

Pension/OPEB 2016 Assumption and Disclosure Study

May 2016





Dear Clients and Friends,

PwC is pleased to share with you our **Pension/OPEB 2016 Assumption and Disclosure Study**. This study presents our analysis of the 2015 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 2014 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.

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, 2015, of the 100 companies studied, 25 disclosed that they are using a multiple discount rate approach to measure 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, 2015, of the 100 companies studied, 12 disclosed that they are using a full or partial mark-to-market approach.

We hope you find the results of our **Pension/OPEB 2016 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

Table of contents

<i>I – Study highlights.....</i>	<i>1</i>
Pension highlights	1
OPEB highlights	3
<i>II – New study data.....</i>	<i>4</i>
Multiple discount rate method & mark-to-market	4
<i>III – Pension plans discussion</i>	<i>6</i>
Pension discount rate	6
Pension expected rate of return on plan assets	9
Pension salary progression	10
Pension funding levels	11
Pension deferred losses	12
Pension asset allocation	12
Frozen pension plans	13
<i>IV – OPEB plans discussion</i>	<i>14</i>
OPEB discount rate	14
OPEB health care cost trend rate	16
OPEB ultimate health care trend rate	17
OPEB funding levels	18
<i>For more information contact</i>	<i>19</i>

I – Study highlights

Pension highlights



Pension results – Summary of median assumptions

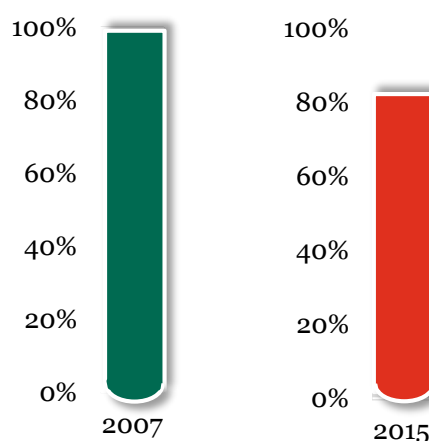
	Discount rate (at 12/31)	Expected rate of return on plan assets (at 1/1)	Salary progression rate (at 12/31)
2015	4.30%	7.25%	3.92%
2014	4.00%	7.35%	4.00%
2007	6.25%	8.30%	4.25%

The 2015 median discount rate for pension plans in the study increased 30 basis points since 2014 but has decreased 195 basis points since 2007. The 2015 median expected long-term rate of return on pension plan assets decreased 10 basis points since 2014 and 105 basis points since 2007. The 2015 median salary scale assumption decreased 8 basis points since 2014 and has decreased 33 basis points since 2007.

Median plan funding levels remained unchanged from 2014, with pension plan assets equal to approximately 82% of the projected benefit obligation (PBO) in 2015 and 2014. In 2007 the median funded ratio was 100%. If the median discount rate 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 increased from 30% of the projected benefit obligation at the end of 2014 to 31% of the projected benefit obligation at the end of 2015.

Funding ratios



If companies that use a mark-to-market approach (recognizing gains and losses immediately) are excluded, median deferred losses were 33% of the PBO in 2015. In 2007, deferred losses were only 12% of the PBO.

Median 2015 asset allocations for pension plans in the study were generally consistent with 2014 allocations at 39% equity, 40% debt/fixed income, and 10% other in 2015 compared to 40% equity, 41% debt/fixed income, and 9% other in 2014. In 2007 the median values were 64% equity, 29% debt/fixed income, and 5% other.

OPEB highlights

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

	<i>Discount rate</i>	<i>Initial health care trend rate</i>	<i>Ultimate trend rate</i>	<i>Years to ultimate trend rate</i>
2015	4.25%	6.81%	5.00%	9
2014	3.90%	7.00%	5.00%	8
2007	6.25%	9.00%	5.00%	6

The 2015 median discount rate for OPEB plans in the study increased 35 basis points since 2014 but has decreased 200 basis points since 2007. The 2015 median initial health care trend rate has decreased 19 basis points since 2014 and has decreased 219 basis points since 2007. The 2015 median ultimate trend rate has remained unchanged since 2014 and 2007. The median number of years to reaching the ultimate rate has increased from eight years in 2014 to nine years in 2015, and has increased three years since 2007.

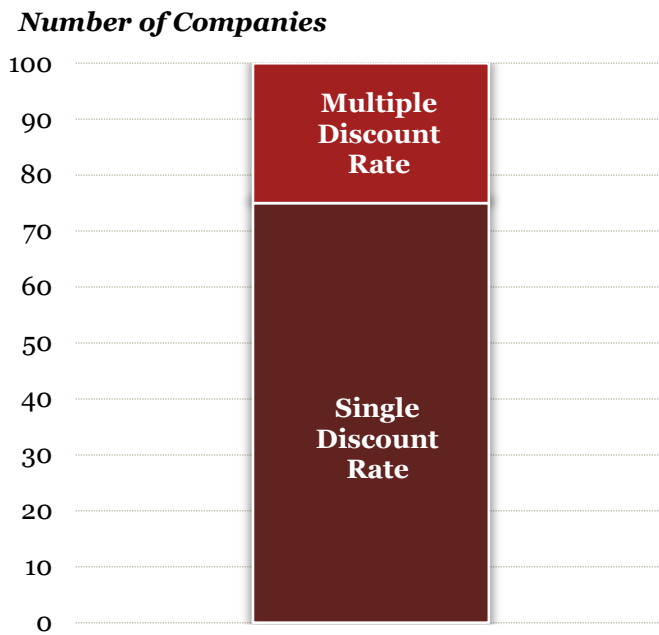
The percentage of funded OPEB plans in the study has remained constant since 2014 with 49% of plans being funded in 2015 compared with 50% being funded in 2014. In 2007 a slightly higher percentage (52%) of the OPEB plans in the study were funded. For OPEB plans that are funded, the median plan funding level increased slightly since 2014, with OPEB plan assets equal to approximately 54% of the APBO in 2015 compared with 52% in 2014. In 2007 the median funding ratio was approximately 25% for funded OPEB plans.

