

SUMMARIES OF RESEARCH DISCUSSION PAPERS

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A LIMITED EXPERIMENT ON V_2

BY S. BENJAMIN

(Paper No. 31 deposited in the Library in July 1983)

THE note indicates (i) that a V_2 net premium reserve can be immunized by a (redeemable) gilt whereas an ordinary net premium reserve cannot, and (ii) that a V_2 reserve is relatively insensitive to i , the rate of interest for future new money.

ALTERNATIVES TO THE NET PREMIUM VALUATION

BY C. D. DAYKIN

(Paper No. 32 deposited in the Library in July 1983)

FOLLOWING proposals for a statutory minimum standard of valuation for long-term insurance liabilities involving a net premium approach, associated with market values for the corresponding assets, a paper presented to the Institute in January 1975 by Bews *et al.* (*J.I.A.*, **102**, 61) suggested some modifications of the straightforward net premium method, which would take into account directly the yield which had already been secured on assets backing the accumulated reserves. Their paper drew attention to some of the weaknesses of the modified net premium methods, which have become referred to as V_2 and V_3 split interest methods, but no further work appears to have been published on the practical problems of using these approaches.

The present paper looks again at the V_2 and V_3 modifications to the net premium method of valuation, in the context of Part VI of the Insurance Companies Regulations 1981, which appears to lay down a minimum standard of valuation in terms of a net premium valuation at a single rate of interest may be determined having regard to the yields already secured, as well as to a conservative assumed yield on future investments.

The conclusion is drawn that the V_2 and V_3 methods may produce reserves significantly weaker than was apparently intended by the regulations and that severe limitation of future premiums valued is essential if reserves of a strength of

an ordinary net premium valuation at an appropriately weighted average of the secured yield and the long-term rate of interest are to be obtained. The paper also demonstrates how the V_2 and V_3 reserves respond to changes in the assumed long-term rate of interest and secured yield and behave in sometimes unexpected ways.

THE ANALYSIS, AND AN APPLICATION, OF DIVORCE DATA

BY J. G. SPAIN

(Paper No. 33 deposited in the Library in January 1984)

A few years ago, it occurred to the author that some form of insurance against the financial hazards associated with divorce might be attractive to those at risk, which is a large proportion of the married population. This may seem fanciful, but there is a real need, particularly since current draft legislation is aimed at attaining the concept of 'a clean break'.

This is the idea behind the paper. While the statistical background has been scrutinized prior to publication (*J.I.A.*, **109**, 453), this is not the case for the rest of what has been written, for which the author takes full responsibility.

As will be clear, detailed consideration of the various problems led the author to the inevitable conclusion that such a contract could not be underwritten extensively by a prudent U.K. financial institution, for the reasons stated.

THE MATCHING OF ASSETS TO LIABILITIES

BY A. J. WISE

(Paper No. 34 deposited in the Library in April 1984)

THE paper, which has been published in full (*J.I.A.*, **111**, 375), is supplementary to another by the same author (*J.I.A.*, **111**, 445).

It provides the detailed mathematical analysis on which the primary paper is based, and describes the general mathematical model and the alternative definitions of matching which are used. Explicit solutions for matching portfolios are stated with proofs which have been checked by Dr T. Stanley of the City University. Formulae for selected stochastic models are given together with the algorithm which was used to derive all the solutions quoted in the primary paper.

The analysis is given an alternative geometrical treatment and there is also a description of the key features of the actuarial model to which the matching theory relates.