PBGC
Protecting America's Pensions

2010

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Annual Exposure Report

Pension Benefit Guaranty Corporation
www.pbgc.gov

PBGC Pension Insurance System Projections

Every year PBGC provides an actuarial evaluation of its expected operations and financial status. This report contains estimates and projections for both the single-employer and multiemployer programs over the next decade, including future position projections that offer a glimpse into subsequent decades.

To project long-term exposure, PBGC uses two systems: the Single-Employer Pension Insurance Modeling System (SE-PIMS), and the Multiemployer Pension Insurance Modeling System (ME-PIMS). Each relies on running many simulations to derive a range of projected outcomes. The details of these models and how the simulations were run can be found in Appendix 1: Methodology, beginning on page 14.

The results of the ME-PIMS simulations, summarized on page 4, deserve particular attention. Due to the deterioration in two large multiemployer plans, the projections show a 6.2 percent chance that the multiemployer program will be insolvent by 2020, and a 29.2 percent chance that it will be insolvent by 2030.[1]

These results will be discussed in further depth throughout this report.

Recognizing the wide range of possible outcomes. Since these projections cover many years and there is obviously considerable uncertainty about even the near future, we show a wide range of possible outcomes. Throughout this report, we present the mean (average) results that SE-PIMS and ME-PIMS projected for some key outcomes for the period FY 2011-2020.

To give a sense of the potential variation and the factors that generate it, we also show a 'high' value (at the eighty-fifth percentile) and a 'low' value (at the fifteenth percentile). This range represents the bulk of our projected outcomes in each case.[2]

Almost a third of our projected results lie above or below the range displayed. For example, while the set of *all* single-employer results includes financial positions from a surplus of $55 billion to a deficit of $157 billion, the difference between the 'high' and 'low' values displayed ranges from a $4.0 billion surplus to a $52.5 billion deficit, significantly less than the full range. These "tail" results may also be important, so we present the full distributions of projected financial positions for both programs beginning on pages 8 and 11, respectively. We also compare them with 2009's 10-year projections, to offer insight into how our risks have changed over the last year.

Summary of Projections

The traditional financial exposure presentation combines all of PBGC's future claims, premiums, investment returns, etc., into a single net financial position. That net surplus or deficit is the result of each of these components. Projections for the amounts that companies will pay to PBGC in premiums, that PBGC may gain or lose through investments, and that PBGC will pay (and will still owe by 2020) for people with

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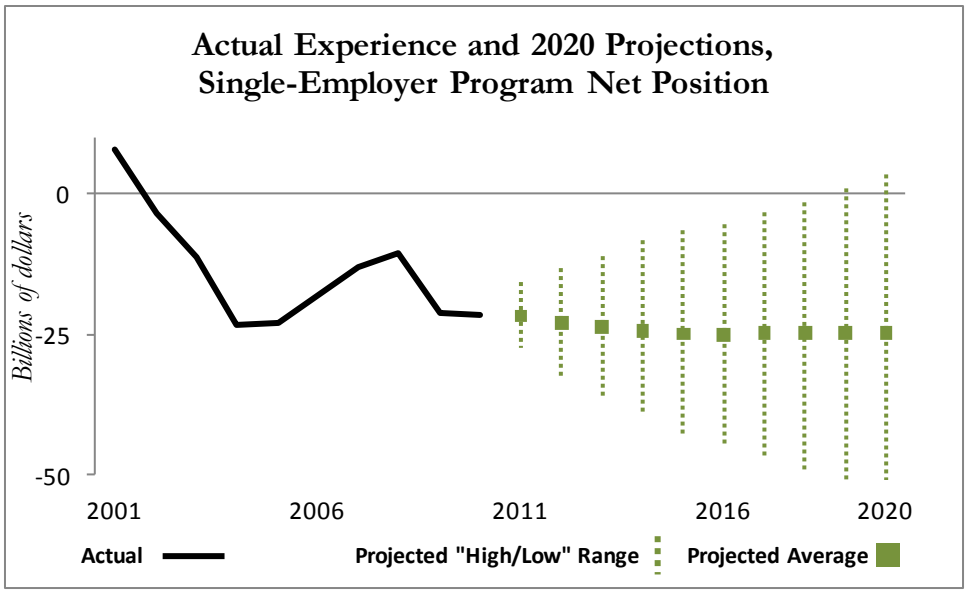
[1] Both SE-PIMS and ME-PIMS can simulate up to 20 years into the future, but they do not model longer-term sources of uncertainty affecting the structure of the pension system, such as factors affecting employers' decisions on whether to sponsor defined benefit pensions. These factors become increasingly important over longer-term horizons.

[2] Some of the outcomes that we describe are year-by-year results, such as investment income in each year. In these cases there is generally a fairly constant amount of variation every year. For other categories, such as the net position of the single-employer program, each year affects the next, so there is a cumulative effect, yielding more uncertain results with each passing year. (This cumulative effect does not apply to the multiemployer program's position, where the program's few assets are a fraction of the value of impending claims. There is a very wide range of results every year, but the range does not grow larger over time as it does for the single-employer program.)

failed pension plans, are important factors in each projected position. Each of them varies considerably, and as a result the net financial position varies as well.

In this summary section, we describe the range of projected net financial positions and some of their important component factors. In later sections, we show the ranges for the components in greater depth.

Single-Employer. The chart below shows our actual net financial position from FY 2000 - 2010, and the range of projections for the next 10 years. The average, or mean, projection appears as a large dot. The dotted vertical bars show the range of results between the fifteenth and eighty-fifth percentiles. Since every year's position affects the next year's, the uncertainty of our financial position grows every year through 2020, as reflected in the progressively longer vertical bars:



Because PBGC's obligations are paid out over the lives of people receiving pensions, a deficit means we will have less money than we will need, over a period of decades. Without changes, at some point a program in a deficit position will run out of money. It will have paid out all its assets and still owe benefits. However, that point still appears to be many years in the future for PBGC's single-employer program.

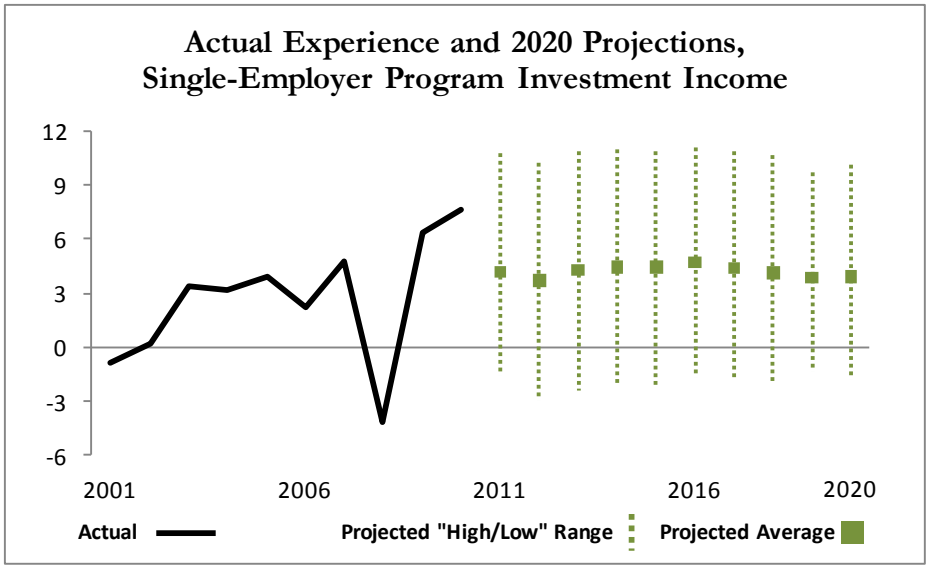
Out of 5,000 simulations, none project that PBGC's single-employer program will run out of money within the next 10 years. A slight majority result in improved or unchanged positions. But because some simulations result in very large deficits for the program, the average (mean) outcome is a decline in the program's position.

Of the factors that affect the projected net position, the most significant are new claims from terminated plans and investment income. Premiums are a smaller but still significant factor. The amount we pay in benefits each year affects what we owe and what we have on hand equally.

