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Pension/OPEB

2017 Assumption and Disclosure Study

July 2017

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Dear Clients and Friends,

PwC is pleased to share with you our **Pension/OPEB 2017 Assumption and Disclosure Study**. This study represents our analysis of the 2016 year-end assumptions and disclosures under ASC 715-20, ASC 715-30, and ASC 715-60.

We analyzed data for 100 companies, comprising Fortune 100 and other large and established companies, with a December 31 fiscal year-end. We reviewed the public annual reports for the companies selected -- specifically financial information regarding pension and other postretirement benefit (OPEB) plans. We included 2015 for comparison and, in order to illustrate the changing pension/OPEB economic environment since the financial crisis in 2008 and the recession that followed, we also included 2007 data.

In developing the interest cost and service cost components of net benefit cost, one key assumption is the discount rate. Until recently, most companies used a single discount rate approach. That is, the single weighted average discount rate determined in measuring the projected benefit obligation was also used to measure the interest cost and service cost components of benefit cost.

Beginning in 2015, many companies adopted an alternative approach with separate discount rates developed for projected benefit obligation, interest cost, and service cost based on their respective cash flows. As of December 31, 2016, of the 100 companies studied, 36 disclosed that they are using a multiple discount rate approach to measure 2017 benefit cost which is up from the 25 companies that disclosed using such approach for 2016 benefit cost.

Another key component of net benefit cost is the gain or loss from actual experience different from assumed experience or changes to assumptions (for example, mortality, returns on plan assets, discount rates). Most companies defer recognition of these gains and losses through accumulated other comprehensive income and amortize them to income over future periods.

However, over the last few years some companies have elected instead to immediately recognize these gains and losses in income (sometimes referred to as a mark-to-market approach). As of December 31, 2016, of the 100 companies studied, 11 disclosed that they are using a full or partial mark-to-market approach.

Finally, the FASB has finalized new rules governing the presentation of pension and OPEB costs on the income statement, as well as the amounts that may be subject to capitalization into fixed assets, inventory, etc. Once adopted, the guidance will require separating service costs from other elements of cost (such as interest, expected asset returns, etc.), and reflecting those other costs outside of operating income. This new standard is not reflected in the data reviewed. More to come on this in future studies.

We hope you find the results of our **Pension/OPEB 2017 Assumption and Disclosure Study** useful in understanding the current defined benefit plan environment and in benchmarking your company's assumptions against the study results.

Ken Stoler
Partner

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I – Study highlights

Pension highlights

Pension results – Summary of median assumptions

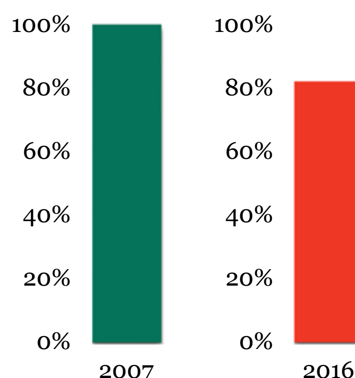
	Discount Rate (at 12/31)	Expected rate of return on plan assets (at 1/1)	Salary progression rate (at 12/31)
2016	4.10%	7.00%	3.80%
2015	4.30%	7.25%	3.97%
2007	6.25%	8.30%	4.25%

The 2016 median discount rate for pension plans in the study decreased 20 basis points since 2015 and has decreased more than two full percentage points since 2007, reflecting the low interest rate environment of the past decade. The 2016 median expected long-term rate of return on pension plan assets decreased 25 basis points since 2015 and 130 basis points since 2007, reflecting less optimistic capital markets outlooks of investment professionals. The 2016 median salary scale assumption decreased 17 basis points since 2015 and has decreased 45 basis points since 2007.

Median plan funding levels remained unchanged from 2015, with pension plan assets equal to approximately 82% of the projected benefit obligation (PBO) in 2016 and 2015. In 2007 the median funded ratio was 100%. If interest rates were to return to 2007 levels, we estimate the median funded ratio would increase to roughly 110%.

Median deferred losses for pension plans in the study remained unchanged at 33% of the projected benefit obligation at the end of both 2015 and 2016. Of the 89 companies that defer recognition of gains/losses, 87 were in a loss position at 12/31/2016.

Funding ratios



Median 2016 asset allocations for pension plans in the study were generally consistent with 2015 allocations at 40% equity, 39% debt/fixed income, and 16% other in 2016 compared to 39% equity, 40% debt/fixed income, and 15% other in 2015. In 2007 the median values were 64% equity, 29% debt/fixed income, and 5% other.

Please note that because the list of companies for which data is collected may change from year to year, some previous years' data may change slightly from last year's study.

OPEB highlights

OPEB results – Summary of median assumptions (at 12/31)

	Discount Rate	**Initial health care trend rate**	**Ultimate trend rate**	**Years to ultimate trend rate**
2016	4.00%	6.60%	5.00%	8
2015	4.25%	7.00%	5.00%	9
2007	6.25%	9.00%	5.00%	6

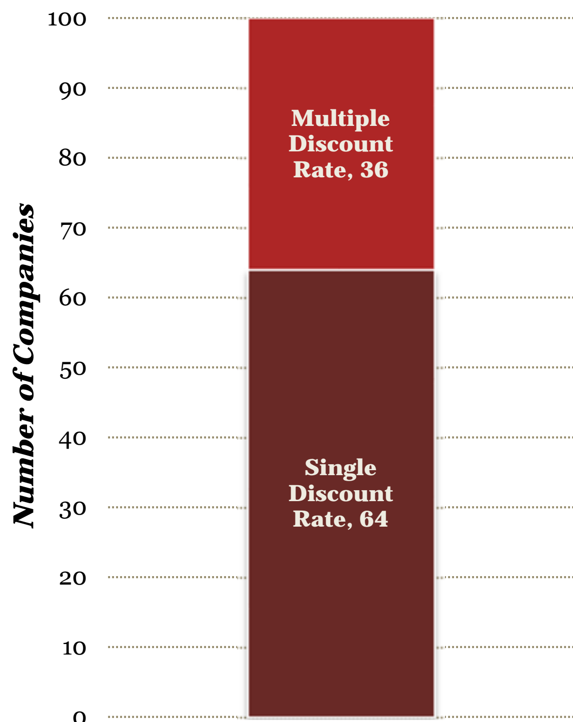
The 2016 median discount rate for OPEB plans in the study decreased 25 basis points since 2015 and has decreased by more than two full percentage points since 2007, which similar to Pensions, reflects the low interest rate environment of the past decade. The 2016 median initial health care trend rate decreased 40 basis points since 2015 and 240 basis points since 2007, reflecting increased optimism about health care cost increases. The 2016 median ultimate trend rate has remained unchanged since 2015 and 2007. The median number of years to reaching the ultimate rate decreased from nine years in 2015 to eight years in 2016, but has increased two years since 2007.