II – New study data

Multiple discount rate method & mark-to-market



Multiple discount rate adoption



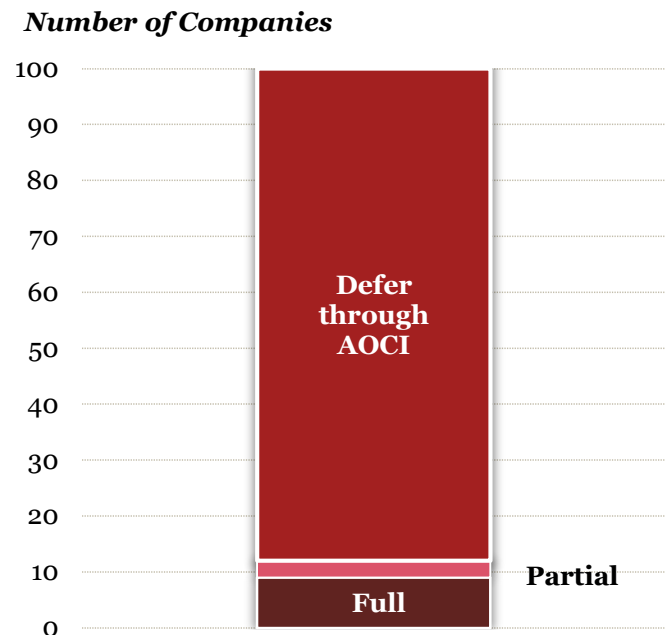
Multiple discount rate method

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.

In 2015, many companies adopted an alternative approach 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, 25 disclosed adopting a multiple discount rate method. Some of the remaining 75 companies may also intend to use this new method in developing 2016 expense but have not yet disclosed this change.

Mark-to-market adoption



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, 9 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.

III – Pension plans discussion

Pension discount rate

The median discount rate for pension plans in the study increased by 30 basis points since 2014 (but decreased by 195 basis points since 2007), to 4.30% in 2015.

Similarly, the mean discount rate increased by 34 basis points since 2014 (but decreased by 197 basis points since 2007), to 4.30% in 2015.

While 2014 rates had decreased significantly from those in the previous year, 2015 rates have increased but not to the level of 2013 rates. These changes are consistent with overall movement of interest rates from 2007 to 2015.

For a typical plan in 2015 with a benefit obligation of \$1 billion, if the discount rate were to decrease 34 basis points to last year's level, this would increase the balance sheet liability by approximately \$50 million. If the discount rate were to increase by 197 basis points to 2007 levels, this would decrease the balance sheet liability by approximately \$300 million.



Table 1 – Pension discount rate

	<i>Discount rate (at 12/31)</i>		
	2015	2014	2007
Low	2.10%*	3.10%	5.50%
Median	4.30%	4.00%	6.25%
High	4.93%	4.50%	6.80%
Mean	4.30%	3.96%	6.27%

*One company with various frozen defined benefit plans is anomalous and is 100 basis points less than the next lowest company.

