

# **THE IMPACT OF REVERSION TAXES ON PENSION PLAN FUNDING**

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## **DISCLAIMER**

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## **ABSTRACT**

The 50% reversion tax has led to a de-funding of single employer defined benefit pension plans through lower contributions. While this may have had the beneficial effect of increasing tax revenues, the lower funding levels and increasing costs of pension plans have threatened employee pensions and the solvency of the PBGC. The Pension Protection Act of 2006 should improve funding levels and the PBGC's solvency. However, without repeal of the reversion tax, it is likely to increase the trend towards plan terminations, freezing or lowering future accruals, or conversion to cash balance plans. The reversion tax that would compensate for the tax exempt earnings of the pension fund is in the 5% to 15% range.

## **BACKGROUND**

The current reversion tax results in an asymmetric risk borne by pension plan sponsors. They are responsible for funding shortfalls but any surplus remaining at the termination of the plan is subject to punitive taxes. Pension reform will increase minimum funding levels to reduce the number of under funded plans, which will increase the likelihood of surpluses that would be subject to punitive taxes. The Society of Actuaries' Pension Section Research Team commissioned this study to quantify the impact of reversion taxes on pension plan funding.

## **METHODOLOGY**

A review of literature on the effects of asset reversion tax was completed. An article by Richard Ippolito in the *Journal of Law and Economics* published in 2001 contains an analysis of the effects of reversion taxes on funding during the period 1980 to 1995, using techniques to isolate the reversion tax from other factors. This study, which is updated and expanded, provides much of analysis in the first section on the historical effects of the reversion tax. In the next section on pension reform, the recently passed legislation is analyzed to measure the effects on the continuation of defined benefit plans, funding levels, and stakeholders. In the final section, the level of excise tax needed to offset the tax benefits is evaluated using three methods. First is a spreadsheet that shows the tax needed to offset the tax benefit of deferral over time, the second

applies this to a model pension plan and the last considers the Margrabe option model and the effects of uncertainty.

## HISTORICAL EFFECT OF REVERSION TAXES

ERISA continued the practice of allowing recovery of excess assets subject only to corporate income taxes after a pension plan had been terminated and the benefits distributed<sup>1</sup>. Reversions increased in the 1980s as more plans became over funded on a termination basis due to favorable stock market performance, conservative actuarial assumptions, and use of projected cost methods. In 1984, regulations were issued to clarify how ongoing plans could obtain a reversion through a termination/reestablishment or a spin-off termination.<sup>2</sup> The Tax Reform Act of 1986 introduced a 10% nondeductible excise tax on asset reversions to compensate the U.S. Treasury for the benefit of tax-deferred earnings within the pension fund<sup>3</sup>. This excise tax was increased to 15% in 1988<sup>4</sup>.

The 1980s saw a number of high profile corporate takeovers financed by junk bonds. In many cases, over funded pension plans were terminated and the surplus used as part of the financing for the takeover. The annuity purchases usually were placed with insurers that invested in junk bonds such as Executive Life, providing more funds for corporate takeovers. In addition to terminating the pension plans, these highly leveraged takeovers frequently reduced staff. In some cases, employees not only lost future benefit accruals and increases, they also lost

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<sup>1</sup> Veal, *et al.*, Pension Plan Terminations, pp. 163-4. ERISA imposed some additional technical requirements on reversions, such as that the plan must explicitly provide for reversions. Pension plans referred to in this paper are single employer defined benefit plans.

<sup>2</sup> *Ibid.*, pp. 165-74.

<sup>3</sup> P.L. 99-514, 100 Stat. 2085 (1986)

<sup>4</sup> Technical and Miscellaneous Revenue Act of 1988, § 6069

their jobs. Even where there was a replacement defined contribution plan, the employees in salaried plans lost their projected benefit – the increase in their accrued benefit from future salary increases<sup>5</sup>.

These takeovers were driven by the availability of junk bond financing, low equity valuations, and the tax deductibility of debt financing compared to equity financing, and possibly by misleading accounting. Reversions played a minor role, and studies have shown that they were generally not the cause of corporate takeovers<sup>6</sup>. However, the perception that asset reversions were driving takeovers led Congress to increase this non-deductible excise tax to 50% in 1990<sup>7</sup>. While there is a lower tax if part of the reversion goes to the employees, the maximum that the plan sponsor can retain is about 25%. The collapse of the junk bond market and the disappearance of Drexel and Executive Life, and rising equity valuations in the 1990s would likely have ended these takeovers without punitive taxes. SFAS 158 should improve the transparency of pension accounting in the future<sup>8</sup>.

The punitive excise tax achieved its objective of ending asset reversions. It also caused plans to reduce contributions to avoid surplus subject to this tax in a termination. Chart A (attached) shows the dramatic decline in funding ratios following the enactment and increases in reversion taxes. Since pension plans typically invest about 60% in stocks, while liabilities are based upon bond rates, an index of excess returns was constructed using 60% of S&P 500 plus 40% of Liability Index to show the net effect of excess returns on funding ratios.

This decline in funding ratios that occurred after the reversion taxes were enacted despite favorable investment performance resulted from the use of increasingly aggressive actuarial

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<sup>5</sup> As an example of this, a 40 year old participant in a final pay salary plan who is expected to retire at 65 would have a projected benefit that is over 3 times his accrued benefit using a 5% salary scale assumption.

<sup>6</sup> Veal, *Op. Cit.*, p. 161

<sup>7</sup> Omnibus Budget Reconciliation Act of 1990, § 12003(b)

<sup>8</sup> Financial Accounting Standards Board, “Statement of Financial Accounting Standards No. 158”

assumptions and cost methods for funding. Chart B (attached) shows the difference between the interest rate used for funding and market interest rates. The funding rate went from 5% below market in 1980 to 3% above market in 2004. This is one of the most important causes of the decline in funding ratios.

Chart C (attached) shows the growth in unit credit cost methods from 20% in 1980 to 76% in 2004. These cost methods produce lower costs in the early years. SFAS 87 mandating the projected unit credit method for accounting may have influenced some plan sponsors to adopt it for funding. Chart C also shows the spread between interest assumptions and salary scale doubling between 1980 and 2004. This increasing of interest assumptions over the salary scale produces lower costs in salary plans. Limited data on mortality assumptions and some anecdotal evidence on early retirement assumptions suggest a similar trend in these assumptions.

In order to test the hypothesis that the decline in funding ratios was due to the reversion tax and not other factors, Richard Ippolito constructed a model using Form 5500B data from a longitudinal sample of 1900 plans representing about ¼ of defined benefit pension plan assets in the U.S. for the period 1980 to 1995.<sup>9</sup> The distribution of funding ratios was validated against the total plan database.<sup>10</sup> The liabilities are adjusted to a constant interest rate of 6.5% and 1983 GAM mortality for the period.<sup>11</sup> The full funding limit constraint effective in 1988 is calculated on the same basis.<sup>12</sup> To calculate projected liabilities from current liabilities, salary increases are assumed to offset interest rate prior to retirement and a reduced discount rate is used after

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<sup>9</sup> Ippolito, Richard, "Reversion Taxes, Contingent Benefits, and the Decline in Pension Funding," p. 211

<sup>10</sup> *Ibid.* p. 212

<sup>11</sup> *Ibid.* p.225

<sup>12</sup> *Ibid.* p.226

retirement to allow for some post retirement cost of living increases.<sup>13</sup> Testing was done on the sample as a whole and in 19 groups based upon funded status prior to 1986.

