CONNING®

2016 ANNUAL CORPORATE PENSION REVIEW

INSIGHTS FROM CONNING'S INVESTMENT SOLUTIONS TEAM

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INTRODUCTION

Conning's Annual Corporate Pension Review - 2016 analyzes the financial health of the U.S. corporate defined benefit (DB) industry. In this report, we will be highlighting plan funded status and other key financial metrics that provide meaningful insight for corporate sponsors, chief investment officers (CIOs) and other plan stakeholders.

This is our first report and we have used 389 companies' pension and financial data from their 2016 financial statements. Any reference to pension liability values is assumed to be U.S. GAAP-based pension valuation.

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Conning understands that for most corporate sponsors and their CIOs, minimizing contribution surprises and bridging the underfunded gap are their two most important objectives. Additionally, diverting cash away from the core business or its shareholders by making unexpected (and sometimes quite significant) contributions can impact the company's financial position. Therefore, this report analyzes the impact of funded status on companies' earnings and capital. Furthermore, we have broken the analyses by pension plan size and corporate sectors such that we are able to evaluate the data more thoroughly.

EXECUTIVE SUMMARY

- In aggregate, funded status marginally fell from 80.4% to 79.8%.
- The average pension discount rate fell to 3.94% from 4.09%, thereby increasing pension liabilities in 2016. The overall average discount rate was at its lowest since 2012.
- The increase in unfunded pension liabilities resulted in those liabilities representing a higher percentage of company retained earnings and capital in 2016 (19.2% and 4.14%, respectively).
- Total unfunded pension liabilities were 8.2% of the total long-term debt (which includes the pension liabilities).
- Overall, allocation to fixed income assets increased marginally in 2016, and fixed income remained the largest asset allocation category between equities, fixed income and alternative investment (37.5%, 39.8% and 22.7%, respectively).
- Among all sectors, the most-funded pension plans were in the Financial sector (average funding: 95.5%) whereas the least-funded were in the Diversified sector (average funding: 61.8%).

OVERVIEW

For 2016, Conning's analysis found that total pension liabilities increased faster than assets for the 389 companies in its database. Overall funded status remained relatively flat over the year, while unfunded pension liabilities increased 6%. Driving the faster growth in pension liabilities was the continued decrease in the accounting discount rates, which reached their lowest level in the five-year period covered in this report. The reduction in the discount rate was mainly driven by the credit spread compression, as the energy sector recovered in 2016, combined with Donald Trump's victory in the U.S. presidential elections, even though underlying U.S. Treasury rates were marginally higher. As a result, plan sponsors saw unfunded liabilities grow to be a higher percentage of earnings and capital. In aggregate, unfunded liabilities represented 7.6% of equity and 73% of net income.

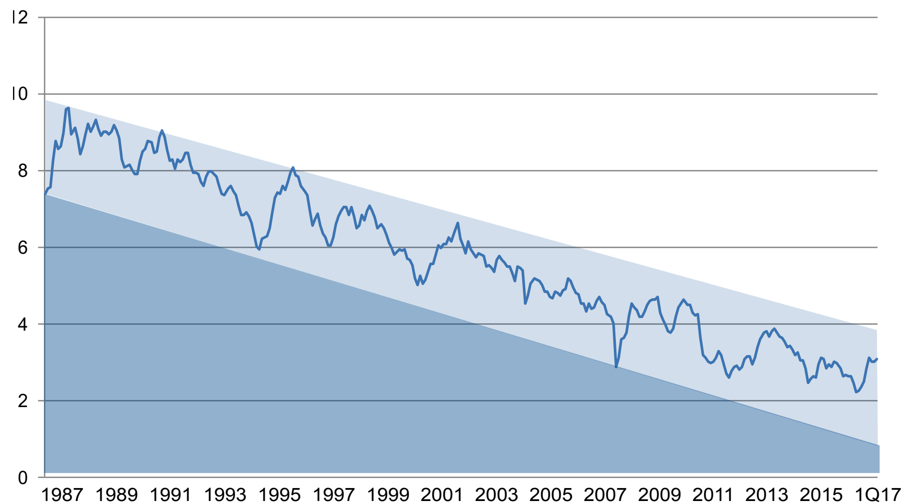
Plan performance continued to be influenced by external forces in 2016. Increases in PBGC (Pension Benefit Guaranty Corporation) premiums and the adoption of new mortality tables continued to motivate de-risking efforts for some plan sponsors, a trend likely to continue this year and beyond. Those efforts may include further implementation of liability-driven investing strategies, lump-sum payments to qualified members and potential pension risk-transfer transactions.

