

*THE NEW PENSION LAW AND DEFINED BENEFIT PLANS: A SURPRISINGLY
GOOD MATCH*

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The New Pension Law and Defined Benefit Plans: A Surprisingly Good Match

Abstract

Much of the commentary on the new pension reform law suggests that it will be deleterious to defined benefit plans. This paper, which describes the economic policy background leading to the new law and the law's main funding provisions and shows an analysis of the volatility of required minimum contributions, comes to the opposite conclusion. The new law should improve benefit security, reduce contribution volatility, and encourage responsible management and creative plan design, thereby improving the environment in which defined benefit plans are sponsored by employers and retirement benefits are earned by workers.

Introduction

During congressional consideration and immediately after President Bush signed the Pension Protection Act of 2006 ("PPA") into law in August 2006, many in the media and in various interest groups viewed the new law as antagonistic toward defined benefit plans and predicted that it would sound the death knell for those plans.¹ We respectfully disagree.

This paper reviews the historical economic and policy background that led to the Bush Administration's proposal for pension reform in January 2005 and subsequent congressional consideration and debate. The new law is then described in broad terms, focusing on its provisions for single-employer defined benefit plans and, in particular, the new funding requirements.² The penultimate section shows a stochastic analysis of these requirements for one particular pension plan, illustrating more general properties of the new legal framework and its implications for the volatility and manageability of fund contributions. The paper concludes by discussing briefly the likely consequences of the new law for the future shape of pensions in the United States and future public policy issues.

The analysis demonstrates that many of the complaints about the new law and resulting gloomy predictions for defined benefit plans in the media and among some experts are

¹ For a typical example of media coverage, see "Change to boost 401(k)s, put brakes on pensions: Bush likely to sign bill that experts say will doom defined-benefit plans," *Dallas Daily News*, August 7, 2006, by Pamela Yip. Also see the editorial of the *Wall Street Journal*, August 4, 2006, the day of PPA's passage, entitled, "The Pension Era, R.I.P." Among policy experts, Karen Ferguson, director of the Pension Rights Center, said the bill is "a huge missed opportunity. While the bill contains a handful of positive provisions that help some workers, it also contains harmful provisions that allow plans to break pension promises and, rather than strengthen the private pension system, are likely to weaken it." James Klein, president, American Benefits Council, said, "We are pleased that important relief for airlines has been included, but the new law's funding regime for most pension plans – including most well-funded plans – is troubling. By injecting more volatility into employers' pension funding obligations, the law is likely to accelerate the trend away from defined benefit plans."

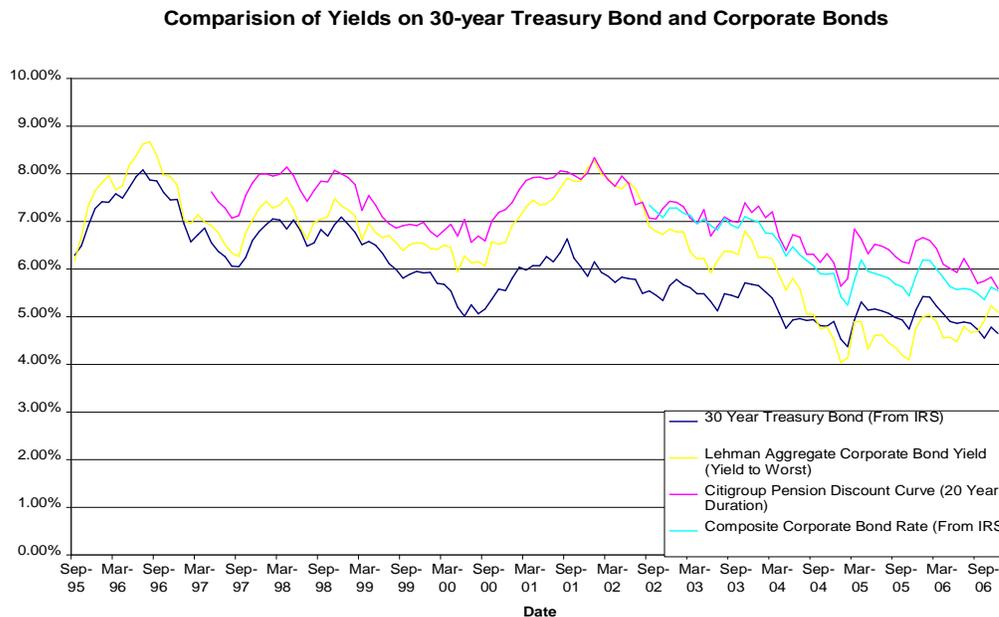
² The new law also reformed the funding requirements for multiemployer defined benefit plans; that is a more complex subject than the one treated in this paper and must be subject to a separate analysis. The new law also added provisions applying to defined contribution plans and some insurance products, plan investments and other retirement plan issues; again, these are large and diverse topics that must be treated elsewhere.

largely unfounded. Rather the new law is actually friendlier to defined benefit plans than the old law was, especially in its ability to alleviate the volatility of required contributions—ironically, the area that has attracted the most criticism. The PPA should lead to a stable and supportive environment by improving benefit security, reducing volatility, and allowing for plan design and management changes to reflect the evolving needs of workers and plan sponsors.

Economic and Policy Background

Initial demand for the latest round of reform of the funding law arose in the pension community in the late 1990s and early 2000s when the spread between the yield on the 30-year Treasury bond and yields on long-maturity corporate bonds widened. Under the old law, the yield on the 30-year Treasury bond was used as the basis for calculating the discount rate employed in computing a plan's "current liability," of which somewhat less than 90 percent stood as the legal funding target for many pension plans. The lower the discount rate, the larger the plan liability and thus the higher the required minimum contributions. It was claimed that the Treasury bond yield was unnaturally low because issuance of the "long" bond was slowed as the federal government's budget balance shifted from deficit to surplus, moderating its borrowing needs. It was suggested instead that the yield on corporate bonds should be used as the pension discount rate. The spreads between yields on 30-year Treasury bonds, and three different measures of rates on high-grade corporate bonds (the Lehman Aggregate yield to worst, the 20-year point on the Citicorp pension discount curve, and, since 2001, the composite corporate bond rate published by the IRS) are shown in Figure 1 below. As may be seen, the spreads widened in late 1999, and again in late 2001.

