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## Original Article

# An analysis of the Pension Benefit Guarantee Corporation's deficit and scenarios in determining adequate premiums to cover claim experience

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### Andrew Frank Thompson

is Professor of Finance at the University of Northern Iowa where he served as department head in the 1990s. Before that he was a tenured professor, and Director of insurance and actuarial science at the University of Cincinnati. He has published in the *Transactions of the Society of Actuaries*, *Proceedings of the Canadian Institute of Actuaries*, *Journal of Risk and Insurance*, *The Financial Review*, *Contingencies*, *Financial Management*, *The American Journal of Economics and Sociology*, and *Tijdschrift voor Economische en Sociale Geografie*.

### Mir A. Zaman

is the Carl Schweser Professor of Financial Analysis in the College of Business at the University of Northern Iowa. Dr Zaman earned his PhD in Finance from the University of Iowa, his MBA in Finance and his BA (Honors) in Mathematics from the University of Dhaka, Bangladesh. His research interests are in Market Efficiency, Market Micro-structure, Insider Trading and IPOs. His research has been published in the *Journal of Finance*, the *Journal of Financial Economics*, the *Journal of Business*, the *Journal of Real Estate Finance*, *Financial Management Journal* and the *Journal of banking and Finance*.

### Sam Kolahgar

is a Research Assistant in the UNI Department of Finance, while currently pursuing an MBA at the University of Northern Iowa College of Business. He holds a master's degree in Financial Management and has prior work experience as an investment manager on construction projects in the middle east, and cost accounting analysis for Systems Group Corporation.

### Azadeh Babaghaderi

is a Research Assistant with the UNI Department of Finance, while pursuing an MBA in the University of Northern Iowa College of Business. She has prior experience as a senior analyst and IPO specialist for Novin Investment Bank, along with work as a financial lending officer for PEDEX Corporation.

**ABSTRACT** This article examines Pension Benefit Guarantee Corporation (PBGC) premium development, claims experience and the PBGC's net financial position to determine the credibility of premiums charged for coverage from 1994 to 2010. A retrospective premium model is presented that analyzes variations in flat and variable rate premiums as exogenous factors in accumulating PBGC's net financial position. The retrospective model considers a US\$35 flat premium per participant, doubling the variable rate, or increasing the flat premium to \$50 over the study period. A \$35 flat premium would have been insufficient to meet historical losses from 1994 to 2010. A combination \$35 premium, plus a doubling of variable revenues would have been modestly adequate producing a \$791 million deficit in 2010. However, a \$50 flat premium produces adequate development of the PBGC fund resulting in a \$2.1 billion surplus by 2010. The findings of this study provide evidence that current PBGC premiums appear inadequate for meeting future claims based on historical experience from 1994 to 2010. However, a combination of flat and variable rate increases that reflect the true cost of coverage based on PBGC's incurred losses may move PGBC towards an adequate rate structure.

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**Correspondence:** Andrew Frank Thompson  
UNI College of Business (0124), Cedar Falls, IA 50613,  
E-mail: [actuary1@uni.edu](mailto:actuary1@uni.edu)



## INTRODUCTION: PBGC INSURANCE OPERATIONS AND SOURCES OF FUNDING

The Pension Benefit Guarantee Corporation (PBGC), created under the 1974 Employee Retirement Income Security Act, is a quasi-governmental insurer offering coverage to participants in defined benefit pension plans. While PBGC is considered a federal agency under the US Department of Labor, its primary funding is based on income generated from premiums charged to employer sponsors of defined benefit plans. This agency operates as an insurance operation that depends upon having premium income adequate to meet future loss obligations to retirees in failed defined benefit pension plans. However, if PBGC deficits were to reach the point of insolvency, the federal government would have an implicit obligation to meet PBGC's obligations in much the same manner as it did with the FSLIC in the 1980s. Given the economic downturn over the last decade, PBGC obligations have increased to the point where increases in flat and variable rate premiums have been insufficient to meet claims costs from failing defined benefit retirement plans. Since current PBGC rates have not been adequate to meet loss experience for the past several years, the main concern is what may be an appropriate premium rate to charge in order to credibly cover future claim experience. This article seeks to examine this question by using a retrospective reserve model to test what combination of flat and variable rate premiums might have been sufficient to cover PBGC claims costs over the last 15 years from 1994 to 2009.

