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## B. Wissenschaftliche Mitteilungen

CHRIS DAYKIN, London

### The Role of Actuaries in the Development of Insurance Supervision in the EC<sup>1</sup>

#### 1 Campagne and the OEEC

1.1 The story of the attempt to liberalize the European insurance market started before the European Economic Community came into being (see *Daykin*, 1984). The Organization for European Economic Co-operation (OEEC), the predecessor of the OECD, established an Insurance Sub-Committee to explore ways in which the European insurance market might be opened up and international trade in insurance encouraged.

1.2 In November 1956 the OEEC Insurance Sub-Committee commissioned a report from Professor *Campagne*, Chairman of the Verzekeringskamer, the insurance supervisory authority of the Netherlands, on whether it was possible to establish minimum standards of solvency for insurance firms. It was hoped to move towards a European-wide standard of supervision of solvency, so that each country would be able to rely on supervision carried on in the other countries for the purposes of allowing insurance companies from those countries to carry on business.

1.3 The report to the OEEC Insurance Sub-Committee (*Campagne*, 1957) started from the position that an appropriate level of solvency margin should be determined according to risk-theoretical calculations, with a view to ensuring a specified low probability that the reserves and margins should prove to be inadequate. However, the report moved rapidly from the theory to a pragmatic solution, in view of the absence of data to derive a theoretically satisfactory result.

1.4 The only data that were analysed were the annual aggregate claim ratios net of reinsurance (for all underwriting years taken together) for ten insurance companies writing non-life business in Switzerland over the period 1945 to

<sup>1</sup> Vortrag, gehalten an der Mitgliederversammlung der Schweizerischen Vereinigung der Versicherungsmathematiker vom 7. September 1991 in Genf.

1954. An arbitrarily chosen frequency distribution function for claim ratios between 0 and 1 was chosen (a beta distribution) and fitted to the data. The risk of ruin requirement was set at 1/1,000 over a 3-year period, and the report concluded that a solvency margin of 25% of premiums would be appropriate.

1.5 The *Campagne* report was considered further by an ad hoc Working Party on Minimum Standards of Solvency over the next three or four years, and further statistical information was collected on the variability of claim ratios between companies and between countries over different periods. The statistical information demonstrated considerable variation in the level of claim ratios between the countries concerned, much of which was probably due to differing levels of margins in premium rates. It was acknowledged that setting a minimum standard of solvency implied the need for a consistent interpretation of technical reserves but no progress was made in deciding how this could be achieved.

1.6 Considerations along the lines of those in the *Campagne* report suggested figures for the minimum solvency margin which varied from 3% of premiums for Germany to 31% for the Netherlands. Nevertheless, the report of the Working Party (*Campagne*, 1961) concluded that a minimum standard of 25% of premium income should not be regarded as unacceptable as a minimum margin of solvency for non-life business, at least until the state of knowledge had considerably improved.

1.7 Consideration was also given in Professor *Campagne's* report, and in the subsequent report of the OEEC Insurance Sub-Committee, to a solvency margin in respect of life assurance business. The recommended level was 4% of the mathematical reserves, calculated on the premium basis with a modest Zillmer adjustment.

1.8 This figure of 4% was derived from consideration of the observed profits and losses of the ten largest Netherlands life insurance companies for the years 1926 to 1945, expressed as percentages of the mathematical reserves. According to the figures quoted in the report, a solvency margin sufficient to reduce the probability of a loss exceeding the free assets to 1/1,000 over the three years would have been 10% of the mathematical reserves.

1.9 The recommended figure of 4% of mathematical reserves was associated with a probability of about 5% of a loss exceeding the free assets. The report does not make it clear why it was considered acceptable to have what were, on the face of it, very different standards of security in relation to life and non-life insurance companies.

1.10 These OEEC proposals were never finally adopted or implemented.

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Some member countries had reservations about what was proposed, in particular the arbitrariness of establishing uniform solvency margin requirements on top of technical reserves which were calculated quite differently in the different countries.

## 2 Early developments in the European Community

2.1 Following the establishment of the European Economic Community by the Treaty of Rome in 1957, the Conference of EEC Insurance Supervisory Authorities began to address the same problems as those already under consideration in the OEEC. The objective was to move as quickly as possible towards the ideal of a free market in insurance within the EEC. The first stage was to establish the credentials which insurance companies must demonstrate before being allowed to establish branch operations in other EEC countries and write business there.

2.2 Each of the countries concerned had an existing system of insurance supervision, but the principles on which supervision was carried out differed substantially from country to country. The methods and the requirements of one supervisory authority were not necessarily acceptable to the other supervisory authorities. What was needed was sufficient harmonization to give confidence that a company supervised elsewhere could be seen as being in a sound financial position to carry on writing business.

2.3 The first Freedom of Establishment Directive to take shape covered non-life insurance. In the early 1960s a Study Commission reviewed the work which had been carried out by Professor *Campagne* and the OEEC and looked at further data for claim ratio variability for the period up to 1960. They concluded that minimum standards of solvency margin could be related to written premiums, incurred claims or technical reserves, and suggested that the respective percentages should be 24%, 34% or 19% (Commission d'Etude, 1963).