As shown in the chart on the following page, investment income varies a great deal every year, but the amount of variation does not grow cumulatively, because each year's projection is only for that year's investment income (not the accumulated total of all our investment gains and losses). So, the vertical bars in the chart remain similar in size. For 2011, that pool of projected results ranges from an $11.0 billion gain to a $1.4 billion loss.

One important fact to note is that our projections do not assume that plans are terminated voluntarily by healthy companies, only by companies in distress. In fact, some healthy companies do close their pension plans by purchasing annuities and undertaking a standard termination. In these cases, PBGC's obligations are

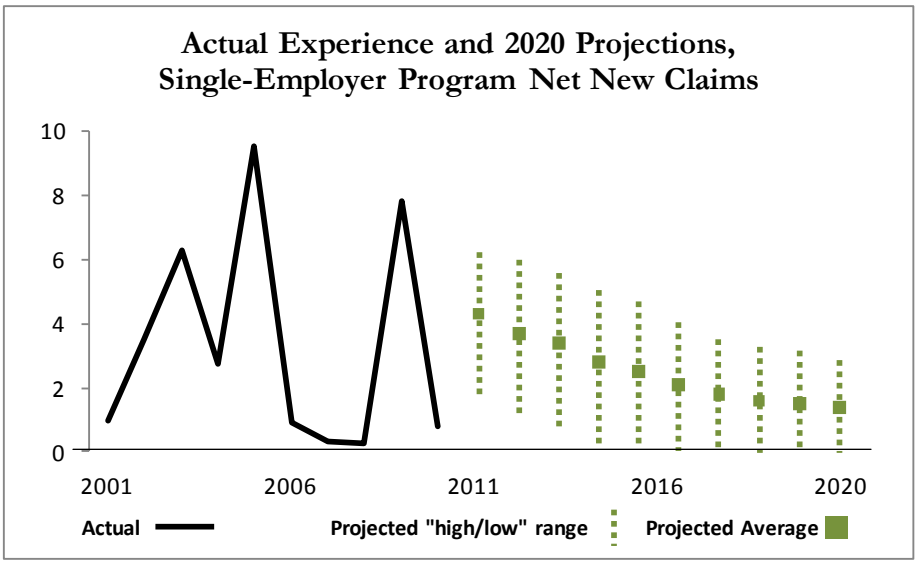
not affected, but those companies cease paying premiums. We are analyzing the effect of these actions and will attempt to incorporate them in future reports.



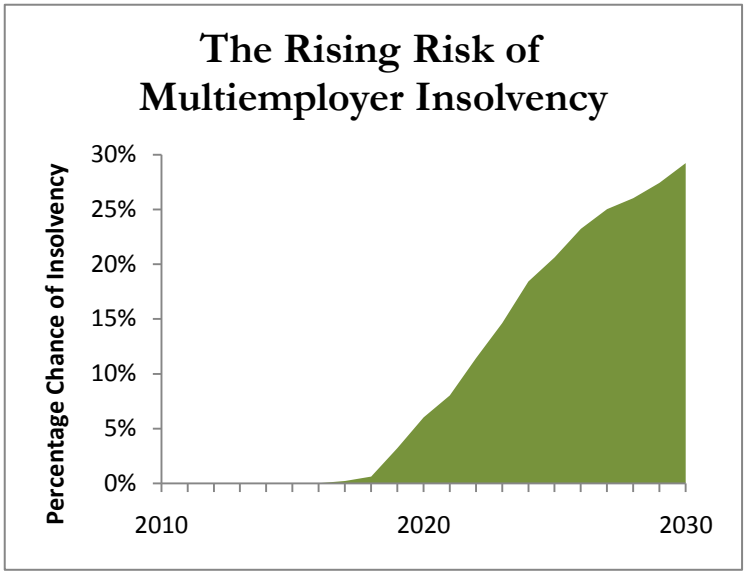
Projected new net claims (below) represent the amount of money we owe for people's benefits because their plans fail during the 10-year projection period, less the assets we recover from failed plans and the companies that sponsor them. Since PBGC takes over the assets of plans that fail, new claims result in both new assets and new liabilities in our financial position. But since PBGC would not take them over in the first place if they could pay all benefits due, they add more to what we owe than to what we can pay.

Like our investment income projections, the projections displayed for new net claims are for each year's results, so there is no cumulative effect in the amount the data vary. In fact, due to new funding rules, variation in new net claims is projected to decrease year by year.

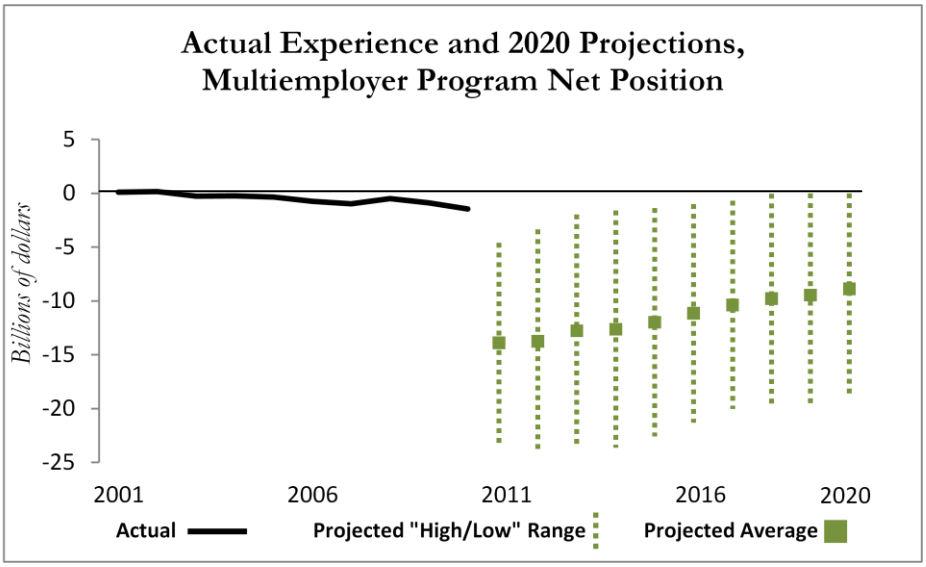
To model future new claims, SE-PIMS starts with present economic conditions and information we have on how well-funded plans are. Then every year, the model projects many scenarios with different random annual fluctuations to factors affecting plans' funding and sponsors' financial health, within certain bounds. (See Appendix 1: Methodology.)



Multiemployer. The chart immediately below shows the chance of Multiemployer insolvency over a 20-year projection period. The chart at the bottom of the page shows the multiemployer program's actual financial position from FY 2000 - 2010, and the range of projections for the next 10 years.



In 2009 we presented the first results from the new ME-PIMS, showing a sobering risk picture for the program. This year, we ran simulations for a 20-year horizon. Our multiemployer program ran out of money in 29.2 percent of simulations, due in large part to the deterioration in two large plans. PBGC's multiemployer insurance program became insolvent in 6.2 percent of simulations within the shorter 2011-2020 projection period. However, the average outcome was nevertheless a $9.4 billion long-term deficit.



The 10-year projections of the multiemployer program nearly all result in declines. The average position among the 2020 outcomes is a very notable decline. These outcomes result mostly from the significant deterioration in two large plans. Deterioration in other plans is also possible. The deterioration in a single year is due to the chances that a very large plan will move from a "reasonably possible" claim to a "probable" claim, at which point the plan is recorded for financial statement purposes, or "booked." Due to

the multiemployer program's design, there is often a long time lag between the booking of a multiemployer plan and the plan's actual insolvency.

Other drivers are dwarfed by the new claims impact. For example, all ME premiums over the next decade are projected to total less than $1 billion. Since multiemployer plans spend all their money before PBGC steps in, there is no other significant funding stream. Multiemployer program assets vary by only $2.0 billion, or about 1/13 the amount that projected claims vary in the range displayed. (The projected value of new claims by 2020 varies by $25.6 billion among the ME-PIMS projections shown.)

