Institute
and Faculty
of Actuaries

大浪淘沙过后，发现价值

夏达伟(David Hare)

2015年5月15日

我所要讨论的内容

“全世界金融服务市场在不断发展和演变中，作为一个‘高精尖行业’中的成员，我们可以借鉴的关于精算和风险管理方面文献资料浩如烟海，而这些又对于我们有效开展精算工作异常重要。夏达伟先生，英国精算师协会的前任会长，将列举一些他从业30年来对他的思想产生过深远影响的精算和保险类出版物，并突出强调了一些他认为经受住了时间考验的深刻见解。”

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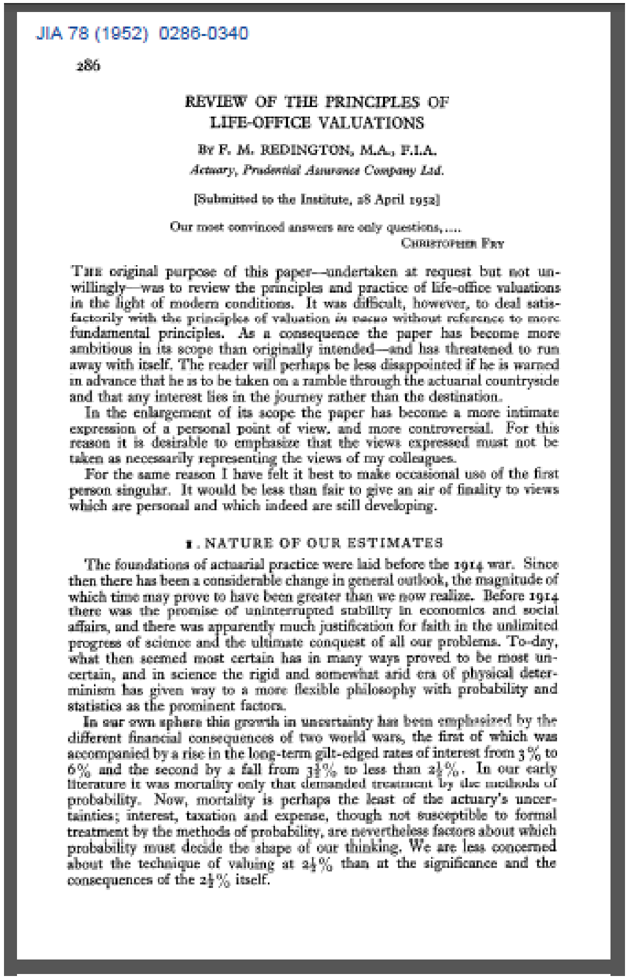
人寿保险公司估价原则回顾



JIA 78 (1952) 0286-0340

286

REVIEW OF THE PRINCIPLES OF
LIFE-OFFICE VALUATIONS

By F. M. REDINGTON, M.A., F.I.A.
Actuary, Prudential Assurance Company Ltd.

[Submitted to the Institute, 28 April 1952]

Our most convinced answers are only questions, ...
CHRISTOPHER FRY

The original purpose of this paper—undertaken at request but not unwillingly—was to review the principles and practice of life-office valuations in the light of modern conditions. It was difficult, however, to deal satisfactorily with the principles of valuation *in vacuo* without reference to more fundamental principles. As a consequence the paper has become more ambitious in its scope than originally intended—and has threatened to run away with itself. The reader will perhaps be less disappointed if he is warned in advance that he is to be taken on a ramble through the actuarial countryside and that any interest lies in the journey rather than the destination.

In the enlargement of its scope the paper has become a more intimate expression of a personal point of view, and more controversial. For this reason it is desirable to emphasize that the views expressed must not be taken as necessarily representing the views of my colleagues.

For the same reason I have felt it best to make occasional use of the first person singular. It would be less than fair to give an air of finality to views which are personal and which indeed are still developing.

1. NATURE OF OUR ESTIMATES

The foundations of actuarial practice were laid before the 1914 war. Since then there has been a considerable change in general outlook, the magnitude of which time may prove to have been greater than we now realize. Before 1914 there was the promise of uninterrupted stability in economics and social affairs, and there was apparently much justification for faith in the unlimited progress of science and the ultimate conquest of all our problems. To-day, what then seemed most certain has in many ways proved to be most uncertain, and in science the rigid and somewhat arid era of physical determinism has given way to a more flexible philosophy with probability and statistics as the prominent factors.