2.4 Subsequent work, however, suggested that about a quarter of all existing EC companies would be unable to meet this standard, so a revised proposal emerged, based on the higher of 18% of premiums and 26% of incurred claims, with reductions in two stages for higher levels of premiums and claims.

2.5 This formed the basis of the eventual agreement (EC, 1973), although the formula which emerged had only two levels, 18% of gross premiums up to 10 million écus and 16% of gross premiums in excess of that, or 26% of gross

average incurred claims up to 7 million écus and 23% in excess of that, whichever gives the larger result. The value of the écu is based on a basket of EC currencies, but is broadly equivalent to a US dollar. The result may be reduced to allow for the ratio of net claims to gross claims, but not by more than 50%. Final agreement on the Directive took many years and it was not promulgated until July 1973.

2.6 Meanwhile, consideration was being given to appropriate solvency standards for life assurance companies. Some important further work was carried out by what was by then the OECD, beginning with a preliminary report in 1966 and culminating in a report of a Working Group, which was published in 1971 (*Buol et al, 1971*). Discussions on a Freedom of Establishment Directive for life insurance in the EC began in 1972, and lasted for 7 years, resulting in the promulgation of the first life directive in 1979 (EC, 1979).

2.7 As it turned out, the work of the OECD Working Group did not have much influence on the outcome, which rested heavily on Professor *Campagne's* original report in proposing an explicit solvency margin requirement of 4% of mathematical reserves. A further component was added to allow for mortality risk on products where the technical reserves are small, to be calculated at 0.3% of the capital at risk (the excess of the sum assured over the technical reserve). Allowance could be made for reinsurance, up to 15% in the case of the solvency margin based on mathematical reserves and up to 50% in the case of the solvency margin based on capital at risk.

2.8 The Directive acknowledged the very substantial margins which could exist within the mathematical reserves, and elsewhere as hidden reserves, and laid down an arrangement whereby only part of the solvency margin had to be shown explicitly. Under certain conditions, part could be covered by hidden reserves, such as undervaluation of assets, and it was permissible to demonstrate adequate solvency cover on the basis of a formula representing the value of future profits likely to emerge on the business, as described by *Levie* (1980) and *Pickford* (1983).

2.9 Publication of the two Establishment Directives marked the first stage of development of a free insurance market within the EC. This permitted companies to set up branches in other member states, without having to be subject to full-scale supervision in those states. The supervisory authority of the head office country was responsible for ensuring the overall solvency of the undertaking, in line with the requirements of the Directives, and the supervisory authority concerned with the branch operation needed only to establish that ade-

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quate assets were maintained to cover the liabilities of the branch. Non-EC companies could elect to be supervised at a global level in one country of the EC and could then operate branches in all the other Member States.

2.10 The solvency margin, together with the guarantee fund, which was set at  $\frac{1}{3}$  the level of the solvency margin, with specified minimum values, provided an effective mechanism for the use of intervention powers, which were not otherwise to be available to supervisors and which were laid down in the directives. A company failing to maintain the required solvency margin must submit a plan for the restoration of a sound financial position and satisfy the supervisory regarding its implementation. If the company's margin of solvency falls below the guarantee fund level, a short-term financing scheme must be produced, i.e. arrangements to get hold of new capital quickly. In the event of these requirements not being fulfilled, the supervisor can withdraw the company's authorization to write further business.

2.11 These directives represented a major step forward in mutual recognition of the effectiveness of supervision carried on in other EC countries, but fell a long way short of the ideal envisaged in the Treaty of Rome, i.e. that companies should be free to sell insurance directly throughout the Member States of the European Communities.

### 3 Shortcomings of the solvency margin regime

3.1 It is interesting to reflect with hindsight on the conclusions that were reached some 30 years ago. In a review of the EC solvency margins by the Solvency Margins Sub-Committee of the Groupe Consultatif (1986), it was concluded that the solvency margin performed two important functions. One was to reduce the probability of insolvency, whilst the other was to provide a buffer against deterioration in a company's financial position which can occur in the period before its authorization to write new business can be withdrawn.

3.2 It was, however, observed that the theoretical basis for the EC solvency margin requirements was very weak, for at least three reasons:

- a minimum solvency margin requirement is stipulated but there are no agreed principles for valuing the assets or the liabilities;
- the balance sheet approach is a static one and does not have regard to the way in which a company's financial situation may be developing, and
- the individual circumstances of a company are not taken into account.

3.3 To these might be added the thought that the original *Campagne* analysis

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was itself theoretically unsound. Interestingly, a more recent attempt to carry out a similar procedure to that adopted by *Campagne* pointed to a need for almost double the solvency margin recommended in 1957 (*De Wit and Kastelijn*, 1980). The figures actually chosen by the EC, at least for non-life insurance, were essentially arbitrary and the result of a political negotiation process. Much could be said about these different aspects and the interested reader is referred to *Daykin* et al (1984, 1987) and *Daykin* and *Hey* (1990) for further discussion on how the issue of the solvency of non-life insurance companies may be approached.