The percentage of funded OPEB plans in the study has remained nearly unchanged since 2007 with 48% of plans being funded in 2016 compared with 49% in 2015 and 52% in 2007. For OPEB plans that are funded, the median plan funding level has remained essentially unchanged, with OPEB plan assets equal to approximately 53% of the accumulated postretirement obligation (APBO) in 2016 compared with 54% in 2015. In 2007 the median funding ratio was approximately 25% for funded OPEB plans.

Please note that because the list of companies for which data is collected may change from year to year, some previous years' data may change slightly from last year's study.

II – Recent trends

Multiple discount rate method & mark-to-market

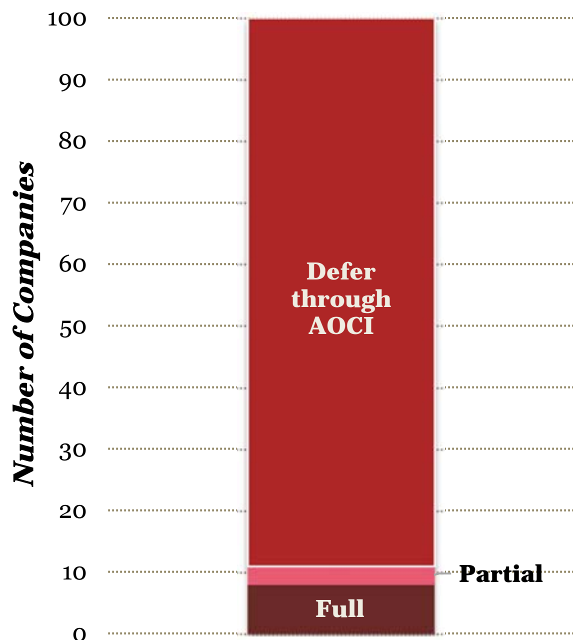


Multiple discount rate method

In developing the interest cost and service cost components of net benefit cost, one key assumption is the discount rate. Until recently, most companies used a single discount rate approach. That is, a single weighted average discount rate determined from measurement of the projected benefit obligation was also used to measure the interest cost and service cost components of benefit cost.

Beginning in 2015, many companies adopted an alternative approach (Read our Insight here) with separate measurement of the projected benefit obligation, interest cost, and service cost. Under this approach, individual spot rates from a yield curve are matched with the respective future cash flows. This results in different weighted average discount rates for the projected benefit obligation, interest cost and service cost.

Of the 100 companies, 36 disclosed adopting a multiple discount rate method at year-end 2016, an increase from year-end 2015 where 25 companies disclosed using such method. Some of the remaining 64 companies may also intend to use this new method in developing 2017 expense but have not disclosed this change.



Mark-to-market approach

Another key component of net benefit cost is the gain or loss resulting from changes in assumptions or actual experience different from assumptions (for example, mortality, returns on plan assets, discount rates). Most companies defer recognition of these gains and losses through accumulated other comprehensive income and amortize them to income over future periods.

However, over the last few years some companies have elected instead to immediately recognize these gains and losses in income (sometimes referred to as a mark-to-market approach).

Of the 100 study companies, 8 disclosed using a full mark-to-market approach, in which all gains or losses are recognized in income in the year they occur. Further, 3 companies disclosed using a partial mark-to-market approach, in which gains or losses only in excess of a corridor (10% the greater of beginning of year PBO and asset values) are recognized immediately. The number of companies using a mark-to-market approach is consistent with the prior year.

III – Pension plans discussion

Pension discount rate

The median discount rate for pension plans in the study decreased by 20 basis points since 2015 (and decreased by 215 basis points since 2007), to 4.10% in 2016.

Similarly, the mean discount rate decreased by 27 basis points since 2015 (and decreased by 225 basis points since 2007), to 4.02% in 2016.

While 2015 rates had rebounded somewhat from those in the previous year, 2016 rates have fallen back to near the lowest point of the last decade. These changes are consistent with the overall movement of interest rates from 2007 to 2016.

For a typical plan in 2016 with a benefit obligation of $1 billion, if the discount rate were to increase 20 basis points to last year's level, this would decrease the balance sheet liability by approximately $30 million. If the discount rate were to increase by 215 basis points to 2007 levels, this would decrease the balance sheet liability by approximately $250 million.

