U.S. Multiemployer Pension Plan Stress Metrics: Previous Benefit Cost and Previous Benefit Cost Ratio

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Introduction and Executive Summary

The Society of Actuaries (SOA) is pleased to update its longitudinal study of Previous Benefit Cost (PBC) and Previous Benefit Cost Ratio (PBCR), metrics for measuring the financial stress imposed on multiemployer pension plans (MEPPs) by the combination of unfunded liabilities and declining numbers of active participants.[1]

This study presents results for 1999–2015 plan years, as well as preliminary results for 2016, based on a partial year of reporting. Analysis is based on publicly available Department of Labor Form 5500 filings as of Nov. 14, 2017; this study updates results through 2015, with preliminary results for 2016 based on a partial year of reporting. Data for 2015 includes 1,221 plans covering roughly 9.7 million participants and roughly 205,000 employers.[2]

Here are highlights of the updated results:

- Using funding discount rates, the median PBC was −$621 in 1999, indicating a small funding "surplus" rather than an unfunded liability. The median peaked at $3,799 in 2009 and has generally declined since to $2,119 in 2015. Preliminary indications for 2016 suggest an uptick, most likely because unfunded liabilities for 2016 increased, in part as a result of low investment returns during 2015.
- Using lower Current Liability discount rates, median PBCs generally increased since 2009—from $8,004 in 2009 to $11,271 in 2015, almost five times its funding discount rate equivalent. Current Liability discount rates have steadily fallen since 2009, while funding discount rates stayed the same or fell only slightly. Lower discount rates generate greater liabilities, hence greater unfunded liabilities and greater PBCs.
- Using funding discount rates, the median PBCR was 0% in 1999, indicating no unfunded liability. It peaked in 2009 at 61% and has declined to 54% in 2015. Using the lower Current Liability discount rates, the median PBCR in 1999 was 17%, generally increasing to 67% in 2009. It has hovered between 67% and 70% since 2009 and is 67% in 2015.
- Since 2009, annualized costs of unfunded liabilities outweigh the cost of current participants' benefit accruals for over half of plans.
- Aggregate unfunded liabilities increased slightly from about $129 billion for 2014 to about $133 billion for 2015, when measured with the actuarial discount rates, cost and asset methods used for funding purposes. Most plans continued to have an unfunded liability on this funding basis. Using Current Liabilities, which are computed with much lower discount rates that vary from year to year, unfunded liabilities increased from $496 billion in 2014 to

[1] PBC is the cost of current benefit accruals plus a 15-year amortization payment on the unfunded. PBCR is the ratio of the 15-year amortization payment on the unfunded liability over the PBC. Both metrics use the unit credit actuarial cost method and the market value of assets. Previous studies are available at https://www.soa.org/research-reports/2016/2016-multi-pension-plan-stress-metrics/.

[2] Refer to the Data and Methods section of this study for more information on the data included as well as Form 5500 filing due dates.

$535 billion in 2015. Note that Current Liability discount rates were slightly lower for 2015 than for 2014, generally causing liabilities to increase slightly.

Previous Benefit Cost (PBC)

A plan's PBC represents the annualized cost of funding its unfunded liability per active participant.[3] The median PBC using funding discount rates was –$621 for 1999, indicating a small funding "surplus" rather than an unfunded liability. The median peaked at $3,799 for 2009 and has generally declined since to $2,119 for 2015. However, preliminary indications suggest an uptick for 2016. Unfunded liabilities for 2016 increased, most likely because of low investment returns during 2015.

Using Current Liability discount rates, median PBCs generally increased since 1999—from $465 in 1999 to $8,004 in 2009 to $11,271 in 2015, almost five times its funding discount rate equivalent. Current Liability PBCs generally continued to increase after 2009 while funding discount rate PBCs generally decreased, primarily because Current Liability discount rates steadily fell while funding discount rates stayed the same or fell only slightly. Lower discount rates generate greater liabilities, hence greater unfunded liabilities. Refer to Figure 5 for the average discount rates over this period.

Medians provide a glimpse at the "average" situation, but shed no light on the range of PBCs among all plans. Figure 1 shows the percentage of plans whose PBCs fall within given ranges. The distribution is weighted by participants in order to better represent the system as a whole. These PBCs are nominal—they have not been adjusted for inflation.