Sources of Uncertainty: Single-Employer Program

The uncertainty in the future of our single-employer program arises from uncertainty about which plans will fail, about how much we will have to pay people as a result of these failures, and about how much we will still owe people by 2020 (in benefits that will not yet have been paid within the 10-year projection period.)

Which plans will fail?

The primary driver of our projections is the health of those companies that have pension plans and the underfunding of those plans. If many companies with large, underfunded pension plans enter bankruptcy and are permitted to terminate their underfunded plans, creating new claims against PBGC, then the amount we pay in benefits through 2020 will also increase, as will future obligations. These new claims will also be reflected in our projected net position.

How much will we have to pay people?

Benefit payments and new claims. "Benefit Payments" for a given year means the amount we pay during that year to retirees, regardless of when their plans failed. "New Claims," on the other hand, represents the total costs to PBGC of plans that fail in a given year. A "New Claim" is for all the money PBGC will have to pay for a given failed plan — not just for the year it fails or for the 10-year projection period, but until all the people covered by the plan stop getting benefits.

The table below shows a range of projections for new claims and benefit payments for the next 10 years. The table shows the average (mean) and the "high" and "low" values among seventy percent of outcomes.[3]

	"Low" (15th percentile)	**Mean**	"High" (85th percentile)
Benefit Payments 2011-20	$57	**$69**	$79
Projected New Claims, Net 2011-20	$10	**$25**	$40

Billions of dollars

[3] In the tables, "high" and "low" projections for different measurements — such as "Benefit Payments" or "New Claims" — simply order all results through that lens. So, amounts within a single column cannot be combined. Where there are relationships among the values presented, we note them in the text that accompanies the tables.

The uncertainty around new claims is greater than that around payments. Since benefit payments include continuing payments to people whose plans have already failed, many of the payments that will be due are already known, decreasing the uncertainty in the amount we will have to pay over the next 10 years. Furthermore, while our projected benefit payments are only for the 10-year projection period, our projected new claims include obligations far into the future. Under the model, the median value for new claims over the next 10 years is about $21.3 billion. This is not the same as the average (mean). Half of the simulations show a 10-year total of claims above $21.3 billion and half below. The average (mean) level of claims is higher, about $25.0 billion over the next 10 years. The mean is higher than the median because there is a chance under some simulations that claims could reach very high levels.

How much will we still owe in 2020?

Interest rates affect how we calculate obligations. The single-employer program's expenses are mainly benefit payments to the retirees who depend on us. At any given point in time, we use an interest rate to calculate how much money we need to have now, to support payment of people's benefits in the future. Changes in this interest rate have a big effect on these calculations. (See Appendix 1: Methodology.) But while the rate accounts for a great deal of what we project we will owe people, it is not in our direct control.

All told, within the seventy percent of outcomes presented, the SE program's projected liabilities in 2020 vary by $72 billion.

	"High" (85th percentile)	**Mean**	"Low" (15th percentile)
Projected PBGC SE Liabilities in 2020	$134	**$98**	$62

Billions of dollars

What investment returns will PBGC realize to help make future payments?

PBGC's assets in hand can grow various ways: assets inherited from failed plans, recoveries in bankruptcy from sponsors abandoning their pension promises, premiums, and investment income. Of these, investment returns are a significant determinant of how much we can expect PBGC's assets to grow.

For these projections, PIMS assumed we would invest 70 percent of assets in fixed income investments (such as treasuries and corporate bonds) and 30 percent of assets in equities (such as stocks).

The table on the following page shows projections for our total base of assets in the single-employer program by 2020, as well as for what we will earn in investment income by 2020:

	"Low" (15th percentile)	**Mean**	"High" (85th percentile)
Projected PBGC SE Assets in 2020	$52	**$75**	$99
PBGC SE Investment Returns 2011-20	$20	**$44**	$68

Billions of dollars

Within the results shown in the table, there is a $48 billion range projected in the investment return that we will realize and a $47 billion range in the total amount of PBGC's projected assets, illustrating just how dependent our asset growth is on our investment returns.

New claims also accompany increased assets because when plans fail, we inherit their assets as well as their future responsibilities. So the same events add to the money PBGC has on hand, but add more to the amount we owe. In many scenarios with rising assets, the new claims discussed on page 6 also increase.

One other factor that helps offset the amount we owe is the amount of premiums we collect. Under the current structure, the amount we will collect in single-employer premiums is shown in the table below:

	"Low" (15th percentile)	**Mean**	"High" (85th percentile)
PBGC SE Premiums 2011-20	$13	**$15**	$18

Billions of dollars

Since premiums have been set by Congress, at rates that do not cover PBGC's likely obligations, the premiums we collect are far outstripped by obligations.

Projected financial position, single-employer program

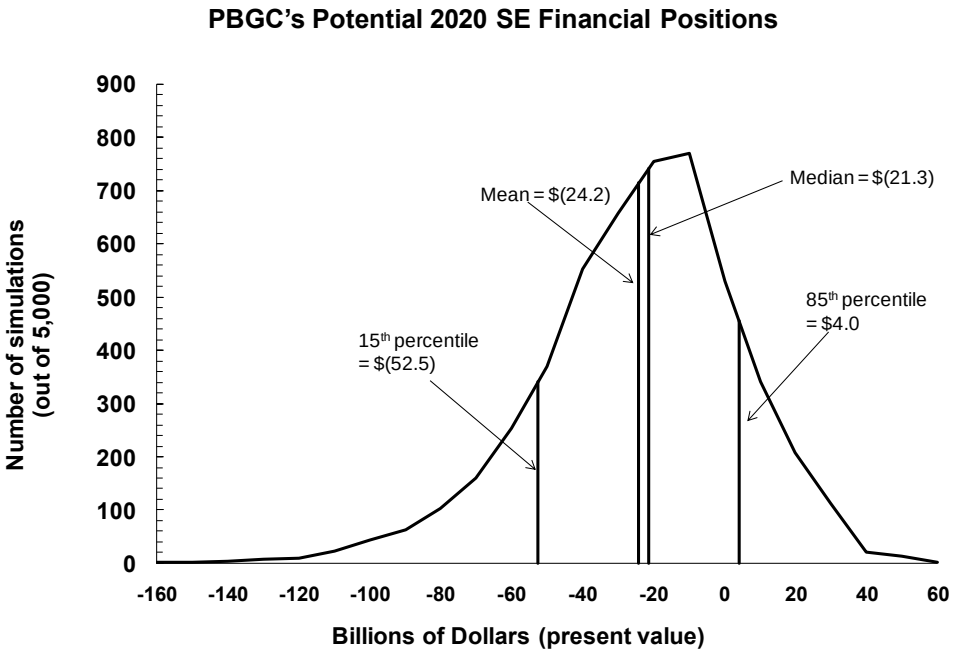
SE-PIMS projects PBGC's potential financial position by combining simulated claims (including what we recover from failed plans and their sponsors to help fund their pension promises) with simulated premiums, investment returns, and other factors, including how much we already have on hand at the beginning of the simulation (that is, our 2010 financial position).

The financial position of the single-employer program as of September 30, 2010, was a deficit of $21.6 billion. In a slight majority of simulations, the 2010 projections show an improvement; the median projected position in 2020 is a $21.3 billion deficit. This means that half of the simulations show either a smaller deficit than $21.3 billion, or a surplus, and half of the simulations show a larger deficit. But the average (mean) outcome in 2020 is a $24.2 billion deficit, because in some simulations the deficit reaches very high levels. The table on the following page shows the average (mean) position, along with the values at the fifteenth and eighty-fifth percentiles.

	"Low" (15th percentile)	**Mean**	"High" (85th percentile)
Projected 2020 SE Financial Position	$(53)	**$(24)**	$4

Billions of dollars

Full distribution of results, by financial position. The following graph shows the full range of outcomes that SE-PIMS projects for our single-employer financial position over the next 10 years. It shows the number of simulations with the position below certain values. The higher the curve climbs, the more simulations fall at that point in the distribution. The further to the right any point on the curve is, the better the financial position associated with that point.