The most notable pension risk-transfer transactions in 2016 included:

- Prudential Financial's $4.3 billion liability transfers from United Technologies ($1.8 billion) and WestRock ($2.5 billion)
- MassMutual and Metlife's $1.6 billion transfer from PPG.

In 2016, investment de-risking continued to have an impact on asset allocations, with equities reaching their lowest percentage of total plan assets over the five-year observation period. This has included diversification of growth portfolios away from equities and also adoption of LDI strategies so that assets are better matched to liabilities. Looking ahead, as the long bond yields continue to rise, Conning would expect that demand for long-duration fixed income assets will increase as plans continue to de-risk and shift their allocation toward liability-matching (LDI) strategies.

Long-term (30-year) Treasury yield since late 1987



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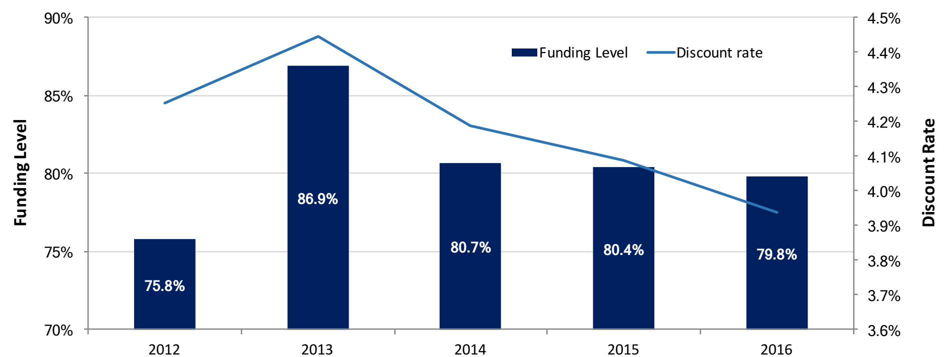
PLANS EXPERIENCE LOWER FUNDED STATUS

Funded status and unfunded pension liabilities challenge plan sponsors as they forecast the impact on company financials. A decrease in funded status in 2016 represents a greater impact on capital and earnings than the prior year. Sponsors continued their efforts to reduce that impact by trading performance for stability and shifting assets from equities to fixed income.

Funding Status Down as Contributions Rise

In 2016, plans saw their funded status decrease 60 basis points (bps) from the prior year. Unfunded pension liabilities went from $326 billion in 2015 to $346 billion in 2016 despite favorable investment performance and increased contributions. Driving this mismatch was the continued decrease in discount rates.

Total Funding Status



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At a cumulative level, plan funded status decreased to 79.8% from 2015's 80.4%. Over a five-year period, funded status began at 75.8% in 2012, rose to 86.9% the following year before descending to 2016's result. In dollar terms, unfunded pension liabilities were $408 billion in 2012, fell to $204 billion in 2013, and have since risen to $346 billion.

Plan sponsors increased plan contributions by 31% in 2016 over 2015. This ended a trend that began in 2013 of lower contributions versus the prior year. Among the plans in Conning's database, 181 increased 2016 contributions, 151 decreased contributions, 16 maintained their contributions and 40 made no contributions. Those contributions were one reason there was a 2.2% increase in assets. However, plan liabilities increased 3%. A significant reason for the higher liabilities was a 17-bps decrease in the discount rate used to calculate liabilities.

