

# Derisking Your Pension Plan, Part 1: PBO or ABO Funding Target?



## Executive Summary

- The three major issues faced by defined benefit pension plans intent on derisking are choice of valuation target, choice of asset benchmark and choice of asset allocation. This paper addresses the valuation target issue.
- While an ABO valuation target appears to offer lower contributions than a PBO valuation target, we argue that the benefits of an ABO target are illusory for a plan intent on derisking.
- Choosing an ABO target cannot really reduce contributions, but only delay them. Also, for most real-world plans, contributions would actually be eventually higher under an ABO target than they would under a PBO target, once contributions attain sustainable levels.
- Funding to an ABO target would also eschew tax advantages that current law affords.

## Introduction

It is well known that long-duration bonds are the low-risk asset for defined benefit (DB) pension plans. By increasing allocations to fixed-income and extending duration on those assets, plans can reduce the volatility of their funded balance. This paper is the first in a series dealing with the endgame of such efforts, the issues a DB plan faces when it attempts to reduce risk to an absolute minimum.

Calling this process “derisking” is a bit of a misnomer. It is impossible to remove all risk from a pension plan, as actuarial risk will always be in play (unless it transfers the plan to an insurance company). Also, even the most finely engineered fixed-income benchmarks will exhibit tracking error against liability valuations on the order of 250 basis points (bps) to 400 bps per year, reflecting non-hedgeable sensitivities to interest rates, credit spreads and credit risks. While such risk levels are orders of magnitude lower than those associated with allocations heavy in equities or alternative assets, they are clearly not zero.

We pointed out in a previous white paper that as a DB plan’s risks are reduced, the return/risk tradeoff facing it becomes ever more perverse.<sup>1</sup> It needs to forego successively larger levels of expected return for each successive reduction in funded-balance volatility it seeks. This is due to the fact that efficient frontiers become vertical at the point of minimum risk. We have also pointed out that the process of precisely matching asset benchmark to liability valuation does not make a lot of sense for plans that are willing to tolerate substantial amounts of risk<sup>2</sup> “Don’t Sweat the Small Stuff” is a good motto for plans that are not derisking.

These principles are in play even for plans that are attempting to reduce risk to a minimum. As complete derisking is impossible, any DB plan sponsor will eventually have to come to grips with the tradeoff between return and risk and find some livable compromise. It will have to carefully evaluate whether some of the more arduous risk-reduction efforts it pursues are worth the effort.

There are three main aspects of the derisking process that will be discussed in this series:

- 1) the choice of liability valuation funding target: Projected Benefit Obligation (PBO) versus Accumulated Benefit Obligation (ABO),
- 2) the selection of an asset benchmark, and
- 3) the choice of an asset allocation.

Each of these tasks involves factors specific to a particular plan, so the answers are definitely not one-size-fits-all, and plan sponsors intent on derisking should address each of these tasks in turn.

This paper tackles the issue of liability valuation target selection and the more general topic of accounting procedures. Of the three derisking aspects listed above, this is the one for which the results are most general across plans, but it is also the case that these more uniform results may appear distasteful to some sponsors.

We argue that it is most consistent with derisking principles to adopt accounting procedures that conservatively state a plan's liability valuation. While such practices give the *appearance* of a lower funded status, they better inform plan administrators as to the steps needed to address the plan's long-run financial integrity. Furthermore, accounting procedures that reduce the current liability valuation inevitably raise the rate of return at which that valuation grows over time, in which case plan administrators may be pushed toward riskier asset allocations in order to preserve or improve upon that funded status.

More specifically, choosing to target the ABO rather than the PBO cannot change the benefits the plan will eventually have to pay and so cannot truly reduce cash contributions. It can only delay them. Eventually, necessary contributions under an ABO target path will be higher than if the plan had funded to a PBO target all along, even while funded status will be forever lower. Plans funding to an ABO target will ultimately be faced with the grim choice of either hard-freezing<sup>3</sup> or raising contributions yet higher.

