

# Making financial uncertainty count: Unit-linked insurance, investment and the individualisation of financial risk in British life insurance

Arjen van der Heide 

Max Planck Institute for the Study of Societies, Cologne, Germany

## Correspondence

Arjen van der Heide, Max Planck Institute for the Study of Societies, Paulstraße 3, Cologne 50676, Germany.  
Email: vdh@mpifg.de

## Abstract

While most scholarship in the sociology of insurance has focused on the making of insurance risk by investigating mechanisms of pooling and spreading, this article examines insurers' management of financial uncertainty. Based on a large corpus of written sources and 44 semi-structured oral history interviews, this article seeks to describe and explain a shift in how financial uncertainty is dealt with in British life insurance, away from traditional multipolar arrangements revolving around actuarial prudence and discretion, towards bipolar arrangements that rely on explicit risk quantification and the logic of risk-based capital to "individualise" financial risk. The article identifies two factors that were key in bringing about this shift: first, the competitive dynamics that unfolded with the emergence of challenger "unit-linked" insurers in the 1960s, and, second, changes in the professional ecology, as manifested by the changing relations between the actuarial profession and insurance supervisors.

## KEYWORDS

economic sociology, individualisation of financial risk, life insurance, modern finance theory, professions, sociology of insurance

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## 1 | INTRODUCTION

Sociological studies of insurance often focus on the ways in which insurers “make” risks (Van Hoyweghen, 2007)—that is, the practices through which insurers construct risk pools, classify individuals into different risk groups, market risk, manage their relations to policyholders and seek to include or exclude specific individuals from their risk pools (Baker, 2000, 2002; Bouk, 2015; Ericson & Doyle, 2004; Ewald, 1991; Lehtonen, 2014; Lehtonen & Liukko, 2015; McFall, 2015). An important theme in this literature concerns the production of insurance solidarity, which is bounded by the conditions within which individuals are allowed to enter a risk pool and the extent to which they are compensated when an insured risk materialises. While it is often understood that individual policyholders should pay according to their “risk”, it is also understood that there are moral and practical limits to the ways in which insurers can construct risk. Though insurers may fantasize about individualised risk prices, in practice they must price insurance plans based on broad classifications creating elements of solidarity beyond mere “chance solidarity” (Lehtonen & Liukko, 2015; McFall, 2019; Meyers & Van Hoyweghen, 2018).

While much of the sociology of insurance focuses on insurers’ efforts to construct risk out of mortality, fire hazards, illness and so on, this article rather focuses on the “backstage” practice of financial risk. In contrast to the “diversifiable” insurance-related risks, financial risk refers to the “non-diversifiable” forms of uncertainty that come, for instance, with insurers’ investment activities. This aspect is a non-negligible part of insurance arrangements, especially of long-term ones like life insurance. As existing sociological scholarship on insurance has pointed out, most insurance contracts have a savings and investment dimension (Alborn, 2009; Baker & Simon, 2002; Chan, 2012b; Ericson & Doyle, 2004; Lehtonen & Liukko, 2015), which is not only a feature of how insurance arrangements are structured but may also play an important role in insurance marketing (Alborn, 2002; Lehtonen, 2014). Yet, few scholars have scrutinised how insurance arrangements deal with financial uncertainty—how they construct financial risk as part of the insurance commodity—and how this has changed over time. One notable exception is a recent study of global reinsurance, in which the authors suggest that the emergence of a rationalised, calculative approach to financial risk endangers the relation-based logic of global reinsurance (Jarzabkowski, Bednarek, & Spee, 2015).

In this article, I pick up on this theme by investigating how British life insurers deal with financial uncertainty and how it has changed over time. There are three reasons why the article’s focus on life insurance is warranted. First, because of the long-term nature of most life insurance arrangements, their savings and investment function tends to be relatively important. For this reason, modern life insurance arrangements (as they emerged in the UK from the late eighteenth century onwards) often include features that are explicitly designed to deal with financial uncertainty, such as the “smoothing” of policyholder benefits across financial cycles (see below). Second, the savings and investment function of life insurers has gained increasing pertinence as British life insurers play an increasingly prominent role in the UK’s retirement income system. Indeed, with the ongoing “pension privatisation” (Naczyk & Palier, 2014), pension business becomes an increasingly important source of insurers’ premium income. How insurers construct financial risk, thus, matters for how insurance arrangements deal with economic uncertainty around retirement.

Third, I argue that there has been a marked shift in how life insurers deal with financial uncertainty—similar to the shift in the structure of pension schemes from defined benefit to defined contribution arrangements (Langley, 2004)—away from the “pooled”, “multipolar” (Lehtonen & Liukko, 2015) approaches of traditional “with-profits” insurance, towards “bipolar” “unit-linked” arrangements. Today, financial risk is separated from insurance risk and is dealt with through the logic of risk-based capital—that is, insurers maintain financial reserves proportional to the calculated risk embedded in insurance arrangements and charge policyholders for the concomitant “opportunity cost” of shareholder capital. The emphasis in British life insurance, in other words, has shifted from “spreading” the economic risk of early death and retirement towards “embracing” the risk of financial markets (Baker & Simon, 2002).