Figure 1

DISTRIBUTION OF PLANS BY PBC RANGES

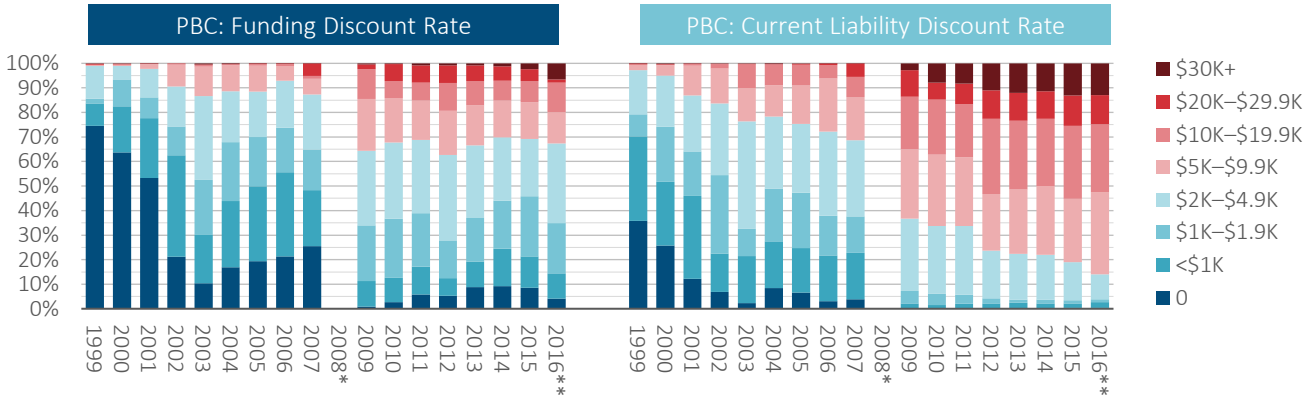


Figure 1 shows that when using the funding discount rate, the percentage of plans in the highest PBC ranges have held fairly constant during the past few years. For example, since 2010, roughly 7% of plans have had a PBC that is greater than $20,000, and about 30% have had a PBC greater than $5,000. The percentage of plans with PBCs under $1,000 increased from 11% in 2009 to 24% in 2014 with a subsequent decline to 21%. In other words, the most stressed plans continue to be highly stressed. And while the number of plans among the least stressed has been growing, it remains small.

During the same years, when using the Current Liability discount rate, the percentage of plans with the highest PBCs has slowly increased. Since 2010, the percentage of plans with PBC greater than $20,000 increased from 15% in 2010 to 26% in 2015. The number of plans with PBCs among the lowest levels has steadily fallen. Current Liability PBCs have generally increased primarily because Current Liability discount rates steadily fell while funding discount rates stayed the same or fell

[3] PBC and PBCR measure unfunded liability using the unit credit actuarial cost method and market value of assets; annualized cost of the unfunded liability is defined as a 15-year level-dollar amortization payment on the unfunded liability.

only slightly. Lower discount rates generate greater liabilities, hence greater unfunded liabilities. Refer to Figure 5 for the average discount rates over this period.

Previous Benefit Cost Ratio (PBCR)