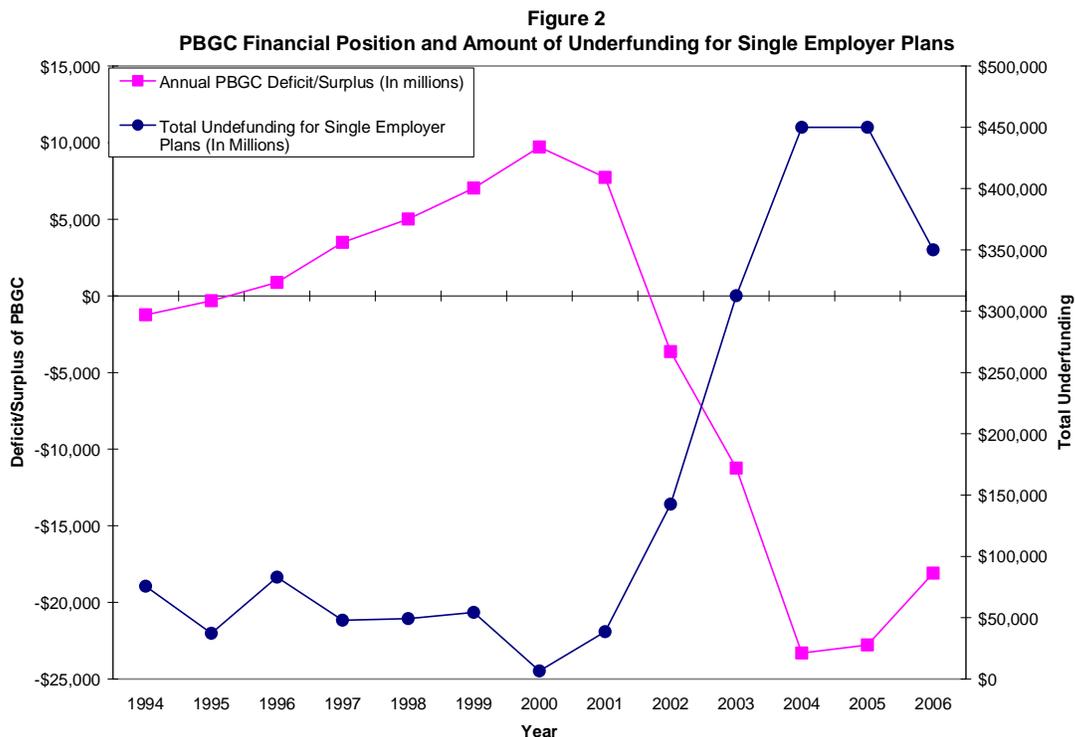
Figure 1



Source: Citigroup, Lehman Brothers and IRS.

As all bond yields declined following the 2001 recession and the Federal Reserve's concerted policy of rate cuts, pension liabilities rose. Shortly before that prices of equity securities--the main asset component of pension funds - fell dramatically. Equities stayed depressed through 2002, following the popping of the high tech bubble in 2000, the recession, the 9/11 terrorist attacks, and the revelation of corporate scandals. Hence, underfunding of defined benefit plans increased dramatically, as shown in Figure 2 (look to right axis and line with circles) as measured on a termination liability basis by the Pension Benefit Guaranty Corporation (PBGC) – the federal insurer of defined benefit plans.

After years of running surpluses, the PBGC itself began running a sizable deficit, also shown in Figure 2 (look to left axis and line with squares). The same economic trends affected the PBGC's assets and liabilities assumed from past failed plans, but, the agency was particularly hard hit when the large underfunded plans of bankrupt sponsors, particularly airlines, landed on its doorstep. Even more significantly, from a political viewpoint, the shortfalls soon took on a human face, as some of the participants of these failed plans--many near or in retirement--lost benefits, when their claims exceeded moderate insurance limits of the PBGC. These losses were reported widely in the media, and the public's confidence in the broader private defined benefit pension system declined.



Source: PBGC Annual Reports.

The Bush Administration responded to these economic and political trends in sequence. In 2003, it proposed that the yield on the 30-year Treasury bond, no longer issued since 2001, be replaced in pension calculations by a high-grade corporate bond rate curve. In doing so, the Administration acknowledged that, as corporate obligations, pension liabilities were appropriately measured by using the rate on high-grade corporate securities rather than the yield on Treasury securities. It reasoned that although the PBGC was a federal government agency, it does not have the full faith and credit of the U.S. Treasury. Hence pension liabilities, insured by the PBGC, were the collective responsibility of corporate plan sponsors. The Administration also considered that rates on corporate bonds were the essential building block of pricing on group annuity contracts – the closest market analogy to corporate pension liabilities.

The Administration also proposed to eliminate the four-year smoothing of the discount rate and to use a full rate curve, so that the pension liability would reflect accurately current market conditions and the timing of expected plan cash flows, which becomes important in aging pension plans.³ (Corporate bond rate curves are usually upward sloping, so liabilities of older plans will be larger than liabilities of younger plans, everything else being equal, compared to a measurement system that uses a single discount rate.) The Administration also indicated that changing the discount rate was only a first step – the larger problems of the defined benefit system would need to be addressed in a forthcoming, more comprehensive proposal. In the meantime, stop-gap legislation would be applied to the discount rate issue.

The Administration was particularly concerned about certain problems that became apparent during the late 1990s and early 2000s. Some plan benefit provisions were negotiated with unions or made by sponsors but were not funded adequately in the Administration's view, such as benefits connected with plant closings, subsidized early retirements and lump sum payouts. Indeed, it was suspected strongly that sometimes financially insecure firms gave workers benefit increases instead of wage hikes, increasing reliance on the PBGC (after the five-year phase-in of insurance protection for the increases) in the event of firm bankruptcy and plan termination.⁴ Hence, the Administration determined that the old law, especially its funding target provisions, was not making pension benefits secure or addressing adequately the financial risks and moral hazard in the pension insurance system.

In addition, under the old funding law, deficit reduction contributions, credit balances, and smoothing - working separately or together - led to long funding holidays for sponsors, such as in the late 1990s, and their obverse – large sudden spikes in required contributions such as in the early 2000s.

³ Four-year smoothing refers to the use of a weighted average (with declining weights 4,3,2,1) of the current and last three years' bond yields. A full rate curve refers to the diagram where the maturity for every year through at least thirty is on the horizontal axis and the rate on the corresponding zero coupon bond is on the vertical axis.]

