



SOCIETY OF ACTUARIES

Article from:

# The Actuary

May 1993– Volume 27, No. 5



The Newsletter of the  
Society of Actuaries

VOL. 27, NO. 5  
MAY 1993

# THE Actuary

## The CAS and SOA move together on principles

by Steve Radcliffe  
SOA President-Elect

**T**he Casualty Actuarial Society (CAS) and the Society of Actuaries (SOA) have agreed to form a joint task force to achieve unity on actuarial principles. Allan Kaufman, CAS Vice-president of Research and Development, and I will spearhead this effort beginning this spring. CAS and SOA leadership are to be congratulated on their foresight in making this a priority for our profession.

### Individual progress

I congratulate the CAS on the progress it has made in articulating principles. It is interesting to compare the different approaches each group has used to design its principles. By reviewing its actuarial practices, the CAS derived principles by induction. The SOA articulated general or fundamental principles with the hope that principles specific to certain practices could be derived, at least in a general way, from the fundamental principles.

Both groups have made important advancements for our science in the discovery, development, and articulation of principles. Tremendous potential for synergy exists from getting the two groups together. As previously noted, the SOA has concentrated on general or fundamental principles, while the CAS has made large strides in principles that are specific to the practice of casualty actuarial science. Each group can learn much from the other.

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## Pensions in Canada by 2031

by J. Bruce MacDonald

**R**etirement income is often compared to a three-legged stool, with the legs being social security, private pensions, and savings. It is interesting, yet disturbing, to see what the situation may be in 40 years.

### Social security

Three basic elements make up the Canadian social security system:

- Canada or Quebec Pension Plan (CPP, QPP, or C/QPP)
- Old Age Security Pension (OAS)
- Guaranteed Income Supplement (GIS)

The C/QPP provides a pension of 25% of career average earnings, adjusted for increases in national average earnings. Maximum benefits are payable if the member has worked for 85% of the contributory period from age 18 to retirement. The pension is fully indexed with the cost of living. Retirement is normally at age 65 but can be as early as age 60 subject to a reduction.



In 1993 both members and their employers contribute 2.5% of covered earnings, which are about the average earnings of Canadians. (Those who are self-employed contribute twice these amounts.) The Thirteenth Actuarial

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## Pensions in Canada cont'd

Report on the Canada Pension Plan indicates these rates will increase to 6.42% by 2031, primarily for demographic reasons, as the CPP is funded on a pay-as-you-go basis. QPP figures are a bit different.

Pessimists say Canadians will not stand for these increases, and the C/QPP will no longer exist. I do not think this will happen. Increases will be gradual, and a tipping point will never be reached. Complaints could cause cutbacks to occur, such as an increase in the retirement age, less generous early retirement provisions, less than full indexing, and a requirement to work for more than 85% of the contributory period to receive a full pension.

The only requirement for OAS benefit eligibility is a specified period of residence in Canada, with 40 years required for the maximum benefit. In 1993, it is about 13.6% of the average wage. It is financed out of general revenues, with no identifiable tax. OAS entry-level pensions are indexed with prices, not wages, and the pension itself is indexed with prices. Using the same actuarial assumptions as for the CPP, OAS will be only 8.3% of average wages by 2031.

The First Actuarial Report on OAS indicated a cost of 3.67% of total earnings in 1993, increasing to 4.75% by 2031. These percentages apply to total earnings, a larger amount than contributory earnings under C/QPP.

OAS is subject to a "claw-back" tax. In the 1992 taxation year, this tax was 15% of net income in excess of \$51,765 to a maximum of OAS benefits received. The threshold is indexed with the increase in the consumer price index, minus 3%. With Canada's inflation rate well under 3%, this threshold will not increase in the next few years. The costs in the preceding paragraph do not take this tax into account.

GIS is an income tested demogrant. The maximum paid to a married couple in 1993 is about 21.1% of the average wage. Because it is indexed with prices, not wages, this figure will decline to 12.8% by 2031. The only cost estimates for GIS were made by the SOA Committee on Social Insurance and indicate the cost will remain constant at about 1.3% of income.