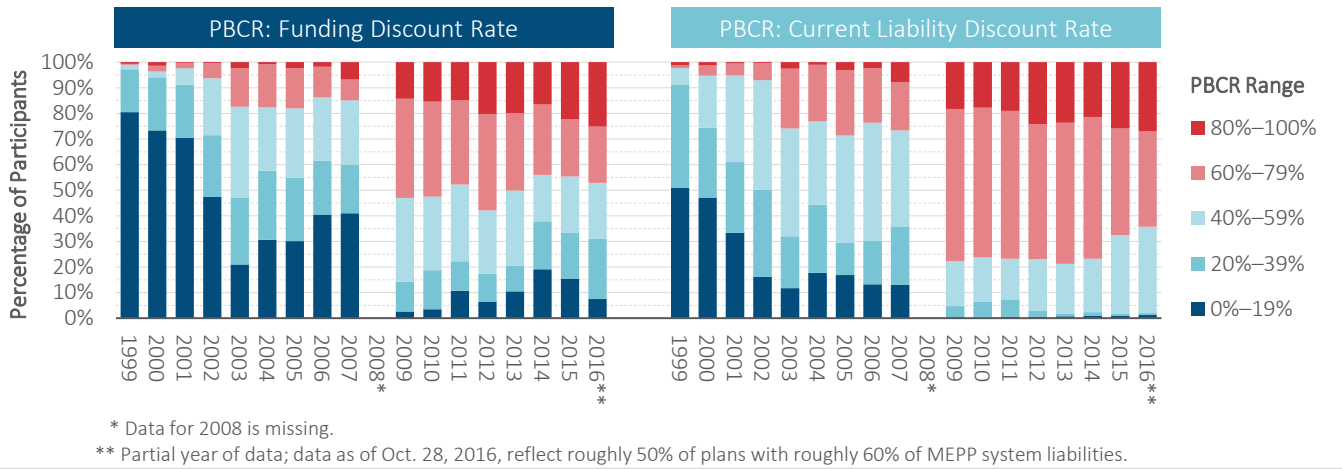
A plan's PBCR represents the annualized cost of its unfunded liability as a portion of its total annualized cost, including the cost of current benefit accruals and administrative expenses.[4] A PBCR of 0% indicates no unfunded liability. A PBCR above 50% indicates that funding the unfunded liability makes up more than half of the annualized cost to fund a plan over 15 years.

Using funding discount rates, the median PBCR was 0% in 1999. It peaked in 2009 at 61% and has declined to 54% in 2015. Using the lower Current Liability discount rates, the median PBCR in 1999 was 17%, generally increasing to 67% in 2009. In 2015, it is again 67%, having hovered between 67% and 70% since 2009.

Shifting to a broader view than medians can provide, Figure 2**Error! Reference source not found.** shows PBCR distributions across all plans, weighted by the number of participants. Both distributions show that since 2009, annualized costs of unfunded liabilities outweigh the cost of current participants' benefit accruals for over half of plans.

Figure 2

DISTRIBUTION OF PLANS BY PBCR RANGES



* Data for 2008 is missing.

** Partial year of data; data as of Oct. 28, 2016, reflect roughly 50% of plans with roughly 60% of MEPP system liabilities.

The distribution of PBCRs using funding discount rates shows that since 2009, the percentage of plans with PBCRs of 60% or more has generally decreased very slightly. Relief among the most stressed plans has been limited. The percentage of plans at the lowest stress level—those with PBCRs under 20%—has increased from 3% in 2009 to 16% in 2015, indicating that some of the less stressed plans have been able to further reduce their stress levels.

Using the lower Current Liability discount rates for the same time period, percentage of plans at higher stress levels have fallen slightly. And in general since 2009, the percentage of plans with PBCRs in the least stress level is almost nonexistent because almost all plans have an unfunded Current Liability.

[4] PBC and PBCR measure unfunded liability using the unit credit cost method and market value of assets; annualized cost of the unfunded liability is defined as a 15-year level-dollar amortization payment on the unfunded liability. The use of these methods for these metrics is not intended to provide commentary on their appropriateness for funding these plans or any other purpose.

Dependency Ratio

Unfunded liabilities reflect benefits earned by both active and inactive participants. However, MEPP employer contributions typically are a product of the number of active participants working and the prenegotiated contribution rate. Therefore, all other things being equal, a plan with a higher dependency ratio—more inactive participants relative to active participants—will feel greater pressure on its contribution rates.[5]