⁴ See Testimony of Bradley Belt, Executive Director, PBGC before the Senate Committee on Finance, March 1, 2005. Also see James Wooten, "The Most Glorious Story of Failure in the Business," 49 Buffalo Law Review, 683 (Spring/Summer 2001).

When a plan's funding ratio, calculated as the ratio of plan assets to current liability, dropped to low levels, the subsequent short amortization period under the deficit reduction regime required especially large contributions.

Credit balances accumulate, with interest, when contributions are made in excess in minimum required contributions. Under old law, credit balances were carried at "book" and generally were included in plan assets; these balances could be contributed in place of cash to meet required funding.

The old law allowed smoothing of measured assets and liabilities as a way to reduce the effects of market volatility on the officially measured (and disclosed) funded status of plans and required contributions. But, combined with the deficit reduction requirements and a secular trend toward lower interest rates, smoothing enhanced rather than reduced volatility.

Policymakers and pension analysts were also concerned about the strong incentive under the old law toward lump sum distributions instead of life annuities, as most plans that offered lump sums calculated them by using the low rate on the 30-year Treasury bond. Indeed, this sometimes became a risk exposure when plan participants retired early as the plan sponsor was failing and withdrew all their plan assets in a scenario akin to a bank run, leaving the PBGC and annuitants holding the empty bag.

All of these factors played a role in the large underfunding of failed plans taken over by the PBGC. Many of these plans were disclosed as being well-funded under government defined measures, but were, in fact, poorly funded after years of funding holidays. At the same time, it was recognized that another aspect of the old law called the full funding limit, which derived from a yet older definition of plan obligation found in ERISA called the actuarial liability, prevented responsible sponsors from contributing an extra funding cushion to their plans during good times when interest rates and asset prices (and oftentimes corporate profits) were high.

The Bush Administration revealed its pension reform proposal in January 2005. It built upon its initial proposal of a corporate bond rate curve an essentially full mark-to-market measurement of plan assets and liabilities, including a reflection of current and anticipated trends in mortality experience. It desired a fuller reflection of risk by proposing that plan liabilities of financially weak sponsors be measured on a stricter standard, under the assumption that their plans presented a high risk of distress termination. In particular, the Administration asked that "at-risk" liabilities, after a gradual five year phase-in period after the plan sponsor's securities are rated below investment grade, reflect fully the higher costs of early retirements and lump sum subsidies along with insurance company loads for the administrative expenses of group annuities.

Regardless of the funding target – "on-going" for financially secure plan sponsors and "at-risk" for financially weak sponsors – the funding regime was to be simplified to a uniform seven year amortization of funding shortfalls, defined as 100 percent of the

funding target less assets. The proposal would have eliminated credit balances, except in the sense that plans whose funding ratio was more than one would not need to contribute more than the value of current benefit accruals.

The Administration additionally addressed the moral hazards by a regime of benefit limitations, which imposed successively stricter restrictions on benefit accruals, benefit increases and lump sum payouts as an underfunded plan's funding status deteriorated, relative to its appropriate target. Similar funding incentives were contained in a new schedule of PBGC insurance premiums, which increased the per-participant flat premium and assessed a small percentage of the measured underfunding of the plan. (Under the old law, many underfunded plans escaped this extra assessment.) At the same time, the proposal tried to encourage better management of the plan, by allowing significantly larger tax-deductible contributions to the plan, up to a 30 percent cushion of the funding target plus expected benefit increases. Finally, the proposal aimed to improve disclosure to participants and federal agencies.

In designing the details of its proposal, the Administration relied, in part, on the stochastic modeling system of the PBGC called PIMS. The explicit goals of the proposal were to reduce expected losses of the PBGC and participants and to reduce the volatility of minimum required contributions by plan sponsors. In addition, the Administration intended to give sponsors some relief in required contributions in the near term, through both the longer amortization period itself and some transition rules. The comparison was, of course, to the old law, although there was some ambiguity as to how the old law was to be measured – whether with the (reintroduced in 2005) 30-year Treasury bond yield (“snap-back”) or the stop-gap corporate bond yield. The simulations were done using imperfect information, as the underlying government database on plan status – mainly the Form 5500 and its Schedule B – reflected conditions only through 2003 and 2004 and various assumptions about subsequent plan contributions, asset returns and so on.

Although there was strong support in the media for the Administration's pension reform proposal, interest group reaction was largely negative. In particular, the “credits” were controversial, that is the elimination of credit balances and the reflection of the financial risk of the plan sponsor by its credit rating in calculating the plan liability. Ultimately, the versions of the bills that emerged from the various committees and both Houses, diluted and changed these features of the Administration proposal. The focus of “at-risk” was altered to the funding status of the plan itself, and credit balances, albeit in a different form, were preserved. Nonetheless, the policy goals of the Administration were largely shared by Congress and the final legislation retains the basic structure of the Administration's proposal and many of its details. The final reform also includes many items of importance to other segments of the pension, financial and policy communities, aiding ultimate passage and achieving bipartisan support, including:

- Relief for airline plans,
- various transitions, exceptions, and allowable elections,
- special treatment of benefits to first responders,
- generally faster vesting,

- multiemployer plan reform,
- permanence of the increased IRA and defined contribution limits and covered compensation and small saver's credit of EGTRRA,
- other defined contribution plan issues like encouraging automatic enrollment, investment advice, and annuities,
- favorable tax treatment for insurance products combined with long-term care insurance,
- positive clarification of the (prospective) legal status of hybrid (cash balance) defined benefit plans, and
- the Administration's post-Enron proposal for required employee diversification for plans with employer stock contributions (except stand-alone ESOPs).

Major Provisions of the Pension Protection Act of 2006 Affecting Funding of Defined Benefit Plans

The following description summarizes major provisions of PPA affecting the funding of defined benefit plans, but largely ignores transition rules, elections, and exceptions given to a few industries.

The new law's funding target and shortfalls are essentially the same as in the Administration's proposal, except as indicated below.

- The full high-grade corporate bond rate curve may be summarized by three rates and 24-month averaging of these three rates is allowed.
- Allowable asset value smoothing is reduced from the old law's 48 months and a wide corridor (80 to 120 percent of market value) to two years and a narrow corridor (90 to 110 percent of market value).
- Sponsors may request to use of plan-specific mortality tables as long there is credible data to support the request.