Why, then, did the way in which life insurance arrangements deal with financial uncertainty change towards such bipolar arrangements? One possible explanation would be to say that insurers' changing financial practices are the product of increased financial market volatility and a secular decline in interest rates, which has forced insurers to reconsider the nature of financial risk along the lines of modern finance theory. While traditional long-term insurance arrangements may provide adequate mechanisms for sharing the burden of economic uncertainty that derives from the slow-burning and *diversifiable* processes of life and death, they are much less equipped to deal with the fast-paced, open-ended and *non-diversifiable* volatility of what Susan Strange (1997) famously described as "casino capitalism". In a cultural context which increasingly reveres risk taking (Baker & Simon, 2002), such volatility put strain on the elements of solidarity in traditional insurance arrangements and gave unit-linked insurers a decisive competitive edge.

This perspective, however, would provide at best only a partial explanation because it does not address the institutionalisation of the practices of risk-based capital and the explicit quantification of financial risk, which moulds the universe of ways in which life insurers can deal with financial uncertainty. Following scholars in the social studies of finance, this article presupposes that financial risk may be constructed in various ways (De Goede, 2004). Financial risk may be understood as volatility, which can be measured (as in modern finance theory) as variance in market prices; it is equally possible, however, to entertain a less formalistic understanding of risk, as actuarial science has tended to do, which highlights the fundamentally uncertain nature of the future. Different constructions of financial risk, moreover, tend to come with different beliefs about how the burden of financial uncertainty should be distributed and the possibility to manage financial uncertainty through calculation (Besedovsky, 2018). There is, in other words, "an inherent contestability of the normative commitments of modern financial risk management" (De Goede, 2004, p. 213). The question of why life insurance has "embraced" financial risk is, thus, also a question of why life insurers enact financial risk in certain ways and not others, which is a question that requires sociological explanation.

In this article, I argue that the individualisation of financial risk in British life insurance is the product of both competition between incumbent with-profits insurers and challenger "unit-linked" firms (Fligstein, 2001) and a change in the "professional ecology" (Abbott, 2005), involving a changing distribution of authority between actuaries and insurance supervisors, which facilitated the institutionalisation of modern finance theory. Competition between incumbent "with-profits" insurers and challenger "unit-linked" insurers started to reshape the practice of "participation" in life insurance from the 1960s onwards. Another crucial moment for the individualisation of financial risk, though, was in the early 2000s, which saw a shift in the governance of life insurers' financial conduct from actuarial governance, based on prudence and discretion, towards a modern financial approach based on explicit risk quantification and risk-based capital calculation. Although the actuarial profession had long resisted explicit quantification of financial risk (see, e.g., Alborn, 1994; Porter, 1995), the dramatic downfall of the Equitable Life Assurance Society in 2000 was perceived as a failure of actuarial expertise (Collins, Dewing, & Russell, 2009) and provided a window of opportunity for government actors and proponents of modern finance theory to reform insurers' calculative practices. Risk individualisation was, thus, neither just an outcome of an "improved" understanding of risk nor just the product of an ideological commitment to individualism but rather occurred at the interplay of market competition and the changing role of actuarial expertise.

The article draws on three sets of sources. First, I draw on archival material, which includes documents collected from the library of the Institute and Faculty of Actuaries, newspaper archives, and the UK government's digital archive, and a selection of journal articles from British actuarial journals (which include transcriptions and summaries of the meetings in which the papers were discussed). These sources cover the entire period under investigation. Second, I draw on industry statistics and a set of secondary sources to gauge the broader trends in the British life insurance industry. Third, I rely on a set of 44 semi-structured interviews (typically lasting around 1/1.5 hr each) with practitioners, which served to deepen the analysis by investigating how interview subjects experienced (or, more accurately, remember having experienced) the developments described in the article. Interviewees include company actuaries, regulators and supervisors, consultants and model providers, academic

actuaries and actuaries working for investment banks. Although I discussed the period of the 1970s and 80s with some interviewees, the interview data focus especially on the period from the 1990s onwards.

Before commencing with the historical-sociological analysis of insurers' financial risk management, I first describe how this management has changed over time, drawing on the sociology of insurance.