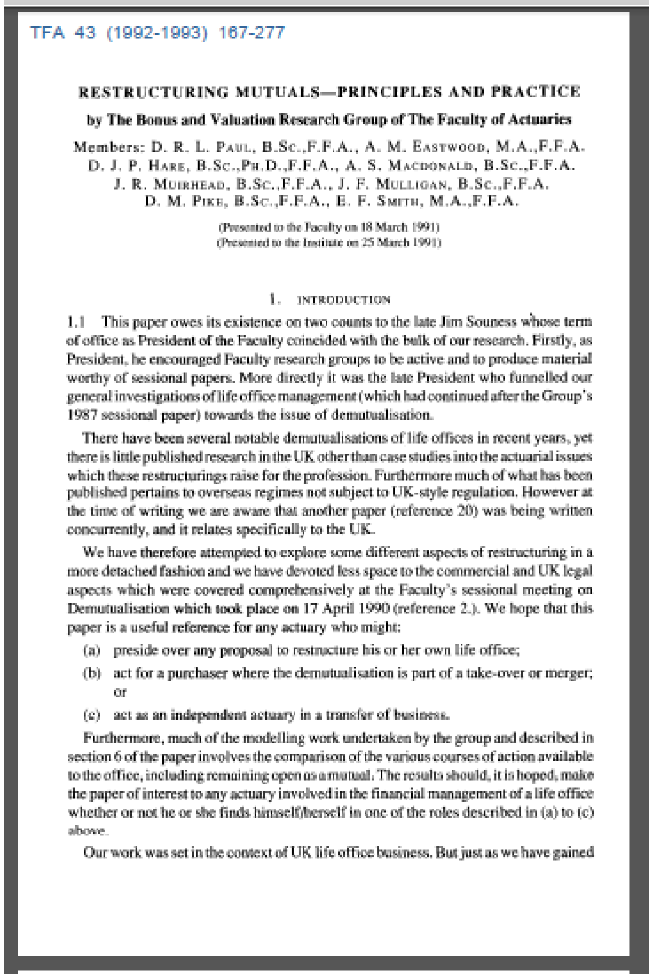
In our own sphere this growth in uncertainty has been emphasized by the different financial consequences of two world wars, the first of which was accompanied by a rise in the long-term gilt-edged rates of interest from 3% to 6% and the second by a fall from 3½% to less than 2½%. In our early literature it was mortality only that demanded treatment by the methods of probability. Now, mortality is perhaps the least of the actuary's uncertainties; interest, taxation and expense, though not susceptible to formal treatment by the methods of probability, are nevertheless factors about which probability must decide the shape of our thinking. We are less concerned about the technique of valuing at 2½% than at the significance and the consequences of the 2½% itself.

- 提供“免疫”的理论基础– 我们现在称作资产/负债匹配
- 部分解读20世纪80年代的人寿保险业实务考试
- 我觉得我最有希望考及格的专业之一！

悟道：

- 向专家前辈学习
- 不要总觉得别人都知道得比你多，他们只是看上去更自信些罢了！

互助保险公司重组 – 原则和实践



TFA 43 (1992-1993) 167-277

RESTRUCTURING MUTUALS—PRINCIPLES AND PRACTICE

by The Bonus and Valuation Research Group of The Faculty of Actuaries

Members: D. R. L. Paul, B.Sc.,F.F.A., A. M. Eastwood, M.A.,F.F.A.
D. J. P. Hare, B.Sc.,Ph.D.,F.F.A., A. S. Macdonald, B.Sc.,F.F.A.
J. R. Muirhead, B.Sc.,F.F.A., J. F. Mulligan, B.Sc.,F.F.A.
D. M. Pike, B.Sc.,F.F.A., E. F. Smith, M.A.,F.F.A.

(Presented to the Faculty on 18 March 1991)
(Presented to the Institute on 25 March 1991)

1. INTRODUCTION

1.1 This paper owes its existence on two counts to the late Jim Souness whose term of office as President of the Faculty coincided with the bulk of our research. Firstly, as President, he encouraged Faculty research groups to be active and to produce material worthy of sessional papers. More directly it was the late President who funnelled our general investigations of life office management (which had continued after the Group's 1987 sessional paper) towards the issue of demutualisation.

There have been several notable demutualisations of life offices in recent years, yet there is little published research in the UK other than case studies into the actuarial issues which these restructurings raise for the profession. Furthermore much of what has been published pertains to overseas regimes not subject to UK-style regulation. However at the time of writing we are aware that another paper (reference 20) was being written concurrently, and it relates specifically to the UK.

We have therefore attempted to explore some different aspects of restructuring in a more detached fashion and we have devoted less space to the commercial and UK legal aspects which were covered comprehensively at the Faculty's sessional meeting on Demutualisation which took place on 17 April 1990 (reference 2.). We hope that this paper is a useful reference for any actuary who might:

(a) preside over any proposal to restructure his or her own life office;

(b) act for a purchaser where the demutualisation is part of a take-over or merger; or

(c) act as an independent actuary in a transfer of business.