Table 1 – Pension discount rate

	Discount rate (at 12/31)		
	2016	**2015**	**2007**
Low*	2.10%	2.10%	5.50%
Median	4.10%	4.30%	6.25%
High	4.50%	4.93%	6.80%
Mean	4.02%	4.29%	6.27%

**Some companies with frozen defined benefit plans have unusually low discount rates and can be up to 100 basis points lower than typical companies.*

Chart 1 – Pension discount rate

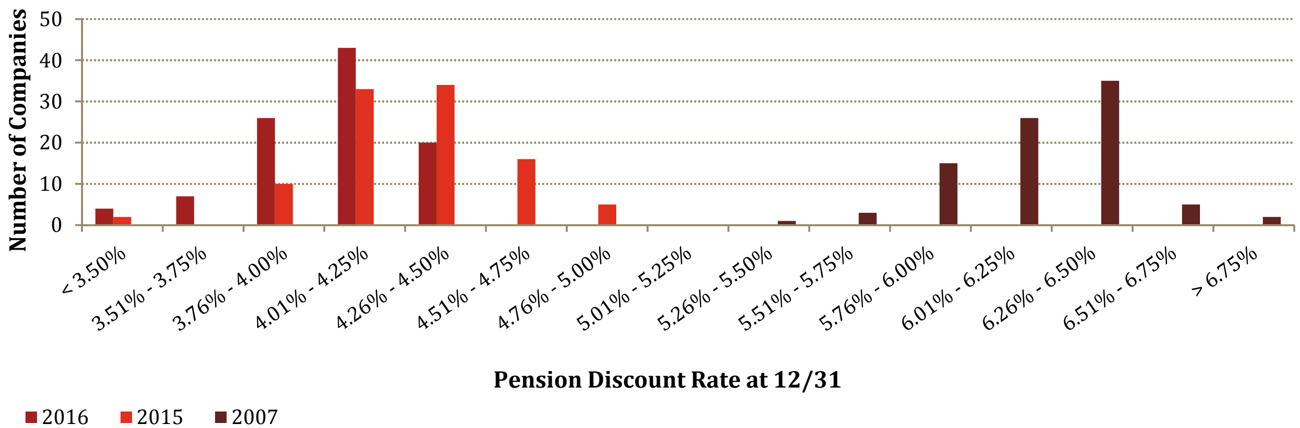
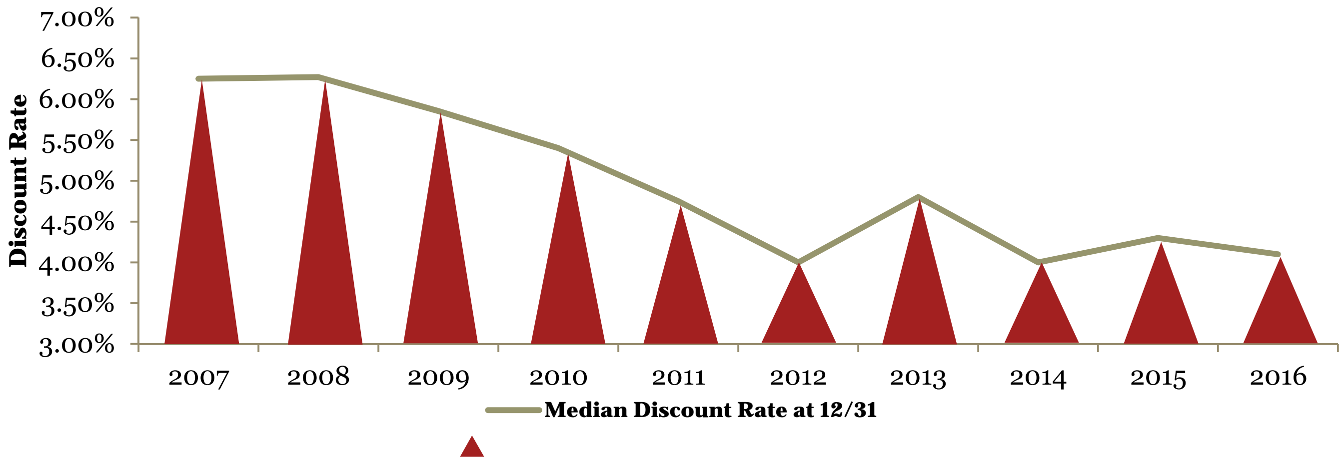


Chart 2 – 10 year trend in pension discount rate



Pension expected rate of return on plan assets

The median EROA (expected return on assets assumption) for pension plans in the study decreased by 25 basis points since 2015 and by 130 basis points from 2007, to 7.00% in 2016. The relatively small changes in this assumption since 2007 compared to fluctuations in the discount rate assumption in the same time period reflects the long-term nature of the expected return assumption (which is meant to estimate asset returns over the period benefits will be paid).

For a typical plan in 2016 with $1 billion in assets, an increase of 25 basis points to the expected return on assets assumption would result in a $2.5 million decrease in annual pension expense.

An increase of 130 basis points to the expected return on assets assumption would result in a $13 million decrease in annual pension expense.

Table 2 – Pension expected return on assets

	Expected rate of return on plan assets (at 1/1)		
	2016	**2015**	**2007**
Low	4.28%	3.65%	6.90%
Median	7.00%	7.25%	8.30%
High	9.00%	9.00%	9.50%
Mean	6.96%	7.05%	8.28%