This study will examine the adequacy of premiums in relation to single-employer insurance offered by PBGC, the largest insurance program and one that has generated the greatest losses to the PBGC fund. As a federal corporation, PBGC is governed by a Board of Directors consisting of the Secretaries of Labor, Commerce and Treasury. It provides insurance to 44 million workers and retirees in 29 100 private defined benefit plans. The largest number of workers and retirees, 33.79 million,

are members of single-employer plans.<sup>1</sup> Consequently, the focus of this study will concentrate on the coverage having the largest loss potential, single-employer plans involving individual US companies offering defined benefit plans to workers. During the 2010 fiscal year, PBGC received US\$2.231 billion in premium income plus \$7.594 billion from investments against plan termination losses and actuarial adjustments of \$9.421 billion. Net losses on insurance to the single-employer plans amounted to \$517 million and the capital position ran a deficit of \$21.594 billion.<sup>1</sup> As noted in PBGC's 2009 Annual Report, 'The agency's deficit remains a cause for concern and is a reflection of the long term challenges confronting PBGC'.<sup>2</sup> Under these circumstances, the data demonstrate that premiums were inadequate for meeting PBGC claim costs leading up to 2010. At issue is what premium should have been charged given this type of experience and how might that information be used to revise current rates to meet future PBGC insured loss obligations.

Table 1 provides a historical perspective on the long-run financial position of PBGC since 1985. Annual increases in the PBGC capital deficit from 1995 onward grew at a faster rate (32.56 per cent) than during the entire 25-year period from 1985 (11.81 per cent). In the period from 1985 to 1995, PBGC experienced deficits of between -\$315 million and -\$2.897 billion. Following a brief period from 1996 to 2001, when PBGC ran capital surpluses between \$869 million and \$9.704 billion, the agency faced a growing trend in deficits thereafter with the latest 2010 shortfall reported at \$21.594 billion. Particularly telling is the fact that the latest deficit comes after similar shortfalls in 2004 and 2005 when flat and variable premiums were increased in an effort to shore up the PBGC fund. While the PBGC fund deficit decreased at a rate of 7.34 per cent in the period from 2005 to 2010 (that is, \$23.305 billion to -\$21.594 billion), the lack of a significant reduction in fund losses shows that the higher current premiums may not be adequate to sustain the fund. In 2010 the fund generated a 12.1 per cent investment return, up

**Table 1:** Net financial position of PBGC's single-employer program from 1985 to 2010

<i>Fiscal year</i>	<i>Assets (in millions)</i>	<i>Liabilities (in millions)</i>	<i>Net financial position (in millions)</i>
2010	\$77 827	\$99 421	-\$21 594
2009	\$68 736	\$89 813	-\$21 077
2008	\$64 612	\$75 290	-\$10 678
2007	\$67 241	\$80 352	-\$13 111
2006	\$59 972	\$78 114	-\$18 142
2005	\$56 470	\$79 246	-\$22 776
2004	\$38 993	\$62 298	-\$23 305
2003	\$34 016	\$45 254	-\$11 238
2002	\$25 430	\$29 068	-\$3638
2001	\$21 768	\$14 036	\$7732
2000	\$20 830	\$11 126	\$9704
1999	\$18 431	\$11 393	\$7038
1998	\$17 631	\$12 619	\$5012
1997	\$15 314	\$11 833	\$3481
1996	\$12 043	\$11 174	\$869
1995	\$10 371	\$10 686	-\$315
1994	\$8281	\$9521	-\$1240
1993	\$8267	\$11 164	-\$2897
1992	\$6381	\$9118	-\$2737
1991	\$5422	\$7925	-\$2503
1990	\$2797	\$4710	-\$1913
1989	\$3059	\$4183	-\$1124
1988	\$2422	\$3965	-\$1543
1987	\$2163	\$3712	-\$1549
1986	\$1740	\$3766	-\$2026
1985	\$1155	\$2480	-\$1325
<i>Annual %</i>			
Increase in the PBGC Deficit 1985–2010:			11.81
<i>Annual %</i>			
Increase in the PBGC Deficit 1995–2010:			32.56

Source: PBGC.<sup>3</sup>

from the -6.5 per cent return in 2008, but less than the 13.2 per cent return in 2009.<sup>1,2</sup> Even with the two years of above average investment returns in 2009 and 2010, premium income along with investment income was not sufficient to significantly reduce the \$21 billion deficit to the PBGC fund.

An actuarial and financial approach to PBGC funding requires that the present value of future premiums meet the present value of future obligations to workers and retirees in defined benefit plans under coverage. Three critical variables in maintaining the viability of an insurer is the ability to (i) adjust premiums to fully reflect the risks assumed with coverage; (ii) alter underwriting and benefit structures to avoid poorer than average risks getting coverage at rates below the true cost of claims (that is,

adverse selection risk) and (iii) generate investment returns that will grow funds that can be used to meet future claim liabilities.<sup>4</sup> Table 2 provides historical information on PBGC premium rates and revenues since 1985. Initially, PBGC charged a flat premium rate per insured worker of \$2.60 to \$8.50. By 1988, PGBC started charging a flat rate, plus a variable rate based on the level of under funding in vested plan benefits. Rates in 1988 were \$16 per worker with an excess variable premium of \$6 per \$1000 of unfunded benefit up to a maximum of \$34 per worker. These rates gradually increased to \$19 per insured worker and \$9 per \$1000 of unfunded benefit without an upper bound on unfunded amount. Table 2 examines the historic premium rates for PBGC coverage from 1985 to 2009.