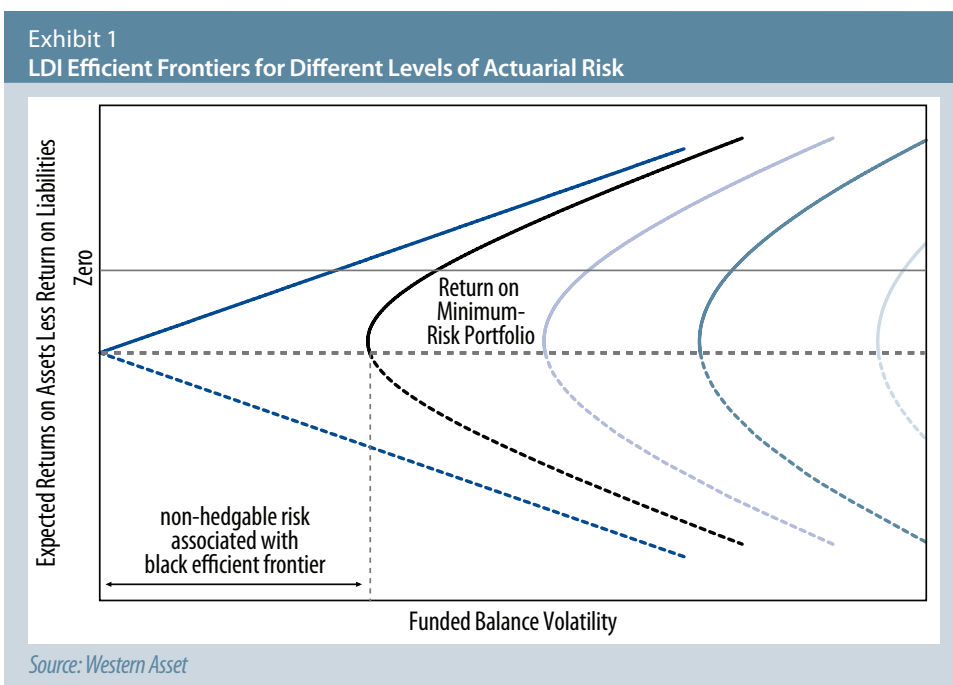
So long as a plan is not hard-frozen, its eventual obligations are most accurately described by its PBO.<sup>4</sup> Funding to an ABO target essentially ignores costs that eventually will have to be addressed. Also, it instills greater volatility in required cash contributions. As these results are inconsistent with a serious derisking program, an ABO target should be chosen only by plans that are willing to pursue an aggressive (risky) asset allocation or that intend to hard-freeze imminently. Also, funding to an ABO target foregoes tax advantages that contributions afford under current law.

If plan administrators could manage to the economics of their plan regardless of the accounting regime, they could effectively derisk even while enjoying the better initial appearance that various accounting tactics provide. The question is whether the human beings involved can indeed keep a blind eye to funded status as reported under some accounting practices and focus instead on the plans' economics.

### How Actuarial Risks Can Affect the Return/Risk Tradeoff

The impact of actuarial risks can be seen through a set of standard liability-driven investment (LDI) efficient frontiers, as in Exhibit 1. All the frontiers shown are based on the same systematic behaviors of assets and liability valuations. The only change across these frontiers is the amount of actuarial risk and other non-hedgeable (non-systematic) risks that are assumed.<sup>5</sup>

If actuarial risks did not exist and liabilities could be perfectly hedged with available assets, the efficient frontier would be linear (the blue line), and a full hedge could reduce funded-balance volatility to zero. As actuarial and other non-hedgeable risks are introduced, the efficient frontier becomes curved and thus vertical at the point of minimum funded-balance volatility. In other words,



ever-larger reductions in expected return are required for each incremental reduction in risk. The larger the non-systematic risks, the more concave the efficient frontier, and so the faster the deterioration in the return/risk tradeoff as risk is reduced.

This is one reason that derisking may not be appropriate for a young plan, one where most beneficiaries are far from retirement age. The younger a plan's beneficiaries, the more uncertainty there is about their ultimate ages at retirement or separation, their life expectancy at point of retirement and their earnings levels at point of retirement. The larger the actuarial risks, the more perverse the tradeoff between risk and return becomes, and so the more likely the plan would be to choose a somewhat aggressive asset allocation rather than derisking.

Another noteworthy aspect of Exhibit 1 is that at the point of minimum risk, the expected return on plan liabilities is almost sure to exceed that on assets, so that the net return on funded balance is negative. The second paper in this series will deal with this feature.