Similarly, the new law's seven year amortization schedule for funding shortfalls is largely the same as the Administration's proposal. Unlike the Administration's proposal, however, the PPA permits sponsors to use credit balances, albeit with some new rules and restrictions (in some of the new law's most complex provisions). In particular, an underfunded plan's minimum contribution will be its target normal cost (that is, the value of benefits accrued during the year) plus any shortfall amortization charges. Every year, the sponsor must determine whether the plan has a funding shortfall by comparing its funding target with the value of plan assets, reduced by all credit balances (now marked to market).

If there is a funding shortfall, the sponsor first measures the present value of future payments to amortize previous funding shortfalls and then determines the plan's new shortfall amortization base. Each shortfall amortization base is amortized in level payments over seven years. If assets gain enough value or liabilities decline, it is

possible for there to be a negative amortization base, reducing required contributions.⁵ Amortization of each shortfall amortization base will continue for seven years, unless the value of plan assets (reduced by all credit balances) equals or exceeds the plan's funding target. In that case, all shortfall amortization bases automatically revert to zero, and the minimum contribution would be the plan's target normal cost for the year minus excess assets.

As mentioned above, the definition of at-risk liabilities changed from the Administration's proposal to the PPA. Now a plan will be considered at risk if it meets both parts of a two-part test:

1. The value of plan assets (reduced by all credit balances) is less than 80 percent of the on-going funding target for the preceding year.
2. The value of plan assets (reduced by all credit balances) is less than 70 percent of the at-risk funding target for the preceding year.

To determine the at-risk funding target, the sponsor must assume that all employees who are eligible to retire within the next 10 years will retire on the earliest date possible under the plan's rules and will elect to receive benefits in whatever form would create the highest liability. Also, if a plan were at risk for at least two of the preceding four years, its funding target would be increased by the administrative costs of group annuity contracts. At-risk funding targets are phased in over five years. The minimum required contribution is the at-risk normal cost plus required amortization payments, again using the seven-year schedule.

Although the new law's designation at-risk designation (combined with its treatment of credit balances) does not address all the Administration's concerns and may drag in some otherwise well-funded plans (albeit with large credit balances) and financially strong plan sponsors; in practice, the extra required contributions will generally be small.⁶

Under the new law, plans whose previous-year funding fell below 80 percent (after subtracting credit balances created after 2007) are restricted in the use of credit balances to reduce required contributions. A plan sponsor may forfeit credit balances and sometimes must do so to avoid benefit restrictions, as we will explain below.

Congress was more generous than the Administration in increasing maximum deductible contributions. The final maximum is the larger of:

⁵ Under a special exemption, if the value of plan assets (removing some, but not all, of the credit balances) is 100 percent of the funding target, no new shortfall amortization base is required for one year.

⁶ Being at-risk also sets off a restriction on the employer to fund non-qualified deferred compensation plans for executives and higher PBGC premiums.

- The minimum required contribution,
- the plan's funding target, plus target normal cost, plus a funding cushion over the value of plan assets (not reduced by credit balances),
- the plan's at-risk funding target, plus at-risk target normal cost, over the value of plan assets (not reduced by credit balances), even if the plan is not at risk.

The funding cushion is 50 percent of the plan's funding target, plus an additional amount to reflect any present value arising from projected compensation increases.⁷ The final reform also relaxes the additional deduction limit of 25 percent of pay that is imposed on employers sponsoring both defined benefit and defined contribution plans. Specifically, the limit does not apply to single-employer defined benefit plans insured by the PBGC nor to extent that employer contributions to defined contribution plans stay under six percent of compensation. It should be noted, however, that extra contributions create credit balances and thus introduce additional complexity to sponsors' funding strategy unless they are willing to forfeit them.

Congress was slightly stricter than the Administration's original proposal in its benefit restriction regime. If a plan is at least 80 percent funded (or 100 percent funded without reducing assets for credit balances), the new law does not restrict benefits. If the plan is less than 80 percent funded for the current year, however, sponsors may not improve benefits without funding the improvements first and pay only partial lump sums. If the benefit improvement would push funding below 80 percent, the sponsor must bring funding up to 80 percent of the plan's new funding target before the benefit increase could take effect. If a plan is less than 60 percent funded, sponsors may neither increase benefits, nor pay lump sums, and must freeze benefit accruals and shutdown benefits. If the plan is less than 100 percent funded and the plan sponsor is bankrupt, no lump sum payments may be made.

Under the PPA, credit balances cannot be counted as additional cash payments to avoid benefit restrictions. But plan sponsors may elect to reduce their credit balances before determining their minimum funding requirement to reach the desired funded level. Moreover, the new law requires plan sponsors to forfeit their credit balances to avoid restrictions on lump sum distributions. If they have sufficient credit balances, collectively bargained plans generally must forfeit credit balances to avoid the restrictions on benefit increases, benefit accruals and shutdown benefits as well.

Congress essentially adopted the Administration's proposal for PBGC premiums (with funding shortfalls calculated as their mark-to-market values). The PPA, however, also imposed, on a permanent basis, a new termination premium program on plan sponsors that experience a distress termination in connection with bankruptcy reorganization or involuntary termination.

Table 1 presents a brief summary of the main funding provisions of the old law, the Administration proposal and the new law (PPA).

⁷ For non-pay related plans, the additional amount reflects imputed benefit increases based on the last six years.

