SOCIETY OF ACTUARIES

Article from:

The Actuary

September 1981 – Volume15, No. 7

Government Borrowing

(Continued from page 3)

create an awareness in those who conduct economic policies that insurance arrangements depend upon some predictable store of wealth, some reliable mechanism for inter-temporal financial transfers.

James H. Murta also contrasts the differing viewpoints of borrower and lender. The borrower may look at the illustrated transaction in any of at least four ways, each with its own implications, viz., (i) comparing the debt's future value in today's dollars with current income; (ii) comparing it with expected future income; (iii) same as (i) but with emphasis on the borrower's ability to repay; (iv) comparing the debt's future value in today's dollars to expected future income, which is the Harvard economists' way. A weakness in (iv) is that it diverts attention from the borrower's ability to repay the debt.

Frederick J. Sievert views the true dollar cost of borrowing as the difference between the interest paid on the borrowed funds and the interest earned on their reinvestment. He offers this example:

> Suppose an automobile is purchased for $10,000 at 12% simple interest, and sold one year later for $9,500. The interest paid is $1,200; the interest earned is −$500. This makes the true cost $1,200 − −$500, ie. $1,700. This translates to a 17% rate; inflation is immaterial except to the extent that it has affected the resale value of the automobile.
>
> One would be hard pressed to determine the earnings rate for investment of the national debt. If it's positive it does reduce the deficit below the stated $59.5 billion level. But to suggest that the earnings rate is even close to the inflation rate is preposterous.

Edward H. Friend is inclined to agree with the Harvard economists, seeing a parallel between their approach and the PRNCHLAR ("pension reform normal cost and half-life amortization of the ratio") designed as a funding method for public sector pension plans and presented by him in *Vols. 28* and *29* of *Proceedings of the Conference of Actuaries in Public Practice*. The argument he then made is that funding is consistent with the underlying objectives if this ratio is diminishing by at least 50% over a designated half-life such as 35 years. The point he was making in the pension discussion (which he considers applicable here also) is that the absolute dollar growth in the unfunded obligation is not ominous in an inflationary economy if the underlying payroll is growing perhaps twice as fast and the ratios of unfunded obligation to payroll are the same in both the non-inflationary and inflationary environment.

Godfrey Perrott considers the economists' adjustment correct as far as it goes, except that it raises two other problems: first, the budget, even adjusted, isn't balanced; second, a large component of the inflation rate is the expectation of future inflation. The government, using inflation-adjusted accounting, tends to institutionalize the inflation that none of us wants.

Bruce E. Nickerson takes issue with the economists' arithmetic in dividing the 12% into 2% interest and 10% debt repayment; he finds the interest to be 1.82% and the repayment 9.09% under the circumstances specified. But the critical question to him is what "true" interest rate is needed to produce adequate savings and capital formation. If, as he suspects, this rate is about 3.5% rather than 1.8%, then the government is making a 1.7% profit by accelerating inflation beyond lenders' expectation and by discouraging savings to the extent necessary to reduce that "true" rate to 1.8%—a smart, if unethical, debt management practice. Smart in the short term but destructive of both nation and government in the long term.

Allan W. Ryan regards the economists' concept, that what appears to be a level amortization is really one of decreasing payments, as acceptable, and possibly having applications in the structure of mortgages and other long-term private debt. He sees the effect as a disproportionate burden to the borrower in the early years, and proposes that the principal be amortized using a "true" interest rate—say, 3%, and that both the monthly payment and the outstanding balance be increased by an inflation factor (measured by either an index or an agreed-upon rate). The result would be equal instalments to the borrower in real terms.

E.J.M.

ALFRED N. GUERTIN

An Appreciation by W. Harold Bittel

When I first visited Al Guertin in his office in the New Jersey Insurance Department in 1943, he was in the spotlight for his recent key role in developing the new approach to statutory nonforfeiture and valuation requirements that had become known as the Guertin legislation. Al pointed out the extent to which such activity had been possible for him in the system set up by F. Bruce Gerhard and developed further by the late Bruce E. Shepherd into the Department's Actuarial Division. Al successfully stimulated my interest in becoming part of a regulatory system in which an actuary could be engaged in more than technical matters; though Al was never unduly modest in discussing his activities, his description of these opportunities was, if anything, understated.

Al was a prodigious worker, never content unless he had at least one project "in the works." He was deliberate in personal matters—I am told that he "kept company" with Rhoda for almost four years before they were married. She died in December 1980; they both had been in poor health for years. Her personality was a perfect complement to Al's—he could work at home on his projects as often and as long as he wished provided he made himself available for the joint activities that she decided were desirable.

Aside from Al's major professional attainments, two consequences of his many activities deserve special comment. The first is the impact that his campaign for the legislation that bore his name had on Insurance Commissioners around the country. I am satisfied that this and the work he did on numerous NAIC committees laid the groundwork for later recognition by most Insurance Departments that qualified actuaries are essential for proper regulation and supervision of insurers. The other item is the work he did for small member companies after he went with the American Life Convention. Many of them needed actuarial guidance but would not otherwise have sought or obtained it. These activities caused unfavorable comments at the time but I have always considered any efforts to improve insurer operations and safety commendable.