### Choice of Liability Valuation Target: ABO Versus PBO

A DB pension provides beneficiaries an annuity for which payments are specified percentages of their earnings, with those percentages based on lengths of service (service credits earned). Federal Accounting Standard Board (FASB) protocols require plans to evaluate those benefits based on the expected earnings *at points of retirement* for each beneficiary, as that is the basis on which payments will be made unless the plan is hard-frozen at some prior point. This results in the Projected Benefit Obligation, or PBO. Federal ERISA law, as most recently updated in the Pension Protection Act (PPA) of 2006, specifies evaluating benefit costs based on workers' *current* earnings, equivalent to the Accumulated Benefit Obligation, or ABO.<sup>6</sup> The plan sponsor could at any time hard-freeze the plan, in which case it would be contractually liable only for benefits as specified by the ABO.

Because the ABO will be less than the PBO, funded status will appear better on an ABO basis than on a PBO basis. Sponsors who are intent on derisking but are funding to an ABO target would then likely make lower initial cash contributions to the plan than if they were funding to a PBO target, and this is a major attraction of ABO targeting. We'll show here that these benefits are illusory.

If a plan is to be kept open and if we momentarily ignore the avenue of more aggressive asset returns, then the current PBO funded balance shows the present value of all future contributions the plan will have to make, regardless of what liability valuation target it funds to. If the plan is underfunded by \$500 million, then future contributions must sum to \$500 million in present value.<sup>7</sup>

Since the aggregate present value of contributions does not depend on choice of funding target, lower contributions initially must mean higher contributions later. Furthermore, those future contributions must be higher by an amount whose present value is equal to the postponed contributions. In other words, assuming, say, a 5% return on assets, reducing contributions by \$10 million today necessitates contributing an extra \$12.8 million in five years or \$16.3 million in 10 years and so on. Again, funding to an ABO target does not reduce contributions. It only delays and magnifies them.

Confronted with this fact, a plan sponsor might say, "Okay, we'll just stick with the ABO target indefinitely and not try to catch up later so that we can keep our contributions lower." However, even when the plan sticks to an ABO target indefinitely, it still ends up very soon having to make higher contributions than it would had it held to a PBO target all along.

If the plan funds to its PBO, the sustainable contribution level would be its *service cost*.<sup>8</sup> Actual contributions would converge to this level as the plan approaches full funding. For a plan funding to its ABO, the minimum sustainable contribution under ERISA rules would be its *normal cost*: service cost evaluated at current earnings levels plus annual adjustments for earnings changes.

This adjustment for earnings growth is the main difference arising between ABO and PBO accounting. PBO calculations already allow for expected future earnings growth within present valuations, so they do not exhibit regular earnings increments. Service costs under ERISA rules will be lower than under FASB protocols, because they are based on current rather than future earnings.<sup>9</sup> However, as is shown in the Appendix, for all but a few very young plans, normal costs will exceed PBO service costs, in which case sustainable contributions will be higher under an ABO target.

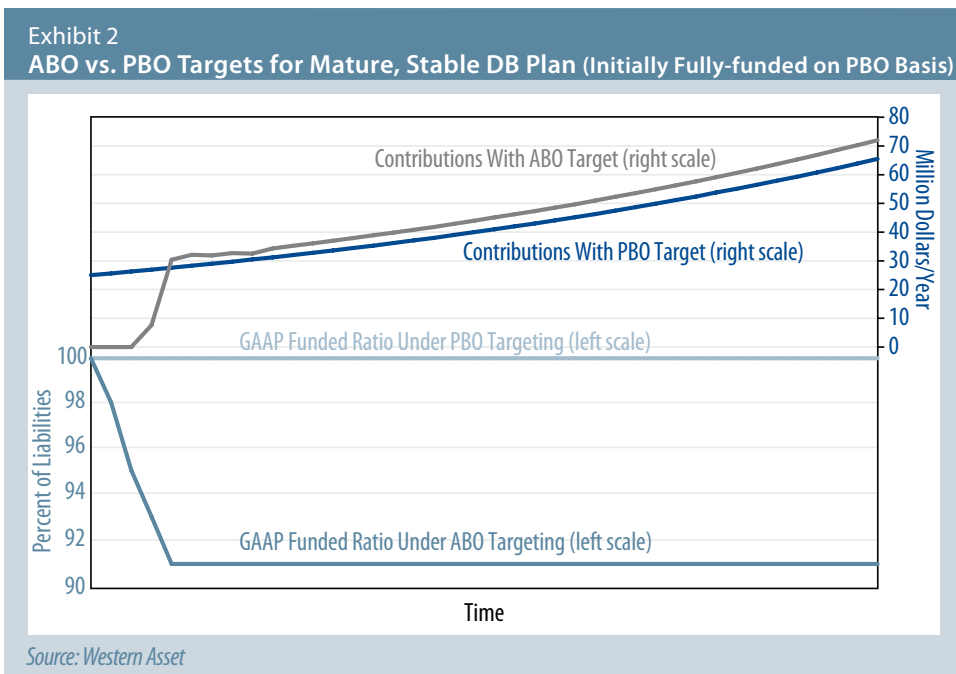
*Contributions are initially lower under an ABO target only because that valuation gives the appearance of a better funded status and so allows a brief “funding holiday”* relative to what would be contributed under a PBO target. Once this appearance of a better funded status is worn away and contributions revert to sustainable levels (normal costs under an ABO regime, service costs under a PBO), contributions will actually be higher under the ABO target and will remain so forever.