Chapter 1 – Pension discount rate

Number of companies

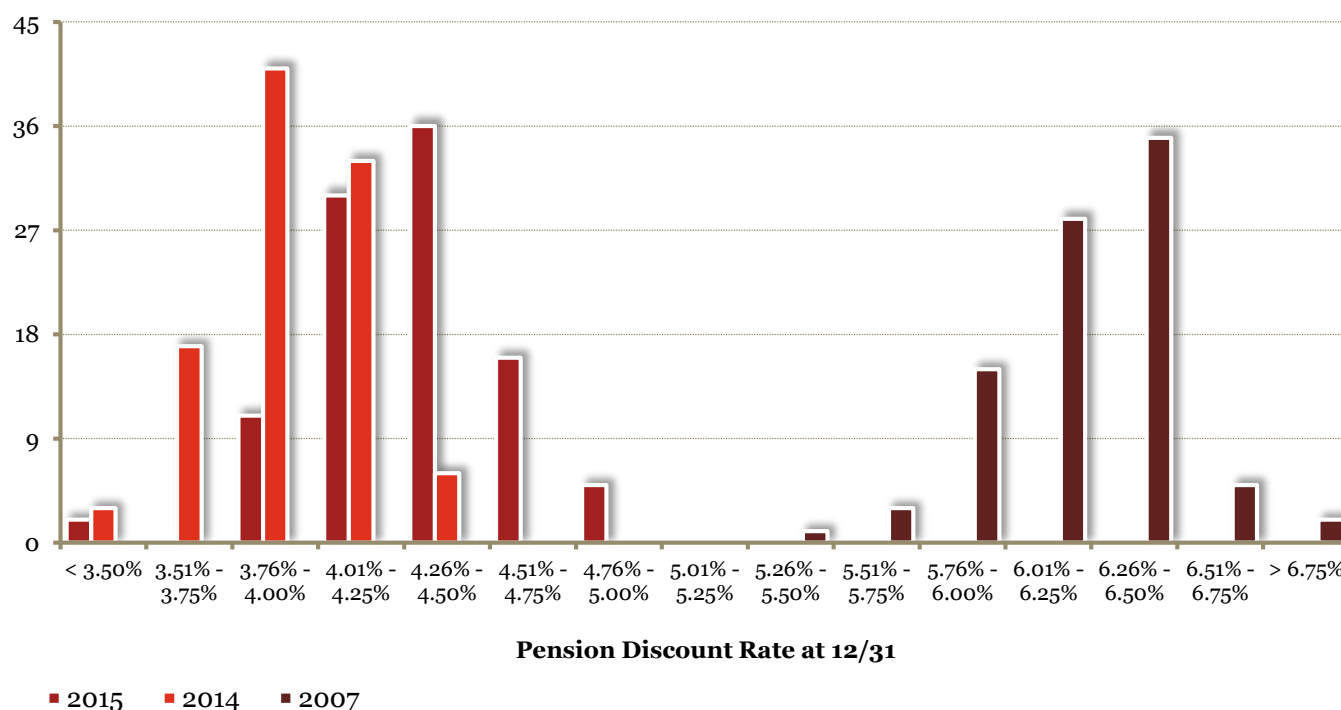
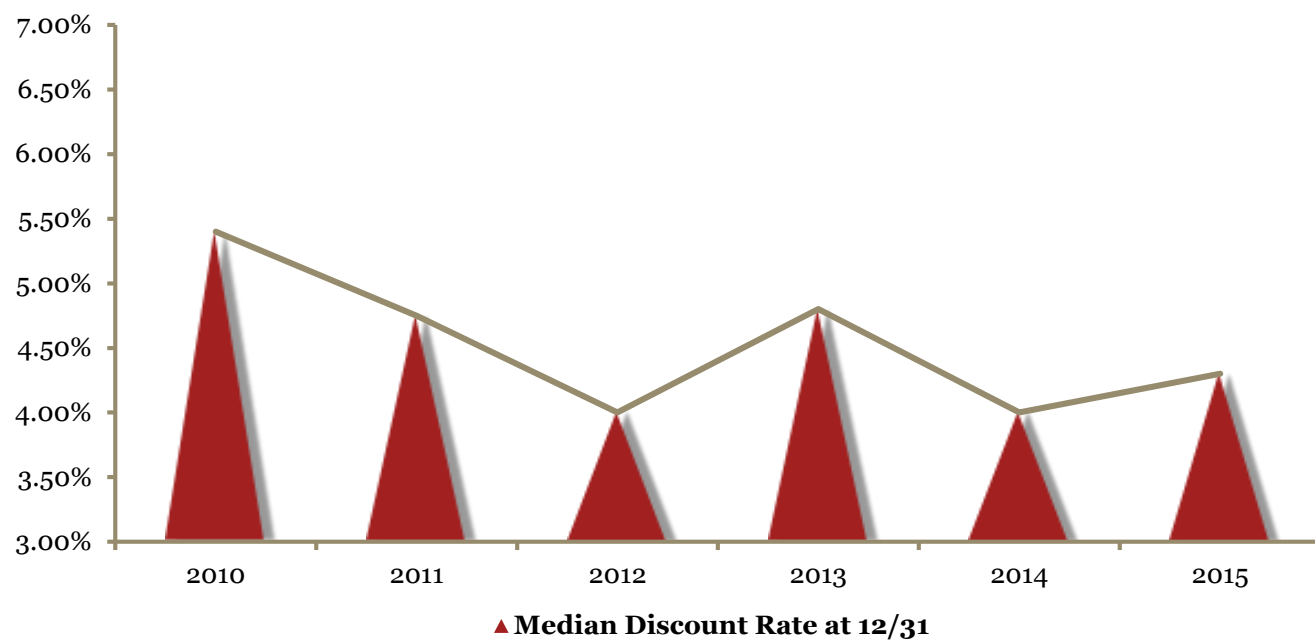


Chart 2 – 5 year trend in pension discount rate



Pension expected rate of return on plan assets

The median EROA (expected return on assets assumption) for pension plans in the study decreased by 10 basis points since 2014 and by 105 basis points from 2007, to 7.25% in 2015. The relatively small changes in this assumption compared to fluctuations in the discount rate assumption 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 2015 with \$1 billion in assets, a decline of 10 basis points to the expected return on assets assumption would result in a \$1 million increase in annual pension expense.

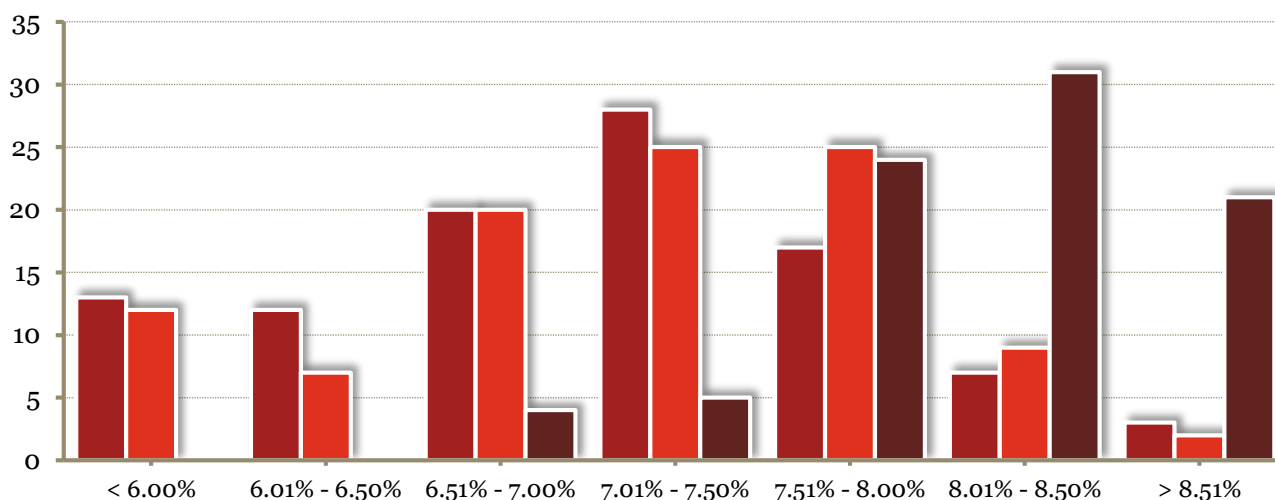
A decline of 105 basis points to the expected return on assets assumption would result in an \$11 million increase in annual pension expense.

