

# **U.S. Insurance Company Investment Strategies in an Economic Downturn**

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# **U.S. Insurance Company Investment Strategies in an Economic Downturn**

In the fall of 2008 the world financial markets nearly imploded. In the months and years immediately following, many once stable companies became insolvent or required a federal bailout. The marketplace froze up and then evolved during this time. Much has been written about the Global Financial Crisis. Most to date has dealt with the banking industry and financial service holding companies, focusing on their role originating and financing home mortgages. Not much has been written about the insurance industry's exposure and experience during this crisis. This report focuses on property and casualty, health, and life insurers domiciled in the United States. It deals specifically with investment policies for insurers before, during and after the initial months of this event, and looks for instances where financial institutions can learn from past mistakes to make better decisions in the future.

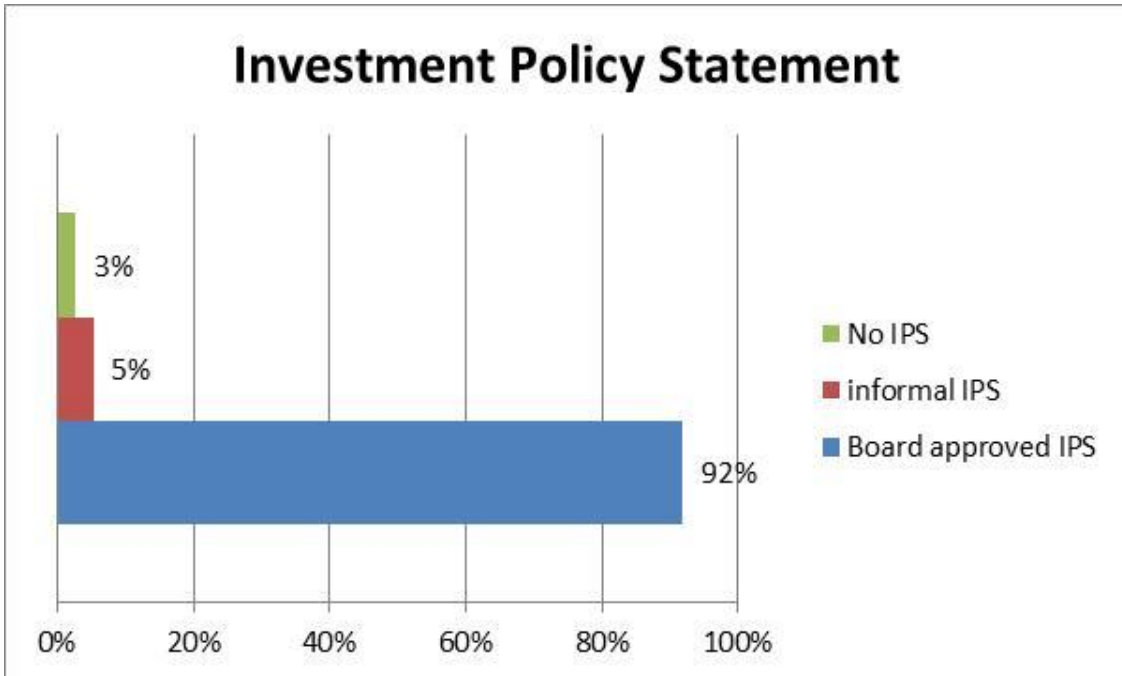
## **Executive Summary**

The recent financial crisis created incentives to review investment practices and see what was done well and what could be improved for the future. Looking inward at insurer investment practices, background trend information was generated and a survey developed for insurers of various sizes and types to share their thoughts. A total of 39 responses were received from life, health and property/casualty insurers. The research continued with conversations in private and public forums, where initial conclusions were expanded.

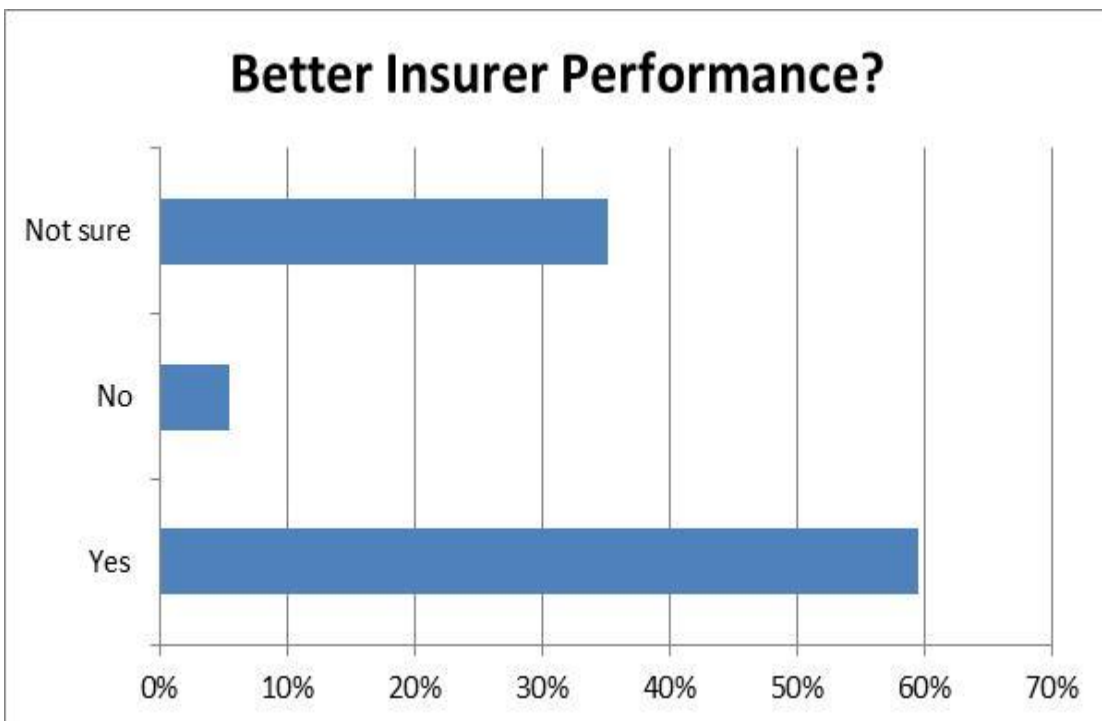
## ***Survey Responses***

According to the survey, nearly all insurance companies reported having well-defined investment policy statements (IPS), approved by their board that are flexibly written and have evolved over time. Only 3% reported having no IPS. These policy documents guided management and staff through the crisis, providing stability and enabling better performance during this period. This was true for companies of all sizes and types, although each firm had a unique experience.

Concentration risk comes in many forms. It can be focused exposure from a single asset class or risk type, a single supplier or customer, or even regulators in a desire for consistency. The sometimes scattered regulatory environment created by state and federal regulation actually provides a base for improved risk management because so many different groups are looking at products and practices. It also provides an opportunity for regulatory arbitrage in some instances, most notably seen during the crisis with the AIG Financial Products Division and their credit default swap portfolio.



The survey found that insurers believed their industry performed better during the financial crisis than other financial institutions. While insurer portfolios were definitely stressed and some insurers benefited from favorable government lending programs, long-term policyholder relationships were maintained. There was no “run on the bank” at an insurer. Conservative investment policies, internal analysis of credit risk and operating cash flows helped to keep the crisis at bay and actually created opportunities that some firms took advantage of.



## ***Insurer Advantages During the Financial Crisis***

AIG was a special case; its holding company structure allowed senior management to choose a weak regulator with unclear authority and limited expertise to provide oversight of the complex derivative products offered by its Financial Products Division. Internally there was little independent oversight of the business line. Transparency of positions was very poor, even to internal risk managers. The resulting Dodd-Frank legislation, with a goal to reduce future systemic risk, set goals intended to standardize more derivative contracts and make counterparty exposures explicit and known.

Insurer liquidity was supported by long-term contractual relationships with policyholders, with continuing premiums and other operating cash flows affording insurers options to pay claims from incoming premiums along with scheduled asset maturities and coupons. This reduced or eliminated the need to liquidate marketable securities during a period when liquidity was very tight. In some cases, the survey showed these regular cash flows allowed insurers to be opportunistic, buying assets at temporarily depressed prices.

Insurers generally avoided the worst of the subprime mortgages due to conservative investment policy guidelines. Most insurers maintain credit risk expertise on their internal staff. This provided a second set of eyes to review investment opportunities and made insurers less dependent on rating agencies for credit decisions. The natural human tendency during a crisis is to freeze like the proverbial “deer in the headlights”. Some investors credited a formal investment policy statement (IPS) with helping them to overcome this tendency during the crisis. Others performed their own due diligence by interviewing mortgage originators or became uncomfortable with the housing market and sold all of the sub-prime bonds they held. While stability provided by the IPS can lead to improved results, it was surprising that the survey did not show more IPS updates following a period when liquidity dried up. It is clear that a regular review of the IPS for potential updates is beneficial to ensure they are still useful.

Insurers have continued and even expanded their use of external asset managers. Outsourcing might be a leading indicator, as boards of insurance companies regroup after the crisis and review where they have internal competitive advantages. It could be a precursor of a wave of consolidation for the industry where companies with varying core competencies join forces.

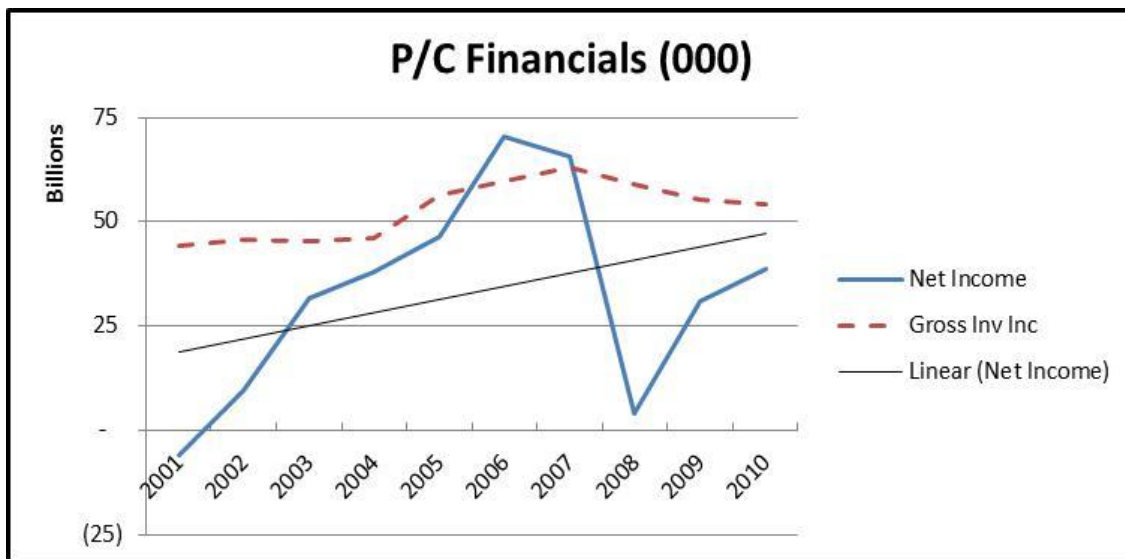
Insurance regulatory capital requirements in the United States (known as Risk-Based Capital or RBC) discourage equity investments in general accounts. Because of this, general account exposure to stock market drops during the crisis was minimal. Insurers offering variable annuities or portfolio management products (e.g., mutual fund subsidiary) had indirect exposure that depressed firm values due to managing fewer assets under management (AUM) and collecting fewer asset-based fees. However, many of the variable annuity writers suffered deep cuts to their market value due to investor concerns about equity exposures and potential mispricing of in-force guarantees granted. Variable annuity practices have evolved over the past decade, learning from the tech bubble and subsequent crash, and now from this crisis. By changing product design and asset allocation requirements to ensure better asset/liability alignment between

policyholder choices and investment strategies, writers of these equity driven policies were better able to adjust during the financial crisis.

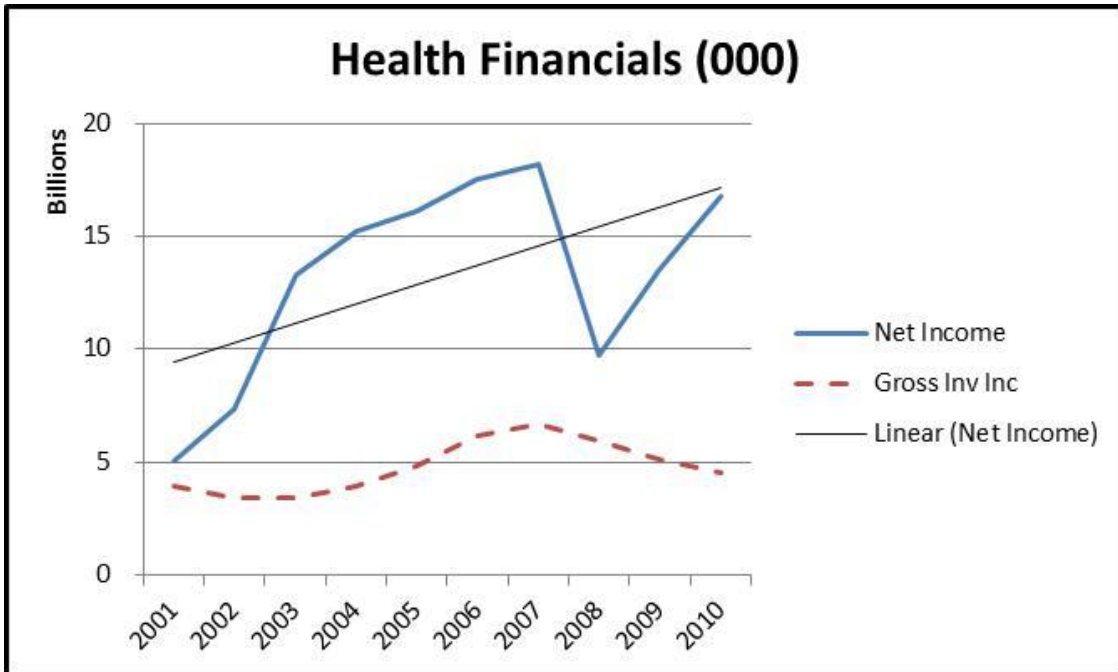
### **Insurer Financial Trends**

Much can be learned from looking at balance sheet and income statement trends of insurers. Each subclass of insurance company, whether it is property and casualty (P/C), health or life, has its own history of how assets and liabilities work together. P/C firms manage assets separately from liabilities, yet earnings from assets are a key component of the pricing process. Capital appreciation is an important source of surplus growth. Investment income is less important to health insurer profitability. The liabilities drive their business strategy. Life insurers generally match asset cash flows against liability needs and that is built into the pricing as an integrated process. Multi-line insurers should consider these diverse tendencies and understand the interactions between them.

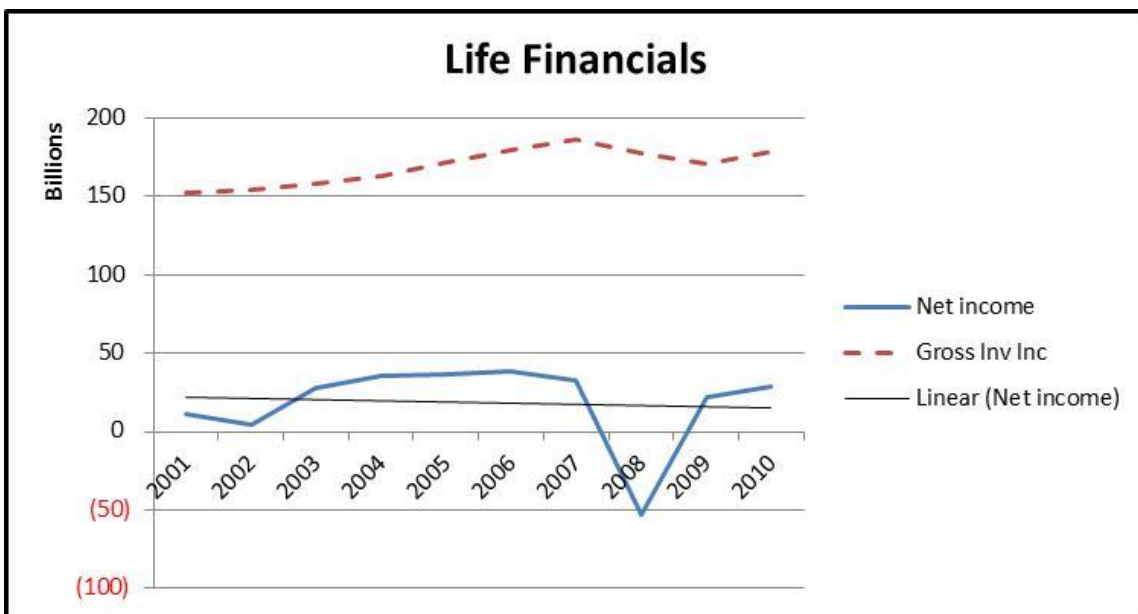
In order to provide background information for the survey portion of this research project, the AM Best data set (using their Financial Suite product) was used to compare metrics related to asset allocation and financial performance of insurers. It is purely quantitative and collected only for US based companies. All metrics presented are industry totals. While the transparency of this data is not perfect, it provides a window into the risk exposures and business models of the industry.



P/C insurers have shown a tendency to consider new asset classes, but have been impacted negatively by the last two equity bubbles. An attempt seems to be made to optimize their asset mix but less consideration has been given to liquidity needs. They would be served well by submitting their asset portfolios to truly independent and contrarian peer review.



Since 2001, health insurer net income has grown less dependent on investment income. This is expected in a decreasing interest rate environment since health insurers view investment policy as primarily focused on liquidity. Premiums also play a role in providing liquidity. This process helps them avoid bubbles but also leaves their results sub-optimal most of the time with excessive conservatism. Outsourcing the investment function might be the best solution for some health insurers, as long as independent oversight occurs.



Life insurance net income did not grow as fast as the assets under management and generally were outperformed by health and P/C insurers. With longer lived assets and

limited new business relative to the base in-force policies, ongoing Asset/Liability Management and risk modeling process that incorporates liquidity is more important to life insurers than most other institutional investors.

### ***What Have We Learned?***

Insurers struggled through the financial crisis, with some impacted more than others. Through the survey and discussions with industry participants, a number of conclusions were reached. They can be summarized as follows.

- Liquidity can go away very quickly, especially when everyone is counting on the same tools. This is an ongoing concern. For example, many insurers are counting heavily on their regional Federal Home Loan Bank to provide liquidity in a pinch.
- Insurers should actively manage liquidity, credit and interest rate risks using specific stress scenarios that have been reviewed with independent oversight.
- Guaranty funds should assess risk charges before defaults occur that are based on the risks accepted. This aligns incentives and reduces moral hazard.
- Insurers have advantages related to cash flows during a crisis relative to other financial services firms in that they often have long-term contractual relationships with customers. Required premiums and the flexibility to change contractual provisions provide options not available to others.
- Regulatory investment constraints are conservative relative to other financial institutions, which tends to drive the most entrepreneurial investors elsewhere. This provides a safety net that makes it harder for insurance company investment professionals to threaten solvency through their investments.
- Insurer filings require transparent reporting of all assets held. This is more stringent than demanded for other types of financial institutions and incents insurers to stay with standard asset classes. This requirement also seems to drive aggressive entrepreneurial personalities away from the industry.
- Financial leverage (borrowing) limits flexibility during a crisis. The market can stay irrational longer than a company can stay solvent if it relies on leverage. Insurers utilize low amounts of true borrowing although their basic business model utilizes float, where cash is collected today with promises to pay it back to claimants at a later time.
- An Investment Policy Statement (IPS) should evolve over time to reflect asset classes and liquidity tools available for use during both normal and crisis scenarios.

Overall, insurers did seem to perform better than banks during the recent crisis. A general business model that incorporates recurring premiums, along with regulatory conservatism



and internal credit analysis, led to these results. Insurers are not known for their quick reactions to market changes and that proved true here as well, but the investment process they had in place provided conservative consistency. The Investment Policy Statement was the key to this success for insurers of all sizes and types. It provides a consistent process and plan that an investment team can point to during the bubble build up to stay within conservative bounds, and again during a crisis because such events have proactively been considered and flexible solutions put in place.

## Background

This research project was funded by the Committee on Finance Research of the Society of Actuaries. A survey was developed and made available through an email link to select insurers, where the Chief Investment Officer or leading member of their team completed it. A total of 39 responses were received, with the respondents spread (non-scientifically) between life, health and property/casualty insurers of various sizes. Several follow-up discussions were held with survey respondents, as well as in public forums, where initial conclusions were discussed and modified.

Research reports do not create themselves in isolation, and the researcher thanks the Project Oversight Group (POG): George Eknaian, Jack Nelson, Jackie Griffin, John Gauthier, John Maginn, Peter Gunder, Robert Lamarche, Steve Marco, Tamara Burden, Barbara Scott and Steve Siegel for their insights designing and implementing the questionnaire, along with gleaned information from the results. Additionally, a number of people were very helpful while gathering additional data and trying to make sense of it all. These included Alex McCallum, David Holmes, Richard Coffman, Alice Rosenblatt and Bill Lane. Of course all errors and omissions remain the responsibility of the researcher.

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Cardinal Investment Advisors acted as primary peer reviewers on this project and provided data allowing balance sheet trends to be completed. Marc Tourville, Rick Beard, and Keith Chambers were key contributors. They can be contacted at

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# Report

## ***What Caused the Global Financial Crisis***

A Bloomberg news article on May 31, 2011 reported that in a talk given at the Foreign Correspondents' Club of Japan, Mark Mobius of Templeton Asset Management expressed concern about a future financial crisis. He said, "There is definitely going to be another financial crisis around the corner because we haven't solved any of the things that caused the previous crisis." In response to a question about price swings at the Foreign Correspondents Club of Japan, Mobius added "Are the derivatives regulated? No. Are you still getting growth in derivatives? Yes." In his view, derivatives remain a risky asset class that poses systematic risk.

Many segments of the financial industry performed poorly during the last financial crisis but, up to this point, no one has developed a comprehensive review of the insurance industry's practices during this period. Looking back at the period leading up to the crisis and noting changes to insurer balance sheets during the crisis, this research report will report on what the industry did well, what they did poorly, and how they can improve practices for the next crisis.

This research project would not have been contemplated without the recent financial crisis. As time has passed the underlying drivers, and even its name, have changed. The cause and effect will be studied for years, and what follows here is meant to provide a short summary to provide context for the rest of the report.

Initially, sub-prime mortgages were assumed to be the primary cause. As more time passes the cause seems to move further back in time to practices and incentives that were not obviously related at the time. The role that governments, including Central Banks, have played to manage the economy appears to have been extremely important. As this is written in late 2011, markets are unsure how to interpret data about potential country defaults and volatile energy prices. Along the way market liquidity dried up, credit imploded and equity markets tanked. Certainly sub-prime home mortgages played a central role, especially private label versions of that asset class, but they now appear to be symptomatic of other issues. Many red flags have been raised since the early 1980s. Government encouraged home ownership through federal policies and tax law; the Fed provided liquidity through lower interest rates each time there was a minor crisis; and entities (e.g., companies, unions, governments) were allowed to keep ever increasing levels of liability/debt off their balance sheet as a shadow economy developed. Insurers were incited toward certain asset classes through the Risk-Based Capital (RBC) formula. Investment banks created products to meet these needs and became too big to fail.

We need to go back in time to find the origins of this era. Harry Markowitz wrote his seminal paper detailing the basics of the efficient market theory in 1952, leading many investors to think that higher risk could lead to more predictable and higher returns.

Fisher Black, Myron Scholes and Robert Merton developed option pricing tools used to price and value derivatives in 1973.

Interestingly, a credentialed actuary had a key role in the development of the extended Collateralized Debt Obligations (CDO) asset class. David Li ASA PhD, a former SOA Investment Section council member, introduced the Gaussian copula in his 2000 paper *On Default Correlation: A Copula Function Approach*. This tool was later used to develop higher order CDO products. This copula was relatively easy to work with but, as Li himself noted, oversimplified reality.

The 20 years preceding the crisis saw a steady reduction in regulation and a move to self-regulating markets. This included the Gramm-Leach-Bliley legislation allowing overlap between types of financial institutions and other legislation that increased allowable leverage at commercial and investment banks. Meanwhile, entitlement programs like Social Security and Medicare continued to expand. The Federal Reserve was created in 1913 to regulate banks and ultimately the nation's money supply in order to avoid future "bank panics" such as occurred in 1907. Prior to the recent financial crisis, the Federal Reserve maintained an accommodative policy of low interest rates that some say encouraged debt. These and other developments have been part of a major development process over the last 100 years that has changed the economic world we live in.

### **Sub-Prime Overview**

What were some specific market shortcomings? In addition to original analysis, this section will refer to *The Financial Crisis and Lessons for Insurers*, a research paper issued in September 2009 with lead researcher Dr. Shaun Wang. These are of course opinions, and alternative views should also be considered.

