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The Center On Federal Financial Institutions (COFFI) is a nonprofit, nonpartisan, non-ideological policy institute focused on federal insurance and lending activities.

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PBGC: Updated Cash Flow Model from COFFI

COFFI has updated our cash flow model for the Pension Benefit Guaranty Corporation (PBGC) to reflect the recently released Fiscal 2004 financial statements, plus many significant technical refinements to the model.

Our overall conclusions from the modeling are broadly in line with previous findings:

- Legislation is required, otherwise PBGC runs out of cash in 2020 or 2021.
- A $78 billion rescue would be needed in our base case, without reform.
- Without a rescue, affected retirees would eventually receive only a small fraction of their pensions.
- There is a limit to benefits from reform; substantially lower future claims still produce a $56 billion hole.
- Even a shutdown of PBGC (no new claims or premiums) would cost $30 billion.
- A $100 billion hole is created by more pessimistic claims, including terminations at all airlines.
- Premiums of $4.0 to $6.5 billion per year would be needed, if premium hikes were the only action
- Investment returns of 10%, double our projections, would be needed, if nothing else were done.
- Even a big bet on stocks needs unrealistically high long-term returns of 13% or more vs. an expected 8%
- PBGC would add $2.5 billion annually to the federal deficit within 5 years and $4 billion within 10 years.

This paper will briefly explain the findings and the many technical enhancements to the model; we will publish a more detailed technical summary later. Please see our earlier paper, “PBGC: When Will the Cash Run Out”, available at www.coffi.org, if you are not familiar with the original version of the model.

The author would like to acknowledge the helpful suggestions and criticisms of Ron Gebhartsbauer, Ken Kent, and many others who prefer to remain anonymous. My acknowledgment of their help is not meant to suggest any endorsement on their part of the results.

Findings

The overall picture is relatively unaffected by either the enhancements to the model or by the recently reported 2004 financial results for PBGC. The enhancements generally allow us to dive down into greater detail, but this greater detail largely confirms the earlier conclusions. Similarly, the Fiscal 2004 financial statements serve mostly to confirm the depths of the financial problems. The numbers are daunting, but our earlier modeling already showed that they would look this bad if UAL, US Airways, and one other major airline were to terminate their plans.

The two surprises in PBGC's financials that affect cash flows are roughly offsetting. On the positive side, variable premiums were much higher than either we or PBGC expected earlier in the year, approximately $500 million higher. The amount is likely to subside to historic levels over the next several years, but the added premiums could cumulate to $1 billion or more over that period. If we are wrong about variable premiums coming back down, it will almost certainly mean even worse news for PBGC, since it would imply continued high levels of underfunding in the system, resulting in higher future claims. PBGC would be best off with no variable premium income because no one was significantly underfunded.

The negative surprise was that a study commissioned by PBGC of its mortality experience determined that its covered retirees are living longer than anticipated. This good real-world news hurts PBGC, since it means it will be paying pensions for more years. PBGC estimates that the plans it has already taken over will cost an extra $1.5 billion in today's dollars as a result.

Scenarios

COFFI's model allows an unlimited number of scenarios to be tested, depending on one's views of the world. The following three represent a reasonable range of results, with the Base Case being the author's personal best estimate with currently available information. **All cases shown here assume the continuation of current law and government policy.** However, we will be happy to run cases under alternative legislative scenarios as ideas are proposed. In addition, we show a theoretical fourth case in which PBGC stops taking on new claims, other than those it already considers probable, and ceases collecting premiums. This case is included to show the depth of the hole already dug.

