.

Capital adequacy: Higher risk charges to certain asset classes

Around the world, insurance regulation is moving to a principles-based approach.

In many countries, insurance regulation has, in recent years, moved from a rules-based approach to a principles-based approach. The most important initiative is Europe's Solvency II framework, which is scheduled to take effect at year-end 2012.[13]

Europe's Solvency II framework is a leading example of this approach.

Solvency II is based on three pillars. The first pillar concerns quantitative capital requirements. Insurers must hold enough capital to be 99.5% certain of covering their obligations over the next year, with assets and liabilities measured on an economic basis. The second pillar focuses on qualitative elements of supervision related to risk management, governance and other internal risk controls. The third pillar promotes market interaction to increase transparency and public disclosure. A key aspect of Solvency II is that it allows insurers to use internal, rather than standard, risk models to determine target capital. To qualify for use, an internal model's assumptions and methods must be well documented and certified by the supervisor.

Details of Solvency II's implementation are still under discussion.

In Europe, there is a continuing dialogue between insurers and supervisors about capital requirements.[14] According to the latest estimates, the new capital standard, as measured through Quantitative Impact Study 5, is expected to require 20% more capital than the QIS4 exercise. The results of QIS5 will be available in April 2011.

Other regions are following Europe's lead.

Regulators in the US, emerging markets and other regions are also reviewing their regulations concerning the solvency and financial soundness of insurers, often taking inspiration from developments in Europe.

The rate used to discount liabilities might influence insurers' asset allocation choices.

In many markets, increases in capital requirements to cover market risks will cause insurers to invest more heavily in sovereign bonds, hampering their investment performance. A key feature of Solvency II is that it values insurance liabilities by discounting them.[15] How liabilities are discounted heavily affects asset-liability matching and hence asset allocation.

[13] For a fuller discussion of Solvency II and developments in other regulatory regimes, see Swiss Re, *sigma* No 3/2010, "Regulatory issues in insurance".
[14] Swiss Re, *sigma* No 3/2010, *op cit.*
[15] Proposals now under discussion would soften this approach by discounting longer-term insurance liabilities at the risk-free rate plus a liquidity premium that reflects the illiquid nature of the liabilities. The size of this premium is not yet clear. In QIS5, swap rates are used as the risk-free rate.

The pro-cyclicality of risk-based capital regimes may trigger a downward spiral is asset prices.

The financial crisis has also highlighted the issue of pro-cyclicality of regulatory capital charges based on recent market history. Declining asset prices can create a downward spiral, as some companies, faced by a reduction in available capital, liquidate assets, causing asset prices to decline further.[16] This undesirable consequence of risk-based frameworks heightens risk and should be mitigated where possible.

The high risk charges of rating firm models are also spurring de-risking.

Although credit rating firms' reputations were tarnished in the recent financial crisis, they continue to influence how regulators – and insurers themselves – view risk. The capital adequacy models of rating firms resemble those used by the regulators. Indeed, the US National Association of Insurance Commissioners' (NAIC) Risk-Based Capital (RBC) model, introduced in December 1993, is the 'granddaddy' of most rating firm capital adequacy models. These models, which set risk charges based on the expected volatility of investment returns, influence investment choices. For example, equity holdings, though typically a modest share of insurers' portfolios, often demand the most asset risk capital. Investments in affiliates also carry especially high capital charges.

Changes in accounting standards create investment policy uncertainty

Fair value accounting, though it improves transparency, might increase reported balance sheet volatility.

The recent financial crisis also highlighted a problem of pro-cyclicality in accounting standards that resulted from major declines in the values of most asset classes. Fair value accounting for financial assets, though it improves transparency, can increase reported balance sheet volatility by failing to reflect an insurer's intention of holding assets to maturity. It does this by decreasing the value of companies whose assets have lost value. This, in turn, causes the value of financial intermediaries' debt and equity to fall further, possibly triggering another round of balance sheet write-downs – a pro-cyclical response.

Accounting standard makers continue to grapple with how to value insurance liabilities.

The International Accounting Standards Board is still reviewing how properly to account for insurance liabilities. A key problem is the asymmetric treatment of assets and liabilities. The move to fair value accounting and mark-to-market methodologies under its International Financial Reporting Standards (IFRS) has so far focused on assets, heightening insurers' balance sheet volatility.[17] The new IFRS 9, effective in 2013, allows greater use of the amortised cost category and would help reflect insurers' intention to hold a security to maturity. It remains to be seen how financial institutions will react to this new regime, with its different penalty and incentive structure.[18]

The current mark-to-market rule imposes a penalty on mis-classification of financial instruments.