Obviously, OAS and GIS will be a less significant part of the retirement

income of Canadians by 2031. It now is possible for someone whose only source of income is C/QPP and OAS to qualify for a partial GIS payment, even if C/QPP is at its maximum level. This situation will gradually change.

By 2031, a Canadian whose only source of income is C/QPP and OAS may be subject to the claw-back. A reasonable scenario can be developed showing that the claw-back can even apply to a GIS recipient. These anomalies may be corrected, but still it would be unwise to rely on OAS to continue except for those with the smallest incomes.

The status quo could be maintained by indexing entry level OAS and GIS with wages rather than prices, but this would require large cost increases.

### Private savings

This article will deal only with tax-assisted savings for retirement. In the 1950s, Registered Retirement Savings Plans (RRSP) were introduced to allow Canadians to save for their retirement. Under Canadian tax laws, the self-employed and members of partnerships could not establish pension plans for themselves, although they could for their employees. At various times, regulations have severely limited what pensions significant shareholders, who also were employees of a company, could provide for themselves.

While much money has been contributed to RRSP, detailed statistics, which are based on income tax records, have not been analyzed in a useful way. The impression is that those classes previously mentioned, which include most doctors, dentists, accountants, and lawyers, have been the principal contributors, and that other Canadians who do not belong to private pension plans have not contributed very much. The same is probably true for those in private pension plans who wish to supplement their pensions, although contributions by such individuals are limited by the tax laws.

Group RRSP are a recent phenomenon. While RRSP are individual contracts with the taxpayer with no provision for an employer contribution as such, employers have established them. Frequently, employers give employees raises to enable contributions, using the convenience of payroll deductions. RRSP are simple to

administrate, because they are not subject to pension benefits legislation and the tax requirements are much less complicated.

RRSP have certain disadvantages. Money in them need not be used to provide life pensions. Lump sum withdrawals can be made. Even when periodic payments are made, the funds may be exhausted while the owner is still living. There is no requirement that a spousal pension must be taken. Perhaps more importantly, many RRSP, unlike pensions, are subject to the claims of the owner's creditors. This can be a serious problem for professionals in partnerships where liability frequently is unlimited.

In any event, the increase in contributions to C/QPP will inhibit RRSP contributions.

### Private pension plans

In this category are plans operated by governments for their employees, as well as those of private companies. Here there is good news and bad news.

The good news is that most of these plans provide adequate benefits, and that most, except for some operated by governments, are soundly funded. A recent survey by the Financial Executives Institute showed that only 10% of plans in the survey (which did not include governmental plans) had solvency deficiencies, while only 39% had unfunded liabilities on a going-concern basis. Individuals in these plans should have adequate pensions. Pension benefits legislation, which requires that there be liberal vesting and that benefits be taken only as a pension, has ensured that employees who terminate will receive a pension.

The bad news is that in 1990 only 44.8% of employed workers were in private pension plans. The number has declined from 47.0% in 1984. Conventional wisdom is that the cause is the administrative burden imposed by new pension and tax legislation, resulting in plans being terminated or replaced with Group RRSP. While there is some truth in this, the fact is membership had been constant at around 47% for many years before 1984. Many new plans being established are probably Group RRSP, rather than conventional pension plans. Pension supervisory authorities have told me that many terminated pension plans were small plans that covered only one or two employees.

These numbers exclude cases where the retirement vehicle was exclusively a profit-sharing plan or a Group RRSP, but no evidence exists that a significant number of workers are covered in this way.

Some way must be found to encourage establishing new private plans. The increase in contributions to C/QPP will inhibit this. While it is doubtful that an increase in CPP benefits is in the cards because of the cost, mandatory private plans cannot be ruled out.

#### Conclusion

All this leads to these conclusions:

- There will be a cutback in certain features of C/QPP but not in the level of benefits paid at normal retirement.
- OAS and GIS will become less important parts of the Canadian social security system.
- Group RRSP, if not individual ones, will become subject to pension benefits legislation.
- Coverage under private plans must be expanded if mandatory plans are to be avoided.
- This is possibly the best of all possible times to have retired, but it may not be wise to live too long.