Furthermore, much of the modelling work undertaken by the group and described in section 6 of the paper involves the comparison of the various courses of action available to the office, including remaining open as a mutual. The results should, it is hoped, make the paper of interest to any actuary involved in the financial management of a life office whether or not he or she finds himself/herself in one of the roles described in (a) to (c) above.

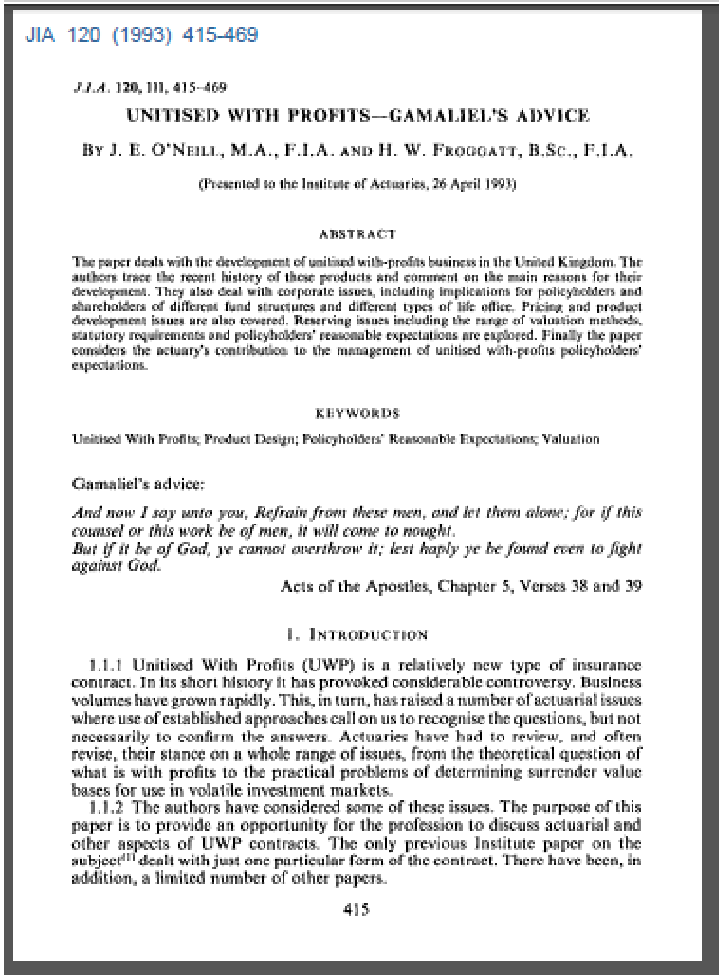
Our work was set in the context of UK life office business. But just as we have gained

- 精算师协会红利和估价研究小组委派的论文
- 我的第一篇会议论文
- 随机建模突出了“飞轮效应”

悟道：

- 在一起分享想法和知识非常有趣并且有益
- 长期负债能够对于保险公司的资产负债表构成长期影响

累积式分红保险(Unitised with Profits) – 甘梅利尔(Gamaliel)的忠告



JIA 120 (1993) 415-469

J.I.A. 120, III, 415–469

UNITISED WITH PROFITS—GAMALIEL'S ADVICE

By J. E. O'Neill, M.A., F.I.A. and H. W. Froggatt, B.Sc., F.I.A.

(Presented to the Institute of Actuaries, 26 April 1993)

ABSTRACT

The paper deals with the development of unitised with-profits business in the United Kingdom. The authors trace the recent history of these products and comment on the main reasons for their development. They also deal with corporate issues, including implications for policyholders and shareholders of different fund structures and different types of life office. Pricing and product development issues are also covered. Reserving issues including the range of valuation methods, statutory requirements and policyholders' reasonable expectations are explored. Finally the paper considers the actuary's contribution to the management of unitised with-profits policyholders' expectations.

KEYWORDS

Unitised With Profits; Product Design; Policyholders' Reasonable Expectations; Valuation

Gamaliel's advice:

And now I say unto you, Refrain from these men, and let them alone; for if this counsel or this work be of men, it will come to nought.
But if it be of God, ye cannot overthrow it; lest haply ye be found even to fight against God.

Acts of the Apostles, Chapter 5, Verses 38 and 39

1. INTRODUCTION

1.1.1 Unitised With Profits (UWP) is a relatively new type of insurance contract. In its short history it has provoked considerable controversy. Business volumes have grown rapidly. This, in turn, has raised a number of actuarial issues where use of established approaches call on us to recognise the questions, but not necessarily to confirm the answers. Actuaries have had to review, and often revise, their stance on a whole range of issues, from the theoretical question of what is with profits to the practical problems of determining surrender value bases for use in volatile investment markets.

1.1.2 The authors have considered some of these issues. The purpose of this paper is to provide an opportunity for the profession to discuss actuarial and other aspects of UWP contracts. The only previous Institute paper on the subject[1] dealt with just one particular form of the contract. There have been, in addition, a limited number of other papers.