For instance, under the current accounting standard IAS 39, assets that are classified as "held-to-maturity" (HTM) are allowed to be valued at amortised cost. Misuse of the HTM classification is penalised. Insurers therefore have an incentive to categorise securities as available for sale (AFS), creating greater volatility in their shareholder equity and pressuring them to allocate less to higher-yielding securities.

Fair value accounting would encourage a reduction in asset-liability mismatches.

The fair-value approach would encourage insurers to reduce asset-liability mismatches, based on their treatment under accounting and solvency calculations. The resulting incentives have led many European insurers to shift their asset allocations away from equities to less volatile fixed income securities.

[16] See Swiss Re *sigma* No 3/2010, *op cit*, for a detailed discussion.

[17] In July 2009, the International Accounting Standards Board published an exposure draft on insurance contracts that specifies the valuation of long-term insurance liabilities.

[18] IFRS 9, which will replace parts of IAS 39 and eliminate its held-to-maturity and available for sale (AFS) categories, is not mandatory before 2013.

The use of derivatives will be tightly supervised

Insurance regulators limit the use of derivatives to risk-reducing activities.

The use of derivatives by insurers is tightly restricted in many markets. Regulators typically limit insurers' use of derivatives to risk reduction and the promotion of efficient portfolio management. Insurers are restricted from using derivatives for speculative purposes.

Concern over the use of derivatives has grown in the wake of the AIG bailout.

In the wake of the financial crisis, regulators have grown especially concerned about derivatives. The near-collapse of AIG, which arose from the misuse of derivatives by its financial services unit (not subject to insurance regulation), served as a wake-up call for the need to understand and monitor the protection-selling derivative activities of financial institutions.

Derivatives use should be regulated based on their benefits as well as their risks.

Insurance regulators should continue to carefully monitor and assess the range of admissible derivatives and their conditions of use. In so doing, it is important to recognise the benefits, as well as the pitfalls, of derivatives use since, in the vast majority of instances, insurers strategically use derivatives to manage risk. Because derivatives, when properly used, reduce financial risk, insurance regulators should:

- recognise and take into account the benefits of well-structured hedges in calculating capital requirements;
- neither ban nor restrict appropriate use of derivatives for risk management, since this would hinder insurers' ability to practice effective risk management.

The limitations of de-risking

De-risking will lower investment returns.

De-risking enables insurers to achieve more stable investment returns. But this comes at the cost of a reduction in the average returns and profitability of insurers. This effect, of particular concern in today's low-interest-rate environment, is quantified below (see Box).

In formulating policy, regulators should note:

No insurance investment strategy can ever be risk-free.

- No insurance investment strategy can ever be risk free. Even if a company were to invest exclusively in AAA government bonds, mismatch risk would remain on its balance sheet because the precise size and timing of its liabilities are fundamentally uncertain.

The pursuit of AAA securities has led insurers into dicey investments.

- Pressure on insurers to invest heavily in AAA securities creates distortions. Faced with a paucity of AAA-rated corporate bonds, insurers seeking high-quality securities yielding more than government bonds increasingly invested in AAA-rated structure securities. Many of these investments encountered serious problems during the financial crisis. In 2008 alone, more than 11 000 of these securities were downgraded.[19]

Bond markets in some countries are neither active nor mature.

- In many countries, the government bond market is neither large nor liquid enough to meet the investment needs of insurers. Countries in financial distress, such as Greece, have suffered ratings downgrades and their bonds have declined sharply in value, creating large losses for domestic insurers holding this debt.

Over-investment in AAA securities weakens market discipline and penalises policyholders.

- If insurers invest predominantly in government or other AAA securities, it could distort market incentives. This would weaken market discipline on sovereigns and compel policyholders to subsidise the government by accepting a lower rate of interest than would prevail under free markets.

The outlook for sovereign debt is uncertain.

- Investing in sovereign debt may prove increasingly risky in the future. As the populations in heavily-indebted countries continue to age, the credit ratings of these countries could come under increased stress. A recent Standard & Poor's study indicates a possible scenario for a general downward slide in sovereign ratings through 2020, which then accelerates through 2030 and beyond.[20]

[19] See Fitch, "US Corporate Bond Market: A Review of Fourth-Quarter and 2009 Rating and Insurance Activity", February 12, 2010; and Efriam Benmelech and Jennifer Dlugosz, "The Credit Rating Crisis", NBER *Macroeconomics Annual* 2009.

[20] S&P Global Credit Portal, "Global Aging: An Irreversible Truth", October 7, 2010

How investment strategy affects returns

To demonstrate how over-regulation impedes investment returns, ...

... consider four hypothetical investment strategies.