Table 2 – Pension expected return on assets

	<i>Expected Rate of return on plan assets (at 1/1)</i>		
	2015	2014	2007
Low	3.65%	4.56%	6.90%
Median	7.25%	7.35%	8.30%
High	9.00%	9.00%	9.50%
Mean	7.06%	7.21%	8.28%

Chart 3 – Pension expected return on assets

Number of companies



Pension Expected Return on Assets at 1/1

■ 2015 ■ 2014 ■ 2007

Pension salary progression

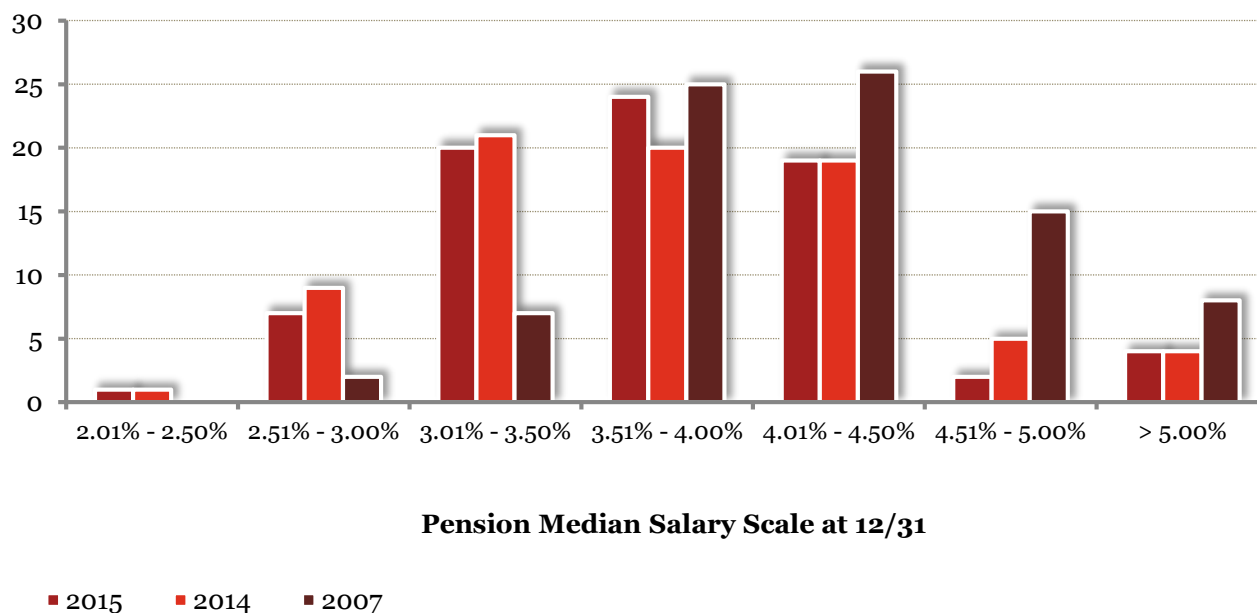
The median salary scale assumption for pension plans in the study decreased by 33 basis points since 2007—to 4.00% in 2014 and 3.92% in 2015, whereas the mean salary scale assumption decreased by about 56 basis points since 2007, which appears to be generally consistent with the decrease in other economic assumptions over the period.

Table 3 – Pension salary scale

	Salary progression rate (at 12/31)		
	2015	2014	2007
Low	0.50%	0.80%	3.00%
Median	3.92%	4.00%	4.25%
High	5.97%	7.50%	6.75%
Mean	3.78%	3.85%	4.34%

Chart 4 – Pension salary scale

Number of companies



Pension funding levels

The median funded ratio (pension plan assets as a percentage of projected benefit obligation) of pension plans was 82% in both 2014 and 2015 which is an 18 basis point decrease from the median funded ratio in 2007. Similarly, the mean funded ratio was 81% in both 2014 and 2015, 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. As a result, absent other changes in market conditions (for example, increasing interest rates or significant equity market returns), these funding levels may continue for some time.