415

- 回顾关于英国的累积式分红保险的论文，包括其历史以及对于定价、准备金和管理问题的讨论

- 这是我第一次在会议讨论中发言！

悟道：

- 从事后看来，本来可以怎样做从而使结果大为改观？

- 学习当众发言的最佳途径就是“去说”-即便你最初没有打算说也无大碍！ (当然，有准备最好)

到期保本准备金：两种途径

ELSEVIER
Insurance: Mathematics and Economics 21 (1997) 113–127
INSURANCE MATHEMATICS & ECONOMICS

Reserving for maturity guarantees: Two approaches

Phelim P. Boyle [a,*], Mary R. Hardy [b,1]
[a] Centre for Advanced Studies in Finance University of Waterloo, Waterloo, Ont., Canada, N2L 3G1
[b] Department of Actuarial Mathematics and Statistics, Heriot-Watt University, Edinburgh EH14 4AS, UK

Received February 1997; received in revised form June 1997

Abstract

This paper examines the pricing of and reserving for certain guarantees that are associated with some insurance contracts. Specifically we deal with maturity guarantees, which provide a minimum level of benefits at contract maturity. Under these contracts the policyholders' premiums are invested in a specified portfolio. When the contract matures the value of the benefit is guaranteed not to fall below a certain level. We examine and contrast two approaches to the pricing and reserving for these guarantees. The first approach is based on stochastic simulation of future investment returns. The second approach is based on modern option pricing theory. The reserving procedures under the two approaches differ dramatically. We provide numerical estimates of the reserves required under each approach using realistic assumptions. We find that the conventional option hedging strategies in the presence of transaction costs become relatively expensive. © 1997 Elsevier Science B.V.

Keywords: Maturity guarantees; Segregated funds; Reserving; Option pricing; Dynamic hedging

1. Introduction

Insurance companies have, in recent years, become more innovative in their product designs, due to increasing pressure from competing financial institutions. One such development has been the inclusion of financial guarantees and other embedded options in insurance products. In the United States there has been a dramatic growth in equity indexed annuities where the basic benefit consists of a fixed benefit and a variable amount related to the performance of a stock market index. Similar types of products which combine a guarantee with a payoff linked to some index or indices have recently become popular in the United Kingdom. In Canada segregated funds contracts typically contain a maturity guarantee. In these contracts the benefit depends directly on the investment performance of a given portfolio and the guarantee provides a minimum amount when the contract matures. Clearly the guarantee may become effective if the investment performance of the portfolio is particularly poor over the last few years of the contract. There has been considerable interest in the valuation of the liabilities associated with such guarantees and the associated problem of reserving for these liabilities. These topics form the subject matter of the present paper.

Such guarantees cannot be dealt with adequately using traditional deterministic actuarial approaches. They were the subject of considerable concern in the United Kingdom some 20 years ago. To address these concerns, the

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[1] E-mail: M.R.Hardy@ma.hw.ac.uk.