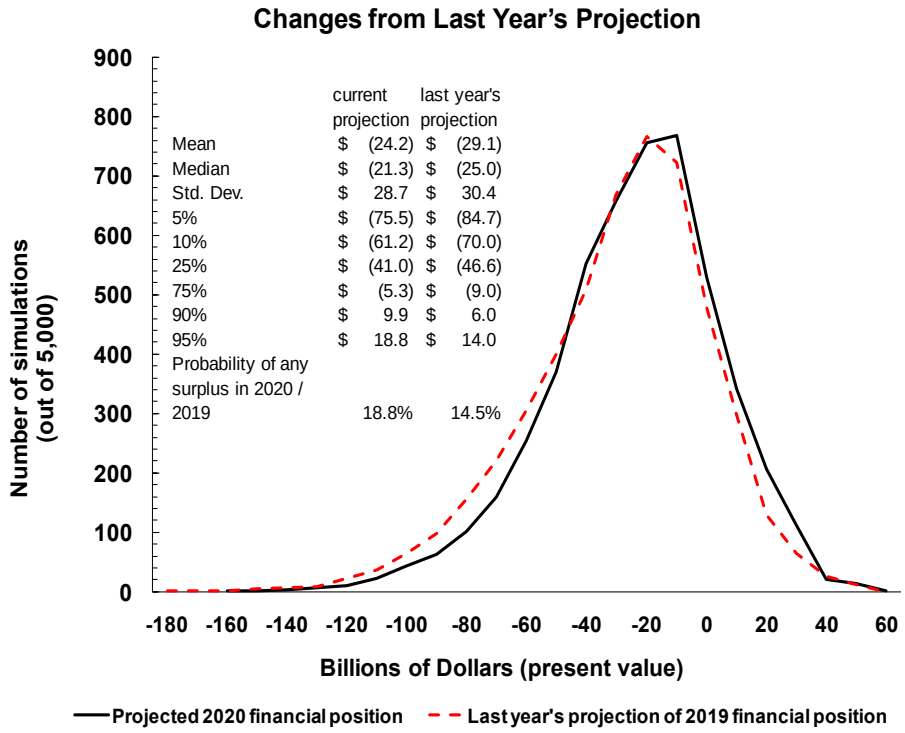
Simply put, the further to the right the graph's "hump" is, the more scenarios have positive outcomes, and the less spread-out the graph is side-to-side, the more the simulations agree on outcomes.

Vertical lines on the graph show the outcomes at the fifteenth and eighty-fifth percentiles, and the mean (or "average") outcome. The median (as mentioned above) is a $21.3 billion deficit in 2020. (Half the simulations show a higher deficit, and half show a lower one or a surplus.)

Comparison with 2009 outcomes, by financial position. By comparing this year's projections for 2020 with last year's projections for 2019, we can shed light on what risks have changed.

The graph below compares last year's projections of PBGC's 2019 financial position with this year's projections of the 2020 financial position. The hump has moved to the right, and has become steeper. That is, results are more positive and less varied. The average (mean) projected position has improved by $4.9 billion. The median in the 2020 projection improved by $4.4 billion over the 2019 projection, from a deficit of $25.7 billion to a deficit of $21.3 billion.

The change in the projected deficit is primarily due to improvements in financial market conditions that, for many plan sponsors, have resulted in improved capacities to fund and maintain their plans. This year's average (mean) projected financial position for 2020 is significantly improved over last year's projection, because last year's distribution included a greater number of severe deficits and fewer scenarios of significant surpluses. Overall, 18.8 percent of the simulations we ran for 2020 show a surplus or a "break even" scenario, with 81.2 percent resulting in deficits. Among the 2019 simulations reported last year, 14.5 percent resulted in a surplus or no change, and 85.5 percent resulted in deficits.



Potential for exhaustion of PBGC funds. In our financial statements, we report our financial position by comparing future benefit obligations (which span many decades into the future) and other liabilities with the assets presently held. Those statements do not consider future premiums or future claims. A stakeholder reading those financial statements alone could wonder how to evaluate the possibility of PBGC running out of funds.

The random scenarios simulated in SE-PIMS, by contrast, incorporate PBGC's existing assets and obligations and also:

- Future premium income (assuming current levels);
- Future PBGC claims, which increase PBGC's benefit obligations but also include assets recovered from the terminated plans and from their sponsors; and
- Future investment income and/or losses on PBGC assets, based on PBGC's investment policy and allocations.

In the 5,000 scenarios simulated in SE-PIMS, there are none in which PBGC assets are completely exhausted within the 10-year projection horizon.

Multiemployer Program

A multiemployer plan is a collectively bargained plan that is maintained by two or more unrelated companies. There are more than 10.4 million individuals covered by about 1,500 insured multiemployer plans.

By law, PBGC insures multiemployer plans very differently from how we insure single-employer plans. Some of the differences are:

- PBGC-insured benefit levels are lower for people in multiemployer plans than for those in single-employer plans.
- Multiemployer plans pay lower premiums to PBGC.
- We do not take over troubled multiemployer plans and do not act at all until a plan becomes completely insolvent. Then PBGC funds its continued operations[4]. So we do not take over assets from failed multiemployer plans.

Almost all the uncertainty in the multiemployer system is concentrated in the possibility of new claims.

How many multiemployer plans will fail? What will we owe when they do?

The table below shows the average (mean) values that ME-PIMS projected for new claims and financial position for PBGC's multiemployer program in 2020. Alongside those values, the table displays the "low" and "high" values at the fifteenth and eighty-fifth percentiles. Higher new claims mean greater financial losses to PBGC, so we have reversed the order of the columns for the second row of projections, to better show the relationship between high new claims and a deterioration of our financial position. In this table, we set off new PBGC's net claims with parentheses to clarify their relationship to our net position.

	"Low" (15th percentile)	**Mean**	"High" (85th percentile)
(Projected New Net Claims 2011-20)	$5.8	**$17.1**	$31.4
	"High" (85th percentile)	**Mean**	"Low" (15th percentile)
Projected 2020 ME Financial Position	$(0.4)	**$(9.4)**	$(18.0)

Billions of dollars

Other drivers are dwarfed by the new claims impact. For example, all ME premiums over the next decade are projected to total less than $1 billion. Since multiemployer plans spend all their money before PBGC steps in, there is no other significant funding stream. Multiemployer program assets vary by only $2.0 billion, or about 1/13 the amount that projected claims vary in the range displayed. (The projected value of new claims by 2020 varies by $25.6 billion among the ME-PIMS projections shown.)

[4] Formally this financial help is in the form of loans. However, with a few historical exceptions, the loans have never been repaid.

As stated above, we do not take over assets from failed multiemployer plans, so the only assets in the multiemployer program are from the premiums that we have collected (or will collect) and any interest that we earn on those premiums.

Not surprisingly, given the limited sources of asset growth in the multiemployer program, the table shows a range of $17.6 billion for the multiemployer program's projected financial position — with most of that range to the program's detriment.

Under ME-PIMS, the median amount of claims totaled over the next 10 years is about $15.2 billion; that is, half of the simulations show a 10-year total of claims above $15.2 billion and half below. The mean level of claims (that is, the average level of claims) is higher, about $17.1 billion over the next ten years. The mean is higher than the median because there is a chance under some simulations that claims could reach very high levels. For example, under the model there is a 10 percent chance that claims could exceed $32.7 billion over the 10-year period.

Actual payments within the next decade are much less than new claims.

In addition to claims, ME-PIMS simulates assistance payments from PBGC to ME plans to pay people's benefits and maintain the plans. The table below shows the average (mean) and high and low values for such payments among simulations between the fifteenth and eighty-fifth percentiles, for the 10-year period ending in 2020.

	Low (15^{th} percentile)	**Mean**	High (85^{th} percentile)
(Financial Assistance Payments 2011-20)	$0.4	**$1.2**	$2.0

Billions of dollars

Financial assistance payments vary within this range by a factor of five, with a "high" benefit payment figure of $2.0 billion within the range shown.

