



SOCIETY OF ACTUARIES

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## FELLOWS' VIEWS ON SOCIAL SECURITY ASSUMPTIONS

From Benjamin I. Gottlieb in Washington we have his summary of responses to a questionnaire that had been sent to a random sample of 500 Society Fellows with U.S. addresses in our 1981 Year Book. This was a topic by Stephen G. Kellison in the July 1982 Academy Newsletter; we believe actuaries interested in either Social Security or actuaries' economic and demographic prognostications would do well to get a copy from Mr. Gottlieb at his Yearbook address.

Three features of the summary specially struck us:

(1) The gratifyingly high response—500 enquiries, 449 heard from. Our own cynical estimates of our colleagues' inability to handle their mail may warrant revision.

(2) The large proportion of our Fellows who have thought about the subject sufficiently to express their opinions. Only 11% rated themselves not qualified. 25% considered themselves "very well" or "well" qualified; the other 64% placed themselves in "moderately" or "somewhat" qualified classes.

(3) The long-term economic and demographic assumptions that actuaries in 1981 picked as their preferences, e.g.:

Inflation: 4%-7% range, mostly reached after 6 years—81% of replies.

Fertility: 1.7%-2.1% range—88% of replies.

E.J.M.

## E. & E. QUIZ

(Answer to Quiz on page 6)

Question: In Spring and Fall 1970, 1,185 students put Part I behind them (180 by the Graduate Record Exam route). How many of these were F.S.A.s no later than 1981 (Spring exams)?

## THE U.S. MILITARY RETIREMENT SYSTEM

by Toni S. Husted

Chief Actuary, Department of Defense

The military retirement system is an unfunded non-contributory defined-benefit plan. The Service Secretaries currently approve voluntary non-disability immediate retirement annuities upon credit of at least 20 years of service at any age. There is no vesting before retirement, so only 12% of new entrants ever become eligible for benefits. Retirement annuities are indexed annually to the Consumer Price Index.

On September 30, 1981, there were in the system 2.1 million active duty regular and reserve personnel, 0.9 million selected drill reservists, 1.1 million retired non-disability annuitants, 0.2 million disability annuitants and 73,000 survivor benefit families. Fiscal year (FY) 1981 benefits totalled \$13.7 billion. The most common age at retirement was 43 for officers, 39 for enlistees. Apart from reserve retirees, the average gross monthly annuity in September 1981 for non-disabled officers was \$1,751; non-disabled enlistees averaged \$761 a month.

### Valuation, September 30, 1981

Valuation results show an aggregate entry-age normal cost of 47.0% of basic pay. The corresponding figure a year earlier was 46.2%, but this increase arises from a mixture of a regular increase, changes in actuarial assumptions, and tightening of the system, as set forth in the next paragraph.

The pay-as-you-go unfunded liability totalled \$590.4 billion, a \$67.1 billion increase over the previous year. Of this increase, \$15.4 billion arose from changes in our actuarial assumptions; plan deliberalizations reduced the lia-

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## "PERSONAL LIFE ASSURANCE—WHAT THE PAST TELLS US"

by Gary Chamberlin,  
London Correspondent

Eric Short, F.I.A., actuary and journalist with the London Financial Times, presented his paper under this title to the Students Society of the Institute earlier this year. His conclusion was bleak; he quoted from Hagel:

"What experience and history teach us is this—that people and governments never have learned anything from history or acted on principles deduced from it."

But surely actuaries must be the exception. —else why would more than 100 of us with our guests have turned out to discuss Mr. Short's finding with him? This was his account:

### Backing A Horse

For a start, observe the conventional "participating" policies. Suppose that 10 years ago you, a man aged 30, had started paying a £10 monthly premium for a 10-year endowment. What would your proceeds be in 1981? Answer, if you picked the very best company from the field, £1,999. But the average was £1,742, and at worst you would have received little more than £1,500. Conclusion, it *does* matter which horse you choose in the Life Assurance Stakes. And, the longer the race, the more important the choice. At 25 years (same age and premium) endowments yielded in 1981 anything between £5,000 and £10,000. The mean was £7,524, and the standard deviation £1,125.

The paradox, says Mr. Short, is that people who buy policies don't pay enough attention to past results; they look at the brokers' projections which depend on pure assumption as to future bonuses (dividends). If you rank the

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## Military Retirement

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bility by \$6.3 billion; the balance, \$58.0 billion resulted mainly from increased benefits and population growth. The aggregate entry-age normal unfunded liability was \$476.9 billion.