Table 1 - Pension Funding Provisions

Provision	Old Law	Administration Proposal	New Law
Funding Targets	Actuarial liability or less than 90% of current liability depending on funding status and relative size of two liability measures.	On-going: 100% of accrued liability. At-risk: for financially weak plan sponsors, assume all participants retire at earliest possible date and elect costliest benefit form, plus a loading factor.	On-going: 100% of accrued liability At-risk: for poorly funded plans, assume all employees eligible to retire within next 10 years retire at earliest possible date. All elect costliest benefit form. Sometimes also a loading factor.
Liability Assumptions	Actuarial liability: Actuary's assumptions on what is reasonable based on expected investment returns, retirement rates, etc; also depends on cost method chosen. Current liability: 4-year moving average of yield on 30-year Treasury bond; standard (non-projected) mortality: all other assumptions, actuary's best judgment; no reflection of lump sum subsidies.	Full corporate bond rate curve with 90-day smoothing. Standard mortality with projected improvements. Accurate reflection of lump sum and early retirement subsidies expected.	Full rate curve with no smoothing or three segments with 2-year simple average smoothing. Standard mortality with projected improvements; plan-specific mortality if evidence is available. Accurate reflection of lump sum and early retirement subsidies expected.
Asset Valuation	4 year smoothing; 80-120% corridor	Market Value	2-year smoothing; 90-110% corridor.
Amortization of Unfunded Liability	Depends on complex interaction of funded status, cost method chosen and source of gain or loss—range from less than 4 years to 30 years.	7-year	7-year with phase-in of funding targets in certain cases.
Lump Sum Distributions	Current Yield on 30-year Treasury bond.	Corporate bond rate curve	Three segment corporate bond rate curve
Credit Balances	No restrictions; carried at book; often not subtracted from assets	Eliminated	Use restricted for underfunded plans; mark to market; usually subtracted from assets.
Maximum Deductible Contributions	Up to actuarial liability or, if less, 150% of current liability less assets.	Up to 130% of target plus projection for salary increases or usual benefit increases less assets	Up to 150% of target plus projection for salary increases or usual benefit increases less assets. Also relief from combined DB/DC limit.

Provision	Old Law	Administration Proposal	New Law
Benefit Limitations	No unfunded benefit increases allowed if plan is less than 60% funded on a current liability basis.	No unfunded benefit increases allowed if plan assets less than 80% of target. No lump sum payouts if on-going plan is less than 60% funded or at-risk less than 80% funded or bankrupt. No benefit accruals if at-risk is less than 60% funded or bankrupt. No shutdown benefits.	No unfunded benefit increases and partial lump sum payouts allowed if less than 80% of target (subtracting credit balances from assets). No benefit increases, lump sums, benefit accruals or shutdown benefits if less than 60% of target or if less than 100% of target and bankrupt.
PBGC Premiums	\$19 (unindexed) per participant and \$9 of underfunding per PBGC-defined unfunded vested liability in some limited circumstances.	\$30 (indexed) per participant plus \$9 of underfunding per target.	\$30 (indexed) per participant plus \$9 of underfunding per vested target with no smoothing. Termination premium added.

Other provisions beneficial to defined benefit plans in PPA include a clear path forward for new hybrid plans and conversions from traditional defined benefit plans⁸, the allowance for in-service distributions after age 62 (phased retirement), the liberalization of conditions in which sponsors may transfer excess pension assets to retiree health plans, the change in lump sum calculations proposed by the Administration, and the allowance of a special defined benefit/401(k) combination plan for small employers.

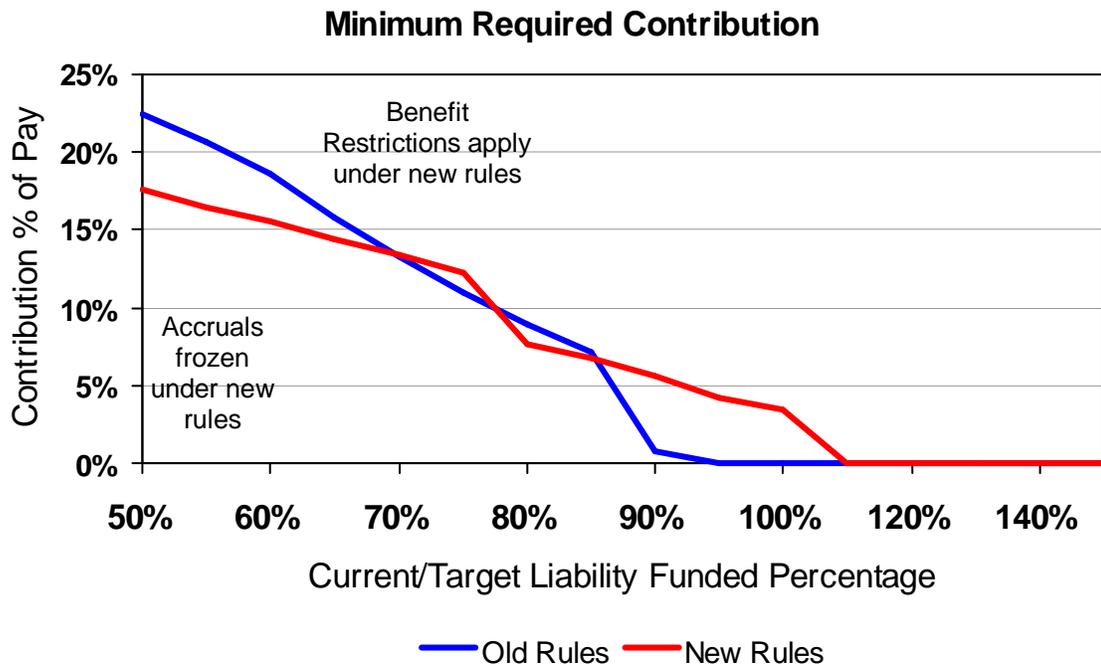
Figure 3 illustrates the impact of these new funding rules and benefit restrictions by charting the minimum required contributions as a percentage of pay by the plan's funding level, separately showing the old and new rules, as well as shaded areas where benefit restrictions apply. The same discount rate basis using corporate bonds is applied to the old and new rules, although a reasonable case could be made that the old law should be illustrated using the yield on the 30-year Treasury bond (and hence, the old law would be harsher than shown). Indeed, in the next section of this paper showing a stochastic simulation, the old law analysis uses 105 percent of the four-year weighted average of the 30-year Treasury bond yield (snap-back).

Consistent with its main purpose of improving benefit security, the new law requires contributions until and somewhat past the point of full funding. In poorly funded plans, by contrast, the new law is more generous than the old law. As we will see immediately

⁸ Hybrid plans have been embroiled in legal and media controversy concerning age discrimination; although the new law does not deal with past conversions and accruals subject to court cases, it does state conclusively that, prospectively, hybrid plans are not age discriminatory.

in the next section, both of these characteristics have important implications for the volatility of contributions required, contrasting new and old law.

Figure 3-Minimum Required Contributions: New versus Old Law



Source: Watson Wyatt Worldwide.