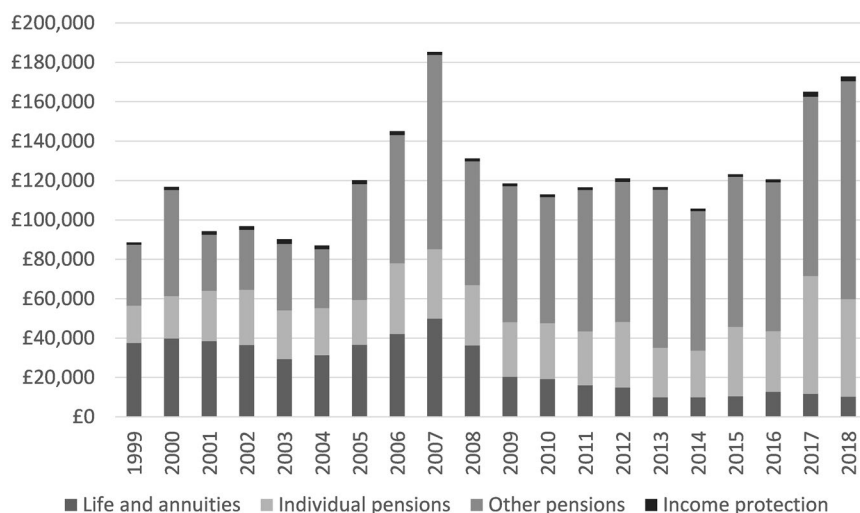
## 2 | LIFE INSURANCE, INVESTMENT AND THE INDIVIDUALISATION OF FINANCIAL RISK

A common way of classifying insurance contracts is by looking at the nature of the insured risk. Booth et al. (1999, pp. 197–200) distinguish four basic contract structures: term assurance, whole life assurance, endowment assurance and annuities. Term assurance and whole life assurance contracts pay lump sum benefits to beneficiaries upon the death of the person whose life is assured; in the former case, this protection is temporary; in the latter case, protection lasts for the entire life of the insured individual, and therefore guarantees payment. Endowment assurance, in contrast, pays a lump sum benefit upon the survival of an individual at a specified point in time, or earlier if the individual dies early. Annuities, in contrast, pay a regular stream of benefits until death in exchange for an initial lump sum premium.

What these contracts share in common is that they all have an element of “pooling”. Indeed, the pooling of resources to navigate uncertainty about the future is often identified as a core feature of any type of insurance (Ewald, 1991; Lehtonen & Liukko, 2015). In the case of term assurance, whole of life assurance and to some extent endowment assurance, insurers facilitate the pooling of resources to face the economic uncertainty of early death, in the case of annuities to face the uncertainty that they may outlive their economic means. To determine how much each individual should contribute to the overall risk pool, insurers deploy the “technology of risk” (Ewald, 1991) and estimate the average likelihood for different risk groups—or “classes” (Bouk, 2015)—that some event will materialise in the future. By *spreading* the financial burden of this uncertainty across a larger risk pool, insurers reduce uncertainty *in the aggregate* and by extension also the economic burden of individual uncertainty, which enables the construction of individual responsibility (Baker, 2002; O'Malley, 2012).

Today life insurers mostly earn their premium income from pension business, selling both individual and “group” policies (see Figure 1). In so doing, life insurers' savings and investment function has become increasingly important. Of course, as Lehtonen and Liukko (2015) note, “there is an element of saving present in all insurance” (p. 157), but the extent of the emphasis on investment in different life insurance arrangements may vary (Alborn, 2009; Chan, 2012a, 2012b; Lehtonen & Liukko, 2015). In the types of “ordinary life assurance” described above, policyholders set aside money today to receive lump sum payments in the future. Insurers, moreover, invest these premiums in financial products, which in some cases allows policyholders to benefit from compounded interest. Yet, the benefits of such contracts do not directly correspond to the premiums a policyholder has paid in (although *expected* benefits may), but varies according to whether and when a risk materialises. In pension arrangements, in contrast, policyholders are understood to save for their own benefits. Such contracts are, therefore, often recognised as distinct from ordinary life insurance, though they nonetheless form a large part of life insurers' overall business.

Another way of carving up life insurers' business, which focuses on the savings and investment dimension, is to distinguish between non-profit, with-profits, and unit-linked insurance. In non-profit insurance, the insurer promises to pay a pre-specified amount in nominal terms. That is, regardless of how much interest an insurer earns by investing her premiums, the policyholder will receive the amount agreed at the inception of the contract. In exchange for this certainty, however, the insurer is likely to charge a premium for the uncertainty whether all premiums combined will be enough to cover for the risk (and a profit), which especially in long-term contracts can be rather significant. Insurers, however, also offer policies that allow policyholders to “participate” in the profits of a firm. In these with-profits arrangements, policyholder benefits consist of both a nominal amount, which tends to



**FIGURE 1** Overview of life insurers' premium income (in millions) from different product categories. Source of data: Association of British Insurers

be relatively lower than in non-profit insurance, and additional “bonuses” that are determined after the inception of the contract and are, at least formally contingent on the performance of investments and non-profit business (other business considerations may play a role too). British life insurers have historically tended to sell a combination of with-profits and non-profit insurance.

Unit-linked insurance also allows policyholders to “participate” in the firm, but, in contrast to with-profits insurance, it ties policyholder benefits directly to underlying investment funds. In so doing, unit-linked insurance separates the savings and investment element of a contract from its insurance element. It highlights the savings and investment function, and therefore often comes in the form of endowment or pension policies: with their premiums, policyholders buy “units” of investment, the value of which corresponds to the market value of the assets contained in them; policyholder benefits are then expressed in unit terms. So far, unit-linked insurance is purely about savings and investment. In addition to this savings component, though, unit-linked insurance also has an insurance component, which may consist, for instance, of a guarantee that in case a policyholder dies early, a nominal amount is paid to beneficiaries exceeding the policy's unit value. Part of the insurance premium is used to cover for this insurance element, while the rest is used to invest in units. Thus, in contrast to with-profits insurance, unit-linked insurance separates the insurance and savings components of life insurance arrangements and thereby formally separates the organised solidarity of insurance pools from the individualism of saving and investment.

In so doing, however, unit-linked insurance does not have the same mechanisms that with-profits insurance has to deal with financial uncertainty. With-profits insurance, at least in theory, relies on a combination of actuarial prudence and post-hoc bonuses to ensure that the firm remains solvent even if investment performance is poor. Actuaries would include “invisible” margins in their calculations to ensure that policyholder premiums would be enough to pay for the insured risk (and for a profit to be made). The surpluses that are thusly generated are then distributed across different groups of policyholders according to actuarial discretion. In so doing, moreover, with-profits life insurers often “smooth” policyholders' benefits, in an attempt to stabilise bonuses across financial cycles. Actuarial calculations and the concomitant actuarial discretion (Alborn, 1994; Porter, 1995), in other words, form a crucial part of the with-profits arrangement.