"May you live in interesting times." This old quote has an obvious double meaning. It is interesting to read about a financial meltdown in its historical context, but it can be disastrous if you are living it in real time and have lost your home and retirement savings. This is definitely the case today for many families.

Initially this crisis was referred to as the sub-prime crisis, but as time went by and the crisis expanded it became known as the financial or liquidity crisis. What started out as a single asset class crisis which, it was thought, could be compartmentalized became a liquidity crisis where lenders were afraid to open their pocketbooks to others.

In the mortgage market, homeowners with little ability to pay a mortgage were welcomed by mortgage brokers who abused rules originally designed to help business owners with volatile earning patterns establish credit and buy a home. Initially private, non-agency, firms rolled up non-conforming mortgages (e.g., jumbos, adjustable rate, sub-prime) into asset backed securities. As the liquidity in this part of the market dried up, they were often assumed or purchased by government sponsored entities (GSE) such as Fannie Mae and Freddie Mac with legislative encouragement. For those mortgages purchased by Fannie and Freddie, this provided an implicit guarantee but these "agencies" were operating at highly leveraged levels. Many forms of these assets become securitized into

residential mortgage backed securities (RMBS) by investment banks that do not retain risk while being paid high fees, separated into tranches that are awarded distinct credit ratings, and sold to investors. Assets that would have had junk ratings if they stood alone were combined to be investment grade and even AAA/Aaa rated assuming diversification benefits. Hedge funds and other investors leveraged their holdings and developed one-sided incentives rewarding fund managers if the market went up. Investors (bond holders) were left holding the bag if the market went down. Credit default swaps (CDS) were originally designed to provide hedges for those invested in corporate bonds. Their use was extended to include mortgage backed securities (and their derivative products like CDOs) and do not require the buyer to own the underlying securities. These instruments were sold by AIG through its lightly regulated Financial Products Division, bringing additional default risk onto their balance sheet. They were a major factor leading to AIG's problems as described later in this paper.

Each of these groups – homeowners, mortgage brokers, commercial banks, investment brokers, regulators, rating agencies and hedge funds - played a role in the financial upheaval, which continues to run its course. Loan defaults increased as home values, the collateral, dropped below the loan value. While some were speculators, many were simply homeowners who succumbed to the temptation and bought larger houses with larger mortgages than they would have with stricter underwriting standards. These stresses led to government takeovers of Fannie Mae and Freddie Mac, bank interventions and bailouts. In the past, families struggling to pay bills continued to make mortgage payments even as they left credit card and other bills to accumulate. This time truly has been different. A drop in home values throughout the United States led many families to walk away from their homes and default on their mortgages.

Additional economic stresses have led to problems in a wide variety of asset classes. Liquidity dried up in many markets, as lack of balance sheet transparency led to rumors and conservative lending practices for both lenders and investors. Trust was missing in many markets.

Many in the financial services industry argue that this has been a “perfect storm” that could not have been anticipated, but not everyone agrees. Many articles predicted an impending housing bubble, driven partially by the Fed's low interest rate policy following the bursting of the dot-com bubble. Those making money from sub-prime style loans continued to argue that market prices for these instruments were correct. For those willing to apply skepticism to this market, there were plenty of warning signs that could have been heeded.

Some traders applied strategies that assumed the market would mean revert to lower levels, and made large profits. This paper will provide some general background regarding the ongoing financial crisis. Readers are encouraged to reach their own conclusions about the likelihood and causes of the actual scenario to date and how long it will take for the global financial markets to stabilize.

## **Housing Bubble**

Try to think about a family representing a good credit risk and expected to pay off a home loan. Characteristics would include things such as high income levels relative to the home's value, stable employment, a history of paying off debt, and high levels of existing assets. There is an old joke that it is easiest to obtain a loan if you don't really need one, and it remains true today. However, this temporarily changed prior to the sub-prime crisis as the ultimate owners of securitized assets did not recognize that borrowers no longer met the traditional criteria. The rules had changed.

Sophisticated investors became so focused on short-term results that many took the few extra basis points and ignored the longer term risks related to default, contagion and liquidity. Since World War II, the United States home mortgage market had always provided regional diversification. The market failed to recognize that, as home prices moved higher nationwide (an example of positive contagion), the likelihood of them dropping in lock step had increased. Over short time horizons, it appeared that the investors' trading book was earning excess returns. Investors ignored these leading indicators of the challenges yet to come. As defaults rose, so did spreads. At the same time, liquidity fell as buyers became scarce, although agency backed conforming loan RMBS continued to be available. Those who had purchased mortgage backed securities in the past suddenly had no stomach for the newly perceived risks, and no new buyers emerged. Today, many investors continue to take write-downs on their mortgage backed portfolios. The market has not yet cleared itself of the leverage and won't return to normal until it does.

As mentioned above, recent asset bubbles have been described as "perfect storms" that could not possibly have been anticipated. Some risk managers think this verbiage is designed to avoid accountability. A good investor, or risk manager, should develop stress scenarios that could plausibly happen and determine what the impact would be. There were enough articles written about the possibility that housing was in a bubble that having it deflate quickly should have been considered. Institutions can't use the excuse of potential homeowners that they did not have the computing power or sophistication to consider unexpected economic scenarios. Some sophisticated investors, based on their own analysis, chose to take a contrarian bet and made huge profits doing so.

Risk management is not about eliminating risk. It is about accepting transparent risks that you understand and are compensated for accepting. If risks are not transparent or not well understood, the investor should walk away from the opportunity or at least try to reduce the exposure as much as possible through mitigation techniques. Much as in baseball where a pitcher has to adjust to the umpire's strike zone, markets evolve and investors need to adjust with them. An investor who maintains perspective and uses common sense can have a competitive advantage over those who accept markets as perfectly efficient.

Risk management practices were supposed to reduce these risks for mortgage writers and investors alike, allowing those who followed best practices to avoid these periodic

blowups and perhaps profit from them by taking contrarian positions. Most so-called sophisticated investors lost. Why?

## **Analysis**

In an attempt to generalize the causes of the crisis and apply them to future situations, this report will consider six characteristics that can drive a financial crisis and how they impacted investment practices in the insurance industry versus the overall financial markets.

**Culture:** Effective risk management requires a culture that encourages risk when the firm is paid appropriately for taking it and discourages it otherwise. It must be supported from the top down, and implemented from the bottom up. Effective risk management considers exposure limits that consider assets and liabilities designed to promote survival even during the worst of times. The same opportunity may make sense in one economic environment and not in another, or may be reasonable for one firm and not for another based on a desired risk appetite. When senior management is incented based exclusively on recent results, or a firm's goals are set based solely on revenue, it incents weak risk management practices. If a bet pays off, the manager receives a big bonus, and if it doesn't, the owners take the loss and the manager moves on to the next job. Egos also play a part. If a CEO thinks he/she is the smartest person in the room and thus isn't inclined to listen to a risk manager, he/she won't encourage alternative views of the world. There is always a way around exposure limits, especially when transparency is not required. It is challenging to get past that. Much like buying insurance to reimburse catastrophes, most of the time risk management is a cash flow cost. It can be hard to quantify the opportunity cost when an entity has successfully avoided a disaster, but easy to quantify the cost of the risk manager. In most years, firms with weak and minimal risk management will present stronger financial statements than those that are prudent and manage risk. When risk management is deeply embedded in the corporate culture, skeptical team members can challenge assumptions and help develop scenarios to estimate results in various environments. In a company with prudent guidelines, the decision making process is improved by involving independent peer review and considering the risks taken in addition to the income statement and balance sheet items.

Insurers tend to be conservative managers in the financial services arena. Typically, insurers who have become troubled have extended beyond their investment expertise by investing surplus in equities, writing liability risks they did not understand (such as early generation variable annuity riders and long tailed casualty business covering asbestos), or falling victim to a liquidity crisis while holding illiquid assets. In the US, state insurance regulations discourage large bets on investments through exposure constraints and high capital charges differentiated by perceived risk.

**Exposure/Correlation in the Tail:** Default risk between similar instruments is not independent in the tails, yet many models assume you diversify by spreading risk across many similar exposures. Independence is assumed between both individual home mortgages and geographic regions. Under the law of large numbers, this results in a

stable distribution of returns. This turned out not to be true as the market weakened nationally. As foreclosures spiked there was little regional differentiation. Foreclosures were up everywhere. As with many real-life distributions, the farther out in the tail, the more dependency there is between events. Best practice risk management uses a consistent approach and a common definition of risk throughout the entity. It also provides a healthy balance between common sense and complex mathematics used to model behavior.

When insurers write liability business where the law of large numbers applies, the correlations are assumed to be low or independent. Occasionally concentration by geographic area will occur, such as a single state casualty firm hit by a hurricane. Correlations are more of an issue within the investment portfolio, and Investment Policy Statements generally create constraints for risks based on interest rates (metrics include duration and convexity), credit (maximums per issue/sector) and geography. Since an insurer is generally buying assets to create cash flows that match liabilities they tend to do less proprietary trading than other asset managers and hold many assets to maturity.

**Reliance on External Experts:** Many investors and regulators relied on the rating agencies as a gatekeeper for analysis rather than doing the work themselves. Others guaranteed the credit worthiness of these tranches, thinking any amount charged would more than balance the perceived low risk. Once the market tanked, these stakeholders were surprised that so many AAA/Aaa rated investments could exhibit so much credit risk. They did not understand the risk interactions, and the exposure, they had taken. Their models did not reflect reality. Many investors blamed the rating agencies, but investors should not have invested in these assets without doing their own analysis. This was made harder by lack of transparency and the perceived oligopoly formed by the NRSRO (Nationally Recognized Statistical Rating Organizations) that had high barriers to entry. Complicated instruments were developed with increasing complexity and reduced transparency. Investors need to understand the underlying cash flows of the assets they purchase across several scenarios, some positive and some negative. This task should not be transferred to others. Investors will ultimately be held accountable for their actions and for the actions of those they have outsourced tasks to.

Insurers who maintain internal credit risk expertise were able to utilize these skills to compare against ratings issued for various asset classes. This provided independent analysis unavailable to many other investors, and provided a second set of eyes, providing skepticism, when considering evolving asset classes such as RMBS utilizing sub-prime home mortgages. One insurer noted that they exited the market “due to the rampant abuses in loan origination we were hearing first-hand when we’d interview the popular originators.” Another exited the sub-prime bond market for new issues and sold their 2006 vintage assets.

**Incentives:** The financial markets work more efficiently when incentives are aligned. This condition broke down, for example, in the mortgage loan origination market. Brokers were paid for originating mortgages, with no disincentive if the homeowner failed to pay. While some fraud was involved, the basic process broke down. Brokers got



instant liquidity by passing the risk on to the private label market. They worked with investment bankers to securitize them, segment them into tranches and sell the tranches on to institutional investors. Even in a scenario where no loans were retained, when liquidity dried up they would have had trouble passing along new issues that were in the pipeline. Although spreads widened, the markets were slow to stabilize and provide liquidity. It is still unclear what future role Government Sponsored Entities like Fannie Mae and Freddie Mac will play.

Historically investors have often received additional compensation, maybe a few basis points, beyond the expected credit risk. This excess return was generally attributed to covering such things as liquidity risk and model risk. The financial crisis showed that the market may have undervalued this risk. In some cases during the crisis, the nominal yields of corporate bonds stayed level even as risk-free yields dropped in a flight to quality.

Insurer incentives vary by the types of business written and how the entity views itself. It might consider its expertise as investing, with float provided from liabilities acting as a loan from policyholders. This is typical for many casualty insurers, with assets and liabilities managed independently. If an insurer defines itself based on its products, then the liabilities drive the company and investing supports the product areas. Some products are very competitive, such as single premium deferred annuities, and there is often great pressure on investment staffs to reach for a few extra basis points. This occurred especially when additional capital was not required to be held, so the industry was susceptible to rating agency mistakes as RBC for credit risk is driven by ratings.

**Leverage:** Entities that borrow to fund their investments incur more risk than those who don't. Even if their investment picks are right in the long term, an initially unstable market that provides an opportunity can stay unbalanced for a long time. An investor might not be able to survive until markets correct if high leverage has been employed. Long-Term Capital Management (LTCM), a hedge fund run by a combination of Wall Street legends and Nobel Prize winners, learned this lesson the hard way in the late 1990s. Their mathematical models looked for small inconsistencies in mean reverting prices and used high leverage to boost their returns. Eventually the purchased assets reverted to normal market values, but the fund did not survive to see that day.

Credit default swaps provided another form of leverage in the housing market. In this case the risk of default was underestimated, so the seller was more exposed to credit risk than they realized. Leverage made the resulting chaos worse than it otherwise would have been.

Float, the time lag between premium collection and claim payment for an insurer, is a form of leverage, so insurers do not rely on borrowing as much as other industries. Bonds are the dominant asset class, and the interest rate risk for assets is matched to the liability risk for many product types. Equity portfolios are generally created using surplus accounts and insurers do not typically borrow to trade as the RBC requirements for these

types of actions are high. For these reasons insurers generally run more conservative portfolios than other financial institutions and have less leverage.

**Systemic Risk/Liquidity:** Governments have historically played a major role in asset bubbles by informally sanctioning them or setting up policies that, through unintended consequences, encouraged sub-optimal behavior. In this case, both tax policy and the setting of low interest rates by the Federal Reserve seem to have played a role. Regulation in the US is often not coordinated, and many financial institutions are able to at least partially choose their regulator, with most picking the entity allowing the most freedom for operations. Pure insurers are regulated by the states, with large variability between risk management abilities. This means there are over 50 potential sets of rules to follow, and this can be a logistical challenge. The NAIC (National Association of Insurance Commissioners) has sought to make many of these rules consistent through organized legislation at the national level. This diversity of regulation reduces the concentration risk found when one set of regulations dominates and participants figure out the drivers and nuances. Thus, the systemic risk created by the industry is reduced, especially relative to other financial industries such as banks that are moving toward a single set of risk standards. Having multiple sets of eyes peer review a firm's balance sheet increases transparency and makes it more likely that risky practices will become known.

Regulation in the United States also includes the Federal Reserve, Office of the Comptroller of the Currency (OCC), the Office of Thrift Supervision (OTS), the FDIC (Federal Deposit Insurance Corporation), FHFA (Federal Housing Finance Agency, replacement for OFHEO – Office of Federal Housing Enterprise Oversight and FHFBB – Federal Housing Finance Board) and Securities and Exchange Commission (SEC). In such a complex environment, politics and turf issues can overwhelm real issues. There is little consistency and regulatory arbitrage becomes common. During stable periods investors came to believe that the government, in this case especially the Federal Reserve, had the ability to manage the economy and avoid volatility. The historical record of these regulatory bodies provides little comfort in their ability to unearth systemic risk in advance. In some cases the regulators are shut down in their efforts by politicians eager to keep the “punch bowl” flowing. Others have limited accountability after a crisis. For example, the OTS so visible in the AIG fiasco previously regulated the Savings & Loan industry which cost the American taxpayer \$87.9 billion in bailout funds (per Resolution Trust Corporation as noted on Wikipedia) during the late 1980s and early 1990s.

Insurers seem to get into trouble when they form holding companies in order to arbitrage their regulatory position. They also tend to overestimate their abilities at times, but during the recent crisis the industry actually pulled back early when they could easily have pushed for expanded exposure to the afflicted asset classes. The situation where they joined the crowd occurred when securities lending programs froze up. This provided the lenders, including many insurers, a scare when it was revealed that some borrowers (including AIG) might not pay back the borrowed funds.

## Summary

The housing crisis may have been caused by low rates put in place by the Federal Reserve. Surely it was at least partly an unintended consequence of providing liquidity after the stock market bubble burst and the events of 9/11/2001. Some say the Fed has created cycles; one bubble bursts and the Federal Reserve Banks provide too much liquidity, accidentally creating the next bubble. Should we leave the economy to find its own cycle, allowing proper risk incentives to reappear? Or have we entered an unstable period similar to the 1930s where markets fail to break out of their doldrums? Are there multiple cycles, with frequent business cycle recessions accompanied by less frequent liquidity driven, but more severe scenarios? Only time will tell.

Except for the AIG credit default swap disaster, which was not regulated as insurance and avoided meaningful regulation, the insurance industry did not play a strong role in the financial crisis. For public companies that were impacted, it occurred mainly due to equity exposure, either through surplus accounts or guarantees on variable annuity products. Interest rate risk was matched well enough so asset liquidity was not an issue, and credit risk managed through strong investment policy statements. These provided exposure limits to specific issuers and industries as well as internal expertise that allowed for additional analysis of various asset backed securities.

### ***One Insurer's Role in the Crisis***

Although numerous insurers were heavily impacted by the recent financial crisis, one in particular has been linked strongly to the systemic risks that broadened the crisis. Although an imperfect measure, stock price is a reasonable proxy for firm value. American International Group (AIG) dropped over 95% of its market cap due primarily to its foray into the credit default swap market. A CDS “insures” the credit risk of the underlying security, and AIG viewed these as a high profit margin product as it leveraged its own AAA/Aaa rating. AIG extended an existing market in corporate bond CDS to also guarantee securitized home mortgages. Although complete details of government involvement have not been documented, it appears that AIG drew at least \$90 billion in loans and diluted 80% of its ownership. While technically this did not impact the insurers in AIG's holding company structure, no layman would view it this way. To them, AIG is an insurer. AIG showed how systemic risk can appear in unexpected places when regulatory arbitrage is allowed. According to the Financial Crisis Inquiry Commission report, published in January 2011, AIG's liquidity position was impacted by its heavy use of commercial paper, collateral on derivative contracts, securities lending, an asset portfolio full of mortgage backed securities, liquidity put requirements, at risk ratings, and limited standby credit facilities. Since major international banks were thought to have large exposures to AIG's credit from buying credit default swaps that provided protection on AAA/Aaa rated CDOs, regulators at the Fed feared the impact an insolvency would have on markets. AIG's failure of risk management, combined with the interconnectedness within the international financial community, led to its unexpected role in the middle of the systemic risk crisis. Here is what the report said about regulation of the AIG holding company.

*AIG engaged in regulatory arbitrage by setting up a major business in this unregulated product, locating much of the business in London, and selecting a weak federal regulator, the Office of Thrift Supervision (OTS).*

*The OTS failed to effectively exercise its authority over AIG and its affiliates: it lacked the capability to supervise an institution of the size and complexity of AIG, did not recognize the risks inherent in AIG's sales of credit default swaps, and did not understand its responsibility to oversee the entire company, including AIG Financial Products. Furthermore, because of the deregulation of OTC derivatives, state insurance supervisors were barred from regulating AIG's sale of credit default swaps even though they were similar in effect to insurance contracts. If they had been regulated as insurance contracts, AIG would have been required to maintain adequate capital reserves, would not have been able to enter into contracts requiring the posting of collateral, and would not have been able to provide default protection to speculators; thus AIG would have been prevented from acting in such a risky manner. (Financial Crisis Inquiry Commission Report, January 2011, page 352)*

Previously the OTS had overseen the Savings & Loan industry. It should be noted that the Office of Thrift Supervision became part of the Office of the Comptroller of the Currency (OCC) on July 21, 2011.

### **Current Status of Insurance Investment Practices**

One form of concentration risk is regulatory supervision. When all regulators use exactly the same, or similar, rules then companies find creative interpretations of those rules. The most famous case study is Enron, where accounting shenanigans caused financial ruin for its shareholders and employees alike, but there are many other examples where financial transparency was limited due to a rules based accounting regime. Today there is a move toward principles based regulation, but concerns are mounting that it is overly conservative and provides unclear incentives to firms. While most companies might use conservative interpretations of these principles, it is the rogue company operating in the tail that could become the systemically important financial institution. How the Basel III or Solvency II regulations, or the upcoming rules on systemic risk driven by the Financial Stability Oversight Council (FSOC), will play out is unknown. Observers should be wary of one set of rules that claims to cover all types of financial institutions.

The insurance industry can be segmented into three components. Property/casualty insurers work with liabilities where there is lots of historical data, covering losses to property and worker's compensation accidents, along with emerging risks like asbestos and director's liability. As we saw with hurricane Katrina in 2005 and Irene in 2011, coverage of natural disasters can surprise based on frequency and severity, and previously clear contract clauses occasionally need to be reinterpreted by the courts. Health insurers finance the health care system and compete with government provided care, especially for the elderly. For many years a threat from potential national health care plans was management's focus and drove consolidation of the industry. Life insurers do more to integrate the asset and liability sides of the balance sheet than other financial institutions. Longer time horizon products require asset/liability management risks to be

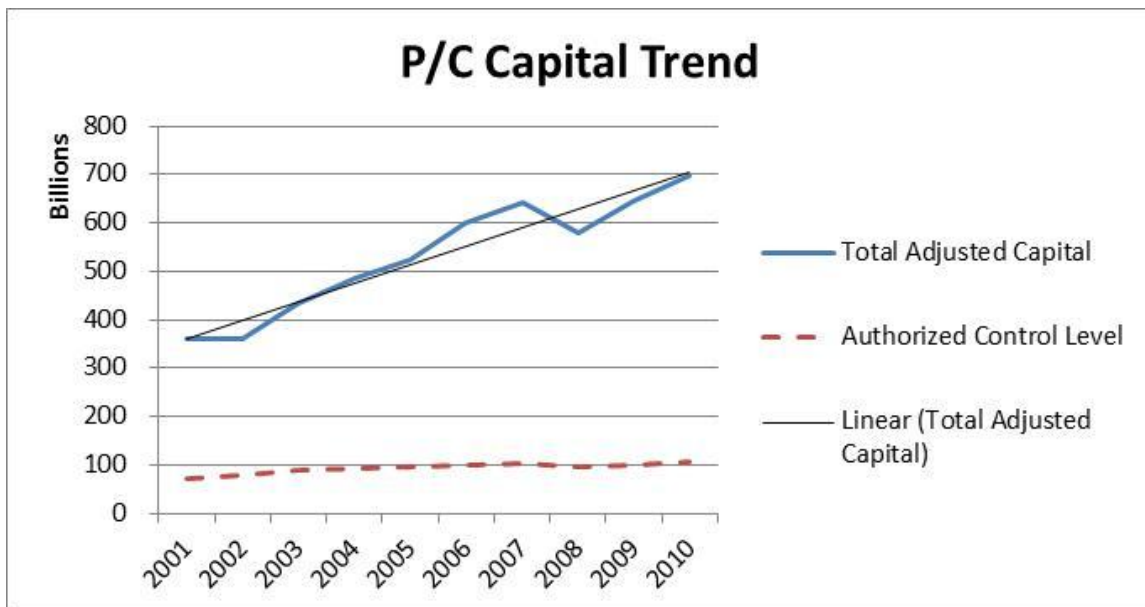
managed on an ongoing basis. Before getting into the details of the survey, this paper will provide some high level comments about recent trends in each of these sub-segments of the insurance industry.

### ***Trends of Insurer Balance Sheets***

Here the AM Best data set, from their Financial Suite product, is used to compare metrics related to asset allocation and financial performance of insurers. This provides background information that helps interpret the written and verbal surveys. It is purely quantitative and collected only for US based companies.

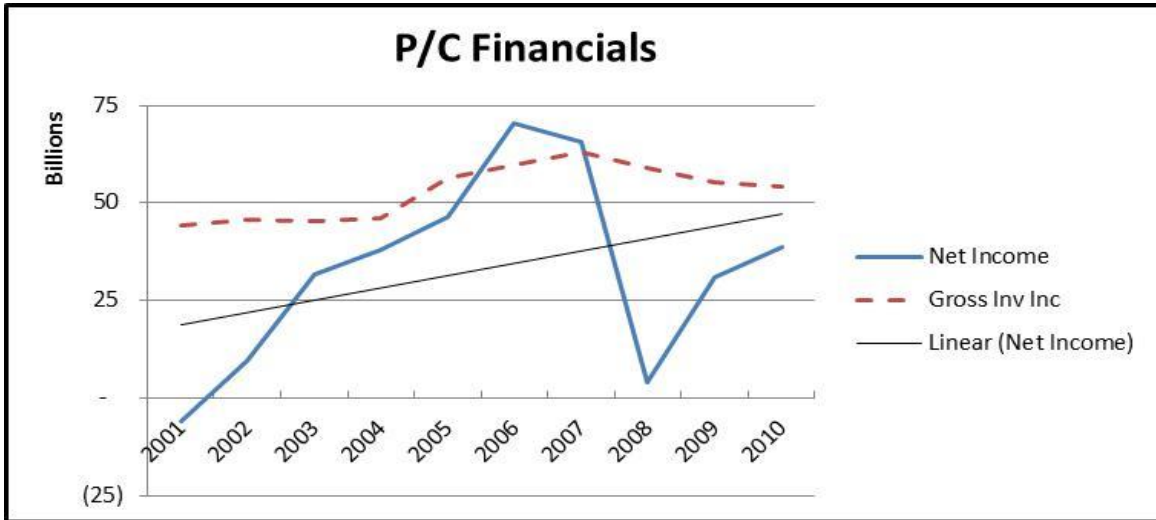
Insurer financials provide a wealth of knowledge for those willing to spend some time extracting it. Statutory filings are public documents and databases collect this information and provide transparency. All assets owned are shown on the balance sheet, including assets purchased and disposed of during the period reported. This forms a type of peer pressure indirect regulation that makes it obvious if a firm has an unusual investment strategy. Other regulatory requirements are considered confidential, so useful modeling such as cash flow testing (actuarial opinion and memorandum) and dynamic financial analysis are not publicly available. Risk-Based Capital (RBC) is generally a factor based system for investment risks, so various exposures are compiled and reported as part of the publicly available statutory filings. You can tell how much exposure to non-investment grade bonds or equities, for example, a specific company has.

