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REVIEW

Actuarial Practice in Social Security, 2002. By P. PLAMONDON, A. DROUIN, G. BINET, M. CICHON, W. MCGILLIVRAY, M. BEDARD and H. PEREZ-MONTAS (International Labour Office/International Social Security Association, 2002)

The really quick review is that this is an excellent book and working document.

It is written by seven actuaries, with all of the authors having a connection to the International Labour Office (five of whom also have direct connections to work in this practice area in Canada). In total, the seven authors have literally hundreds of years of work experience in the benefit areas covered, which are: social security benefits (e.g. retirement income, orphans' benefits, survivors' benefits, etc.); workers compensation; and unemployment insurance. These plans will live under different names and appear with different disguises depending on the country of origin.

There is no discussion of universal health insurance in this book (which, in developed nations, is normally a government program, except in the United States of America and South Africa). That material is covered in detail in another ILO/ISSA volume. Also, there is a separate text from the ILO/ISSA on 'Actuarial mathematics of social security pensions', so this volume is not consumed by mathematics (although key concepts are formulated in algebraic templates).

Any practising social security actuary should have this volume in his/her office for easy access. Now, that's only about 150 people in the world, so that hardly gives this book a chance to be a best seller (or the script for a Hollywood hit starring Jack Nicholson).

So, why might you want to read this book?

One thing it will do is give you a very definite appreciation of why analysing social security is so remarkably different than modelling a private pension scheme (or private workplace sickness/DI programs). It will also give you a definite appreciation of just how complex the work of the social security actuary truly is.

Let me offer you a taste of this in a very short summary of the first few chapters of the text.

Part I. The Scope and Context of Actuarial Work in Social Security

Chapter I. The global picture

This chapter quickly outlines all of the variables that a social security actuary needs to know and analyse. These include: mortality, interest rates, expenses, but also — fertility, disability, marriage rates (including age at marriage), divorce rates, migration (in and out and, maybe between internal regions), salary rates by age and sex, labour force participation rates (by age and sex), the percent of the economy that is underground (i.e. the cash economy), inflation, age of retirement, workforce productivity, level of urbanisation, and on and on.

Unlike an even relatively large private pension plan, the social security actuary cannot assume independence between and among these variables. Just the existence of social security will impact the age at retirement and life expectancy. The rate of economic growth will influence labour force participation rates and fertility rates. Social security taxes will affect job growth. Workers comp and unemployment insurance will have an impact on labour force participation rates. The list is endless.

The result of combining all of these variables (and the list above is far from exhaustive) will create a socio-economic/actuarial (SEA) model that can be used to analyse and evaluate the social security system in question.

The social security actuary must also be aware of other political impacts that the social security system will bring.

For example, in the U.S.A., the surplus or deficit in the OASDI system will be combined with the government operating budget surplus or deficit in a unified budget. Thus, the operating deficit now being carried by the Bush Government can be argued as being much larger than the amount publicly presented, which includes very large OASDI surpluses. Some of the social

security expenses (and even some benefits) may be financed from general tax revenues. Expanding social security benefits may relieve other systems (including private fringe benefit systems) of associated costs, but expanding social security costs may take money away from other socially desirable public programs (e.g. subsidised housing).

In a very real way, all of these factors need to be a part of the SEA model. Now, there's a challenge.

Chapter 2. The role of actuaries in social security

(a) In a new scheme:
- — What can be afforded (benefits versus costs)?
- — Who will be covered (and not)?
- — What level (if any) of wealth redistribution will occur?
- — What will be the normal retirement age?
- — Who pays (employers/employees/taxpayers)?
- — Will there be reserves (versus purely PAYGO)?
- — If so, how will they be invested?

(b) In reviewing an existing scheme:
- — Are we on track (if not what are the alternatives)?
- — Reconcile this report to the last report.
- — Keep a long-term perspective in choosing model parameters.
- — Do a sensitivity analysis.

(c) At a moment of reform:
- — Amendments to the scheme usually require an actuarial report.
- — What is the impact of the reform?

In all of this work, the actuary must be an unbiased analyst. The actuary assists public policy, but is expected not to be an advocate.

Part II. The Valuation of Public Pension Schemes

Chapter 3. The characteristics of public pension schemes

Social security systems are not just large pension plans. They have many characteristics which mean that the methods used by private pension actuaries are inappropriate for use in the evaluation of social security systems.

Social security systems tend to be compulsory and use an open-group model. One usually ignores any possibility of termination. The plan provides a great deal of credible data that can be used in present and future actuarial evaluations. Having reserves is a choice not a necessity. Contribution compliance can be an issue.

The social security actuary may have to be concerned about intra and inter-generational equity — especially in a PAYGO system.

Thus, having been trained in 'pension maths' may be of only marginal assistance in the understanding of social security systems.

Chapter 4. The actuarial valuation process

The actuarial valuation process sub-divides itself into the following actions:
- — preparatory work (e.g. review the existing plan in detail);
- — data collection and analysis (some data will come from other government agencies and even agencies outside of the government);
- — model building and/or adjustments;
- — selection of assumptions and model variables (having tested alternatives);
- — remember interdependence of variables — be internally consistent;
- — do a base run and analyse the results (including lots of consistency checks);

— run sensitivity analyses;
— write a report (remembering that your audience is not actuarial); and
— present findings and recommendations (remembering the process is political).

Okay, you get the picture. There is really some interesting stuff here. Other chapters in this section include:
— financial systems (e.g. PAYGO versus funded);
— actuarial modelling for public pensions (e.g. deterministic versus stochastic);
— data;
— analysis of past experience (and reconciliation);
— demographic and macroeconomic modelling (how to);
— scheme specific assumptions;
— results and sensitivity analysis;
— the valuation of modifications to a scheme; and
— structured reform considerations.

Part III (Chapters 14-17) covers the valuation of employment injury benefits (i.e. workers compensation).

Part IV (Chapters 18/19) covers the valuation of short-term cash benefits including sickness and maternity benefits and unemployment insurance.

Believe it or not, at this stage we are only 300 pages into a 500-page treatise. The next 75 pages cover a standard actuarial report structure, based on ILO guidelines, using a Caribbean country called Demoland as its model. This would be extremely useful to a practising social security actuary, but may seem redundant to the casual reader.

Another 100 pages contain technical briefs (four) which are detailed advanced topics, again probably only of interest to someone who is actually in the practice area.

And that is one of my two extremely small points of contention about this fine book. It may have a little problem defining its audience.

If its audience is made up of practising social security actuaries, then these people may find the first half of the text somewhat unnecessary. On the other hand, if the audience is expected to be fresh-faced students of social security topics, then the first half is excellent, but the second half goes beyond what I think they (or their instructors) will wish them to know. This is important, since the end product is a 513-page treatise and (I imagine) will have a cost to match.

The second nit that I will pick is the fact that the book (published in 2002) does not mention the existence of IAA (International Actuarial Association) guidelines for social security actuaries. I believe these have now been fully approved by the IAA, and I know that members of ISSA knew that they were being drafted. This is a small nit, but as the document from the IAA is relatively small (less than 20 pages), at least a mention would have been nice.

In total, a great book, well written, carefully written, expertly written, but a book that appears to be searching for a well-defined audience.

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