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THE CANADIAN PENSION DEBATE

By James G. Paterson

An appetite for suggestions on how to reform a nation's retirement system is bound to be satisfied by recent Canadian offerings. The last four years have seen no fewer than five government-commissioned studies, viz.,

"Cofirentes +", a Quebec committee.
"One in Three", the Economic Council of Canada.

"Retirement Without Tears", Special Senate Committee on Retirement Age Policies.

"Retirement Income Policy in Canada", the Federal Government's Lazar Task Force.

Report of the Royal Commission on the Status of Pensions in Ontario.

Their tasks varied from narrow to extremely broad. The Economic Council's main theme was, "Can Canada insure its older generation an adequate income without risk to the economy?" (its answer was Yes). The Senate Committee focussed on retirement age, mandatory or flexible retirement, age discrimination in employment, and need for cooperation among governments, unions, business and the public. The other three (and to a large degree, the Economic Council as well) examined all pension types ranging from government programs, through social insurance and private pensions, to personal savings. They examined design, financing and administration of pensions and their regulation.

Consensus

On some issues all five reports more or less agreed: that among the elderly there's too much poverty which is heavily concentrated among women; that current vesting and portability systems hurt mobile workers; and that better pension protection against inflation must be found. Four wanted increased funding of the Canada and Quebec Pension Plans (CPP & QPP), though the Ontario Royal Commission favored reduction to a virtual pay-as-you-go system. Three recommended that all public service pensions be governed by funding and investment rules like those in the private sector, and that at least part of their funds be invested in private sector securities.

Cleavage

On just how to improve Canada's pension system, agreement was lacking. The Quebec report recommends that CPP and QPP benefits be raised on earnings up to half the earnings ceiling, (from 25% to 50% of pre-retirement earnings). It also seeks greater vesting, portability and indexing in private plans. Despite its criticisms, the Economic Council fell short of recommending either that CPP and QPP be expanded or that there be mandatory minimum private pensions; it proposed that governments "encourage and induce" greater coverage through better vesting, portability, indexing (and perhaps surviving spouse rules) for private pensions, and through locked-in registered retirement savings plans.

The Senate Committee called for improved CPP and QPP benefits and for flexible retirement as well as broader coverage, vesting, portability in private plans. The Task Force offered four alternatives for pension reform via government legislation, and estimated what each would cost. All include tighter rules for vesting, portability, indexing and surviving spouse pensions. *Option 1* would continue the present voluntary private system—predominantly a defined benefit system. *Option 2* would convert it to a voluntary money purchase system. *Option 3* would create a mandatory level of private pensions, imposed on all employers and employees. *Option 4* would expand CPP and QPP, increasing the earnings base by half to one-and-one-half times the average industrial wage, and raising benefits from 25% to 45% of pre-retirement earnings.

The Royal Commission proposes no change in the CPP but recommends a mandatory universal, fully vested and fully portable money purchase plan invested totally through the private sector and producing replacement ratios between 15% and 20% of pre-retirement income. It also recommends improved vesting and tighter retirement age and surviving spouse rules under private programs, and addition to each plan of a "participating annuity" optional form of pension on the "excess interest" principle.

Vesting proposals for private sector plans differ widely, the maximum being that of the Senate Committee—100% after one year of service.

Indexing

Diversity also features indexing recommendations. "Cofirentes +" wants present and future pensions adjusted by excess investment earnings over the real net-of-inflation yield; it would also require that pension liabilities be valued using what the government prescribes as the real rate of return. The Economic Council suggests that the federal government underwrite and issue price-indexed annuities to retired persons. The Senate Committee offered no specific indexing proposals, but the Federal Task Force presented four alternatives, each embracing either the excess interest principle or government underwriting of indexing. The Royal Commission proposes an "inflation tax credit" through the income tax system, payable from age 68.

The Debate Continues

A National Conference organized by the federal government will have been held before this article appears. Three hundred, representing all provincial governments and various regional, national, social, economic and professional groups, have been invited. Consensus is sought on private pension reform with particular attention to the proposals outlined here. □

EARLY COMPUTER DAYS IN CANADIAN LIFE INSURANCE

by Hudson J. Stowe

Ed. Note: Mr. Stowe was a pioneer in the introduction of computers to business use in Canada. He gratefully acknowledges the help of Messrs. Albert L. Wright and J. T. Bradbury in supplying and confirming details for this account. The Actuary would welcome letters from readers that would help to enlarge the record of Canadian actuaries' early contributions in this field.

In 1936 William Phillips ("Ahead of His Time," November 1980 issue) sent a copy of his Institute paper, "Binary Calculations," to me in Toronto. I immediately showed it to I.B.M. and offered to act as their agent in acquiring his now famous model. But soon after this the war started, causing computer design to be concentrated on machines suitable for scientific problems to further the war effort.

