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What the New Mortality Tables Mean to Your Defined-Benefit Plan

Executive Summary

- Coming changes to actuarial mortality tables will raise a typical DB plan's liability valuation by something in the neighborhood of 6%–8%.
- Since mortality rates will drop most sharply for older beneficiaries, the duration of plans' liabilities will increase, especially the key-rate-durations of long-dated cash flows.
- While plans' natural inclination to the changed mortality rates would be to shift to more aggressive asset allocations, they might do well to rethink this response, given the heightened risks associated with such action, thanks to the higher durations of liabilities.
- An alternative response would be to increase cash contributions, possibly even increasing plan assets' duration.
- The appropriate combination of increased cash contributions and changes in asset allocation will depend on each plan's assessment of its own unique features and appetite for risk.

A Defined-Benefit (DB) pension plan's obligations to its beneficiaries are estimated by applying assumed mortality rates to the plan's census of beneficiaries, both active and retired. As one would guess, the longer beneficiaries can be expected to survive and collect benefits, the larger will be the liabilities of the plan, and, so, the lower the funded status. The American Society of Actuaries (SOA) has announced that it will introduce new mortality projections this year and that these projections will result in longer projected life expectancies for most cohorts. We analyze here the effects of those changes and discuss strategies plan sponsors might take to cope with the coming changes.

Scales RP-2000, AA, and BB Giving Way to MP-2014 and RP-2014. Life expectancy has been steadily increasing in the US over the last century, so much so that mortality tables based on past experience can be expected to overstate future mortality rates and thus understate future longevity. As this has been the case for some time, the SOA has taken to publish mortality improvement tables, tables that prompt actuaries to determine how much they should reduce projected mortality rates below what is indicated by existing mortality tables proper. Presently, the SOA members utilize RP-2000 mortality tables, enhanced with mortality improvement rates known as Scale AA.

In 2012, the SOA announced the intention to shift to a Scale BB that featured even faster improvements in mortality than did Scale AA¹. In announcements early this year, it further upgraded Scale BB to an enhanced improvement scale called MP-2014, and it also introduced new, base mortality tables RP-2014². When both these tools are fully implemented by actuaries, assumed mortality rates will be much lower than previously, resulting in substantial increases in DB liability valuations and similar declines in funded status.

That's not all. As it happens, most of the coming decline in mortality rates will be for very old beneficiaries. That is, while projected mortality rates for young workers will be only slightly different, those for older workers and for retired "annuitants" will be more significantly higher. And even more importantly, mortality rates will be assumed to decline even more rapidly in the future, so that life expectancy for a person who will be, say, 85 in 2025, will increase even more than that for someone who is 85 today.

Higher Liability Valuations and Lower Funded Status.

Exhibit 1 shows the change in the present value of estimated lifetime pension benefits occurring under RP-2014 and MP-2014 for male beneficiaries of various

Exhibit 1
Percent Change in Due Value of Annuity
for Male Beneficiaries by Current Age*

Age of Beneficiary	Change in Annuity (%)
25	2.50
35	2.70
45	2.80
55	3.00
65	4.40
75	10.50
85	17.40