Unfunded Plan Liabilities' Impact on Capital Earnings

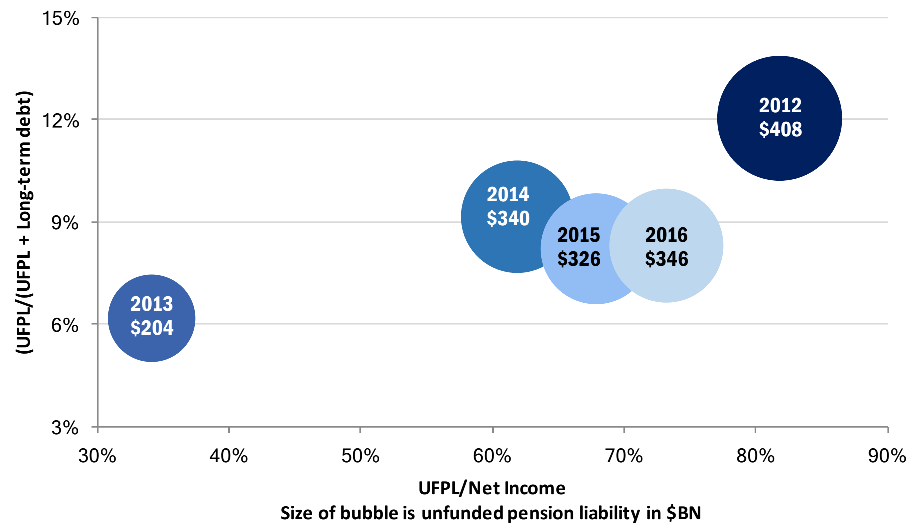
Regulations require that plan sponsors close their UFPL (unfunded pension liabilities) gap. That deficit can be recovered through improved investment returns, increases in long-dated yield, plan sponsor contributions, or any combination of the three. As a result, those liabilities represent a potential demand on a company's net income. At the same time, UFPL is viewed as unsecured senior debt by lenders and rating agencies. Increases in UFPL can affect credit ratings, leading to higher costs of capital.

Both of those provide reasons for plan sponsors to undertake efforts that would minimize the risk of uncertain and at times sizeable contributions. Therefore, employing an investment strategy that is expected to match the underlying liabilities, such as LDI, benefits the ultimate shareholder. To evaluate the impact of UFPL, Conning measures it against net income and the combination of UFPL and long-term debt.

In 2016, the $346 billion in UFPL represented 73% of the combined net income for the companies in Conning's database. This was higher than the 68% in 2015 because aggregate net income decreased to $473 billion in 2016 from $481 billion in 2015. The 2016 decrease in net income was broad, with 167 companies reporting lower net income. One hundred companies reported both lower net income and higher UFPL in 2016 than in 2015.

UFPL was essentially unchanged relative to the overall long-term debt of the companies in 2016, compared to 2015, at 8.2%. This was the result of the 5% increase in long-term debt in 2016, which was greater than the increase in UFPL. The increase in long-term debt was seen across the majority of companies, with 206 of the 389 reporting higher long-term debt in 2016.

Unfunded Pension Liability Impact



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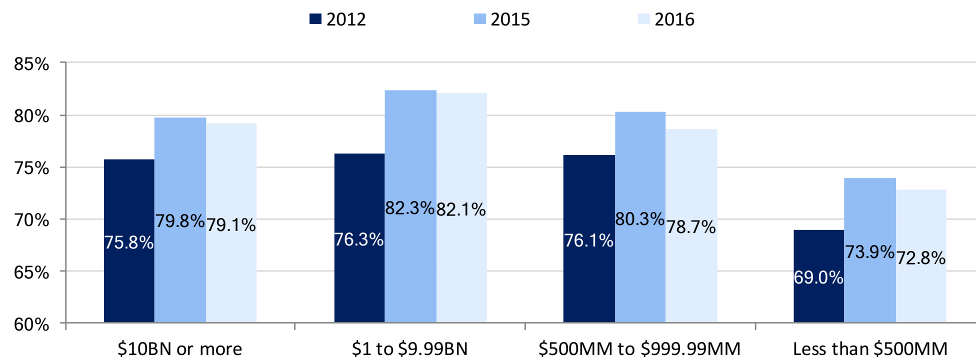
Funding Status by Plan Asset Size