3.4 In some respects the EC solvency margins represent quite a stringent requirement, particularly for life insurance, where there is a long-established tradition of setting up cautious technical provisions. Many British actuaries felt that the solvency margin was unnecessary and without theoretical foundation, given the responsibilities of the Appointed Actuary to the long term business fund (see paragraph 4.1 ff). In a discussion at Staple Inn on draft guidance notes for Appointed Actuaries in relation to the valuation regulations, *Benjamin* (1983) stated:

“The calculation of the solvency margin is laid down in detail and to a layman it looks scientific. However, we know that its methodology and the numbers it uses have no scientific support from the Institute of Actuaries. The EEC solvency margin is no substitute for proper actuarial guidance on the financial condition of an office, and there is the possibility that, after a few years, we shall find the system professionally unworkable and we may need to refer to an opening disclaimer in the Guidance Notes.”

3.5 Fortunately, this prophecy of doom has not been fulfilled and the solvency margin system has so far proved to be workable, by both actuaries and supervisors. However, in the U.K. we have regarded the solvency margin as serving the two purposes referred to in paragraph 3.1, but without lessening in any way the need for the actuary to set up technical reserves in life insurance which make “proper provision for all liabilities on prudent assumptions” (Regulation 54 of the Insurance Companies Regulations 1981; SI 1981, No. 1654).

3.6 On the other hand, the solvency margin for non-life insurance may be far from adequate in respect of long-tail business and reinsurance accepted, where the technical provisions are frequently not over-generous. A solvency margin based on a percentage of premiums also fails to address adequately the situation where the main risk is in respect of a rump of business which is running off, to which the current premium level may bear little relationship.

3.7 Many insolvency problems around the world have arisen from imprudent or ill-advised investment policy and a solvency margin requirement which does not even address the issue of the valuation of assets, still less tailor the requirement to the riskiness of the asset portfolio, is less than satisfactory.

3.8 On the whole it is not very likely that the parameters of the EC solvency margin requirement will be renegotiated in the near future, or perhaps even in the distant future, because of the difficulty of securing agreement between the 12 member states – and before too long there may be more than 12. It would moreover be very difficult to incorporate in a directive a set of detailed requirements which would meet all the technical objections. Even if it could be done, it is unlikely that the rules would be sufficiently flexible to be entirely satisfactory. The solution proposed by the Groupe Consultatif, although it has not yet been espoused either by the Commission or by any of the member state governments, was for the question of solvency to be addressed through an actuarial report on the overall financial strength of the company, taking into account all the relevant aspects, both on the assets and the liabilities side, and incorporating a forward looking rather than a purely static approach (Groupe Consultatif, 1986).

#### **4 The role of the actuary in life assurance in the U.K.**

4.1 In non-life insurance we still have some way to go to achieve the objective of comprehensive actuarial reporting, but the situation in life insurance has historically been very different, at least in the United Kingdom. There the tradition has been for the actuary to be regarded as responsible for the overall financial control of the company and, in particular, to be the overall guardian of the long-term business fund. These concepts were introduced by the Life Assurance Companies Act, 1870, some 22 years after the formation of the Institute of Actuaries (the Act is reprinted in the Journal of the Institute of Actuaries and Assurance Magazine 16, 1-18).

4.2 The 1870 Act required that a separate account should be kept of all receipts in respect of life assurance and annuity contracts of the company and that this fund should be regarded as the absolute security for the life policies. This approach gave particular safeguards in the case of composite companies which were also carrying on general insurance business, but also implied total separation of the life and annuity business transactions from any shareholders' funds.

4.3 The 1870 Act also required regular investigations to be carried out into the

financial condition of the company by an actuary, albeit that at that time companies which had been established prior to the passing of the Act were required to have such an investigation only every 10 years! New companies were required to be looked at every 5 years, or more frequently if required under the company's constitution. A key feature of supervision, which has remained the case right up to the present day, was that the annual accounts of the company, together with the abstract of the actuarial valuation when carried out, and also an abstract summarizing details of all the business in force, had to be deposited with the Board of Trade, who then made them available to the public through the Registry of Joint Stock Companies.

4.4 Although not contained within the 1870 Act, subsequent legislation built on the life fund concept and gave absolute authority to the actuary to control the emergence of surplus within the life fund. It became illegal to transfer any money out of the life fund other than as a distribution of surplus revealed by an actuarial valuation, or indeed for the company, or any upstream holding company, to pay a dividend to shareholders at any time that the life fund was in deficit. There are also statutory restrictions on the way in which any surplus disclosed may be distributed as between shareholders and policyholders.

4.5 In 1870 the idea of statutory supervision of insurance companies was relatively new. *Sprague* (1872) compared the new U.K. legislation with that recently introduced in the United States of America, particularly in Massachusetts and New York, which had the expressed objective of "securing the solvency of all Life Insurance Companies doing business in the respective States, so that all the contracts of assurance entered into by them shall be duly fulfilled." *Sprague* went on to argue "firstly, that no legislative enactments whatever can succeed in absolutely securing the solvency of Life Insurance Companies; secondly, that even if this could be done, it would be highly undesirable that it should be attempted". In his view it was best to allow insurance companies a good deal of freedom, but require them to make their affairs public.