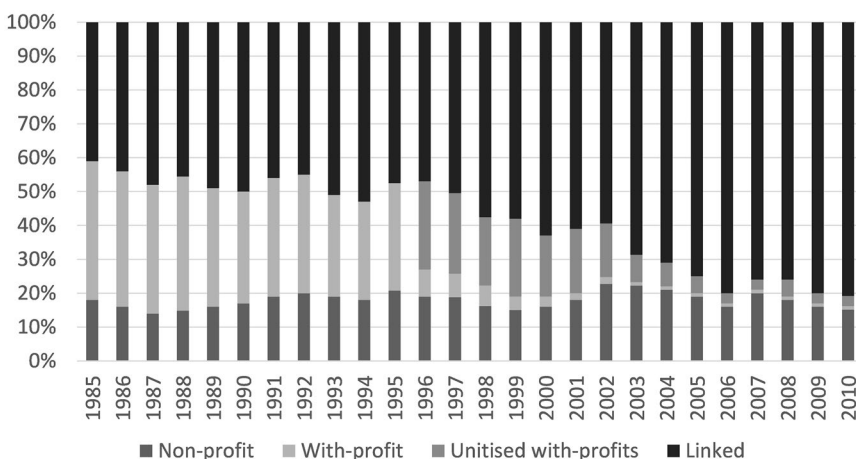
Unit-linked insurance, in contrast, has no such post-hoc distribution mechanism. Nevertheless, unit-linked insurers must make sure, on the one hand, that premium income covers the insured risk, including the financial risk of guarantees; on the other hand, however, company management may also face pressure to ensure that pricing remains competitive. Faced with various forms of “non-diversifiable” uncertainty, the severity of which is

compounded as the duration of contracts increases, insurers must, thus, balance between charging too much and charging too little (Ericson & Doyle, 2004). To tackle this problem, insurers have started to quantify financial risk explicitly, calculating how much capital is needed to buffer against all but the very worst-case scenarios. In unit-linked insurance, financial risk becomes something to be factored into insurance pricing rather than something that is dealt with at the level of the company (i.e., the “participating” policyholders, and, in the case of proprietary companies, the shareholders) as a whole. In today’s unit-linked insurance schemes, in other words, actuarial calculation, discretion and prudence (i.e., actuarial expertise) have been displaced by explicit risk quantification and the logic of risk-based capital. Financial risk is dealt with not through organised solidarity but in a “bipolar,” risk-based relation between a policyholder and the company’s shareholders who provide the capital to face the uncertainty.

In recent decades, unit-linked insurance has become the dominant form of insurance (see Figure 2), and, in combination with the practice of explicit risk quantification and risk-based capital, has contributed to the individualisation of *financial* risk. In what follows, I examine how this way of structuring the savings and investment component of life insurance contracts emerged from the competitive struggles between incumbent with-profits insurers and newly emerging challenger firms that started selling unit-linked insurance.

### 3 | THE RISE OF UNIT-LINKED INSURANCE

Unit-linked insurance emerged as an alternative to conventional with-profits arrangements in the 1960s and 1970s. Up to that point, competition in British life insurance had remained relatively stable. In the 1950s, for instance, the industry was dominated by offices that had been established in the early- to mid-nineteenth century, who continued to sell very similar policies (Johnston & Murphy, 1957). There were, moreover, significant barriers to entry. Many of the older with-profits insurers, for instance, had in prior decades amassed large reserves, or “estates”, which were used to “smooth” policyholder benefits across economic cycles. These reserves gave incumbents a cushion to keep bonuses steady, and in the case of a mutual firm, “provided the capital for the risks to be taken by the firm” (interviewee AD). Having access to a large estate gave incumbents a significant competitive advantage over challengers.<sup>1</sup>



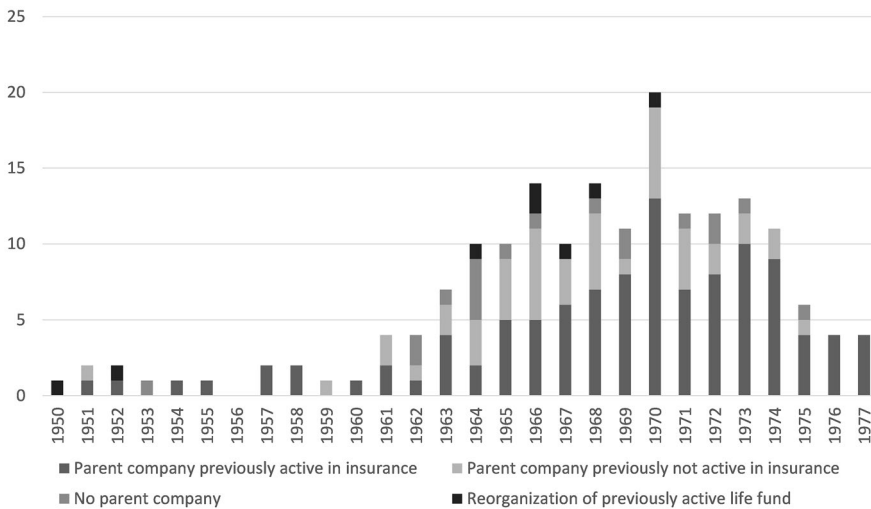
**FIGURE 2** Share of annual premium equivalent (APE) for different types of life insurance arrangement. The annual premium equivalent measure is designed to allow for comparisons across single premium and regular premium business, and reflects the annual premium income that an insurers will receive from new business written in a given year. Source of data: Almezweq (2015)