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PLAN SIZE EXPERIENCE VARIES

There was a noticeable difference in the funding level changes among different sized plans. Conning categorized the plans into four groups based on plan asset size.

1) $10B or more: 39 plans
2) $1B to $9.99B: 119 plans
3) $500M to $999.99M: 62 plans
4) Less than $500M: 169 plans

Discount Rates by Plan Size

Discount size rate	2012	2015	2016
$10B or more	4.3%	4.2%	4.2%
$1B to $9.99B	4.3%	4.1%	4.0%
$500M to $999.99M	4.2%	4.2%	4.0%
Less than $500M	4.3%	4.0%	3.8%

Prepared by Conning, Inc. Source: ©2012-2016 Bloomberg L.P. The selected years 2012, 2015 and 2016 as shown above are representative of past performance over this period. Omitted years are in-line with the years shown.

Funding Status Falls More for Smaller Plans

Smaller plans reported lower funded status in 2016 compared to 2015. Larger plans were unchanged. However, when viewed against 2012, there were noticeable improvements across all size categories.

Funded status of plans with $10 billion or more in assets remained broadly unchanged in 2016 compared to 2015 as were plans with $1 billion to $9.99 billion in assets. However, funded status of plans with $500 million to $999 million in assets experienced a 1.6% decrease in 2016 from 2015. The smallest plans, those with less than $500 million in assets, had a 1.1% decrease in 2016.

One factor contributing to the larger decrease in funded status by the smaller plans is that their discount rates also decreased more than the larger plans. When analyzing discount rates, plans with $500 million to $999 million had the largest decrease of 23 bps, while plans with less than $500 million had a 17-bps decrease. The very largest plans, with $10 billion or more in assets, reported a 2-bps decrease in the discount rate.

The positive news is that, regardless of size categories, funding status was significantly improved over 2012. The largest plans funding status in 2016 was 3.4% higher than in 2012. Plans with $1B to $9.99B in assets were 5.7% above their 2012 level. Plans with $500 million to $999.99 million had a 2.6% improvement over 2012. Finally, plans with less than $500 million in assets had a 3.8% funding status increase.

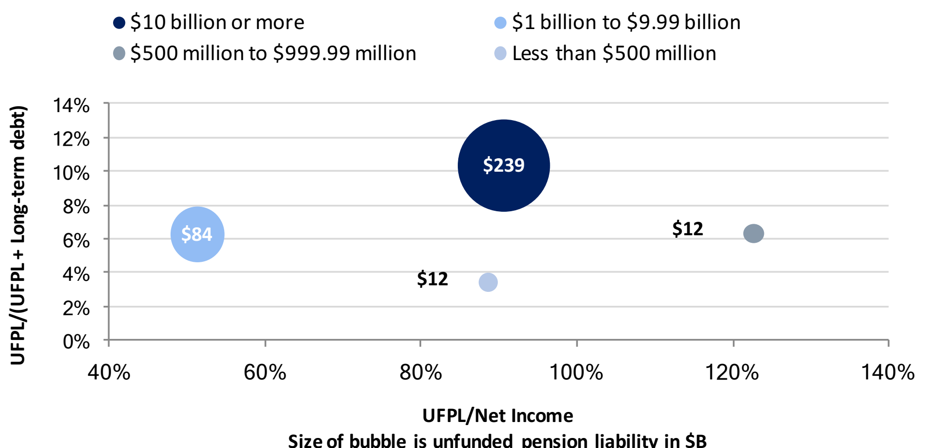
UFPL Impact on Capital Eases for Smallest Plans

In 2016, the combined UFPL for the smallest plans was 32% of their combined net income, compared to 52% in 2015. This was the only size category that saw an improvement. The largest plans saw their combined UFPL increase from 80% of combined net income to 91%. Plans with $1B to $9.99B saw their UFPL as a percentage of plan increase by 7% to 51%. Plans with $500 million to $999.99 million produced a 2% increase.