Based on this model, the reversion tax resulted in a 40% reduction in the contribution rate<sup>14</sup>. By 1995, the cumulative effect was a 60% reduction (\$218 billion) in excess pension assets<sup>15</sup>. The full funding limit explains less than 10% of this reduction<sup>16</sup>. This is corroborated by the following:

- 1) The greatest reduction in contribution – 60% – took place among the best-funded group of plans while it was 16% among the worst funded group. The reduction in funding ratios resulted in a bunching at 100% and elimination of the right side of the distribution. This is consistent with the hypothesis that plans reduced funding to avoid surplus subject to reversion tax<sup>17</sup>.
- 2) Investment performance was favorable during the period, and would have led to higher funding ratios absent an effort to lower them to avoid reversion taxes.
- 3) Comparison to multi-employer plans, where all contributions are irrevocable, shows that in 1986 nonunion single employer plans were 25% better funded than multi-employer plans but this advantage fell to 7% by 1995.<sup>18</sup>
- 4) Comparison to State plans, where there are no tax benefits or funding rules, shows assets in private plans falling from roughly twice that of state plans in 1986 to parity in 1995.<sup>19</sup>
- 5) That the full funding limit had a small influence on the reduction in funding ratios is shown by:<sup>20</sup>

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<sup>13</sup> *Ibid.* pp.226, 227

<sup>14</sup> *Ibid.* pp.215, 216

<sup>15</sup> *Ibid.* p.217

<sup>16</sup> *Ibid.* p. 218

<sup>17</sup> *Ibid.* pp.215 - 218

<sup>18</sup> *Ibid.* p.221

<sup>19</sup> *Ibid.* p.223

- i. Had the full funding limit been the constraint, there would be a bunching of funding ratios at 150% instead of 100%
- ii. Only 8.6% of the plans chose the lowest interest rate for the Current Liability that produces the highest possible value while 72% of the plans chose a highest rate that produces the lowest value. Plans that were constrained by the full funding limit could increase their contribution by choosing the lowest rate.
- iii. The trend in decreasing funding ratios started in 1987 after enactment of the reversion tax but before the full funding limit.

Updating this model from 1995 to 2003 based upon increase in PBGC insured pension assets gives a lower funding amount of \$287 billion as a result of the reversion tax. Applying an average of 30-year treasury rates for the period (7%) to that and a 35% tax rate gives an annual tax cost to pension plans of \$7 billion<sup>21</sup>.

Three primary stakeholders in defined benefit pension plans affected by reversion tax are: plan sponsors, employees and beneficiaries, and the U.S. Treasury. The PBGC taxes plan sponsors to cover its deficits under normal conditions. If its deficit rises to a level where this is no longer feasible, either the U.S. Treasury will have to produce funds or beneficiaries will suffer losses. However, the PBGC will also be considered as a separate entity. Other secondary stakeholders – the capital markets, service providers, society, *etc.*, will not be considered.

Short-term, the U.S. Treasury was the winner, while plan sponsors, employees and beneficiaries, and the PBGC were losers. Plan sponsors' annual loss of \$7 billion in tax benefits translates into the U.S. Treasury's gain. As more under funded plans are taken over by

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<sup>20</sup> *Ibid.* pp. 218, 219

<sup>21</sup> Ippolito uses an assume earnings rate of 10% on pension assets, which would give an annual tax cost of \$10 billion. Risk free government bond rates are used for earnings assumptions in this paper. Note that if the assets were invested by the corporation in equities in a taxable account, the effective tax rate would be below 35% since capital gains tax would be paid when gains are realized and dividends would be taxed at a lower rate.

the PBGC in distress terminations, plan sponsors are facing higher current and future PBGC premiums. PBGC premiums increased from \$200 million in 1986 to \$1.5 billion in 2004<sup>22</sup> and are projected to rise to \$6.5 billion in 2008<sup>23</sup>. Falling funding ratios threaten the benefits that are over the PBGC limits while the PBGC's ballooning deficits threaten insured benefits. Active employees also suffer from increasing trend towards plan terminations, freezing or lowering future accruals, or conversion to cash balance plans. The PBGC is faced with increasing current and future deficits from distress terminations of under funded plans. Long-term, however, U.S. and state treasuries will also lose. A PBGC bailout could ultimately cost hundreds of billions of dollars. Then there will be increased welfare spending (SSI, Medicaid, food stamps and similar programs) for retirees with less pension benefits, who dissipated lump sum distributions from defined contribution plans.

The reversion tax is only part of the cause of the decline in defined benefit plans. Fundamental shifts in the economy (away from manufacturing to services, large to small firms and increasing worker mobility) account for about half of the decline<sup>24</sup>. Legislation designed to curb tax shelters and limit benefits to highly compensated employees led to a steep decline in smaller plans, while favorable legislation and regulation encouraged growth of 401(k) plans. Chart D (attached) shows the decline in the number of plans and percentage of the workforce covered by defined benefit plans. It also shows the rise in the number of cash balance plans to 29% of defined benefit plan participants in 2004<sup>25</sup>, which could be attributed to the reversion tax. Prior to the reversion tax, plan sponsors terminated their defined benefit plans when they wanted

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<sup>22</sup> PBGC, Pension Insurance Data Book 2004 p. 63

<sup>23</sup> Center on Federal Financial Institutions, "PBGC: Budgeted Premium Hikes Seem Improbable" p. 1

<sup>24</sup> EBRI, "Pension Evolution in a Changing Economy" p. 16

<sup>25</sup> PBGC Insurance Data Book 2005, p. 61



to switch to defined contribution. The cash balance plan allows the plan sponsor to use over funding for a defined contribution plan without paying reversion tax<sup>26</sup>.

## **PENSION REFORM**

The Pension Protection Act of 2006 (PPA) was signed into law on August 17<sup>th</sup>, the most comprehensive pension legislation since ERISA<sup>27</sup>. It has provisions favorable to defined contribution and hybrid plans in addition to shoring up defined benefit plans. Most of the provisions for funding defined benefit plans are effective starting in 2008 and are not fully phased in until 2011. Airlines, auto manufacturers, and government contractors have special provisions. The analysis here will focus on how the ultimate funding provisions will interact with the current 50% nondeductible reversion tax for plans without special treatment.

The provisions of this law that affect defined benefit pension plan funding can be broken into five categories:

- 1) Change in the target funding ratio from 90% to 100% with a 7 year amortization for funding shortfalls;
- 2) Change in the methodology (both assets and liabilities) in calculating the funding ratio;
- 3) Provisions to penalize under funding and encourage full funding;
- 4) Provisions to allow higher tax deductible contributions; and,
- 5) Rules for conversion to cash balance (hybrid) plans.

Actuarial value of assets is limited to a 24-month averaging period and a corridor of 90% to 110% of fair value. A 3-segment high quality corporate yield curve with 24 month averaging is

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<sup>26</sup> Accounting and funding rules may have also played a role since assets could be less than the sum of employee account balances

<sup>27</sup> Public Law Number 109-280 (HR 4)

used with standard mortality assumption and other plan assumptions (early retirement, termination, and election of optional forms) in valuing liabilities.<sup>28</sup> An “at risk” valuation is required using conservative assumptions – employees eligible to retire in the next 10 years will retire at the earliest date and elect the most expensive option. Plans that are at risk (80% under funded and 70% under funded on an at risk basis) have higher target funding. For most calculations, credit balances (prior contributions in excess of the minimum), which now must be adjusted by actual earnings instead of an assumed rate, are deducted from assets.

Plans that are under funded (below 80%) cannot increase benefits and lump sums are limited. In addition, severely under funded plans (below 60%) cannot accrue benefits, pay lump sums or shutdown benefits. Credit balances are deducted from assets in these calculations. PBGC variable premiums, which are calculated using a segmented yield curve without 24 month averaging, (.9% of under funding) apply to all plans below target funding.

Plans are allowed to make higher tax-deductible contributions that equal the benefit accrued for the year (unit credit cost method), plus an amount to bring the plan to its funding target, plus a cushion of 50% plus an amount to cover projected benefit increases. If the analysis in the previous section is correct, few plans (those for whom termination or bankruptcy is a remote possibility) are likely to use this provision. As explained in the next section, the reversion tax is far more punitive than the value of tax deferred earnings resulting in optimal funding ratios well under 100% especially with typical asset/liability mismatch.

Finally, the PPA provides for rules for conversion to cash balance plans, payment of lump sums under these plans, and clarification of age discrimination issues. This, along with the IBM

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<sup>28</sup> The mortality table is prescribed by the Secretary of the Treasury (this may be the RP2000 combined). However large plans with creditable experience with approval can use plan mortality. A plan can also elect to use a full yield curve without 24 month averaging.

appellate decision<sup>29</sup>, should clear up any legal uncertainties that were preventing some plans from converting to cash balance plans.