Table 1: Key results of different scenarios ($ billions)

			Potential Offsets			
Scenario	**Year of Exhaustion**		**Rescue Required (2005 $)**	**Total Premiums Required, 2008 on (Annual)**	**Invest. Return Required**	**Stock Return Required, if 60% in stocks**
Base	2021		$ 78	$5.3	9.9%	13.6%
Half of base claims	2020		$ 56	$4.0	9.7%	13.0%
Base + All Airlines	2020		$100	$6.5	10.1%	13.4%
Shutdown	2018		$ 30	NA	9.2%	12.5%

The base case assumes that the level of claims in the first decade is consistent with the median case produced in PBGC's last published run of its PIMS claims model ($2.2 billion annually for 10 years, in 2003 dollars.) We further assume that UAL, US Airways, and Delta do distress terminations, which is roughly consistent with the level of "probable losses" in PBGC's latest financial statements. To avoid double-counting we assume that the PIMS median case already had 50% of those airline claims built in. (Given the economic circumstances at the time the PIMS model was run, it seems very unlikely that all the cases around the median had produced losses from all three carriers. On the other hand, it seems equally unlikely that some of the carriers were not in most of those cases. 50% seems a reasonable estimate of the potential double-counting.)

The second decade of claims is presumed to fall back to average levels. We take the historical claims data from 1985 to 2003, adjusted to 2004 dollars, and add in the presumed experience for 2004-2013. The average of these 29 years, which includes both good and bad times for PBGC, seems a reasonable base. The resulting annual claims are approximately $1.6 billion in 2004 dollars, near PBGC's 20-year inflation-adjusted average, and far below the record $14.7 billion in 2004.

We grow this average figure by 3% a year to reflect wage inflation and the growth in PBGC's guaranty limit minus some exit from the defined benefit system. (We do not reduce it further because plan freezes would have much less effect than the rarer plan terminations.)

Alternative Cases and Sensitivity Analyses

The "Half of base claims" case has the same first decade assumptions, but assumes that the second and subsequent decades have half the claim levels of the base case. This annual level, roughly $800 million in 2004 dollars, would be well under the historical average.

The "Base + All Airlines" case assumes the distress terminations of the remaining legacy air carriers. The base claims level is increased in the second and subsequent decades due to a higher average for the 1985-2013 period as a result of the additional airline terminations. Finally, as a technical matter, our "double-counting" percentage related to the PIMS model is reduced to 30%, since even fewer PIMS cases would have had all the airlines terminating.

The shutdown case assumes no new claims, beyond those PBGC has determined are probable as of 2004, and no new premiums. While unrealistic in policy terms, it is a good measure of the extent to which the financial problems are completely locked in. Note that the hole is about $7 billion worse than PBGC's reported figure, because our model includes future expenses that GAAP does not allow PBGC to put on its balance sheet now. (These expenses might be a couple of billion dollars lower if we did a specific expense model for this unlikely scenario.) The shutdown case is far worse than we reported in the earlier version of the model, because it now reflects PBGC's record losses in 2004.

The "rescue required" column shows the dollar amount that would have to be infused, presumably from the government, in 2005 to avoid running out of cash if no other measures are taken. The amount would rise over time if the rescue were delayed, as there would be less time to earn investment income on the infusion.

As the table shows, there is very little variation in the timing of when PBGC runs out of cash to pay retirees. This is because new claims tend to bring sufficient investments to cover their own losses for 10 or 15 years, although generally only about half of what would be necessary to cover the pension payments for the full period promised. Since PBGC would run out of cash in roughly 13 years anyway, these new claims do not tend to accelerate the trouble, but merely to make it bigger in the long run.

We want to emphasize that we do not think that any retirees will lose their pension checks. As with the depositors in the Savings & Loan crisis, we do not believe that politicians would, or could, stand by while retirees saw their pensions reduced to 9% or less, regardless of the government's legal right to refuse a rescue. (See our earlier paper for an explanation of the mechanics by which pensions would theoretically be reduced so sharply.)

Premiums are assumed to come down from $1.5 billion over a period of several years and then to run at the rough historical average of $900 million per year. This assumes no mass exodus from the defined benefit system. (See "PBGC: When Will the Cash Run Out?" for our explanation of why employers are likely to freeze plans, and continue paying premiums, rather than terminate outright.) The "premium required" column shows the annual level that would be necessary to avoid cash exhaustion without taking any other measures.