A key challenge for plan sponsors is forecasting the impact of UFPLs on net income. That challenge is amplified by the change in UFPL as well as net income or total debt (long-term debt plus UFPL). Minimizing swings in UFPL is one way to manage that impact.

Looking across the period of 2012 through 2016, the smallest plans exhibited the closest range in

Unfunded Pension Liability Impact by Plan Size: 2016



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terms of variability. Those plans with less than $500 million in assets saw their combined UFPL range from a low of 17% of net income to a high of 53%. The largest plans saw their combined UFPL range from a low of 44% of net income to a high of 100%. On average, the smallest plans' UFPL was 32% of net income, compared to 80% for the largest plans.

A similar pattern emerged in the variability of UFPL as a percentage of combined long-term debt and UFPL. Plans with less than $500 million in assets have experienced the tightest range, while plans with $10 billion or more had the widest range.

SECTORS HIGHLIGHT VARIATION

Categorizing the plans according to their industry sector revealed significant variations in funded status and discount rates. There are nine industry sectors represented among the plans in Conning's database. The number of companies within each sector varies, from two in the Diversified sector to 121 in the Consumer sector.

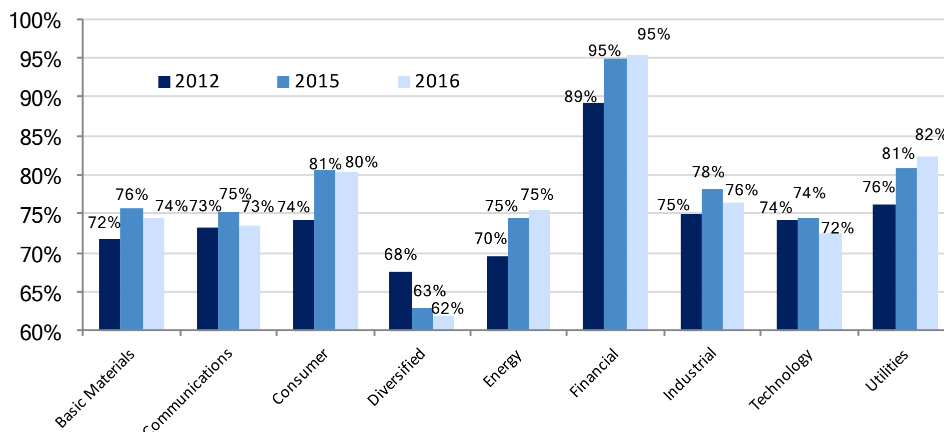
Amongst these sectors, Industrial and Consumer sectors have the largest share of defined benefit pension obligations (32% and 31%, respectively). Their dominance likely reflects the presence of large, long-established companies such as General Motors, GE, and Procter & Gamble.

Energy, Financials, and Utilities Improve Funding Status in 2016

Looking over a longer period, all sectors except Diversified and Technology companies had a cumulative funding status increases between 2012 and 2016.

Average discount rates for the nine sectors ranged from 2.96% for Technology to 5.04% for Diversified. What is noticeable is the Energy and Utilities actually experienced an increase in their average discount rate, by 4 and 12 bps respectively, over that period. Among the sectors that experienced a decrease in average discount rates, Financials had the lowest at only 6 bps.