Meanwhile, those higher eventual contributions under the ABO target will not be able to close the funding gap between the two target paths, since under the ABO target the plan is making only the minimum sustainable contribution. Eventually, with the plan underfunded on a PBO basis, it will have either to hard-freeze or make substantially higher contributions to achieve full funding relative to the PBO.

The following charts illustrate this point for plans with different demographic conditions. The relevant demographic differences are whether the plan is aging, stable or greening and whether it is young or mature. A plan is said to be aging when the average age of beneficiaries is rising over time, greening when the average age is falling and stable when the average age is steady. In

the US at present, most plans are mature and aging. These demographic differences affect the relative size of the ABO versus the PBO and that of service costs versus benefits, but they don't change the finding that funding to an ABO target generally provides only temporary and illusory benefits.

Exhibit 2 illustrates stylized dynamics for a mature, stable plan that is initially 100% PBO funded and therefore overfunded on an ABO basis. Since it is initially fully funded on a PBO basis, the plan can sustain that status by making annual contributions equal to service costs. These rise steadily over time, as workers' earnings increase. Funded status remains at 100%. Because the plan is initially overfunded on an ABO



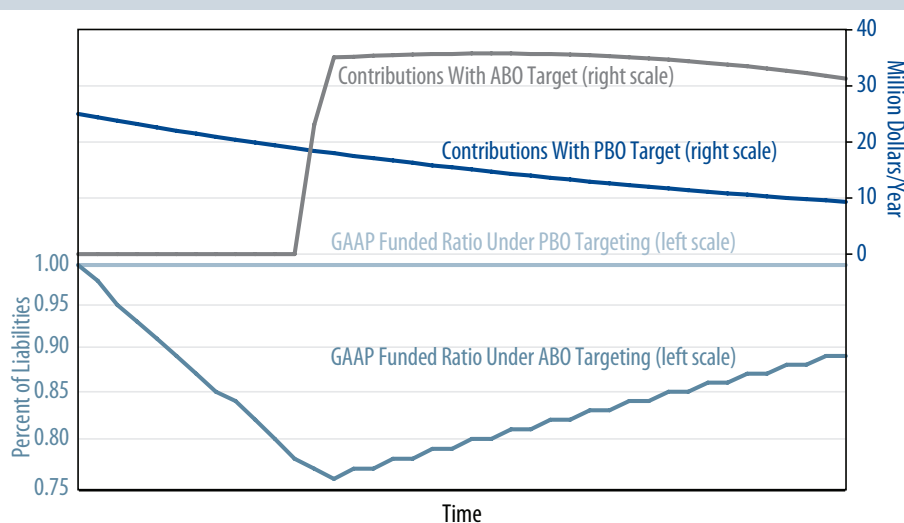
basis, funding to an ABO target allows it to take a funding holiday until the reported surplus is exhausted, at which point minimum contributions jump to normal costs. At all points thereafter, minimum contributions under that ABO target will exceed what the plan would be contributing had it funded to the PBO target. Even though contributions under the ABO target eventually exceed those under the PBO target, they are not large enough to close the gap in funded status between the two paths. Therefore, the plan ultimately will have to choose between hard-freezing or increasing contributions yet further.

Our assumption that the plan is initially fully funded on a PBO basis does not substantively affect these results. If the plan were less well funded, initial contributions under a PBO path would be higher, and under an ABO target either the funding holiday would be shorter or some initial contributions would be required. Eventually, the plan would approach full funding under the PBO target path, while any apparent surplus on an ABO basis would be exhausted under the ABO target path. The contributions and funded statuses on both paths would then converge to those in Exhibit 2.