Within this context, unit-linked insurance emerged as a composite product of unit-trust investment funds and of smaller life offices that sought to challenge the dominant position of the larger insurers. One of the first unit-linked insurance products was offered in 1957 by London & Edinburgh, which sold endowment policies of which part of the insurance premium was used for life cover while the other part was used to buy units of investment in the Unicorn Trust fund (The Economist, 1957). Soon after life insurers such as Northern Assurance also started offering unit-linked policies based on investment units that were managed “in-house”, putting themselves in direct competition with the growing unit trust industry. Life insurers enjoyed several competitive advantages, though. With the Life Assurance Premium Relief, which had been adopted in the nineteenth century to foster thrift through endowment assurance (it was abolished in 1984), life insurers enjoyed a significant tax advantage (Hannah, 1986). Another important advantage was that life insurers were allowed to market their policies from door to door, while this was prohibited for unit trusts, who had to find other ways of marketing them (Carter & Falush, 2009). In the face of competition from life insurers, therefore, some unit trusts, such as the major fund Save & Prosper, set up their own insurance branch.

The model of unit-linked insurance, moreover, allowed newly established insurers to circumvent some of the barriers to entry that had previously made it difficult for newcomers to make inroads in the life insurance market. By emphasising the savings dimension of the insurance contract (linking benefits to the value of underlying investment units) and removing the “smoothing” element from the insurance arrangement, for instance, unit-linked insurance allowed newly established insurers to circumvent the disadvantages of not having a large “estate” like the traditional with-profits insurers had. For this reason (and others), unit-linked insurance required a much smaller capital base; newcomers, among which were the successful Hambro Life and Abbey Life—both founded by the South African insurance entrepreneur Mark Weinberg—only had to put up the legally required £50,000 in capital to write a large volume of unit-linked business (Weinberg, 1973). The 1960s and 1970s, therefore, witnessed the emergence of a large number of newcomers in the UK’s market for life insurance (see Figure 3).

For proponents of unit-linked insurance, the savings and investment function of unit-linked insurance tended to be most important. The actuary Galfrid Melville, for instance, argued that:

In effect, intending unit-linked policyholders are saying to the life office involved “We don’t want your guarantees on investment. We don’t want either you or your actuary to have to be bothered about the future of interest rates, nor about future capital appreciation (or depreciation), nor about



**FIGURE 3** New entrants in the UK market for life insurance in the period 1950–1977. Source of data: Franklin and Woodhead (1980, p. 97)

short-term fluctuations in the market, in making your decisions about premium rates or surplus distribution. We just want you to credit the 'savings elements' of the premiums we pay to your unit fund (or funds), invest these to the best of your ability, tell us exactly what you are doing and why, and give us exactly our share of whatever happens, good or bad, as determined in the market place. We want you to concentrate your thoughts on investment management rather than on its subsequent distribution." (Melville, 1970, p. 313)

Similarly, for Weinberg one of the strengths of unit-linked insurance was that it eliminated "virtually all the conflicts and rigidities of traditional actuarial forms" (Weinberg, 1973, p. 19). Traditional insurance schemes dealt with financial uncertainty through actuarial expertise, but in so doing, Weinberg argued, introduced "conflicts of interest" between different groups of policyholders and shareholders. By emphasising the savings and investment function of long-term insurance contracts and pushing the burden of investment-related uncertainty to the level of the individual, unit-linked insurance sought to reduce such conflicts of interest to a bare minimum. It also brought to the fore the Abbottian (1988) struggle among accountants and actuaries for jurisdiction over life insurance contracts.

The functional differentiation between the saving and insurance function of life insurance implied by unit-linked insurance, and its emphasis on the former quickly raised questions of classification: could unit-linked insurance still be seen as life insurance proper? Should it be regulated in similar ways to unit trust funds? Or should the two functions be regulated separately? In 1971, the Department of Trade and Industry, which regulated the insurance industry at the time, commissioned a report to deal, amongst other things, with these questions (Scott, 1973). The answers of the committee were not entirely undivided. Although many committee members agreed there was some validity to the logic that the insurance and investment components should be separated and regulated differently, they also agreed that this was impracticable (Scott, 1975). Because most contracts also included insurance components, however, small they may have been, unit-linked insurance should be regulated as life insurance proper. As with many financial innovations, unit-linked insurance, thus, benefitted from categorical ambiguity to create a product that receives advantageous regulatory and tax treatment (cf. Funk & Hirschman, 2014).

Unit-linked insurance was rather successful initially. The Scott Committee noted, for instance, that in 1971 around a third of insurers' total premium income flowed into unit-linked funds (Scott et al., 1973). The success of unit-linked funds, however, was strongly tied to the state of financial markets. With-profits insurance, which had remained the dominant model of insurance provisioning in the 1970s, regained traction when during the 1973–1974 stock market slump policyholders were confronted with the potential risk of unit-linked schemes. "Suddenly the risk was seen as more important than the potential gain, and the demand was for stability and guarantees" (Squires & O'Neill, 1990, p. 281).