Chart 3 – Pension expected return on assets

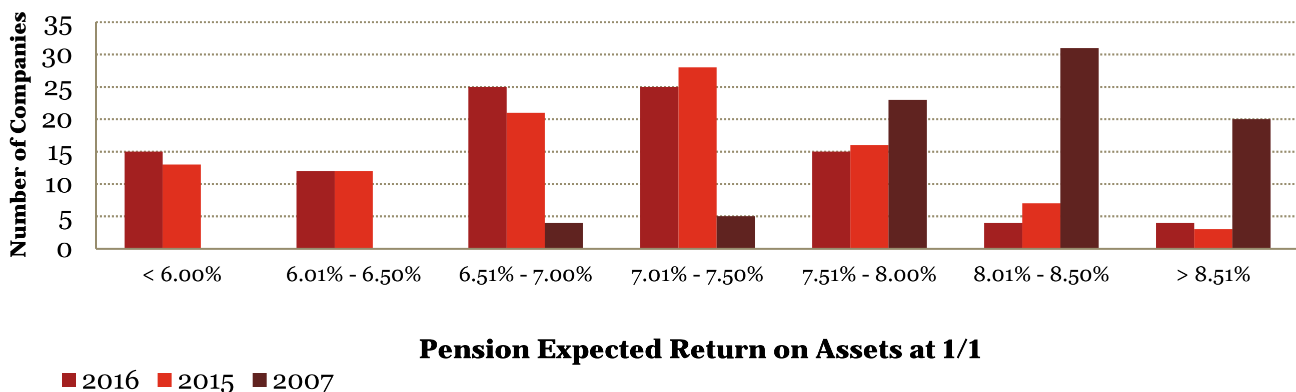
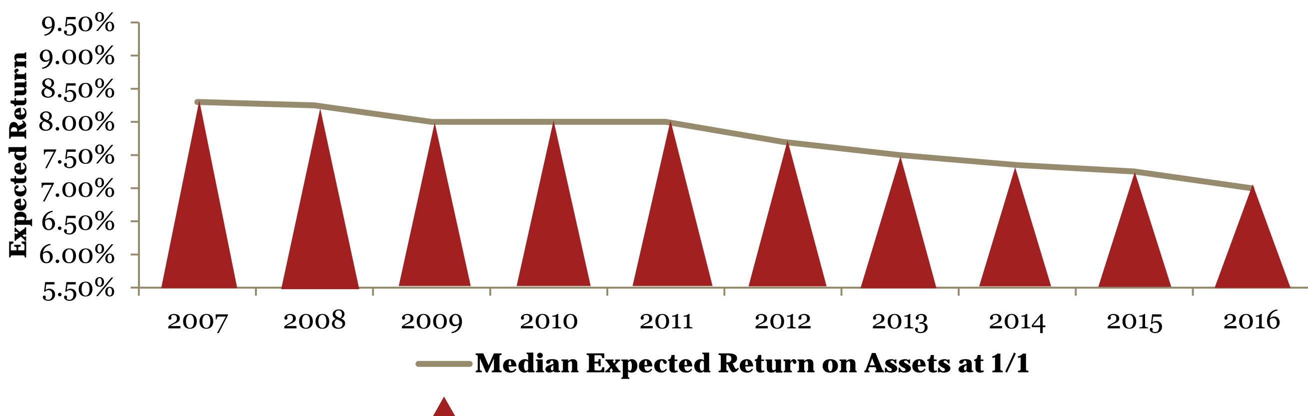


Chart 4 – 10 year trend in expected return on assets



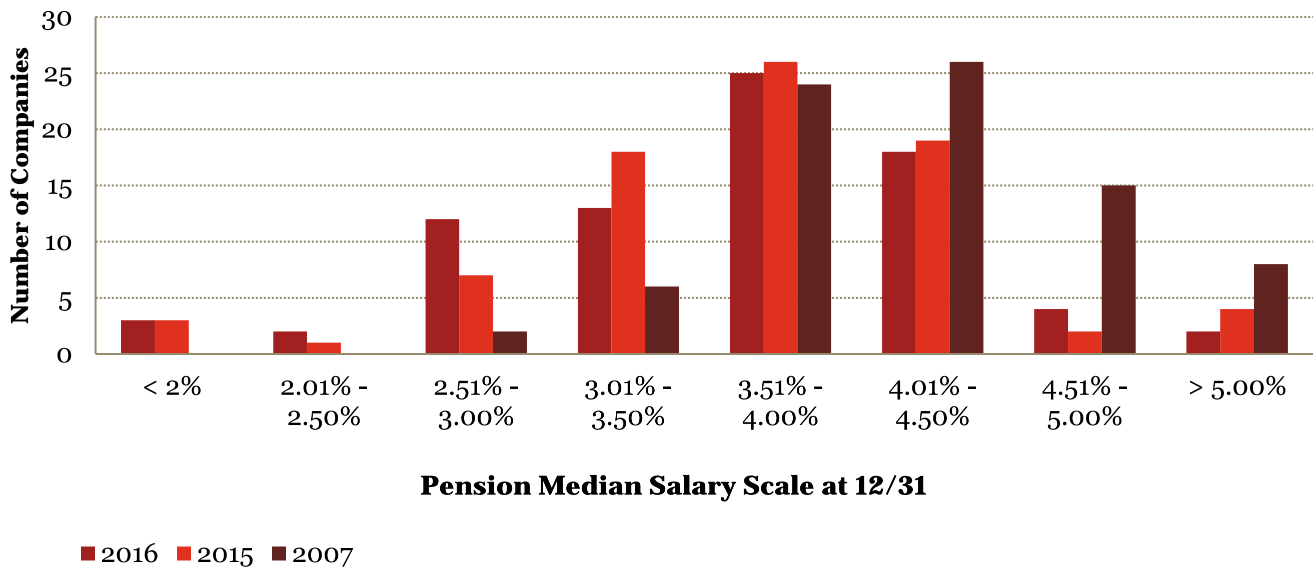
Pension salary progression

The median salary scale assumption for pension plans in the study decreased by 45 basis points since 2007 — to 3.97% in 2015 and 3.80% in 2016, whereas the mean salary scale assumption decreased by about 68 basis points since 2007, which appears to be generally consistent with the decrease in other economic assumptions over the period.

Table 3 – Pension salary scale

	Salary progression rate (at 12/31)		
	2016	**2015**	**2007**
Low	0.50%	0.50%	3.00%
Median	3.80%	3.97%	4.25%
High	5.75%	5.97%	6.75%
Mean	3.67%	3.78%	4.35%

Chart 5 – Pension salary scale



Pension funding levels

The median funded ratio (pension plan assets as a percentage of projected benefit obligation) of pension plans was 82% in both 2015 and 2016 which is an 18 basis point decrease from the median funded ratio in 2007. Similarly, the mean funded ratio was 81% in 2016, a 21 basis point decrease from 2007 levels.

While the Pension Protection Act of 2006 included aggressive contribution requirements for underfunded plans, the Moving Ahead for Progress in the 21st Century Act (MAP-21) of 2012 and the Highway and Transportation Funding Act (HATFA) of 2014 amended these provisions and have allowed for lower contribution levels by employers. Most recently, the Bipartisan Budget Act of 2015 extended the current period of lower minimum contributions over the next few years. However, longer-term minimum required contributions are expected to eventually rise.