However, since PBGC delays helping multiemployer plans until *after* plans spend all their money, most of what we will pay for a new claim does not show up in financial assistance from 2011-2020, but in the multiemployer program's financial position at the *end* of the period. Since the financial position projection shows money still owed in 2020, it captures deterioration at which the "financial assistance" flow only hints.

Projected financial position, multiemployer program

The vast majority of our projections show a much worse position over the next ten years. As of September 30, 2010, the multiemployer program had a deficit of $1.4 billion. The average (mean) projected result for 2020 is a $9.4 billion deficit, and the median position outcome in 2020 is a $5.4 billion deficit. (Half of the simulations show either a smaller deficit than $5.4 billion or a surplus, and half of the simulations show a larger deficit.)

This is a substantial change even from last year's projections. The most important reason for this deterioration is the reported deterioration in major multiemployer plans. A smaller factor is the Pension Relief Act of 2010, which relaxed funding requirements and therefore increases PBGC's exposure.

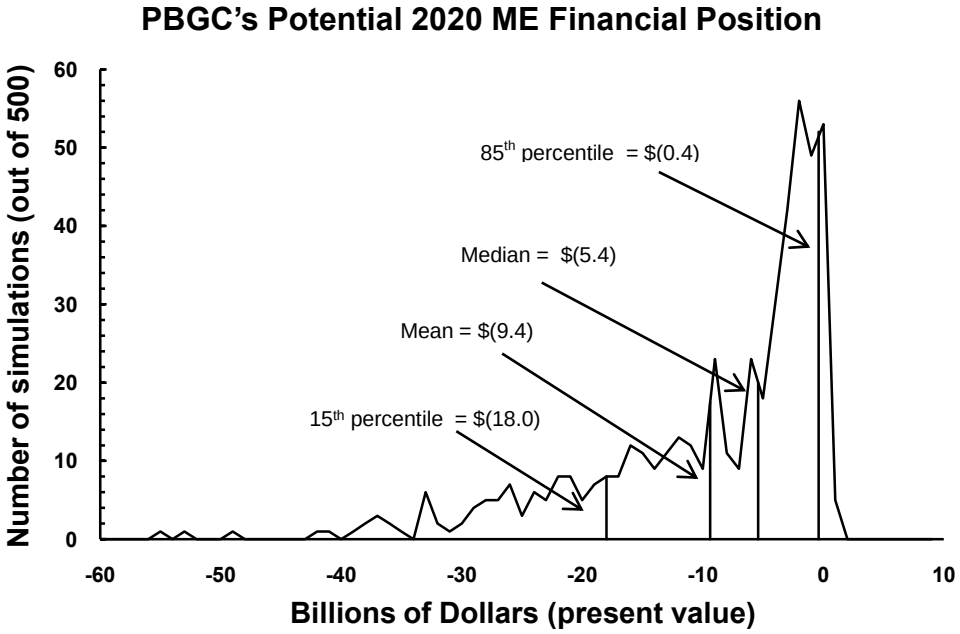
Since the multiemployer program's premiums are very low and the program has few assets, the primary driver of the net position is failed plans and new claims.

ME-PIMS projects PBGC's potential financial position by combining simulated claims with simulated premiums, expenses, and investment returns.

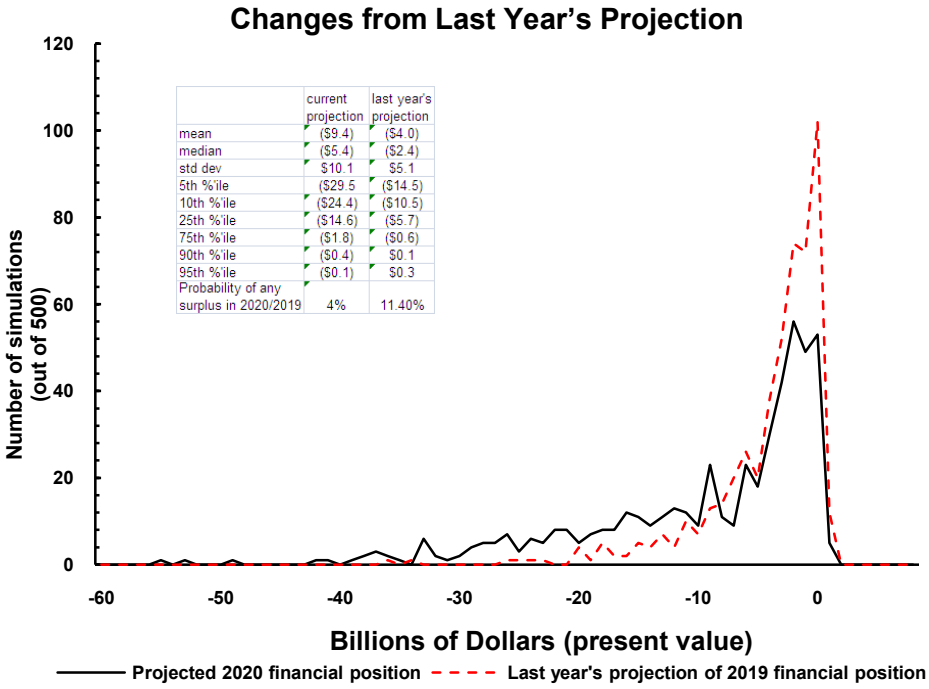
But unlike the relationships among the flows and positions in SE-PIMS, those in ME-PIMS leave little room for asset to grow, due to the design of the multiemployer program. In the multiemployer program, assets can only grow through the collection of premiums and interest on any money on hand.

On the other hand, ME-PIMS projects that PBGC's multiemployer obligations, in the form of new claims by 2020, will grow considerably.

The following graph illustrates the wide range of outcomes that are possible for PBGC's multiemployer program over the next 10 years. The median result is a $5.4 billion deficit in 2020. Since most of the distribution is to the left of 0 on the graph, it is clear at a glance that most projections show deficits, with many showing very severe deficits.



Comparison with 2009 by financial position. The deterioration of the program's financial position can be seen at a glance in the graph on the following page. Whereas the previous year's projections featured a cluster of values with a peak relatively close to the zero, or "break-even" position, and relatively few other outcomes, the 2010 results return many worse outcomes (to the left of break-even). The number of results close to break-even has declined dramatically.



The decline is largely due to the booking of two large plans, as reflected in note 9 of PBGC's 2010 financial statements. The "starting point" for ME-PIMS is the current exposure shown there. PBGC's exposure as reported in Note 9 went from $326 million in 2009 to $20 billion in 2010, illustrating the sensitivity of the multiemployer insurance program to the possible failure of a small number of very large plans.

Appendix 1: Methodology

Our long-term exposure projections, presented here, are different from the exposure we report in our financial statements. There, we classify some plans as "probable terminations," and record them as losses on our financial statements. We describe others as "reasonably possible" to terminate, and disclose our estimated exposure due to them in Section VII, "Single-Employer and Multiemployer Program Exposure" — but do not book them as losses. These estimates are based on plans that PBGC insures and considers likely to terminate, compared with all the plans that PBGC insures (the universe modeled in SE-PIMS and ME-PIMS).

ME-PIMS and SE-PIMS both project long-term exposure by running many simulations, each modeling year-by-year changes over 10 years. Each simulation starts with known facts about the economy, the world of insured plans, and PBGC's financial position. Then the program introduces random year-by-year changes (within certain bounds) to model economic fluctuations, producing new outcomes a year at a time. Within a scenario, one year's outcomes form the next year's starting-point, and so on. The models recognize that all single-employer plan sponsors have some chance of bankruptcy, that all multiemployer plans have some chance of insolvency, and that these probabilities change over time.

Neither the single-employer nor the multiemployer Pension Insurance Modeling Systems are predictive models. SE-PIMS does not attempt to anticipate companies' behavioral responses to changed circumstances. Although ME-PIMS mathematically models the likelihood of mass withdrawal from a given plan, it does not attempt to anticipate behavioral responses by individual employers.