4.6 This doctrine of "freedom with publicity" remains the fundamental principle of insurance supervision in the U.K. today. Even if the average member of the public could not necessarily understand the information disclosed, at least other actuaries would be able to. *Sprague* (1872) commented: "Altho' the returns are not sufficient to enable the value of the liabilities of each Company to be rigorously estimated, yet they are quite sufficient to enable actuaries, and through them, the public, to judge of the stability and future prospects of the Life Offices of the country, on far surer grounds than

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were formerly available." Subsequent legislative changes improved the quality of the information available to the outside observer, so that it became, and in principle remains, the case that a third party actuary could form a reasonable assessment of the financial position from the data which is in the public domain.

4.7 Further changes were made to the legislation in 1909, but I will skip over that and come right up to 1973, when the position of the actuary was markedly strengthened by requiring each company to have a named individual as the Appointed Actuary, instead of requiring certain tasks to be performed simply by an actuary. The Appointed Actuary is a key person in the system of supervision and may either be employed within the company or retained as a consulting actuary advising the company. He or she must be a Fellow of the Institute of Actuaries or a Fellow of the Faculty of Actuaries and must be 30 years old or more.

4.8 The Appointed Actuary has responsibility for determining the mathematical reserves in respect of the life business and for ensuring the continuing financial viability of the company. He or she also has a major part to play in safeguarding the reasonable expectations of policyholders. The legislation requires the Appointed Actuary to sign the report on the valuation of the long-term business, which now has to be produced annually, and the relevant certificate concerning the size of the mathematical reserves and the amount of the required solvency margin.

4.9 Because of the importance of the Appointed Actuary under the supervisory legislation, the Institute and the Faculty of Actuaries have issued guidance to their members to explain the nature of the professional responsibilities of the Appointed Actuary and what will be expected of him or her by the profession. This Guidance Note (GN1) was first issued in May 1975 and has since been revised to reflect more recent developments and discussions within the profession on the role of the Appointed Actuary. A copy of the current version of GN1 is included at Appendix 1.

4.10 The Appointed Actuary is to be kept fully informed of all matters bearing on the financial position of the company, including premium rates, investment policy, reinsurance arrangements and distributions of profit to policyholders and to shareholders. It is not intended that the actuary should necessarily be responsible for taking management decisions in each of these areas, but it is regarded as essential for the proper monitoring of the company's financial position that the actuary should be fully aware of all that is happening. The Appointed Actuary should have the right of direct access to the

Board and should be present whenever matters of importance for the future financial condition of the company are under discussion.

4.11 When the Appointed Actuary legislation was introduced, there was no requirement for a life insurance company to hold an explicit solvency margin. It was regarded as the professional responsibility of the Appointed Actuary to monitor the overall financial position of the company and to ensure that the size of the life fund, and the way in which it was invested, was such as to ensure that the future liabilities of the company towards policyholders, including meeting their reasonable expectations, could be met with a high degree of probability. Although the statute required the Appointed Actuary to carry out a formal investigation into the financial condition of the company only once a year, the profession regarded it as the Appointed Actuary's duty to monitor the financial position on a continuous basis. GN1 thus states that the Appointed Actuary is to take all reasonable steps to ensure that he is, at all times, satisfied that if he were to carry out an investigation, the position would be satisfactory.

4.12 The Appointed Actuary is also required to take all reasonable steps to ensure that the company will not make any distribution or allocation of profit (to policyholders or to shareholders) without having first obtained and considered a report from the Actuary with observations and recommendations.

4.13 The Actuary's responsibilities are seen as going well beyond a simple requirement to report in the annual returns to the supervisory authority on his regular investigations into the financial condition of the company. Clearly the actuary has responsibilities to the company as his principal, but he is also regarded by the profession as having an overriding obligation to the supervisory authority, by reason of his position, which gives him a clear responsibility to safeguard the rights and interests of policyholders.

4.14 The Guidance Notes envisage that there could be occasions on which the Appointed Actuary might need to advise the DTI directly of a situation where the company is following a course of action which could lead him to qualify a subsequent actuarial certificate. In practice this has happened only rarely, but the threat is important in ensuring that company management takes notice of what the Appointed Actuary says. Further details and discussion of the Appointed Actuary system may be found in *Johnston* (1988) and more details of the U.K. system of supervising both life and non-life insurance companies can be found in *Daykin* (1990, 1990 a).

## 5 The Government Actuary's Department

5.1 An unusual feature of insurance supervision in the United Kingdom is the role of the Government Actuary's Department (GAD). This is an independent government department which, since 1919, has been offering actuarial consultancy services to Ministers, to government departments and to other public sector bodies and overseas governments on all actuarial matters. A major part of GAD's role is to assist the Insurance Division of the Department of Trade and Industry in the supervision of life insurance companies. GAD is also concerned with the supervision of non-life insurance companies and small mutuals known as friendly societies. Other parts of GAD advise on the financing of the U.K. and other social security schemes, occupational pension schemes in the public sector, the formulation of government policy on pension matters, population projections for the U.K., consumer credit, compensation, the impact of AIDS, and so on.