### ***Property/Casualty Trend Data***

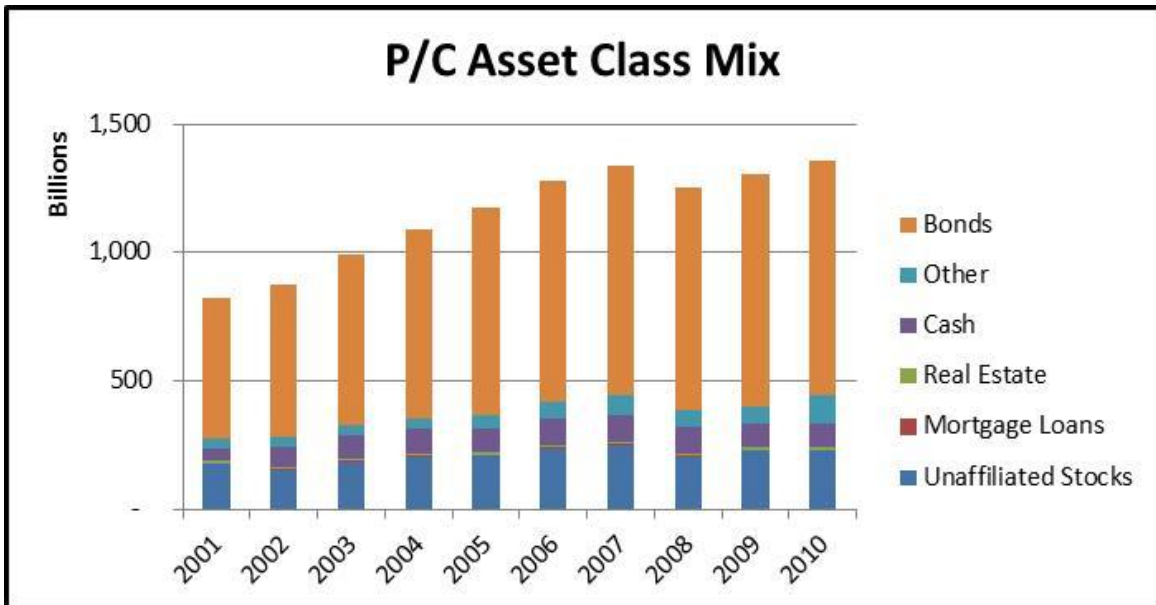


The capital ratio for P/C insurers has trended higher over the past decade, maintaining a similar trend line despite a drop in 2008. Total adjusted capital more than doubled while the authorized control level was stable, resulting in an RBC ratio of 327% in 2010 after a

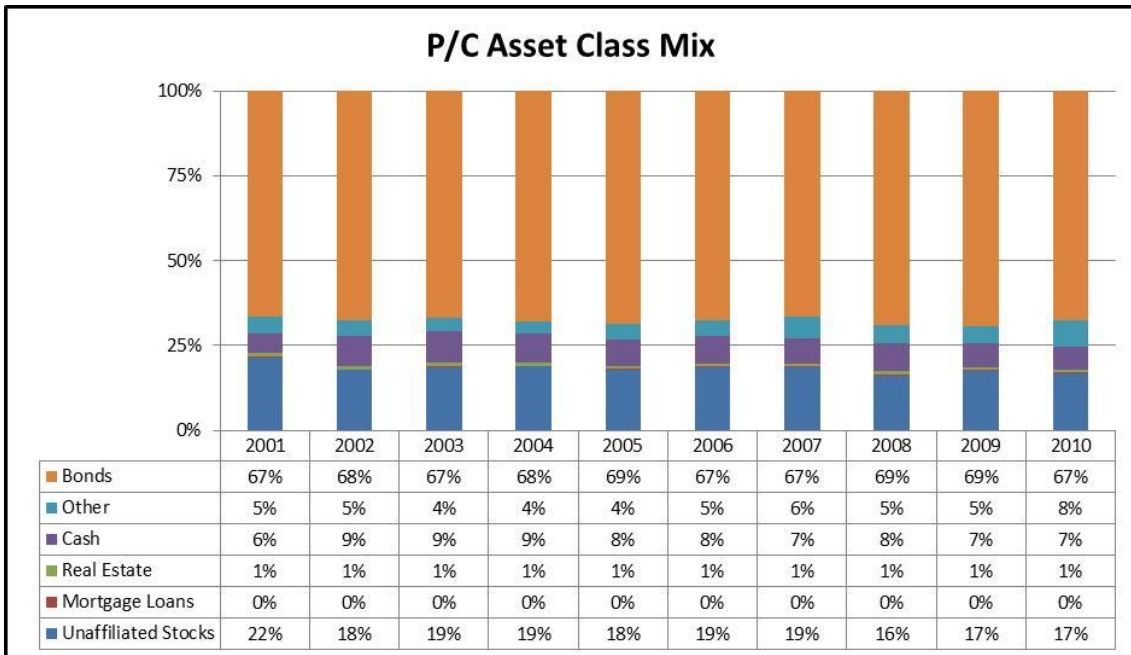
low of 229% at the end of 2002. This increase likely reflects in part the market changes driven by the terrorist attacks in late 2001 and the hard market that followed.



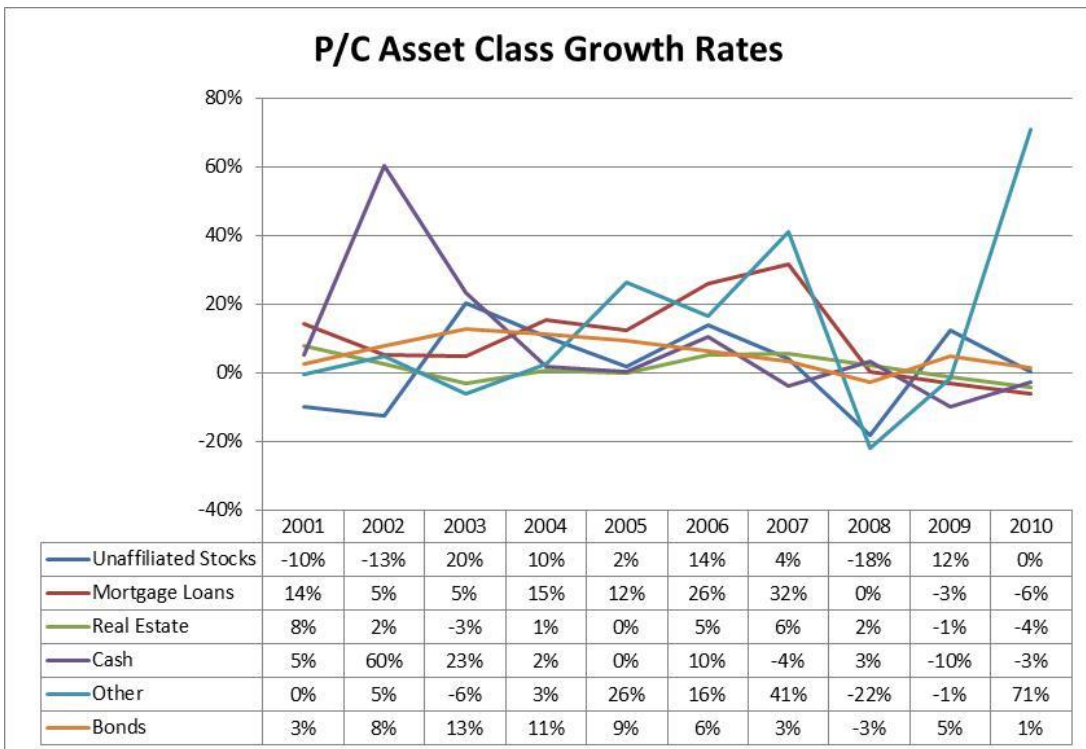
Net income for the P/C insurance industry has had a positive slope during the last decade (2001 – 2010) despite volatility due to 2001 losses and 2008 reductions in market value of assets. Premiums increased 29% and net income 80% (from 2000 since 2001 net income was negative) during this period, with the expense ratio initially decreasing but ending up slightly higher than it started (26.5% in 2001 to 28.2% in 2010). Operating ratios, as expected, are volatile and currently low after a high ratio in 2008 (2010 result 91%). Yields have reduced from 5.3% to 3.8% in 2010.



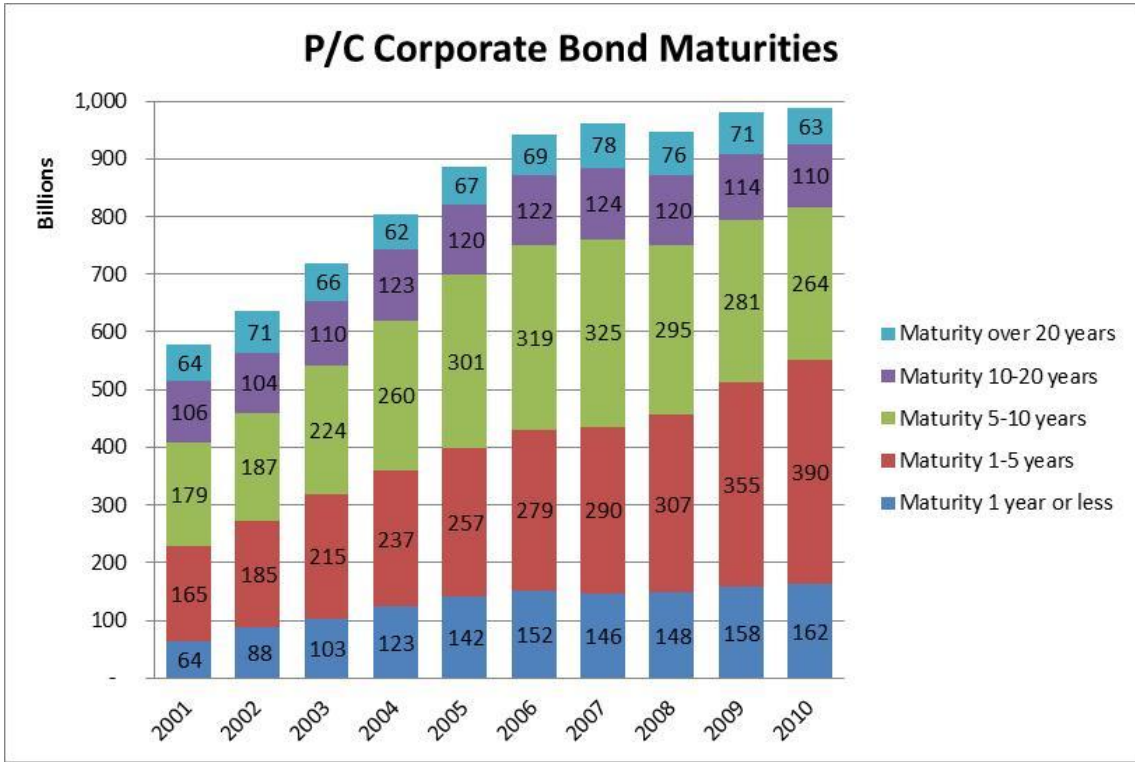
While overall assets increased by 66% during this period, cash increased by 94%. Seven of the ten most recent years showed a combined ratio greater than 100%, making investment income results very important.



What is noticeable in this data is the steadiness of the asset allocation percentages. Unaffiliated stocks and the catchall Other category are the only asset classes to change by more than 2% between 2001 and 2010. For stocks, most of that change was in the first year of the trended data as the dot-com boom continued to deflate. Other assets spiked in 2010.



Asset class growth rates are another way to look for changes in industry investment strategies. Growth when initial allocations are small can be more easily identified here.



It's clear that maturities are shortening over the decade for P/C writers even as the total amount of assets under management increase. The 1-5 year maturity assets seem to be favored in recent years. This allows P/C insurers to increase yield above very short assets yet retain liquidity over the next several years if conditions change.

Financial Size Category	Current Rating	Asset Allocation by Financial Size Category					Cash	Other	Total
		Bonds	Preferred	Common	Property/ Mortgage Loans				
AM Best size	Count	Bonds	Stock	Stock	Mortgage Loans	Cash	Other	Total	
II	7	58%	0%	24%	2%	16%	0%	100%	
III	47	52%	2%	10%	1%	34%	1%	100%	
IV	82	62%	1%	12%	2%	23%	0%	100%	
V	138	66%	1%	11%	2%	20%	1%	100%	
VI	126	70%	1%	11%	1%	15%	1%	100%	
VII	114	74%	1%	11%	2%	12%	1%	100%	
VIII	237	75%	1%	13%	1%	10%	1%	100%	
IX	173	80%	0%	9%	0%	9%	1%	100%	
X	80	72%	1%	10%	1%	15%	1%	100%	
XI	66	71%	0%	12%	1%	14%	1%	100%	
XII	47	75%	0%	12%	1%	9%	3%	100%	
XIII	31	72%	1%	17%	1%	8%	1%	100%	
XIV	61	82%	0%	9%	1%	6%	2%	100%	
XV	291	77%	1%	10%	0%	10%	2%	100%	
Other	656	50%	1%	9%	1%	39%	1%	100%	

Property/Casualty insurers come with a wide range of characteristics, making it hard to make conclusions about this data in any way except as totals. Many are set up to pass through all their business through reinsurance ceded, so the loss ratios are often either

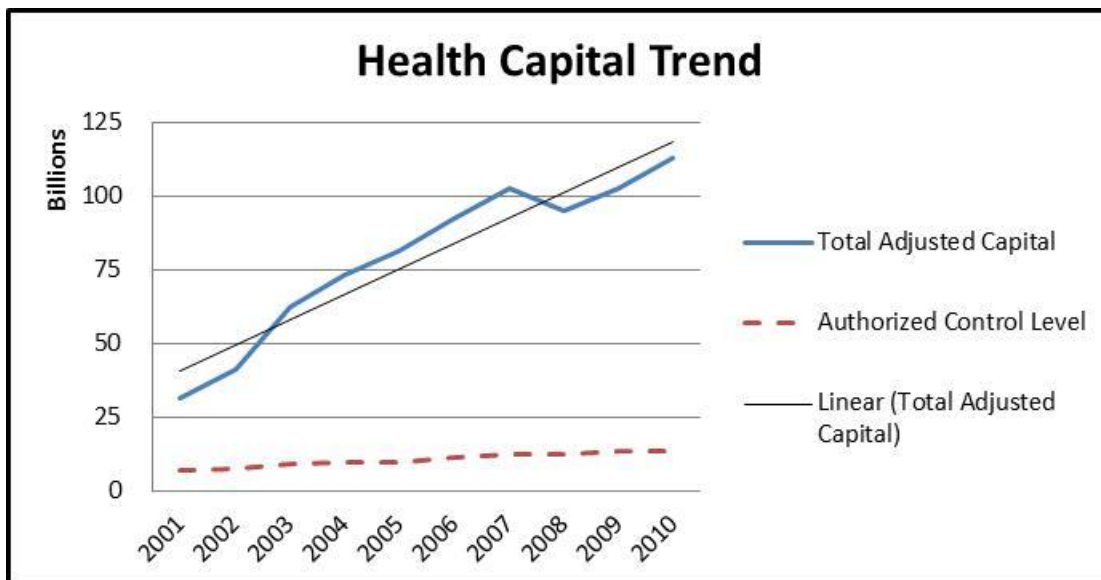


very high or very low. Looking at size, while one should not draw conclusions from the data, it is not surprising that small insurers hold more cash than larger firms. It is likely this is to meet ongoing business needs.

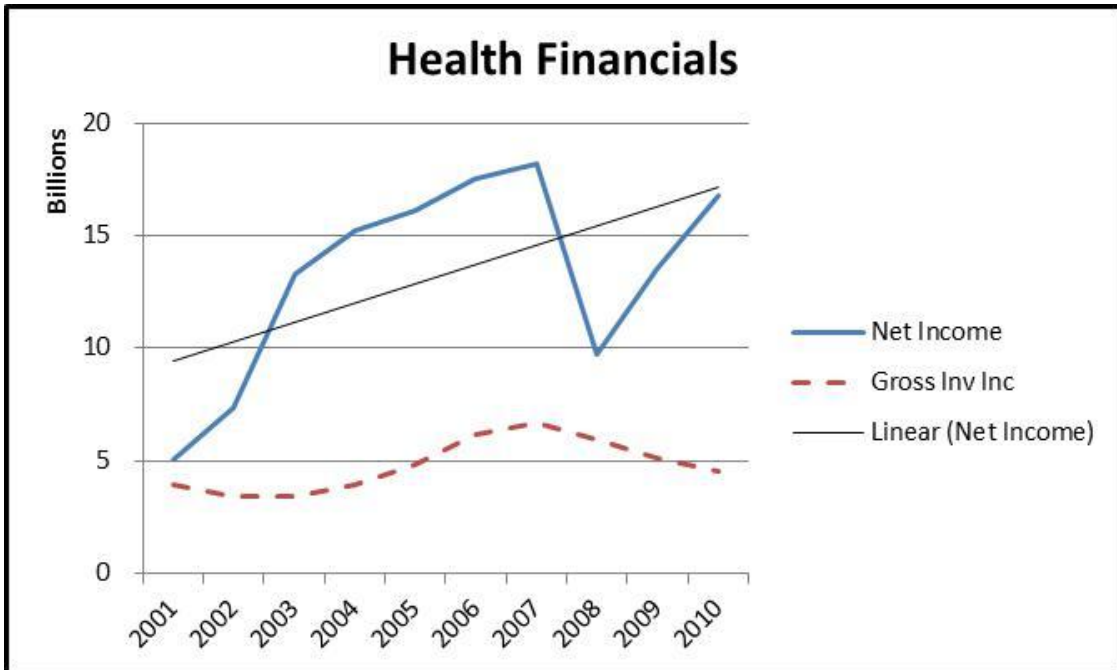
Size	AM Best Size Categories		Capital	auth control RBC
	Number of companies	RBC Ratio		
II	7	190%	9,682	2,551
III	46	265%	132,571	25,020
IV	82	365%	601,126	82,362
V	138	410%	2,113,680	257,592
VI	126	440%	3,992,719	453,921
VII	114	398%	6,514,916	818,299
VIII	237	466%	23,424,387	2,515,759
IX	173	396%	28,565,077	3,604,026
X	80	362%	21,917,818	3,030,270
XI	66	400%	16,982,233	2,124,371
XII	47	323%	12,170,897	1,881,271
XIII	31	361%	12,279,513	1,701,196
XIV	61	421%	27,312,053	3,246,304
XV	291	300%	441,919,549	73,621,741
Other	656	318%	22,442,082	3,524,647
Total	2,155	320%	620,378,303	96,889,330

RBC ratios turn out to be hard to analyze by size for P/C insurers. With 14% of the companies in the largest group (with 71% of the capital) and 30% not classified at all by size, it is hard to draw conclusions. The smallest companies tended to have the smallest RBC ratios, but interestingly the largest insurers (\$2 billion surplus) maintained a 300% RBC ratio while each of categories IV-XIV (\$5 million to \$2 billion surplus) held 323-466%. The table was pulled from 2009 data.

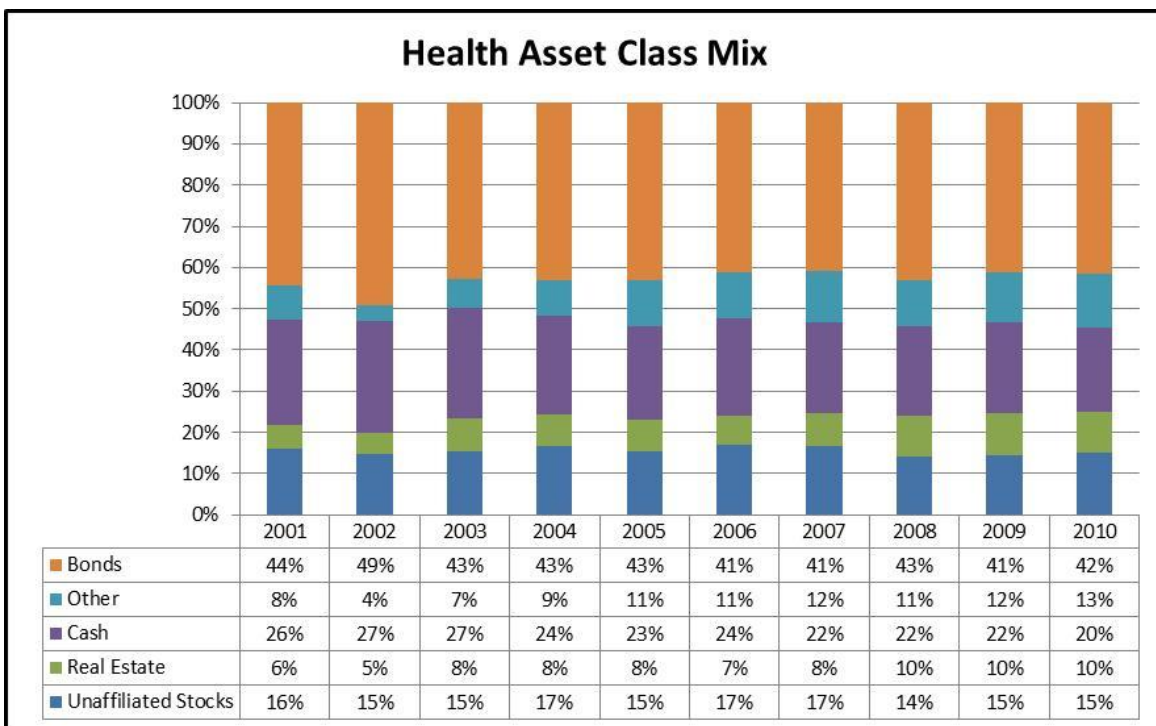
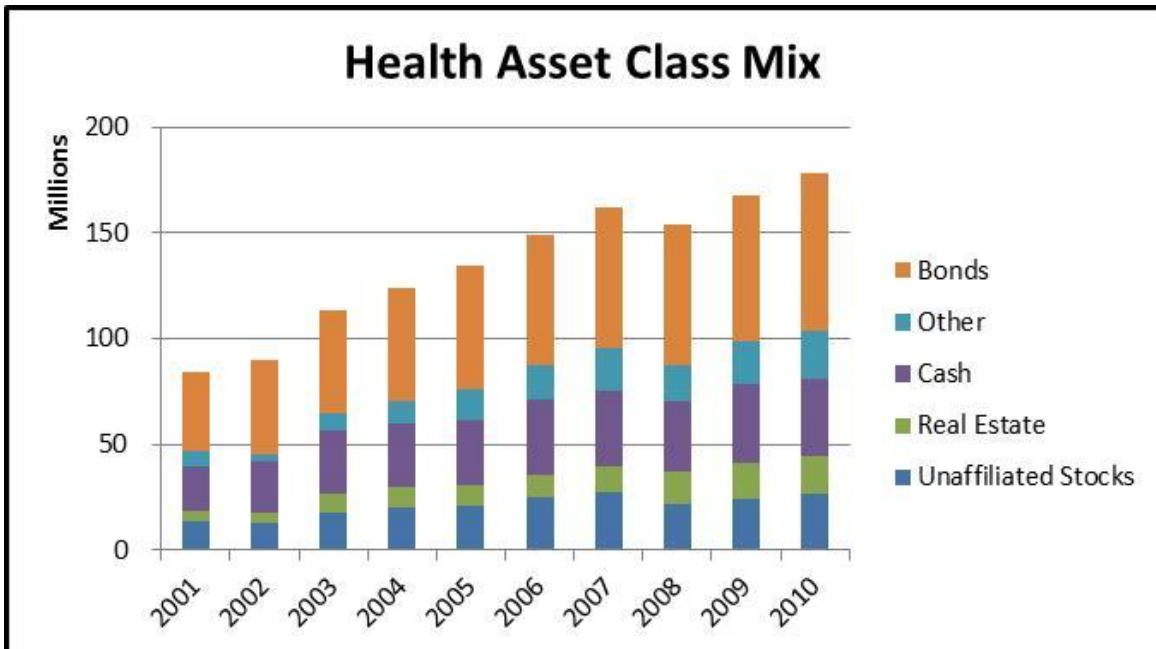
## Health Trend Data



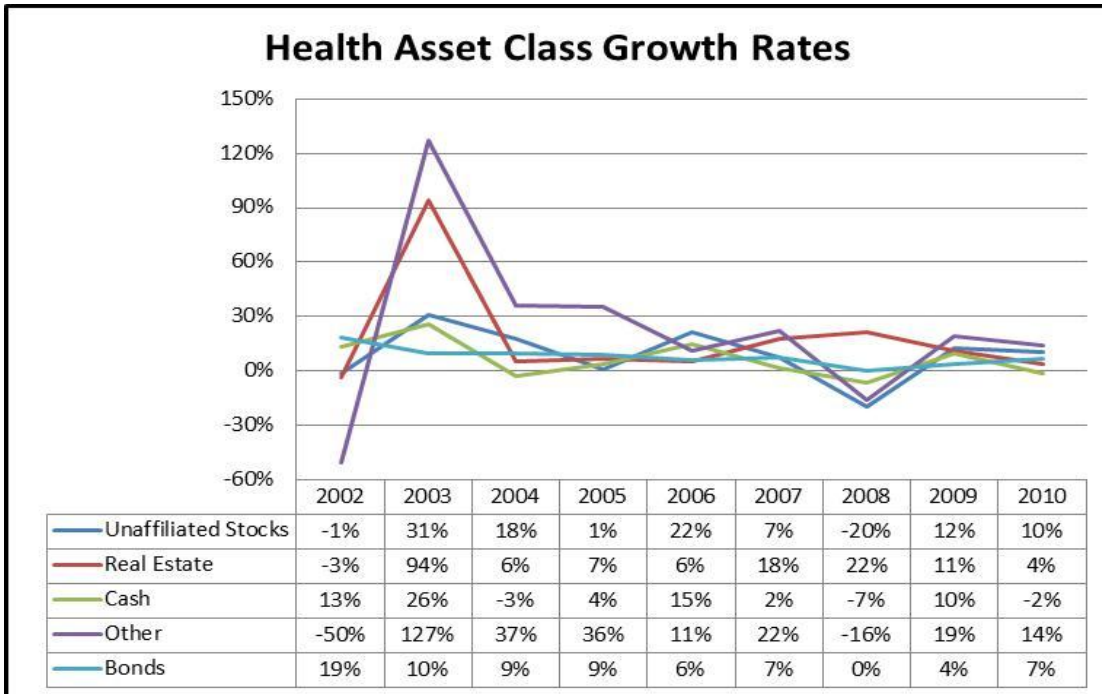
Capital has increased consistently over the past decade in the health insurance industry as it enjoyed the positive period of the underwriting cycle, with a small hiccup due to investment losses in 2008 the only year that did not outperform the preceding year. Overall the level of industry capital has grown from \$31.5 billion to \$113.0 billion for a growth rate of 15%, countered by medical trend of about 9%. The heightened uncertainty of health care reform, growth in managed care relationships and a wave of mergers encouraged management to maintain a higher level of capital. The industry might also be putting off capital investment anticipating greater certainty in the future and a desire to be prepared. The impact has been for the health insurance industry RBC ratio to increase from 230% in 2001 to 420% in 2010, building up a war chest to counter the uncertainty inherent in this market. This is rational behavior since once decisions are finalized it will be too late to react.