Concurrent with the PPA, SFAS 158 will revise accounting for pension plans to place net projected pension obligations on the balance sheet starting at the end of 2006<sup>30</sup>. This change would have resulted in a pre-tax charge to shareholder equity of \$212 billion in 2005 for the top 100 companies.<sup>31</sup> While PPA will make funding higher and more volatile, this accounting change will make shareholder equity lower and comprehensive income more volatile. Both will encourage plan termination, freezing of accruals or cash balance conversion (to eliminate projected benefits). This is the first phase of a FASB project to revise pension accounting. The next phase will move closer to market values to conform to international standards<sup>32</sup>.

PPA will result in higher required cash contributions for most plans, significantly higher for those plans that are under funded. The use of a segmented yield curve in place of the long-term rate may increase liabilities by 5% to 10%, depending upon the yield curve and distribution of liabilities. The effect of the 24-month averaging compared to the prior 4-year formula will depend upon the direction of interest rates. In the past where interest rates were in secular downward trend, this was a major reason (along with plan early retirement assumptions) that plans fully funded on a current liability basis were under funded on a plan termination basis. At risk plans will have to use conservative early retirement assumptions and other plans will have to disclose the basis for their early retirement assumptions. The mortality change may result in about a 5% increase in liabilities. Finally the change in asset valuation will reduce asset values for some plans (those above 110% of market or averaging losses beyond 2 years).

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<sup>29</sup> *Cooper v. IBM Personal Pension Plan*, No. 05-3588, 2006 WL 2243300 (7th Cir. August 7, 2006).

<sup>30</sup> Financial Accounting Standards Board, "Statement of Financial Accounting Standards No. 158"

<sup>31</sup> Milliman, "2006 Pension Funding Study" p. 3

<sup>32</sup> Financial Accounting Standards Board, "Project Updates: Postretirement Benefit Obligations, Including Pensions"

The latest PBGC data (2003) shows 72% of plans (85% of liabilities) under funded on a plan termination basis. Watson Wyatt's survey of large plans shows 65% of plans under funded on a current liability basis in 2003 (57% in 2005). Thus around two thirds of plans are likely to face increased contributions when PPA is fully phased in. The last time contributions increased substantially was after the stock market decline in 2000. Chart E (attached) shows the increased contributions and the corresponding increases in large plan terminations and freezes, while Chart F (attached) shows corresponding increases in cash balance conversions. PPA is likely to continue this trend until the traditional, final pay salaried plan becomes an uncommon benefit in the private sector.

Of the stakeholders identified in the previous section, the PBGC is a clear winner under PPA. Its premiums will increase. The higher required plan contributions and the restrictions on benefits for under funded plans should reduce the PBGC's future deficits. The U.S. Treasury will lose temporarily as higher contributions reduce revenue although there should be long-term savings from avoiding a PBGC bailout. The higher PBGC premiums should offset some of these revenue losses in the consolidated budget. Plan sponsors face higher PBGC premiums and minimum plan contributions. While they gain a tax deduction for funding benefits, the reversion tax penalty more than offsets this. Retired and other inactive participants gain greater benefit security from higher funding and PBGC solvency. Active participants lose as plans are terminated, frozen or converted to cash balance plans. Younger participants and frequent job changers may benefit if there is cash balance conversion or defined contribution replacement plan. Older, long service employees (over age 40, 10 or more years of service) in final salary plans are clearly losers even with replacement plans. They lose projected benefits from future salary increases and early retirement subsidies. A Society of Actuaries study on cash balance plan conversions shows a retiree over age 55 with 25

years of service having a benefit of \$124,338 under a final pay plan compared to \$85,870 under a cash balance plan compared to a participant terminating prior to age 55 with 5-10 years service having a benefit of \$3,141 under a final pay plan compared to \$10,319 under a cash balance plan.<sup>33</sup>

Spreadsheet G (attached) contains a simple model to demonstrate the effect of higher contributions under PPA with the 50% reversion tax. This model starts with a plan that is 60% funded and frozen in 2010 and makes minimum contributions until terminated in 2016. Liability rate is constant at 5% and earnings rate varies under 3 scenarios – baseline (5%), high (10%), and low (1%). In the baseline and low scenarios, the present value of the after tax cost before and after PPA is close. However, in the high earning scenario, the present value of the after tax cost after PPA is more than double the cost before PPA due to the reversion tax. The spreadsheet also shows much higher funding ratios under PPA, lowering the risk of loss to the PBGC and participants in bankruptcy. It also shows the advantage of a matched investment strategy since much of the gain in the high return scenario is lost to the reversion tax. The higher funding requirements of PPA with the punitive reversion tax on surpluses should lead to a greater allocation to long-term bonds.

## NEUTRAL EXCISE TAX

Chart H and its spreadsheet shows the advantage of tax deferral of earnings, assuming a constant 35% tax rate and an earnings rate of 5% per year. The benefit of 10 years of tax-free accumulation is 14%. This amount would be higher if the tax rate or earnings rate were higher<sup>34</sup>. The tax rate and earnings rate in the future are uncertain, although the earnings rate can be

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<sup>33</sup> Kopp, *et al.*, “A Benefit Value Comparison of a Cash-Balance Plan with a Traditional Final Average Pay Defined-Benefit Plan” p. 9

<sup>34</sup> This assumes a risk free rate. If equities were used, the earnings rate might be higher and the tax rate lower. See footnote 20 *supra*.

estimated reasonably well if funds are invested in a matched bond portfolio. The highest marginal tax rate on corporate profits in the post World War II period was 53% (1946 to 1949) while the lowest was 34% (1988 to 1992)<sup>35</sup>. Even if legislated tax rates do not change, the rates are graduated and so the actual tax paid at the time of reversion could be less. The current tax starts at 15% of the first \$50,000 and a corporation with a net after tax loss would pay no tax.

The tax advantage depends upon how long the reverted funds were invested. A plan that had contributed \$1 million the year before and had a \$1 million reversion the following year obtained no tax advantage (assuming taxes would be paid at the end of the year). Chart I and its spreadsheet contain a model pension plan, with contributions of \$100,000 per year and assets of \$10 million, that was constructed to determine the reversion tax that would offset the advantage of tax deferral of earnings, assuming a 35% tax rate and a 5% earnings rate. This model shows that a 4% excise tax would offset the tax advantage in a 10% reversion, while a 7% tax would offset the tax advantage in a 20% reversion. Since only 8% of plans have funding ratios of 125% or higher, a 5% reversion tax should suffice<sup>36</sup>. If there is concern about some plans obtaining tax advantages from over funding, a graded tax could be used with a 10% rate if the reversion exceeded 25% of the assets. Another possibility that has been suggested is to mandate reversions when over funding reaches an extreme such as 150% of plan termination liabilities using conservative assumptions. However, the funding limits of PPA would make this redundant<sup>37</sup>.

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<sup>35</sup> Internal Revenue Service, Corporation Income Tax Brackets and Rates, 1909 to 2002

<sup>36</sup> Watson Wyatt Worldwide, "Survey of Actuarial Assumptions 2005", p. 4

<sup>37</sup> Some members of the benefits community have advocated allowing plan sponsors to make voluntary withdrawals of extreme over funding without going through the formal process of vesting and guaranteeing benefits as required under current law. The analysis in this section would apply to any reversion. The problem in allowing withdrawals without guaranteeing benefits lies with both the liabilities and the assets. Using the PBGC assumptions and methodology would be sufficient in many, but not all cases as a measure of plan termination liabilities. While asset liability mismatch risk might be handled by over collateral, to the extent the assets are invested in illiquid, high-risk investments, the liquidation value may be below the market value. Given the funding limit, its unlikely that an ongoing plan would become or remain safely over funded for a significant period of time

Another approach to determining the appropriate excise tax rate is an option-pricing model. Applying the Margrabe option model using current excise tax, corporate tax, a 5% risk free return rate and reasonable assumptions of asset/liability volatility, produces an optimal funding ratio of 60%<sup>38</sup>. For companies for which bankruptcy (and transfer to the PBGC) is unlikely, this ratio would increase if assets and liabilities were better matched, allowing greater tax deferred funding. This arises from the asymmetric excise tax risk – the tax cost of over funding far exceeds the tax benefit of funding. An excise tax rate of 10% produces an optimal funding ratio of 100% at six years, while a 25% tax produces an optimal funding ratio of 80% at 10 years. The appropriate neutral excise tax rate under this model is around 15%.