Exhibit 3 illustrates stylized dynamics for a young, aging plan that is initially fully funded on a PBO basis. While the younger plan features larger differences between ABO and PBO liability valuations and service costs, the annual earnings adjustments for the younger plan imply more substantive boosts to normal costs. So here again, normal costs exceed PBO service costs, and the sustainable level of contributions under an ABO target path is much larger than that under a PBO target path. Here, too, initially full funding on a PBO basis means overfunding on an ABO basis. So under an ABO target, the plan could take a funding holiday until that reported surplus is worked off, at which point contributions would far exceed those that would be necessary had the plan followed a PBO target.

Because the plan is aging, the ABO is rising faster than the PBO, and so the gap in funded status between the two target paths is partially closed. This comes only at the cost of much larger eventual contributions under the ABO target. As long as the plan is not hard-frozen, the ABO will remain below the PBO, and the plan eventually will have to choose between a hard-freeze and yet-higher contributions.

Exhibit 3  
ABO vs. PBO Targets for Young, Aging DB Plan (Initially Fully-funded on PBO Basis)



Source: Western Asset

Here again, the contours of these paths depend only slightly on the initial funded status. With a lower initial funded status, initial contributions under the PBO target would be larger, while under the ABO target, either the funding holiday would be shorter or some initial contributions would be necessary. As the effects of those initial conditions wore off, contributions under both paths would approach their sustainable levels, and both contribution and funded status paths would converge to those in Exhibit 3.

As explained in the Appendix, much the same contours hold for plans with different demographic features. Normal costs could be expected to fall below PBO service costs only for a very young plan that is

getting younger. New, younger beneficiaries would have to be joining the plan in such large numbers that average age of beneficiaries would be declining, with retirees a small and declining share of total beneficiaries. For such a plan, the sustainable level of contributions would be lower under an ABO path for quite some time. However, such plans are rare, and derisking would not be an advisable strategy for them anyway.

As stated at the outset, choosing the ABO target cannot reduce needed contributions but only delay them, so it is inevitable that plans following an ABO target will eventually be saddled with larger contributions than if they had followed a PBO target (unless a hard freeze is imposed in the interim). The only question is how much higher those contributions will be and how soon they will kick in.

The contribution paths in the charts are more volatile under ABO targets than those under PBO targets. This is not a matter of risk per se, as these results are perfectly predictable. However, real-world sponsors could well have a harder time coping with the sudden jumps in contributions that result from an ABO target, even if they were warned about these disruptions ahead of time.

Tax considerations are also in play. Federal law since the PPA allows plan contributions to be deducted from taxable income up to the point of 150% (ABO-based) funding. Under FASB accounting protocols, pension charges against operating earnings come from interest and service costs, not from contributions. Therefore, for any plan less than 150% funded, *cash contributions lower tax liabilities without lowering reported earnings*, thus raising both after-tax earnings and shareholders' equity. So, even the temporary benefits of conserving cash via an ABO target are substantially offset by increased tax liabilities. Furthermore, returns on pension assets accrue free of tax liability, while returns on corporate cash are fully taxable. On both counts, funding to an ABO target leaves potential tax benefits untapped.