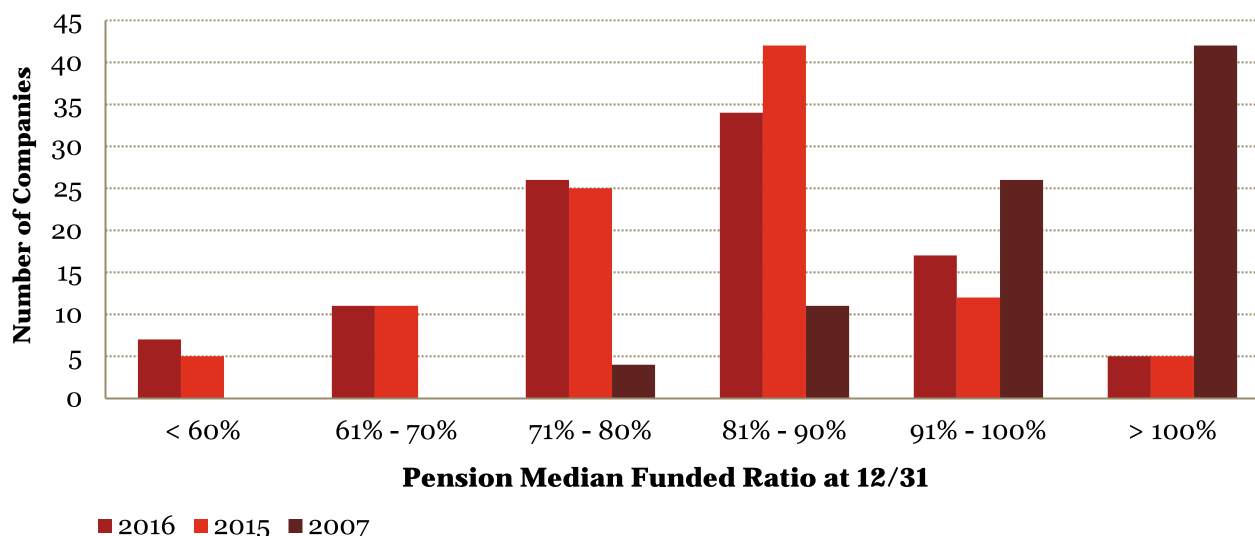
In 2007, of the companies in the study, 41 companies had pension plans that were 100% funded or better, compared with only 5 in 2015 and 2016.

Table 4 – Pension plan funded ratios

Funded Ratios - Pension plan assets as a % of PBO (at 12/31)

	2016	2015	2007
Low	45%	45%	73%
Median	82%	82%	100%
High	122%	124%	143%
Mean	81%	82%	102%

Chart 6 – Pension plan funded ratios



** Positive percentages are unamortized gains, negative are unamortized losses.*

Pension asset allocation

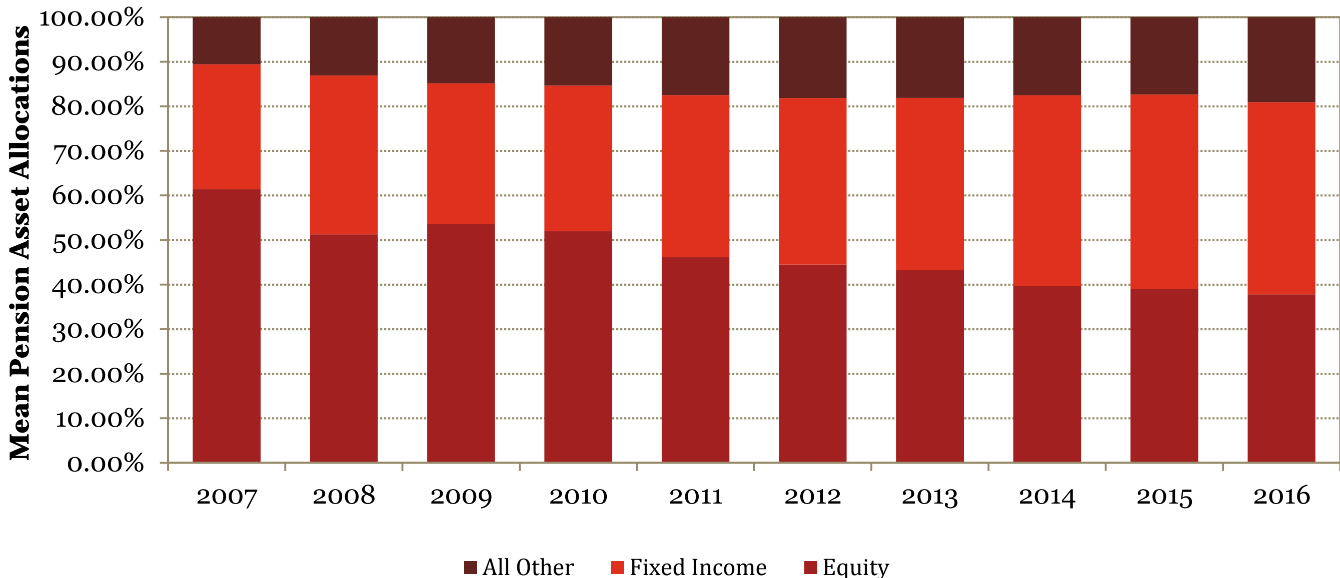
We also reviewed information about pension asset allocations (i.e., investment strategy) for funded pension plans. Overall, employers have shifted some assets from equity into fixed income and alternative investments since 2007. The median percentage of plan assets invested in equities dropped by 24 percentage points from 2007 to 2016, decreasing to 40% during that period. This shift reflects an increasing desire to avoid volatility in plan funding levels that comes with equity securities, as well as the ability to 'lock in' funding of plan liabilities by matching expected future benefit payments to fixed income returns and maturities.