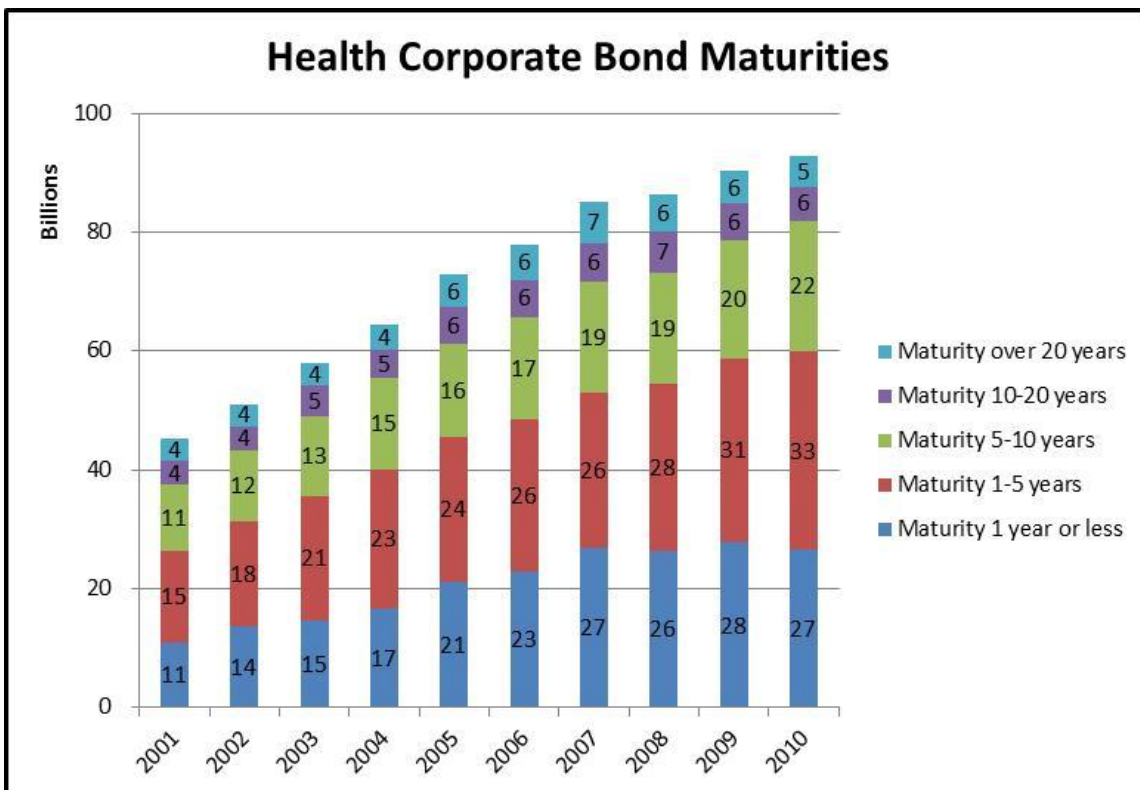
Net income for the health industry has grown from \$5 billion in 2001 to \$16.8 billion in 2010, an increase of 234%. The comparison is skewed in that 2001 was a down year in the underwriting cycle. The expense/premium ratio has decreased to 11.0% while the operating ratio remained steady with 86.6% in 2010. The higher income has resulted from economies of scale rather than a reduction of claims. Recent product design changes toward unlimited benefits may ultimately increase the loss ratio for this period. While gross investment income during this period has reflected generally reducing yields, it is clear that investment income has not driven income. Contrast this chart with the similar one covering the P/C industry, and you see that health is much less reliant on investment income.



Overall cash and investments for the health industry have more than doubled (up 114%) during the period 2001-2010, while net premiums written have increased 69% over this same period. Growth in real estate occupied by the company (2010 balance sheet is 4 times the 2001 balance sheet total) was driven by a single company, Kaiser Permanente. Cash and other short term equivalents have also grown – 69% from 2001 to 2010, smoothly. Assets reported under Schedule BA (other assets in chart) increased 3.8 times during this period.



Asset class growth rates are surprisingly stable during this period, with exceptions in 2003 and 2008. Bond growth is very consistent, and real estate has differing characteristics in its reporting so showed steady growth even during 2008.



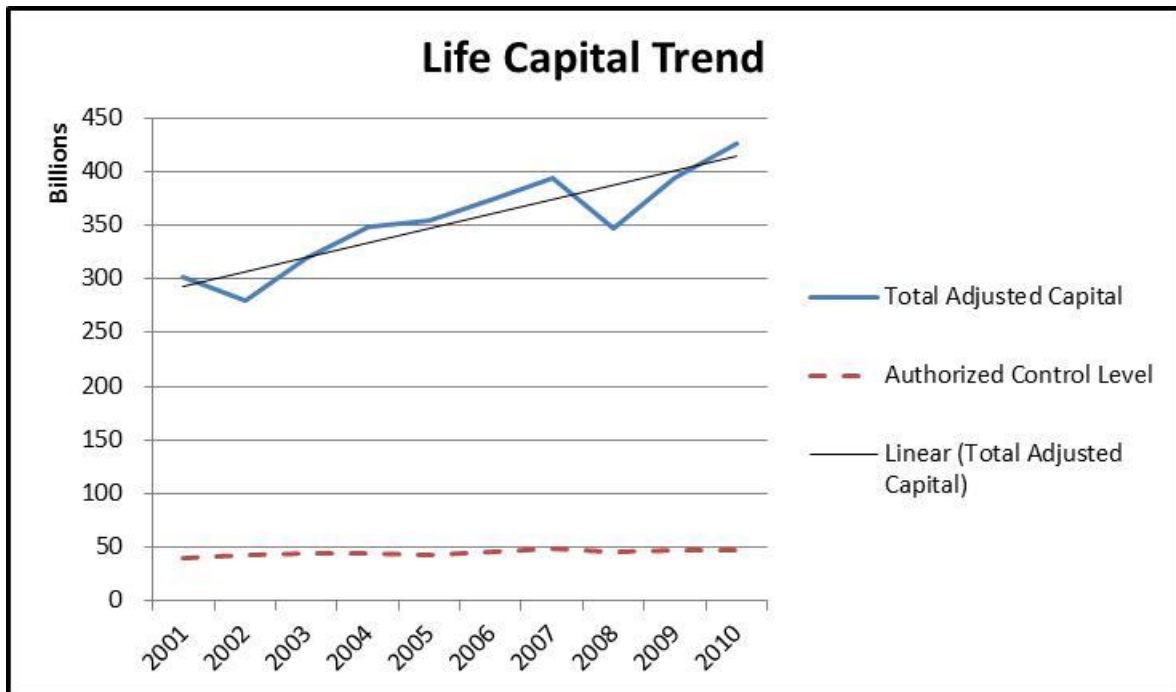
While overall corporate bond exposure doubled during this period, maturities beyond 10 years have not expanded at the same rate. Given that many of these companies have disability income and long-term care policies in their portfolio these durations seem quite short. This could reflect a concern that disability claims traditionally increase during a recession and a conscious effort to shorten the portfolio.

Size	AM Best Size Categories		Capital	Auth Control level
	Companies	RBC Ratio		
II	4	213%	6,340	1,491
III	21	505%	64,116	6,346
IV	20	222%	133,757	30,179
V	31	292%	484,216	82,831
VI	36	228%	1,157,383	254,179
VII	41	227%	2,677,536	589,903
VIII	48	261%	5,795,265	1,111,294
IX	46	308%	6,653,076	1,081,712
X	7	348%	3,202,996	460,684
XI	18	340%	7,998,863	1,177,018
XIII	3	466%	3,129,097	335,743
XIV	4	596%	3,825,247	320,670
XV	47	428%	22,550,909	2,631,819
Other	817	414%	43,473,068	5,248,453
Total	1,143	379%	101,151,869.0	13,332,322.0

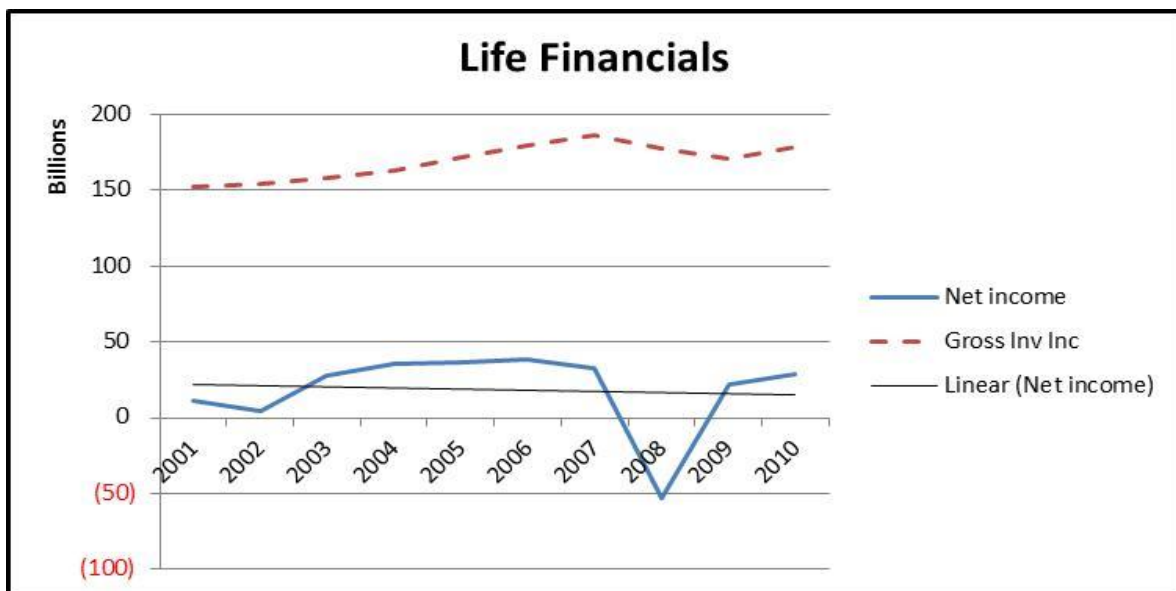
Similarly to P/C insurers, the health industry does not fit cleanly with the AM Best size categories. It appears that the rating agency should revisit these categories to make them more useful. Interestingly it does seem that the RBC ratio increases as the size increases, although with 71% of the companies and 43% of the capital not shown by size it is difficult to make conclusions.

An overall view of the health insurance industry leads to the conclusion that, despite having doubled invested assets, the primary growth has been in home office real estate, cash and Schedule BA assets. It appears that there is opportunity for health insurers to better manage their assets against their liabilities while also engaging in surplus investment strategies. They should consciously determine if investing is a core competency and consider alternatives such as outsourcing if it is not. Health insurers should consider additional analysis of how their assets and liabilities interact. It should also be noted that some health insurers have large blocks of long-term care and disability income policies that have different profiles than individual and group medical insurance.

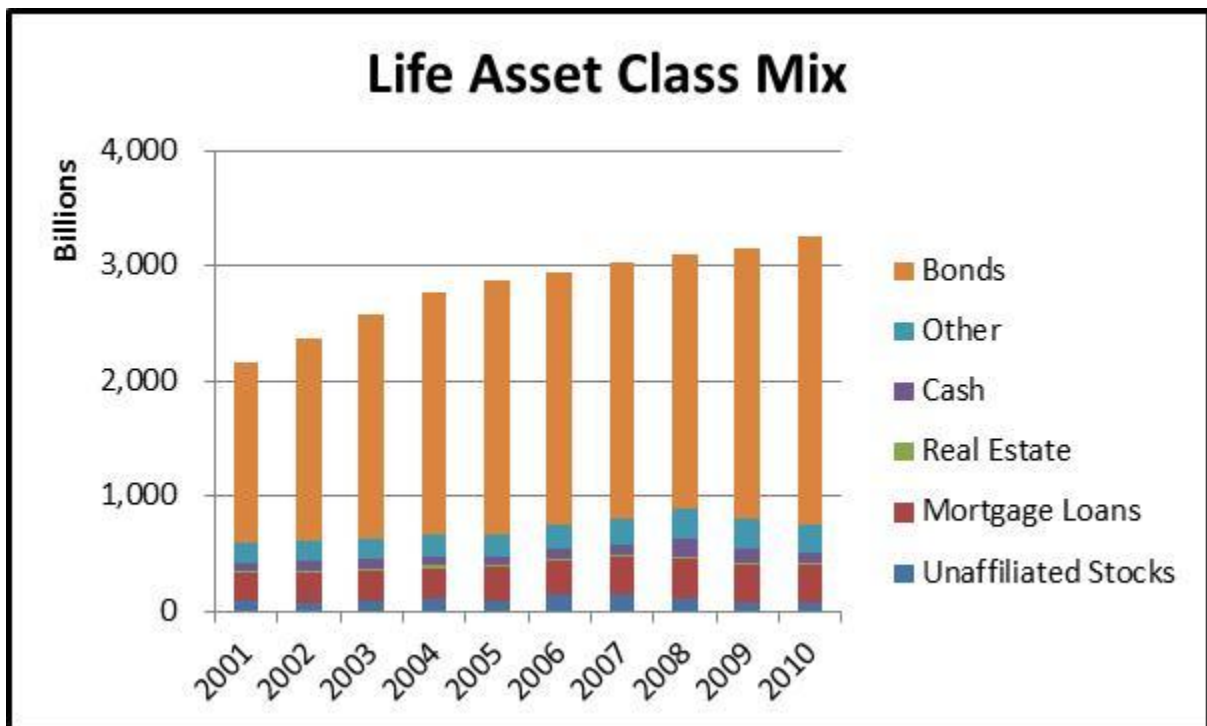
## Life Trend Data



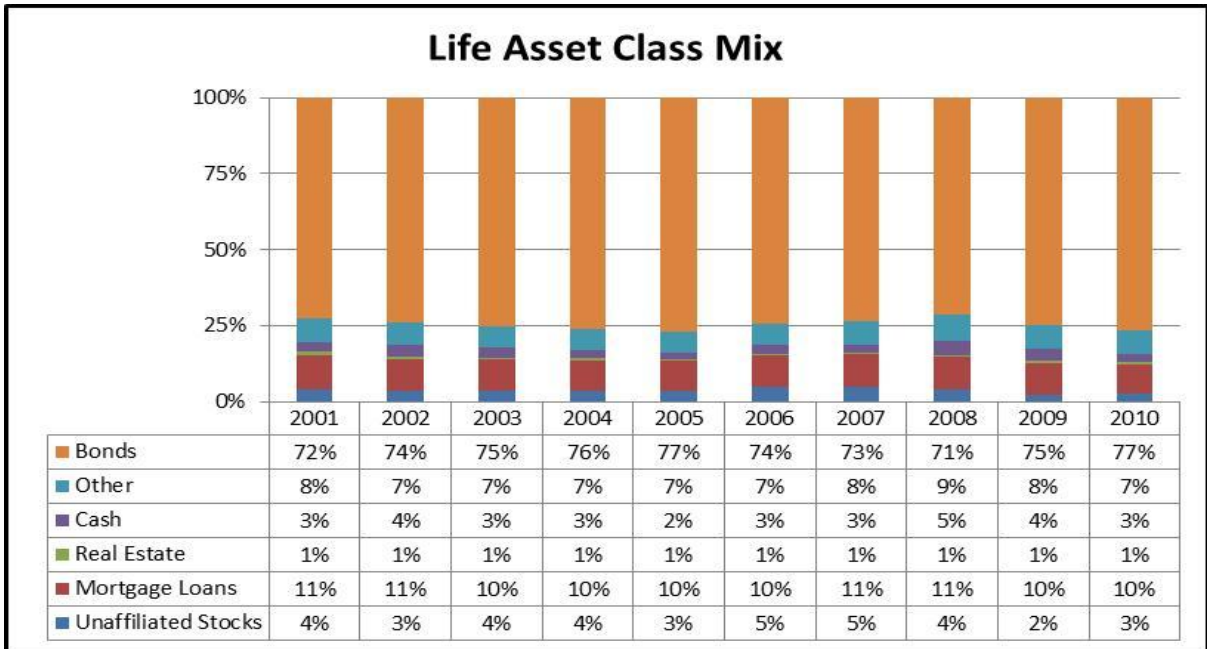
The life insurance industry's capital grew slowly from 2001 (\$302 billion) to 2010 (\$426 billion) at a 3.9% annualized rate. The authorized control level grew at 2.1% annually during the same period. The RBC ratio for the life insurance industry during this period grew, starting at 384% and ending at 450%.



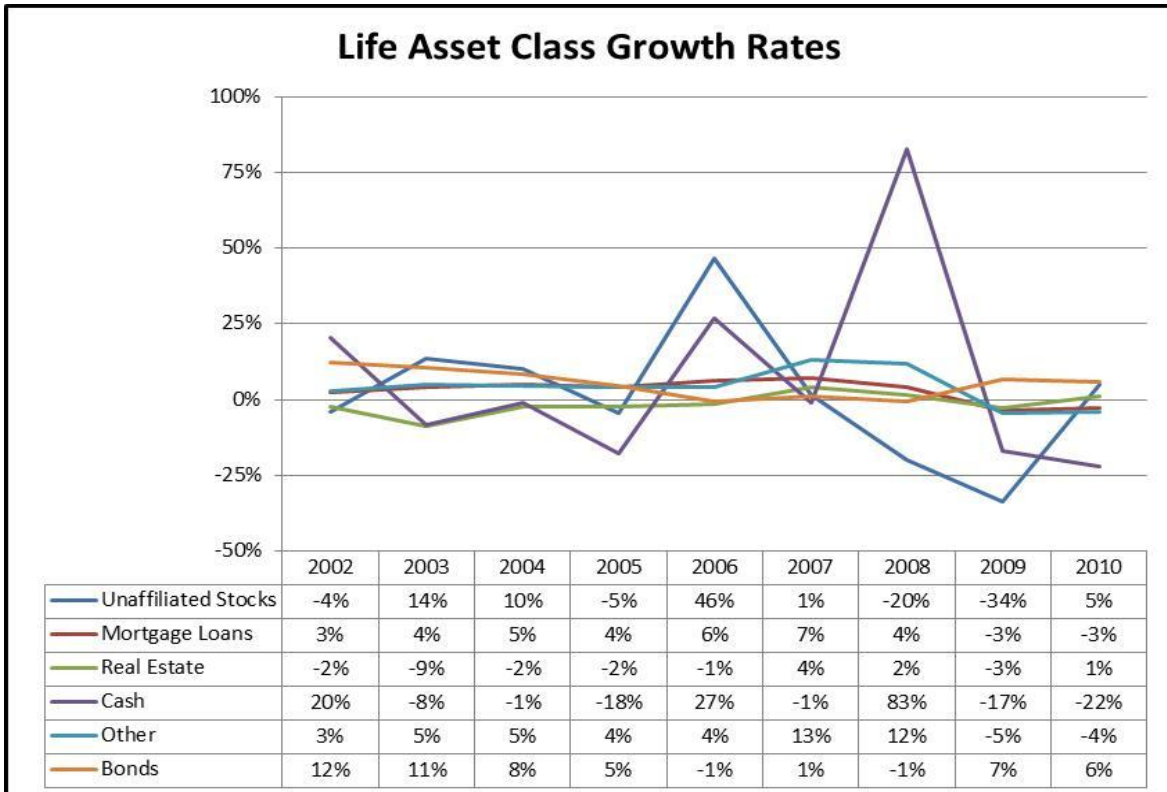
There is a strong interaction between assets and liabilities in life insurance products, but because this risk is transparent it often is passed along to policyholders and not retained as net income. Life insurance assets have grown by 46% since 2001. Asset/liability management is a key component of many products offered by life insurers. The expense ratio has gradually dropped since it was first recorded in the data base in 2002, from 24.5% of premiums to 20.4%. The Operating ratio has dropped since 2001, from 107.2% to 97.7% of premiums. These reductions likely reflect the evolution of products sold to commodity type offerings such as term life and variable annuities. Life insurers have been challenged to maintain yield in a declining interest rate environment, and guarantees are becoming more critical to results.