From 2005 to 2009, flat premium rates went up from \$30 to \$35 per worker, while the variable rate formula remained the same. As a consequence the contribution of flat premiums to overall premium revenues to PBGC grew from 45.8 per cent in 2005 to 61.8 per cent in 2009, and variable premiums as a percentage of total premium revenue declined from 54.2 per cent to 38.2 per cent in that same period. If variable premiums are used to differentiate those plans with higher risk by charging correspondingly higher rates for coverage, the 2009 variable premiums do not appear to fulfill this purpose in light of the lowered contributions to PBGC revenues. With the latest changes to PGBC premiums, rates are at their highest levels, yet premium revenues and investment returns have been insufficient to reduce the agency's net financial deficit. Consequently, if PBGC, as an insurance operation, were to have adequate premiums, capable of credibly covering future claim costs, rates would have to increase to reflect losses above what was expected. Despite increasing the flat premium from \$2.80 to \$35, and variable rates from \$6 per \$1000 to \$9 per \$1000 of unfunded pension liabilities, PBGC continued to increase losses in its net financial position resulting in a negative \$21 billion balance by the beginning of 2010. One way private insurers can analyze how much they may need to increase rates to cover losses is to

**Table 2:** Pension Benefit Guarantee Corporation historic premium rates and revenues for 1985 through 2009

Year	Flat premium rate	Flat premium revenue (in millions)	% of total premium revenue	Variable premium rate	Variable premium revenue (in millions)	% of total premium revenue	Total premium revenue
1985	\$2.60	\$81.7	100.00%	—	—	0.00%	\$81.7
1986	\$8.50	\$201.4	100.00%	—	—	0.00%	\$201.4
1987	\$8.50	\$267.6	100.00%	—	—	0.00%	\$267.6
1988	\$16.00	\$414.4	89.23%	\$6/\$1000 Unfunded:\$34 Max	\$50.0	10.77%	\$464.4
1989	\$16.00	\$503.2	83.42%	\$6/\$1000 Unfunded:\$34 Max	\$100.0	16.58%	\$603.2
1990	\$16.00	\$509.0	77.24%	\$6/\$1000 Unfunded:\$34 Max	\$150.0	22.76%	\$659.0
1991	\$19.00	\$541.0	73.01%	\$9/\$1000 Unfunded:\$53 Max	\$200.0	26.99%	\$741.0
1992	\$19.00	\$590.0	67.43%	\$9/\$1000 Unfunded:\$53 Max	\$285.0	32.57%	\$875.0
1993	\$19.00	\$605.0	67.98%	\$9/\$1000 Unfunded:\$53 Max	\$285.0	32.02%	\$890.0
1994	\$19.00	\$648.0	67.85%	\$9/\$1000 Unfunded:\$53 Max	\$307.0	32.15%	\$955.0
1995	\$19.00	\$587.0	70.05%	\$9/\$1000 Unfunded:\$53 Max	\$251.0	29.95%	\$838.0
1996	\$19.00	\$600.0	52.36%	\$9/\$1000 Unfunded:No Max.	\$546.0	47.64%	\$1146.0
1997	\$19.00	\$646.0	60.54%	\$9/\$1000 Unfunded:No Max.	\$421.0	39.46%	\$1067.0
1998	\$19.00	\$642.0	66.46%	\$9/\$1000 Unfunded:No Max.	\$324.0	33.54%	\$966.0
1999	\$19.00	\$611.0	67.74%	\$9/\$1000 Unfunded:No Max.	\$291.0	32.26%	\$902.0
2000	\$19.00	\$661.0	81.91%	\$9/\$1000 Unfunded:No Max.	\$146.0	18.09%	\$807.0
2001	\$19.00	\$674.0	82.10%	\$9/\$1000 Unfunded:No Max.	\$147.0	17.90%	\$821.0
2002	\$19.00	\$654.0	83.10%	\$9/\$1000 Unfunded:No Max.	\$133.0	16.90%	\$787.0
2003	\$19.00	\$647.0	68.25%	\$9/\$1000 Unfunded:No Max.	\$301.0	31.75%	\$948.0
2004	\$19.00	\$654.0	44.86%	\$9/\$1000 Unfunded:No Max.	\$804.0	55.14%	\$1458.0
2005	\$30.00	\$664.0	45.80%	\$9/\$1000 Unfunded:No Max	\$787.0	54.24%	\$1451.0
2006	\$31.00	\$892.0	61.90%	\$9/\$1000 Unfunded:No Max	\$550.0	38.14%	\$1442.0
2007	\$33.00	\$1057.0	71.60%	\$9/\$1000 Unfunded:No Max	\$358.0	25.30%	\$1415.0
2008	\$34.00	\$1104.0	78.70%	\$9/\$1000 Unfunded:No Max	\$241.0	17.92%	\$1345.0
2009	\$35.00	\$1126.0	61.80%	\$9/\$1000 Unfunded:No Max	\$696.0	38.20%	\$1822.0