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PII S0167-6687(97)00026-7

- 由标准人寿赞助进行研究，通过随机模拟和期权定价理论关注到期本金保证

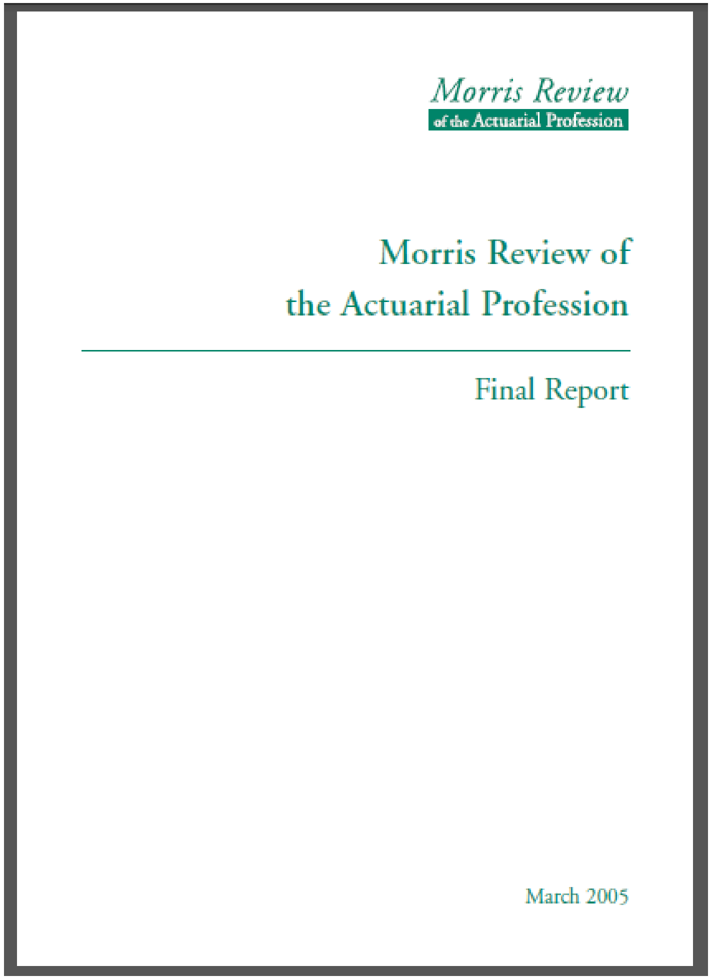
- 突出保证的预期成本和95%及99%的成本间的巨大差异

悟道：

- 尾部分布太重要了，但并非总能引起足够的重视

- 他山之石，可以攻玉

莫里斯点评精算业



Morris Review
of the Actuarial Profession

Morris Review of
the Actuarial Profession

Final Report

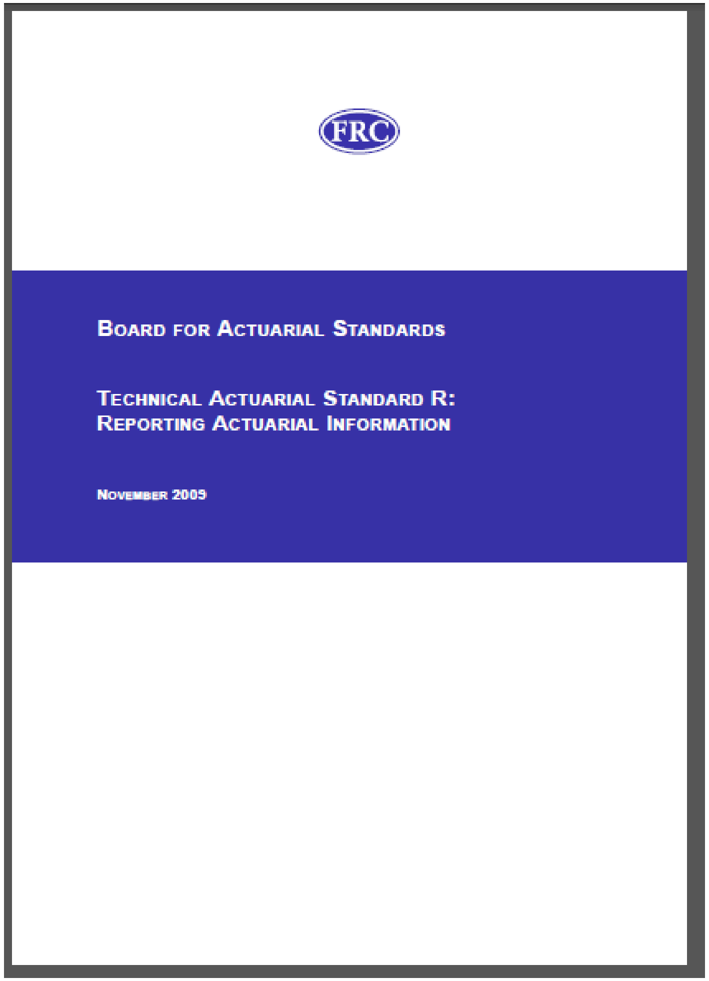
March 2005

- 因公平人寿后续点评彭罗斯报告，
- 提出了一些重要建议，包括引起独立监督和财务报告委员会(Financial Reporting Council)制定技术标准