To demonstrate how regulatory restrictions might affect the investment returns of insurers, consider the return performance of US insurers from 1991-2008 for four different asset allocation strategies:

- the actual allocations held by insurers, year to year
- a "rebalancing" strategy that annually resets the allocation to its average level for the entire period (see Table 3)
- a procyclically-constrained allocation that exhibits twice the cyclicality of the actual year-to-year allocations[21]
- a strategy that invests only in Treasury securities: 50% in bonds and 50% in bills (cash)

Table 3
Average investment allocations of US insurers, 1991–2007

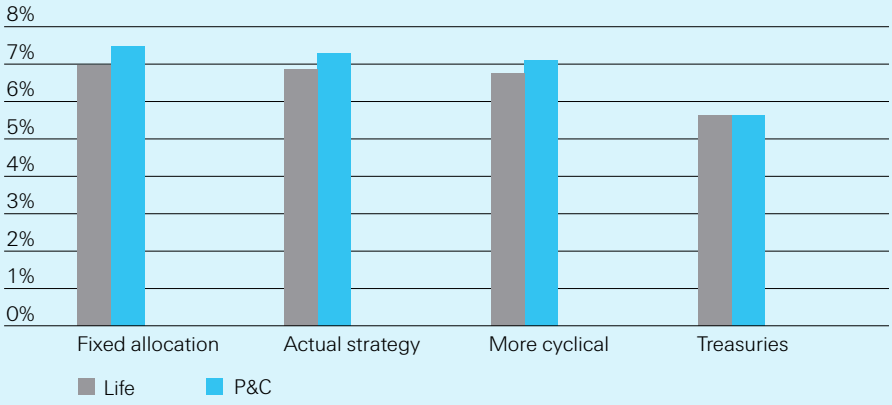
	Cash	Government bonds	Corporate bonds	Mortgages	Equities
Life & Health	3%	20%	58%	14%	4%
Property & Casualty	7%	49%	22%	0.4%	22%

Source: Swiss Re Economic Research & Consulting calculations based on A.M. Best data.

A simulation shows that rebalancing improves returns and that cyclically constraining allocations hurts returns.

Simulating the return performance of US insurers' investment portfolios over the years 1991–2008 produces three results. First, a rebalancing strategy that holds allocations fixed over time would have produced higher returns than the actual asset allocations that insurers used. In particular, by rebalancing annually, life companies could have improved their annual investment returns by 12 basis points, from 6.85% to 6.97% (see Figure 9). P&C companies could have boosted annual investment returns by 18 basis points, from 7.29% to 7.47%. Second, cyclically constraining asset allocations would have reduced investment returns.[22]

Figure 9
Average investment returns for US insurers under various asset allocation strategies, 1991–2008



Source: Swiss Re Economic Research & Consulting analysis.

Investing only in Treasuries reduces annual returns by 121 to 165 basis points.

Third, and most significantly, undertaking the all-Treasuries investment strategy would have produced annual investment returns of just 5.64%, reducing annual returns by a substantial 121 bp for life insurers and 165 bp for P&C insurers.

[21] To illustrate the impact of procyclical regulation, this analysis assumes that regulation forces asset allocations to be twice as cyclical as they actually have been.

[22] In this specific illustration, which assumes that the cyclicality of asset allocations doubles, the level of investment underperformance relative to rebalancing is twice that of the actual allocation strategy.

Limiting their investments to government debt could cost global insurers some USD 340 billion a year.

Regulation that forces insurers to invest procyclically reduces their returns. In the extreme, requiring US insurers to invest only in Treasury securities could have had an especially strong impact, reducing investment returns by approximately 1.5% per year from 1991–2008. A similar constraint on the global industry's USD 22.6 trillion of investments would reduce investment returns by some USD 340 billion per year. Although this figure reflects an extreme scenario, even a fraction of this impact would severely harm insurance policyholders and shareholders.

Reducing access to insurance

Excessive regulation would push up insurance prices and reduce the returns offered by life insurers.

If insurers invest heavily in low-return assets, they would need to raise life and non-life premium rates to compensate for lower investment returns. Earning lower investment returns would also reduce the returns that life insurers could offer their policyholders.

Higher insurance prices would cause some clients to go uninsured …

Higher prices for life insurance and other insurance products would affect consumers in several ways. Some clients would purchase less coverage, or go without coverage entirely. Pension plans and individuals purchasing fixed annuities would receive lower payments, making these contracts more expensive and less attractive. Some individuals would instead opt for variable annuities, but many would choose other, riskier, investments, such as mutual funds, bonds, or stocks.

… and ultimately hurt consumers.