Note: In general, variable rates are stated rate/\$1000 unfunded vested benefit, with a maximum limit per participant. However for 1994–1995 there was an additional 20 per cent uncapped premium in excess of \$53. From 1995 to 1996 the uncapped portion went up to 60 per cent. After 1996 there was no maximum limit on the variable premium.

Source: PBGC.<sup>3</sup>

use retrospective premium analysis to determine how a higher rate might have fared in generating loss reserves. Such an investigation permits the insurer to determine a revision in current rates that may more fully reflect what is required to meet future claim obligations.

## RETROSPECTIVE PREMIUM ANALYSIS OF THE PBGC FUND

The retrospective premium method of analyzing the PBGC fund is based on viewing insurance coverage as consisting of a pool of policyholders who pay premiums in order to be indemnified against future losses from defined benefit pension plans. These policyholders pay both flat and variable premiums invested in a fund to pay future losses. The PBGC policyholders pay a flat premium per participant and a variable premium if the plan has an unfunded pension liability. The retrospective model assumes that the fund

from premiums will be invested at 5 per cent as long as accumulations remain positive, if not, the investment return is zero.<sup>5</sup> Actual claim experience over the study period is counted against accumulations from paid-in premiums and investment return. Premiums paid for the year are used to offset claim experience. If claims in a given year are higher than premium income, funds are taken from the PBGC fund. If the PBGC fund balance is insufficient to meet current claims, paid losses will be assigned to the PBGC fund to produce a negative amount. If the PBGC fund is positive at the beginning of the year, a 5 per cent investment return will be added to the balance.<sup>6</sup> If the fund is in a deficit position at the beginning of the year, there will be no investment return at the end of the year. Claim costs, premium income and investment return will be recorded at the end of the year. Flat premiums may be increased on a per

participant basis and applied to those policyholders that were paying premiums over the study period. Since it is not possible to tell how variable premiums were assigned to individual single-employer plans, the present study considers aggregate changes to variable rate revenues that may be developed by altering variable rates.<sup>7</sup> For example, if variable rates were to be doubled over the period, the model projects a doubling of historical revenues each year from variable rate premiums.

Table 3 provides a retrospective premium analysis using the highest flat premium rate charged to date by PBGC, \$35 per participant, starting in 1993 and continuing until 2010. Under this model the PBGC net financial position becomes positive in 1996, remains so until 2004, and then turns negative ending with a deficit of \$8.7 billion.

Table 4 considers the impact to the PBGC net financial position from a \$35 flat premium and a doubling of revenues from variable rate premiums. Under this scenario PBGC's net financial position becomes positive in 1995, and remains so with the exception of 2005 and 2009. Even though net claims in 2009 is substantial amounting to \$7.9 billion in losses, under this scenario PBGC's net financial position ends with a deficit of \$791 million, an amount which could be made up from premium and investment income in succeeding years. Consequently, this premium structure might be adequate on a long-term basis when viewed in terms of PBGC's ability to cover losses incurred historically.

Table 5 examines the effect that a \$50 flat premium would have on PBGC net financial position, leaving variable premiums in tact from 1993 to 2010. Under this scenario the PBGC fund extinguishes its deficit position by 1994 and remains positive to 2010 leaving a funding balance of \$2.1 billion. By increasing the highest historical flat premium by 42 per cent, PBGC with a \$50 premium is able to meet annual claim costs and still have some left over for unexpected future claims. This result reinforces the perspective that current PBGC rates are too low to meet current and future

losses to the fund based on historical claim experience.