PBGC is assumed to earn 5.12% on its investments, consistent with an 8% long-term return on stocks, a 4.4% return on bonds (consistent with PBGC's yields at the end of Fiscal 2004), and a 20/80 mix of stocks and bonds, which is the mid-range of PBGC's announced target.

The "investment return required" column shows what sustained level of return would be necessary to avoid cash exhaustion without other measures. The "stock return required column" shows what return on the stock market would be required, compounded for 75 years, if PBGC aggressively bet on stocks. We assume 60% of investments would be in stocks, higher than PBGC has ever done and likely to require a change in law.

Some have suggested that PBGC hold a higher proportion of its investments in stocks, as it has at times in the past. Our probabilistic simulations show that this would generally tend to delay cash exhaustion by several years and to reduce the size of rescue required. However, the problem is accelerated and considerably deepened in a significant number of cases. It's a bit like being a good amateur poker player. You expect to win when you sit down at the table, but if you don't get good cards, you can still lose a lot in any one sitting.

Enhancements to the Model

The core of the model and its assumptions are the same as in the first version, explained in "PBGC: When Will the Cash Run Out?" However, a number of enhancements have been added. These include:

Ability to vary future claims by decade. An intractable level of computational complexity arises if each year of PBGC claims is allowed to vary, since we need to track the pension payouts from each claim year for up to 74 additional years. The first version solved this problem by forcing claims to be the same in non-inflation adjusted dollars each year for the full 75 year projection period. We have since found a method that allows us to vary the dollar amount of new claims by decade.

Individual modeling of claims from each legacy airline. Given the importance of potential claims from the airline industry, we added an extensive section to analyze the effect on PBGC of each major airline individually, starting with data available from 10-K filings with the SEC. As part of this refinement, we now adjust the first decade non-airline claims downward to avoid double-counting between our airline estimates and the total claim numbers based on PBGC's PIMS model, as explained above. Our previous paper acknowledged the issue of double-counting, but did not attempt to quantify it.

Option to use probabilistic simulation of stock market returns. In the first version, we dealt with the uncertainty of investment returns by running multiple scenarios with different investment returns. We have added the ability to generate random returns from the stock market, centered around an estimated average return, with a distribution of results based on historical volatility from 1926 to the present.

Other refinements to investment calculations. Rather than using a single rate for investment returns on all assets, we now allow separate estimates for stock returns (which can be simulated randomly), bond returns on existing investments, and bond returns on future investments, when interest rates may be higher or lower.

Calculation of PBGC effects on the federal budget. The federal budget has a modified cash flow basis for determining the annual cost. We have added a section to calculate these costs.

Explicit assumptions for bankruptcy recoveries. PBGC recovers modest amounts from the bankrupt estates of plan sponsors. Previously, we had adjusted the funding ratio to account for this. Now, we have an explicit assumption as to the proportion of underfunding recovered. The base case assumes a 3.5% recovery rate, slightly below long-term levels, but above recent PBGC results.

Ability to choose among payout ratios for new claims. PBGC's cash position is affected not just by the net present value of the pension payments it takes on, but also by how quickly they are paid out. We have introduced a choice of four different payout patterns, based on one's expectations of the demographics of future claims. Our base case assumes non-airline terminations will be concentrated in heavy industrial firms with many retirees per employee, resulting in an average duration of 10.2 years. Longer durations have little effect on the overall size of the problem, but could push out the date of cash exhaustion by up to 2 years.

Explicit modeling of PBGC expenses. PBGC, like all insurers, has substantial operating expenses. The first version used a crude growth rate based on the growth in pension payouts, adjusted downward for economies of scale. We now use an explicit formula derived from a linear regression on past expenses. Fixed expenses are assumed to be $120 million, with additional variable expenses of 7% per dollar of annual pension payment.