Experience shows that, from a public policy perspective, this is a negative outcome. Individual investors, when left to their own devices, have not proven successful as asset managers. They tend to pursue investments such as technology stocks, commodities and real estate when they seem the most enticing, but are actually the most expensive. The consulting firm Dalbar finds that in the twenty years through 2009, the average individual investing in equity funds earned annual returns of 3.2%, far below the S&P 500 index's 8.2% return; the average bond fund investor earned 1.0% a year, versus a Barclays Aggregate return of 7.0%.[23]

[23] Dalbar, "Quantitative Analysis of Investor Behavior 2010", March 2010.

Some Q&As for insurance CEOs

This section offers perspectives on several key insurance asset management questions.

Ongoing financial market turmoil and uncertainty have prompted insurance executives to raise many questions about how best to approach investing. This section draws on the analysis presented above to offer perspectives on several fundamental insurance asset management concerns.

Question 1: What should an insurer learn from the crisis to help avoid future investment losses?

Insurers should manage investment risks with an awareness that crises occur regularly.

The most important lesson insurers can learn from the current crisis is that anything is possible. Asset managers should anticipate and prepare for a broad range of possible outcomes, especially in good times, because crises occur fairly regularly. In a careful analysis of the history of financial crises, Reinhart and Rogoff conclude that "serial default on external debt – that is, repeated sovereign default – is the norm throughout every region in the world, even including Asia and Europe"[24]. The crisis's strong impact on asset prices is a reminder of the need to identify, measure and mitigate extreme risks. Doing so demands out-of-the-box thinking.

Extreme events challenge the notion that outcomes follow a normal distribution.

Two related phenomena are *fat tails* and *time-varying correlations*. Investment returns exhibit fat tails, which is to say that the frequency of extreme outcomes is far higher than predicted by a normal distribution or "bell curve". Normality is usually a reasonable assumption, but not in times of stress, when it matters most. "When it rains it pours".

Diversification is always helpful, but less so in times of stress.

Moreover, while diversification is always useful, it becomes less so in times of stress. For example, the correlation of stock returns across regions depends on how markets are faring. In the best 5% of months, when global returns were 7.4% or greater, regional returns have modest correlations (see Table 4, upper panel), which makes global diversification very effective. In the worst 5% of months, when returns were –8.4% or less, correlations were far higher (lower panel). Thus, diversification, though always useful, is a "fair weather friend". It helps least when needed most.

Table 4
Regional correlations of stock returns in extreme high- and low-return months, Jan 1988–May 2010

Months in which global returns were in the top 5th percentile

	Emerging markets	Europe	North America	Asia
Europe	0.35			
North America	0.56	0.26		
Asia	–0.19	–0.20	–0.54	
World	0.09	0.50	0.11	0.56

Months in which global returns were in the bottom 5th percentile

	Emerging markets	Europe	North America	Asia
Europe	0.67			
North America	0.73	0.73		
Asia	0.66	0.68	0.35	
World	0.81	0.93	0.86	0.73

Source: Swiss Re Economic Research & Consulting, based on MSCI data.

[24] Carmen Reinhart and Kenneth Rogoff, "This Time is Different: A Panoramic View of Eight Centuries of Financial Crises", April 2008.

Investment risks should be managed holistically.

Managing investment risks holistically: The current crisis highlights that the global financial system does not operate in silos. All financial instruments, however simple or complex, are interconnected. The collapse of one market can set off a chain reaction causing problems in other markets. Insurance risk managers and senior executives should maintain a multidimensional perspective.

Insurers should prepare for cash flow stresses.

Recognising the importance of liquidity: Because insurance liabilities tend to be long-duration, and are paid out slowly, insurers generally have few short-term funding needs that could cause a liquidity crisis. Ironically, this thinking might have increased the risk appetite of the insurers that encountered trouble during the crisis. Insurance companies need to be prepared for liquidity stresses, such as collateral calls, credit downgrades and cash outflows, which can be triggered by abnormal events.

Soft factors are as important as quantitative risk management tools.

Soft factors, such as risk culture and investment discipline, are vital: Financial models, however sophisticated, have their limits. Risk management is ultimately a human discipline. Tools such as MPT and ALM, though invaluable to insurers, do not suffice. An insurer creates value for policyholders and shareholders by cultivating a strong culture of risk awareness and by carefully crafting an investment policy to which it adheres.

Question 2: Is now a good time to re-enter the stock market?

