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Worldwide Asset and Liability Modeling
Publications of the Newton Institute

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WORLDWIDE ASSET AND LIABILITY MODELING

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Preface

Few problems are as important and complex to institutions and individuals as the management of their assets in such a way that their liabilities can be covered and their goals achieved. The assets must be invested over time to achieve favorable returns subject to various uncertainties, policy and legal constraints, taxes and other requirements, and liability commitments. Most investors, be they individuals or institutions, do not diversify properly across markets or across time, particularly in relation to their liability commitments. There are many motivations for studying asset liability management, including:

(a) the results may be useful to set guidelines for institutions and individual investors concerning their asset allocation mixes; the models integrate various decisions over time with the constraints, preferences and uncertainties inherent in the investment problem; and

(b) the models consider temporal dependence of asset returns and liability commitments, path dependent preferences, short and long term tradeoffs and provide for realistic measurement of risks and their tradeoff with investment returns considering the effects of taxes, transaction costs and other problem features.

To study this area, I organized a week-long set of research seminars under the general theme ‘Worldwide asset and liability modeling,’ on May 15–20, 1995 at the Isaac Newton Institute for Mathematical Science on the campus of the University of Cambridge. This research program was followed by an institutional investor workshop on Saturday May 20th. This week’s activities formed part of the six month Financial Mathematics Seminar held at the Newton Institute from January to June 1995. I organized this part of the program under the general direction of the financial mathematics seminar organizers Mark Davis, Stewart Hodges, Ioannis Karatzas and Chris Rogers. This volume consists of twenty-five papers arising from this program. Most of the papers appearing here were presented in Cambridge with a few added to round out the volume.

The research papers in this volume utilize several approaches and integrate a number of techniques such as single period mean-variance, multi-period models using stochastic programming with and without specific decision rules, dynamic stochastic control, stochastic dynamic programming and simulation. These papers discuss a variety of models that have been implemented, are close to being implemented, or represent new innovative approaches that may lead to future novel applications.

The volume also discusses issues concerned with the future of asset-liability management modeling. This includes models for individuals and various financial institutions such as banks and insurance companies. This will lead to custom financial engineering products. These models hold much promise for the future to provide users with organized, diversified systems to help manage their financial affairs in an increasingly complex financial world. The models force diversification.
and attention to extreme events and hence help minimize the possibility of financial
disasters while at the same time providing good advice in ordinary circumstances
balancing the various complex elements of the investor’s situation.

The seminar in Cambridge took place in the efficient and most pleasant facilities
of the Isaac Newton Institute on the campus of the University of Cambridge. The
staff of the Institute, particularly Anne Cartwright, Florence Leroy, the Associate
Director John Wright and Director Michael Atiyah were most helpful before and
during our pleasant stay in Cambridge. Financial mathematics seminar chairman
Chris Rogers was most supportive and helpful throughout this activity. My work
in the practical use of asset and liability allocation models has been supported,
encouraged and improved by my consulting association since 1989 with the Frank
Russell company. Special thanks go to my Russell colleagues Chris Hensel and
Andy Turner for their encouragement and our joint work. The Natural Sciences
and Engineering Research Council of Canada has supported my research in stochas-
tic programming including financial theory and asset-liability applications at the
University of British Columbia since 1969. This support was very helpful with this
project as well.

I was pleased to have John Mulvey join me as a co-editor of this volume. Besides
co-authoring the introduction with me, John adds his special insights gained from
years of outstanding research and consulting to improve the papers in this volume
as well as contributing several outstanding co-authored papers based on his own
pioneering work. Our editor David Truah has been most helpful and patient
in the preparation of this volume. Finally special thanks go to my wife Sandra
Schwartz for much encouragement and help on the seminar in Cambridge and in
the preparation of this volume.

William T. Ziemba

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