Stochastic Analysis of the Volatility of Minimum Required Contributions, Comparing New and Old Law

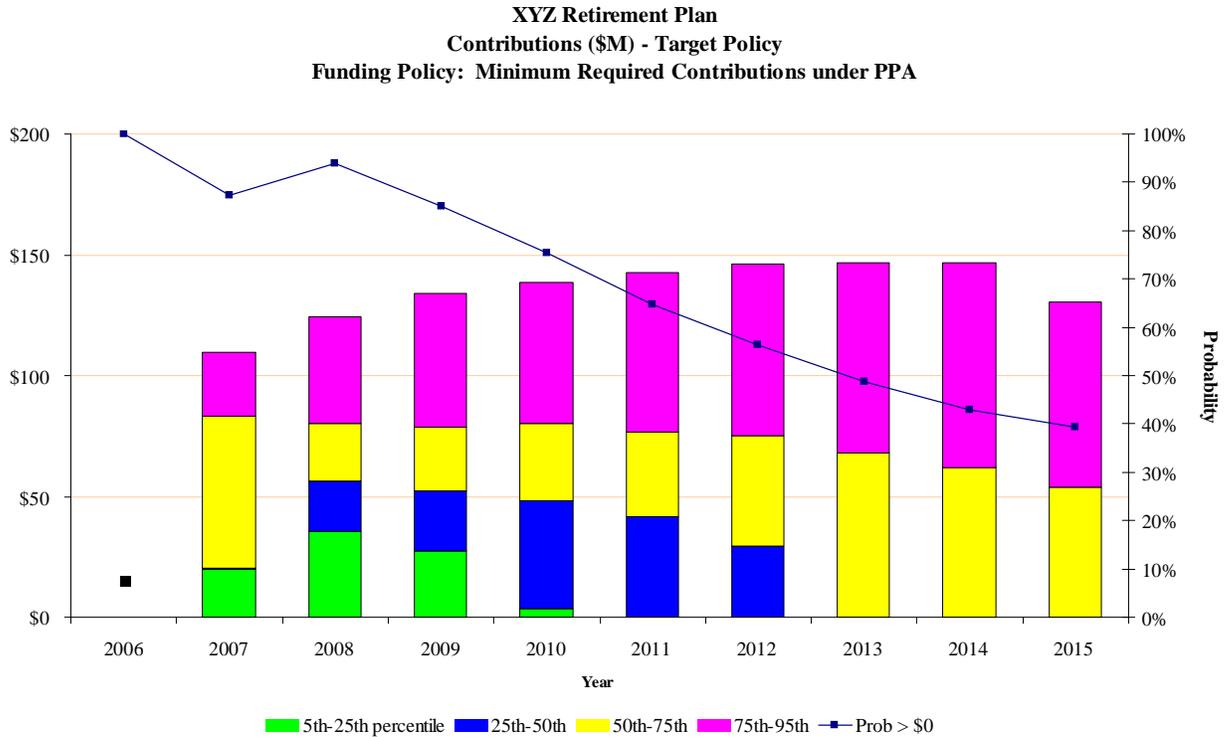
This stochastic analysis compares the minimum required contributions from 2006 through 2015 for a particular pension plan under new and old law. We focus on the volatility of these contributions--the frequency and amount of funding spikes or dips. By stochastic analysis, we mean a projection methodology that incorporates a random element. In particular, we simulate the possible outcomes of the variable being examined – required annual contributions from 2006 through 2015 – given assumptions of expected asset returns, variance and correlations of various asset classes, interest rates, inflation, and other relevant economic factors based on historical evidence and economic theory. The stochastic model used is the Watson Wyatt Worldwide proprietary asset/liability software, updated with return assumptions as of November 2006. The representations of new and old funding law in the combined Watson Wyatt asset liability and funding law model are precise and incorporate many details of legal and regulatory requirements, including transition rules, which were not mentioned in the prior section. The specific funding policy of the plan sponsor modeled is to contribute only the minimum required by law.

The pension plan (XYZ) used in the analysis is a cash balance plan with approximately \$1 billion in plan liability, about two-thirds of which is inactive, that is, for retirees and terminated vested participants. In 2005, the plan had about \$850 million in assets, invested as follows: 52.5 percent to equities, 15 percent to equity-like alternative investments (such as private equity and real estate) and 32.5 percent to bonds. It had a small credit balance of about \$4 million that is used up in 2006. We conducted similar analyses of many other pension plans – traditional DB and cash balance plans, frozen and active, poorly funded and well funded, no credit balances and large credit balances – and the basic contours of results were the same. Also note that the use of a cash balance plan for the analysis may increase volatility compared to a traditional plan because the effective duration of a cash balance plan liability is shorter and short-term rates have been much more volatile than long-term rates. Also use of a plan with few credit balances may be thought to bias the results of the analysis to greater volatility, at least according to some experts.

Figure 4 shows the stochastic range of minimum required contributions every year from 2006 through 2015 for Plan XYZ under the PPA. The contribution for 2006 -- \$15 million – is known with certainty and hence is represented with a dot on the graph. Contributions for future years, however, are projected and may vary according to asset returns, interest rates and other variables.

The results are summarized in terms of “best case” to “worst cast” outcomes. The best case outcome is that achieved by the most favorable 5 percent of simulations, that is, the outcome can be expected to be as good or better than this result in the best 5 percent of circumstances. The “most likely” outcome falls in the middle of the distribution of results, that is, 50 percent of the situations are better than the most likely case and 50 percent are worse. In the worst case outcome, only 5 percent of the situations are as bad or worse than this result. The “upper quartile” and “lower quartile” results are 25 percent and 75 percent of the way down the distribution, respectively. The probability that the required contribution is not zero is also shown.