## **THE NEED TO MAINTAIN A POSITIVE FUND BALANCE TO FACILITATE RESOLUTIONS**

From a microeconomic, insurance perspective, PBGC offers a unique form of coverage where rates must be sufficient to cover current claims and still have funding for unexpected losses in the future. Although the policy insures pension benefits for workers participating in defined benefit plans, the premiums are paid by firms sponsoring the pensions. The insured party is not the policyholder or premium payer for the coverage. The insurance is owned by the corporation, on behalf of the insured workers covered by PBGC. Consequently, the managers of the firm decide whether to continue their defined benefit plan and pay premiums, or terminate the pension. Insured workers have little control over these decisions. If a plan terminates due to bankruptcy PBGC's insurance coverage provides guaranteed benefits to retirees, and the claim liability is based on the value of the plan assets, the level of benefits defined within the terminated plan, the limits of PBGC coverage, and the extent corporate assets subrogated to pay guaranteed benefits. In most of these cases plan assets are considerably less than the actuarial value of the plan's future pension obligations. Under such circumstances PBGC recalculates benefits to workers and recognizes a future insurance claim liability based on the limits of coverage, the value of the transferred assets in the terminated plan and the present value of future benefits.<sup>9</sup> When PBGC receives pension assets from a terminated plan, there can be a priority to a retiree's claim to enhanced benefits. Current employees covered under PBGC insurance, retirees receiving fixed benefits before PBGC plan assumption, current employees with vested benefits less or more than the PBGC maximum benefit limits, as well as participants with unvested benefits, all have varying priorities of claims to ERISA law.<sup>10</sup> Difficulties in handling assets



**Table 3:** Examination of the PBGC loss reserve based on actual net claims, a \$35 flat retrospective premium, 5% return on reserve assets and maintenance of variable premiums from 1993 to 2010

Year	(1) Beginning of the year net financial position (in millions)	(2) Retrospective premium rate	(3) PBGC participants (in millions)	(4)=(2)×(3) Flat premium revenue (in millions)	(5) Variable premium revenue (in millions)	(6)=(4)+(5) Premium income (in millions)	(7) Net claims (in millions)	(8)=(6)-(7) Adjustment for premiums and claims (in millions)	(9)=(1)×Int. Rate Accumulation to net financial position with interest (in millions)	(10)=(1)+(8)+(9) Net financial position year-end reserve (in millions)
1993	—	—	—	—	—	—	—	—	—	-\$2503.00
1994	-\$2503.00	\$35.00	34.11	\$1193.9	\$307.0	\$1500.9	\$458.0	\$0.00	\$0.00	-\$1460.15
1995	-\$1460.15	\$35.00	30.89	\$1081.2	\$251.0	\$1332.2	\$152.8	\$1179.35	\$0.00	-\$280.80
1996	-\$280.80	\$35.00	31.58	\$1105.3	\$546.0	\$1651.3	\$125.5	\$1525.80	\$0.00	\$1245.00
1997	\$1245.00	\$35.00	34.00	\$1190.0	\$421.0	\$1611.0	\$218.1	\$1392.90	\$62.3	\$2700.15
1998	\$2700.15	\$35.00	33.79	\$1182.7	\$324.0	\$1506.7	\$92.6	\$1414.05	\$135.0	\$4249.21
1999	\$4249.21	\$35.00	32.16	\$1125.6	\$291.0	\$1416.6	\$92.7	\$1323.90	\$212.5	\$5785.57
2000	\$5785.57	\$35.00	34.79	\$1217.7	\$146.0	\$1363.7	\$84.9	\$1278.75	\$289.3	\$7353.60
2001	\$7353.60	\$35.00	35.47	\$1241.5	\$147.0	\$1388.5	\$966.0	\$422.45	\$367.7	\$8143.73
2002	\$8143.73	\$35.00	34.40	\$1204.0	\$133.0	\$1337.0	\$3505.9	-\$2168.90	\$407.2	\$6382.01
2003	\$6382.01	\$35.00	34.41	\$1204.2	\$301.0	\$1505.2	\$6226.7	-\$4721.46	\$319.1	\$1979.66
2004	\$1979.66	\$35.00	34.52	\$1208.3	\$804.0	\$2012.3	\$2643.9	-\$631.60	\$99.0	\$1447.05
2005	\$1447.05	\$35.00	34.23	\$1198.1	\$787.0	\$1985.1	\$9612.0	-\$7626.88	\$72.4	-\$6107.48
2006	-\$6107.48	\$35.00	33.93	\$1187.7	\$550.0	\$1737.7	\$902.4	\$835.26	\$0.00	-\$5272.23
2007	-\$5272.23	\$35.00	33.89	\$1186.2	\$358.0	\$1544.2	\$322.0	\$1222.22	\$0.00	-\$4050.01
2008	-\$4050.01	\$35.00	33.90	\$1186.5	\$241.0	\$1427.5	\$263.2	\$1164.30	\$0.00	-\$2885.71
2009	-\$2885.71	\$35.00	33.60	\$1176.0	\$696.0	\$1872.0	\$7690.9	-\$5818.90	\$0.00	-\$8704.61
2010	-\$8704.61	—	—	—	—	—	—	—	—	—

Assumptions: Annual interest return on positive net financial position reserves: 5.00 per cent interest rate.