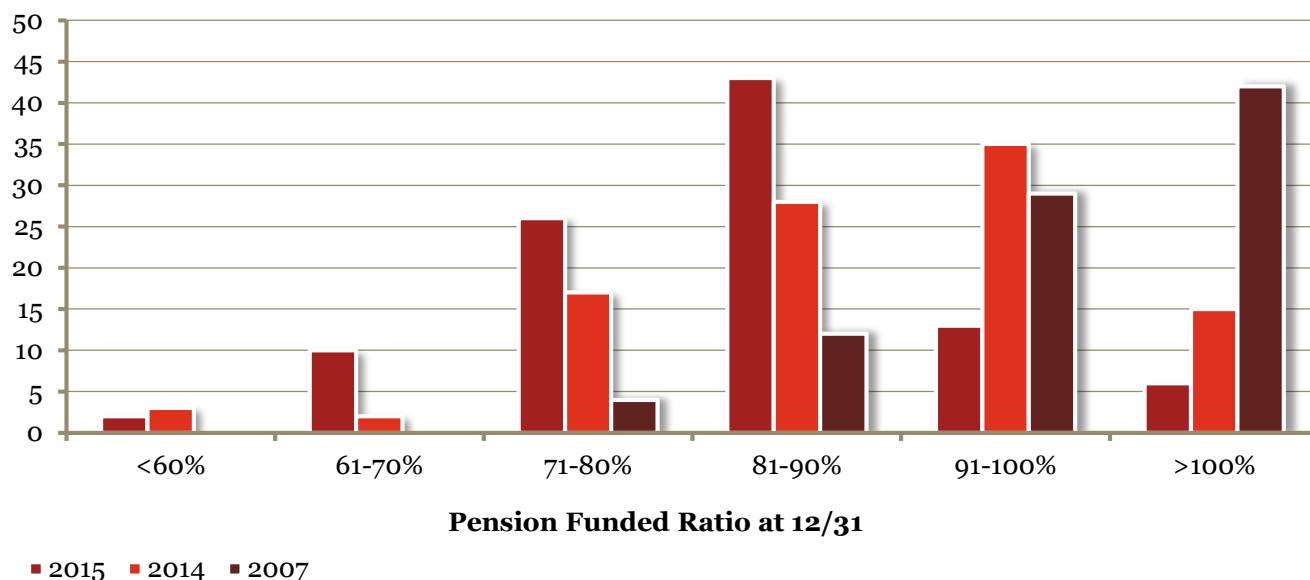
In 2007, of the companies in the study, 41 companies had pension plans that were 100% funded or better, compared with only 5 in 2014 and 2015.

Table 4 – Pension plan funded ratios

	Funded Ratios - Pension plan assets as a % of PBO (at 12/31)		
	2015	2014	2007
Low	45%	43%	73%
Median	82%	82%	100%
High	124%	120%	143%
Mean	81%	81%	102%

Chart 5 – Pension plan funded ratios

Number of companies



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 31% in 2015. Though deferred losses remained relatively constant from 2014, gains due to increasing discount rates on the PBO were offset by asset losses due to lower-than-expected asset returns in 2015.

For a typical plan in 2015 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.

Table 5 – Pension plan deferred gains/(losses)

	<i>Unamortized gain/(loss) as a % of PBO* (at 12/31)</i>		
	2015	2014	2007
Low	(155%)	(151%)	(114%)
Median	(31%)	(30%)	(12%)
High	37%	5%	20%
Mean	(28%)	(29%)	(12%)

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

Pension asset allocation

Also included in our study is a detail of asset allocations (i.e., investment strategy) for funded pension plans. Overall, employers have shifted away from equity into fixed income and alternative investments since 2007. The median percentage of plan assets invested in equities dropped by 25 percent from 2007 to 2015,

decreasing to 39% 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 6 – Pension asset allocation at 12/31

	<i>Equity</i>			<i>Debt/Fixed income</i>			<i>All other*</i>		
	2015	2014	2007	2015	2014	2007	2015	2014	2007
Low	0%	0%	0%	11%	12%	0%	0%	0%	0%
Median	39%	39%	64%	40%	41%	29%	15%	15%	5%
High	80%	81%	97%	96%	95%	52%	87%	87%	88%
Mean	39%	40%	62%	44%	43%	28%	17%	17%	9%

* Represents aggregation of cash, real estate, and other investments.

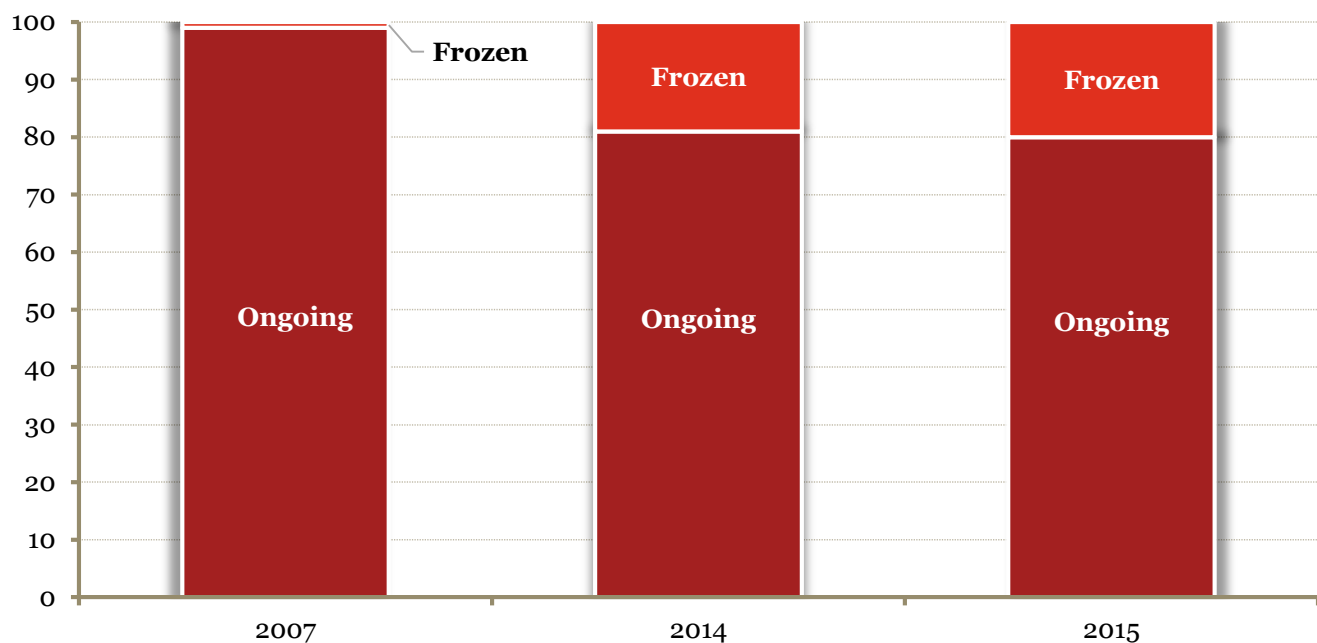
Frozen pension plans

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

19 companies in 2014 and 20 companies in 2015. 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 6 – Frozen pension plans