Table 5 – Pension asset allocation at 12/31

	Equity			Debt/Fixed Income			All Other*		
	2016	**2015**	**2007**	**2016**	**2015**	**2007**	**2016**	**2015**	**2007**
Low	0%	0%	0%	13%	11%	0%	0%	0%	0%
Median	40%	39%	64%	39%	40%	29%	16%	15%	5%
High	75%	80%	97%	99%	98%	52%	86%	87%	88%
Mean	38%	39%	61%	43%	44%	28%	19%	17%	10%

**Represents aggregation of cash, real estate, and other investments which include investments such as hedge funds and private equity.*

Chart 7 – 10 year trend in pension asset allocation



Pension deferred losses

Median deferred losses as a percentage of the projected benefit obligation for pension plans in the study remain high, having more than doubled since 2007, from 12% to 33% in 2016. Though deferred losses remained constant from 2015, losses due to decreasing discount rates on the PBO were offset by asset gains due to higher-than-expected asset returns in calendar 2016.

For a typical plan in 2016 with a benefit obligation of $1 billion, a deferred loss of about $300 million would increase net benefit expense by roughly $30 million in each of the next 10 years.

Please note that companies that use a full or partial mark-to-market approach for gains and losses were not included in the following table.

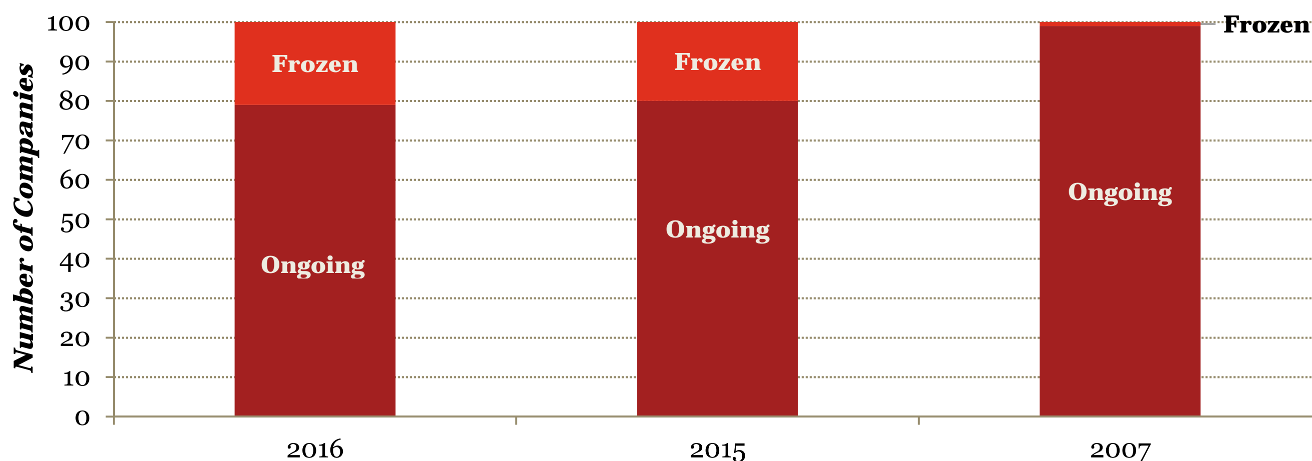
Table 6 – Pension plan deferred gains/(losses)

	Unamortized gains/(losses) as a % of PBO (at 12/31)		
	2016	**2015**	**2007**
Low	(137%)	(155%)	(114%)
Median	(33%)	(33%)	(12%)
High	1%	1%	20%
Mean	(32%)	(33%)	(11%)

Frozen pension plans

The number of companies included in the study that had frozen their funded pension plans has been increasing each year. Based on information disclosed in the study data collected, in 2007 only one company had disclosed a frozen plan or plans, compared to 20 companies in 2015 and 21 companies in 2016. These numbers may be understated, since for some companies in the study we were unable to determine based on their disclosures whether the company had frozen one or more pension plans.

Chart 8 – Frozen pension plans



IV – OPEB plans discussion

OPEB discount rate

Consistent with the pattern of decline in pension discount rates for 2016, the median discount rate for OPEB plans in the study decreased by 25 basis points since 2015 (and decreased by 225 basis points since 2007), to 4.00% in 2016.

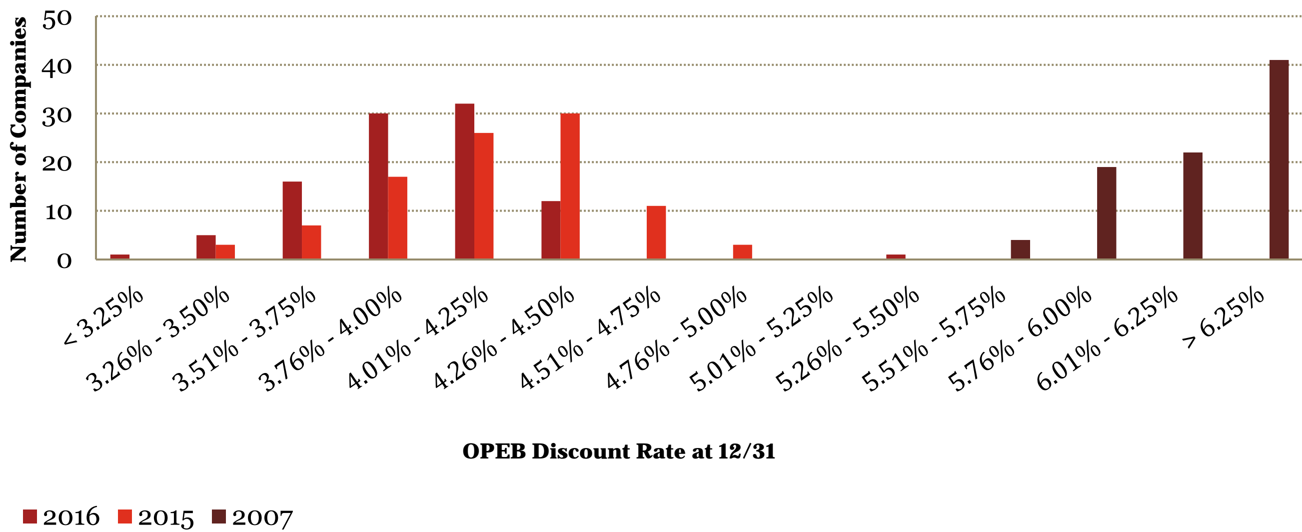
Similarly, the mean discount rate decreased by 21 basis points since 2015 (and decreased by 228 basis points since 2007), to 3.98% in 2016. These changes are consistent with overall movement of interest rates from 2007 to 2016.