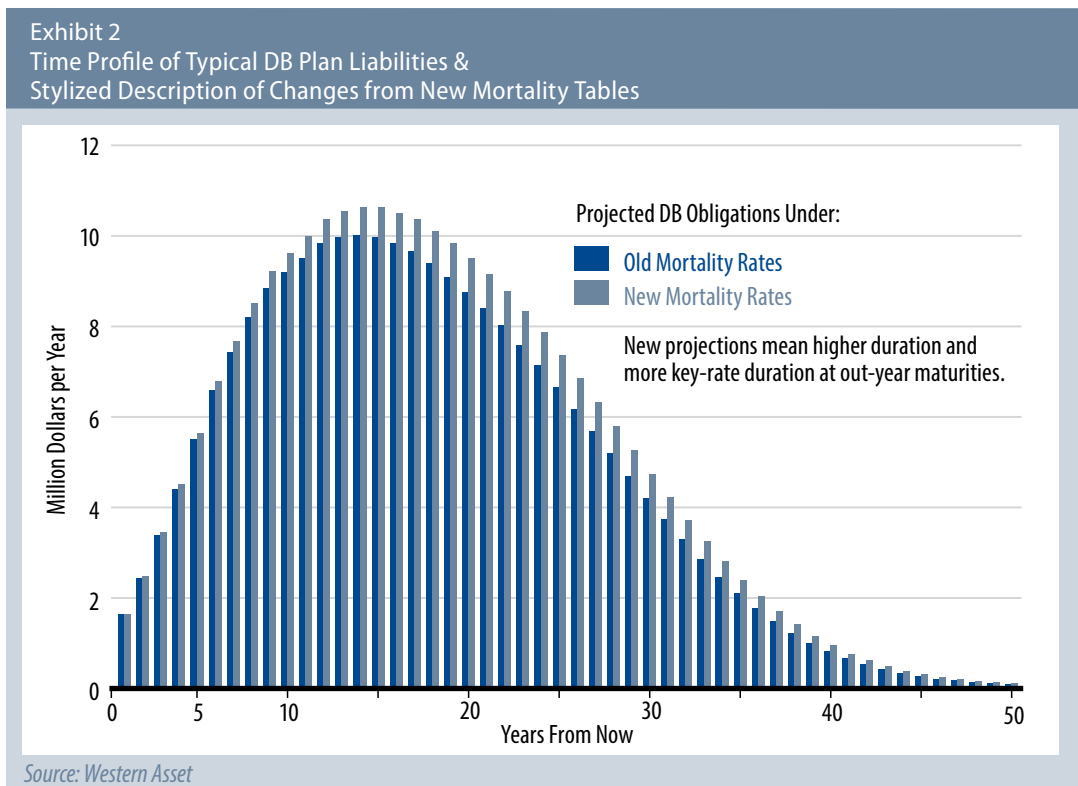
*Shown are estimated effects of change from RP-2000 with scale AA to RP-2014 with scale MP=2014
Source: Society of Actuaries (2014-1) Table 1.1 etc.

1 See Society of Actuaries (2012) "Mortality Improvement Scale BB Report," and Society of Actuaries (2013) "Questions and Answers Regarding Mortality Improvement Scale BB."
2 Society of Actuaries (2014-1) "Exposure Draft RP-2014 Mortality Tables" and Society of Actuaries (2014-2) "Exposure Draft Mortality Improvement Scale MP-2014."

ages. As you can see, the gains are dramatically larger for beneficiaries 75 years of age and older, and the increases will be even larger for individuals joining these cohorts in future years.

It is obvious that these changes will increase actuaries' estimates of DB plans' future benefit payments and so increase liability valuations. While exact changes will depend on the demographics (and openness/closedness) of a plan, advance estimates from the clients we have talked with mention increases in liability valuations on the order of 6% to 8%, and the SOA seems to concur with these estimates³.

Longer Duration of DB Plan Liabilities. What also seems clear, but possibly less obvious, from the impact of RP-2014 and MP-2014 is that the duration—sensitivity to interest rate changes—of these valuations will increase as well for Employee Retirement Income Security Act (ERISA) plans⁴. Since these changes affect older beneficiaries' life expectancy most substantially and since the effects are progressive over time, it is clear that estimates of out-year benefit payments for a plan will rise most noticeably. Exhibit 2 provides a stylized example of how a DB plan's estimated cash flows might change.



Since out-year flows can be expected to increase most noticeably, those out-year flows will comprise a larger percentage of the liability valuation, meaning a longer duration for that valuation. For exactly the same reason, the out-year flows will exhibit higher key-rate durations than was previously the case. In other words, under the new projections, DB liability valuations will be even more sensitive to interest rate changes than was previously the case, and they will be especially more sensitive to movements in long-term interest rates. Once again, how much duration and out-year key-rate durations change will depend on the maturity and openness of the plan, but some increase in both can be expected for any ERISA plan.