Figure 3

DEPENDENCY RATIO

PERCENTAGE OF PLANS IN DEPENDENCY RATIO RANGES

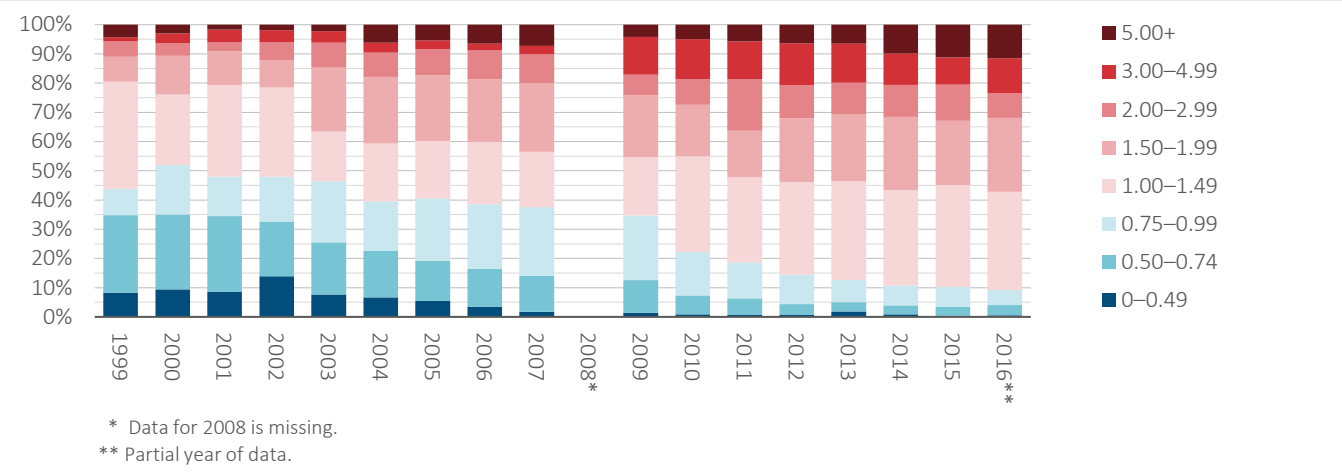


Figure 3 shows that inactive participants have outnumbered active participants, and the proportion of inactive participants steadily increased. In 1999, about 1 out of 10 participants was in a plan with a dependency ratio of 2.0 or greater, and 5.5 out of 10 were in plans with a dependency ratio of 1.0 or more. By 2015, 3 out of 10 participants were in plans with a dependency ratio of 2.0 or greater, and 9 out of 10 were in plans with a dependency ratio of 1.0 or more. Further, 1 out of 10 participants was in a plan with a dependency ratio of 5.0 or more.

Aggregate Liabilities and Funded Status

The multiemployer pension system carries significant unfunded liabilities, as Figure 4 shows. For the most recent complete year of reporting, when using the actuarial methods and discount rates reported for minimum funding purposes, aggregate unfunded liabilities increased from about $129 billion for 2014 to about $133 billion for 2015. Most plans continued to have an unfunded liability on this funding basis. Note that the actuarial methods may include asset smoothing. Factors affecting unfunded liabilities include contributions, plan changes, assumptions changes and/or favorable financial and demographic experience compared with the actuarial assumptions and are beyond the scope of this study.

Current Liabilities are computed with much lower discount rates that vary from year to year and are compared with the market value of assets. Unfunded liabilities increased slightly, from $496 billion in 2014 to $535 billion in 2015. The increase stemmed from lower discount rates, as well as other factors that were only partially offset by any favorable financial and/or demographic experience. Almost all plans had an unfunded liability on a Current Liability basis. Refer to Figure 5 for a comparison of discount rates for funding purposes and Current Liability.

[5] Inactive participants include retirees as well as participants no longer accruing benefits but not yet retired.