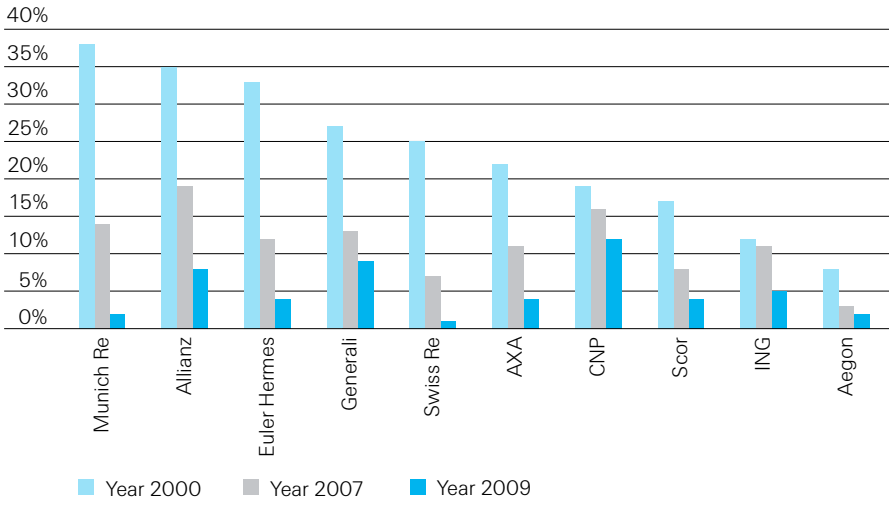
Considered in isolation, stocks are inherently risky.

In assessing equities, or any other asset class, risk should be considered in the context of the overall portfolio. For a company that views its equity holdings in isolation and defines "safety" as having zero probability of suffering a substantial capital loss, stocks are never safe. As Mark Twain observed in his novel *Pudd'nhead Wilson* "October. This is one of the peculiarly dangerous months to speculate in stocks. The others are July, January, September, April, November, May, March, June, December, August, and February."

Insurers have scaled back equity holdings in the face of this uncertainty.

Many insurers, especially those in Europe, have reduced their equity holdings in recent years due to regulation and market uncertainty (see Figure 10). This uncertainty is substantial. From 1975–2009, for example, the S&P 500 suffered losses in 7 of 35 years, including annual losses of 37% (2008) and 22% (2002).

Figure 10
Equity holdings of European insurers, year-end 2000, 2007 and 2009



Source: Natixis

Yet investing in equities can reduce the risk and improve the performance of an insurer's portfolio.

But it is ill-advised for an insurer to think about the risk of stocks in isolation, for several reasons. A key insight regarding diversification is that since the return to equities is less than perfectly correlated with returns to other assets, holding at least some equities reduces the volatility of the investment portfolio. Moreover, an insurer must consider its investments in the context of its liabilities. To the extent that the value of an insurer's liabilities fluctuates in line with equities, holding equities actually reduces enterprise risk by providing a partial hedge.

Higher-risk assets typically earn higher returns.

Finally, shunning equities when they seem volatile is counterproductive because it at precisely these times that, on average, equities perform the best. A fundamental tenet of finance, borne out by empirical research, is that riskier investments tend to earn higher returns.[25]

Because markets are not forecastable, market-timing often fails.

For an insurer, the key asset allocation benchmark is one that replicates expected liabilities. Because financial markets are not readily forecastable, attempts to time the market generally fail to create value, and often destroy value.[26]

Asset-Liability Management, unlike market-timing, consistently adds value.

No one-size-fits-all portfolio strategy suits all insurers. Each should build a portfolio specific to its business. As long as the financial market environment does not fundamentally change, changes to its asset allocation are unnecessary.

[25] Clifford S. Asness, "Stocks versus bonds: Explaining the equity risk premium", *Financial Analysts Journal*, Mar/Apr 2000.
[26] Gary P. Brinson, L. Randolph Hood, and Gilbert L. Beebower, "Determinants of Portfolio Performance", *Financial Analysts Journal*, July/August 1986; Brinson, Singer, and Beebower, "Determinants of Portfolio Performance II: An Update", *Financial Analysts Journal*, May/June 1991.

Question 3: What investment opportunities do emerging markets offer Western insurers?

The debt of many emerging markets has favourable credit fundamentals.

Emerging market debt and equity are of increasing interest to many investors, including insurers, because they offer the opportunity to earn higher expected returns, though at greater risk. The credit fundamentals of many emerging markets are attractive. Investors who own emerging market debt stand to benefit from credit spread compression, particularly if the issuer's rating is upgraded.

Emerging market equities are a diversifying asset class in a growing segment of the world economy.

Emerging market equities offer two key advantages. First, their returns are far less correlated with those of Western stock markets than are these markets with one another. Second, as emerging markets grow to be an increasingly large part of the global economy, portfolios reflecting the world economy will need to have higher allocations to these markets.

Many insurers make private equity investments within the insurance sector.

Some insurers are also pursuing private equity opportunities in emerging markets. These include investments in insurers as well as insurance-related principal investments (IRPIs), in businesses such as insurance brokers and agencies.

Emerging markets offer many high-growth investment opportunities.

