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ACTUARIAL APPROACHES TO FINANCIAL MANAGEMENT

Seminar, 16 November 1993

A one-day seminar was held in London, at the Great Western Royal Hotel, by the Institute of Actuaries and the Faculty of Actuaries to review the British papers which were presented at the 3rd AFIR International Colloquium held in Rome earlier in the year. The seminar was attended by about 170 participants, and was based on a total of four sessions and a keynote address.

The morning commenced with an Introduction by the President of the Institute of Actuaries, Mr L. J. Martin, who remarked that seventeen out of the fifty-nine papers presented at the AFIR International Colloquium in Rome were by British authors. He also contrasted the different approaches by the international authors, some of whom adopted a theoretical approach and others a more practical application of the theory. He concluded by hoping that the British contribution would be as prominent in 1994 in Florida, and encouraged authors to combine both theory and practice in their work.

Mr R. G. Gillespie, the chairman of the first session on Modelling & Valuation, introduced the speakers and then handed over to Mr P. R. Lockyer to open the session. The papers discussed in this session were:

P. M. Ludvik	The Wilkie Model Revisited,
A. S. Macdonald	What is the value of a valuation?
A. D. Wilkie	Can dividend yields predict share price changes?

An interesting discussion followed, despite only one of the authors, Professor Wilkie, being present at the time. The topics discussed ranged from the suitability of the Wilkie model in certain circumstances to the problems of finding a suitable method of measuring dividend yield consistently over a period of time.

The second session was split into two simultaneous sessions on Asset Liability Management and Financial Risk Control. The session on Asset Liability Management was chaired by Mr A. J. Wise, who also opened the discussion because of the late arrival of Mr Macdonald. The papers discussed in this session were:

P. E. B. Ford	Some further investigations into cashflow matching,
M. W. Griffin	Asset/liability management of the *bons de capitalisation* product,
R. J. Squires	The operation of unitised funds incorporating minimum benefit guarantees.

Mr Ford introduced the audience to a combination of linear programming and cleansing techniques using SOAP (Stochastic Options Asset-mix Program) and SUDS (Surplus Deficit System) and Mr Squires discussed the application of his theory to a practical situation.

At the same time the alternative session on Financial Risk Control was chaired by Mr W. M. Abbott and the discussion was opened by Mr. R. S. Clarkson. The papers discussed in this session were:

P. G. Kennedy	Financial risks in the audit of a life insurer,
J. W. F. Mariathasan & P. F. Rains	Strategic financial management in a general insurance company.

There was general agreement on the benefits in reducing financial risk, a process as advocated in the paper by Mr Kennedy. The second paper emphasised performance relative to competitors. It was accepted that such models often needed cultural change within an organisation to be accepted.

The participants then adjourned for lunch and an informal discussion on the morning's sessions and then reconvened for the second split session on Derivative Instruments and Pension Fund Investment.

The session on Derivative Instruments was chaired by Mr A. D. Smith and the opener was Mr G. Mariathasan, who introduced the following papers:

P. G. Kennedy	Managing financial instruments in a life company portfolio,
P. J. Lee	Portfolio selection in the presence of options and the distribution of return of portfolios containing options.

There was a contrast between risk and return in the two papers, in that the first paper by Mr Kennedy concentrated on the control of risk when using derivatives within a life company, whilst the second looked at the profitability (or not) from holding options within a portfolio.

Unfortunately Mr Kennedy was unable to make the session, but there was a lively discussion on the uses of derivatives for asset (and liability) management and the role of the actuary in this area. The one conclusion reached by all was that the quality of personnel was of the greatest importance in this area.

The concurrent session was on Pension Fund Investment, chaired by Mr Rains and opened by Mr C. W. McLean. The papers discussed at this session were:

C. D. Daykin, D. G. Ballantine & D. J. M. Anderson	Modelling the assets and liabilities of a pension fund,
M. W. Griffin	A new rationale for the different asset allocation of Dutch and U. K. pension funds,
P. J. Haines	The investment of pension funds,
A. J. Wise	The investment return from a constantly rebalanced asset mix.

Mr Griffin's paper concluded that the major reason for the different asset allocation of U.K. and Dutch pension funds was the difference in the actuarial costs method between the two countries. Mr Wise compared the returns from a passive investment policy with that from a rebalanced one. His model predicted that a rebalanced portfolio had a lower expected return.

Much of the discussion focused on the paper by Messrs Daykin, Ballantine & Anderson, which used a stochastic model to predict the expected value of a pension fund after 15 years. In response to a question, it appeared that the models 8% failure rate from the most conservative investment stance (10% to index-linked) occurred because some of the liabilities were much longer than the longest index-linked stock available.

The meetings adjourned for tea, and then rejoined for the keynote address. Professor H. Markowitz gave a case study of developments in financial management by outlining some of his work for Daiwa. This work applied his own brand of mathematical techniques to finance using modern portfolio theory (MPT) and linear programming to optimise the stock selection in a portfolio so as to outperform a specific benchmark. He produced some outstanding results, which made many people in the room consider whether a traditional investment department was worth having.

The final session commenced with Professor Wilkie in the chair and Mr G. J. Clark opened the discussion on the following papers:

R. S. Clarkson	Some observations on the theory of games,
S. M. Coutts	Immunization is dead,
A. D. Smith	Towards a quantitative matching philosophy.

A wide-ranging final discussion followed inspired by the opener's remarks. Mr Clarkson and Mr Smith introduced their own papers, but Mr B. H. Shaw introduced the paper on immunisation on Mr Coutts' behalf.

At the end of the afternoon Professor Wilkie made some closing remarks on the day's activities. He stated that the day had been an experiment, but a show of hands indicated that it had been a success and that there was some support for some kind of post-qualification course in Mathematical Methods in Finance.

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