Figure 4
AGGREGATE LIABILITIES AND FUNDED STATUS

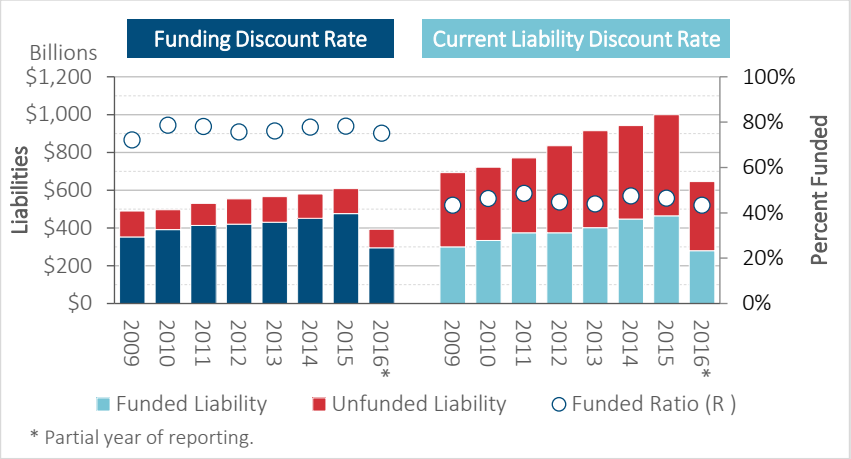
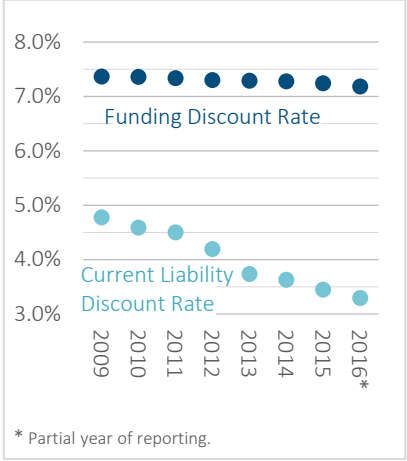


Figure 5
WEIGHTED AVERAGE DISCOUNT RATES



Data and Methods

Tabulations and analyses are based on publicly available data from the Department of Labor Form 5500 as of Nov. 14, 2017, which reflects completed reporting for plan years through 2015 and a partial year of reporting for 2016. Note that with typical extensions, Form 5500 is generally due 9½ months after the end of the plan year. For example, for a plan year that runs from Jan. 1, 2016, through Dec. 31, 2016, Form 5500 is due Oct. 15, 2017.

Other than exclusions or adjustments for obvious errors, data were used as reported. The use of the reported values is not intended to provide commentary on the appropriateness of the underlying assumptions and methods for funding these plans or for any other purpose.

Refer to Table 1 for a summary of the plans included in this study, and note the following items about the data:

- With typical extensions, Form 5500 is generally due 9½ months after the end of the plan year. For example, for a plan year that runs from Jan. 1, 2016, through Dec. 31, 2016, Form 5500 is due Oct. 15, 2017. Most plans file on or immediately before the deadline. Thus, 2016 data reflects primarily plans with calendar year plan years plus any plans that filed earlier than required.
- Data for the 2008 Schedule MB is missing from the Department of Labor database, consequently all 2008 data is excluded from this study.
- The authors' criteria for errors and missing data differ slightly from some previous analyses, so results for previously published years may differ slightly.
- Many participants have earned benefits under more than one multiemployer plan, and many employers contribute to more than one of these plans. This study reflects the sum of reported counts for each plan.

Table 1
SUMMARY OF DATA INCLUDED

Plan Year	Excluded Number of Plans	Included in Study Number of Plans	Number of Participants (Millions)	Number of Contributing Employers
1999	52	583	3.96	N/A
2000	76	1,185	6.90	N/A
2001	79	1,220	8.16	N/A
2002	58	1,248	8.45	N/A
2003	44	1,268	8.53	N/A
2004	38	1,284	8.60	N/A
2005	33	1,306	9.18	N/A
2006	34	1,304	9.25	N/A
2007	34	1,308	9.39	N/A
2008	N/A	N/A	N/A	N/A
2009	134	1,197	9.37	219,486
2010	147	1,173	9.33	212,539
2011	100	1,203	9.57	214,660
2012	96	1,208	9.38	205,714
2013	100	1,194	9.68	208,144
2014	61	1,216	9.76	203,082
2015	42	1,221	9.74	204,767
2016	20	631	6.63	110,411

Liabilities for PBC and PBCR using funding discount rates are the unit credit liabilities reported on Schedule MB for years 2008 and later. For years prior to 2008, the authors estimated unit credit liabilities by adjusting Current Liabilities under Internal Revenue Code §431 for different discount rates. In previous iterations of this study, the authors estimated unit credit liabilities for all years. As a result, some of the figures in this study may not match previously published figures for some years, although the general outcome remains the same.

The techniques and assumptions used were developed for the multiemployer sector as a whole and may not be appropriate for any given plan or small set of plans. Modifications to the assumptions and methods used may result in different numerical outcomes, but the overall conclusions are likely to be similar.

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