## 4 | HYBRIDISATION, THE NATURE OF FINANCIAL RISK AND ACTUARIAL DISCRETION

In contrast to the vision of unit-linked insurance as expounded by people like Melville and Weinberg, most unit-linked insurers catered to the demand for security by including financial guarantees of various sorts in their contracts. Some contracts, for instance, included "maturity guarantees", which set a minimum level to the value of the contract at maturity, regardless of the market value of underlying units. In the absence of the traditional mechanisms of with-profits arrangements to deal with financial uncertainty, the inclusion of such guarantees raised new questions about the nature of financial risk.

The issue first came to a head in 1971, when the actuary Sidney Benjamin presented a paper at the Institute of Actuaries on financial risk in unit-linked policies with maturity guarantees. In his paper, Benjamin (1971) sought to quantify this risk with what by today's standards appears a rather crude stochastic simulation of stock market returns. His analysis, which randomly projected historical stock market returns into the future, indicated that



unit-linked insurers had vastly underestimated the risk of maturity guarantees. Benjamin's methods and conclusions became highly controversial. One actuary later remembered Benjamin's presentation as the "stormiest" meeting of the actuarial profession he had ever attended (Smith in Corby, 1977, p. 274). In contrast to convention, moreover, his paper was never published in the professional journal. Although it took nearly a decade for Benjamin's basic arguments (and methods) to be accepted, he nevertheless drew attention to the potential danger of financial guarantees on unit-linked policies. It showed that by removing the discretionary elements from the insurance contract, which proponents of unit-linked insurance argued removed "conflicts of interest", the question of financial risk gained new pertinence.

At the same time, however, the challenge of unit-linked insurance forced changes in the management of with-profits funds. In the 1980s, for instance, with-profits insurers increasingly used "asset shares", which are the conceptual equivalent of investment units in unit-linked funds, to guide bonus policy. In the traditional with-profits arrangements, actuaries used the "net premium" valuation method to calculate bonuses, which facilitated the gradual release of surplus over time the stabilisation of bonuses. Interviewee BD, who was an actuary at one of the largest British life insurers from the mid-1980s until the mid-2010s, remembers he found...

...the net premium valuation sort of difficult to understand ... But, not long after I got there ... asset shares were being used to decide what bonuses you wanted to pay, and then the net premium valuation was just used to produce the answer and the surplus you needed to pay those bonuses. So, you know, I'm sure in the 1950s and 60s it was important that the net premium valuation produced the surplus it did and then that was used to pay a bonus. Whereas by the time I got there it ran the other way. You use the asset shares to decide what bonuses you want and then adjusted the net premium valuation to give you the right answer. (Interviewee BD)

Unit-linked insurance, in other words, served as an exemplar for the bonus policies of with-profits funds. In the mid-1990s, this hybridisation of unit-linked and with-profits arrangements became enshrined also in regulatory classifications, when funds could be classified not only as with-profits, unit-linked or non-profit, but also as "unitised with-profits" (see Figure 2).

The unitisation of with-profits arrangements also raised new questions about the role of actuarial prudence and discretion in the management of financial uncertainty. Central in this debate was the notion of "policyholder reasonable expectations", a legal notion that was introduced in the 1973 Insurance Companies Amendment Act, which was intended to strengthen insurance supervision after several (general) insurers had failed in the 1960s and early 1970s (Daykin, 1992). The Act gave the Secretary of State the authority to intervene in company management if the company threatened to renege on its contractual obligations, "or, in the case of long term business, to fulfil the reasonable expectations of policyholders or potential policyholders".<sup>2</sup> What this phrase meant in the context of life insurance, however, remained unclear and was subject of significant debate. The inclusion of the term among insurers' legal obligations led some to push for its definition in quantitative terms. Yet, most actuaries also recognised that setting quantitative limits to insurers' bonus policies would be at odds with the practice of actuarial discretion. For this reason, for instance, the then President of the Institute of Actuaries Marshall Field said in a speech that he was not convinced of the possibility to quantify policyholders' reasonable expectations in "legal terms", and that there were circumstances in which "policyholders' expectations as regards the level of bonus declarations ought *not* to be realised" (Field, 1987, p. 2). The "justifiable expectations of a policyholder", Field argued, should, therefore, not be a quantifiable amount, but rather a promise that policyholders should be able to trust actuaries as "custodians of surplus". Thus, although asset shares were increasingly used to guide with-profits insurers' bonus policy, actuaries tended to agree that this did not imply any hard promises.

In sum, while unit-linked insurers sought ways to incorporate financial guarantees in their arrangements (and in some cases even an element of "smoothing"), which raised questions about how much financial risk there was embedded in these arrangements, with-profits insurers increasingly managed their funds in ways that resembled

unit-linked arrangements, raising questions about the extent of actuarial discretion. At the end of the millennium, the pertinence of these questions was underlined, partly as a function of continuously declining interest rates, which had put significant pressure on the profitability of the British life industry and ultimately culminated in the dramatic collapse of the Equitable Life Assurance Society.