In this context, emerging market investments attract Western insurers because of the strong growth prospects and complementarities with existing insurance operations. The growth of insurance business in emerging markets has been impressive. Adjusted for inflation, non-life premiums grew at an annual rate of more than 9.3% from 2000 to 2009, while life business increased by about 12.2% a year. The share of global direct life premiums written in emerging markets, now 14%, is expected to reach 24% in 2020, at which time these markets in aggregate will be larger than the US.

Some emerging market insurance and related businesses complement Western insurance operations.

What is especially alluring to some insurance CEOs is the potential complementarity of emerging market businesses. By actively participating in local insurance companies in emerging markets, an insurer can leverage its underwriting and product development expertise in new venues, replicating what has succeeded in other markets. Some insurers also have the expertise to add value through IRPIs.

Insurance investment in China

The growth of China's insurance has been impressive...

In many financial dictionaries, "China" has become nearly synonymous with "growth". Since 2000, China's insurance sector has grown at an average rate of 27% a year. The scale of its investments is huge. At the end of 2009, insurance investment funds totaled CNY2.7 trillion (USD 394 billion), making China the second-largest Asian insurance asset holder, behind Japan.

...but its insurers face regulatory and capital market obstacles when investing.

Although their assets have not suffered serious impairments in the global crisis, China's insurance investment officers are not worry free. Bond yields have been low since the late 1990s, causing a negative spread problem for insurers that underwrote product guarantees years ago. The low-rate environment has also reduced the attractiveness of insurance products relative to bank and securities products.

A paucity of long-term bonds restricts the supply of some insurance products.

Another challenge Chinese insurers face is that the nation's capital markets offer few asset classes for practicing ALM. Matching investment portfolios with long-term liabilities remains difficult, limiting insurers' ability to develop long-term products. Long-term (maturity of 10 or more years) government and corporate bonds are in limited supply and infrequently traded. To some risk takers, it may be tempting to invest for short-term gain, in the hope of building a reserve against long-term obligations, especially because the Shanghai and Hong Kong stock markets have appreciated strongly. Some even view investment returns as a way to offset disappointing underwriting performance.

The government is liberalising restrictions on insurance investment.

To help insurers, the government has broadened the range of investments they can undertake to include real estate and offshore investments, although these investments require case-by-case regulatory approval. This should improve insurers' ability to practice ALM and risk management.

Question 4: How can investments mitigate the risk of inflation?

Inflation hurts non-life insurers with long-tail liabilities.

Inflation hurts non-life insurers with long-tail liabilities. If, for example, an insurer matches a book of 10-year liabilities with a portfolio of 10-year government bonds, inflation can cause the value of the liabilities to rise, even as the bond coupons and principal remain fixed. Thus, even a portfolio perfectly duration-matched to liabilities can be utterly useless in protecting against inflation. An added challenge is that claims typically rise at a faster pace than inflation.

Some investments are effective inflation hedges.

Insurers can hedge their inflation risk by allocating some of their investments to asset classes that perform well when inflation is high, such as inflation-indexed bonds and real assets.

Real assets hedge inflation risk, but are volatile and illiquid.

Real assets include real estate, commodities and timberland. Historically, returns to commodities and real estate have been highly correlated with inflation (see Table 5). These investments have drawbacks, however: they are volatile and often illiquid. Nonetheless, they provide equity-like returns and are an attractive alternative for insurers prepared to spend the resources to develop expertise in these asset classes.

Table 5
Correlation between annual asset returns and CPI, 1998–2009

Asset class	Correlation with CPI	
Treasury bills	0.64	**
TIPS	0.48	
Real estate	0.43	**
Commodities	0.34	*
US stocks	–0.09	
Non-US stocks	–0.10	
Intermediate Treasury bonds	–0.31	*
Long-term Treasury bonds	–0.39	**

Notes: **denotes statistical significance at the 99% level and * at the 95% level. Significance is measured using annual return data since 1970 for each asset class except real estate (since 1978) and TIPS (since 1998).

Source: Swiss Re *sigma* No 4/2010, "The impact of inflation on insurers".

Treasury bills and inflation-indexed bonds are effective inflation hedges …

Two other asset classes whose returns are highly correlated with inflation are Treasury bills and inflation-indexed bonds. When inflation rises, Treasury bill yields rise as well, because investors require higher interest rates on these investments. Inflation-indexed bonds track inflation perfectly when held to maturity, although in the interim their values may fluctuate as market expectations of inflation change.

… but earn low average returns.

There are two key limitations to inflation-indexed bonds. First, they provide lower returns than other major asset classes. Second, they are not available in all markets. Still, insurers might benefit from allocating some assets to inflation-indexed bonds, where available.

What about stocks?

