PBGC
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Date: February 24, 2016

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Subject: Multiemployer Program Sensitivity Analysis

Executive Summary

This report summarizes PRAD's sensitivity analysis of certain multiemployer assumptions used in the FY14 Projections Report. Specifically, our analysis measured the sensitivity of the Multiemployer Program's years 10 and 20 mean net position as well as 10-year cumulative assistance payments with respect to the following assumptions:

- employment level
- solvency horizon used for MPRA's "long-term" solvency test with respect to suspensions and/or partitions
- end-of-period funding ratio used for the MPRA "long-term" solvency test
- floor on contribution rate increases

As can be seen in Tables 1 and 2, PBGC's net position is most sensitive to the employment level assumption. Table 3 shows that net position is much more sensitive to employment level than is 10-year cumulative assistance payments.

Employment Level

Unlike employer contributions to single-employer plans, employer contributions to multiemployer plans are directly tied to the number of active participants. Since employers typically contribute negotiated hourly rate(s) for each active participant, varying the active employment trend is expected to have a significant impact on aggregate employer contributions. The FY14 Projections Report modeled active participant counts as a stochastic variable with a mean annual decline of 1.3%.[1] We found that doubling the mean annual decline to 2.6% resulted in a 14% deterioration in the year 10 mean net position and a 20% deterioration in the year 20 mean net position. Conversely, a level active participant assumption (i.e. 0% decline) resulted in a 13% improvement in the year 10 mean net position and a 16% improvement in the year 20 mean net position. As shown in Table 3, the sensitivity is much smaller (about 3%) with respect to 10-year cumulative assistance payments.

[1] Hours-per-participant are held constant in ME-PIMS.

"Long-term" Solvency Test

MPRA requires plans to be 1) "critical and declining" and 2) pass a long-term solvency test in order to utilize the tools of benefit suspension and/or partition. For modeling purposes, the FY14 Projections Report applied this provision by requiring plans be projected to be at least 20% funded at the end of the 50-year period following the implementation of suspension and/or partition in order to qualify for these tools. As shown in Tables 1 and 2, the years 10 and 20 mean net positions are relatively insensitive to this assumption. Decreasing the solvency horizon from 50 years to 30 years resulted in a 1.4% improvement in the year 10 mean net position and a 1.0% improvement in the year 20 mean net position. Similarly, changing the required end-of-period funding ratio from 20% to 0% and 60%, respectively, had almost no impact on the years 10 and 20 mean net positions (less than 0.3% impact in all cases).

Floor on Contribution Rate Increases

As noted above, employer contributions depend on employment level and negotiated contribution rate(s). ME-PIMS generally assumes that contribution rates will increase at the historical rate, but no less than the year-over-year Wage Base[2] growth.[3] For the FY14 Projections Report, the mean Wage Base growth was 4.48%.[4] Our sensitivity analysis calculated the impact of changing the Wage Base growth assumption by +/- 50 bps to 4.98% and 3.98%, respectively. As shown in Tables 1 and 2, varying the Wage Base growth by +/- 50 bps had a modest impact.[5] Increasing the Wage Base growth by 50 bps resulted in a 1.2% improvement in the year 10 mean net position and a 2.2% improvement in the year 20 mean net position. Conversely, decreasing the Wage Base growth by 50 bps resulted in a 1.2% deterioration in the year 10 mean net position and a 2.6% deterioration in the year 20 mean net position.

Results Based on Net Position

Tables 1 and 2 summarize the sensitivity testing results. The baseline is the "with MPRA take-up" scenario from the FY14 Projections Report. The "with MPRA take-up" scenario assumes that 60 percent of critical and declining plans will take steps to suspend benefits[6] but with partition take-up constrained to 20% in order to reflect PBGC's limited resources. The FY14 Projections Report indicated that the Multiemployer Program had a negative net position or "deficit" of $42.4 billion, which was projected to shrink to a mean deficit of $28.0 billion by year 10 and $27.8 billion by year 20. Tables 1 and 2 show the sensitivity of the years 10 and 20 mean net positions with respect to various assumptions.

As shown in Tables 1 and 2, changes in the employment level trend had a substantial impact on the projected deficit, whereas changes in the other assumptions had a de minimis impact.

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[2] Social Security Wage Base is the maximum earned gross income or upper threshold on which a wage earner's Social Security tax may be imposed.

