

The Actuarial Interest Rate as an Investment Objective

Richard O. Michaud, September 13, 1979

A pension plan's* actuarial interest rate assumption is frequently an important consideration in defining investment strategies and asset mixes. That the actuarial rate has absolutely no financial meaning or investment significance does not appear to be widely appreciated in the investment community. The rate's only usefulness is as a relatively limited decision variable for defining the plan's funding schedule.

A basic understanding of pension liabilities and the liability estimation process is useful in evaluating the role of the actuarial rate assumption in financial planning and investment management. The fundamental notion is that a pension plan's liabilities are determined by the promised benefits and not the actuarial estimation process. Actuarial liabilities are an estimate of the funds which are required at a given point in time, in order to consider the plan fully funded, given the actuary's assumptions. The plan's interest rate—the assumed geometric mean or growth rate of the assets over the life of the plan—is only one of many assumptions required by the actuary to estimate plan liabilities and define sponsor contributions.

The actuarial rate can be used to control, in a limited fashion, scheduled plan contributions over time. If the rate is increased, required contributions will decrease, since the actuary has assumed an increase in funds received from invested capital. Depending on its financial status, the firm may want to use the actuarial rate assumption to exercise, to the extent possible, its option to "pay now" versus "pay later."

Of course, a change in the actuarial rate does not affect the actual return on investment nor the actual value of promised benefits.

The irrelevance of the actuarial rate as a meaningful investment objective follows from the simple fact that it is independent of the asset level required to fund promised benefits. In operational terms, the principle can be illustrated by considering an increase in the actuarial rate while all other factors remain constant. In this case, the actuary's estimate of "normal" or "scheduled" contributions will be decreased. However, the new actuarial rate will result in a decrease of investment experience gain (or increase in investment experience loss) and will imply an increase in the component of

* Our discussion is directed towards defined benefit pension plans.

plan contributions related to investment experience. The net effect of a decrease in "normal" contributions and an increase in the investment experience component of contributions due to a change in the actuarial rate is unlikely to balance out on a period-by-period basis. The adjustment process is tangled in the amortization period of investment experience gains and losses mandated under the Employee Retirement Income Security Act (ERISA) and the actuarial estimation of normal funding levels over time. Nevertheless, the cumulative impact of changes in the actuarial rate is ultimately and fundamentally independent of the assumptions in the estimation process.

Defining an asset mix to meet an actuarial rate may conflict with the sponsor's and the manager's basic responsibility under ERISA, to manage pension funds for the sole benefit of the beneficiaries. The issue of benefit improvements highlights the problem of the implications of inefficient money management on the welfare of plan beneficiaries. Plan sponsors often anticipate that benefit improvements will occur during the normal course of plan sponsorship. Often low actuarial rates are assumed so that the sponsor will overfund the plan now in order to cushion the impact of anticipated benefit improvements on plan contributions in the future. An investment manager who slavishly uses the actuarial rate to structure the plan's asset mix is likely to assume an inappropriately low level of risk that may lead to the sponsor's inability to support planned benefit improvements.

Another important consequence of the attention placed on meeting the actuarial rate has been an increase in the popularity of Guaranteed Income Contracts (GICs) and fixed income securities. The current interest in these securities is due less to their low risk level than to the fact that they have been a superior investment medium with respect to equity investment over the last decade. According to Ibbotson-Sinquefeld historical total return data (Journal of Business, Jan. 1976; updates through 1978, personal communication) the annual geometric mean total return over the 1969-78 decade for stocks is 3.2% and for long-term corporate bonds is 5.8%. However, the use of fixed income securities as exclusive or primary investment mediums for funding pension plan liabilities raises some fundamental questions concerning the sponsor's and manager's basic funding responsibilities under ERISA. Historically, equities have been a significantly superior investment compared to fixed income securities and have been a reasonable inflation hedge. Unless plan sponsors and fund managers are willing to make the rather heroic assumption that historical capital market

rates and the structure of financial markets have irrevocably altered and are irrelevant for the investment management process, then the investment objective of meeting the actuarial rate may lead to assuming an inappropriately low risk level for the plan's invested assets. The consequences of inefficient asset management impact on the safety of unvested accrued benefits, the likelihood and level of benefit improvements and the ability of the sponsor to fund the plan in a changing economic environment.

The use of the actuarial rate in the investment management process is symptomatic of a widespread lack of communication between the major participants — actuary, sponsor, fund manager — in the pension management process. The proper definition of investment policy involves consideration of many interdependent components of plan funding which include the plan's emerging liabilities and projected contributions, the financial status and stability of the firm and the structure and variability of financial markets over time. The actuarial rate objective ignores fundamental financial considerations in a futile attempt to capture something of the nature of the plan's obligations.

It remains to consider whether any (geometric mean) return objective can be useful in constructing an appropriate asset mix. At the heart of the misdirected actuarial rate objective lies the notion of defining a "normal" rate of return (for a given risk level) which will minimize or control experience gains and losses from investment experience and contribute to the orderly and efficient funding of the plan. We hope to return to this interesting and important problem in a future issue.