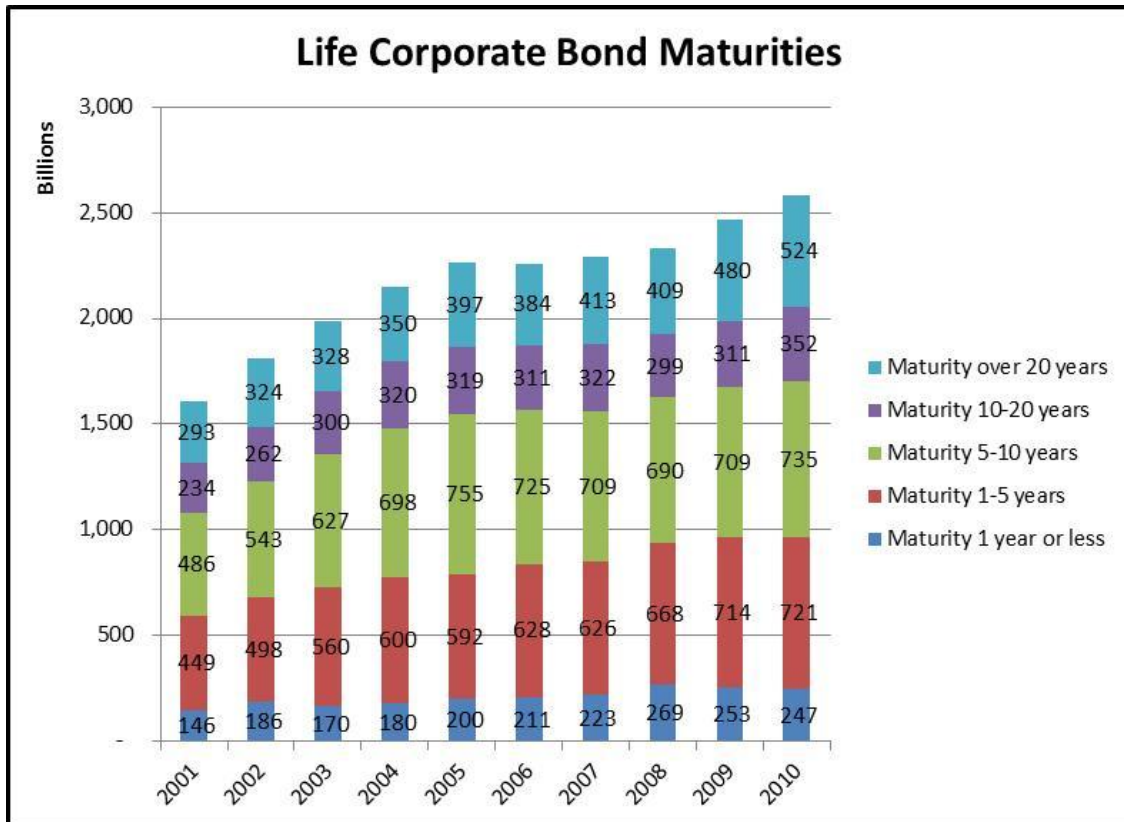


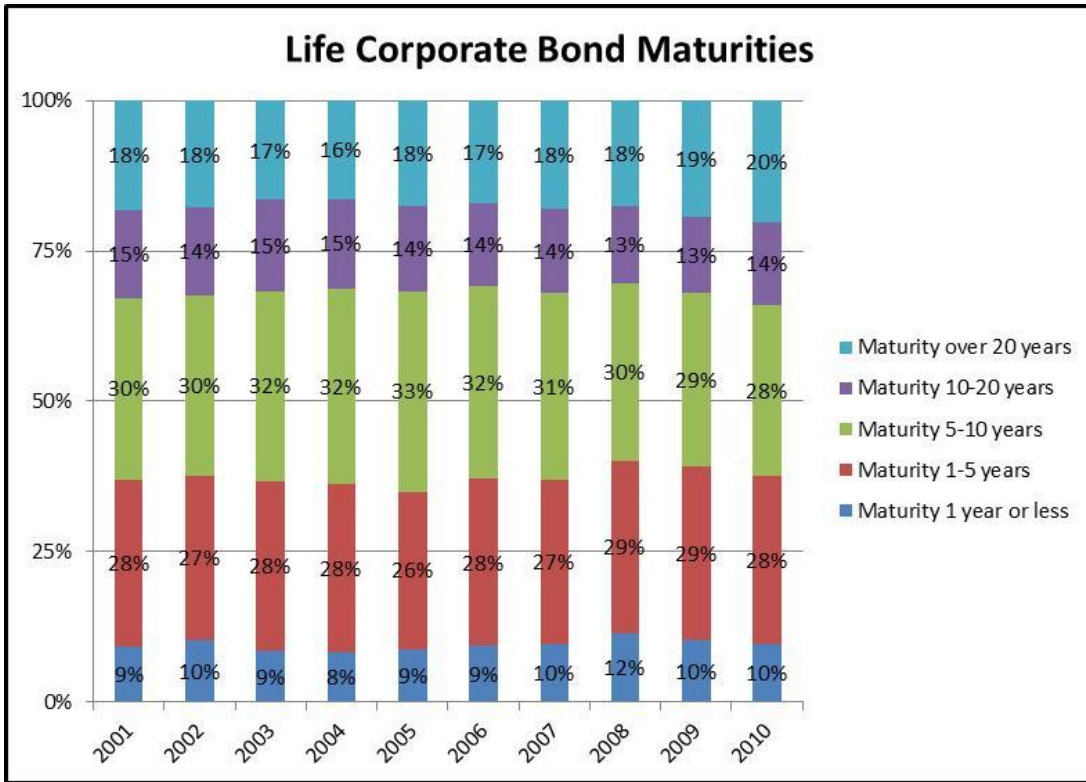


Life insurers have had steady asset allocation over the past decade, with variations mainly from the two equity bubbles and their aftermath. Bonds continue to dominate the portfolios, with 77% of general account assets in 2010 matching the highest during the period.



Industry levels of cash spike occasionally for perceived liquidity needs, but cycle back quickly. In spite of the liquidity issues in the market, life insurers in aggregate were able to nearly double their cash position by the end of 2008. Unaffiliated stock portfolios also seem to cyclically vary and the drivers behind these changes might be an interesting research project in the future.





While maturities have varied through the decade, an analyst needs to compare the liability mix to make any definitive conclusions. A recent trend, looking at 2008-2010, is that the shortest maturities are reducing and longer maturities are increasing. Maturities over 20 years now account for 20% of bonds held, up from a low of 16% in 2004.

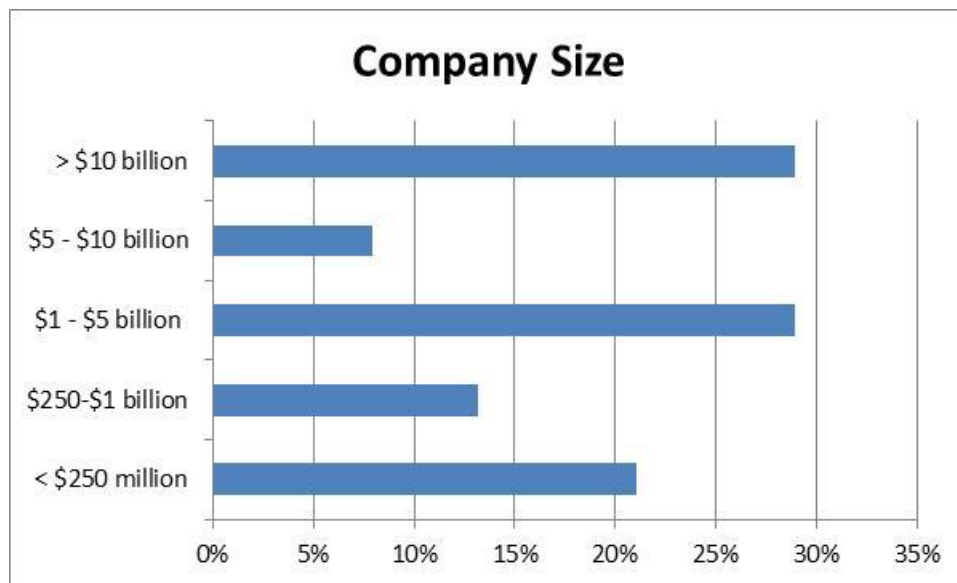
Size	AM Best Size Categories			
	Number of companies	RBC Ratio	Capital	auth control RBC
II	2	37%	4,219	5,779
III	13	414%	52,367	6,319
IV	32	447%	244,713	27,403
V	77	402%	1,168,171	145,127
VI	63	417%	1,989,272	238,316
VII	49	429%	2,735,038	319,137
VIII	66	409%	8,156,267	997,830
IX	61	384%	11,921,738	1,553,558
X	26	485%	9,509,576	980,248
XI	32	449%	12,061,831	1,343,430
XII	10	366%	5,307,674	725,236
XIII	15	399%	10,331,821	1,293,776
XIV	21	437%	21,966,364	2,510,901
XV	138	422%	297,412,362	35,220,265
Other	542	414%	403,973,393	48,763,756
	1,147	418%	786,834,806	94,131,081

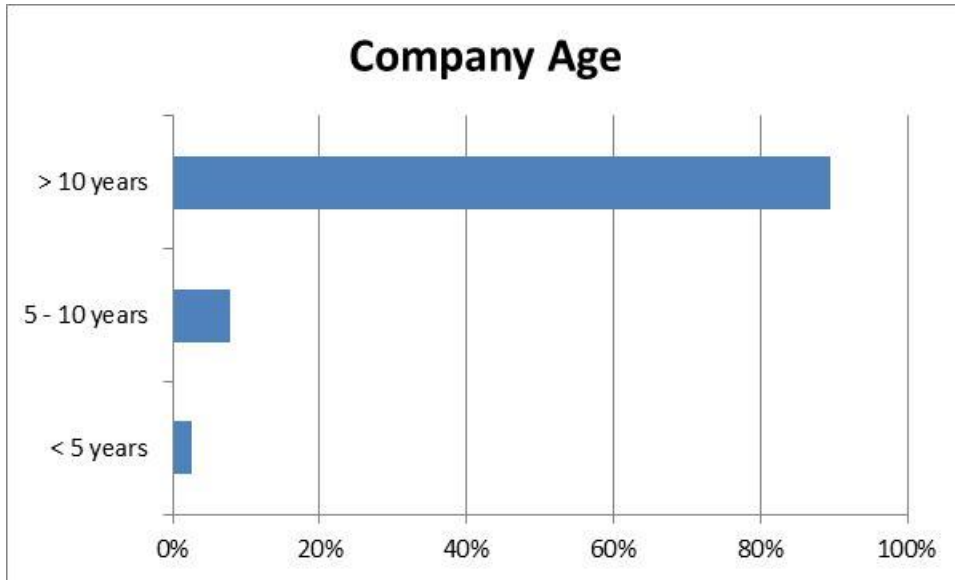
For life companies the same concerns arise about the usefulness of data where 48% of the companies are listed in the Other category (2009 data). There is more consistency of RBC ratio across different firm sizes for life insurers. Most track the overall 418% ratio.

### ***Survey and Interviews – General Account Assets***

The research team developed an online survey, with a great deal of input from the Project Oversight Group, designed to better understand decisions made and actions taken before, during and after the financial crisis. It was designed to take only a few minutes to complete and focused on qualitative information rather than quantitative data pulled from a statutory statement. Survey respondents were given the opportunity throughout to make additional comments. Preliminary results were presented at several seminars and follow up discussions were held with survey respondents, seminar attendees and POG members.

A total of 39 surveys were completed from a selected group of investment professionals designed to cover a range of insurers of various size and type. Most represented companies over 10 years old. Results were meant to reflect current practices rather than be statistically significant.





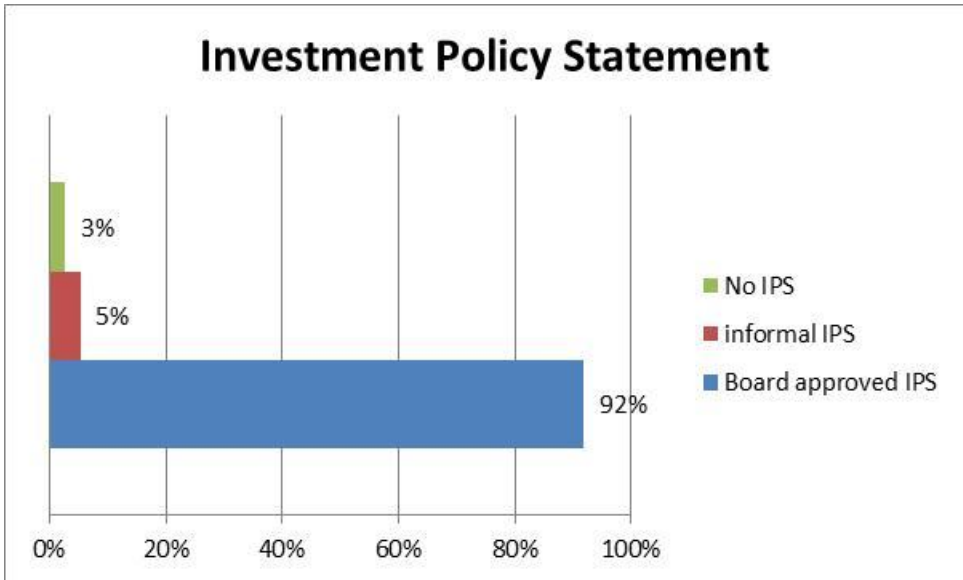
The survey offered several definitions to ensure clarity for the respondents. First was the timeline of the crisis. It was defined as follows:

- Pre crisis: prior to second quarter 2007
- During crisis: third quarter 2007 until first quarter 2009
- Post crisis: second quarter 2009 and later

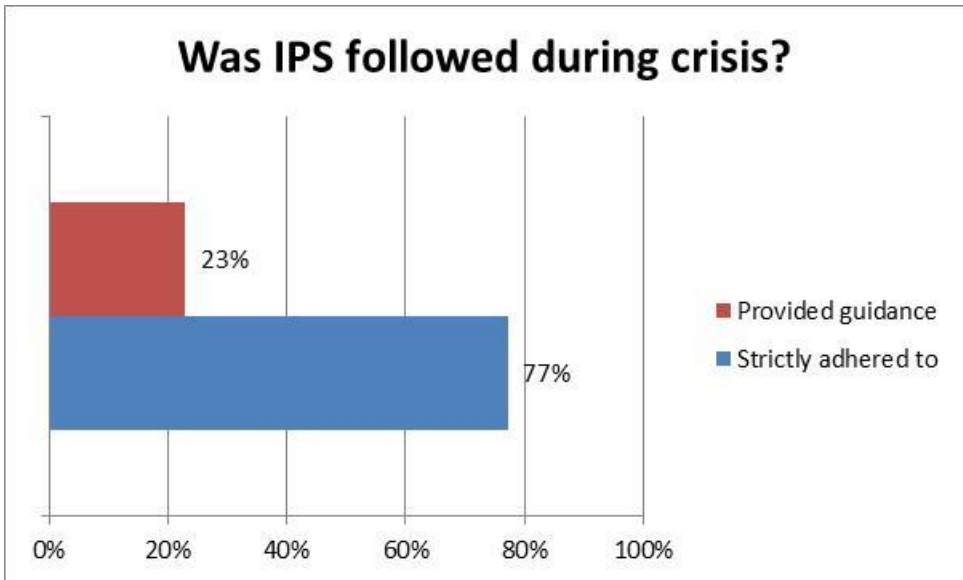
The second definition was for the term Investment Policy Statement (IPS). Using the 3<sup>rd</sup> edition of *Managing Investment Portfolio* (used by the SOA and CFA Institute as a syllabus text), an IPS is defined as a written document that sets out a client's return objectives and risk tolerance over a relevant time horizon, along with applicable constraints such as liquidity needs, tax considerations, regulatory requirements, and unique circumstances.

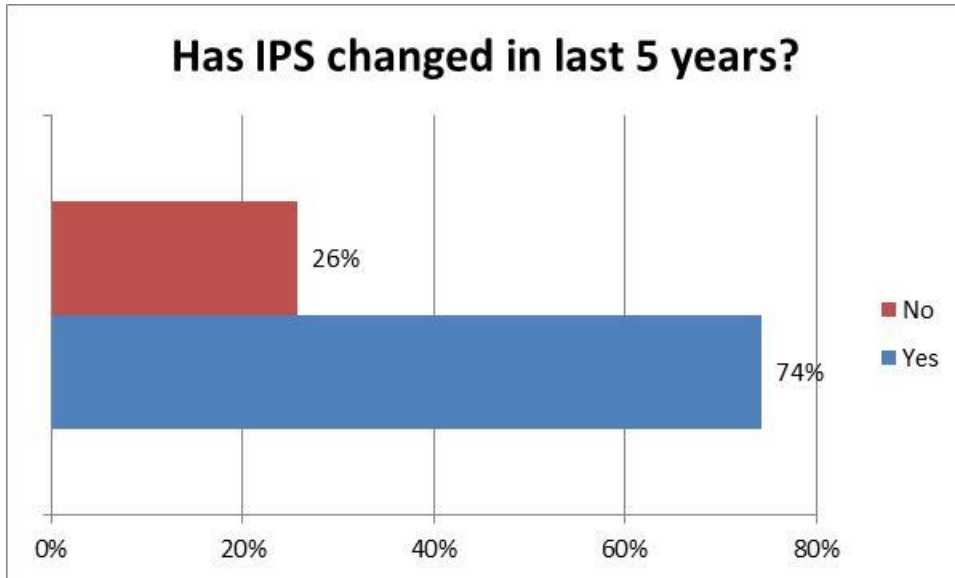
### ***Investment Policy Statement***

Nearly all companies reported having a board approved IPS (92%), with a small minority having an informal one (5%) or delegating the authority to an investment oversight committee (3%). All of the respondents reported having some type of IPS.

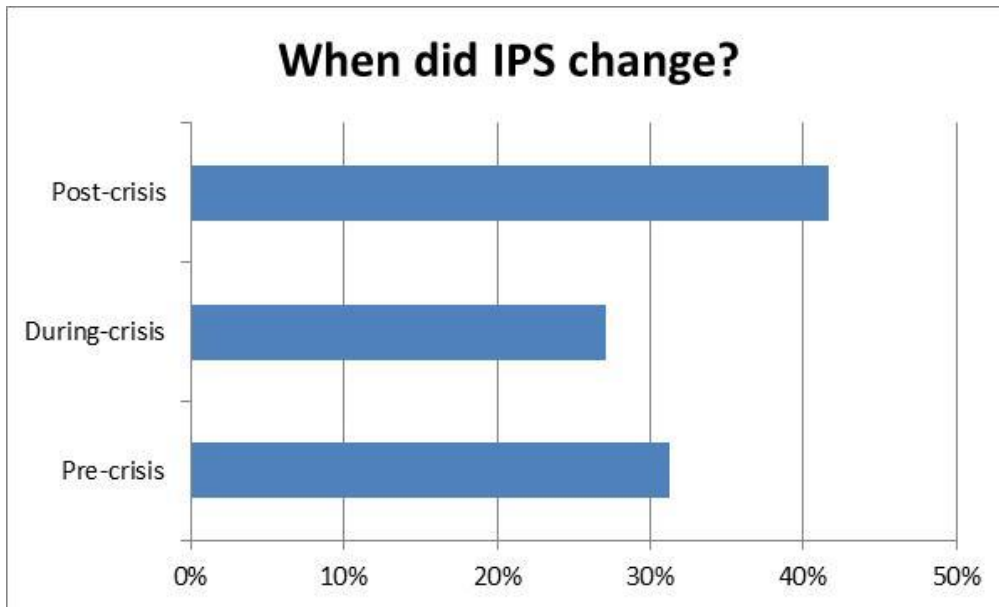


A significant majority (77%) reported that the IPS was strictly adhered to during the crisis, with the rest stating that it provided guidance (23%). Several reported that they overrode the IPS to allow liquidity to build up, to let things calm down before rebalancing, and to react to specific opportunities that were seen in the market.





A significant majority of the respondents changed their IPS in the last 5 years (74%). This was spread across the 3 periods of interest, with about 60% of that group changing it before the crisis, half during the crisis and 80% after the crisis. Based on discussions with respondents during the follow up interviews, it became clear that many IPS statements do not include asset allocations in their IPS but include it as an appendix and review it regularly. This is not exclusively true, and changes to asset allocation and asset classes were the primary reasons to update the IPS. Insurers were adjusting asset allocations to match liabilities on a regular basis. Some had updated it because a new Chief Investment Officer had been hired, additional detail was needed, or because benchmarks changed names (e.g., when Lehman went bankrupt). Other reasons included changes in outsourced portfolio managers, changes in policy on fallen angels (when a credit rating drops below investment grade), liquidity enhancements and wording to reflect risk considerations. Several respondents stated that the IPS is reviewed annually and updated for current levels of capital and liability driven risk structure.



For those who did not update the IPS during this period, comments generally reflected changes to the ranges used in their asset allocation. Several specifically pointed out that, just because they had not made changes did not mean that they did not review their documents regularly for changes in risk tolerance and available asset classes. Some felt their IPS stood up well during the crisis because it was based on a long-term view of investing.

If an IPS is so broad that it does not need to be updated after the worst financial period in nearly 100 years, is it too broad? Liquidity tightened more than most predicted, and some tools that had been counted on to provide liquidity dried up completely, so it is surprising that liquidity considerations were not revisited to expand options available in the future. Investment managers should ponder that as they consider future adjustments to the IPS.

Very few accounting and regulatory changes impacted the IPS. About 10% of respondents reported changes due to mark-to-market (e.g., limit risky asset holdings), FAS 159 (fair value, impact included reducing rho and vega metrics), and SSAP 43R (RMBS valuation, impact at one company was to limit non-agency RMBS). Only one respondent reported that available for sale accounting changes had impacted their IPS, and they reported it was to allow for consistent accounting treatment. A higher percentage, though still a minority, reported that OTTI (other than temporary impairments) had resulted in changes to the IPS. This included creating an impairment policy for consistent write-downs.

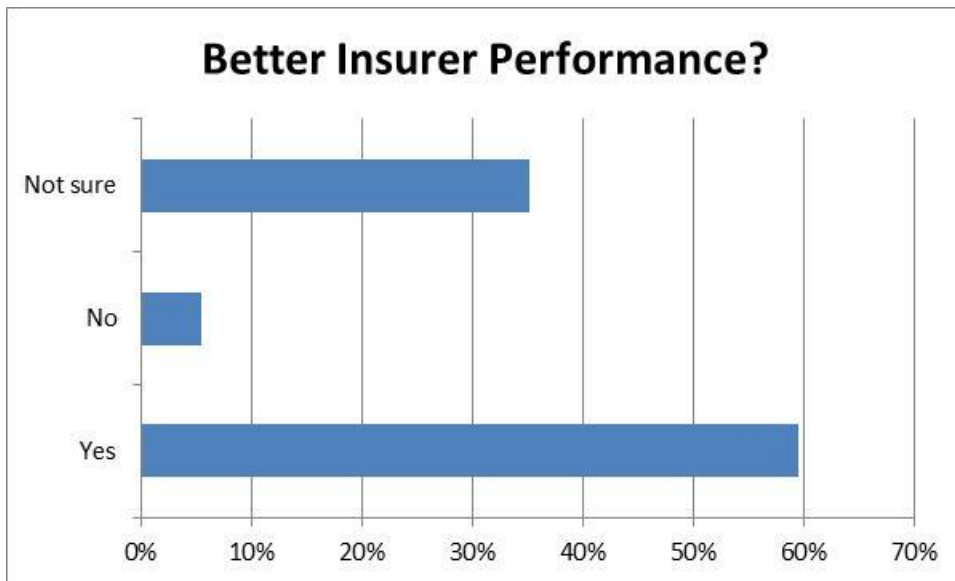
Other self-reported changes to the IPS included changes to a company's desired risk profile, and improved differentiation of responsibilities of management, portfolio managers and consultants. Although only one insurer mentioned this, it seems likely to be the position of others as well. Defining responsibilities is especially important when outsourcing some or all of the investment function. The asset manager can't, by definition, provide independent oversight. One company reported that accounting issues



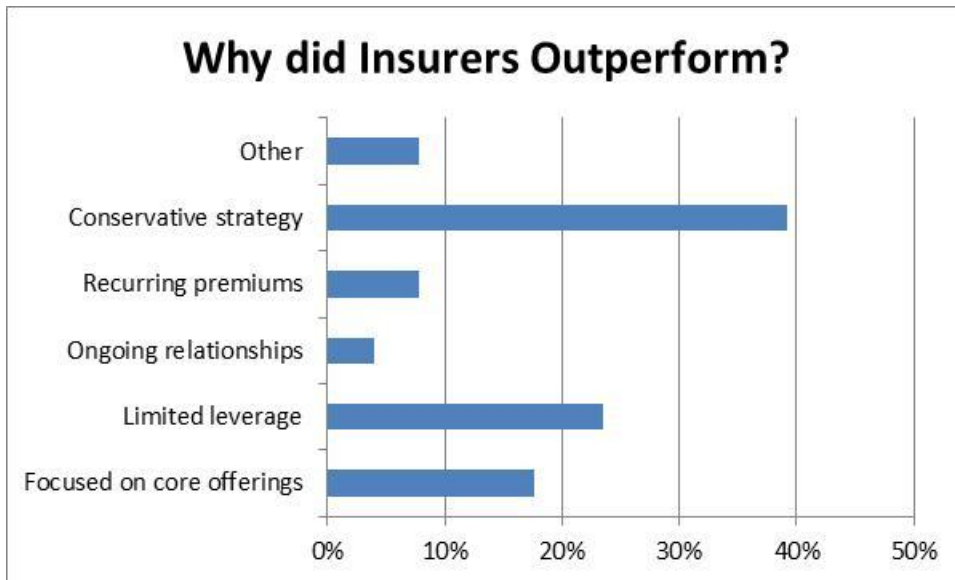
are not part of their IPS, which is an interesting statement to make as most IPS statements reflect the firm's current balance sheet.

### ***Insurance Industry Success***

Nearly 60% of survey respondents felt that insurers performed better than other financial institutions during the recent financial crisis, with nearly all of the rest saying they were not sure and only 2 stating that insurers did not outperform. One comment from this last group noted that some insurers had received comparable capital relief to the banks that received TARP money. This seems to refer to the insurers that qualified for federal assistance by owning a bank subsidiary, inferring that federal assistance to a few insurers made the industry comparable to banks since they used the same rescue tools.