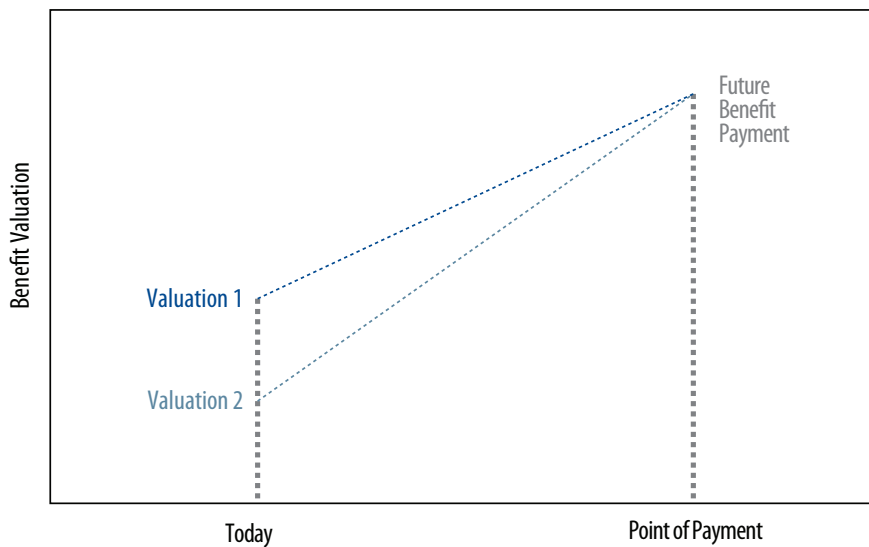
Our examples above assume no actuarial shocks and surprises on asset returns. As funding to an ABO target results in lower funded status, it leaves a plan even more vulnerable to downside actuarial shocks or downside surprises on asset returns. On the flip side, funding to the ABO target allows the plan to benefit more substantially from favorable surprises on actuarial shocks and asset returns. An ABO target could be fine for a plan intent on pursuing aggressive allocations and wanting to benefit fully from that strategy. Our focus in this paper is on plans intent on derisking, and under such a program, the examples shown here are relevant. Plans intent on derisking are also more likely to be averse to the upside and downside surprises that an ABO target leaves the plan more susceptible to.

### The Hard Facts Of Pension Accounting

The results above concerning choice of funding target are true of pension accounting tactics in general. Procedures that work to improve reported funded status today tend to push a plan toward riskier allocations, so a plan intent on derisking would be well advised to avoid such tactics.

As stated earlier, plan strategies have no effect on ultimate benefit payments. Therefore, the lower the present valuation of those benefits, the faster the valuation will grow over time (as in Exhibit 4), and so the harder it will be for any specific asset allocation to keep pace or catch up to that valuation. Funding to an ABO target, seeking a higher discount rate or utilizing other such procedures can improve present funded status, but these methods do not improve the ability of the plan to meet its obligations.

Exhibit 4  
The Lower the Present Valuation of a Future Payment, the Faster It Must Grow Over Time



Source: Western Asset

While the various accounting procedures cannot improve performance, they may encourage administrators to delay actions that address long-run efficacy. A plan serious about derisking would do well to avoid such techniques and to pursue an accounting regime that is as conservative as possible.

### Conclusions

A serious derisking strategy involves a number of issues that a plan must successfully negotiate. These are not insurmountable obstacles, but they do require careful handling. From the outset, the plan should be aware that even the most assiduous derisking effort will not result in a turnkey solution. Even the most carefully run DB plan will require ongoing attention and cash infusions.

The first step in the derisking process is adopting accounting procedures that fully and accurately assess the tasks at hand and avoid procedures that are aimed only at making funded status *appear* better on paper. To this end, plan administrators should be aware that choosing an ABO funding target will be effective only if they intend to hard-freeze the plan very soon. For plans that are intended to be left open indefinitely, choosing an ABO target can only postpone contributions, not reduce them. By encouraging administrators to postpone necessary actions, the ABO target could result in more headaches down the road, while also foregoing tax benefits. Much the same can be said of other accounting maneuvers, such as seeking the highest discount rate possible.

Once an appropriate accounting regime and liability valuation target are chosen, the next steps in the derisking process are selecting a benchmark for plan assets and allocating actual assets, including deciding on active versus passive mandates. We deal with these issues in a second paper in this series.

### Appendix: When will ABO-mandated contributions eventually exceed those under a PBO mandate?

We show here that for almost any DB plan, normal costs under ERISA/PPA rules will exceed PBO-based (or GAAP) service costs. In this case, the minimum sustainable cash contributions under an ABO funding target will exceed those under a PBO target, so the lower contributions afforded by an ABO target will be temporary, while the resultingly weaker funded status will be permanent.

As stated in the text, normal costs include service costs, based on workers' current earnings, plus an adjustment to the prior ABO for increases in workers' earnings. PBO-based service costs are based on workers' expected point-of-retirement earnings. So, our assertion implies that for most real-world plans, annual earnings adjustments are greater than the difference between PBO- and ABO-based service costs.

Note that altering plan demographics induces offsetting changes in this relationship. The younger the plan, the bigger the difference between PBO- and ABO-based service costs, but the larger the relative size of annual earnings adjustments, as more workers are active and so the adjustments affect more of the ABO. The analysis here casts the comparison between normal costs and PBO service costs (hereafter referred to as just service costs) in terms of general pension plan demographics.