Reserves earn no interest in the years where there is a negative balance. Premiums are collected and claims are paid at the end of each year.

Source: PBGC.<sup>8</sup>

**Table 4:** Examination of the PBGC loss reserve based on actual net claims, \$35 flat retrospective premium, doubling of variable premium revenues and a 5% return on reserve assets

Year	(1) Beginning of the year net financial position (in millions)	(2) Retrospective premium rate	(3) PBGC participants (in millions)	(4)=(2)×(3) Flat premium revenue (in millions)	(5) Variable premium revenue (in millions)	(6)=2×(5) Increased variable rate premium revenue (in millions)	(7)=(4)+(6) Premium income (in millions)	(8) Net claims (in millions)	(9)=(7)-(8) Adjustment for premiums and claims (in millions)	(10)=(1)×Int. rate Accumulation to net financial position with interest (in millions)	(11)=(1)+(9)+(10) Net financial position year-end reserve (in millions)
1993	-	-	-	-	-	-	-	-	-	-	-\$2503.00
1994	-\$2503.00	\$35.00	34.11	\$1193.9	\$307.0	\$614.0	\$1807.9	\$458.0	\$1349.85	\$0.00	-\$1153.15
1995	-\$1153.15	\$35.00	30.89	\$1081.2	\$251.0	\$502.0	\$1583.2	\$152.8	\$1430.35	\$0.00	\$277.20
1996	\$277.20	\$35.00	31.58	\$1105.3	\$546.0	\$1092.0	\$2197.3	\$125.5	\$2071.80	\$13.86	\$2362.86
1997	\$2362.86	\$35.00	34.00	\$1190.0	\$421.0	\$842.0	\$2032.0	\$218.1	\$1813.90	\$118.1	\$4294.90
1998	\$4294.90	\$35.00	33.79	\$1182.7	\$324.0	\$648.0	\$1830.7	\$92.6	\$1738.05	\$214.7	\$6247.70
1999	\$6247.70	\$35.00	32.16	\$1125.6	\$291.0	\$582.0	\$1707.6	\$92.7	\$1614.90	\$312.4	\$8174.98
2000	\$8174.98	\$35.00	34.79	\$1217.7	\$146.0	\$292.0	\$1509.7	\$84.9	\$1424.75	\$408.7	\$10008.48
2001	\$10008.48	\$35.00	35.47	\$1241.5	\$147.0	\$294.0	\$1535.5	\$966.0	\$569.45	\$500.4	\$11078.36
2002	\$11078.36	\$35.00	34.40	\$1204.0	\$133.0	\$266.0	\$1470.0	\$3505.9	-\$2035.90	\$553.9	\$9596.37
2003	\$9596.37	\$35.00	34.41	\$1204.2	\$301.0	\$602.0	\$1806.2	\$6226.7	-\$4420.46	\$479.8	\$5655.74
2004	\$5655.74	\$35.00	34.52	\$1208.3	\$804.0	\$1608.0	\$2816.3	\$2643.9	\$172.41	\$282.8	\$6110.93
2005	\$6110.93	\$35.00	34.23	\$1198.1	\$787.0	\$1574.0	\$2772.1	\$9612.0	-\$6839.88	\$305.5	-\$423.40
2006	-\$423.40	\$35.00	33.93	\$1187.7	\$550.0	\$1100.0	\$2287.7	\$902.4	\$1385.26	\$0.0	\$961.85
2007	\$961.85	\$35.00	33.89	\$1186.2	\$358.0	\$716.0	\$1902.2	\$322.0	\$1580.22	\$48.1	\$2590.16
2008	\$2590.16	\$35.00	33.90	\$1186.5	\$241.0	\$482.0	\$1668.5	\$263.2	\$1405.30	\$129.5	\$4124.97
2009	\$4124.97	\$35.00	33.60	\$1176.0	\$696.0	\$1392.0	\$2568.0	\$7690.9	-\$5122.90	\$206.2	-\$791.68

Assumptions: Annual interest return on positive net financial position reserves: rate=5.00 per cent

Reserves earn no interest in the years where there is a negative balance.

Premiums are collected and claims are paid at the end of each year.

Variable premium rates are doubled over the period from 1993 to 2009.

The flat premium is set equal to the highest rate charged in 2009: \$35.00.