When asked why insurers had done better, responses favored conservative strategy and a focus on core offerings over limited leverage and recurring premiums. One person reported that the predictability of liabilities was helpful in this regard.

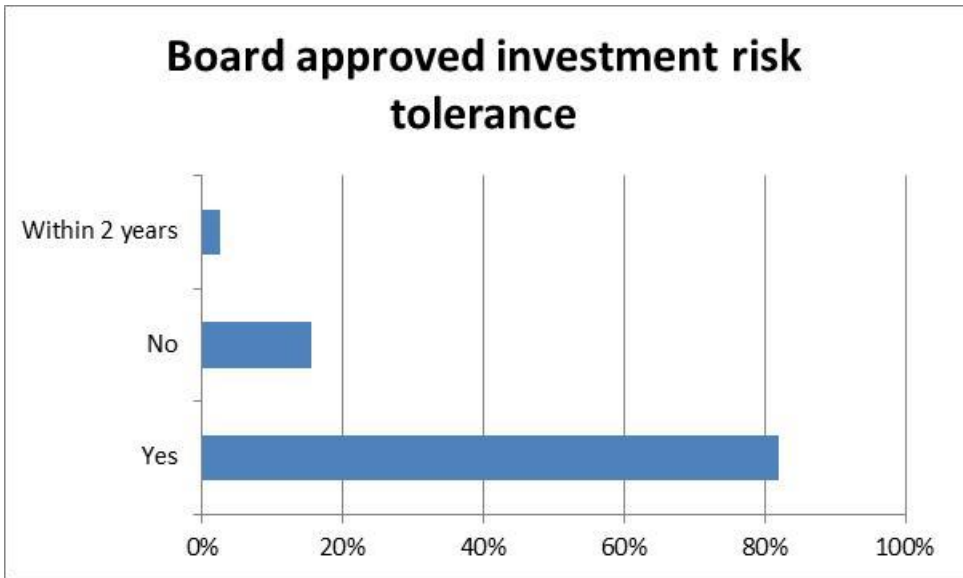


During the follow-up interviews this series of questions resulted in quite a bit of discussion. One consistent comment was that, since insurers often have an internal credit risk staff that they were better able to peer review deals presented to them. This made insurers less reliant on rating agencies. This would be especially true for firms active in the private placement asset class, where companies issue bonds by working directly with the credit provider and generally bypass the rating agencies. The use of recurring premiums as an asset class rather than as a liability offset was also viewed as a stabilizer by some, and this comes out in some of the survey responses in other ways as well. Examples would include stable liabilities or the ability to provide internal liquidity. Contractually required premiums provide flexibility when liquidity is tight. Rather than investing the operating cash flows from premiums, coupons and maturities, insurers can use them to pay out claims and surrenders rather than selling other assets. This has additional ALM repercussions that will need to be considered.

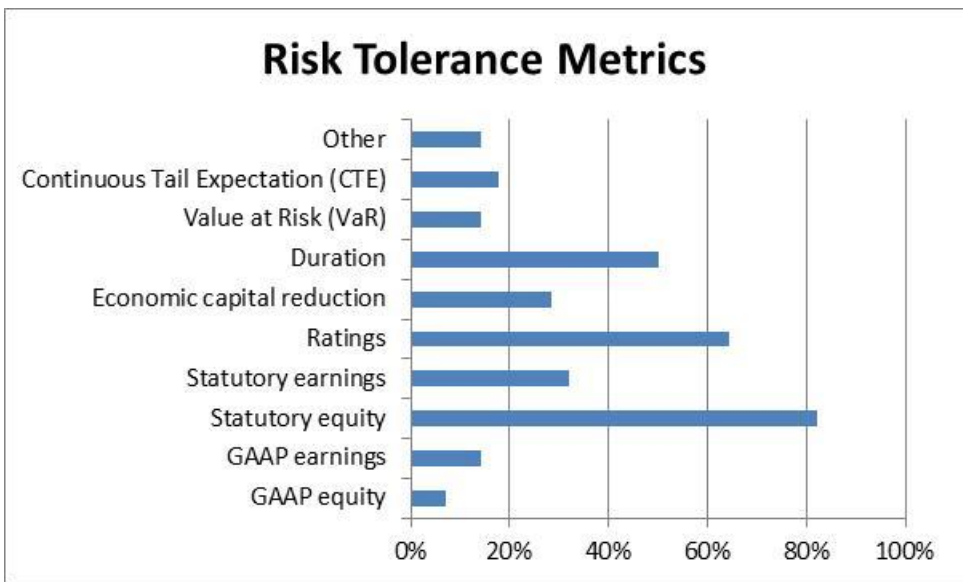
### ***Risk Tolerance***

The definition of risk tolerance was also taken directly from the 3<sup>rd</sup> edition of *Managing Investment Portfolios*. Risk tolerance is the capacity to accept risk; the level of risk an investor (or organization) is willing and able to bear.

Over 80% reported a board approved investment risk tolerance, and one insurer is in the process of adding one. For the rest it appears to be an evolutionary step, with most having an informal risk tolerance that was not yet board approved. One company is focusing on converting board approved qualitative measures to quantitative metrics.

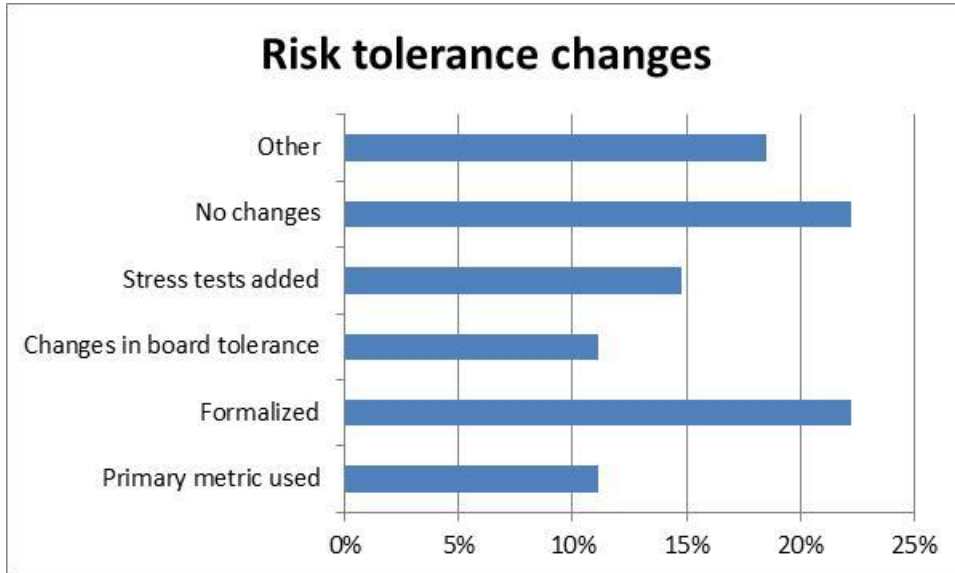


Risk tolerance metrics focused on statutory equity, rating and duration constraints. Some also look at statutory earnings and economic capital. A few insurers incorporate metrics often used in regulatory capital such as CTE (continuous tail expectation) and VaR (value at risk), or GAAP metrics. One write-in response stated that they form a risk tolerance constraint based on investment leverage.



Of the 39 responses to this part of the survey, 14 reported changes to their risk tolerance with 57% of those changes coming post-crisis, 43% during-crisis and 29% during pre-crisis periods. Three surveys reported changing their risk tolerance during more than one period. Nearly half of these changes were simply to formalize the risk tolerance policy by gaining board approval. Others added stress tests and changed the primary metrics used. Two responses reported that they recognized changes in the board's risk tolerance. This would be an interesting area for future research. Do people have a consistent tolerance for

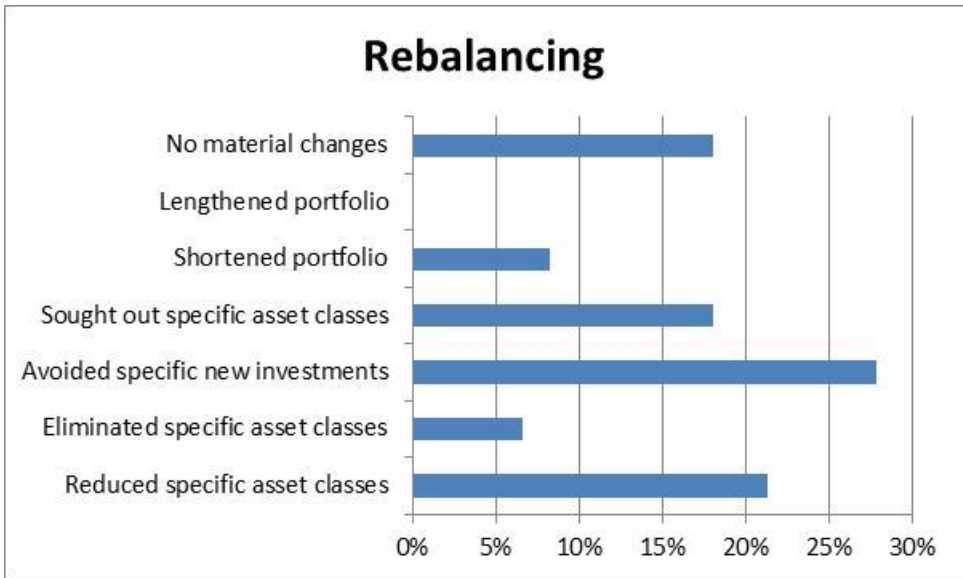
risk, or does it change due to recent external events? This type of anchoring might gain additional buy-in by board members as it will be harder for them to blame management for taking excessive risk if there is a board approved risk appetite that is regularly discussed.



One insurer felt that the market for certain bond classes (low investment grade) had changed and was no longer consistent with their stated risk tolerance and asset allocation strategy. They increased credit quality requirements for new purchases of the corporate bond asset class.

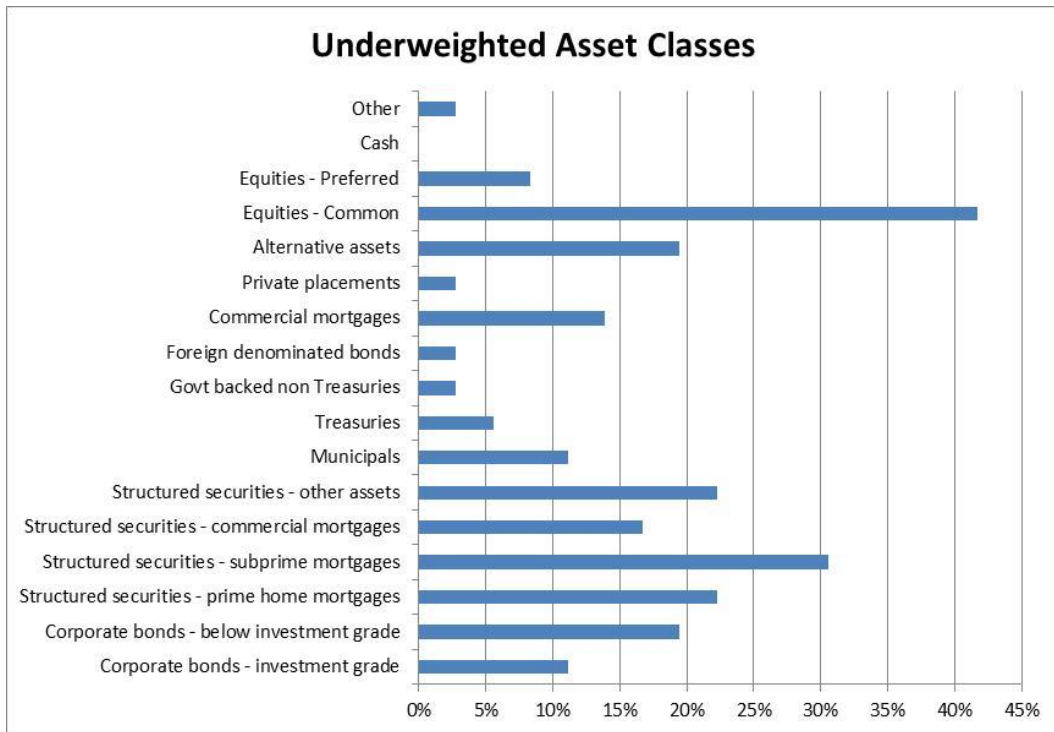
### ***Portfolio Changes***

The survey attempted to ascertain changes to asset allocations through rebalancing activity between July 2007 and June 2009. Not surprisingly, the most popular responses involved avoiding or reducing exposure to specific asset classes. Interestingly, nearly 20% reported that they opportunistically sought out specific asset classes. A few self-reported that they adjusted risk levels within a specific asset class. This was likely a common occurrence within the corporate bond asset class as adjustments were made by rating.



Almost all (35) of the insurers reported overweighting in at least one asset class relative to their previous allocations. The primary asset classes overweighted were investment grade corporate bonds and cash. Some companies also added municipals, Treasuries, and government backed non-Treasuries. The chart shows percentages related to those who overweighted at least one asset class.

Not surprisingly, the primary asset classes overweighted contributed to increased liquidity. This included a flight to quality, with cash, government guaranteed issues and investment grade corporate bonds all showing increased exposure. 17% did not overweight any asset class.



While it was no surprise that no one underweighted Cash and 17% did not underweight any asset class, every other asset class was underweighted by at least one company. The most common, with over 40% reducing exposure, was common stock. This could be viewed from several perspectives. Insurers were clearly increasing liquidity during the crisis and common stock generally backs surplus, so it could be a move to cash from a readily liquidated position like common stocks without valuation considerations. Another possibility could be a concern about risk-based capital and ratings considerations, and reducing the common stock exposure was a way to clean up the balance sheet. One could argue that an insurer's reduced investment in common stocks would be a contrarian indicator as these sales were made when the market was low relative to other periods.

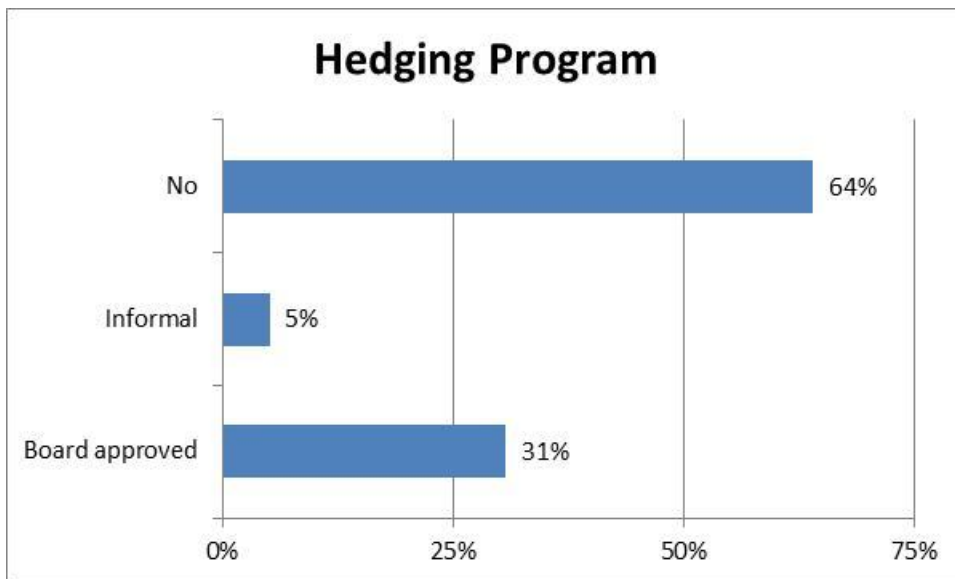
Structured securities on all types of underlying securities were impacted during the crisis, making it hard to buy new issues as the market dried up. Many in-force assets in these classes were impaired, and no one knew what the proper assumptions or ratings should be, so few were willing to actively grow exposure. Because the survey did not first ask respondents if they participated in certain asset classes, it is impossible to tell if a small number of underweightings for some classes mean most were not in that asset class in the first place, but that seems a logical conclusion. For prime home mortgages, fewer insurers underweighted agency issues than non-agency issues. They seem to have recognized the reduced risk of the GSE backed asset class, while subprime structured securities were underweighted for both senior and subordinated tranches. For those structured securities based on commercial mortgages or non-mortgage assets, there was a slight difference between those who underweighted senior and subordinated tranches. Insurers reported that they were slow to rebalance to previous asset allocations, and some experienced a fear that markets could get even worse with some anticipating a total meltdown. Some

might say that a blind rebalancing would have been better, and this would be true for common stock allocations. However, the past did not predict the future during this period regarding structured securities, especially those backed by subprime mortgages. An investment officer's gut feel to back off these asset classes proved correct.

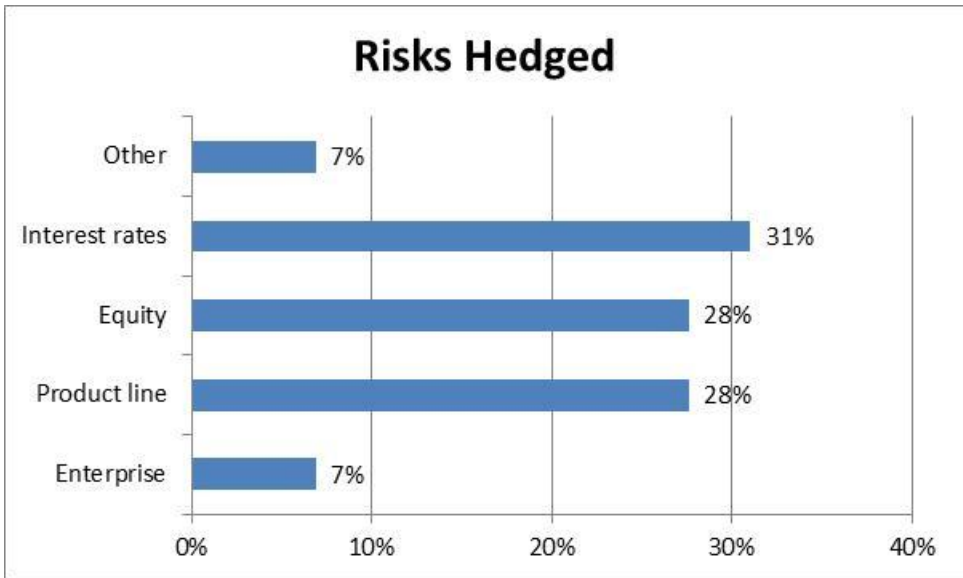
In the fall of 2008 some short-term funds (money market funds) broke the buck, creating discontinuities in that market. For some insurers this caused changes to short-term funding vehicles. Drivers included a desire to have more cash on hand, move to government backed and liquid assets, and to generate greater diversity across funding vehicles. About half of those surveyed had a securities lending relationship prior to the crisis, and about 40% of respondents saw changes in their use of that market. Many exited or suspended the program, capped exposure (presumably to counterparties) or adjusted program terms. At least one insurer, AIG, is known to have accepted asset/liability mismatch risk when it accepted collateral for securities lending and invested it in residential mortgage backed securities rather than conservative, short-term, securities as was expected by both the counterparty and regulator.

### ***Hedging Program***

Due primarily to the types and sizes of companies surveyed, many do not have a hedging program. Of those that do, however, a large majority have had their board approve the plan (86%).

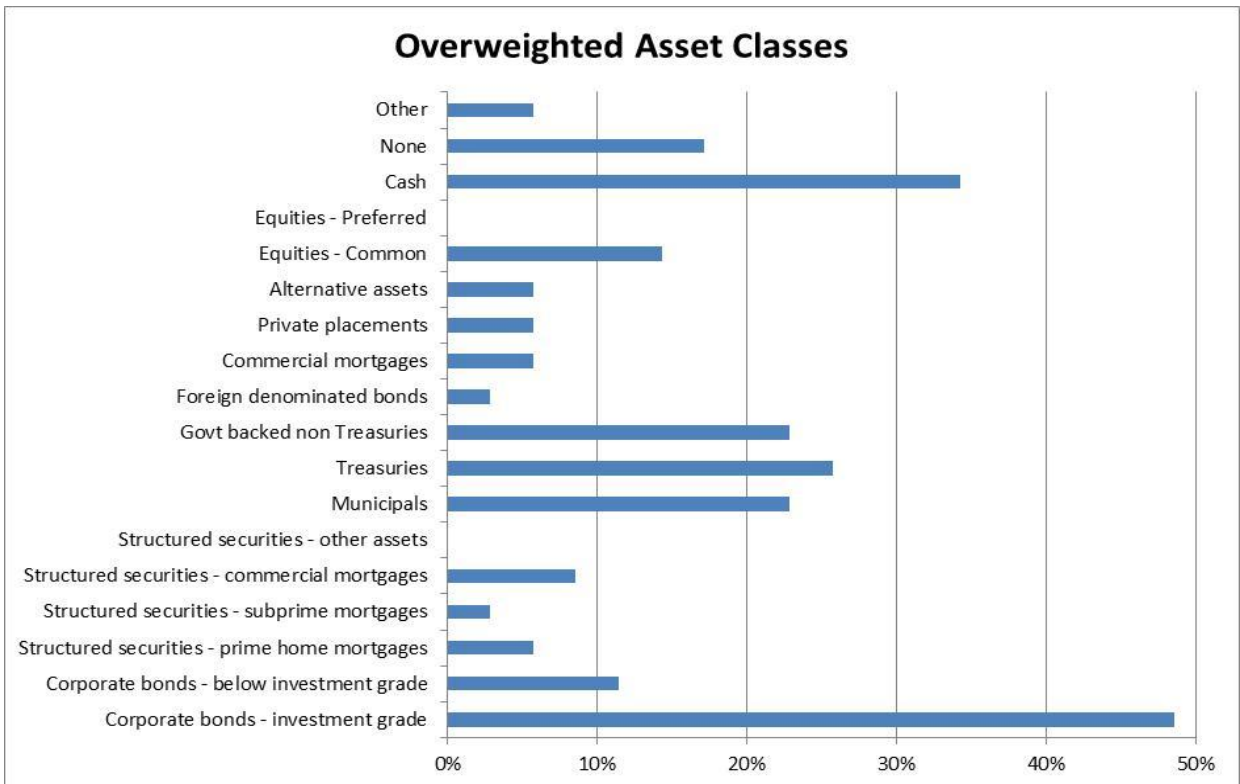


Few of the companies that were surveyed are hedging their enterprise risks, and the tools available to do so have limited development to date. Silo risks related to specific product lines, or risks related to interest rates or equities are more commonly hedged. This varies by business line, so it is not surprising that a majority of insurers are not hedging since, for example, casualty insurers have limited interest rate risk in their liabilities to match against.



Other risks being hedged included currency risk and inflation risk. One company hedges gasoline for fleet vehicles used by claims adjusters.

For insurers with a hedging program, few changed it prior to or during the crisis. It was more common to update their program after the crisis. Among the changes introduced were macro hedges to manage equities, interest rates and gasoline prices.



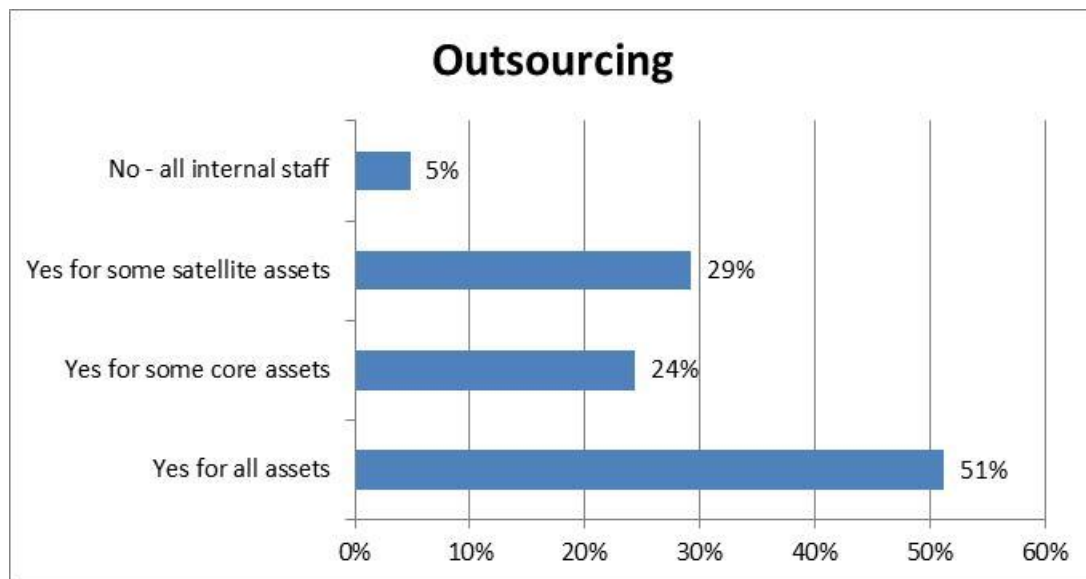


Survey respondents with specific overweight examples in structured securities should not be treated as statistically significant results but rather as illustrations where insurers felt they had found mispriced assets.