First, the reader might be wondering why we don't instead consult plans' public reports for data on normal costs versus service costs. While service costs are a standard feature in corporate plans' 10-K and annual reports, normal costs are part of ERISA compliance and as such are not publicly reported. Later on in this Appendix, we utilize the following results to draw inferences from plan data that are generally available.

Some notation is in order. Let IC be the interest costs of the plan, and as those interest costs will be different under ABO and PBO targets (because the discount method is applied to different benefit streams), designate  $IC_{ABO}$  and  $IC_{PBO}$  as the interest costs under the respective targets. Similarly, designate  $SC_{ABO}$  and  $SC_{PBO}$  as the service costs under the respective targets (different because newly earned service credits are evaluated using different levels of beneficiaries' earnings). Let BEN be the benefits paid in the current year, and let ADJ be the adjustment to the ABO due to changes in workers' earnings.

(If earnings increase only as much as previously expected, there is no effect on the PBO, because those expected earnings increases were already included in previous PBO calculations. If earnings increase by an amount different from actuaries' expectations, then this is an actuarial "event" that is handled differently from the accounting items used here. As pointed out in the text, the possibility of such actuarial events does not provide any rationale for an ABO target, so the abstraction from them here is in order.)

Finally, let  $\rho$  be the ratio of ABO to PBO. Since both the ABO and the PBO presumably use the same discount methods, not only is  $\rho = ABO/PBO$ , but also  $\rho = IC_{ABO}/IC_{PBO}$ . Abstracting from actuarial events, the percent change in the PBO in a given year is

$$(1) \quad \Delta PBO/PBO = (IC_{PBO} + SC_{PBO} - BEN)/PBO,$$

and the percent change in the ABO is

$$(2) \quad \Delta ABO/ABO = (IC_{ABO} + SC_{ABO} + ADJ - BEN)/ABO = (\rho \cdot IC_{PBO} + SC_{ABO} + ADJ - BEN)/\rho \cdot PBO.$$

Upon multiplying the right sides of (1) and (2) by PBO, subtracting  $IC_{PBO}$  from both, and simplifying,

$$(3) \quad \Delta ABO/ABO \geq < \Delta PBO/PBO \quad \text{as} \quad SC_{ABO} + ADJ \geq < \rho \cdot SC_{PBO} + (1 - \rho) \cdot BEN.$$

The last term in (3) is equivalent to  $SC_{PBO} + (1 - \rho) \cdot (BEN - SC_{PBO})$ .  $SC_{ABO} + ADJ$  is merely normal costs as we have defined them, and  $SC_{PBO}$  is our designation for service costs. So (3) implies that

$$(4) \quad \text{NORMAL COST} \geq < \text{SERVICE COST} + (1 - \rho) \cdot (BEN - SC_{PBO}) \quad \text{as} \quad \Delta ABO/ABO \geq < \Delta PBO/PBO.$$

ABO will grow faster than, at the same rate as, or slower than PBO as the plan is aging, stable or greening. Benefits will be greater than service costs for mature plans and lower for very young plans. We have converted the comparison of normal costs and service costs into a comparison of the relative growth rates of PBOs and ABOs and of relative sizes of benefits and service costs, thus into an analysis of plans' demographic features.

If the plan is stable, then the percent changes in ABO and PBO are about equal, so that normal costs will exceed service costs whenever benefits exceed service costs. For aging plans, ABO will be growing faster than PBO, and so normal costs exceed the sum of the terms on the right side of the first inequality in (4). That sum of terms will exceed service costs as long as benefits exceed service costs. In other words, for aging plans, normal costs will fall below service costs only if benefits are very small relative to service costs and if the ratio of ABO to PBO,  $\rho$ , is very small. Both of these magnitudes have to be such as to make  $(1 - \rho) \cdot (BEN - SC_{PBO})$  sufficiently negative relative to service costs. For a plan that is greening, the percent change in ABO is likely to be less than that in PBO, so normal costs are less than the sum of terms in (4). Even in that case, normal costs would still exceed service costs if benefit payments were sufficiently large, so only for young, greening plans are normal costs likely to be less than service costs.