Funding Status by Sector



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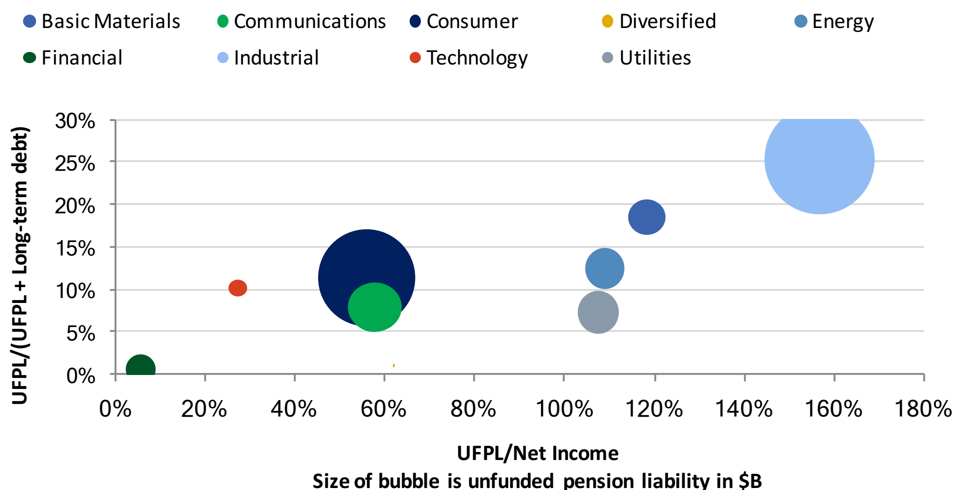
Unfunded Pension Liability Impact by Plan Sector: 2016



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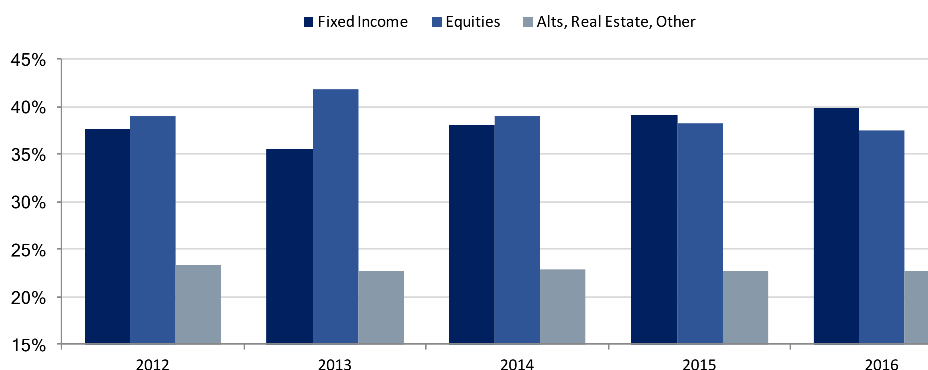
Aggregate Asset Allocation: 2016



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Financials UFPL Impact on Capital and Earnings had Narrowest Variability

When analyzing net income by sector, the number of sectors amplifies the impact of companies with net losses in a given year. This amplification produces some cases where the UFPL exceeded the sector's net income. As a result, for the sector analysis, an adjustment was made that removed any company that reported a net income loss for a given year.

Conning found a wide range in variability when analyzing plans by sector. For example, looking at adjusted net income, the Communication sector had the widest range. In 2012, UFPL represented 138% of net income, compared to 35% in 2013. However, since 2014, the Communication sector has experienced lower variability, between 40% and 65%. The Financial sector has generated the tightest variability, ranging between 0% and 18%.

ASSET ALLOCATION STRATEGIES SHIFT TOWARD FIXED INCOME

Efforts by plan sponsors to reduce funding level variability has led to the adoption of LDI strategies. One effect of these strategies is the continued shift in asset allocations toward fixed income. Equities, 41% of total plan assets in 2013, decreased steadily to 37% in 2016. Conversely, fixed income securities increased from 35% to 40% over the same period. While interest rates remained low during this period, funded status variability concerns stayed high, and plan sponsors traded away higher equity returns for lower volatility to enhance their pension risk management focus.