Throughout this report, we express all future outcomes in present value terms (i.e., discounted back to 2010). Each scenario's outcomes are discounted based on the 30-year Treasury bond yields projected for that scenario, regardless of whether the underlying simulated cash flows are generated from holdings of equities, high-yield bonds, corporate bonds, or U.S. Treasury bonds.

In our projections of net position, one important factor is the determination of the amount of money we owe in today's dollars. Changes in interest rates have a big effect on this calculation — the higher the interest rate by which we calculate what we owe, the lower the present value of the obligations (liabilities) reported on our balance sheet. PBGC uses a consistent methodology to set these rates. SE-PIMS and ME-PIMS model uncertainty in future changes to these interest rates.

SE-PIMS

No single underfunding number or range of numbers is sufficient to evaluate PBGC's exposure and expected claims over the next 10 years. Claims are sensitive to changes in interest rates and stock returns, overall economic conditions, contributions, changes in benefits, the performance of some particular industries, and bankruptcies. Large claims from a small number of terminations characterize the Corporation's historical claims experience and are likely to affect PBGC's potential future claims experience as well.

SE-PIMS starts with data on PBGC's single-employer position (a $21.6 billion deficit in the case of FY 2010) and data on the funded status of approximately 450 plans that are weighted to represent the universe of PBGC-covered plans. The model produces results under 5,000 different simulations. The probability of any particular outcome is determined by dividing the number of simulations with that outcome by 5,000. The model uses current funding rules.

PBGC's expected claims under the single-employer program depend on two factors: the amount of underfunding in the pension plans that PBGC insures (i.e., exposure) and the likelihood that corporate sponsors of these underfunded plans will encounter financial distress that results in bankruptcy and plan termination (i.e., the probability of claims).

Over the near term, expected claims result from underfunding in plans sponsored by financially weak firms. The financial health of a plan sponsor is reflected in factors such as whether the firm has a below-investment-grade bond rating. The amount of underfunding for plans of these financially weak companies is estimated based on available data, including the annual filings that certain companies with underfunded plans are required to make to PBGC under Section 4010 of ERISA.

A Summary of SE-PIMS

The analysis of PBGC's projected financial position was performed using PBGC's Single-Employer Pension Insurance Modeling System. SE-PIMS has a detailed database of about 450 actual plans, sponsored by about 330 firms, which represent about half of PBGC's insurance exposure in the single-employer defined benefit system measured from the 2008 Form 5500 filings (the most recent year of complete Form 5500 filing data). The database includes the plan demographics, plan benefit structure, asset values, liabilities, and actuarial assumptions. It also includes key financial information about the employer sponsoring the plan.

The SE-PIMS database contains pension plan information from Schedule SB of the Form 5500 (Annual Return/Report of Employee Benefit Plan), generally from the 2008 plan year. In addition, more recent data available from ERISA Section 4010 filings is used for certain large underfunded plans.

SE-PIMS simulates contributions, premiums, and underfunding for these plans using the minimum funding and premium rules as required by the PPA, and then extrapolates the results to the universe of single-employer plans. Recent changes to funding rules (the Pension Relief Act of 2010) are reflected in the modeling. SE-PIMS also uses the employer's financial information as the starting point for assigning probabilities of bankruptcy, from which it projects losses to the insurance program.

The SE-PIMS model is not predictive. That is, it is not intended to provide a single best estimate of future events. When used in a stochastic (random) mode, SE-PIMS provides a range of possible future outcomes and quantifies the likelihood of these outcomes.

General Assumptions: Projections of claims against the insurance program are made stochastically. Claims against the pension insurance program are modeled by simulating the occurrence of bankruptcy for plan sponsors. The model reflects the historical relationship between the probability of bankruptcy and the firms' financial health variables (equity-to-debt ratio, cash flow, firm equity, and employment). For each period, the model assigns a random change in each of these variables to each firm correlated with changes in the economy. The simulated financial health variables determine the probability of bankruptcy for that year.

The model assumes, with the exception noted below regarding variable-rate premiums, that all plan sponsors contribute the minimum amount each year. The model runs 500 economic scenarios (varying interest rates and equity returns), with each plan's sponsor being "cycled" through each economic scenario 10 times (with varying financial health experiences, bankruptcy probabilities, etc.) for a total of 5,000 different simulations. SE-PIMS then extrapolates the results of these simulations to the universe of insured single-employer plans.

All of the following variables are stochastically projected:

- Interest rates, stock returns, and related variables (e.g., inflation, wage growth, and multiplier increases in flat dollar plans[5] are determined by interest rates in SE-PIMS).
- Sponsor financial health variables (equity-to-debt ratio, cash flow, firm equity, and employment).
- Asset returns. At the beginning of each scenario, each plan's asset allocation is randomly selected from a pool of allocations that reflects historic differences across plans in investment strategies. Each plan's asset return also has a stochastic element that is uncorrelated with the simulated market rates and is uncorrelated across plans.
- Plan demographics. The number of active participants for a plan varies with its sponsor's total employment level. Age and service also vary over time due to retirement and hiring assumptions. The numbers, ages, and benefits of retired and terminated vested participants vary depending on mortality, separation, and retirement assumptions.
- Probability of bankruptcy. Sponsors are subjected to an annual stochastic chance of bankruptcy. A plan presents a loss to participants and/or the pension insurance program if its sponsor is simulated to experience bankruptcy and the plan is less than 80 percent funded for termination liability. Losses to the insurance program are calculated by averaging the losses in all simulations across all scenarios.

Two of the most important variables in the stochastic simulations are stock returns and interest rates. Stock returns are independent from one period to the next. To determine a simulated sequence of stock returns, the model randomly draws returns from a distribution that reflects historical

[5] In a flat-dollar plan, the pension benefit is determined by multiplying a fixed amount by the participant's years of service. In a salary-related plan, the benefit is determined by multiplying a percentage of the participant's salary by the years of service.

experience going back to 1926. Unlike stock returns, interest rates are correlated over time. With the model, the Treasury yield for a given period is expected to be equal to the yield for the prior period, plus or minus some random amount. The random draws affecting the bond yields and stock returns are correlated according to an historical estimate. Stock returns are more likely to be high when the Treasury yield is falling and vice versa. Credit spreads on investment-grade corporate bonds are modeled to regress toward their historic mean values.

Mortality

- For purposes of projecting plan population — the RP2000 mortality table projected to the valuation year.[6]
- For determining the amount of underfunding at termination — 94 GAM set forward one year and projected to valuation year plus 10.
- For determining funding targets (liabilities — the RP2000 table projected with scale AA to the year of valuation plus 10.

Contribution Level/Credit Balances

The credit balance at the end of the 2008 plan year was derived by reflecting available information on actual contributions made through 2008. From there, the credit balance was increased each year by the valuation interest rate and decreased by the amount assumed to be used to satisfy the minimum funding requirement. For purposes of modeling future claims in SE-PIMS, it is assumed that employers will contribute the minimum required amount each year and that any credit balance remaining when the new rules take effect will be used to the maximum extent permitted until the balance is completely depleted.

Benefit Improvements

For flat-dollar plans, benefit multipliers are assumed to increase annually by the rate of inflation and productivity growth. For salary-related plans, the benefit formula is assumed to remain constant, but annual salary increases are reflected based on the rate of inflation, productivity growth, and a factor measuring merit and/or seniority.

Benefit Restrictions Under the PPA

Accrual restriction: Plans with funded percentages below 60 percent must cease benefit accruals. PIMS reflects this rule, and assumes that once a plan is frozen, it will remain frozen, even if the percentage increases above 60 percent at some future time.

The PPA requires that when determining funding percentages for triggering benefit restrictions, assets are reduced by credit balances. The PPA also provides that sponsors have the option of declassifying credit balance assets at any time. By declassifying a credit balance, a sponsor may be able to raise the funded percentage to the level needed to avoid a benefit restriction. For modeling purposes, it is assumed that sponsors will choose to declassify credit balances to the extent necessary to avoid the benefit freeze restriction.