(Continued on page 7)

DEATH BENEFIT INCREASES ON OLD NON-PAR POLICIES

by Andrew C. Muirhead-Gould

[redacted]ufacturers Life on January 1, 1981 unilaterally raised the death benefits on our non-participating permanent life policies issued before 1965 in North America. This article describes why and how we did this.

Originally a stock company, we mutualized in 1968; both before and since then we have issued both par and non-par policies. Roughly 30% of our pre-1965 portfolio was some 30,000 non-par whole life and endowment contracts issued with, at the time, markedly low premiums per thousand. Nevertheless, changed conditions have made these policies vulnerable to replacement.

Since profits on these policies are used to support surplus and to increase dividends on our participating policies, it is in the participating policyholders' interest for us to take whatever action will maximize future such profits. One possible way to do this is to offer these non-par policyholders benefits higher than were contracted for at issue.

[redacted]narial Analysis

[redacted]o determine how best to protect these policies from replacement, we developed a simplified model of our in-force business, and calculated how these policyholders would fare if the policies were surrendered either for cash or for reduced paid-up, and their cash values and future premiums were applied to new policies. Of course, not all the policyholders would be insurable and many small policies wouldn't be replaced in this way, but this analysis gave a good indication of the size of the problem.

For each cell in the model, prospective asset shares were calculated using the present cash value as the starting asset share. In this manner we constructed a 10-year revenue projection assuming no action taken. We then tested the effects on profit of various possible enhancement patterns and several lapse assumptions, thus arriving at a measure of the financial effect of any enhancement program.

The Action We Took

[redacted]e percentage death benefit increase that we decided upon varies by policy duration only: 25% or 30% for the oldest policies, grading down to 10% for more recent issues and for policies already converted to reduced paid-up. Total added coverage on the 30,000 policies amounts to roughly $50 millions. Cash and endowment values were not increased.

Although, subject to conditions remaining favourable, we expect these liberalized death benefits to remain in effect, they are not guaranteed beyond one year in the United States, nor beyond five years in Canada. The short guarantee in the U.S.A. is necessary because of nonforfeiture value requirements in that country.

This program has met with no objection from state insurance departments, and has been warmly welcomed by our policyholders and field force. □

ASSOCIATE EDITORS

Frederic Seltzer is leaving our Editorial Board, having set a lustrous record of twelve years journalistic service to the Society. Many thanks to Fred for his labors on—let's see now, that's 121 × 8 × 3 columns.

Welcome to Joseph W. S. Yau who becomes Associate Editor after having quickly shown his interest and talents as proofreader and general helper to the cause.

HOW TO HELP US WHEN A MEMBER HAS DIED

by Cynthia M. Keele, Society Headquarters

It is indeed helpful if we can be notified promptly of a member's death. Far better if two people tell us than if everybody (especially when the person has retired) assumes that somebody else is doing this. The best procedure is this:

1. Do take extreme precautions to keep us from confusing the deceased with another member whose name is similar.
2. The information we need is:
   a) The deceased's date of death, and date of birth if known.
   b) Name and address of next-of-kin, to whom the President will send condolences.
   c) Word on who will write the obituary for the *Transactions* and when we may expect it. □

CONGRESSIONAL SEAT APPORTIONMENT

The "Alabama Paradox" was prominent in the responses to our $\sqrt{N(N-1)}$ article (May issue). The apportionment system that had been most recently revised in 1850 became notorious in 1881, we learn, because it ticketed Alabama for a one-seat loss even though the House size was to be increased and Alabama's population had grown since the prior redistribution.

Our appreciation to Messrs. Frank S. Irish, Newton L. Bowers, Charles W. Dunn, James E. Hoskins and Roy A. Saunders for their enlightenment on a mathematical problem that we discover wouldn't be simple even were it free from political gamesmanship. Messrs. Irish and Bowers obliged us with the following references from among many published accounts of a fascinating algebraic problem:

"Congressional Reapportionment," Zechariah Chafee, Jr., *Harvard Law Review,* 1928-29, 1015.

"The Quota Method of Apportionment," M. L. Balinski and H. P. Young, *American Mathematical Monthly, Vol.* 82 (1975), 701.

Mr. Irish was even able to say that our article "brings to mind" the Chafee essay, written more than half-a-century ago!

Mr. Hoskins gently pointed out that the system we described as "Our Method" works just as well if the preliminary step of setting aside the required single seat to each state is omitted, since none is so small as not to qualify for a seat anyway.

Several correspondents went through the math for us. We have now grasped that the square root comes in as consequence of choosing geometric means.

E.J.M.

Al Guertin

(*Continued from page* 4)

Al loved to talk about his accomplishments. This he had every right to do because they were outstanding, but one of his motivations for doing this, I believe, was to draw out ideas for projects on which he was working. □