悟道：

- “像别人看你那样审视自我”
- 接受反馈，并据以采取行动
- 相关的技能和最新、最先进的技能以及CPD的重要性

精算技术标准R：精算信息报告



FRC

Board for Actuarial Standards

Technical Actuarial Standard R:
Reporting Actuarial Information

November 2009

- 财务报告委员会为精算标准制定的首个精算技术标准

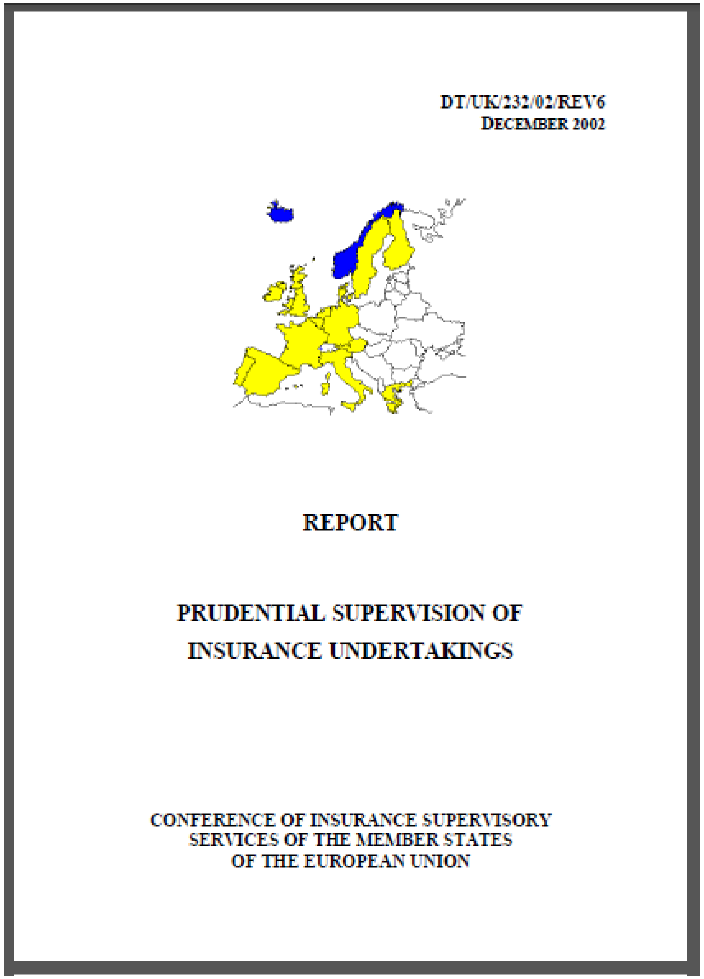
- 围绕可靠度目标、用户对于精算要求的充分的信息的需要而建立

悟道：

- 沟通的重点在于用户，而非作者

- 有效的沟通不容易做到，特别是在具有显著不确定性的时候– 但是，这对于我们的声誉至关重要

保险企业的审慎监管



DT/UK/232/02/REV6
DECEMBER 2002

REPORT

PRUDENTIAL SUPERVISION OF
INSURANCE UNDERTAKINGS

CONFERENCE OF INSURANCE SUPERVISORY
SERVICES OF THE MEMBER STATES
OF THE EUROPEAN UNION

- 以保罗·夏尔马为首的监管小组调查了为何保险公司破产或“险些出事”
- 发现根源在于“管理层如何作为”，而非“资金问题”！
- 为《偿付能力监管标准II》 (Solvency II) 第2大支柱铺路

悟道：

- 第2大支柱的重要性的特点– 自我风险与偿付能力评估(ORSA)、企业风险管理(ERM)框架、治理– 和适当的监管权力
- 我们是在为管理决策加分还是减分？

中国保监会引进中国风险导向偿付能力体系(C-ROSS)

On my agenda

features@theactuary.com

Winds of change

Dr Yulong Zhao talked to **Haijing Wang** and **Wen Li** on the background, progress and far-reaching significance of China's Risk Oriented Solvency System (C-ROSS) on the Chinese insurance industry

Dr Yulong Zhao is the deputy director of the Finance and Solvency Regulation Department of the China Insurance Regulatory Commission (CIRC). He started his working life as a bridge designer. Twenty years on he continues to design, but now it is regulation rather than bridges. It's been almost two years since China launched its insurance regulation reformation and he is one of the leading architects of the second generation of the Chinese insurance industry's regulatory regime. Here, he discusses how China's Risk Oriented Solvency System (C-ROSS) will benefit the insurance market as a whole and why it would bring regulation in the country to the next level.

Why did you choose to work in insurance regulation?

I grew up in a traditional Chinese family and my Mum always taught me that I should work to serve the public interest. I was also heavily influenced by the educational thoughts of Confucius – 'he who excels in study can follow an official career'. In the meantime, I was looking for a role with a strong technical element. Working for the insurance regulator offered me all of these things.

What is the background to the reformation of Chinese insurance regulation?

China's insurance market has enjoyed a decade of high growth. In 2012, annual premiums increased to £155 billion and China became the fourth largest insurance market in the world. With fast growth in premiums, the Chinese market is becoming more open and is gradually maturing. The current insurance regulation regime is strict and overly regulated. It controls product terms and conditions, premium rates and investment channels. In light of the overall plan for market-orientated reformation for the financial industry in China, this is no longer suitable.

The CIRC recognises the shortcomings of the current regime, for example, it is volume rather than risk based. It does not differentiate companies from a risk management perspective and does not have a mechanism to encourage a better risk management system in firms.

Globally, we see the move to risk-orientated regulation. Basel III in the banking sector, the International Association of Insurance Supervisor's new Insurance Core Principles, the EU's Solvency II, and the Solvency Modernization Initiative in the US.

Against this background, the CIRC is keen to develop a new regulatory regime to meet local market needs and offer useful experience to other emerging markets.

Tell us more about the infrastructure and the timeframe of C-ROSS?