## 5 | EQUITABLE LIFE AND THE “FAILURE” OF ACTUARIAL EXPERTISE

Historical accounts tend to attribute the invention of “modern life insurance” in the late eighteenth century to the Equitable Life Assurance Society. By the mid-twentieth century, however, the Equitable Life was “a small, relatively old-fashioned and generally conservative company” (Penrose, 2004, p. 759), which by the 1970s found itself on a turning point. By the late 1960s, more than half of Equitable's revenues came from the Federated Superannuation Scheme for Universities. When the taxation of insurance-administered pension schemes changed with the Finance Acts of 1970 and 1971, however, the Federated Superannuation Scheme for Universities began restructuring and turned into the Universities Superannuation Scheme in 1974. Faced with the loss of a major source of premium income, Equitable started competing “aggressively” in the market for individual pensions, sustaining high levels of bonuses and gradually running down its financial reserves (Penrose, 2004, p. 69). Equitable then unitised its with-profits funds. As Equitable's CEO and actuary Roy Ranson, and actuary Chris Headdon (who later took over as CEO) explained, Equitable's policyholders would receive benefits that would “reflect the value of the assets in the fund attributable to [each policyholder], ie that policyholder's asset share,” albeit without “the precision that applies with linked business” (Ranson & Headdon, 1989, p. 303).

Equitable's approach, however, also had some idiosyncratic features. Rather than retaining surplus, which would have allowed Equitable to rebuild reserves for smoothing and guarantees, Equitable adopted a “full distribution” policy in which the funds for smoothing and guarantees would be taken not from an estate but from future policyholders' premiums.<sup>3</sup> Equitable, thus, managed to sustain high bonuses and to attract new customers. As a corollary, however, the company's surpluses continued to shrink, to such an extent that the company “entered the 1990s with a negative estate” (Penrose, 2004, p. 117). Compounding its problems was the fact that Equitable, like some other insurers, had included so-called guaranteed annuity options, or GAOs, in many of its endowment policies. These options gave policyholders the right but not the obligation to transform maturing endowment policies into pension annuities at a guaranteed rate. A guaranteed annuity rate of 10%, for instance, meant that for every £100 worth of endowment policy, the insurer promised to pay £10 annually until death starting at a pre-specified age.

When insurers started writing these policies in the late 1950s, the guaranteed annuity rates were typically low enough for insurers to discard the possibility that they would ever “bite”. From 1997 onwards, however, guaranteed annuity rates increasingly exceeded the annuity rates available in the market. Equitable Life's management initially thought it would be able to mitigate such losses with a “differential bonus policy”, reducing the benefits of the GAO policies relative to those without such options. In 2000, however, the House of Lords deemed this practice illegal, arguing that a “differential bonus policy” conflicted with policyholders' reasonable expectations. Soon after, the Equitable Life had to close its doors to new entrants and the company ended up with a shortfall of an estimated £4bn, of which £1.5bn was paid for by the government (HM Treasury, 2016).

How could Equitable have ended up with such a large shortfall? Although the company's idiosyncratic approach to running unitised with-profits business was heavily criticised, commentary also quickly pointed to shortcomings in the actuarial expertise that was supposed to deal with financial uncertainties such as these (Collins et al., 2009). An inquiry into the company's failures led by Lord Penrose (2004), for instance, criticised the profession for being complacent. The Morris review of the actuarial profession, which was triggered by the Penrose report, similarly concluded that the profession had been “slow to modernise” (Morris, 2005, p. 15). While the reality of British life

insurance had changed, the report suggested, the methods and techniques that actuaries used to manage financial uncertainty had failed to keep up.

Although Equitable's failure was, thus, constructed as a failure of actuarial expertise, interview data suggest that many actuaries—though not all—still perceive the court's decision as an unwarranted intervention in matters of actuarial discretion, which hampered traditional mechanisms for dealing with uncertainty and significantly worsened Equitable's financial problems. Interviewee CI, for instance, recalled that most actuaries “assumed at the time that [the Equitable] would win their case, ... because ... the received wisdom at the time was that directors had discretion over with-profits bonuses and nothing that had been said by Equitable had caused them to forfeit that discretion, so they could do what they thought was appropriate”. While the court ruling assumed that the changing practice of with-profits insurance had put limits to actuarial discretion, some actuaries, thus, argued that it was the court ruling itself, which had imposed those limits.

## 6 | RECKONING WITH FINANCIAL RISK

Faced with Equitable's collapse, the accountant John Tiner, who became the managing director of the consumer, investment and insurance directorate of the newly established Financial Services Authority in 2001 and in 2003 became CEO of the FSA, initiated a review of insurance regulation and started to push for the use of techniques borrowed from financial economics and the derivatives departments of investment banks to quantify explicitly the value of insurance liabilities and the risks embedded therein. Actuaries had long been aware of the possibility to use techniques from financial economics (most notably the famous Black-Scholes equation) to quantify the value and risk of insurance contracts, and especially some of the younger actuaries who feared that actuarial expertise would become obsolete had propagated their use. Many actuaries, however, had previously rejected this approach, arguing that it had limited practical benefits for the valuation of insurance liabilities because their structure tended to be much more complex than that of most financial derivatives. When regulators imposed the use of these methods in the early 2000s, therefore, insurers had yet to develop the models that would allow them to comply with regulation (see: Van der Heide, 2020).