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Early Computer Days

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Not until 1947 did developers turn their attention to developing a computer for business use. As the then President of the Insurance Accounting and Statistical Association I invited Edmund C. Berkeley (who had worked on these machines during the war) to speak at its annual meeting on how such a machine could be used to underwrite insurance applications.

Developments at Manufacturers Life

In 1952 the University of Toronto installed a Feranti Ferut, primarily to do scientific calculations for the National Research Council of Canada. We approached the University about my company (Manufacturers Life) trying to make use of it. In June 1953 our John H. Bell took a course and decided we could use it to calculate immediate annuity rates. Under his supervision the University staff wrote the programme by which rates were calculated and recorded on punched cards, from which tables of rates were prepared and copied by photo offset for field distribution. In that era of rapidly changing interest rates we found we could produce new rates in a matter of a couple of weeks, giving our agents a decided competitive advantage.

That fall I arranged a programing course—one afternoon a week over several weeks—attended by about twenty Toronto life company people. A few weeks later, I.B.M. put on a seminar in Toronto to announce their new small scale computer (the 650) using punched card input and output. The following month our company placed an order for this machine—the first ordered and delivered in Canada.

Training and planning started in early 1954; by June 1955 the first programme had been tested; in March 1956 the machine was delivered, and by October was producing results.

In June 1958, under the auspices of the University of Toronto, a seminar on the use of computers was held. This attracted so many that we wound up with enough left in the treasury to found the Computing and Data Processing Society of Canada.

Parallel Activities at Sun Life

In 1948 the late John W. Ritchie of the Sun Life of Canada had been a member of the Society Committee on New Recording Means and Computing Devices. Because of his experience that company in 1953 set up its own committee. In 1956 they ordered a Univac, which at that time seemed the best available for life insurance operations. Three of their branches were converted to the computer system, and their people would go to New York each month to update their file there. Their Univac was delivered and operations commenced on May 30th, 1958. Its uses increased so much that even operating on a 24-hour schedule there was insufficient machine time. By the end of 1961 a second machine was ordered. □

$$\sqrt{N(N-1)}$$

Years ago, long before he became our Director of Education, Linden Cole recommended in these columns that actuaries support the work of a non-profit organization called the Population Reference Bureau. We are among those who took Mr. Cole's advice, and we've never regretted it. Which brings us to an article that appeared in that Bureau's magazine, *Intercom*, for January 1981, entitled *The Mechanics of Congressional Apportionment*. Its authors are Dudley L. Poston, Jr. and Marion Tolbert Coleman.

To the extent we had thought about the matter at all, our assumption was that after giving each state the single U.S. House seat to which it is entitled regardless of its population, the remaining 385 seats would be apportioned by first dividing the total enumerated population by 385 and then dividing each state's population by that resulting figure, rounding the result to the nearest integer, and finally adjusting by one seat

somewhere if the total comes to 384 or 386 instead of 385.

But the Poston-Coleman article tells us that:

"The method of equal proportions attempts to achieve the fairest distribution possible . . . (Its) first step is to multiply the . . . population of each state by the following fraction:

$$\frac{1}{\sqrt{N(N-1)}} \quad "$$

As this "equal proportions" procedure apparently is applied, the values of the denominator of the above fraction as N takes its successive values 2, 3, 4 . . . , are divided into each state's population, and the results tabulated. These values for all the states are then listed in order of size until the list is 385 items long. Each state's roster of representatives is then declared to be equal to the number of times that one of its tabulated figures appears in that long list.

Thinking it interesting to see, for a few states, how the two methods compare, we worked out the results for the states numbered (by population) first, tenth, twentieth, thirtieth, fortieth and fiftieth. See the table below.

The rationale of the $\sqrt{N(N-1)}$ method, in use since 1941, is undoubtedly obvious to our readers, and we would welcome letters justifying it.

An individual membership in Population Reference Bureau Inc. costs a tax-deductible \$25 per year. Apart from the satisfaction derived from supporting an excellent organization "engaged in the objective dissemination of population information," an actuary who becomes a member receives a liberal quantity of high-quality literature. PRB's address is 1337 Connecticut Avenue, Washington, DC 20036.

E.J.M.

		Seats, beyond First Seat	
		Our Method*	Official Method
	Population		
1	California	40	44
10	North Carolina	10	10
20	Washington	7	7
30	Oregon	4	4
40	Rhode Island	2	1
50	Alaska	0	0

*We divided 225,867,174 (total population excluding D. C.) by 385, producing an allocation of 586,668 people per seat, and then we divided each state's population by 586,668, rounding to the nearest whole number. In Oregon's case, our answer, we admit, was a trifle closer to 5 than to 4.