5.2 The most important item in a life insurance company's returns to the DTI is the report by the Appointed Actuary. Only another actuary can form a proper appreciation of what is going on in the company and whether there are developments which could become serious. The process of examining the returns of life insurance companies is, therefore, delegated to GAD. This delegation extends to entering into a dialogue with the company and the Appointed Actuary over any points which need to be clarified in order to understand fully the valuation report and the returns. GAD is increasingly taking an active role in visiting companies to discuss matters with the senior executives and the Appointed Actuary, with the intention of looking much more at what the company is doing now and what it is planning to do in the future than at what it was doing at the time to which the last set of returns relates.

5.3 GAD then advises the DTI on whether any action is required under the statutory powers, for example ordering an investigation of the company, requiring a plan for the restoration of a sound financial position or requiring a short term financial scheme.

5.4 GAD seeks to maintain close contacts with Appointed Actuaries on a co-operative rather than confrontational basis. Immediately on appointment a new Appointed Actuary will be invited to visit the Government Actuary to talk over the nature of the responsibilities of the position and the relationship with GAD and the DTI. Subsequently the Appointed Actuary is encouraged to speak freely to actuaries at GAD on all aspects of the financial management of the company and to talk to the Government Actuary if any problems of a professional nature are encountered.

## 6 The influence of actuarial thought on supervision

6.1 A feature which appears to have been present in actuarial thought in the U.K. from early days is the separation of the premium basis and the valuation basis. Premiums should clearly be set at a level adequate to meet the expected future liabilities, including making an adequate contribution to the expenses of writing the business and running the office, and also an element of profit for the shareholders or with-profit policyholders. Valuation, on the other hand, needs to be looked at from the point of view of understanding the profitability of the business, from the point of view of controlling the equitable emergence of surplus for the benefit of with-profit policyholders, or from the point of view of establishing solvency. In the latter case prudent assumptions need to be made for all aspects of the technical basis, having regard to all the facts known to the actuary at the time of the valuation and a cautious assessment of what might happen thereafter.

6.2 Another feature of the role of the U.K. life company actuary has been the extent to which he has been expected to take into account aspects relating to the assets as well as the liabilities. Such an orientation is clear from some of the earliest writings recorded in the Journal of the Institute of Actuaries, for example in *Sprague* (1872), where he identified one of the most likely causes of insolvency of a life insurance company as being loss on the investments. In the modern context, the current U.K. valuation of liabilities regulations state that:

“The determination of the amount of long-term liabilities shall take into account the nature and term of the assets representing the long-term fund and the value placed upon them and shall include appropriate provision against the effects of possible future changes in the value of the assets on their adequacy to meet the liabilities.”

6.3 This role of the Appointed Actuary is emphasized in GN1, where the actuary is told that he must pay regard to the relationship between the term of the assets and that of the corresponding liabilities, that he must ensure that he has information available to him about the existing investments and the continuing investment policy, and that he must decide whether, in his judgement, the investment policy pursued by the directors is, or could become, inappropriate having regard to the nature and term of the company’s liabilities. If this is the case, he must advise the company of the constraints on investment policy necessary to protect the position of policyholders.

6.4 Different aspects of the valuation regulations require the actuary not only

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to look at the appropriateness of the assets and their term in relation to that of the liabilities, but also at any risk associated with them. The valuation rate of interest used is permitted to take into account the rates of return secured on investments already held to match corresponding liabilities, subject to adjustments in respect of any risk element of the return. The rate of return on amounts to be invested in the future has to be approached more cautiously, within the constraints of the valuation regulations. Apart from testing the cash flow matching situation between assets and liabilities, the Appointed Actuary is also required to investigate the effect of sudden changes in the yield on fixed interest investments and in the value of property or equity investments, and set up appropriate additional reserves to ensure a degree of resilience in the valuation basis to such changes (*Purchase et al, 1989*).

6.5 In the late 1960s a new type of life insurance business was launched, which has revolutionized the insurance market in the U.K. and Ireland and also began a revolution in the actuarial thought process. This was insurance directly linked to the value of investments or "unit-linked business" as it is known in the U.K. In this type of business one of the main uncertainties of traditional savings policies – the return on the investments – is handed over to the policyholder, whose policy proceeds directly reflect movements in the value of the investments in which his premiums are placed, through a system of unitized funds and the allocation of units in the funds to the policyholder. Such policies do not generally provide any guarantees to the policyholder in respect of either the return on the investments or the value of the units at the time of surrender or maturity. They do, however, usually provide some small element of guaranteed benefit on the death of the policyholder during the term of the policy and there may be an effective guarantee on the proportion of the premiums which will be absorbed in expenses and profits, although many modern policies do not even have this type of guarantee.

6.6 Actuaries were quick to recognize that the introduction of such new policies demanded new actuarial techniques. Traditional premium-setting and valuation formulae were no longer applicable. A major part of the liability, relating to the parts of the premiums which had been invested in units, could be valued very easily by ensuring that adequate numbers of units had been set up in the various unit funds and by valuing the units attributable to policyholders at an appropriate valuation price. A much more difficult problem was to establish whether any further valuation reserve was required (*Brown et al, 1978*). In order to do this, actuaries developed cash flow testing procedures, which would compare the margins available to the insurance company from

the contract with the expenses likely to be incurred, mortality costs and the costs of any other guarantees.