Smallest Plans Retain Highest Equity Allocation

The effect of implementing an LDI strategy is seen in the shift away from equities towards fixed income, regardless of plan size. However, that shift has not been uniform. The smallest plans experienced the largest increase in fixed income assets. That said, those smaller plans still retained the highest allocation for equities, at 43%, in 2016. The generally lower funding status of the smaller plans is a likely reason for the higher percentage of equities since those assets could potentially generate higher growth.

Sector Asset Allocations Shift to Fixed Income

As with plan size, there was a significant variation in the change in asset allocation among the sectors. Again, the shift toward fixed income was noticeable, except for Technology and Utilities which saw a decrease in fixed income allocations. Offsetting the decrease in fixed income allocations within the Technology and Utilities sectors were increases in the Alts, Real Estate, Other asset category.

Examining asset allocation changes by sector, at the end of 2016 three sectors had more than 40% of their assets in fixed income. The Communication sector had 43% of its assets in fixed income. The Energy sector and Industrial sector both had 41% of their assets in fixed income. The Consumer and Industrial sectors had 7% of their assets in alternative assets.

Change in Asset Allocation by Plan Size: 2012-2016 (% change)

Plan Size	Fixed Income	Equities	Alts, Real Estate, Other
$10B or more	2.8%	1.1%	-3.9%
$1B to $9.99B	0.0%	-6.4%	6.4%
$500M to $999.99M	6.9%	-8.0%	1.1%
Less than $500M	4.5%	-5.5%	1.0%

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Change in Asset Allocation by Sector: 2012-2016 (% change)

Sectors	Fixed Income	Equities	Alts, Real Estate, Other
Basic Materials	3.8%	0.8%	-4.6%
Communications	1.4%	-3.1%	1.7%
Consumer	1.9%	-1.4%	-0.4%
Diversified	22.6%	22.1%	-44.7%
Energy	1.7%	-8.4%	6.8%
Financial	0.2%	2.4%	-2.7%
Industrial	4.4%	-1.0%	-3.4%
Technology	-9.0%	-7.0%	16.0%
Utilities	-1.7%	-1.1%	2.8%

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Data and Methodology

The data in this annual review was reported in the 10-Ks of 389 publicly traded companies. These companies were selected because they had consistently filed pension data every year for the period of 2012 through 2016.

We categorized these companies based on their plan assets and their business sector. Note, those assets may include non-U.S. pension plans. In aggregate, these 389 reported $1.4 trillion in plan assets and $1.7 trillion in plan liabilities.

It is important to note that asset definitions are not uniform. Conning's analysis of companies' financial statements has found that some firms only report individual stocks as equities, while other firms include stock mutual funds. A similar mixing of types occurs in fixed income. In this analysis, Conning has used the allocations as reported by the companies and not adjusted them.

ABOUT CONNING

Conning (www.conning.com) is a leading global investment management firm with more than $115 billion in global assets under management as of June 30, 2017.* With a long history of serving the insurance industry, Conning supports institutional investors, including pension plans, with investment solutions and asset management offerings, award-winning risk modeling software, and industry research. Founded in 1912, Conning has offices in Boston, Cologne, Hartford, Hong Kong, London, New York, and Tokyo.

**As of June 30, 2017, represents the combined global assets under management for the affiliated firms under Conning Holdings Limited, and Cathay Securities Investment Trust Co., Ltd. ("SITE"). SITE reports internally into Conning Asia Pacific Limited, but is a separate legal entity under Cathay Financial Holding Co., Ltd. which is the ultimate controlling parent of all Conning entities.*

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In addition to this report, Conning's LDI Team produces quarterly reports to track pension funding trends throughout the year.

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Learn more about Conning's LDI approach and try the interactive Pension Risk Analyzer at https://www.conning.com/pension-plans/liability-driven-investing