



SOCIETY OF ACTUARIES

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## AERF AWARDS

The Actuarial Education and Research Fund is pleased to announce two awards in its 1985 Grants Competition.

One of these awards is to Professors Stephen P. D'Arcy, FCAS, and Neil A. Doherty, Department of Finance, University of Illinois. They propose to write a monograph entitled "Applications of Finance Theory to Property-Liability Insurance Pricing." The objective will be to provide actuaries, regulators and insurance faculty with a single source explaining the basic finance theories applicable to P & L insurance pricing.

The second award is to Dick London, FSA, who is well known for his specialization in actuarial education. He proposes to prepare a new textbook covering the theory and practice involved in the creation of actuarial survival models to be entitled "Survival Model Construction." His objective will be to combine the broader scope of the texts that have emerged in biostatistics with the actuarial practicality of the standard actuarial texts that have served so well in past years. □

## Pension Fund Taxes In UK

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While the public could see the immediate loss of benefits from the taxation of lump sums (with it being said that senior police officers were far more worried about whether to retire so as to get their benefits before any change than about how to police the miners' picket lines), it was more of a problem to convince people of the results of a tax on investment income.

The campaign has been a success, being taken up particularly by the Confederation of British Industry (the employers' organisation). The Chancellor announced in the Budget speech, rather grudgingly, that he was not making any change.

Various actuaries have been involved in this campaign (the most sophisticated lobbying campaign ever, according to some people), including your correspondent, who has found it a most interesting away-from-the-normal experience. □

## SOCIAL SECURITY: 50 YEARS OLD AND DYING?

by A. Haeworth Robertson

Thanks to the actuaries who advise the Social Security Trustees, the 1985 Trustees Reports (published March 28, 1985) contain enough information for the careful reader to estimate the remaining life expectancy of the present system, which will be 50 years old on Aug. 14, 1985.

Table E3 on page 123 of the OASDI report can be used to derive the ratio of projected income to outgo for the OASDI and HI part of Social Security that is financed primarily by the FICA tax, under various alternative sets of assumptions, as follows:

| Time Period       | Ratio of Income to Outgo |           |          |
|-------------------|--------------------------|-----------|----------|
|                   | Alt. I                   | Alt. II-B | Alt. III |
| 25-Year Averages: |                          |           |          |
| 1985-2009         | 1.26                     | 1.10      | .94      |
| 2010-2034         | 1.14                     | .81       | .55      |
| 2035-2059         | 1.09                     | .69       | .41      |
| 75-Year Average:  |                          |           |          |
| 1985-2059         | 1.16                     | .83       | .56      |

The key economic and demographic assumptions on which these alternative projections are based may be summarized as follows:

|                                     | Key Economic and Demographic Assumptions after the Year 2010 |           |          |
|-------------------------------------|--|-----------|----------|
|                                     | Alt. I   | Alt. II-B | Alt. III |
| Total Fertility Rate (1.8 in 1984)  | 2.3  | 2.0       | 1.6      |
| Productivity (annual real increase) | 2.7%   | 2.1%      | 1.8%     |
| CPI (annual increase)               | 2.0%   | 4.0%      | 5.0%     |

The CPI assumption is shown for completeness but it is not critical to the projections so long as the COLA approximates the CPI. Most of the assumptions vary for the next several years, reaching their ultimate level around 2010, after which the babyboomers begin attaining age 65.

Ignoring the public restlessness and looking only at the above statistics, what can one reasonably conclude about Social Security's remaining life expectancy? Social Security is probably immortal if you believe the Alternative I assumptions: that women will begin to bear 2.3 children during their lifetime instead of the current 1.8; and that "real productivity" will increase by 2.7% per year.

Note: The OASDI report states on page 79, "For the 30 years 1955-84, annual increases in productivity for the U.S. economy averaged 2.0%, the result of average annual increases of 2.7, 1.9 and 1.3% for the 10-year periods 1955-64, 1965-74 and 1975-84, respectively."

The remaining life expectancy of the present Social Security system is probably less than 15 years if you believe in the Alternative III assumptions: that the long-term decline in fertility rates will continue for a while longer, and that it is imprudent to count on unprecedented productivity increases for the next 50 to 75 years to continually breathe new life into a dying system.

There is probably an interesting correlation between one's own life expectancy and one's estimate of Social Security's life expectancy. Indeed, it would be surprising the concern of most people about Social Security extended beyond their own life ex-

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## SEX AFTER NORRIS

by Eugene R. Strum

When the U.S. Supreme Court handed down its decision in *Arizona Governing Committee v. Norris* on July 6, 1983, it appeared as if the "unisex" issue had been fully resolved by a clear and straightforward rule. The *Norris* decision established a definite date — Aug. 1, 1983 — after which all contributions to employer-sponsored benefit plans were to provide sex-neutral benefits, while allowing the use of sex-distinct mortality tables in the calculation of benefits resulting from contributions made before that date. However, subsequent rulings have clouded the Court's general rule and have introduced new uncertainties.