The impact of inflation on stock returns is more subtle. Because they represent ownership interests in businesses whose values rise with inflation, stocks should be a good inflation hedge. But this is only true in the long run and, as Keynes famously noted, "in the long run we are all dead". In the short run, however, high inflation often causes stock prices to decline, prompting many investors to sell their shares in disgust. This tendency limits the usefulness of stocks as an inflation hedge for insurers.

Long-term government bonds hedge deflation risk.

Deflation is another risk for insurers to consider. Historically, when deflation has occurred, the economy has struggled and interest rates have been quite low. Deflation risk can be hedged by holding long-term government bonds, which earn strong returns in low-inflation environments. The risk, of course, is that they get crushed when inflation heats up.

Insurers can invest to hedge their inflation and deflation risks.

In summary, real assets and inflation-indexed bonds can help insurers to hedge inflation risk. Long-term government bonds are an effective deflation hedge.

Question 5: How do demographic shifts affect insurance investment?

Demographic changes could affect future asset returns.

Just as an ageing population will stimulate demand for many savings products, demographic shifts could also affect investment returns. Some economists warn that as baby boomers liquidate their investments to finance retirement, there could be a steep decline in the price of assets, particularly stocks.[27]

Indeed, baby boomer behavior may already have caused home and stock price appreciation in past decades.

Indeed, savings by the baby boomers during their working years may already have affected asset prices. In the US, research suggests that the baby boomers' need for housing contributed to real (inflation-adjusted) home price appreciation in the 1970s and 1980s and their demand for assets during their high-saving years helps explains the strength of the stock market in the 1980s and 1990s.

Baby boomers will sell many of their investments in retirement, but only gradually.

If baby boomers were to sell their accumulated assets *en masse* to finance retirement, this could depress investment returns. But empirical evidence about retiree behavior suggests that these asset sales will be gradual:

- Many retirees are cautious about liquidating assets to finance consumption because they may live longer than expected and could face unexpected expenses.
- Wealth is highly concentrated.[28] The wealthy typically do not sell significant portions of their assets to finance retirement.
- Many less-wealthy retirees also retain substantial assets to enable them to make bequests.

Population ageing poses downward price risk for some assets such as homes and sovereign debt …

Demographic changes will, therefore, influence asset prices only gradually. For example, research suggests that the ageing of populations in developed markets could slow the growth of home prices by as much as 1 percent a year.[29] Moreover, demographic trends could impact the prices of insurers' sovereign debt holdings. As discussed above, many developed countries may face ratings downgrades due to factors related to their ageing populations.

… but these pressures will be offset by "prime savers", a major future source of funds.

There is an upside as well. The rise of the "prime saving" age group (i.e. 35-69) in many emerging markets could be a primary source of capital to finance the deficits of most developed markets, helping to maintain a low-interest environment.[30] Thus, the development of capital markets in emerging economies will provide a mechanism to address what is commonly called the "global imbalance problem".

Although demography likely affects asset returns, it is unclear to what extent or how to profit from this.

In short, although it is likely that demography will influence asset returns in coming years, it is unclear how to exploit this fact or to what extent it is already embedded in asset prices.

[27] For more on the research discussed in this section, see Marika Santoro, "Will the demand for assets fall when the baby boomers retire?", Congressional Budget Office, September 2009.

[28] According to Capgemini's *World Wealth Report 2010*, millionaires hold USD 39 trillion of financial assets. This is nearly one-quarter of world wealth.

[29] See, for instance, Elod Takats, "Ageing and asset prices", Bank for International Settlements Working Paper No. 318, August 2010, for an empirical study of ageing and house prices.

[30] See Dominic Wilson and Swarnali Ahmed, "Current accounts and demographics: The road ahead", Goldman Sachs Global Economics Paper No. 202, August 2010.

Question 6: Why engage a third party asset manager?

Most small and mid-sized insurers use third part asset managers (TPAM).

The case for hiring a third party asset manager (TPAM) often depends on the size of the company. For small and mid-sized insurers, the cost of building a team of experts in many different asset classes is prohibitive. These companies typically have a small team of generalists managing assets, for which a specialist TPAM may be a valuable complement or substitute.

Large insurers use TPAMs on a more limited basis.

Large insurers, which typically employ their own managers to look after core investment-grade fixed-income strategies, often outsource the management of specialised assets, such as high-yield debt, emerging market equities, real estate and other alternative investments.

The use of TPAM has grown rapidly over the past decade.

The use of TPAM has grown rapidly in recent years, in line with our forecast of double-digit growth in a previous *sigma*. Non-affiliated general account assets managed by the largest TPAM firms grew at a remarkable 19.5% annual rate in 2001–2009, from USD 248 billion to USD 1 032 billion.[31]

TPAM can be very cost effective for insurers.