## CONCLUSIONS

The 50% reversion tax was designed to protect defined benefit plans from corporate raiders. Instead, it facilitated the decline of these plans. The reversion tax was more significant in de-funding of these plans than either the OBRA full funding limit or the reduced 415 limits that were intended to decrease tax deferred funding of projected benefits.

Establishing or continuing a defined benefit pension plan is voluntary. The Pension Protection Act of 2006 requires higher funding and penalizes under funding. It offers no relief from the punitive reversion tax on any resultant over funding. Faced with these prospects and proposed accounting changes, many plan sponsors will discontinue defined benefit plans – either through termination, freezes, or cash balance conversions. Traditional defined benefit plans will remain

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<sup>38</sup> Jurin, *et al.*, “The J P Morgan Framework For Measuring—and Managing The Risk of—Over funding and Under funding in a Defined Benefit Pension Plan” p.31

where there are unions to protect the interests of senior members and in the public sector, which doesn't have funding requirements and where long-service employees have greater power.

Defined benefit plans have served participants and employers well. By taking longevity and investment risks, they provide monthly income for life to participants who may not save enough in defined contribution plans either by not participating, dissipating lump sums distributions, or mismanagement of investments. They allow employers to reward long service and to reduce staff through early retirement programs instead of layoffs. Changes in the economy would have led to a decline in the relative importance of defined benefit plans. Worker mobility, longevity, aging of the workforce, growth in services and jobs that do not require manual labor, has changed employment such that for many workers one company is no longer providing long term employment and retirement at fixed ages. However, in my opinion, defined benefit plans are still viable for some companies and industries. The tax code should be neutral between choosing defined contribution or benefit plans and so the punitive reversion tax on defined benefit plans should be removed.



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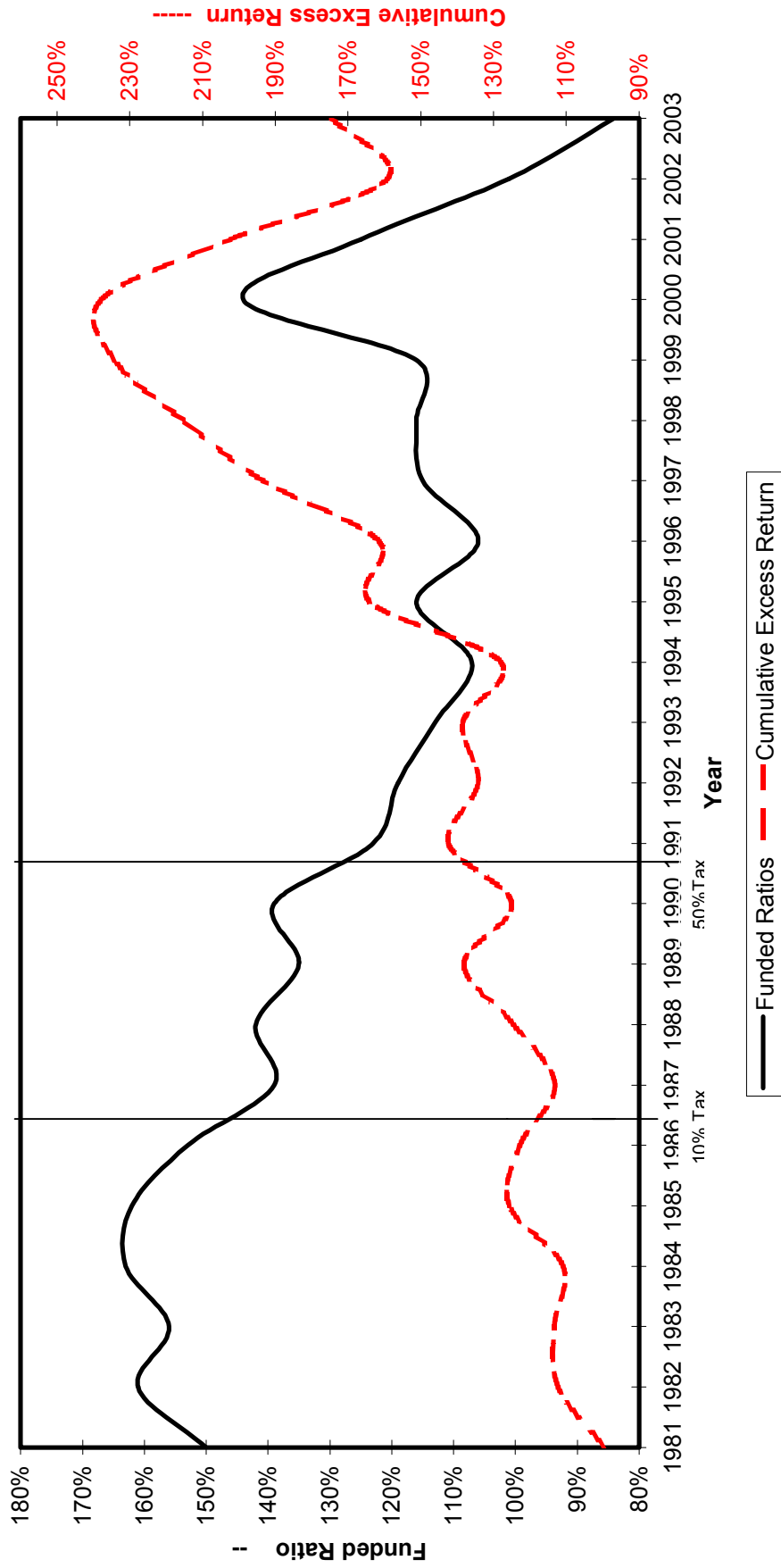
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<http://www.watsonwyatt.com/research/resrender.asp?id=w-911&page=1>