6.7 The margins available to the insurer depended on the particular contract, but could be a mixture of any or all of a) a fixed policy fee with each premium, b) a proportion of the first, second and in some cases subsequent premiums which does not have to be invested in units, and c) a percentage charge on the unit fund each year. The value of any charges relating to the unit funds will, of course, depend on the future value of those funds, whilst the expenses to be covered will be very dependent upon future inflation, as well as on such aspects as the future productivity of the office. Because of the rather uneven way in which the future cash flows can develop under some of these contracts, it is not enough simply to carry out the cash flow analysis as at one particular point of time. It is also necessary to check that the reserves established are adequate to ensure that there will be no further valuation strain arising in subsequent years, if the valuation assumptions in respect of each item of the technical basis are fulfilled.

6.8 Unit-linked business did not only cause a reassessment of valuation methodology. It revolutionized product design. It was no longer a question of calculating what premium was required for a particular sum assured or for a particular set of benefits. The premium could be at any level the policyholder chose, and the policy conditions would simply stipulate what percentage of each premium was to be invested in units and what percentage deduction was to be made from the unit fund each year. In order to decide whether the product design was sound and whether it would be profitable to the insurance company to write such business, the actuary needed to carry out a cash flow projection as at the start of the contract in order to investigate the net cash flows and the emergence of profit to the insurer (*Anderson, 1959, and Smart, 1977*).

6.9 Because of prudent reserving requirements, many contracts give rise to negative profits, i. e. a requirement for capital, in the early years, and only generate positive profits in the later years of the contract. By comparing the profit which emerges with the capital required, allowing for reasonably realistic assumptions of the various elements of the outcome, but with reserves established at each stage of the development of the contract on a cautious basis, the actuary can estimate the return on capital expected under the contract, or, looked at another way, the net present value of the profit streams, discounted at an appropriate risk discount rate.

6.10 Since the U. K. tradition was for prudent reserving standards to be estab-

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lished by actuaries, acting on behalf of the supervisory authority, the introduction of unit-linked business led to feverish activity within the profession to establish appropriate techniques and standards for the valuation of such business, which were then effectively endorsed by the Government Actuary's Department and became standard practice.

6.11 A similar process took place when a number of companies began to offer unit-linked products which contained a guarantee on the eventual pay-out, typically formulated in terms of a return to the policyholder of at least the premiums paid, or the premiums paid plus some low level of interest. These "maturity guarantee" contracts raised new and somewhat difficult technical issues, since the only value of the guarantee was in the event of adverse performance of the assets, the expected return on the units invested on behalf of the policyholder being well in excess of the amount being guaranteed. Nevertheless, it was clear that such a guarantee did have a value, for which the policyholder should pay through appropriate design of the product.

6.12 More particularly, the guarantee should be reserved for, on a basis which takes into account the variability of the assets. Finding a solution to this problem led to the development of stochastic autoregressive models for equity dividends and yields and to reserving standards based on such stochastic models and designed to achieve a specified probability of adequacy (Maturity Guarantees Working Party, 1980). The models adopted by the Maturity Guarantees Working Party were based on work carried out by Professor *David Wilkie* and an expert in time series analysis, *E. J. Godolphin*, whose advice was sought by the Working Party. An integrated model of price inflation, yields on irredeemable government securities, equity dividends and equity yields was subsequently published by *Wilkie* (1984, 1986) and has been used in much recent work on the stochastic modelling of investments, including *Daykin* and *Hey* (1990).

6.13 It is worth recalling that, following the publication of the report of the Maturity Guarantees Working Party, and the endorsement by the Government Actuary of the time of its conclusions in relation to reserving, virtually all maturity guarantee contracts were withdrawn from the market, since the rate of return on capital was no longer adequate to justify selling the contracts, given the sort of charging structure which prospective policyholders were willing to accept in return for being given a guarantee on the sum payable at maturity.

6.14 The Appointed Actuary system has worked well for some 18 years and it is difficult to see the U.K. wanting to change the arrangement significantly.

Nevertheless, there have been some recent moves to strengthen even more the position of the Appointed Actuary within the company. Firstly, it is intended to give greater statutory recognition to the professional Guidance Notes by requiring in the regulations that the actuary must give an annual certificate that the Guidance Notes have been complied with in all material respects. Secondly, the Department of Trade and Industry has asked the Institute and the Faculty to define more closely those actuaries who are properly qualified to fill the post of Appointed Actuary by introducing the concept of a practising certificate.

6.15 Details of the practising certificate conditions have still to be worked out but, in addition to the existing criteria of being FIA or FFA and over the age of 30, it is expected that there will be a requirement to have appropriate practical experience and to maintain an up-to-date record of involvement in appropriate continuing professional education. Anyone qualifying from now on will be required to have attended a Professionalism Course before being awarded a practising certificate and any prospective candidate for the certificate must have had a clean record as far as the profession is concerned, with no adverse tribunal finding. The prospective Appointed Actuary must also satisfy the normal DTI requirements to be declared a fit and proper person to be a manager or director of an insurance company.