[3] Additional upticks in the contribution rate are assumed for plans projected to be in endangered or critical status.

[4] Wage Base growth is a stochastic variable in ME-PIMS. When we say that the mean Wage Base growth is 4.48%, the average is taken over all years for all 500 scenarios.

[5] We only changed the Wage Base growth for purposes of the floor on contribution rate increases. Wage Base growth was left unchanged for other purposes.

[6] 100% take-up for one very large systemically important plan.

The results below were calculated using a stochastic model, ME-PIMS, which is described in the Appendices of the 2014 Projection Report, along with the model's assumptions, methodology, and sample statistics.[7]

Table 1: Year 10

	Mean Present Value of Net Position	*Change from Baseline*	*Percentage (Improvement) / Deterioration from Baseline*
Baseline	(28,037)	- -	- -
Level Employment (0%)	(24,415)	3,622	(12.9%)
Double Employment Decline (-2.6%)	(31,933)	(3,896)	13.9%
30-Year MPRA Solvency Horizon*	(27,638)	399	(1.4%)
60% Funding Ratio Required at End of MPRA Solvency Horizon**	(28,056)	(19)	0.1%
0% Funding Ratio Required at End of MPRA Solvency Horizon**	(28,025)	12	(0.0%)
4.98% Floor on Contribution Rate Increases (+50bp)	(27,702)	335	(1.2%)
3.98% Floor on Contribution Rate Increases (-50bp)	(28,382)	(345)	1.2%

Table 2: Year 20

	Mean Present Value of Net Position	*Change from Baseline*	*Percentage (Improvement) / Deterioration from Baseline*
Baseline	(26,238)	- -	- -
Level Employment (0%)	(21,987)	4,251	(16.2%)
Double Employment Decline (-2.6%)	(31,481)	(5,243)	20.0%
30-Year MPRA Solvency Horizon*	(25,979)	259	(1.0%)
60% Funding Ratio Required at End of MPRA Solvency Horizon**	(26,304)	(66)	0.3%
0% Funding Ratio Required at End of MPRA Solvency Horizon**	(26,228)	10	(0.0%)
4.98% Floor on Contribution Rate Increases (+50bp)	(25,655)	583	(2.2%)
3.98% Floor on Contribution Rate Increases (-50bp)	(26,930)	(692)	2.6%

* Baseline assumes a 50-year solvency horizon

** Baseline assumes a 20 Percent Funding Ratio at the end of the 50-year solvency horizon

[7] A copy of the 2014 Multiemployer Projections report can be found here: FY2014 Projections Report.

Results Based on Cumulative Assistance Payments

As the Multiemployer program approaches insolvency, it becomes increasingly important to consider cash flow impacts in addition to liability impacts. With that in mind, Table 3 is analogous to Tables 1 and 2 except the sensitivity is measured with respect to cumulative nominal financial assistance and partition payments in the 10-year period covering 2015 - 2024. As can be seen below, the PV of cumulative financial assistance payments is most sensitive to the employment level assumption. We found that doubling the mean annual employment decline to 2.6% resulted in a 3.1% increase in the cumulative assistance payments while a level active participant assumption (i.e. 0% decline) resulted in a 2.8% decrease in the cumulative assistance payments. We also found that decreasing the solvency horizon from 50 years to 30 years resulted in a 1.6% decrease in the cumulative assistance payments while changes in the remaining assumptions had virtually no impact.

Table 3: Sensitivity Analysis of Cash Flows

	Cumulative Nominal Assistance & Partition Payments (2015-2024)	*Change from Baseline*	*Percentage Increase / (Decrease) from Baseline*
Baseline	5,256	- -	- -
Level Employment (0%)	5,111	(145)	(2.8)%
Double Employment Decline (-2.6%)	5,418	162	3.1%
30-Year MPRA Solvency Horizon*	5,173	(83)	(1.6)%
60% Funding Ratio Required at End of MPRA Solvency Horizon**	5,285	29	0.6%
0% Funding Ratio Required at End of MPRA Solvency Horizon**	5,242	(14)	(0.3)%
4.98% Floor on Contribution Rate Increases (+50bp)	5,236	(20)	(0.4)%
3.98% Floor on Contribution Rate Increases (-50bp)	5,268	12	0.2%

* Baseline assumes a 50-year solvency horizon

** Baseline assumes a 20 Percent Funding Ratio at the end of the 50-year solvency horizon