Benefit improvement restriction: As noted earlier, SE-PIMS assumes that salary-related plans will not increase benefits and that hourly plans will increase benefits to reflect the rate of inflation plus productivity growth. But, under the PPA, benefit increases that do not exceed the average wage increase of affected employees are not subject to the benefit improvement restriction. Therefore, this provision was assumed to have no effect.

Variable-Rate Premiums

PBGC's experience has been that many companies make plan contributions in excess of the minimum, in part to avoid or reduce their variable-rate premium payments. Virtually all of these companies have been at a low risk of bankruptcy and their plans have not accounted for a material portion of PBGC's claims. In contrast, the relatively small number of plans that result in claims are sponsored by companies that historically have not made contributions above the required minimum. Accordingly, variable-rate premium projections are modeled assuming aggregate contribution levels above the minimum levels, with an adjustment for additional future aggregate contributions that is based on PBGC's historical premium experience.

PBGC's Assets

Projected returns are based on analysis of historical returns, return volatilities and correlations between the different asset class returns.

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[6] Setting a mortality table forward one year means that the table's life expectancy for someone who is X+1 years old is used to represent the life expectancy of someone who is X years old. For example, for this purpose, the life expectancy of a 65-year-old is what the table would assign to a 64-year-old. "Projecting" a mortality table means reducing mortality rates each year to reflect anticipated improvements in longevity.

Discounting Future Contributions/Claims

For calculations involving discounting future amounts, the discount rate used is the 30-year Treasury rate assumed to be in effect for the particular year and economic scenario.

(For additional information on SE-PIMS and the assumptions used in running the model, see PBGC's *Pension Insurance Data Book 1998*, pages 10-17, which also can be viewed on PBGC's website at **www.pbgc.gov/publications/databook/databk98.pdf**.)

ME-PIMS

Each year, PBGC analyzes insured multiemployer plans to identify those plans that might become claims on the insurance program. In general, if a terminated plan's assets are less than the present value of its liabilities, PBGC considers the plan a probable risk of requiring financial assistance in the future, as recorded in our financial statements.

The primary driver for large losses to the multiemployer program is mass withdrawal of all sponsors from a given plan (these are captured in projected new claims). ME-PIMS mathematically models the likelihood of mass withdrawal from a given plan; it does not attempt to anticipate behavioral responses by individual employers.

To project future claims against the multiemployer program that are not in the current financial statements, ME-PIMS mimics the same type of analysis for future years. By "booking" probable plans in each year of the projection, ME-PIMS mimics PBGC's analysis of multiemployer plans in which employers continue to make regular contributions for covered work, to determine whether any of these ongoing plans are probable or possible claims on the insurance program.

In each projection year, ME-PIMS combines measures of chronic underfunding, poor cash flow, a falling contribution base, and a lack of money on hand to weather temporary income losses, into one measure of likelihood that a plan will fail. In the projections, these plans become ME-PIMS liabilities that year.

No single underfunding number or range of numbers is sufficient to evaluate PBGC's exposure and expected claims over the next 10 years. Claims are sensitive to changes in interest rates and investment returns, overall economic conditions, contributions, changes in benefits, the performance of some particular industries, and bankruptcies. In the multiemployer program a large number of claims from the actual and projected insolvencies of medium-sized plans, and a small number of similar claims from large plans, have characterized the Corporation's historical claims experience and are likely to affect PBGC's potential future claims experience as well.

ME-PIMS portrays future underfunding under current funding rules as a function of a variety of economic parameters. The model anticipates that individual plans have various probabilities of positive and negative experience, and that these probabilities can change significantly over time. The model also recognizes the uncertainty in key economic parameters (particularly interest rates and market returns). The model simulates the flows of claims that could develop under hundreds of combinations of economic parameters and extrapolations of plans' respective historical patterns. ME-PIMS is not a predictive model and cannot attempt to anticipate behavioral responses by individual contributing employers in a multiemployer plan to changed circumstances.

An ME plan can go through a "mass withdrawal", which happens when all employers stop participating in a plan at the same time. For each plan in each of the projection years, ME-PIMS calculates a probability of mass withdrawal. The size of the plans is one factor in the calculation, as well as several ratios: assets to cashflow; assets to liabilities; active to inactive participants; current year to previous year contribution amount; and the funding-standard account balance to contributions. As in the SE-PIMS bankruptcy model, a random number is drawn — the result determines whether or not a mass withdrawal happens.

Possible future refinements to the ME-PIMS model. Expected claims under the multiemployer program depend on two things. One is the amount of underfunding in the pension plans that PBGC insures (i.e., exposure). The other is the likelihood that a plan will fail, or become insolvent, either in the course of ongoing operations or following a mass withdrawal.

A plan becomes insolvent when it does not have enough assets to pay PBGC guaranteed benefits as they become due. A single-employer plan has one sponsor for which financial information is often available and whose financial condition can be assessed and modeled. By contrast, among multiemployer plans, even the identity of *any* individual employers that participate in particular ME plans has only recently become available. Others remain unknown. So at present, ME-PIMS does not model the financial conditions of individual employers (or industries) in multiemployer plans.

A Summary of ME-PIMS

The analysis of PBGC's projected financial position was performed using PBGC's Multiemployer Pension Insurance Modeling System (ME-PIMS). ME-PIMS has a detailed database of about 170 actual plans, which represent more than half of PBGC's insurance exposure in the multiemployer defined benefit system measured from the latest Form 5500 filings available. The database includes:

- plan demographics,
- plan benefit structure,
- asset values,
- liabilities, and
- actuarial assumptions.

In addition, ME-PIMS incorporates historical data of employer contribution levels and demographic trends to assist in modeling plan trends.

The ME-PIMS database contains pension plan information from Schedule MB of the Form 5500 (Annual Return/Report of Employee Benefit Plan), generally from the 2008 plan year.

In addition, more recent data from any available reporting of plan status (endangered, seriously endangered, and critical), plus any multiemployer plans' reports regarding Funding Improvement Plans (for Endangered Status Plans) or Rehabilitation Plans (for Critical Status Plans) have been incorporated into the modeling system.

PIMS simulates contributions, premiums, and underfunding for these plans using the minimum funding and premium rules as required by the PPA, and then extrapolates the results to the universe of multiemployer plans. Recent changes to funding rules (e.g., the Pension Relief Act of 2010) are reflected in the modeling.

ME-PIMS starts with PBGC's multiemployer net position (a $1.44 billion deficit in the case of FY 2010) and data on the funded status of 153 plans that are weighted to represent the universe of PBGC-covered plans that are not current or probable claims for PBGC. The model produces results under 500 different simulations. The probability of any particular outcome is determined by dividing the number of simulations with that outcome by 500.

The nature of the multiemployer program and PBGC's established method for recognizing claims against the program require a long time horizon for examining potential claims. The near-term financial condition of one employer (or even several employers) usually does not determine the risk presented by a given multiemployer plan. Rather, expected claims result from underfunding in a plan that shows several indications of future deterioration. In ME-PIMS, these indications reflect historical patterns as well as certain future trends that arise in different scenarios under stochastic modeling.

ME-PIMS' projection of exposure to a multiemployer plan depends largely on the plan's financial status rather than that of the sponsoring companies. The amount of underfunding for each plan is based on the best available data, including annual Form 5500 filings and reports that multiemployer plans provide regarding their status under the funding rules (healthy, endangered, severely endangered, or critical) and the associated filings that detail their respective plans to work out of an adverse status.

In the multiemployer program, PBGC recognizes probable liabilities for plans with the potential to present claims over a limited time horizon. Generally, claims are recognized when their financial condition is likely to deteriorate substantially within 10 years. ME-PIMS models these claims in future years by projecting, from each future year, a potential claim within the 10 years following that future year.

For purposes of its financial statements, PBGC classifies the underfunding for vested benefits in other multiemployer plans as reasonably possible exposure, as required under generally accepted accounting principles. The reasonably possible exposure as of September 30, 2010, as disclosed in Note 9 of PBGC's 2010 financial statements, is $20 billion, compared to $326 million for fiscal year 2009. This increase is due primarily to the addition of two large plans.