Number of Companies



IV – OPEB plans discussion

OPEB discount rate

Consistent with the pattern of increase in pension discount rates for 2015, the median discount rate for OPEB plans in the study increased by 35 basis points since 2014 (and decreased by 200 basis points since 2007), to 4.25% in 2015. Similarly, the mean discount rate increased by 33 basis points since 2014 (and decreased by 205 basis points since 2007), to 4.20% in 2015. These changes are consistent with overall movement of interest rates in the marketplace from 2007 to 2015.

For a plan in 2015 with a benefit obligation of \$1 billion, if the discount rate were to decrease 35 basis points to last year's level, this would increase the balance sheet liability by approximately \$60 million. If the discount rate were to increase by 200 basis points to 2007 levels, this would decrease the balance sheet liability by approximately \$300 million.

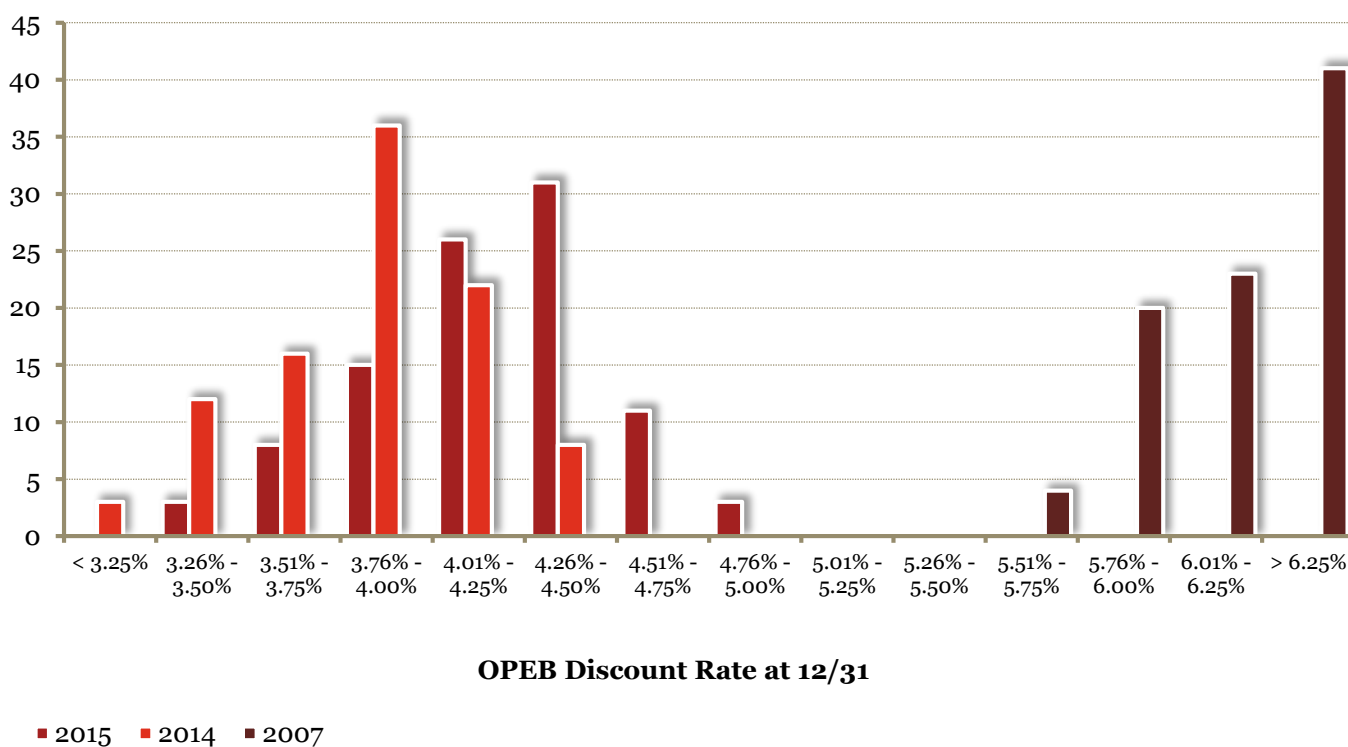


Table 7 – OPEB discount rate

	<i>Discount rate (at 12/31)</i>		
	2015	2014	2007
Low	3.26%	2.95%	5.66%
Median	4.25%	3.90%	6.25%
High	4.97%	4.40%	6.80%
Mean	4.20%	3.87%	6.25%

Chart 7 – OPEB discount rate

Number of companies



OPEB health care cost trend rate

The median initial health care trend rate for OPEB plans in the study decreased by 19 basis points since 2014 (and decreased by 219 basis points since 2007), to 6.81% in 2015. These decreases may be attributable to many factors, such as continued slowing of drug cost