## Population Levelling Off

A one hundred year open-group projection shows that the system is approaching a stationary population. Assuming a level active duty and selected reserve force, the total number of retirees will level out at 1.7 million around the year 2000. Dividing retired appropriation outlays by basic pay outlays gives a ratio of 0.58 in FY81, a ratio that is projected to peak at 0.64 in 2000 and to level out at 0.56 in about 2035.

## A Legislative Plan In The Works

Department of Defense is sponsoring a legislative proposal that would place the retirement system on an entry-age-normal funding method. The normal cost payment, as well as a payment on the unfunded liability, would be placed into a fund each year; an outside Board of Actuaries, similar to that used with the Civil Service Retirement System, would set assumptions and select the method for amortizing the liabilities.

Admittedly, this proposed fund arrangement is deprived of some of its point because such a fund would be a part of the Federal government's Unified Budget; hence, payments into it are treated as intergovernmental transfers having no impact on the Federal surplus or deficit. Since taxes, at least in theory, are set relative to a certain desired level of surplus or deficit, current taxes would not be affected by additional payments from general revenues into the military retirement system fund; the added cost of any year's funding would be both a general revenue expenditure and a retirement fund income, these two transactions simply cancelling each other. The total privately-held debt would not change, though the total debt would increase, perhaps requiring the government's borrowing authority to be raised.

Even though reallocation of costs between generations of taxpayers is thus thwarted, funding still would have some advantages. Costs or savings, e.g., from long-range changes to the system would be immediately reflected in the DoD

budget; the pension plan's true cost would be paid during the employees' working lifetime if the fund is kept outside the defense budget. □

## THIS MONTH'S QUERY FOR ACTUARIES

Readers are invited to send us analyses of the following exchange of opinions between two United Kingdom actuaries, taken from our opposite number, FIASCO, issues of January and May 1982:

*By David E. Purchase, F.I.A.:* "We all understand the statement that the probability of ruin for a young man's family is 1 in 1000. Most if not all would agree that he should insure against this risk. . . . We all know why the risk is insurable even if we do not say so explicitly—because there are a large number of broadly similar risks and the law of averages can be relied on.

"At the other extreme we are asked to attach some meaning to ruin probabilities for insurance companies. . . . (This approach) is now being applied to Long-Term business in the context of maturity guarantees (for equity-linked insurance) (where) we have a small number of companies 'at risk' . . . (whose) results all depend on the same economy or small group of related economies. There seems to me to be no useful way in which ruin probabilities can be used in these circumstances . . ."

*By Anthony B. Pepper, F.I.A.:* "We cannot, with certainty, predict the future fortunes of any company. However we can decide that if a company fails to meet suitable criteria then the chance of failure is unacceptably high. . . . I see nothing wrong with the concept of setting a suitable critical probability level, such that any company whose chance of failure is above this level, should be considered unsound. . . ."

"The profession has realized that maturity guarantees could be exceedingly expensive if the stock market were to fall to very low levels when policies mature. For this reason every effort has been made to assess the danger of this hazard and to insist that suitable reserves are held."

We apologize to these two gentlemen for failing to quote their views in toto. Please send comments to the Editor at his masthead address, for summarization with attribution.

E.J.M. □

## Actuaries At Work

(Continued from page 2)

Our insurance industry, together with consulting firms and supervisory authorities, now employs more than 1,000 actuaries; it is estimated that 300 more will be needed to meet demands of the next five years.

## New Developments

Until recently there was no institutional training nor any examination system for actuaries comparable to those in North America and Great Britain. We usually recruited mathematicians with university degrees who then developed gradually into actuaries. The German Association of Actuaries has now introduced a special actuarial examination to qualify for membership; this will make it easier for young actuaries to enter our Association and may considerably change its age-distribution. The Association has greatly increased its efforts to encourage young actuaries; for example, by seminars and broadening of our literature.

In actuarial circles here discussions about bonus (policy dividend) distribution have assumed an important role. As all policies must be participating and premium levels are high, this is where competition has become increasingly concentrated. Actuaries face the task of designing distribution systems that are not only technically sound but also competitively attractive. Somewhat less attention has been given, of late, to other problems, even to that of inflation to which a fairly satisfactory solution was found quite some time ago, at least for moderate inflation rates, by a combination of profit sharing and premium adjustment.

Another problem of importance and interest to many German actuaries is the current reorganization and financing of our Social Security system. Its financing problems have arisen largely because benefits are provided primarily on an assessment basis; difficulties increase as the relationship between the working population and the retired population shifts more and more in favour of the latter as a result of population aging and a falling birth rate. □