In the multiemployer program, there is little distinction between claims due to insolvency and probable liabilities, unlike under the single employer program. In the single employer program, a probable liability is generated when the condition of the sponsoring employer justifies such a claim. In the multiemployer program, a probable liability is generated when certain plan metrics are sufficiently problematic. Given a sufficiently

problematic collection of plan metrics, and a cash-flow projection of insolvency, a plan is classified as probable, and is thus recognized as a PBGC liability.

PBGC's classification of claims against the multiemployer program depends both on the funded status of the plan and on several measures of the plan's health. These two factors are then used in modeling cash flow requirements of the plan, to anticipate insolvency. Plan funding data (asset and liability amounts) for estimates were collected from Form 5500 filings for 2006, 2007, 2008, and 2009 (the most recent available for each plan). The Corporation adjusted this plan data from such sources as additional reporting from individual plans, and from data provided by plans or their service providers.

Under the model, the median amount of claims totaled over the next 10 years is about $15.2 billion (expressed in today's dollars); that is, half of the simulations show a 10-year total of claims above $15.2 billion and half below. The mean level of claims (that is, the average level of claims) is higher, about $17.1 billion over the next ten years. The mean is higher than the median because there is a chance under some simulations that claims could reach very high levels. For example, under the model there is a 10 percent chance that claims could exceed a present value of $32.7 billion over the 10-year period.

ME-PIMS projects PBGC's potential financial position by combining simulated claims with simulated premiums, expenses, PBGC's investment returns, and changes in PBGC liability, that is, the present value of benefits and expenses payable pursuant to claims recognized by the PBGC.

Because multiemployer liabilities are usually recognized by PBGC several years before a plan becomes insolvent, a plan's financial condition can improve after it is first recognized, reducing PBGC's liability for that plan (i.e., the value of its claim) by delaying its projected of insolvency and/or reducing the flow of assistance anticipated after insolvency. In some cases, insolvency is delayed beyond the threshold required for recognition (10 years for ongoing plans, 20 years for plans in mass withdrawal), causing the plan to become un-booked reducing its claim value to zero. Conversely, a plan's condition can deteriorate further following the initial recognition.

ME-PIMS reflects any un-bookings as negative claims, which are taken into account in the above mean and median claim amounts (i.e., the above amounts represent the net value of booked over un-booked future claims). However, financial improvements that are insufficient to cause claims to be un-booked are not reflected in the ME-PIMS claims values. As a result, the change in net position over the projection period may fall short of the present value of claims over the period by more than the values of simulated premiums, expenses, and investment returns over that period.

The ME-PIMS model is not predictive. As is the case with all PIMS (single or multiemployer), our analysis is not a prediction or a forecast but rather provides a range of possible outcomes generated by 500 random economic scenarios. It is important to analyze any PIMS results beyond the mean and median values. Careful attention should also be given to so-called tail results (e.g., the fifth and 95th percentile outcomes), as the recent financial turmoil has compelled policy makers to do.

General Assumptions: Projections of claims against the insurance program are made stochastically. Claims against the pension insurance program are modeled by simulating the occurrence of insolvency, or mass withdrawal with insolvency anticipated within 20 years, for any given plan. To anticipate insolvency, the model projects future cash flows that would be experienced by a plan under various scenarios. For mass withdrawal, the model reflects the historical relationship among various factors (the ratio of active to inactive participants, the ratio of assets to benefit payments, and the period of time over which the funding standard account is available to ameliorate contribution requirements). For each period, the model assigns a random change in each of these variables to each plan, correlated with changes in the economy. The simulated financial health variables determine the probability either of insolvency or of mass withdrawal for that year.

The model assumes that plan contributions follow plan-specific historical patterns of contribution increases, within parameters established to restrain unlikely patterns of increase or decrease. The model runs 500 economic scenarios (varying interest rates and equity returns). ME-PIMS then extrapolates the results of these simulations to the universe of insured multiemployer plans.

All of the following variables are stochastically projected:

- Interest rates, stock returns, and related variables (e.g., inflation, wage growth, and multiplier increases in flat dollar plans are determined by interest rates in ME-PIMS)
- Asset returns. At the beginning of each scenario, each plan's asset allocation is randomly selected from a pool of allocations that reflects historic differences across plans in investment strategies. Each plan's asset return also has a stochastic element that is uncorrelated with the simulated market rates and is uncorrelated across plans.
- Plan demographics. The number of active participants for a plan varies with its total employment level. Age and service also vary over time due to retirement and hiring assumptions. The numbers, ages, and benefits of retired and terminated vested participants vary depending on mortality, separation, and retirement assumptions.
- Benefit level and employer contribution increases — these vary annually during the projection period with some correlation to modeled economic conditions in each future year.

- Probability of mass withdrawal. This probability is generated using each plan's:
  - ratio of active to inactive populations
  - ratio of assets to benefit payments and expenses
  - ratio of the funding standard account to the decrease in that funding standard account, and
  - plan size

Two of the most important variables in the stochastic simulations are stock returns and interest rates. Stock returns are independent from one period to the next. To determine a simulated sequence of stock returns, the model randomly draws returns from a distribution that reflects historical experience going back to 1926. Unlike stock returns, interest rates are correlated over time. With the model, the Treasury yield for a given period is expected to be equal to the yield for the prior period, plus or minus some random amount. The random draws affecting the bond yields and stock returns are correlated according to an historical estimate. Stock returns are more likely to be high when the Treasury yield is falling and vice versa.

Mortality

- For purposes of projecting plan population—PIMS uses the PBGC mortality table (RP2000 set forward one year, projected with scale AA to the year of valuation plus 10) to project plan mortality experience for all years of the projections.

  Prior Law: Before the effective date of PPA 2006, there was no requirement for Funding Improvement or Rehabilitation Plans ("Recovery Schedules"). From the date of latest plan data through 9/30/10, PIMS subjects plans, when appropriate, to the requirement that they initiate a Recovery Schedule. Recovery Schedules are modeled to start at the beginning of the first bargaining cycle that commences after the required date under PPA (typically 2010). Bargaining cycles are assumed to be three years long, and to start, for all parties in a given plan, on the date of the latest Form 5500 available.

Contribution Level/Credit Balances

The credit balance at the end of the 2009 plan year was derived by reflecting available information on actual contributions made through 2009. From there, the credit balance was increased each year by the valuation interest rate and decreased by the amount by which modeled contributions are below the minimum required. ME-PIMS modeling of employer contributions reflects that most employers make contributions at a level above the minimum required, though this is not always true. There is some interaction between the classic minimum required contribution and the contributions required in light of Recovery Schedules.

Benefit Improvements

For flat-dollar plans, benefit multipliers are assumed to increase annually by the rate at which they have increased over the 10 years previous to the year for which the 5500 provides data. Most multiemployer plans have flat-dollar formulas, though there is a trend towards formulae that are based on a percentage of total contributions attributable to each participant. In cases where the plan formula is not a flat-dollar schedule, a translation to such a formula is made and the plan is modeled as a flat-dollar plan.

Benefit Restrictions Under the PPA

Accrual restriction: ME-PIMS models benefit reductions that arise in Recovery Schedules under Endangered and Critical Plan statuses. These restrictions are modeled in ME-PIMS for Endangered and Critical Plans as appropriate under the respective rules for such plans. For plans that include benefit freezes in their Recovery Schedules, those freezes are modeled as continuing indefinitely.

Benefit improvement restriction: ME-PIMS assumes that due to restrictions on benefit increases (they cannot take place in bargaining agreements unless contributions will immediately fund such an increase under PPA) plans will not increase benefits.

PBGC's Assets

All assets in the Multiemployer Program are, by law, placed in revolving funds that are invested in US Treasury securities. Asset returns in ME-PIMS are bound by the modeling of US Treasury returns in future years. This modeling incorporates random fluctuations within certain bounds to simulate variation over time.

Discounting Future Contributions/Claims

When ME-PIMS discounts future amounts, the discount factors are the "select" and "ultimate" factors described on page 27 of the 2010 financial statements. These factors are based on a survey of prices that the private-sector annuity market would charge at present, to pay a given amount in the future.