# CHART A

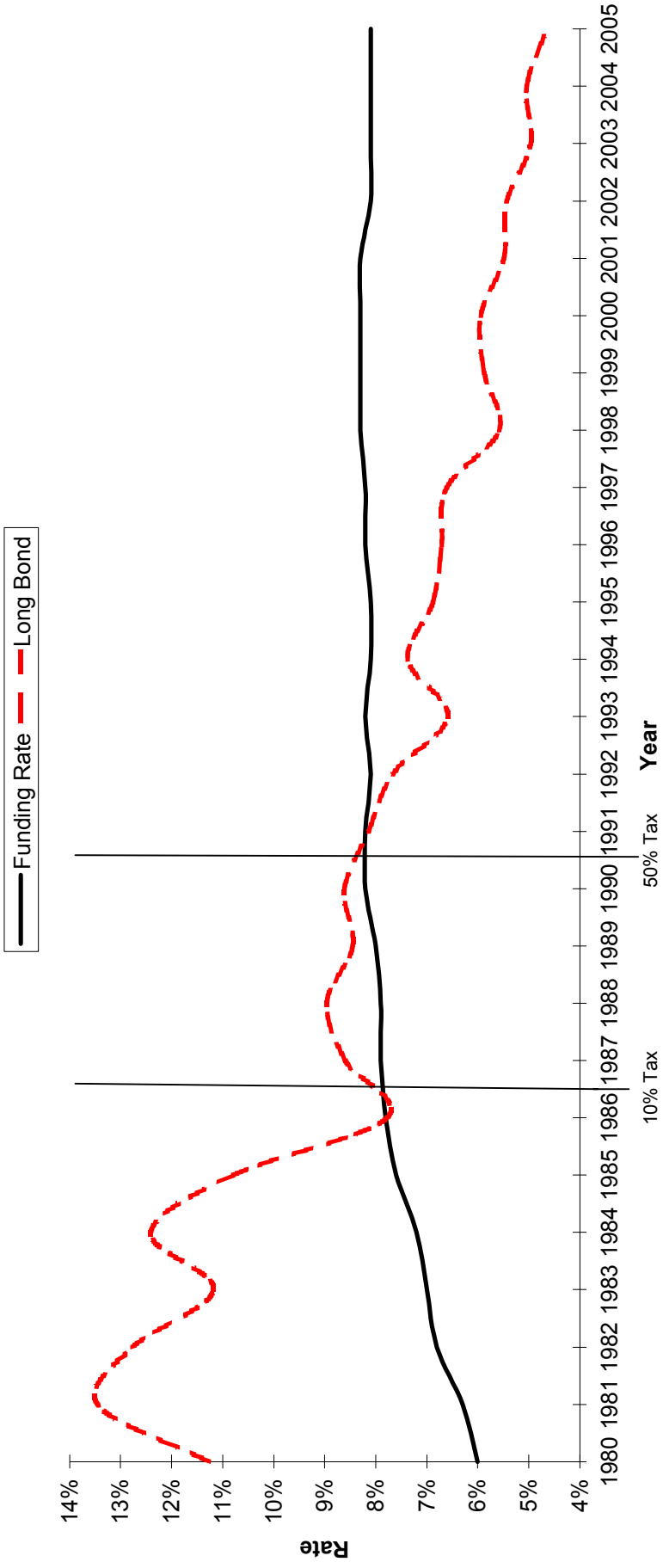
## Funded Ratios Collapse



Source: PBGC Pension Insurance Data Book; Cumulative Excess Return S&P 500 Component from Statistics for Employee Benefit Actuaries; Asset Return equals 60% S&P 500 plus 40% Liability Return, where Liability Return equals PBGC rate – ten times the change in PBGC rates.

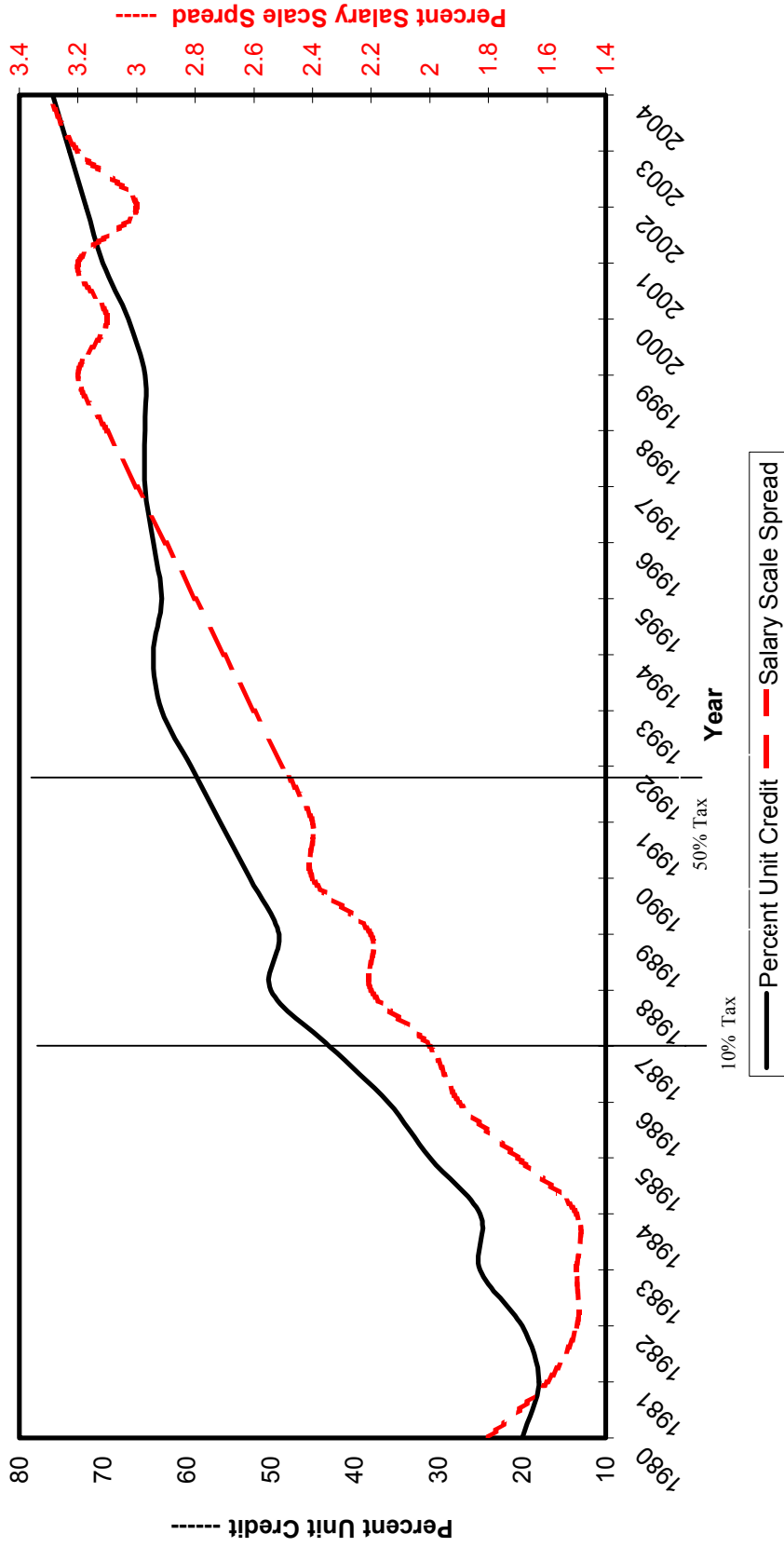
# CHART B

## Funding versus Market Rates



Sources: Funding Rate Wyatt Worldwide; Long Bond Federal Reserve H.15

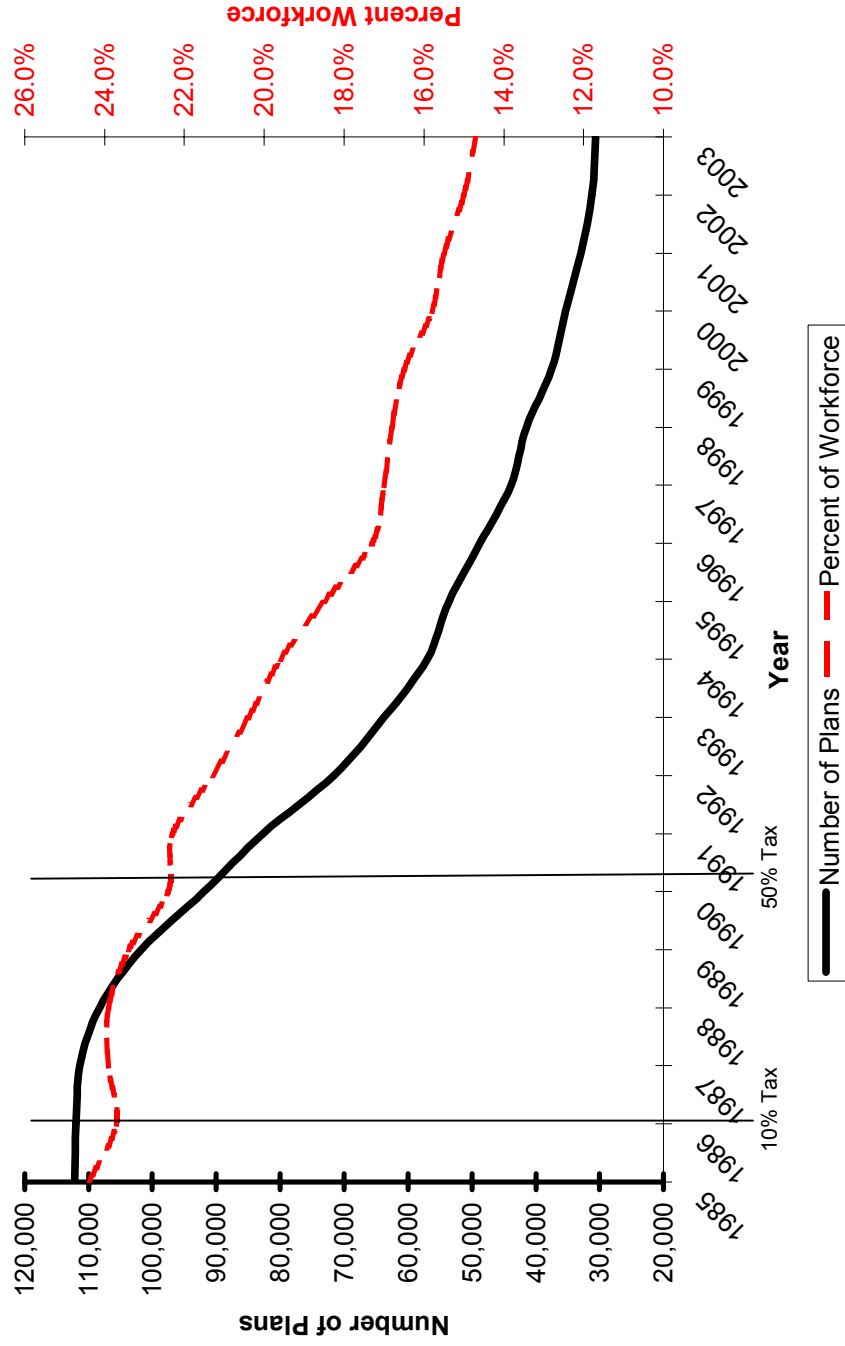
**CHART C**  
 Percentage of Plans Using Unit Credit Cost Methods  
 Spread Between Interest Assumptions and Salary Scale