J. Bruce MacDonald, retired, does some consulting work for the Senior Citizens Secretariat of Nova Scotia.

## Transactions authors profiled

Fourteen papers have been accepted for publication in Volume 44 in the *Transactions*. The following biographical sketches describe 4 of the 18 authors. The 14 other authors have been profiled in previous *Actuary* issues.

"Internal Rate of Return as an Evaluator of Tax Planning Strategies" by Kenneth A. LaSorella and Edward L. Robbins



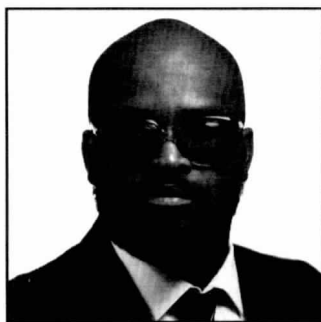
KENNETH A. LASORELLA, FSA 1981, MAAA, is senior manager of financial

services consulting—actuarial life/health at KPMG Peat Marwick. Previously, he was with Sun Life of Canada and with Teledyne, Inc. He has extensive experience in financial actuarial modeling for the purpose of asset liability matching, pricing, purchase GAAP, and quantification of the AIDS risk. He serves on the Society's HIV Research Committee. LaSorella is a Fellow of the Life Office Management Institute.



EDWARD L. ROBBINS, FSA 1971, MAAA, is principal, financial services consulting—actuarial life/health at KPMG Peat Marwick. His areas of expertise are life insurance actuarial studies, company taxation, and financial reporting. Before joining KPMG Peat Marwick in Chicago in 1984, he spent more than 10 years with Pan-American Life Insurance Company as the chief actuary for Latin American operations. He received a bachelor of science degree from Cornell University. He is a past member of the Society's Education and Examination, Program, and Continuing Education committees, and a past president of the Chicago Actuarial Association. He currently serves on the Committee on Papers. He has published papers in *Best's Review* and *Contingencies*.

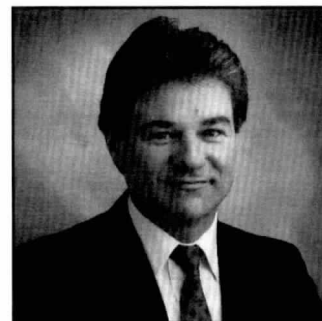
"A Practical Algorithm for Approximating the Probability of Ruin" by Colin M. Ramsay



COLIN M. RAMSAY, ASA 1984, MAAA, is an associate professor of

actuarial science at the University of Nebraska—Lincoln. He received his bachelor of science degree in actuarial science from the City University, London, England, in 1979 and his master's (1980) and Ph.D. (1984) degrees in statistics from the University of Waterloo, Ontario. His research interests include ruin theory, the impact of AIDS on insurance, and the adequacy of pension funding levels. Ramsay's papers have appeared in the *Journal of Risk and Insurance*, *Journal of the Institute of Actuaries*, *ASTIN Bulletin*, *Insurance: Mathematics and Economics*, and *Scandinavian Actuarial Journal*. His papers in the *Transactions* appear in Vol. 41 (1989), Vol. 42 (1990), and Vol. 43 (1991).

"Non-parallel Yield Curve Shifts and Convexity" by Robert R. Reitano



ROBERT R. REITANO, FSA 1980, MAAA, received a bachelor's and a master's degree in mathematics from the University of Massachusetts and a Ph.D. in mathematics from the Massachusetts Institute of Technology. He is senior investment policy officer and director of research at John Hancock Mutual Life Insurance Company. He has been an assistant professor at the University of Massachusetts, an instructor for the Actuaries Club of Boston, and a visiting scholar at M.I.T. He is serving on the Finance Track Education Objectives Committee, Investment Section Council, and the Committee on Papers. He has published papers in *ARCH*, *The Journal of Portfolio Management*, and the *Transactions*, Vol. 34 (1982), Vol. 42 (1990), and Vol. 43 (1991). His paper, "Multivariate Duration Analysis," was awarded the SOA Annual Prize in 1992.