Figure 4-Minimum Funding Under PPA



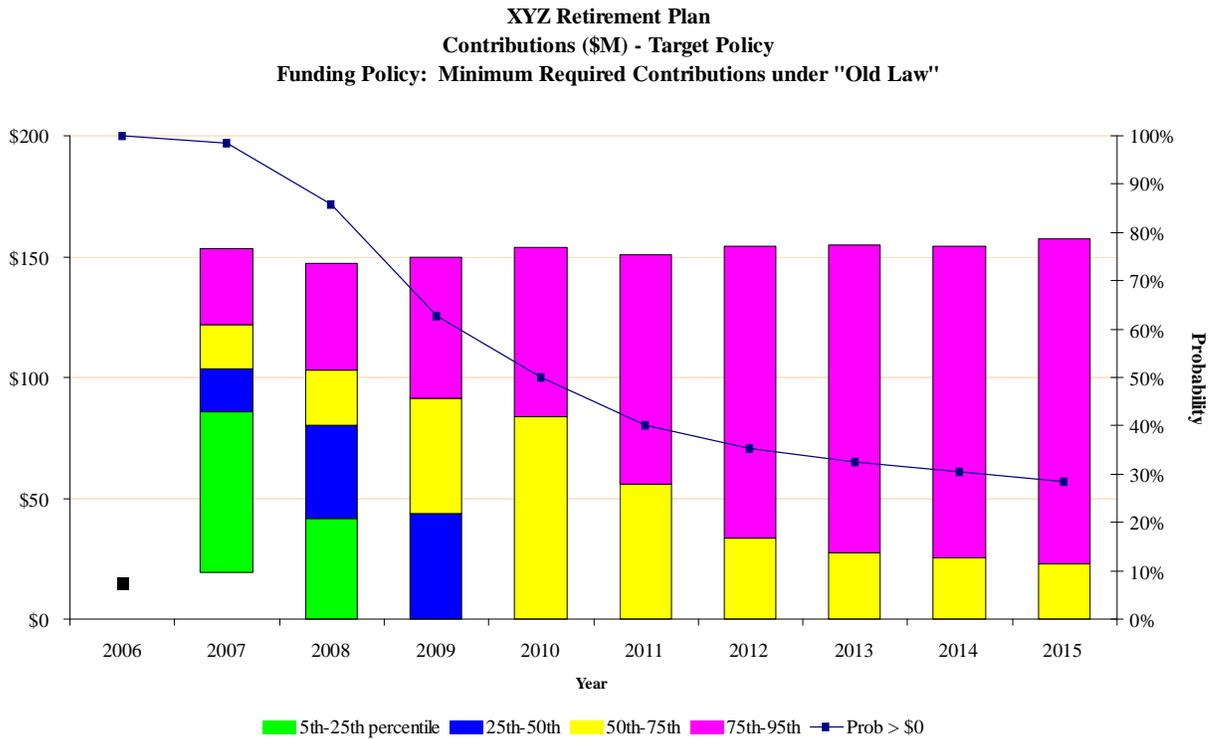
Percentile	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
5th	\$15	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25th	\$15	\$20	\$36	\$28	\$3	\$0	\$0	\$0	\$0	\$0
50th	\$15	\$20	\$56	\$52	\$48	\$42	\$29	\$0	\$0	\$0
75th	\$15	\$83	\$80	\$79	\$80	\$77	\$75	\$68	\$62	\$54
95th	\$15	\$110	\$124	\$134	\$139	\$143	\$146	\$146	\$147	\$130
Prob > \$0	100.00%	87.38%	93.84%	84.96%	75.42%	64.76%	56.26%	48.78%	42.84%	39.32%

Source: Watson Wyatt Worldwide.

Under the PPA, the plan sponsor will likely be required to contribute to this plan through at least 2012 to improve its funding. With transition relief, especially in 2007, required contributions should increase gradually through 2008 with the full implementation of PPA and continue thereafter at a fairly steady level. Beginning in 2013, however, contributions are increasingly less likely to be required as the plan becomes fully funded and accruals remain modest in this older plan. In the 75th and 95th (worst case) percentiles, however, required contributions can be large.

Figure 5 shows minimum funding for Plan XYZ under old law.

Figure 5-Minimum Funding Under Old Law



Percentile	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
5th	\$15	\$19	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25th	\$15	\$86	\$42	\$0	\$0	\$0	\$0	\$0	\$0	\$0
50th	\$15	\$103	\$80	\$44	\$0	\$0	\$0	\$0	\$0	\$0
75th	\$15	\$122	\$103	\$91	\$84	\$56	\$33	\$28	\$25	\$23
95th	\$15	\$153	\$147	\$150	\$154	\$151	\$154	\$155	\$154	\$157
Prob > \$0	100.00%	98.44%	85.84%	62.76%	49.98%	40.16%	35.36%	32.52%	30.54%	28.46%

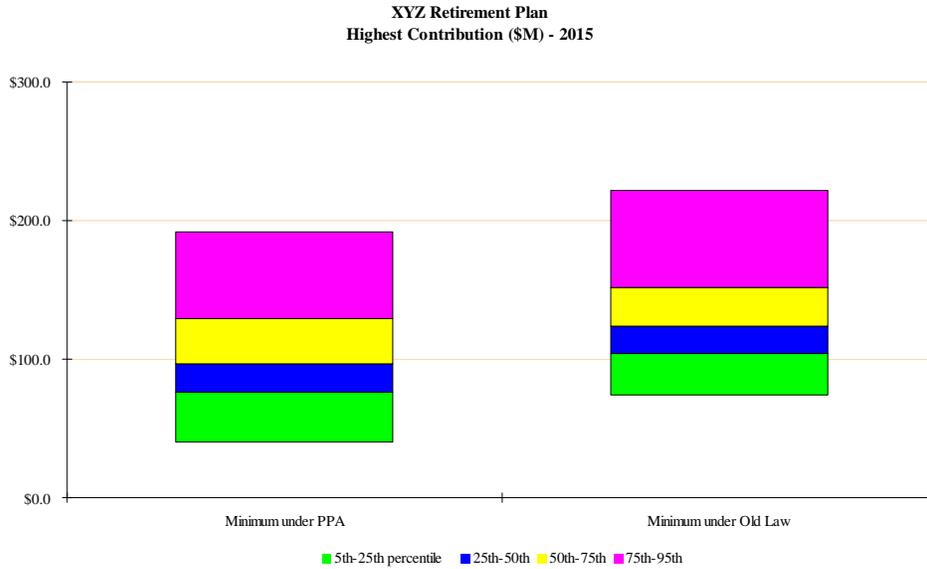
Source: Watson Wyatt Worldwide.

The required contribution in 2006 is obviously the same under both funding laws. By contrast, under the old law, this underfunded plan falls into the maws of the deficit reduction contribution regime and the snapback to the 30-year Treasury bond yield (and with no other transition relief), requiring very substantial contributions through 2009. Thereafter, required contributions would likely stop, even though the plan could still be underfunded. In the worst case scenarios, however, required contributions would be uniformly *higher* than under the PPA, because of the severity of the deficit reduction contribution regime when the plan becomes poorly funded and the lack of a funding cushion.