For a plan in 2016 with a benefit obligation of $1 billion, if the discount rate were to increase 25 basis points to last year's level, this would decrease the balance sheet liability by approximately $40 million. If the discount rate were to increase by 225 basis points to 2007 levels, this would decrease the balance sheet liability by approximately $300 million.

Table 7 – OPEB discount rate

	Discount rate (at 12/31) 2016	2015	2007
Low	3.20%	3.26%	5.66%
Median	4.00%	4.25%	6.25%
High	5.33%	4.97%	6.80%
Mean	3.98%	4.19%	6.26%

Chart 9 – OPEB discount rate



OPEB health care cost trend rate

The median initial health care trend rate for OPEB plans in the study decreased by 40 basis points since 2015 (and decreased by 240 basis points since 2007), to 6.60% in 2016.

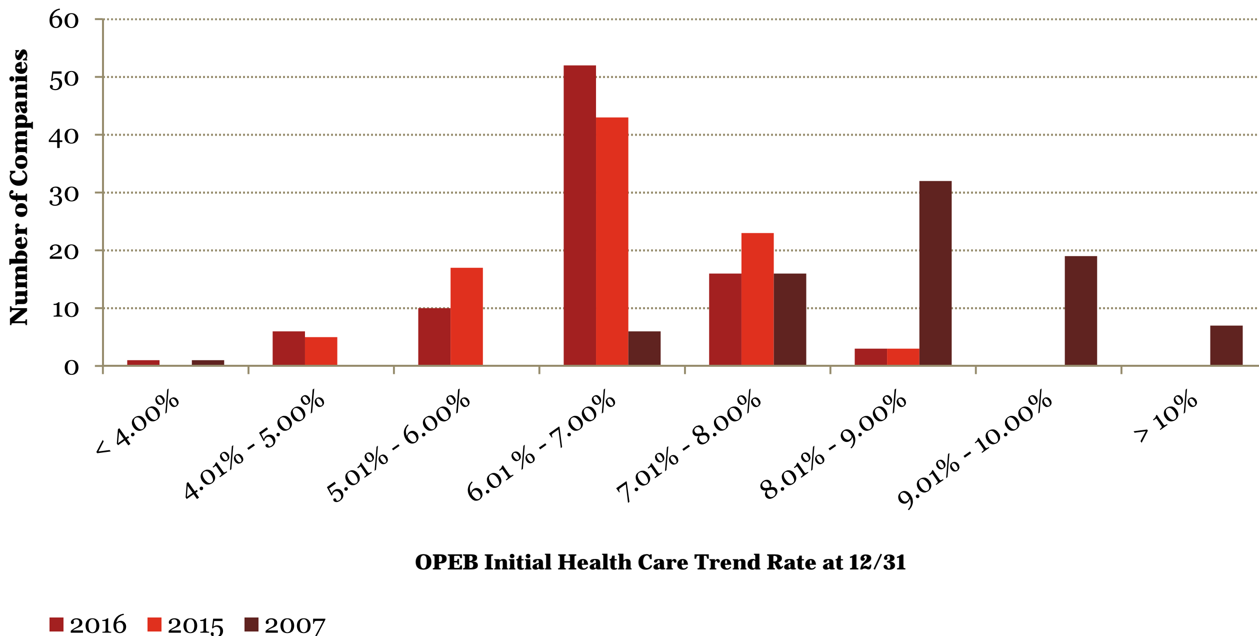
These decreases may be attributable to many factors, such as overall health care cost increases less than in prior years or plan design changes and cost containment initiatives by employers.

Table 8 – OPEB trend rate at 12/31

	Initial health care trend rate			Ultimate trend rate			Years to ultimate trend rate*		
	2016	**2015**	**2007**	**2016**	**2015**	**2007**	**2016**	**2015**	**2007**
Low	4.00%	4.50%	3.00%	3.10%	4.00%	4.49%	0	0	2
Median	6.60%	7.00%	9.00%	5.00%	5.00%	5.00%	8	9	6
High	8.90%	9.00%	12.00%	5.08%	5.21%	6.00%	74	78	21
Mean	6.60%	6.71%	8.81%	4.76%	4.78%	5.05%	11	11	7

**The two companies with 0 years to ultimate are companies that have only dental and/or vision plans. The two companies with over 70 years are likely using the Getzen model for trending.*