³ In Society of Actuaries (2012), P. 4, the SOA estimated that the switch from scale AA to scale BB would raise liability valuations by something like 2% to 4%. The estimates cited in the text include, in addition, the effects of the switch from RP-2000 to RP-2014 and from scale AA to MP-2014.

⁴ This is so since ERISA plans use corporate bond yields to evaluate benefit obligations. For public DB plans, the relevant discount rate is the expected rate of return on assets. As this rate need not be directly related to interest rate levels, public plans will not face increased liability duration per se, but their liabilities will be more sensitive to changes in return assumptions.

How Will Plans Respond? The aggressiveness of DB plans' asset allocations typically varies inversely with funded status. Given this inclination, it is understandable that plans might seek to ramp up asset return targets in response to the coming hit to funded status. Such a response is all the more understandable given the frustration plan sponsors will face having diligently worked to build funded statuses back up from recession lows, only to have actuarial revisions pull them back down again. However, when contemplating their response to the RP-2014 and MP-2014 changes, plans should keep in mind that these changes also increase the risks associated with aggressive asset allocations, because of the higher durations their liability valuations will now exhibit.

From a corporate strategic perspective, when some shock reduces corporate assets and shareholders' equity, it is not clear that a firm should seek a higher-risk business plan in response. The coming changes in mortality assumptions will effect a nearly identical type of hit to shareholders' equity for corporate DB plan sponsors. Here, too, it is not clear that a higher-risk business plan is the most advisable strategic response, and by the same reasoning, it is not clear that a higher-risk DB asset allocation is the most advisable response, especially given the increased risks now associated with such allocations.

An alternative response would be to increase planned contributions, and hedge liabilities more closely than before. After all, current accounting rules will allow the plan to amortize the extra liability valuation on its income statement over a long period of time⁵. The sponsor could choose to make annual contributions equal to the annual amortized amounts of the extra valuations expensed each year. While the valuation change induced by RP-2014 and MP-2014 will show up immediately on the balance sheet, the hit to operating income will be spread over time, and the associated contributions could be spread out as well.

Meanwhile, with the loss of funded status addressed through contributions, the plan could extend the duration of its assets to counter increased risks from the increased liability duration. It might even increase its allocation to fixed-income (hedge assets) in response to the increased riskiness of its liabilities.

This approach begs the question of how required contributions from the Pension Benefit Guaranty Corporation (PBGC) will change. Presumably, the actuarial changes induced by RP-2014 and MP-2014 will be embraced by the IRS and PBGC for corporate plans' funding purposes. However, historical precedent indicates that Congress could act to spread out over time the effects of these changes on plans' required contributions, just as it took similar action with the Pension Protection Act of 2006 and with the MAP-21 changes during the Great Recession. Looming increases in PBGC premia in 2016—both for per-capita premia and “penalty” premia for under-funding—would seem to make such a political fix of the mortality changes even more likely.

If Congress does indeed step in to smooth out the effects of reduced mortality assumptions, that would dovetail with the amortization of the effects on the sponsor's income statement and thus with a response focused on cash contributions and risk reduction. If no such fix is legislated, plans will have to contribute to fund the incurred gap over the seven-year amortization period mandated by the Pension Protection Act of 2006, rather than the more “forgiving” amortization allowed by the Financial Accounting Standards Board. Of course, in that event, plans would have to make such increased contributions regardless of their asset allocation, unless funded status could be brought back to previous levels in just a few years. So even here, a more aggressive asset allocation would be helpful only if it bore fruit very quickly.

⁵ Under the current combination of FAS 87 and FAS 158, changes in actuarial assumptions such as those due to RP-2014 and MP-2014 have full, immediate impact on the plan sponsor's balance sheet. However, the impact on the income statement is amortized over a period equal to the average life expectancy of beneficiaries. Since scales RP-2014 and MP-2014 will increase average life expectancies, they will actually lengthen the period over which the costs of their effects can be amortized.