Among structured securities based on prime home mortgages, one firm added to their agency exposure while another added senior tranches and non-agency issues from prime and senior tranches from subprime mortgages. Several also added to senior tranches of structured securities based on commercial mortgages. None added to their structured security portfolio based on non-mortgage assets.

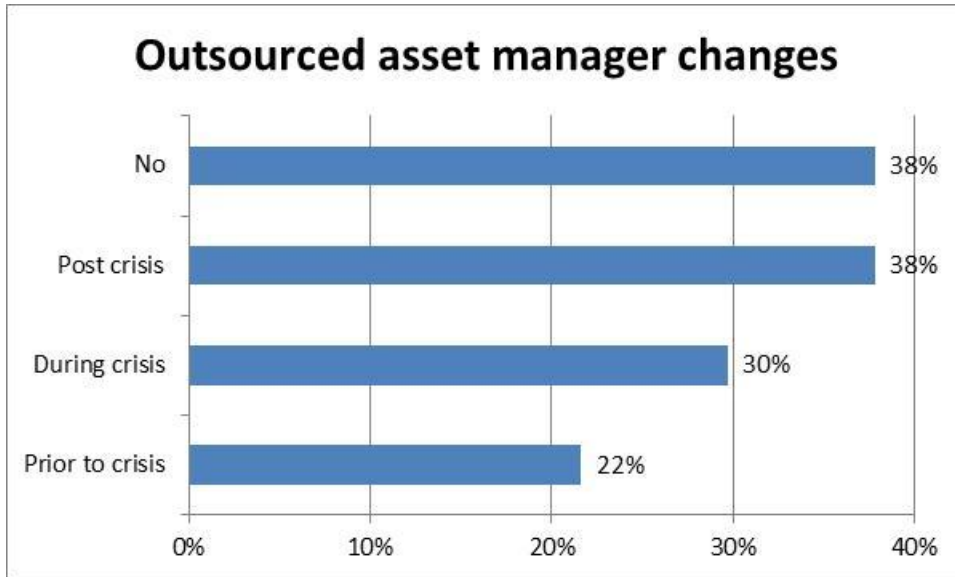
Reasons for overweighting specific asset classes varied from adding liquidity, perceiving value, and focusing on core strengths like credit analysis.

### ***Outsourcing Trends - Survey***

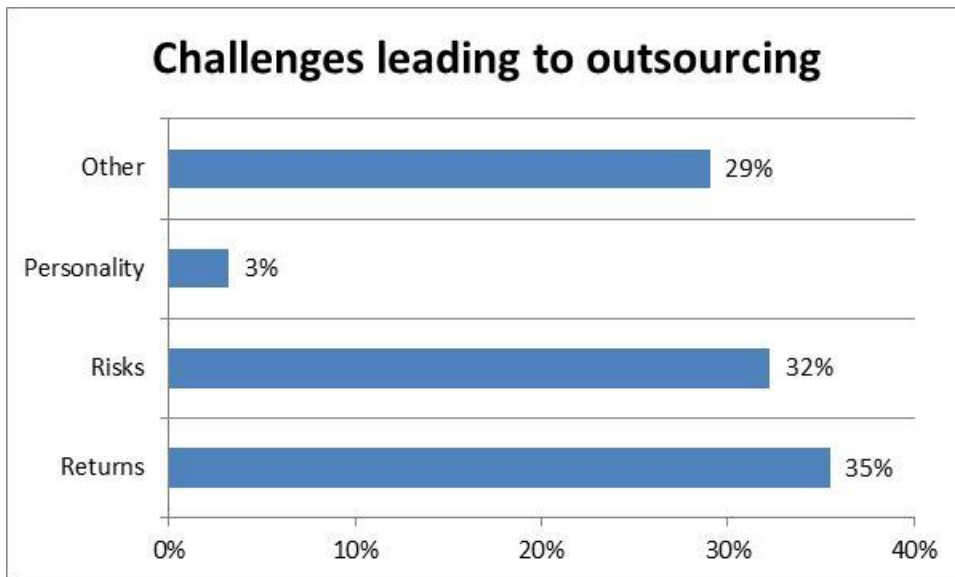


Due to anecdotal evidence for larger companies and experiences of the POG to draw on, the survey was distributed to insurers of various sizes. Among this group 51% outsourced all of their assets, but this should be viewed as representative only for this sample group. Smaller insurers are more likely to outsource their investment department, just as they are more likely to outsource other professional activities such as legal and actuarial services. More representative of current practice was the percentage that reported outsourcing part of their assets, either core (base, primarily bonds) or satellite assets. Satellite assets are those where the insurer hopes to gain an advantage through higher returns or lower risks for a small portion of the assets. Absent an internal skill set for these types of asset classes, insurers who want this exposure will look outside for that expertise. It is becoming unusual for an insurer of any size to manage their entire portfolio internally.

Among those insurers who made changes to their outsourced investments, over half in this survey, more changed managers after the crisis than did so during or especially prior to the crisis. You can think of the number who changed prior to the crisis as a base case, with changes later materially higher. Based on discussions with industry leaders in the outsourcing market, it appears that some insurers have elected to outsource a higher percentage of assets than they had prior to the crisis.



Challenges due to returns (35%) and risk (32%) were major contributors to asset manager rotations, and respondents reported that personality challenges (3%) were not prevalent.



A high percentage (29%) stated that factors other than Returns, Risks, and Personality were the driving factors to pursue a new outsourcing mandate. Reasons included such mundane things as manager's closing of funds, ownership change of fund, in-house

expertise development and portfolio manager changes. There were also compliance concerns, concerns about information provided, fee reduction, and a desire to diversify.

### ***Outsourcing Trends – External Survey***

As part of the literature search the researcher was introduced to David Holmes and the Insurance Asset Outsourcing Exchange. Through Eager, Davis & Holmes LLC he publishes the Insurance Asset Outsourcing Analysis: New Mandates Outsourced to Investment Managers From January 2007 Through December 2010 using the Insurance Asset Tracker Database. This research, published in March 2011 and regularly updated, provides a snapshot to the changing landscape of insurance investment practices. It focuses on new mandates for outsourced investment management and estimates that 50-60% of total global insurance general account investment mandates are included in the database. Questions on the survey were consistent with the general information provided here.

The survey began in 2007 and the post crisis (2009 and 2010) results show a strong tendency toward increased outsourcing. Over 60% of the mandates by count (892 total), and 72% by assets placed (\$243.348 billion), during this period occurred in the past 2 years. While there was an especially strong surge of mandates in 2009, they remained strong in 2010 as well. Could this be a precursor of insurer consolidation, as firms focus on their core strengths after the financial crisis and move more dollars to outside asset managers? Only time will tell.

Companies in the survey are segmented by size, with all sizes showing increases in dollars outsourced over time. The survey tracks mandates by type of company, split between Property/Casualty and Life/Health. While always material, the total dollars placed for Life/Health companies (\$34.5 billion) exceeded those placed for P/C companies (\$31.5 billion).

There is broad variation between years, especially for the P/C companies, about number and average size of mandates. While 2009 appears to be an anomaly, with some large mandates, normal average size seems to be just below \$200 million (\$171 million in 2010). Average mandate size for Life/Health companies has been more stable, with ranges from \$339 million to \$376 million and the 2010 average toward the high end at \$374 million. The number and overall size of mandates for L/H companies was fairly stable between 2009 and 2010, with slightly higher values for 2010 (92 mandates).

The survey shows that mandates to U.S. broad fixed income roles (e.g., core and core-plus) were higher in 2010 (55% by count and 60% by asset value) than in the previous 3 years (45% and 56%, respectively). This could be due to firms outsourcing their entire investment department, looking to provide alternatives for succession planning or just trying to get access to thought leadership that comes with external expertise. Smaller firms are more likely to utilize this asset class for outsourcing than are large firms. While 28% of the mandates from companies over \$5 billion in size used this class, this was followed closely by Alternative Investments and Specialized Fixed Income Roles (various asset classes including municipal bonds, government bonds, high yield, bank

loans, private debt, MBS, TIPS and convertible bonds). This contrasts with 86% of the mandates from companies below \$200 million. As companies get bigger they are more likely to outsource Alternative Investments and Specialized Fixed Income Roles.

Based on company type, L/H firms are more likely to outsource US broad fixed income roles, while P/C firms are more likely to utilize external asset managers for Global roles, Ex-US fixed income and US equity roles. Each region of the world has asset classes that are preferred outsourcing options. This includes US equity roles in the US/Canada, Ex-US fixed income in UK/Europe, US broad fixed income roles for Offshore firms, and Alternative assets for Asia Pacific/Japan.

Interestingly, the survey shows that mandates are increasingly being placed through consultants. From 2008 to 2010 the percentage placed has increased from 15% to 28% by count and 10% to 23% by assets placed. While the size of company did not show large variance for use of consultants, smaller companies tended to use consultants for their larger mandates over the last 2 years.

While the dispersion across consultants is broad, with some focusing on specific asset classes or providing specific ancillary services, there is an oligarchic nature to the distribution by outsourced investment manager. Only 4 asset managers combine for 50% of the mandates, and only 3 covers 50% of the assets placed. The top 5 have 76% of the assets. This high concentration is likely to draw additional competition in the future.

An additional benefit gained from using an external consultant during the outsourcing process is the ability to receive independent oversight. When investment functions are managed exclusively internally or with an outsourced manager, independent oversight provides value. Contrarian thinkers can question asset class concentrations and keep managers from becoming too inward looking. Prior to 2008 some firms thought they were diversified because they held a variety of asset classes in their portfolio. Only later did they recognize the true nature of their risk as home building stocks moved down in tandem with investment banks, residential mortgages and home equity loans. Someone thinking as a skeptic might have anticipated such a scenario.

### ***Variable Products***

While this survey focused on insurance company general account assets, the financial crisis also impacted separate account products. As an example to help readers better understand the exposures and evolution of these markets, the report will briefly discuss the variable annuity market during this period.

The variable annuity product was developed during the early 1980's formed as a tax advantaged vehicle with equity exposure, as an alternative to mutual funds and complementing the fixed rate annuities being offered. During the bull markets of the 1980s and 1990s, products became more complex, essentially leveraging the ability of insurance companies to guarantee amounts deposited into these contracts. Early versions had product features focused on guaranteeing values at death. Accounting issues related to reporting of derivative positions led to a focus on the reinsurance market. Initially

these policyholder guarantees were thought to be overpriced, but when the tech bubble burst and volatility increased it showed how truly underpriced they were. The products seemed profitable in “normal” market environments, but when markets became depressed and volatile, the possibility of significant losses was exposed. Stochastic analysis replaced single scenario pricing techniques, with a focus on tail risk. Product features were changed to eliminate some of the features that were especially exposed to volatile, down markets. Writers of the product adjusted as the reinsurance market dried up and derivative reporting capabilities improved, investing in a variety of options, swaps and futures to better match the expanding set of guarantees offered. Guarantees expanded beyond death benefits into various forms of living benefits as well. These strategies, focused on delta hedging and built into the IPS documents, allowed for frequent hedging adjustments and were not seriously stressed until the recent financial crisis. While no variable annuity writer became insolvent, many publicly traded VA writers had their stock prices temporarily decimated. Since then the direction has been toward dynamic hedging and an expansion of derivative tools to deal with higher order impacts. The process will continue to evolve. A flurry of new products are available now and sales are strong, so we will see if current strategies have gotten ahead of the risks they have accepted.

Prior to the crisis (starting in about 2006) insurers began incenting VA policyholders toward asset allocation models that could be more easily hedged, capping equity exposures and lowering the level of allocations allowed to various high-risk and alternative asset fund choices where the supply of hedge options was limited. Policyholders were incented, and forced in certain scenarios, to have a lower risk portfolio. Insurers had developed a better understanding of the risks in this product. While the next risk usually differs from the last one encountered, better analysis using matching techniques has reduced the risk. If interest rates hold at low levels for extended periods of time it will be interesting to see if the forced allocations were truly conservative.

Early in the crisis hedge performance was poor due to basis risk; the ability to hedge many of the funds included in the variable annuity product was limited. Bond funds had not been hedged for credit or spread risk, some asset classes were not hedgeable in the market (e.g., real estate and structured securities), and actively managed funds experienced poor performance relative to their benchmark. Many of these funds which proved difficult to hedge have been removed from company portfolios, and fund allocation methodologies continue to evolve to better insulate insurers from high volatility and the risk of losses in a market downturn.

After some companies lost money with the collapse of Bear Stearns (and more did so after Lehman’s collapse), many VA writers changed their collateral requirements for OTC swap or option trades, moved to more plain vanilla exchange traded instruments, spread OTC trades over more counterparties and wrote explicit IPS instructions for closing out OTC trades in the event of future uncertainty surrounding a counterparty. Counterparty credit risk, the risk associated with replacing complex hedging positions if the counterparty failed, was also considered.

Investment Policy Statements were impacted by accounting changes. FAS 157, Fair Value Measurements, was issued by the Financial Accounting Standards Board (FASB) and covers fiscal years starting after November 2007. According to the American Academy of Actuaries Public Policy Practice Note from February 2009 (found at [www.actuary.org/pdf/life/fas157\\_0209.pdf](http://www.actuary.org/pdf/life/fas157_0209.pdf)), asset and liability contracts are now allowed to be valued using fair value techniques. Variable annuities were among the drivers of these regulations, which impacted product design and hedging strategies. After FAS 157 was enacted, firms reduced rho and vega hedging by changing the interest rate and volatility sensitivities in their IPS. Rho measures the risk of interest rate changes, while vega measures the implied volatility of an option.

FAS 157 allowed companies to include their own-company credit spreads in the fair value of their VA liabilities. This reduced the liability value and also reduced the rho exposures (gamma effect). It also increased the company's exposure to changes in its own credit spreads, although that had limited impact on investment policies.

Insurers who managed their own funds found that GAAP accounting had increased their income statement exposure to a downturn. Deferred acquisition costs are amortized over the lifetime profit stream, so when fund balances are reduced more DAC is amortized in the current year as the lifetime projection trues up. This could lead to a series of DAC restatements if returns are lower than assumed in the future.

Variable annuity writers with transparent industry standard hedge programs fared better during the crisis than those with excessive amounts of unhedged exposures.

Risk tolerance is generally defined in an insurer's IPS using delta, vega and rho metrics. Companies became more aware during the crisis of the risk in relying primarily on GAAP rather than economic earnings. Many added economic risk tolerance limits. These changes reflected a move into fixed income assets with limited credit exposure and equity assets that tracked closely to broad market indices, reducing basis risk exposures and improving hedge performance.

This market continues to develop and react to new circumstances. Hedges are better matched with assets today than 10 years ago. Innovations are working to lower costs to consumers by using ETFs and product designs that pass more of the risk on to policyholders. Investment managers, product managers and risk managers alike need to be vigilant and seek out the emerging practices and product features that might create unhedged risk in the future.

# Appendix I

## ***Literature Search***

It would be hard to find a company or industry that was not impacted by the financial contraction and worldwide recession of late 2008, but much of the material written so far has focused on banks. While banks and insurers each own massive amounts of assets, insurers are less likely to focus on their proprietary trading accounts. The literature on insurer reactions will increase over the next few years, and this research report will add to that, but there are a few pieces currently available that the researcher found to be worth reading. This is an expanded approach to a standard literature search, and includes web sites that follow the insurance industry likely to continue a dialogue on insurer investing in the future. Several “for pay” sites were contacted but declined to provide material for review so are not included here. The links were tested as the paper was being written but might not always be active in the future.

### **Web sites**

<http://www.insuranceassetmanager.com/>

This subscription site, run by journalist Alex McCallum, as its name implies covers insurance asset management. Various interviews, news releases and newsletters keep the subscriber up to speed on recent events. Mr. McCallum was very helpful in this research project, especially with respect to peer review of key points made and the outsourcing market.

<http://www.eagerdavisholmes.com/>

This site provides information for asset managers interested in receiving outsourced funds from institutional investors including insurers. Eager, Davis, and Holmes compiles regular surveys of investment manager mandates, and the 2010 report is reviewed elsewhere in this report. David Holmes was very helpful in this research project, providing his views and additional contacts.

<http://www.casact.org/pubs/proceed/proceed65/65238.pdf>

Speech presented in 1965 by S. Davidson Herron Jr. of the Insurance Company of North America about the investment process inside insurers. Much is still true today. 6 pages.

<http://www.naic.org/svo.htm>

The National Association of Insurance Commissioners (NAIC) coordinates the state based regulatory system of insurers in the United States. The NAIC’s Capital Markets Bureau supports their efforts related to investment activities. They offer several publications, some available only to regulators. The Capital Markets Weekly Special Reports is available on their web site and anyone can sign up for these reports focusing on topics of interest to insurance company investment portfolios. These reports are quite readable and have focused on specific asset classes and the impact of low interest rates, for example. The authors’ focus is on insurer investments and they appear to be learning about liabilities and their interactions with assets as they go. This is a recent effort by

NAIC and will be very useful if they maintain their independence and utilize internal expertise.

The July 11, 2011 report on Securities Lending was used as background for this research report.

The June 16, 2011 report focused on the insurance industry's derivatives exposure, which remains a miniscule amount (0.18%) of the OTC (over the counter) derivatives market. Of the 223 insurers reporting derivatives exposure at year end 2010, not surprisingly most (170) were life insurers, holding 93.4% of the notional value outstanding. The primary purpose is hedging (90.7%, down from 93.8% in 2009), with 54% swaps (most of the swaps cover interest rates). Nine counterparties represented 76% of the industry's notional value outstanding, led by Deutsche Bank and JP Morgan Chase, so there is concentration risk that could be considered systemic.

The Capital Markets Bureau also creates the Capital Markets Daily Newsletter (regulators only) and provides investment analysis services for state regulators.

### **Texts**

Maginn, Tuttle, Pinto and McLeavey. **Managing Investment Portfolios: A Dynamic Process** 3<sup>rd</sup> Edition

This text is core to the CFA syllabus and is featured in the SOA syllabus. In addition to general readings covering the investment process, sections detail the issues specific to insurers.

**Uncertain Times: A Chief Investment Officer's Journey** by Alton R. Cogert 2009.

This book combines a novel format with a how-to about the major issues involved in the investment function at a small insurance company. Cogert also publishes a regular newsletter about topics of interest. <http://www.saai.com/>

**Financial Crisis Inquiry Report** – released in January 2011 it provides a good, readable, version of what happened during the financial crisis. It leaves the hows and whys to others. Apparently the conclusions reached became very political, with 3 alternatives written. The Democrats published the official version where bankers are the main culprits, the Republicans spread the blame around more evenly to include government but point out that it was a worldwide phenomenon, and one lone dissenter blames regulatory arbitrage. All of these theories have their merits.

<http://www.fcic.gov/report>

### **Articles**

A smarter investment strategy for insurers: The time has come for insurance companies to reconsider their approach to risk and reward. February 2004 • Léo M. Grépin, Marcel Kessler, and Zane D. Williams



[http://www.mckinseyquarterly.com/Financial\\_Services/Insurance/A\\_smarter\\_investment\\_strategy\\_for\\_insurers\\_1378](http://www.mckinseyquarterly.com/Financial_Services/Insurance/A_smarter_investment_strategy_for_insurers_1378) (premium)

This McKinsey article from 2004 warns of higher investment risk in insurer portfolios.

Best's Review June 2010 pp 63-64 A Careful Approach by Meg Green (premium). This article discusses how many insurers have reduced exposures to equities and other capital intensive assets after the downturn. It reports that many insurers had bought Build America Bonds, a form of taxable municipal bond.

<http://www3.ambest.com/Frames/FrameServer.asp?Site=bestreview&Tab=1&RefNum=173099>

OECD Journal 2009 Issue 2 Insurance Companies and the Financial Crisis, pages 110-138. Sebastian Schich (premium). This easy to read article provides the basics relating to the financial crisis as it relates to insurance companies. Examples show how investments caused insurers problems as well as how the industry provided a stable influence to the markets based on a longer time horizon.

Taleb, Nassim Nicholas, Why Did the Crisis of 2008 Happen? (August 26, 2010).

[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1666042](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1666042)

This paper was written as an essay for New Political Economy by the author of The Black Swan.

The Impact of the Current Financial Crisis on the Life Insurance Industry – insight from Nease, Lagana, Eden & Culley, Inc. October 2008

[http://www.slideshare.net/whelms/NLECFOX-White-Paper-Impact-of-crisis-on-Insurance?from=share\\_email](http://www.slideshare.net/whelms/NLECFOX-White-Paper-Impact-of-crisis-on-Insurance?from=share_email)

In this position paper written during the heat of the crisis, the authors do a good job of differentiating the interests of policyholders versus stockholders. While stockholders were losing material amounts, a policyholder was not impacted as much, a point the insurance industry should embrace and communicate.

Life and Health Insurance News, April 4, 2011 A Year to Remember by Frank O'Connor

This summary of the variable annuity market in 2010 shares comments about evolving product details and hedging strategies.

<http://www.lifeandhealthinsurancenews.com/Issues/2011/April-4th-2011/Pages/A-Year-to-Remember.aspx>

Wall Street Journal, February 7, 2011 Building a Cheaper Annuity by Leslie Scism

This article highlights efforts to lower costs within the variable annuity chassis.

<http://www.valmarksecurities.com/Data/Sites/59/buildingacheaperannuity-scism,wallstreetjournal,february2011.pdf>

Pozen, R., Palmer, E. and Shapiro, N. "Asset Allocation by Institutional Investors After the Recent Financial Crisis." *Brookings-Nomura-Wharton Research Conference*, September 30, 2010.

In this 37 page paper the researchers look at global institutional investors (focusing on corporate and governmental pension plans, foundations and university endowments). This paper parallels some of the issues raised in the current research project and the results are not inconsistent. The key trends identified since 2007 are 1) decreased allocation to equities, especially away from domestic equities 2) increased allocation to fixed income and 3) increased allocation to alternative investments.

[http://www.nomurafoundation.or.jp/data/20101015\\_Betsy\\_Palmer.pdf](http://www.nomurafoundation.or.jp/data/20101015_Betsy_Palmer.pdf)

Papageorgiou, N., Hocquard, A. and Ng, S. “A constant volatility framework for managing tail risk.” *Brockhouse Cooper Whitepaper*, September 2010. The first half of this paper provides excellent and readable background material regarding regime switching and clustering of volatility results. It then discusses a tool designed to manage volatile volatilities.

<http://www.brockhousecooper.com/public/publications/A%20constant%20volatility%20framework.pdf>

Giorgio Szego. Causes of the economic crisis: can the flap of a butterfly wing in Brazil destroy the Coliseum...after 30 years? *Journal of Risk Management in Financial Institutions*, special issue Risk Management and the Financial Crisis Volume 4 Number 3. Available at [www.prmia.org](http://www.prmia.org)

Stecker, J. Howard. Impact of the 2008 Economic Crisis on the Insurance Industry – First Impressions. *Journal of Financial Service Professionals*, March 2009 pages 71-76 (premium).

This article is not specific to insurer investment practices, but the author’s coverage of subprime mortgages, mark-to-market accounting, variable products and TARP all are closely related to the impact of the crisis on investment practices.

<http://www.financialpro.org/pubs/subs/journal/2009/03/j00209a4.cfm>

## Appendix II – Survey Results

### ***Default Question Block***

The Society of Actuaries has initiated a research project to learn and share insurance investment practices to better deal with future economic discontinuities. A key component of this research is a survey to better understand the thought processes behind these practices. Thank you for agreeing to complete this survey. It should take 5-15 minutes to complete.

For purposes of this survey, several questions concern time frames surrounding the recent financial crisis. Getting the dates exactly correct is less important than your responses to how actions varied during these phases. Questions will refer to “pre crisis” as prior to second quarter 2007, “during crisis” as third quarter 2007 until first quarter 2009, and “post crisis” as the period starting in second quarter 2009. Please consider only U.S. domiciled entities for this survey.

### ***Demographics***

Please list a primary contact.

Name

Company

Company name of primary entity (or NAIC code)

Email

Phone

Companies that participated included

AAA NCNU

American Family Insurance Group

Amerisure Companies

Auto-Owners Insurance

BCS Financial

Builders Mutual Insurance Company

CareOregon, Inc.