Insurers often pay less for TPAM than other institutional investors such as pension funds.[32] This is because the TPAM market is highly competitive. Moreover, insurers have a credible threat that other institutional investors lack: if they deem the fee too high, they can manage their assets in-house. Many insurers also find it cost effective to outsource other ancillary activities, such as analytics and investment accounting.

The use of TPAM requires careful coordination.

The use of TPAM requires careful coordination between an insurer's own professionals and the outside managers it hires. In this respect, engaging a TPAM resembles other forms of outsourcing that companies undertake: it can reduce costs while supplying additional outside expertise.

[31] Swiss Re *sigma* No 5/2002, "Third party asset management for insurers"; *Insurance Asset Manager*, annual surveys, 2002 and 2010.
[32] Swiss Re *sigma* No 5/2002, pp. 19–20.

Conclusions

Insurers are anxious about their investments.

Insurers are anxious about their investments. The latest biannual CSFI/PricewaterhouseCoopers survey of some 400 insurers worldwide found that investment performance was their number one concern (up from #11 two years prior).[33] This is understandable. Markets are volatile and government bonds, long a mainstay of insurance portfolios, now pay record low yields. Also, the prospects of many of the sovereigns issuing these bonds have grown cloudy.

Those relying heavily on investment income are particularly concerned.

This environment is especially challenging for insurers that are highly dependent on investment income, such as non-life companies with low or volatile underwriting profits and life companies that have guaranteed policyholders high rates of return. These insurers have precious little margin for error.

Market pressures have led many insurers to rethink how they invest.

In light of these challenges, many insurers have been re-examining their approach to investment management. This re-examination is valuable because the industry has learned much over the years about how most effectively to manage assets. As this report discusses, the most useful lessons are not about market timing or security selection. Rather, what adds the most value for insurers is the "blocking and tackling": careful risk management, crafting a portfolio that maximises returns subject to the constraints that insurers face and, most important, managing assets in a way that assures the impregnable viability of the insurance operation.

Global insurers have USD 22.6 trillion of assets at stake.

Insurers are pivotal institutional investors. Their unique goals, priorities and constraints distinguish them and make insurance asset management particularly challenging. The massive scale of their investments – USD 22.6 trillion, or 12% of global financial assets – makes it critical that they manage them optimally. To do so, insurance asset managers need the flexibility to diversify prudently across a range of asset classes. Excessive regulatory restrictions would tie them down, compromising their investment performance. More broadly, excessive external restraints on how insurers invest may prevent them from serving their role as patient, long-term investors that support financial market stability.

Regulatory, tax and accounting changes are pressuring insurers to de-risk.

A confluence of forces - mark-to-market accounting; risk-free discounting; and heightened capital, regulatory and ratings standards - is pressuring insurers to allocate more to lower-risk, lower-return assets. These initiatives, though well-intentioned and sensible-sounding, could backfire if they prevent insurers from holding "efficient" portfolios, which achieve the highest returns for the level of risk incurred.

This can potentially lead to lower returns, making insurance less attractive to consumers and businesses.

Insurance contracts are priced based in part on the investment returns that insurers earn. Requiring insurers to invest heavily in risk-free securities would reduce their investment returns, necessitating higher premium rates for both life and non-life business. Higher insurance prices would adversely impact policyholders:

- some consumers and businesses would scale back coverage, or forego it entirely;
- annuitants and pensioners would receive lower payments;
- more clients would opt for other, riskier, investments, thereby losing the benefit of insurers' investment expertise.

[33] Center for the Study of Financial Innovation and PwC, "Insurance Banana Skins 2009", February 2009.

In the extreme, forcing insurers to invest solely in sovereign debt could reduce investment returns by up to 1.5% a year.

To quantify how much is at stake, we measured the impact on investment returns of a hypothetical requirement for insurers to allocate half their assets to Treasury bills and half to Treasury bonds. For US insurers, this requirement would have reduced investment returns by 1.5% a year from 1991-2008. A similar return reduction on USD 22.6 trillion of global insurance assets would mean approximately USD 340 billion a year in lost income – a devastating loss for policyholders and shareholders.

Market challenges will produce new business opportunities.

As insurers work to address market uncertainty and regulatory challenges, they should not lose sight of the exciting opportunities now available. Emerging markets continue to grow rapidly, offering attractive prospects to nimble competitors. In developed markets, the same forces that have undermined the industry's confidence in how it invests have left millions of people and businesses even more uncertain of their investment approaches. As the dust settles from the financial crisis, these perplexed masses are trying to rebuild their savings. Insurers that offer solutions that meet their needs will win them as clients.

Top-notch investing skills will confer a competitive advantage.

In coming years, insurers with top-notch investment and risk management capabilities will have a key competitive advantage. This will enable some companies to emerge from the financial rubble as industry leaders.

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