6.16 A short brochure has been produced by the Institute and the Faculty to describe the role and responsibilities of the Appointed Actuary (Institute of Actuaries/Faculty of Actuaries, 1991). This has been distributed to Chief Executives and Directors of all insurance companies authorized to write life insurance business in the United Kingdom. The visits by members of the Government Actuary's Department to companies, to which reference has already been made, are also intended to lend support and weight to the Appointed Actuary within the company and ensure that the rest of the company management fully understand and appreciate the role of the Appointed Actuary.

## 7 Supervision of life insurance in the EC

7.1 I have concentrated on the role of the actuary in the U.K. system of life insurance supervision, in part because this is what I know best, but also because it represents the most highly developed level of professional involvement in the system of supervision of any of the countries in the European Community. The need for actuarial involvement in life insurance business is

recognized in all the other countries, but the role of the actuary has in many cases been seen as a technical one, rather than a professional one, and in some countries the actuary is expected to carry out certain calculations but not to exercise any professional judgement.

7.2 The systems of life insurance supervision in the countries of the European Community represent a spectrum of different approaches, from what is generally described as the normative approach of the U.K. and Ireland to the prescriptive or substantive approach, epitomized by the German system. In its full form, as seen in Germany, the prescriptive approach requires prior approval of all products, including policy wordings and premium rates, and the valuation basis is prescribed in great detail in the law. The valuation basis is required to follow precisely the technical assumptions in the premium basis.

7.3 The prescriptive systems of supervision usually also lay down detailed requirements regarding the assets which may be used as investments for the life insurance business, with maximum proportions stipulated for certain categories of assets, and sometimes minimum proportions in other categories of assets. The purchase and sale of investments are in some cases strictly controlled by the supervisory authority. Actuaries are not expected to have any responsibility for the asset side of the balance sheet, or to take the assets into account in any way in valuing the liabilities.

7.4 As indicated above, the most developed example of the prescriptive system of supervision is found in Germany, where even the way in which bonuses will be calculated and distributions made to policyholders is subject to agreement with the supervisor. The actuary, or the insurance mathematician, as he is known, does not have any professional control over either the premium basis or the reserving basis and, although there is scope for developing alternative bonus distribution systems, once these have been agreed with the supervisor, the framework of operation for this is also laid down.

7.5 Systems similar to that in operation in Germany have up to now also applied in Italy, Portugal, Greece, Belgium and Luxembourg, although with differing degrees of tight central control. In Spain products and premium rates have to be notified to the supervisor, but not approved in advance, and although the normal procedure is to adopt the same technical basis for valuation as for calculating the premiums, the actuary of the company has an obligation to decide whether the basis is prudent for valuation purposes and may well be required to set up additional reserves, for example to take into account changes in the mortality experience, or, more importantly, movements in the value of and the yield from the assets.

7.6 France has been moving away from a system of prescriptive supervision for several years, having given much greater discretion to companies and their actuaries to determine premium rates and reserving bases for group business several years ago. They have now followed through the logic of this process, and from July 1991 the requirement for prior approval of insurance products and premium rates has been removed. A descriptive note has still to be prepared in respect of all new products and the authorities expect to request prior details to be submitted in full for a proportion (say a quarter) of new products. Valuation calculations are still very closely supervised by the roving arm of the supervisory authority, the Corps de Commissaires, during their regular visits to audit the affairs of the companies, and actuaries have to be able to defend their methodology and assumptions and secure the approval of the supervisors.

7.7 In Denmark the company actuary has some degree of professional responsibility, and is often spoken of as the Appointed Actuary, following the U. K. usage, although without a really comparable position. However, all life insurance and pension products are written on a market tariff, which is established by the insurance industry and approved by the supervisor. There is no competition on product pricing, although there is keen competition on bonuses. The basic reserves are calculated according to the premium basis and are not, therefore, at the discretion of the actuary. However, companies also maintain a bonus equalization reserve, which is treated as a technical reserve and which is under the direct control of the actuary.

7.8 In the Netherlands there are no regulatory requirements regarding technical bases, either for premiums or for valuation. However, there is a common understanding of what methods and bases are appropriate and in practice practically all companies use the same technical bases for traditional products. Nevertheless, actuaries are seen as having important professional responsibilities and are regarded as key people within the company.

## **8 Supervision of non-life insurance**

8.1 I turn now to the position of the actuary in the supervision of non-life insurance. Here again there are differences between the different countries of the EC, but in most cases actuaries are less influential than they are on the life insurance side. This distinction is all the more noticeable in the United Kingdom, given the established position there of the actuary in life insurance, since

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there is no formal role for actuaries in non-life insurance companies and many such companies do not make use of an actuary at all.

8.2 There is no role in non-life insurers corresponding to the appointed actuary in life insurers and no single individual takes personal professional responsibility for the adequacy of the technical reserves. The amount shown for the technical reserves in the returns to the DTI is certified by the Directors of the company as having been determined in accordance with generally accepted accounting concepts, bases and policies or other generally accepted methods appropriate for insurance companies. The returns are then audited by any independent firm of accountants, who certify that the returns have been properly prepared and that it was reasonable for the directors to give the certificate which they have given.