On the day the decision in *Norris* was announced, the Court vacated decisions in two cases involving TIAA-CREF pension plans (*Spirt v. Long Island University and TIAA-CREF* and *Peters v. Wayne State University*) and remanded them to the appeals courts to be reconsidered "in light of *Norris*." In *Spirt*, the Second Circuit Court of Appeals had ruled (October 1982) that both TIAA and CREF were required to compute all annuity income starting on or after May 1, 1980 on a sex-neutral basis. The May 1, 1980 date had been established by the district court in an August 1979 decision, applicable only to CREF, although it affected benefits purchased by contributions made before that date. The Second Circuit, in October 1982, extended the mandate against the use of sex-distinct mortality tables to TIAA and applied the May 1, 1980 date to both organizations. At about the same time, the Sixth Circuit ruled in *Peters* that sex-distinct mortality tables were permissible and "actuarial equivalence" did, in fact, provide equality of benefits. Based on the clear conflict between these two circuit

courts, the cases were appealed to the Supreme Court arriving, however, after *Norris*.

The plan involved in *Norris* was a voluntary deferred-compensation plan administered by the State of Arizona. The state acted as a collection agent and would forward the funds to the carrier chosen by the participant from an approved list. At retirement, the participant could receive the funds in cash or under any one of several available payout schedules, some of which involved life contingencies. The level of benefits to be received by the participant was not guaranteed until benefits were to begin. In substance, the Supreme Court ruled that all options offered by the plan had to provide equal periodic benefits for similarly situated males and females. However, the Court refused to extend this decision to contributions already made as it did not wish to increase the liabilities of the fund.

The TIAA-CREF plan is a defined-contribution pension plan which only allows benefits to be paid as a lifetime income. Each contribution made to TIAA purchases a guaranteed amount of income at retirement. This guarantee is based on interest rates of from 2½ to 3% and conservative mortality rates. However, during the payout stage actual benefits include dividends, which currently bring the total payments to about double the level of the guaranteed benefit. CREF provides variable annuity income payments and makes no guarantees prior to retirement. After the *Norris* decision, both TIAA and CREF started using sex-neutral mortality tables to compute the amount of benefits resulting from premiums received on or after Aug. 1, 1983.

The Second Circuit, on reconsideration of *Spirt*, reinstated its previous decision, with a minor modification, and retained the May 1980 effective date. As CREF makes no pre-

## JOHN HANSON MEMORIAL PRIZE

The Conference of Actuaries in Public Practice has established a permanent fund, under the auspices of the Actuarial Education and Research Fund, in honor of the late John Hanson, FSA 1957.

The net income of the fund will be awarded to the author of the paper appearing in PCAPP judged to be the best of that year on an employee benefit subject.

Personal and/or corporate contributions (tax-deductible) can be made through Maryrose Sloan, AERF, 500 Park Boulevard, Itasca, IL 60143. □

retirement guarantees, the Court ruled that the fund could compute all future settlements on a sex-neutral basis without increasing its liabilities. Thus the retroactive (1980) imposition of the decision was permitted by *Norris*. With respect to TIAA, the Circuit Court, reasoning that the level of guarantees given was so low as to be insignificant, also imposed the decision as of May 1, 1980. However, the Court allowed TIAA to keep any guarantees made prior to the date of the final Order at the sex-distinct level in case of the "unlikely" event that TIAA would fail to have earnings high enough to pay dividends. TIAA-CREF's petition to the Supreme Court for review of this ruling was denied.

The final Order issued by the district court provided that future payments to annuitants who began receiving payments during the May 1, 1980 through Dec. 31, 1984 period, were to be recalculated at the level that would have been paid if sex-neutral mortality tables were in use since such payments began.

Since the Supreme Court has refused to review the most recent decision of the Second Circuit in *Spirt*, and therefore allowed the May 1, 1980 date to apply to TIAA-CREF pension plans, it is no longer clear that the Aug. 1, 1983 date established in *Norris* applies to all employer-sponsored benefit plans. Moreover, the rules for the retroactive application of sex-based mortality tables have been clouded. The Sixth Circuit has yet to rule on its reconsideration of *Peters*, adding the possibility of further dilution of the *Norris* mandate. □

## Social Security (Continued from page 4)

pectancy. A 65-year-old retiree has perspectives and priorities that are quite different from those of a 30-year-old babyboomer.

Actuaries are different, of course, since "Actuarial science is built on the evaluation of the financial, economic and other implications of future contingent events," an evaluation that is presumably independent of the age of the evaluator, once the requisite level of experience is attained.

How old are you and what is your estimate of the remaining life expectancy of the present Social Security program? □