Source: Watson Wyatt Worldwide.

CHART D

Decline of Single Employer Defined Benefit Plans



Rise in Hybrid Plans

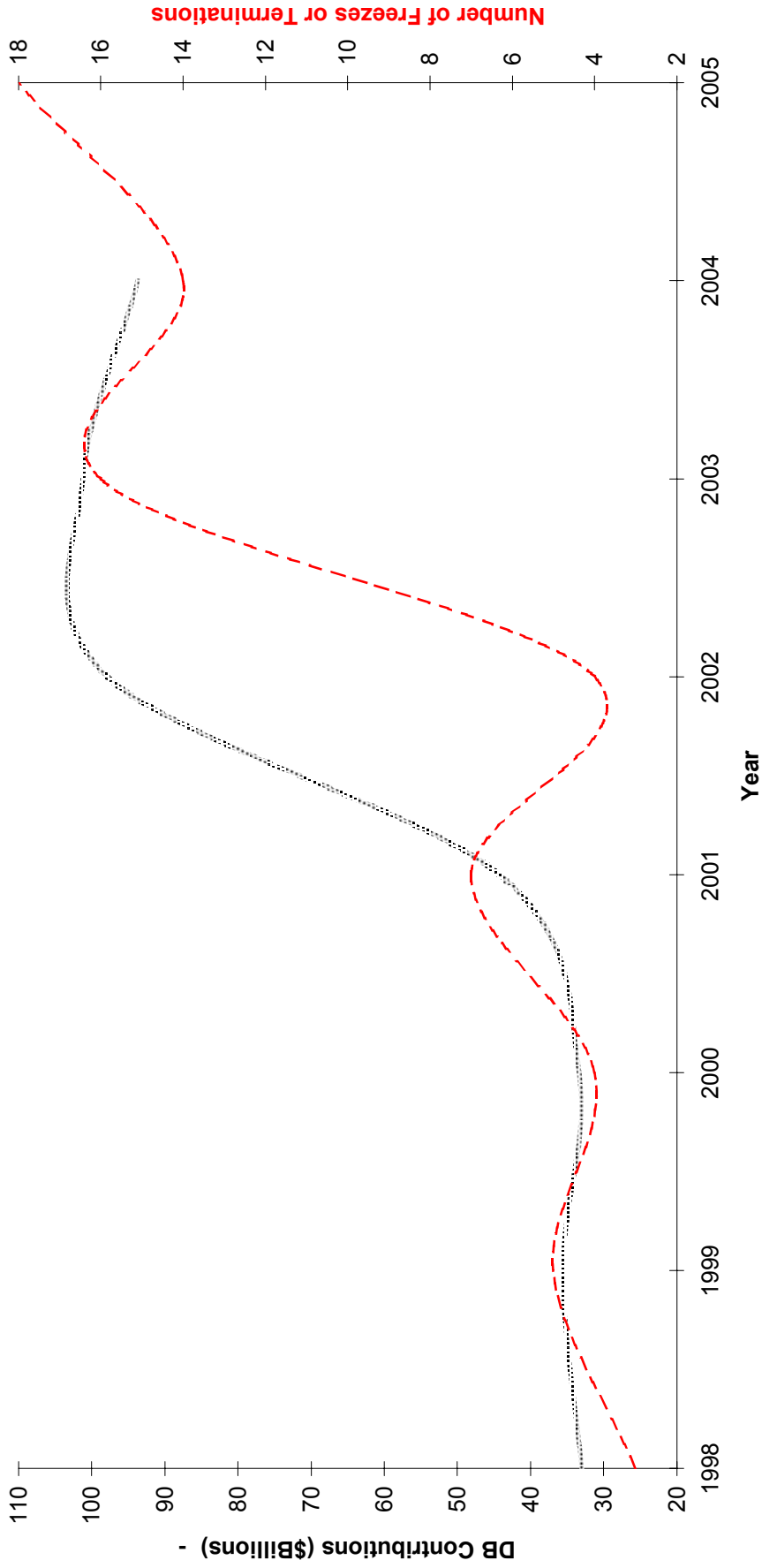
Year	No. Plans	Pct of Plans	No. Participants	Pct Participants
2001	1227	3.7%	7,034,000	20.5%
2002	1308	4.2%	7,915,000	23.1%
2003	1541	5.0%	8,475,000	24.6%
2004	1794	6.0%	10,019,000	29.0%

Source: PBGC Data Book



**CHART E**

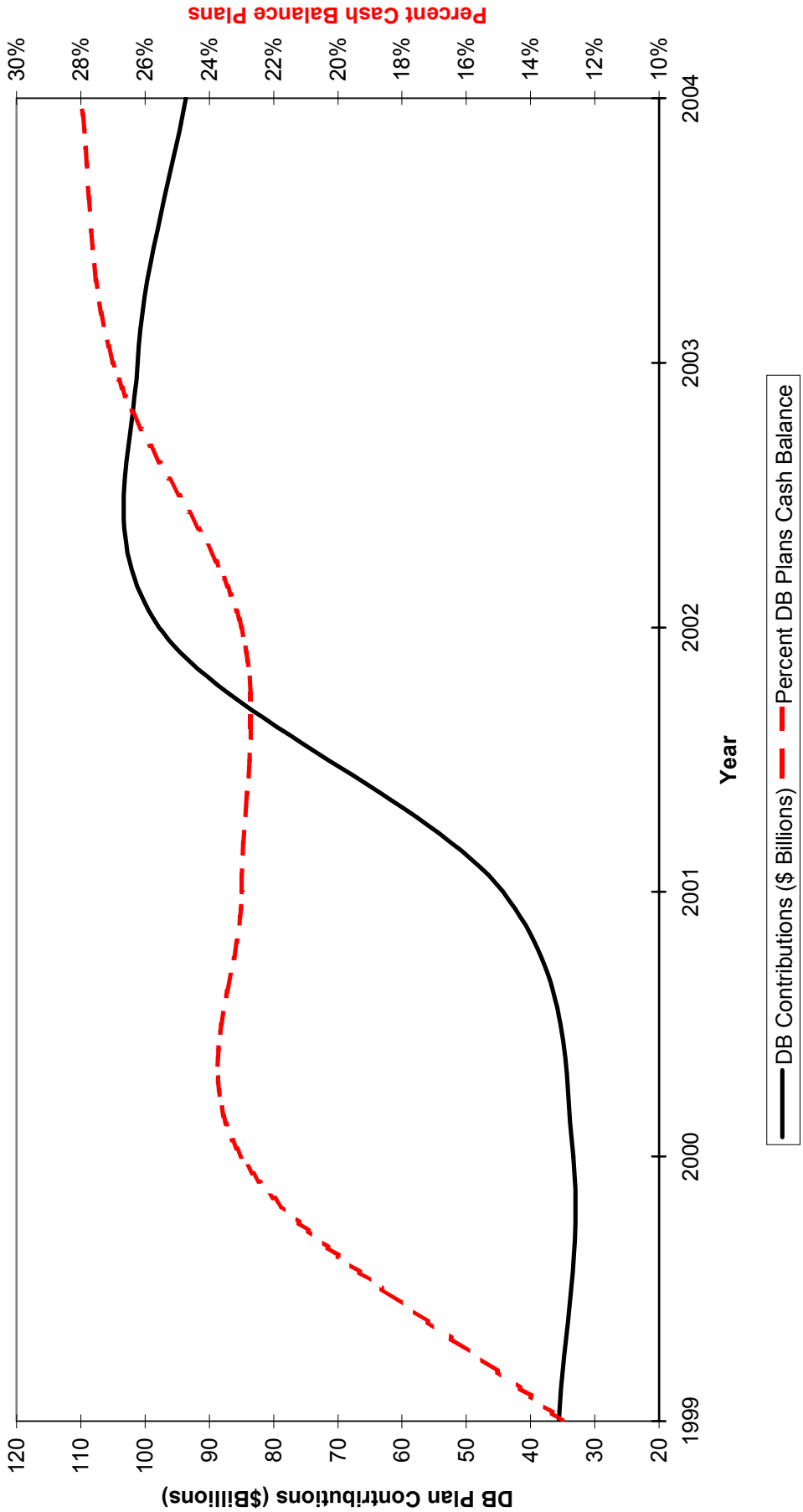
**Large DB Plan Freezes and Terminations**