Source: PBGC.<sup>8</sup>



**Table 5:** Examination of the PBGC loss reserve based on actual net claims, A \$50 flat retrospective premium, 5% return on reserve assets and maintenance of variable rate premiums from 1993 to 2010

Year	(1) Beginning of the year net financial position (in millions)	(2) Retrospective premium rate	(3) PBGC participants (in millions)	(4)=(2)×(3) Flat premium revenue (in millions)	(5) Variable premium revenue (in millions)	(6)=(4)+(5) Premium income (in millions)	(7) Net claims (in millions)	(8)=(6)-(7) Adjustment for premiums and claims (in millions)	(9)=(1)×Int. Rate Accumulation to net financial position with interest (in millions)	(10)=(1)+(8)+(9) Net financial position year-end reserve (in millions)
1993	—	—	—	—	—	—	—	—	—	-\$2503.00
1994	-\$2503.00	\$50.00	34.11	\$1705.5	\$307.0	\$2012.5	\$458.0	\$1554.50	\$0.00	-\$948.50
1995	-\$948.50	\$50.00	30.89	\$1544.5	\$251.0	\$1795.5	\$152.8	\$1642.70	\$0.00	\$694.20
1996	\$694.20	\$50.00	31.58	\$1579.0	\$546.0	\$2125.0	\$125.5	\$1999.50	\$34.71	\$2728.41
1997	\$2728.41	\$50.00	34.00	\$1700.0	\$421.0	\$2121.0	\$218.1	\$1902.90	\$136.4	\$4767.73
1998	\$4767.73	\$50.00	33.79	\$1689.5	\$324.0	\$2013.5	\$92.6	\$1920.90	\$238.4	\$6927.02
1999	\$6927.02	\$50.00	32.16	\$1608.0	\$291.0	\$1899.0	\$92.7	\$1806.30	\$346.4	\$9079.67
2000	\$9079.67	\$50.00	34.79	\$1739.5	\$146.0	\$1885.5	\$84.9	\$1800.60	\$454.0	\$11334.25
2001	\$11334.25	\$50.00	35.47	\$1773.5	\$147.0	\$1920.5	\$966.0	\$954.50	\$566.7	\$12855.46
2002	\$12855.46	\$50.00	34.40	\$1720.0	\$133.0	\$1853.0	\$3505.9	-\$1652.90	\$642.8	\$11845.34
2003	\$11845.34	\$50.00	34.41	\$1720.4	\$301.0	\$2021.4	\$6226.7	-\$4205.35	\$592.3	\$8232.25
2004	\$8232.25	\$50.00	34.52	\$1726.2	\$804.0	\$2530.2	\$2643.9	-\$113.75	\$411.6	\$8530.12
2005	\$8530.12	\$50.00	34.23	\$1711.6	\$787.0	\$2498.6	\$9612.0	-\$7113.40	\$426.5	\$1843.22
2006	\$1843.22	\$50.00	33.93	\$1696.7	\$550.0	\$2246.7	\$902.4	\$1344.25	\$92.2	\$3279.63
2007	\$3279.63	\$50.00	33.89	\$1694.6	\$358.0	\$2052.6	\$322.0	\$1730.60	\$164.0	\$5174.22
2008	\$5174.22	\$50.00	33.90	\$1695.0	\$241.0	\$1936.0	\$263.2	\$1672.80	\$258.7	\$7105.73
2009	\$7105.73	\$50.00	33.60	\$1680.0	\$696.0	\$2376.0	\$7690.9	-\$5314.90	\$355.3	\$2146.11

Assumptions: Annual interest return on positive net financial position reserves: 5.00 per cent interest rate.

Reserves earn no interest in the years where there is a negative balance. Premiums are collected and claims are paid at the end of each year.

Source: PBGC<sup>8</sup>



acquired from terminated plans are significant including, but not limited to: (i) the cost of managing physical assets until a sale can be made; (ii) determining a fair value of the assets quickly; (iii) maintaining the value of the assets while an appraisal is being made of whether to dispose or retain the property; and (iv) dealing with litigation costs associated with enforcing PBGC's right to the property. Without adequate funding to resolve pension bankruptcies, the eventual costs of selling assets may increase substantially reducing the value of PBGC owned assets. These problems may raise PBGC settlement costs thereby adding to the fund deficit due to an inability to quickly, efficiently and effectively address asset sales and claim payments.