Exhibit 3
Possible Responses to and Consequences of Effects of New Mortality Tables

Response	Effect on Funded Status	Effect on Plan Risks
No Action	Permanently Lower than Otherwise	Higher
More Aggressive Asset Allocation	Expected Redress of Effects	Yet Higher
Increased Contributions Alone	Certain Redress of Effects	Higher
Increased Contributions and Increased Fixed-Income Allocation	Certain Redress of Effects	Unchanged or Lower

Source: Western Asset

There is no painless, risk-free address of coming changes from RP-2014 and MP-2014. Exhibit 3 lays out the consequences of possible responses to coming mortality changes: no action, a more aggressive asset allocations, or stepped-up cash contributions. No action will lock in the lower funded status from the new mortality tables and also the higher risk levels associated with longer-duration liabilities.

More aggressive asset allocations can be expected to offset the hits to funded status, but only by incurring yet higher risks. Increased contributions alone can certainly offset the hits to funded status, but will not address the higher risks associated with longer duration liabilities. Combining increased contributions with increased allocations to fixed-income will offset the loss of funded status and can bring plan risk levels back down to or even below previous levels. In both of the last two cases, the costs are the sure and obvious drains on sponsors' cash flows, but the benefits are sure as well. Which path a sponsor takes will depend on its assessment of the risk tolerances of itself and its shareholders.

Resulting Changes in the Fixed-Income Market. As we and many others have remarked, corporate DB plans have stepped up efforts to derisk in recent years. With that change, long-duration products have become increasingly popular. Of course, long-duration, 30-year-or-longer-maturity swaps had already been widely used by DB plans for many years. Recently, demand has been focused among the longest-duration components of long-duration products.

Because it will serve to raise liabilities' duration, the introduction of RP-2014 and MP-2014 stands to accentuate these trends, thanks to their effects of increasing plans' durations. These effects may not be earth-shaking, but they are likely to be significant, given the 6% to 8% increases in liability valuations that are likely to occur as a result of the changes in mortality tables.

Conclusions. People are living longer. That is good news. Still, it provides an increased challenge to DB plans charged with funding that increased longevity. There is no way for a plan to avoid these increased costs. They could try to cover the increased costs via higher asset returns, but such a path will be even higher-risk in the future than it has been in the past.

Increased contributions are an alternative approach, a costly one certainly, but one sure to succeed, and current accounting protocols will allow these costs to be spread out over time, especially if Congress is accommodative. Furthermore, increased contributions could be augmented by increases in asset duration, which would address the increased risks from longer liability duration (and such risk-reduction efforts would now be even more effective than previously).

The implications of the new mortality tables echo and intensify the LDI themes we have previously stressed. Our advice in ["Don't Sweat the Small Stuff"](#) derives from the fact that DB liabilities are not perfectly hedgeable.

Available fixed-income instruments simply are unable to exactly hedge all the interest rate and spread risks of the liabilities. The possibility of actuarial “shocks” to liability valuations compounds this problem⁶. The new mortality rate projections are just an example of the types of actuarial changes that can emerge and confound a cash-flow-matching or key-rate-hedging strategy. Further such changes are bound to occur in the future.

Similarly, the increases in liability valuation induced by the mortality rate changes should remind the plan of the need for active management. Passive allocations cannot produce the returns necessary to keep up with liability valuations even when actuarial assumptions are stable, and they are all the more vital when actuarial assumptions are in flux⁷.

The new mortality tables present challenges to a DB plan that are formidable, but not insurmountable. Plan sponsors can deal with these changes through the combination of increased contributions and changes in asset allocation that make the most sense for them. As always, we believe simple LDI hedging strategies with plenty of capacity for active management will work best. We look forward to working with you to craft a solution that works for your plan.

⁶ For a more detailed account of these points, see [“Don’t Sweat the Small Stuff,”](#) a March 2014 white paper available on our website.

⁷ This issue is analyzed in detail in [“Effective LDI: Keeping Up With Your Liabilities,”](#) October 2013, available on our website.

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