.....DB Contributions - - - - - Number of Plans Frozen or Terminated

Sources: Watson Wyatt Worldwide, Financial Services Fact Book

**CHART G**  
**Cash Balance Conversions**



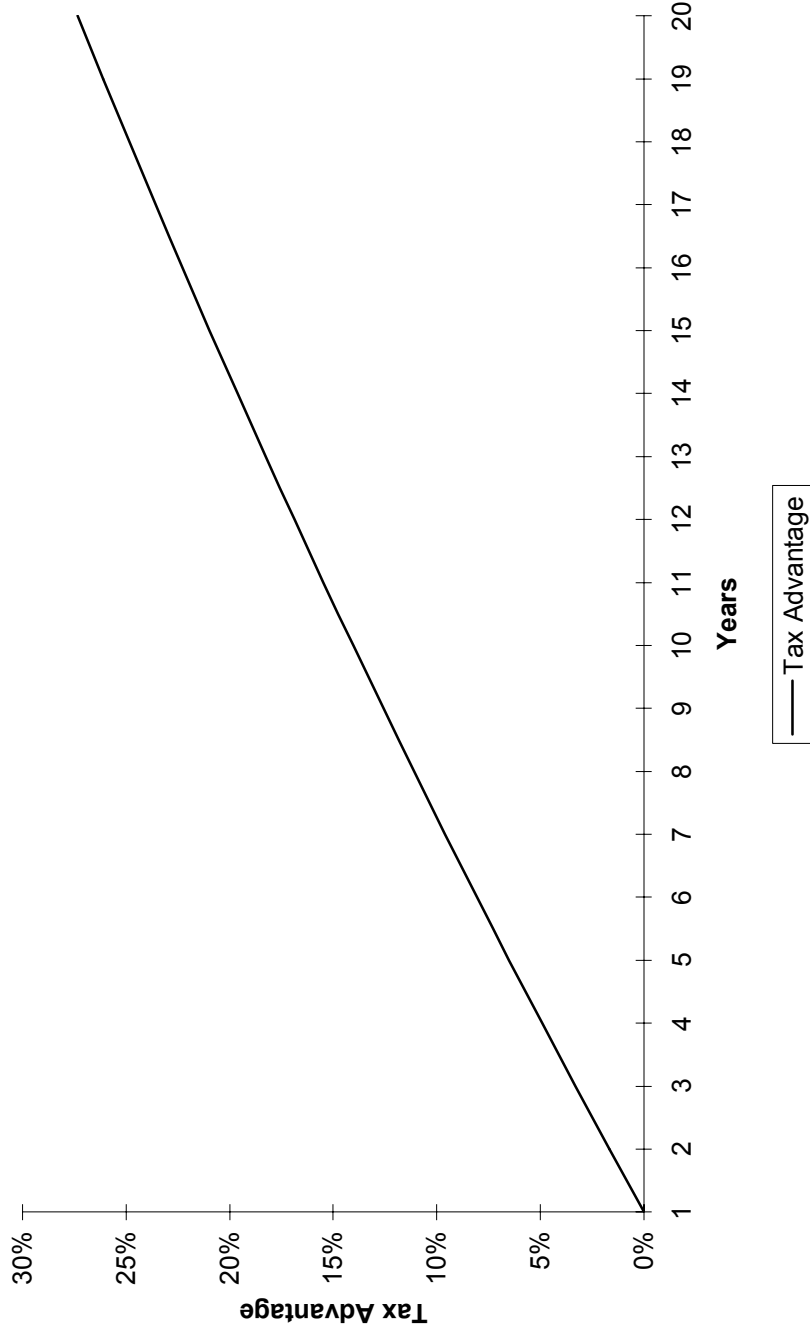
Sources: PBGC Data Book, Financial Services Fact Book

**SPREADSHEET C**  
**Comparison of Effect of Higher Funding Levels and Reversion Taxes on Pension Costs**

BASELINE SCENARIO ASSETS EARN 5% (SAME AS LIABILITIES)												
Year	After PPA						Before PPA					
	Assets	Liabilities	Funded Ratio	Min Contribution	Surplus	after tax costs	Assets	Liabilities	Funded Ratio	Min Contribution	Surplus	after tax costs
2010	395,591	659,318	60%	37,675	-263,727	24,489	395,591	659,318	60%	13,186	-263,727	8,571
2011	453,046	693,256	65%	71,991	-240,210	46,794	428,557	693,256	62%	26,211	-264,699	17,037
2012	547,689	729,009	75%	97,894	-181,320	63,631	476,196	729,009	65%	38,205	-252,813	24,834
2013	672,967	766,693	88%	103,283	-93,725	67,134	538,211	766,693	70%	48,326	-228,482	31,412
2014	809,899	806,424	100%	0	3,475		613,448	806,424	76%	55,815	-192,976	36,280
2015	850,394	848,324	100%	0	2,070		699,935	848,324	83%	60,052	-148,389	39,034
2016	892,913	892,525	100%	0	388	-58	794,984	892,525	89%	0	-97,541	63,402
					PV of AT costs	175,919					PV of AT costs	173,524
HIGH EARNINGS SCENARIO ASSETS EARN 10%												
Year	After PPA						Before PPA					
	Assets	Liabilities	Funded Ratio	Min Contribution	Surplus	after tax costs	Assets	Liabilities	Funded Ratio	Min Contribution	Surplus	after tax costs
2010	395,591	659,318	60%	37,675	-263,727	24,489	395,591	659,318	60%	13,186	-263,727	8,571
2011	472,825	693,256	68%	69,165	-220,431	44,958	448,336	693,256	65%	24,893	-244,920	16,180
2012	589,273	729,009	81%	89,128	-139,736	57,933	518,062	729,009	71%	34,096	-210,947	22,162
2013	737,328	766,693	96%	93,323	-29,364	60,660	603,964	766,693	79%	39,833	-162,728	25,891
2014	904,384	806,424	112%	0	97,960		704,194	806,424	87%	41,272	-102,230	
2015	994,822	848,324	117%	0	146,498		815,885	848,324	96%	37,779	-32,439	
2016	1,094,304	892,525	123%	0	201,779	-30,267	897,474	892,525	101%	0	4,948	-742
					PV of AT costs	140,335					PV of AT costs	62,703
LOW EARNINGS SCENARIO ASSETS EARN 1%												
Year	After PPA						Before PPA					
	Assets	Liabilities	Funded Ratio	Min Contribution	Surplus	after tax costs	Assets	Liabilities	Funded Ratio	Min Contribution	Surplus	after tax costs
2010	395,591	659,318	60%	37,675	-263,727	24,489	395,591	659,318	60%	13,186	-263,727	8,571
2011	437,222	693,256	63%	74,252	-256,034	48,264	412,733	693,256	60%	27,266	-280,523	17,723
2012	515,846	729,009	71%	104,703	-213,163	68,057	444,127	729,009	61%	41,398	-284,883	26,909
2013	625,708	766,693	82%	124,844	-140,985	81,149	489,966	766,693	64%	54,735	-276,726	35,578
2014	756,809	806,424	94%	94,257	-49,615	61,267	549,601	806,424	68%	66,481	-256,823	43,213
2015	858,634	848,324	101%	0	10,310	0	621,578	848,324	73%	75,942	-226,746	49,362
2016	867,220	892,525	97%	0	-25,305	16,448	703,735	892,525	79%	0	-188,790	122,713
					PV of AT costs	252,345					PV of AT costs	234,656