One illustration that may serve to highlight loss settlement challenges from an inability to dispose of pension assets on a timely basis is the case of the United Airlines bankruptcy and pension termination. PBGC became an unsecured creditor in United Airlines when the company shifted \$10.2 billion in unfunded pension liabilities to the agency in December of 2002. PBGC reached an agreement, during the United Airlines bankruptcy proceedings, to receive a \$5.6 billion claim on the new United Airlines. In February 2006, PBGC sold \$2.5 billion of this claim to hedge fund investors and banks for \$450 million or \$.18 on the dollar. Under PBGC's maximum benefit cap, some of the 120 000 United workers saw large cuts in their retirement income due to the significant drop in the value of plan assets from 2002 to 2006.<sup>11</sup> Further highlighting this problem are past bankruptcies where PBGC received such diverse assets as: 'diamonds, a hog slaughtering facility, oil wells, a restaurant, interest in a nuclear fuel reconditioning partnership, and water rights in the Mojave Valley'. While the agency has hired a special assets manager to dispose of or manage PBGC bankruptcy assets, the main issue remains as to how funds can be deployed to this activity when PBGC is running a deficit of \$21 billion.<sup>11</sup> The recent declared bankruptcy filing of American Airlines in fall 2011 once again brings into focus the costs that may attend airline

pension plan failures and the difficulties PBGC faces in liquidating assets to reduce termination costs.<sup>12</sup>

PBGC premiums charged on single-employer defined benefit plans have been inadequate to meet claim experience resulting in a fund deficit of \$21 billion. Despite increasing premium rates for the past several years, PBGC's net financial position has been falling since 2008. A retrospective analysis involving an adjustment of premiums to reflect historical loss experience shows that the current PBGC rate structure is inadequate and that significant increases would be needed to cover losses from the period 1993 to 2010. By setting the premium rate at a level that is at least sufficient to cover past loss experience, PBGC could seek to experientially rate its coverage. Under such an arrangement the agency could alter rates downward after the fund achieves a certain level of surplus and then increase rates at times when current claims costs lower the fund from its target level. Further research into an experiential rating system for PBGC would have the added benefit of allowing rates to be set on a pro-active rather than a re-active basis.

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## REFERENCES AND NOTES

- 1 PBGC. (2010) *U.S. Department of Labor Annual Report of the Pension Benefit Guarantee Corporation 2010*, pp. 13, 19, 24 and 28. For 2010, there were 33.79 million workers in 26100 single-employer plans, and 10.41 million workers in 1500 multi-employer plans.
- 2 PBGC. (2009) *U.S. Department of Labor Annual Report of the Pension Benefit Guarantee Corporation 2009*, pp. 3 and 27.

- 3 PBGC. (2010) 2010 PGBC Annual Report. Financial Summary – Single-Employer Program, pp. 19–20, and Key Single Employer and Multiple Employer Results, p. 22; PBGC (2004) *Pension Insurance Data Book 2004*, Single Employer Data Tables, Tables S-1, S-37 and S-38, pp. 26, 62–63; PBGC (2009) *Pension Insurance Data Book 2009*, Single Employer Data Tables, Tables S-1, S-37 and S-38, and PBGC (2005) *U.S. Department of Labor Annual Report of the Pension Benefit Guarantee Corporation 2005*, Financial Statement Highlights, p. 2.
- 4 For a discussion of rate making in insurance operations, see Ann E. Myhr and James J. Markham (2004) *Insurance Operations, Regulation, and Statutory Accounting*. Malvern, PA: American Institute for Chartered Property Casualty Underwriters, Chapter 7.
- 5 Retrospective rating methods have been used in the past to investigate methods for handling IBNR losses through changes to premium rates or investment strategies, one such example may be found in: Thompson, A.F. and Bowyer, L. (1994) Using financial futures to hedge interest rate risk on paid-loss retrospective insurance programs. *Journal of Insurance Issues and Practices* 7(2): 1–10.
- 6 In this case, the 5 per cent rate of return was chosen because it has been used by insurance companies and state insurance commissioners to define what may be the minimal guaranteed rate on life and health insurance contract accumulations. However, the model can incorporate whatever interest return one may wish to consider to determine rate adequacy. The issue is what may be the most actuarially conservative investment return to allow for a fund to adequately reserve against future loss. The model will not generate a positive investment return, if the fund has a deficit which occurs if premium accumulations are lower than paid claims for a given period.
- 7 The actual numbers of pension participants were reported in the PBGC actuarial reports; however, there was not a listing of the actual pension plans and the amount of their unfunded liabilities to see how a variable rate change might impact each plan.
- 8 PBGC. (2004–09) *Pension Insurance Data Books 2004–09*, Tables S-3,S-10,S-37 and S-38; *PBGC Annual Reports: 1995–2009*, Section on Single-Employer Program relating to yearly results and number of plan participants.
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- 10 Craig, C.K. and Craig, T.R. (2004) The pension benefit guarantee corporation: What financial advisers should know. *Journal of Financial Service Professionals* 58(2): 74, This article provides a good summary of the financial planning factors that may impact the type of retirement income PBGC insurance recipient may receive based on plan assets, time of retirement and type of annuity benefit received (single life, joint and survivor, annuity certain and life).
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