In contrast to insurers' traditional valuation methods, modern financial economics (and option pricing theory in particular) allowed insurers to quantify the value of guarantees, even if they were “out-of-the-money”. When the new regulatory requirements came in, many insurers were vastly unprepared. As a former consultant who helped insurers to prepare for regulatory changes remembers:

The first piece of work we did on GAOs [guaranteed annuity options], we did with a life company that had to go through all of the sacks of policies at [one of the life insurance companies] with an army of students, and read off the back of the policies, where the annuity option terms had been written on in ink, and put them into an excel spreadsheet, because they had no electronic record of the exposures, even if they would have had a model for pricing them, because they'd just been written on. (Interviewee CE)

The new insurance arrangement pivoted on “market-consistent” valuation and risk-based capital calculation. Market-consistent valuation models seek to calculate the economic value of insurance liabilities that *would be* consistent with their market value *were* these liabilities to be traded in secondary markets. Because insurance policies are not traded in a secondary market, market-consistent valuation seeks to derive their price through analogical extension of the core models of modern finance theory. Market-consistent valuation models seek to estimate how much it would cost to minimise the financial uncertainty of an insurance contract by “hedging” it in (partly fictitious) financial markets; the cost of hedging, then, is equal to the economic value of the insurance contract (Van der Heide, 2020).

While market-consistent valuation is often understood as solving the valuation problem “objectively” (it derives the value of insurance liabilities from observable market values of financial market instruments), risk-based capital calculation is considered rather more arbitrary. It involves the construction of a probability distribution for a variety of “non-diversifiable” risks, such as equity risk (the risk of a large drop in the price of stocks) or “longevity trend” risk (the risk that improvements in the life expectancy of policyholders exceed actuarial assumptions). Because the future is inherently unknowable, however, this involves the construction of “fictional expectations” (Beckert & Bronk, 2018), narratives about the future that need to be sufficiently plausible. In so doing, modellers may draw on archival-statistical knowledge (Collier, 2008), but they may also draw on more “subjective” forms of expertise. Supervisors play an important role in the construction of these expectations too, particularly so by “benchmarking” insurers’ expectations against each other, questioning the assumptions of those whose risk estimations diverge from the average.

Combined, market-consistent valuation and risk-based capital calculation form the basis of a calculative practice, which seeks explicitly to quantify not just diversifiable “insurance” risk but also “non-diversifiable”—but partly “hedgeable”—financial risk (François & Frezal, 2018). By formalising financial uncertainty and explicitly quantifying the cost of the shareholder capital required to reserve for future scenarios, the emergence of this calculative practice contributed to the bipolarisation of financial uncertainty, which is reflected in the decline (and perhaps even demise) of with-profits insurance and the significant expansion of unit-linked business. In contemporary life insurance arrangements, explicit quantification of financial risk and risk-based capital calculation have displaced the practice of actuarial discretion and the concomitant practice of post-hoc bonus distribution. Life insurers’ promises become “hard” promises backed by reserves, the level of which is calculated with risk models that seek to translate a fundamentally uncertain future into probability distributions.

## 7 | CONCLUSION

While most scholarship in the sociology of insurance has focused on the making of insurance risk by investigating mechanisms of pooling and spreading, this article has shifted its focus towards insurers’ management of open-ended and “non-diversifiable” forms of financial uncertainty. In dealing with financial uncertainty, I argued, British life insurers have moved away from the actuarial practice of prudence and discretion, towards the explicit quantification of financial risk and the practice of risk-based capital calculation. I identified two factors that were key in bringing about this shift. The first encompasses the dynamics of competition, which unfolded with the emergence of unit-linked insurance from the 1960s onwards, and which caused incumbent insurers to change the management of their with-profits funds. The second pertains to the professional ecology. Partly in response to the downfall of Equitable Life, which was perceived as a failure of actuarial expertise, the role of actuaries in insurers’ financial risk management (as it was inscribed in regulations) started to change from “custodians of surplus” to risk modellers. The separation of the savings and investment elements of insurance contracts and the bipolarisation of financial risk in contemporary life insurance, in other words, cannot be understood without paying attention to the competitive dynamics among insurers *and* the changing role of actuarial expertise in insurance governance.

These developments are consistent with similar changes in the structure of pension funds—from defined benefit to defined contribution arrangements (Langley, 2004)—and the more general affirmative attitude towards (financial) risk in contemporary Western societies (Baker & Simon, 2002). In following De Goede’s (2004) call to repoliticise (financial) risk, two broad issues may be raised. The first concerns the question of whether, how and for whom the new practices of financial risk management contribute to increased financial security; explicit quantification of “non-diversifiable” risk, for instance, may give insurers a false sense of security by suggesting financial risk can be “controlled” and eradicated (cf. Besedovsky, 2018; François & Frezal, 2018). The second concerns the (increasingly prominent) role of life insurers in the UK’s retirement income system. Here, the question arises whether the limited form of organised solidarity that insurers have on offer should be at the core of this system,

or whether financial risk should be “made” differently, in ways that make retirement benefits less dependent on the state of financial markets.

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Research data are not shared.

## ORCID

Arjen van der Heide  <https://orcid.org/0000-0001-6878-4057>

## ENDNOTES

- <sup>1</sup> As one interviewee remembers, for instance, his company had an estate of £3bn on a balance sheet of £10bn (Interviewee AC).
- <sup>2</sup> Insurance Companies Amendment Act (1973), p. 19, Retrieved from [www.legislation.gov.uk/ukpga/1973/58/pdfs/ukpga\\_19730058\\_en.pdf](http://www.legislation.gov.uk/ukpga/1973/58/pdfs/ukpga_19730058_en.pdf)
- <sup>3</sup> The Equitable Life was a mutual company and could therefore not rely on shareholder capital.

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