Chart 10 – OPEB initial health care trend rate

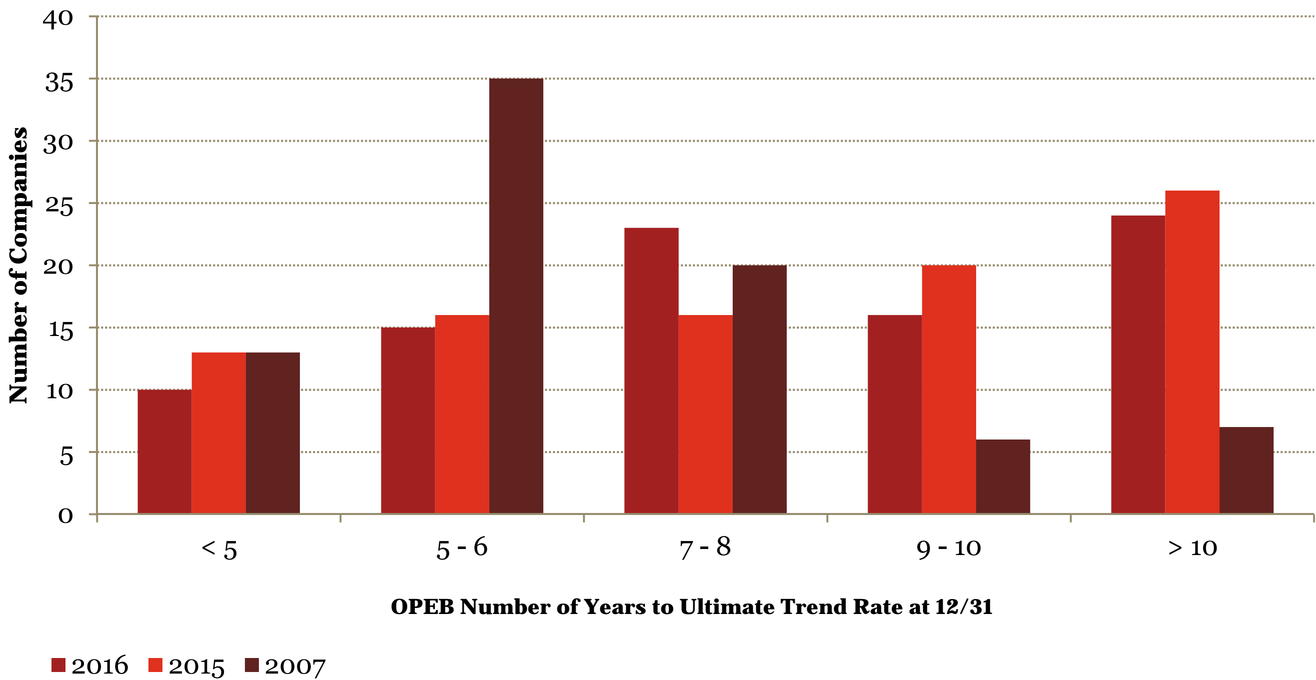


OPEB ultimate health care trend rate

The median ultimate trend rates for OPEB plans in the study remained constant from 2007 to 2016 at 5.00%, while the mean ultimate trend rate decreased by 29 basis points over the period from 5.05% in 2007 to 4.76% in 2016.

While the median time to reach the ultimate trend rate increased from 6 years in 2007 to 8 years in 2016, we noted that 24 of the companies in the study had extended their years-to-ultimate to at least 10 years in 2016, compared to 6 companies with years-to- ultimate at least 10 years in 2007.

Chart 11 – OPEB years to ultimate trend rate



OPEB funding levels

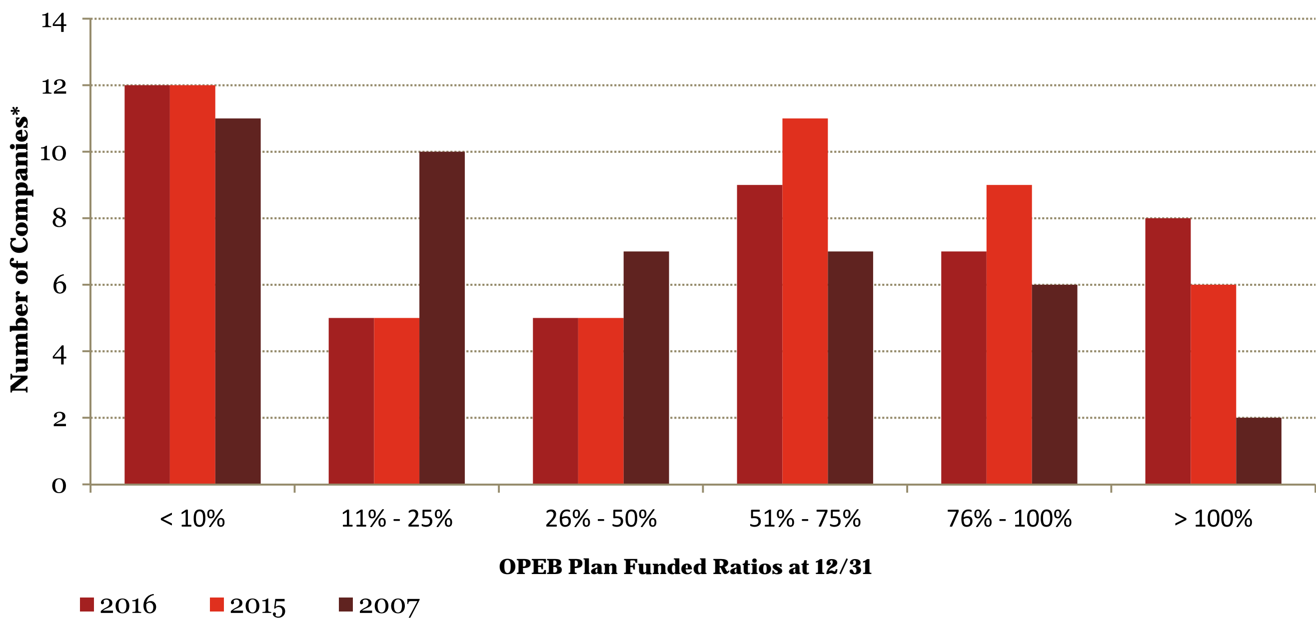
The percentage of companies in the study with funded OPEB plans decreased slightly from 52% in 2007 to 49% in 2015 and 48% in 2016. However, unlike pension plan funded ratios (pension plan assets as a percentage of pension benefit obligation), OPEB plan funded ratios did not experience a significant decline from 2007 to 2016, due to both significant differences in asset mix between pension and OPEB plans and significantly lower funded ratios for most funded OPEB plans than for pension plans.

Table 9 – OPEB plan funding

	Study Companies - % Funded vs. Unfunded		
	2016*	**2015**	**2007**
Funded	48%	49%	52%
Unfunded	52%	51%	48%

** Decrease from 1% from 2015 is due to one company changing from funded to unfunded during 2016.*

Chart 12 – OPEB plan funded ratios



** Completely unfunded OPEB plans were excluded from this chart.*

For more information contact

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