

indeed be the most realistic assumption; individual firms and plans may shrink or terminate, but the entire business sector, and pension funds in the aggregate, are likely to grow. Thus a lower funding percentage might be consistent with reasonable employee benefit protection. However, it would seem desirable to make this assumption explicit, and to prepare estimates on the alternative assumptions that the funding percentage will remain constant or even rise. These developments may not occur, but one should consider the possibility that they might, particularly in view of recent recommendations for earlier vesting and better protection of beneficiaries' expectations.²⁴

The assertion that a falling funding percentage is implied by all of Holland's estimates may be demonstrated as follows:

(1) With respect to those models in which the mean contributions per covered employee are level for 20 years, but in which the mean benefit paid rises, the funding percentage must eventually fall unless fund earnings rise in an offsetting fashion, or life expectancy at retirement declines, or vesting grows generally less liberal. It is not sufficient that fund earnings rise in absolute amount, but as a percent of fund principal as well. It can be shown that fund earnings have not risen sufficiently, but that observation is irrelevant here; it suffices to point out that Holland's calculations do not assume a rising investment return on pension funds. None of the other required developments have occurred, or are assumed in his model. Therefore, in Holland's constant contribution, rising benefit model, a falling funding percentage is implied.

(2) With respect to his alternative calculation in which contributions, benefits, and fund earnings rise at 4 percent (and which calculation produces the highest estimate of fund levels) the demonstration is a bit lengthier. My proposition holds, nonetheless; a falling funding percentage is implied. Let us approach the matter by considering a fully vested, fully funded pension system. There would then be for each worker a "fund" which would rise from zero, at entry into a pension plan, to a maximum at retirement. This maximum would be a fund sufficiently large to provide benefits (allowing for investment income on the declining balance), through the beneficiary's remaining life expectancy. If each age cohort contained the same number of covered workers (or beneficiaries), and if benefits remained the same, the average fund for covered workers (halfway buildup) would roughly equal the average fund per retired worker (halfway run-down). Shifting the population toward more beneficiaries and fewer workers does not, therefore, lower the required fund as long as the age distribution among the workers and retired remains approximately equal. In a growing population (with constant benefits) the mean fund per worker is smaller, since it is pulled down by the larger number of younger workers, and the mean fund per retired beneficiary is larger, since there are relatively more newly retired workers who have not run down their funds very far.

In a growing population with rising wage rates and benefits, the average worker's fund is larger, and the average retired person's fund smaller, than in the last example, since younger workers' funds reflect more recent higher wages and benefits. Nevertheless, and this is the crucial point, aggregate funds for *both* covered employees and

²⁴ Such recommendations are cited in footnote 6.