The CIRC launched the C-ROSS project in April 2012 and planned the new regime to be in force within three to five years. Based on current progress, we hope it will be in place by 2015 at the earliest. We have finished the design of the top-level framework, which complies with IAIS requirements and is also used in both Solvency II and the Basel system. However, the contents of the three pillars have many elements of localisation, reflecting China's character as an

[illegible] THE ACTUARY • April 2014
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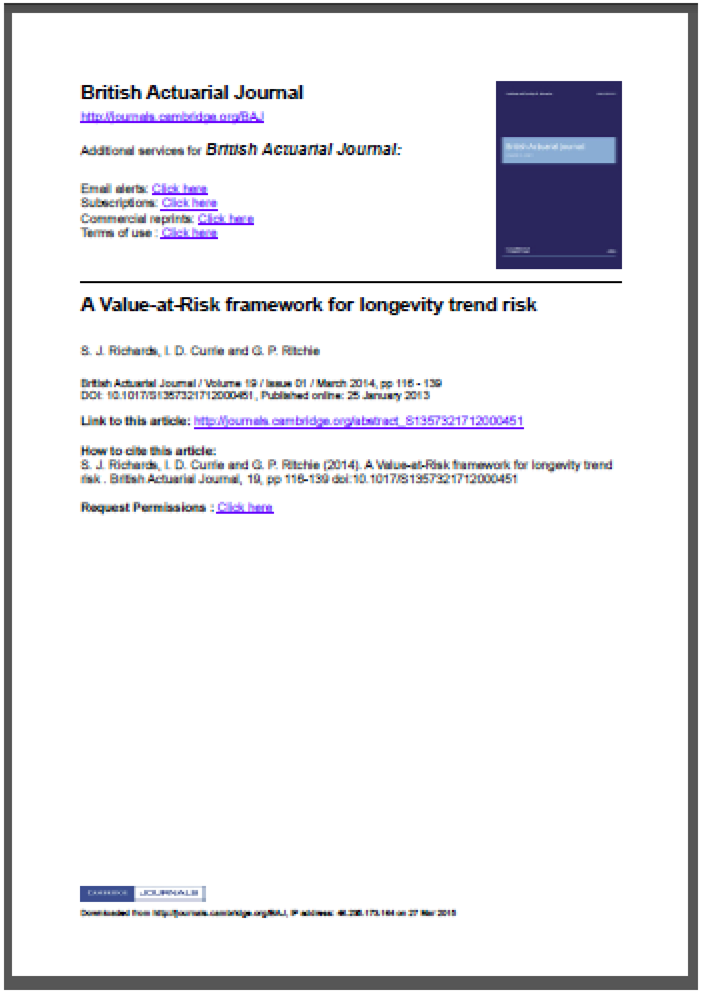
- 在中国形成，通过了广泛的行业协作并借鉴于其他国家的作法和经验

悟道：

- 证明了趋向于整体性、基于风险、偿付能力监督机制的国际趋势
- 我们在精算领域和好朋友及合作伙伴的美好记忆

长寿风险趋势的风险价值框架



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A Value-at-Risk framework for longevity trend risk

S. J. Richards, I. D. Currie and G. P. Ritchie

British Actuarial Journal / Volume 19 / Issue 01 / March 2014, pp 116 - 139
DOI: 10.1017/S1357321712000451, Published online: 25 January 2013

Link to this article: http://journals.cambridge.org/abstract_S1357321712000451

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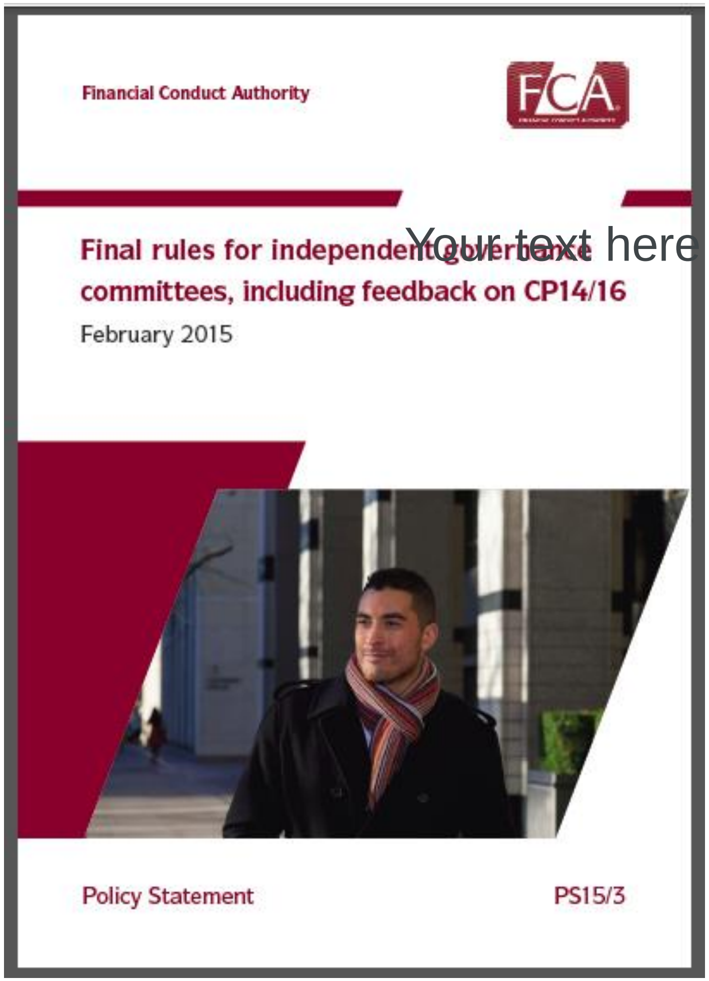
- 2012年的研究报告模拟了未来的死亡率期望如何可能在1年时间内发生改变
- 作者用同样的人口资料建立了若干个模型，发现在99.5% VAR结果发生普遍变化