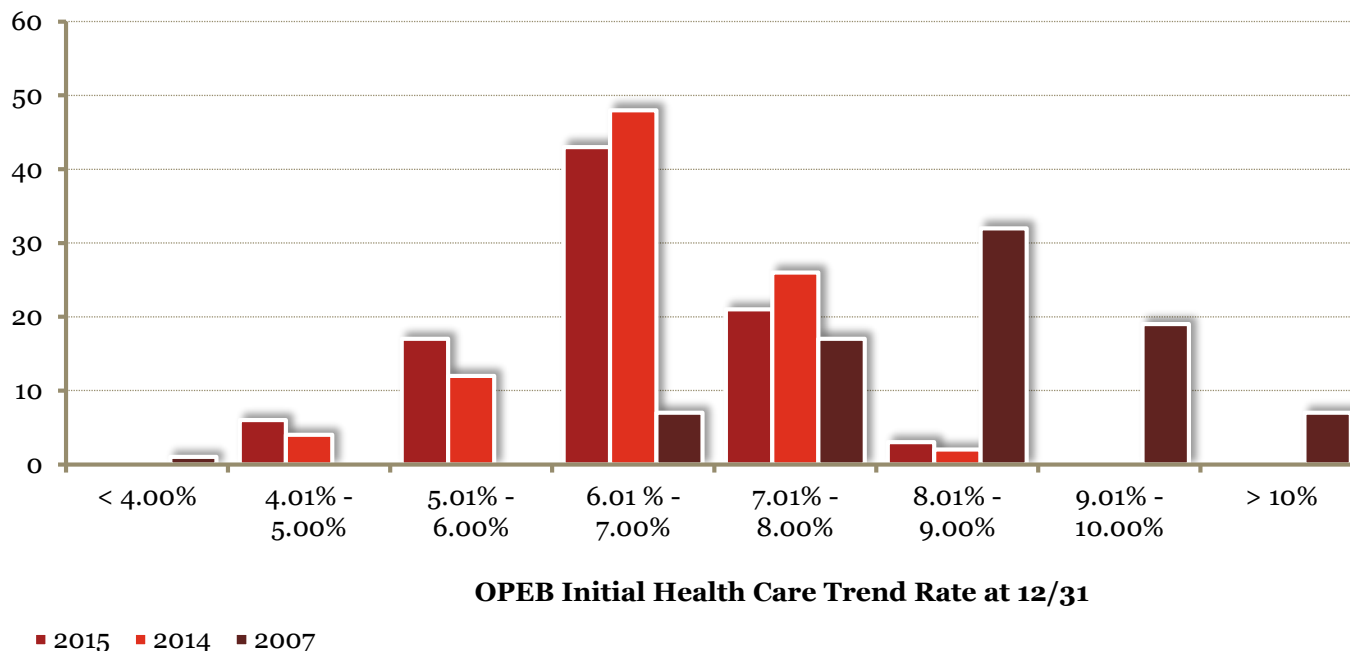
increases and overall health care cost increases, and other plan design changes and cost containment initiatives by employers.

Table 8 – OPEB trend rate at 12/31

	Initial health care trend rate			Ultimate trend rate			Years to ultimate trend rate		
	2015	2014	2007	2015	2014	2007	2015	2014	2007
Low	4.50%	4.50%	3.00%	4.00%	3.50%	4.49%	0	0	2
Median	6.81%	7.00%	9.00%	5.00%	5.00%	5.00%	9	8	6
High	9.00%	8.70%	12.00%	5.21%	5.22%	6.00%	78	80	21
Mean	6.66%	6.84%	8.81%	4.78%	4.82%	5.05%	11	10	7

