

# Mortality Improvements and Pension Liabilities

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Although increasing life expectancy is widely recognized as a factor raising the cost of providing Social Security benefits, it is rarely mentioned in the United States as a cost factor in the decline of defined benefit pensions. In the United Kingdom, however, increasing longevity is thought to be one of the reasons why employers are ending defined benefit plans in favor of defined contribution plans (Pensions Policy Institute 2003). According to a British survey, the primary reasons for large numbers of employers terminating defined benefit pension plans are increased costs due to lower real investment returns and greater longevity (White 2003).

Over the short run, interest rates changes dominate mortality changes in their effect on pension liabilities. Over the long run, however, arguably the reverse is true. This difference between long-run and short-run effects may explain why actuaries and economists have not focused on the effects of increased life expectancy when discussing pension costs and pension funding.

The comparison between the effects of changes in interest rates and changes in life expectancy on pension liabilities depends on the time period examined. Since 1960 there has been a long-term increase and then decrease in nominal interest rates. Comparing the year 1965 to 2004, the rate of return on 10-year Treasury bonds was 4.3 percent in both years (Federal Reserve Board 2005). Thus, over this period, changes in interest rates had no net effect on pension liabilities. Over the nearly identical period 1965–2003, however, life expectancy for males in the U.S. population age 65 rose from 16.3 to 19.0 years, an increase of 16.6 percent (Social Security 2004).

The relative inflexibility of traditional defined benefit plans in dealing with life expectancy risk may be a reason why plan sponsors are terminating traditional defined benefit plans or converting them to cash balance plans. By comparison, in defined contribution plans, the cost and risk arising from changes in life expectancy are entirely borne by participants. In cash balance plans, when all participants take benefits as a lump sum, most of the life expectancy risk is borne by participants, but plan sponsors may bear a slight amount of cost and risk due to improvements in preretirement mortality leading to more people reaching retirement age. In traditional defined benefit plans, the increases in liabilities arising from improvements in life expectancy both in the preretirement period and in the retirement period are entirely borne by plan sponsors.

Several factors determine the magnitude of the effect of an increase in life expectancy on traditional defined benefit plan liabilities. The effect is larger in plans that provide postretirement cost-of-living (COLA) adjustments because the value of benefits received late in life is greater. The measured effect is less if an upward sloping

yield curve is used to evaluate pension liabilities. The improvement in life expectancy among higher-income persons, which is the population tending to have defined benefit plan coverage, has been greater than for the population as a whole (Diamond and Orszag 2004). A rough rule of thumb for a plan that does not provide a COLA and that uses a flat interest rate to evaluate pension liabilities is that over the past 50 years the increase in life expectancy has raised pension liabilities for male workers by 1 percent per year on average.<sup>1</sup>

Just as plans providing annuities can index their benefits to price inflation so that changes in price do not affect the real lifetime value of benefits, life expectancy indexing could achieve the same end. A couple of countries have introduced life expectancy indexing of benefits in their social security systems. Sweden's social security plan has largely shifted postretirement life expectancy risk to beneficiaries by indexing initial benefits to changes in life expectancy, with initial annual benefits falling when life expectancy increases. Finland will take into account life expectancy in calculating social security benefits starting in 2009. With this type of indexing, annuities still provide the insurance that a beneficiary will not outlive his or her benefits.

This shifting of risk in a defined benefit plan from the plan sponsor to participants is not permitted currently for private-sector defined benefit plans under the Employee Retirement Income Security Act of 1974 (ERISA) because it would violate the anticutback rule. The ERISA anticutback rule is based on annual benefit payments rather than lifetime benefit payments. An increase in life expectancy at the point of retirement raises expected lifetime benefits, so life expectancy indexing would cut back annual benefits but not lifetime benefits. This type of adjustment to increased life expectancy shifts both the cost and the financial risk associated with life expectancy changes from the plan sponsor to workers, and workers entirely bear the cost and risk associated with increases in life expectancy through reductions in annual benefits.

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<sup>1</sup> The assumptions are that a male worker retired at age 62 in 1950 or in 2000, there is no inflation indexing of benefits, and benefits are discounted at 4 percent.

## References

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