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REVIEWS

Financial Models of Insurance Solvency. Edited by J. DAVID CUMMINS and RICHARD A. DERRIG. (Kluwer Academic Publishers, Dordrecht, 1989.) £71.65.

This book forms Volume II of the Proceedings of the First International Conference on Insurer Solvency which was held at the Wharton School, University of Pennsylvania in June 1986. The book consists of papers presented at the conference. It is attractively presented and even includes a group photograph of the contributors. However, the type fonts and layout have not been standardised; the papers merely being reproduced in their original form, giving the book a fragmented look.

The main thrust of the book is in the way in which actuarial ideas are blending with the techniques of financial economics in the field of insurance solvency. The emphasis is on a variety of cash flow models incorporating such economic variables as inflation and taxation. This leads on to the inclusion of more esoteric financial economics such as asset pricing and capital structure theory.

Most papers start from the proposition that the current traditional accounting approach to monitoring insurance solvency is no longer valid. The preferred solution is to get a going-concern view of the insurance company using a cash flow model. All the components are potentially stochastic processes, and solvency is the state in which the present market value of the cash inflows exceeds the present market value of the cash outflows. The models need to reflect both expected values and risk. To model such factors with realism it is necessary to view the insurance company within the context of the economy in general and financial markets in particular.

The contribution from Stewart Coutts and Russell Devitt advocates cash flows to assess solvency, but goes much further in suggesting a unified theory of insurance solvency. Such a stochastic theory would embrace both asset and liability risks and would thus be valuable both for solvency assessment and the financial management of insurance companies. The paper from our own Institute's Working Party on Insurance Solvency takes a similar line on the use of emerging costs. Case simulations are provided, and include one of those graphs without which a stochastic analysis would not be complete—this one only has 100 paths. Another paper taking a holistic approach is that from Yehuda Kahane, Charles Tapiero and Laurent Jacque. They stress that solvency depends on the entire operation of the company including underwriting, pricing, expenses and reinsurance.

Other papers deal in detail with particular aspects. Albert S. Paulson and R. Dixit remarkably presented two papers to the conference. The first brings underwriting into the spotlight and in the second they discuss approximations to the tail of the loss distribution. Howard A. Waters focuses on the investment risk in a cohort of endowment policies. J. David Cummins considers premium rates for guaranty funds. Richard A. Derrig discusses surplus allocation and the establishment of fair premiums. The contributions from James Garven and Neil Doherty come to grips with the issue of capital structure. Whilst traditional finance theory shows that capital structure is irrelevant, this seems not to be the case for insurance. Explanations are put forward which centre on various market imperfections, particularly the elastic demand for insurance.

A novel approach is taken in the paper from Jukka Rantala who uses ideas taken from engineering control theory to model the underwriting risks. The insurance company is seen as a series of filters controlling the claims process. Basically, the stream of future claims generate by filtration the reserves, the reinsurer's share and the solvency margins. The model does not yet include asset risks and only linear filters are used.

Taken together the papers in this book represent an important step towards the development of a fully integrated approach to modelling the insurance company. Actuaries and financial economists are producing significant research on solvency.

GORDON MITCHELL

Risk and Insurance. By JAMES L. ATHEARN, S. TRAVIS PRITCHETT and JOAN T. SCHMIT. (West Publishing Co., St Paul, Minnesota, 1989.) \$41.37.

This is a very wide-ranging book, covering everything from life policy conditions and careers in insurance to workers' compensation insurance, consequential loss cover and disability income plans. Apart from a single page on multinational employee benefit plans it is entirely concerned with the United States of America.

The text is a model of clarity and hence easy even for non-U.S.A. readers to follow. The style is thoroughly practical with numerous examples. However, it is not obvious at whom the book is aimed. The preface refers in passing to 'risk managers and consumers of insurance products', but it is surely not realistic to expect a private consumer to wade through its 745 pages. Perhaps the book is meant as an introduction to insurance for people working in commercial businesses; certainly somebody buys it, as it has run to six editions over 27 years!

Each of the 23 chapters deals with a broad topic, e.g. Buying Insurance and Settling Claims; Evaluating Life Insurance Costs; Managing Home Risks. Each chapter includes a realistic section of Consumer Applications, plus discussion questions and 'cases' i.e. practical problems for the reader to answer. There are also several appendices including specimen policies and a glossary.

The standard of production is as high as that of the writing. The book is a hardback with good quality paper, excellent typefaces and layout, clear graphics and a number of photographs.

What use could a U.K. actuary make of this book? If not routinely involved in U.S.A. matters he or she will probably find the chapter on his specialist subject to be useful from time to time. The lengthy glossary is also likely to come in handy for those who (like this reviewer) cannot give an immediate definition of terms such as Keogh plan, combination agent or hold-harmless clause. And if you plan to emigrate to the U.S.A. you should definitely read it before you go!

E. M. BELMONT

Longman International Insurance Reports: Denmark. By CHRISTIAN DINESEN. (Risk & Insurance Research Group.) £120.

This fifty page book is one of a series which also includes West Germany, France and Spain. It is useful for gaining a quick insight into the insurance business of the country from the point of view of a foreign insurer.

The report is readable and well presented. It consists of five chapters, covering, for Denmark:

- (a) economic background,
- (b) political and social background,
- (c) demand for insurance,
- (d) supply side of the insurance market,
- (e) international competitiveness of Danish insurance and its future prospects.

The preface starts by referring to the book as a report on Spain, but, having survived this initial mishap, there appear to be very few errors in the substantial quantity of useful tables provided. These tables compare various characteristics of the Danish economy and insurance industry both through the last thirty years and also in comparison with other countries throughout the world. There are over fifty of these small tables and they are skilfully used within the text to build up a coherent picture of the Danish insurance industry and prospects.

The detail may well require fairly frequent updating (for instance the state-controlled life assurance company, with about a quarter of the Danish life market, has recently been privatised). But this need for updating is a consequence of the usefulness of the book rather than a criticism. It should form part of a helpful series of insurance short-reference books for different countries.

P. E. B. FORD