Chart 8 – OPEB initial health care trend rate

Number of companies



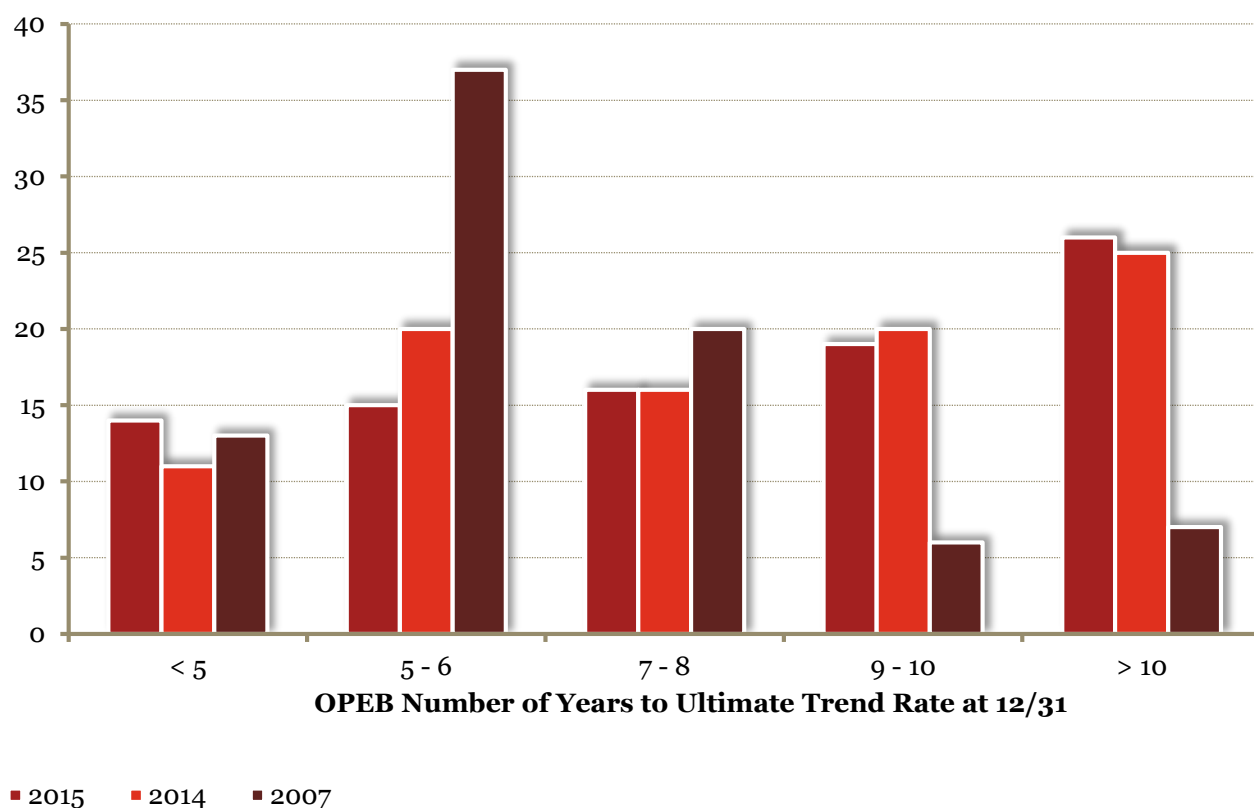
OPEB ultimate health care trend rate

The median ultimate trend rates for OPEB plans in the study remained constant from 2007 to 2015 at 5.00%, while the mean ultimate trend rate decreased by 27 basis points over the period from 5.05% in 2007 to 4.78% in 2015.

While the median time to reach the ultimate trend rate increased from 6 years in 2007 to 9 years in 2015, we noted that 26 of the companies in the study had extended their years-to-ultimate to more than 10 years in 2015, compared to 7 companies with years-to-ultimate greater than 10 years in 2007.

Chart 9 – OPEB years to ultimate trend rate

Number of companies



OPEB funding levels

The percentage of companies in the study with funded OPEB plans decreased slightly from 52% in 2007 to 50% in 2014 and 49% in 2015. 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 2015, 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.

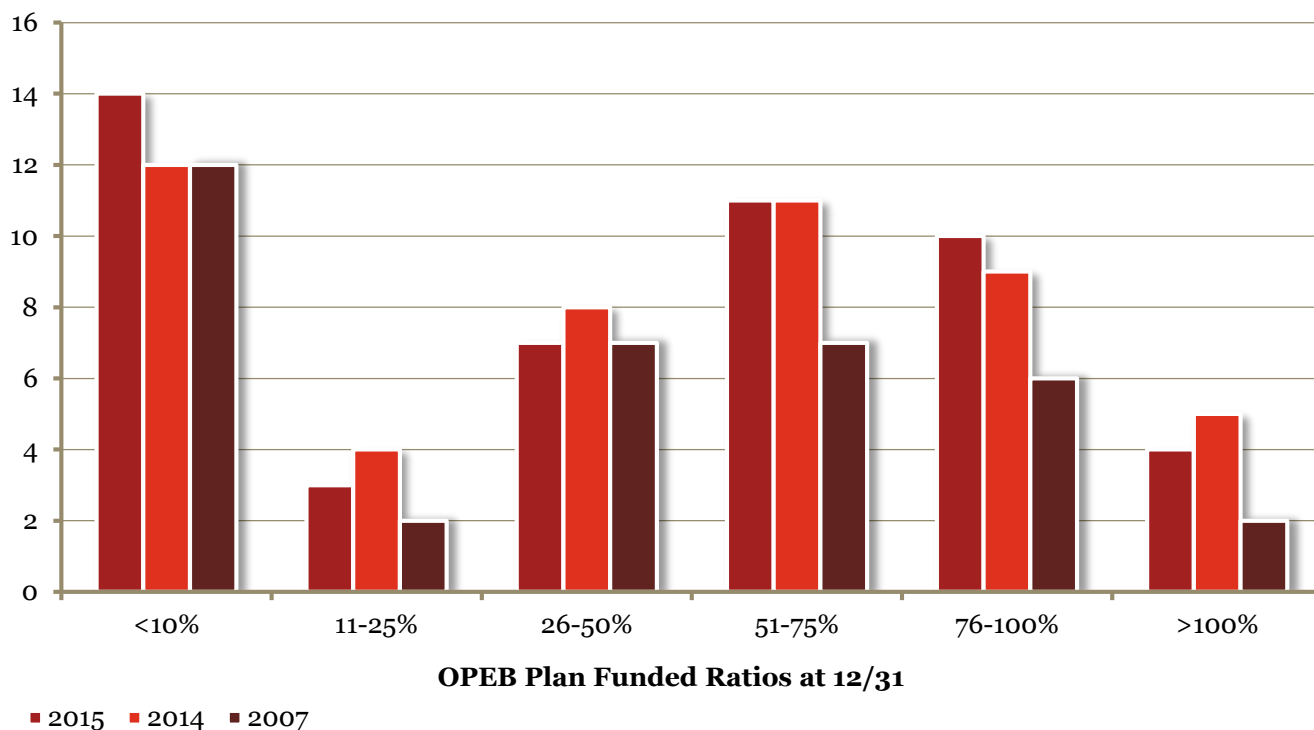
Table 9 – OPEB plan funding

	<i>Study companies – % Funded vs. Unfunded</i>		
	2015*	2014	2007
Funded	49%	50%	52%
Unfunded	51%	50%	48%

*Decrease of 1% from 2014 is due to one company changing from funded to unfunded during 2015.

Chart 10 – OPEB plan funded ratios

Number of companies



For more information contact

If you would like additional details on our analysis, please contact any of the authors listed below or your regional People and Organization professional:

Ken Stoler

(213) 270 8933

ken.stoler@pwc.com

Kevin Hassan

(203) 539 4049

kevin.hassan@pwc.com

Ken Gritzan

(646) 471 4596

ken.gritzan@pwc.com

Tim Lynch

(646) 471 2044

timothy.m.lynch@pwc.com