悟道：

- “所有的模型都是错的，但有些是有用的”
- 重要的是我们了解我们所面对的不确定性 …
- … 但仍能提供相关的建议

独立治理委员会最终规则，包括对CP14/16的反馈



Financial Conduct Authority

FCA

Final rules for independent governance committees, including feedback on CP14/16

February 2015

Policy Statement

PS15/3

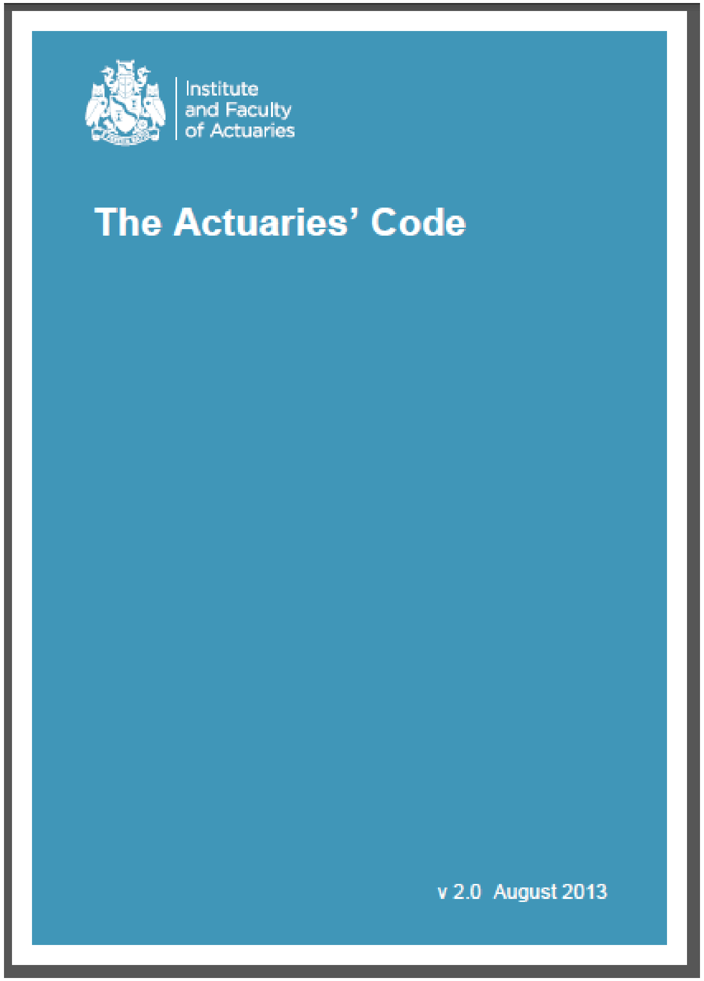
Your text here

- 对于英国的养老金保险市场缺乏竞争力问题的部分回应
- 许多员工拥有养老金储蓄计划，他们却对此知之甚少，现在可能不代表其现金价值

悟道：

- 精算技能与“行为”问题以及“谨慎的”偿付能力管理相关
- 作为金融服务市场的一部分，精算师在为客户创造价值方面会有所作为

精算师规范


Institute
and Faculty
of Actuaries

The Actuaries’ Code

v 2.0 August 2013

- 适用于IFoA所有会员的职业行为原则
- 诚信；能力和谨慎；公正；合规；沟通

悟道：

- 不知者不擅为，需要帮助时要勇于提出
- 我们整个行业的声誉有赖于大家共同来维护
- 中肯、确切，坚持下去– 而且，永远做正确的事

Institute
and Faculty
of Actuaries

大浪淘沙过后，
发现价值

问题?
建议?

夏达伟
David Hare
前任会长, 英国精算师协会
Past President , Institute and Faculty of Actuaries
May 2015