Figure 6 demonstrates even more clearly that the new law smoothes out volatility better than the old law by showing the distribution of the highest contribution through 2015 for each simulation in the stochastic analysis for the XYZ plan. For example, in the 75th percentile of simulations, the highest required contribution through 2015 is \$129.4 million under the PPA whereas it is \$151.5 million under the old law. Similarly, in the

worst case, the highest required contribution is \$192 million under the PPA compared with \$221.6 million under the old law.

Figure 6-Distribution of Highest Required Contribution through 2015: PPA vs. Old Law



Percentile	Minimum under PPA	Minimum under Old Law
5th	\$39.8	\$73.8
25th	\$76.4	\$103.9
50th	\$96.8	\$124.0
75th	\$129.4	\$151.5
95th	\$192.0	\$221.6

Source: Watson Wyatt Worldwide.

Possible Implications of the New Law for Defined Benefit Plans

The average funded ratio (measured using the Financial Account Standard (FAS) 87 accumulated benefit obligation in the denominator) of defined benefit plans sponsored by FORTUNE 1000 corporations in 2005 was 95 percent, with fairly wide variation.⁹ This accounting measurement is probably close to what would have been calculated for the funding target under the new law. In 2006, owing to good asset return performance and slightly higher interest rates, as well as continued funding contributions, the funded status of most plans likely improved further, so that on average and for the majority of

⁹ See "Pension Funding and Business Risk in 2005," Watson Wyatt *Insider*, September 2006.

plans, full funding - even surplus funding - has been achieved.¹⁰ Given this accomplishment, and the likelihood that full funding is now attainable for most underfunded plans, the PPA's requirements and incentives will continue improving funding levels and stability (and thus making participants benefits more secure).

Plan sponsors that want to maintain and even expand an ongoing plan, and those that prefer to avoid complexity may want to quickly bring their plans' funded status up to at least 100 percent and then maintain that status going forward. That funding policy would enable sponsors to avoid benefit restrictions, maximizing future funding flexibility and further reduce volatility (particularly if credit balances are forfeited). Moreover, the new law allows an extra cushion of funding, and some plan sponsors, for reasons of prudence, may decide to take that new opportunity. Owing to the confiscatory tax on asset reversions, however, sponsors may want to avoid significant overfunding without good reasons such as a growing workforce, a decision to increase benefits or significant transfers to retiree health plans.

Because of the many features of the new law attacking the insurance system's moral hazard problems, the increase in premiums and the very recent improvements in the financial situation and prospects for the PBGC, the environment for responsible plan sponsors should stabilize and improve for defined benefit plans and the deficit of the PBGC should decline. Moreover, the legal and regulatory regime (barring surprises from the court system) should be stable and therefore give plan sponsors a more predictable future. Hybrid plans, in particular, have received long-awaited legal clarity going forward. Likewise, owing to the improved benefit security of these plans in the future, the image of defined benefit plans should improve among workers. Indeed, as the baby boom generation approaches retirement, a retirement plan that guarantees a fixed accrual of benefits, and, often, a fixed income for life, should become more popular. Of course, the nature of forthcoming regulatory guidance will be important as well.

A stable and supportive environment does not mean, however, that the nature of benefits being offered in defined benefit plans will not change as a result of the new law. Early retirement and lump sum subsidies are now more expensive (because of improved liability measurement) and risky (because of the benefit restriction and at-risk provisions) to the plan, and hence, everything else being equal, will be reduced or avoided going forward. Even aside from the new law, the prospective need by many growing corporations seeking talent and longer-lived workers for longer careers, will tend to favor phased retirement rather than early retirement.

The new law makes hybrid plans a legitimate choice again, and plan sponsors may want to compare a hybrid plan with a close "cousin" in the defined contribution family, also encouraged by the new law - an automatic enrollment/default investment 401(k) plan, that, however, does not allow loans or distributions before retirement or departure from the plan. Legal clarity for hybrid plans might also spur newer designs and more creativity which were suppressed for many years because of the legal cloud over them.

¹⁰ See "A Return to Better Funding for Pensions in 2006," Watson Wyatt *Insider*, January 2007.

There is some debate related to the investment implications of the new law.¹¹ Some believe that it will encourage more bond immunizations or at least a tilt toward more liability-directed investing, in response to the measurement closer to mark-to-market, stricter funding requirements, and possible benefit restrictions. The measurement of older or frozen plans may be particularly affected by the use of the corporate bond rate curve, which makes the measured liability more sensitive to the potentially more volatile movements in shorter-term rates than in long-term rates. Other analysts, however, would point to the results presented here: because required contributions will be less volatile under the new law, sponsors will have little incentive to switch from equities or other higher return-higher risk asset classes. This is particularly true for active long-lived defined benefit plans that are sponsored by growing companies whose workforces are accruing increasing benefits, where the superior returns usually delivered by equities can benefit the plan and where any asset volatility can be ridden out. Nonetheless, liability-directed investing is a sensible approach on fundamental grounds of risk management, regardless of the regulatory environment, which still allows sponsors to base their asset allocation decisions on their different risk preferences, time horizons, and other factors.

Conclusion

Because the new pension reform law was the product of several arduous years of policy analysis and political struggle, it is likely to remain on the books for many years to come. That is a good thing. The new law is supportive of defined benefit plans by improving their benefit security, reducing the volatility of their required contributions and encouraging responsible plan management and design. And, as a result, the situation of the PBGC should improve.

That being said, some issues may be revisited. In particular, the law's complex web applying to credit balances may become viewed as unnecessary or even counter-productive as plans become better funded. Experience may also show that some reflection of plan sponsor financial risk is needed, for example in PBGC premiums, as advocated by many pension analysts and economists. Also some issues have been left unresolved. As the funded status of plans improves and underfunding becomes overfunding, the asymmetry of the law holding plan sponsors strictly responsible for unfunded liabilities but not allowing them reasonable access to excess assets will need to be examined. If Social Security reform gains political traction, special attention will need to be paid to the sensitive interaction of that universal foundational retirement program with voluntary retirement plans. Nonetheless it is better to build from a solid framework than from a weak one.

¹¹ There have also been other environmental changes for defined benefit plans and their sponsors around this time, especially in financial accounting, that may influence sponsorship, investment policy, plan design and so on. It is beyond the scope of this paper, however, to address them.