Community Health Plan of Washington

Delta Dental of Illinois

Excellus BCBS

Farmers Insurance Group

Grange Mutual Casualty Company

Great-West Life & Annuity

Healthcare Services Group

Illinois Compensation Trust

Illinois Provider Trust

Jewelers Mutual Insurance Company

Louisiana Workers Compensation Group

Medmarc Insurance Group

Motorists Mutual Insurance Company

Mutual of Omaha  
Nationwide Insurance  
Old Mutual Financial Network  
Premera Blue Cross  
Principal Financial Group  
ProMutual Group  
Quincy Mutual Fire Insurance Company  
Regence  
RGA Reinsurance Company  
State Automobile Mutual  
Summit Investment Advisors  
The Dentists Insurance Company  
Trustmark Insurance  
Vermont Mutual Insurance Company  
Wellpoint, Inc.  
Woodmen of the World Life Insurance Society  
WPS Health Insurance

Are you willing to participate in a follow-up phone interview?

- Yes 31 (84%)
- No 6 (16%)

How long has this entity filed statutory financial statements?

- < 5 years 1 (3%)
- 5-10 years 3 (8%)
- > 10 years 34 (89%)

In order to compare similarly sized companies, please list the entity's approximate total cash and invested assets as shown on its balance sheet at year-end 2009.

- < \$250 million 8 (21%)
- \$250-\$500 million 5 (13%)
- \$500 million-\$1 billion 0 (0%)
- \$1 billion-\$5 billion 11 (29%)
- \$5 billion-\$10 billion 3 (8%)
- > \$10 billion 11 (29%)

### ***Investment Policy Statement (IPS)***

As defined in the 3<sup>rd</sup> edition of *Managing Investment Portfolios*, an Investment Policy Statement is a written document that sets out a client's return objectives and risk tolerance over a relevant time horizon, along with applicable constraints such as liquidity needs, tax considerations, regulatory requirements, and unique circumstances.

Does the entity have an Investment Policy Statement (IPS)?

- Yes, our IPS is board approved 34 (92%)

- Yes, our IPS is informal 2 (5%)
- Some of our entities have an IPS, but not all 0 (0%)
- No 1 (3%)
- Not applicable 0 (0%)
- Comments

*Our IPS is approved by the investment oversight committee, which is not a board committee*

Why does the entity not have an IPS?

*We have an investment strategy approved by the Board that does not have all the required elements (risk tolerance level not specified).*

Was its IPS followed during the crisis?

- Yes, it was strictly adhered to 27 (77%)
- Yes, it provided guidance 8 (23%)
- No 0 (0%)
- Comments

*We deviated from the policy in two ways: 1) our equity exposure fell below our target allocation and we did not begin to rebalance until July 2009; 2) we let our liquidity build up higher than our target allocation*

*Equity rebalancing did not occur*

*There were just a couple assets that fell outside our policy guidelines and we chose to hold them*

*I joined after the crisis*

Has its IPS changed in the last 5 years?

- Yes 26 (74%)
- No 9 (26%)

When did it change? (check all that are applicable)

- Pre crisis (prior to 2Q 2007) 15 (31%)
- During crisis (2Q 2007 until 1Q 2009) 13 (27%)
- Post crisis (2Q 2009 and later) 20 (42%)

Why did it change?

*Most changes were to follow the evolution of our business and to improve the risk metrics & limits applicable. No material changes directly related to the crisis were made to the IPS.*

*Pre-crisis changes were 'routine' asset allocation and portfolio guideline changes to match portfolio risk to the insurance entities' needs.*

*Post crisis changes were two specific risk reduction changes resulting from crisis losses.*

*Needed better definition and assignment of responsibility to entities and individuals.*

*New portfolio managers. Reasons unrelated to financial crisis.*

*It was outdated when I came on board in 2007, we had just recently changed investment advisors and needed to review our asset allocation. The policy was recently updated based on feedback from our state's OIC.*

*We clarified wording on existing policies and investments.*

*We modified wording/procedures if a bond dropped below investment grade.*

*We changed benchmark.*

*To increase portfolio liquidity.*

*Only slight technical corrections. No changes to allowed asset classes, exposure or percentage.*

*In both cases, the changes were made to allow for additional asset classes, to change asset allocation and to change the benchmark accordingly. The changes made post crisis were not knee jerk reactions to the crisis but for other business purposes.*

*We added risk management language in 2008.*

*We revised our strategic asset allocation targets in May, 2009 to add risk.*

*Minor adjustments not really related to the crisis.*

*Feb 2005 – to include “Yankee bonds” as an asset class not permitted.*

*Nov 2007 – to comply with statutory collateral requirements for repurchase agreements.*

*Feb 2009 – update investment grade fixed income benchmark from Lehman Brothers Aggregate to Barclays Cap Aggregate*

*Dec 2009 – eliminate investment grade convertible bond asset class and reapportion among remaining classes.*

*May 2010 – update international equity benchmark from Morgan Stanley Cap Int'l EAFE to Morgan Stanley Cap Int'l All Country World Index ex US (MSCI ACWI ex US)*

*It changed to allow investments in new asset classes, or to adjust percentage limits on existing asset classes, that we felt would improve our asset allocation, and improve our*

*asset allocation, and improve diversification. Any changes made during any of these time periods were NOT done for the purpose of damage control, to improve perceived weakness that resulted in crisis related problems.*

*We update our investment policy statement quarterly to reflect changes in our statutory capital base. All of our investment limitations are pegged off of our capital base.*

*Adapted Strategic Asset Allocation concepts to target long-term asset mix that worked with our liabilities and had risk consistent with our available capital for investment risks.*

*Wanted to reduce term structure risk and lower the required investment RBC charges. We examine the IPS annually and tweak the language to clarify certain areas or add some detail to improve understanding but generally have not made any substantive changes since 2006.*

*Update of credit limits and derivatives policy.*

*Policies are updated at least annually to reflect changes in liabilities and risk tolerance of enterprise.*

*Tightened up allocations to certain sub-asset classes.*

*If the entity had an IPS but it did not change during this period, why not?*

*We take a long-term view and do not expect to change our policy unless our investment risk tolerance changes or the underwriting risk changes. We are constantly reviewing asset classes we currently do not include in our asset allocation policy.*

*Felt we were protected with asset allocation among other investments. Some asset classes though were over/under weight during this period.*

*The guidelines are regularly reviewed in meetings of the Finance, Audit and Compliance Committee of the Board of Directors. If it is felt that the economic or business conditions warrant deviating from the guidelines, that deviation is approved by the Committee and documented in the minutes, along with the discussion of why that decision was made.*

*We reviewed the IPS and remained comfortable with its contents.*

*The IPS was appropriate for long-term investing.*

*The IPS was determined to be prudent and the risk tolerance has not changed.*

*Before, during, and after the crisis, we conducted periodic reviews of our policy and therefore did not require material changes post-crisis.*

*Our IPS does not have procedures embedded in it. It is a document that spans time and is broadly applicable; therefore, there was no need to rewrite it due to the events of 2008 and beyond.*

*Because policy allows for ranges, not specific target levels.*

Which accounting and/or regulatory changes, if any, impacted the IPS?

	No	Yes
Mark to market	28 (93%)	2 (7%)
FAS 159	28 (93%)	2 (7%)
Available for sale	27 (96%)	1 (4%)
SSAP 43R valuation of RMBS	28 (93%)	2 (7%)
Other OTTI	27 (84%)	5 (16%)

If yes, what was the impact?

Mark to market  
*Limit on risky asset holdings*

Available for sale  
*We revised the policy statement to allow us more consistent accounting treatment.*

SSAP 43R valuation of RMBS  
*Limitation on non-agency mtg's.*

Other OTTI  
*Creation of Impairment Policy.*

*We had to take a write down due to the OTTI policy statement.*

If there were other changes that impacted the IPS, describe them here.

*Company desire to have a more conservative portfolio.*

*New portfolio managers.*

*Duration "tweaks".*

*These items were taken into consideration when the policy was adopted, but they were not a catalyst for the changes referenced earlier.*

*Accounting issues are not part of our IPS.*

*Accounting changes don't necessarily impact our IPS or asset allocation process. They may impact the structure that some of our investments take.*



*Better specified responsibilities of management, managers, and consultant.*

Do you feel that insurers performed better than other financial institutions during the recent financial crisis?

- Yes 22 (59%)
- No 2 (5%)
- Not sure 13 (35%)

Why?

- Focused on core offerings 9 (18%)
- Limited leverage 12 (24%)
- Ongoing relationships with liability contract owners 2 (4%)
- Recurring premiums 4 (8%)
- Conservative strategy 20 (39%)
- Other 4 (8%)

*Liabilities were more predictable.*

*Strong reputations, core level of assets for product funding remained reasonably strong during crisis.*

*Most companies continued to be highly rated.*

Why not?

*Our portfolio is heavily equities.*

*I believe insurers received comparable capital relief, generally speaking, to the banks that received TARP. Each of these entities have used investment tactics, coupled with the associated capital relief, to shore up their reserves, build capital, and exact premiums to support their respective balance sheets.*

## **Risk Tolerance**

As defined in the 3<sup>rd</sup> edition of Managing Investment Portfolios, Risk Tolerance is the capacity to accept risk; the level of risk an investor (or organization) is willing and able to bear.

Does the entity have a Board approved investment risk tolerance?

- Yes 32 (82%)
- No 6 (15%)
- No, but expect to have one within 2 years 1 (3%)

Why does the entity not have a board approved investment risk tolerance?

*Risk tolerance is based on the company financial situation and is discussed with management and the Board.*

*To my knowledge it has not been explicitly addressed.*

*Risk tolerance can be described more easily than quantified. I'm presuming you are asking for a quantified risk tolerance, as is referred to in the cited text, rather than a qualitative risk tolerance. We have a board approved qualitative description of our risk tolerance, and are working diligently toward gaining quantitative specificity around risk tolerance.*

*Technically, the investment risk tolerance is embedded in the IPS. It is not measured explicitly, say through standard deviation or other quantitative measure on its own. However, the IPS overall give us a risk profile with which the board is comfortable. The IPS is approved annually by the board.*

*There is regular communication of risk positions with the board and they have not requested a formal policy. At the holding company level we may develop an overall risk appetite statement but timing is unclear at this point.*

*Left open to permit flexibility in working with managers.*

What metrics are used to define the entity's risk tolerance? (check all that apply)

- GAAP equity 2 (7%)
- GAAP earnings 4 (14%)
- Statutory equity 23 (82%)
- Statutory earnings 9 (32%)
- Rating 18 (64%)
- Economic capital reduction 8 (29%)
- Duration 14 (50%)
- Value at Risk (VaR) 4 (14%)
- Continuous Tail Expectation (CTE) – also called expected shortfall 5 (18%)
- Other 4 (14%)

*RBC*

*Investment leverage*

*Total return projections*

Did the risk tolerance change during any of these periods? (check all that apply)

- Pre crisis 4 (29%)
- During crisis 6 (43%)
- Post crisis 8 (57%)

What about the risk tolerance changed? (check all that apply)

- Primary metric used 3 (11%)
- Formalized with Board approval 6 (22%)

- Recognized changes in board tolerance 3 (11%)
- Stress tests added 4 (15%)
- No changes 6 (22%)
- Other 5 (19%)

*We had to change a benchmark as Lehman's no longer existed.*

*Improved capital structure.*

*Risk tolerances formalized.*

*Did not feel we were receiving adequate compensation for taking low-BBB risk. Therefore, we dialed-up our credit quality requirement for new purchases. Quality of new investments tightened.*

### **Portfolio Changes**

Describe the entity's rebalancing activity between July 2007 and June 2009.

- Reduced specific asset classes 13 (21%)
- Eliminated all positions in specific asset classes 4 (6%)
- Avoided new investments in specific asset classes 17 (27%)
- Sought out specific asset classes 11 (17%)
- Shortened the portfolio 5 (8%)
- Lengthened the portfolio 0 (0%)
- No material changes 11 (17%)
- Other 2 (3%)

*Sought out higher credit quality*

*Reduced specific risks within asset classes*

In which asset classes did the entity overweight relative to its tactical plan (there may be some overlap in categories)?

- Corporate bonds – investment grade 17 (49%)
- Corporate bonds – below investment grade 4 (11%)
- Structured securities – based on prime home mortgages 2 (6%)
- Structured securities – based on subprime home/secondary (e.g., home equity lines) mortgages 1 (3%)
- Structured securities – based on commercial mortgages 3 (9%)
- Structured securities – based on non-mortgage assets such as credit cards and auto loans 0 (0%)
- Municipals 8 (23%)
- Treasuries 9 (26%)
- Government backed non-Treasuries (e.g., FDIC bonds) 8 (23%)
- Foreign denominated bonds 1 (3%)
- Commercial mortgages 2 (6%)
- Private placements 2 (6%)

- Alternative assets (e.g., hedge funds, private equity, private real estate) 2 (6%)
- Equities – Common 5 (14%)
- Equities – Preferred 0 (0%)
- Cash 12 (34%)
- None 6 (17%)
- Other 2 (6%)

*U.S. Agency bonds*

In which types of structured securities based on prime home mortgages did the entity overweight?

- Senior tranches 1
- Subordinated tranches 0
- Agency issues 1
- Non-agency issues 1
- Other 0

In which types of structured securities based on subprime home/secondary (e.g., home equity lines) mortgages did the entity overweight?

- Senior tranches 1
- Subordinated tranches 0
- Other 0

In which types of structured securities based on commercial mortgages did the entity overweight?

- Senior tranches 2
- Subordinated tranches 0
- Other 0

In which types of structured securities based on non-mortgage assets such as credit cards and auto loans did the entity overweight?

- Senior tranches 0
- Subordinated tranches 0
- Other 0

Why did the entity choose to overweight these asset classes?

*We were already overweight and decided to add slightly more when the prices for senior tranches plummeted in the 20s and 30s for 30% subordinated tranches backed by strong real estates.*

*Liquidity concern, didn't know where the bottom was.*

*There was no change from the tactical plan.*

*Reasonably liquid alternative to Cash.*

*Two separate investment committee decisions. 1. Reduce bonds and buy equities in early 2009. 2. Reduce equities and buy bonds in late 2009.*

*In part it was simply timing. We did not yet have an update policy so we had excess cash once it was defined. Then it took time to deploy the cash.*

*Safer investment and better yield.*

*More favorable return relative to risk.*

*Spread product attractive in late 2008 and 2009; willing to rebalance into equity in May 2009.*

*Perceived value at the time.*

*Wider spreads, liquidity.*

*Perceived value in corporate bonds over long term compared to treasuries.*

*We increased liquidity as a result of the decrease in the value of our bond portfolio due to a widening in spreads.*

*Attempting to rebalance portfolio risk to be at lower levels.*

*Felt more comfortable reinvesting in these asset classes as the crisis continued. CMBS was a valuation play; we added to this as the crisis unfolded.*

*We believe our expertise is evaluating credit risk.*

*Good spreads relative to the credit risk.*

*Expectation of improved returns.*

In which asset classes did the entity underweight relative to its tactical plan (there may be some overlap in categories)?

- Corporate bonds – investment grade 4 (11%)
- Corporate bonds – below investment grade 7 (19%)
- Structured securities – based on prime home mortgages 8 (22%)
- Structured securities – based on subprime home/secondary (e.g., home equity lines) mortgages 11 (31%)
- Structured securities – based on commercial mortgages 6 (17%)
- Structured securities – based on non-mortgage assets such as credit cards and auto loans 8 (22%)
- Municipals 4 (11%)

- Treasuries 2 (6%)
- Government backed non-Treasuries (e.g., FDIC bonds) 1 (3%)
- Foreign denominated bonds 1 (3%)
- Commercial mortgages 5 (14%)
- Private placements 1 (3%)
- Alternative assets (e.g., hedge funds, private equity, private real estate) 7 (19%)
- Equities – Common 15 (42%)
- Equities – Preferred 3 (8%)
- Cash 0 (0%)
- None 6 (17%)
- Other 1 (3%)

*Hybrid securities*

In which types of structured securities based on prime home mortgages did the entity underweight?

- Senior tranches 6
- Subordinated tranches 7
- Agency issues 3
- Non-agency issues 7
- Other 0

In which types of structured securities based on subprime home/secondary (e.g., home equity lines) mortgages did the entity underweight?

- Senior tranches 8
- Subordinated tranches 8
- Other 0

In which types of structured securities based on commercial mortgages did the entity underweight?

- Senior tranches 4
- Subordinated tranches 5
- Other 0

In which types of structured securities based on non-mortgage assets such as credit cards and auto loans did the entity underweight?

- Senior tranches 5
- Subordinated tranches 6
- Other 0

Why did the entity choose to underweight these asset classes?

*There was a natural underweight when the prices of these securities plummet but we were able to sell at good prices compared to the real value of these securities.*

*We did not sell any equities during this period but we did not have the guts to rebalance into equities until mid-2009.*

*We did not rebalance equities, concern over surplus volatility.*

*There was no change from the tactical plan.*

*Fear*

*Portfolio manager decision*

*Timing. Had the cash sitting on the sidelines prior to defining the strategy.*

*Did not feel the return was worth the risk. Investment guidelines allow for +/- 10% in each asset class as well.*

*The company allowed the market valuations to lower our exposure to these asset classes and we did not actively rebalance into them.*

*Risk levels were perceived to be too high.*

*Decrease in value of equities.*

*Concerns over mortgages in non-agency mbs.*

*We were in AMT (municipals) and increased risk and already overweight in comm. mortgages.*

*Too hard to predict default risk.*

*We did not add to our non-agency portfolio during the crisis because we had an overweight before the crisis and were experiencing writedowns on our current portfolio.*

*Already had exposures to these.*

*We rarely invested in them at all, but decided to cease investing in these in 2006 due to the rampant abuses in loan origination we were hearing first-hand when we'd interview the popular originators.*

*In Spring of 2007 decided we didn't know how the housing market was going to fare and so sold all 2006 vintage sub-prime bonds we had.*

*Common stock was too volatile during this period and so it was decided that we would pare it back.*

*Ratings volatility and risk characteristics.*

*Expectations of lower returns.*

*We chose not to rebalance as the equity markets declined more rapidly than the bond markets, thereby reducing our equity allocation. We have lowered the equity target going forward.*

Does the entity utilize outsourced investment managers? (select up to 2)

- Yes, for all assets 21 (51%)
- Yes, for some core assets 10 (24%)
- Yes, for some satellite assets 12 (29%)
- No, we invest all our assets using internal staff 2 (5%)

Did the entity make any outsourced asset manager changes during any of these time periods? (select as many as apply)

- Yes, prior to the crisis 8 (22%)
- Yes, during the crisis 11 (30%)
- Yes, post crisis 14 (38%)
- No 14 (38%)

If the entity changed asset managers, why? (check all that apply)

- Return challenges 11 (35%)
- Risk challenges 10 (32%)
- Personality challenges 1 (3%)
- Other 9 (29%)

*The manager closed the fund we were invested in.*

*Manager too small and compliance concerns.*

*Quality of deliverables and information provided.*

*Changes in portfolio manager in fund.*

*Diversify*

*Developed muni capabilities in house.*

*Ownership change of manager.*

*Switched index manager to reduce fees.*

If not, why not?

- Strong performance throughout 2
- Waited for volatility to lessen 0
- No better alternatives 0



- Other 0

Various short-term (e.g., money market) vehicles were the subject of negative attention starting in September 2008. Did the entity change any of its short-term vehicles after some funds broke the buck that month?

- Yes 8 (22%)
- No 29 (78%)

What changed?

*Decided to keep more cash and to increase the diversification by investing smaller amounts in a larger number of funds.*

*We stopped buying A1, P1 commercial paper and invested only in treasury money market funds.*

*Moved to funds backed primarily by government agencies.*

*Went to government funds.*

*We went to government MM funds and away from all other types*

*More focus put on short term exposure limits.*

*We no longer invest in many of the short-term funds we held previously.*

*More scrutiny of funds, reduced "buy list"*

Did the entity have a securities lending relationship going into the financial crisis?

- Yes 19 (51%)
- No 18 (49%)

Did the entity change its arrangements either during or after the crisis?

- Yes 14 (40%)
- No 21 (60%)

What did it change?

*Exiting securities lending.*

*Liquidated position in lending securities.*

*We have suspended active participation and as liquidity allowed have pulled all loaned securities back.*

*We exited the securities lending strategy.*

*Securities lending was suspended until 2010.*

*Put cap on exposure.*

*Decided to exit the securities lending program.*

*We exited securities lending.*

*Stopped doing them.*

*The compensation structure and terms of the securities lending agreement have changed.*

*Reinvested in government related securities and loaned fewer securities, generally only the government bonds.*

*Stopped new securities lending activity.*

### **Hedging Program**

Does the entity have a hedging program that utilizes derivatives to offset investment and/or corporate risks accepted?

- Yes, it is Board approved      12 (31%)
- Yes, it is informal                2 (5%)
- No                                        25 (64%)

What risks are being hedged? (check any that apply)

- Enterprise risks (across all lines)                2 (7%)
- Specific product line risks (e.g., variable annuities) 8 (28%)
- Equity risk                                8 (28%)
- Interest rate risk                        9 (31%)
- Other                                        2 (7%)

*Fleet gasoline*

*Currency risk*

Did the entity's hedging program change? If yes, when?

- Pre crisis            1
- During crisis        1
- Post crisis            6
- No                     5

Please describe any changes.

*We started to analyze the impact of hedging vega in our Variable Annuity business.*

*We are looking at some macro-hedging programs that we do not currently have in place.*

*After gasoline spiked in summer of 2008, we decided to explore hedging options for claims fleet.*

*Added hedges to protect against an interest rate spike based on perceived increased risk. Added GMWB product and hedge program for that product.*

*Introduced put-like structure over the equity portfolio.*

Did the entity experience problems with the collateral aspects of its hedging program?

- Yes, acceptance of collateral 1
- Yes, substitution of collateral 0
- Yes, valuation of collateral 1
- No 9
- Not sure 2
- Not applicable 0

Describe these problems briefly.

*No comments shared.*

Did the entity change its derivatives counterparty agreements (ISDAs) to reduce counterparty risk?

- Yes 5
- No 5
- Not applicable 1

Did its collateral requirements from the use of derivatives change significantly during the crisis?

- Bilateral posting of collateral with lower threshold amounts 6
- Daily or more frequent calculations for posting collateral 2
- Reduced variation amounts to adjust posted collateral 2
- Stricter definition of assets that can be posted as collateral (more liquid assets or higher haircut) 1
- No material changes 5
- Other 0

Liquidity changed quickly for many asset classes during the financial crisis. What tactical liquidity strategies changed during the crisis?

- Materially increased cash holdings 14 (29%)
- Reduced reliance on reverse repos 1 (2%)
- Reduced reliance on commercial paper 2 (4%)
- Relied on operating cash flows 9 (18%)
- Relied on existing letters of credit 1 (2%)

- Relied on FHLB or similar government sponsored loan facility 5 (10%)
- No changes 16 (33%)
- Other 1 (2%)

Briefly describe how the entity met this challenge.

*We started to keep more cash on hand and worked with the FHLB to include CMBS as acceptable collateral to borrow additional cash.*

*Liquidity never became a big issue. Significant operating cashflow with FHLBI as a backstop.*

*Operating cash flow was adequate to meet needs.*

*Relied on interest income to fund operations rather than reinvesting.*

*We chose to allow operating cashflows to build as opposed to investing into long term asset classes.*

*Maintained a more conservative approach, maintained higher cash balances.*

*We joined the FHLB during this period.*

*Sold securities, such as TIPS, when necessary.*

*Increased cash holdings.*

*Have always focused on public traded bonds, and excess liquidity. Liability profile does not contain institutional deposit contracts or other "hot money".*

*We increased our cash position during the crisis.*

*Did not invest for a period of time and built up cash holdings.*

*There was more limited availability of investments. The commercial paper market dried up, so we did our best to continue using what was available to maintain our cash balance objective.*

*We were generally well positioned for the crisis because of our conservative investment portfolio. The bankruptcies of Enron and WorldCom earlier in the decade resulted in tighter written guidelines that proved helpful in weathering this crisis.*

*Ample liquidity in high quality GNMA assets, no material increase in liability demands.*

*Liquidity was supported largely through natural cash flow of assets and liabilities.*

*Operating cash flows covered liquidity needs.*

*Ceased stock buyback program and used cash to pay down CP.*

Thank you for participating in this survey sponsored by the SOA's Committee on Finance Research. Please provide any further thoughts or comments including related areas that may not have been covered by the survey.

*One of the two asset class changes made post-crisis was the elimination of securities lending.*

*Our custody bank implemented a more conservative securities lending program in regards to credit quality and duration.*

*Thank you for inviting me to participate.*

*My company did not have significant exposure to the asset classes that were affected the most during the crisis. The fixed income portfolio was all investment grade and at the onset of the crisis, we lightened up on the financial sector of the corporate bond portfolio and as time went on, we eliminated the ABS portfolio holding a few subprime issues. Decision to enter a hedge fund was not a reaction to the crisis but to add diversification to the portfolio. As the equity portfolio decreased in value, we continued to rebalance according to policy.*

*Regarding our hedging program that influence the responses here: our interest rate risk has been a focus throughout time (a decade or more). Our product-related hedging program was closed prior to 2008.*

*Thank you.*