We surveyed the 10-K reports of companies in the Dow Jones Industrial Index. Of those 30, 25 had a DB plan in place at the end of 2009. Of those, 24 showed 2009 benefits in excess of service costs. Only Intel showed benefit payments less than service costs in 2009, and only a handful of other companies showed benefit payments less than service costs in any of the last five years. Of those, only Johnson & Johnson showed service costs exceeding benefit payments for most of the last five years. Add in the presumption that all of these plans are likely experiencing aging demographics, and it is almost surely the case that all of them have normal costs greater than service costs, in which case ABO targets would provide them only brief relief on annual contributions. Any real-world corporate plan can make its own assessment of this issue by directly comparing its normal costs and service costs.



## Footnotes

- <sup>1</sup> See Western Asset, “*Active Liability-Driven Investing and Pension Management*,” April 2006, available on our website.
- <sup>2</sup> See, for example, Western Asset, “*Engineering LDI: Circumspect Pension Planning*,” April 2008, available on our website.
- <sup>3</sup> Hard-freezing is a particular state a plan reaches as its sponsors seek to terminate it. **Open** plans are those that admit new beneficiaries and for which existing beneficiaries continue to earn service credits, with benefit payments based on earnings at point of retirement. There are three stages to freezing a plan. A plan is **closed** when no new beneficiaries are admitted. A plan is **soft frozen** when it is closed and when existing beneficiaries no longer accrue service credits (that raise their pension benefits as a fraction of their earnings). A plan is **hard-frozen** when it is closed, when existing beneficiaries’ benefits are no longer accruing service credits, and when benefits are based on current or past earnings levels, rather than earnings at the point of retirement.
- <sup>4</sup> We are referring to benefits that have already been granted and not including benefits yet to be earned. For a hard-frozen plan, ABO and PBO are equal. For any other plan status, PBO will exceed ABO, and the issues discussed in this paper will be relevant.
- <sup>5</sup> Actuarial risks arise from uncertainty as to dates-of-retirement and lengths-of-retirement for plan beneficiaries, uncertainty as to the path of beneficiaries’ future earnings levels, and other factors. These are generally assumed to be nonsystematic and so not hedgeable. Similarly, some interest sensitivities of the liability valuation will not be hedgeable using available fixed-income tools, as will be discussed in Part 2.
- <sup>6</sup> To be exact, federal law specifies a unit credit valuation method of liability valuation, and it refers to “accrued” benefits, rather than accumulated benefits. The ABO as defined in the text was actually specified as part of FAS 87 protocols, which were since superseded by FAS 158. As a practical matter, however, the funding target prescribed by federal mandates is equivalent to an ABO. It is certainly the case that liability valuation under federal rules provides a valuation less than that of the PBO.
- <sup>7</sup> The statements in this paragraph strictly apply only to the valuation of credits/benefits that have **already** been earned, as that is what the ABO and PBO measure. As additional service credits are earned, this necessitates contributions in addition to those indicated by the present PBO funded status. However, these additional liabilities accrue regardless of whether the plan funds to an ABO or PBO target, and they don’t affect the exigencies the plan faces in choosing between an ABO and PBO target. The analysis in the text certainly takes accounts of subsequently earned service credits, as these are the main drivers of the sustainable levels of contributions that the plan must make under the different funding targets.
- <sup>8</sup> The following is a very brief definition of terms for those not familiar with pension cost accounting terminology. As time passes, the present value of future DB payments will rise, because these payments are less distant. These increases in value are the **interest costs** of the plan. A non-frozen plan will see liabilities increase as workers earn further service credits. The present valuation of the new service credits earned is known as the **service costs** of the plan. Service costs will be different under ABO and PBO accounting regimes because different earnings levels are used to evaluate the newly earned credits. **Benefit payments** reduce assets and liabilities equally. Changes in the liability valuation due to changes in the benefit formulae are known as **prior service costs**. As these are fully at the discretion of the plan sponsor, we abstract from them in the discussion in the text. All other sources of change in the PBO are accounted as **actuarial changes**. ABOs will also change as workers’ earnings levels rise. This accretion is added to service cost to determine **normal costs** of the plan, and these constitute minimum legal contributions when a plan is exactly fully funded on ERISA (ABO) bases.
- <sup>9</sup> Actually, ERISA law does not specifically separate out what we call ABO service costs and adjustments for earnings changes. Both changes are merely subsumed within the normal cost designation. We use the term here in order to better analyze the difference between PBO service costs (or, more properly, service costs) and normal costs, the former including only the value of new service credits earned and evaluated at expected retirement earnings and the latter consisting of both the value of new service credits evaluated at current earnings levels and an adjustment to past credit valuations based on the observed increase in earnings levels.

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