**CHART H**

**Tax Rate Needed to Offset Advantage of Tax Free Earnings – 35% Tax Rate, 5% Earnings Rate**

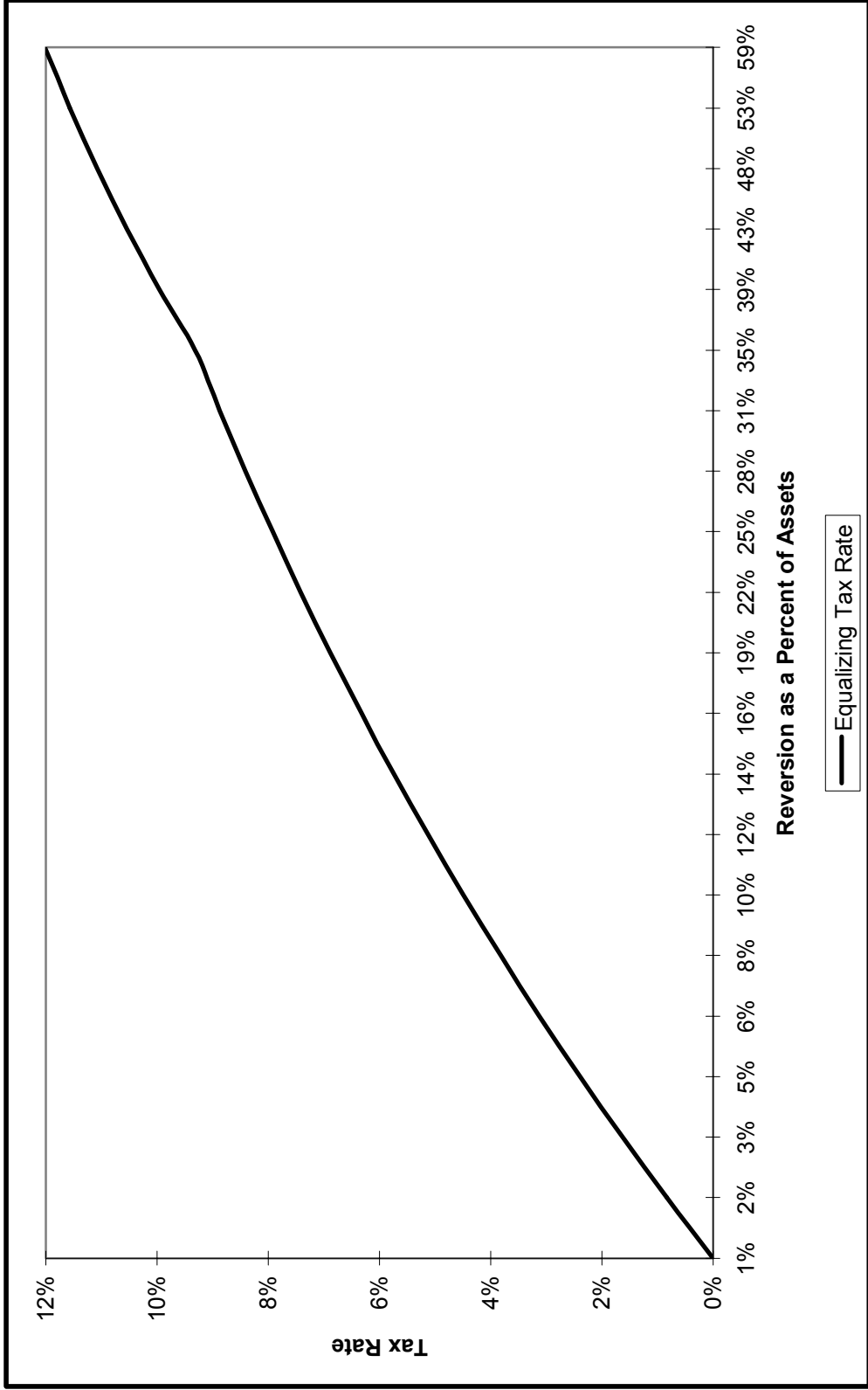


**SPREADSHEET H**

**Tax Rate Need to Offset Advantage of Tax Free Earnings – 35% Tax Rate, 5% Earnings Rate**

Year	Tax Deferred After Tax	Taxable	Tax Rate to Equalize
1	100.00	65.00	0.00%
2	105.00	67.11	1.67%
3	110.25	69.29	3.31%
4	115.76	71.55	4.92%
5	121.55	73.87	6.50%
6	127.63	76.27	8.06%
7	134.01	78.75	9.59%
8	140.71	81.31	11.10%
9	147.75	83.95	12.58%
10	155.13	86.68	14.04%
11	162.89	89.50	15.47%
12	171.03	92.41	16.88%
13	179.59	95.41	18.26%
14	188.56	98.51	19.63%
15	197.99	101.71	20.97%
16	207.89	105.02	22.28%
17	218.29	108.43	23.58%
18	229.20	111.96	24.85%
19	240.66	115.59	26.11%
20	252.70	119.35	27.34%

**CHART I**  
**Tax Rate To Offset Tax Advantage for Model Pension Plan**



This Chart shows the reversion tax needed to offset the advantage of tax deferral of earnings in a pension fund with assets of \$10 million and annual contributions of \$100,000. For example, a tax rate of 4% would be needed to offset the tax deferral advantages of a \$1 million (10%) reversion. This is calculated by applying the factors in Chart H to each contribution starting from the most recent that equal the amount of reversion.

**SPREADSHEET I**

**Model Pension Plan Projection of Excise Tax to Offset Tax Advantage (\$000 omitted)**

Year	Contribution	Benefit			Tax Rate	Amount of Reversion	Reversion/Assets	Tax Rate to Equalize
		Earnings	Payments	Balance				
2005	100	5%	50	10000	35%	105	1%	0%
2004	100	5%	50	9476	35%	221	2%	1%
2003	100	5%	50	8977	35%	347	3%	2%
2002	100	5%	50	8502	35%	486	5%	2%
2001	100	5%	50	8049	35%	638	6%	3%
2000	100	5%	50	7618	35%	804	8%	4%
1999	100	5%	50	7208	35%	985	10%	4%
1998	100	5%	50	6817	35%	1182	12%	5%
1997	100	5%	50	6445	35%	1396	14%	6%
1996	100	5%	50	6090	35%	1629	16%	6%
1995	100	5%	50	5753	35%	1881	19%	7%
1994	100	5%	50	5431	35%	2155	22%	7%
1993	100	5%	50	5125	35%	2451	25%	8%
1992	100	5%	50	4833	35%	2772	28%	8%
1991	100	5%	50	4556	35%	3118	31%	9%
1990	100	5%	50	4291	35%	3493	35%	9%
1989	100	5%	50	4039	35%	3896	39%	10%
1988	100	5%	50	3799	35%	4332	43%	11%
1987	100	5%	50	3571	35%	4801	48%	11%
1986	100	5%	50	3353	35%	5307	53%	12%
1985	100	5%	50	3146	35%	5851	59%	12%

This worksheet makes a number of simplifying assumptions for the purpose of illustrating the excise tax needed to offset the advantage of tax deferral for a plan with ongoing contributions, such as level contributions and benefit payments, with constant tax and earnings rates.