8.3 GAD also plays a much reduced role in the supervision of non-life insurance companies, as compared to the position with life insurance. Nevertheless, GAD is asked to advise on the apparent adequacy of the technical reserves in cases where the solvency position is marginal, or where initial crude tests on the technical reserves indicate that they may not be adequate. In cases of serious doubt, the DTI may require the company to commission an independent actuarial report on the technical reserves. The actuarial profession in the U.K. has been lobbying for some time for a formal professional loss reserving requirement to be introduced, preferably restricted to appropriately qualified actuaries.

8.4 Italy is the only country of the EC to have introduced a formal actuarial certification requirement for non-life reserves. In their case it is not the company actuary (or consultant) who must certify the reserves, but an independent actuary advising the auditor. Elsewhere in Europe actuaries have varying degrees of influence in non-life insurance companies, often being involved in calculating the reserves, or some part of them, and sometimes in premium rating, design of reinsurance programmes, etc. Formal recognition of the role of actuaries in non-life insurance and the introduction of actuarial loss reserving certification requirements remains a key objective for many of the individual national associations and for the Groupe Consultatif as the EC umbrella organization for the actuarial profession.

## **9 The Groupe Consultatif**

9.1 The Groupe Consultatif des Associations d'Actuaries des Pays des Communautés Européennes brings together representatives from the 14 national

associations of the 12 member states of the EC. Its original purpose was to represent the interests of the actuarial profession to the Community institutions, in particular the Commission, the European Parliament and ECOSOC. The aim was to put forward submissions to these bodies on any matters which are under discussion which might affect the actuarial profession or where there was a clear actuarial input to be made. Representatives of the Groupe often carry the lobbying process further, by meeting with representatives of the Commission, European Members of Parliament and so on.

9.2 The Groupe has now established a sound reputation in Brussels and its advice is actively sought by the Commission on actuarial matters, since the opinion of a group representing the views of actuaries in all countries of the EC clearly carries a great deal more weight with the Commission than would any of the individual national associations. In spite of this interest by the Commission in the Groupe, success has not always been easy to come by, for example in attempts to tie down more clearly the definition of an actuary in the Accounts Directive, so as to require only members of the various national associations to be acceptable for this purpose. More recently, however, a notable success has been achieved with a request from the Commission for the Groupe Consultatif to draft a set of actuarial principles of life insurance reserving for inclusion in the Third Life Directive. The recommendations of the Groupe were, with modest redrafting, incorporated by the Commission in their draft proposal for the Directive.

9.3 In recent years the Groupe has begun to play a more active part in seeking to bring together actuaries from the different countries of the EC and will be running its fourth one-day Colloquium in Lisbon in October 1991. There have now also been 2 three-day summer schools, in Rome and Edinburgh respectively, run by national associations but under the auspices of the Groupe Consultatif. Discussions have started on the topic of actuarial education and how this could be brought rather more into line in the different countries of the EC, and on the possibility of developing some elements of a common framework of a professional code of conduct and professional guidance in certain areas.

## **10 The Framework Directives**

10.1 No discussion on the subject of insurance supervision in the EC would be complete without mention of the Framework Directives. These are envis-

aged as the last stage of putting in place the single market in insurance in the EC, which, under the timetable laid down in the Single European Act 1987, is intended to be achieved by 31 December 1992. Draft proposals for life and non-life framework directives have now been published by the Commission and are starting their tortuous way through the procedures for Community legislation.

10.2 As proposed by the Commission, the framework directives would lay the foundations for a system under which a company would be supervised only by the supervisory authority in the head office country. This supervisor would issue a licence which would entitle the company to write business, either on a direct services basis, or by means of the establishment of branches, in all the countries of the EC. The supervisory authorities in any other countries in which the company was operating would not be permitted to lay down additional requirements or to require the company to be subject to further supervision.

10.3 Under the proposed regime, there would be no prior approval of products, policy conditions or premium rates, but individual supervisory authorities would be able to determine the nature of the supervisory process which they would apply to the companies they were supervising. This might include, for example, some system of keeping the authorities informed about products and would include the arrangements for overseeing technical reserves and laying down any requirements regarding valuation assumptions. The directive would lay down some general principles of reserving, at least in the life insurance field, and individual supervisory authorities would be required to ensure that these principles were adhered to. Some general principles of investment may also be included, including a list of permitted asset types and some maximum percentages of assets representing the technical reserves which may be invested in particular types of assets.

10.4 The process of negotiating these framework directives is at an early stage and it is too soon to be sure whether these initial proposals will be reflected fully in the final version. Nevertheless, there is now a degree of eagerness evident at political levels to get in place the final building blocks of the single market in insurance and progress should be steady, if not dramatic, over the next year or two.

## 11 Looking to the future

11.1 The path ahead is not an easy one, since to give effect to the proposals in the framework directives a number of member states will need to change radically their system of supervision. In many cases a much greater role will need to be played by actuaries, both within companies and in supervisory authorities. In some cases these additional responsibilities will necessitate an education process, covering both actuaries in post and the actuaries of the future. National associations will need to become much more like professional bodies than learned societies, developing codes of conduct and appropriate professional guidance to fit the new situation in which members find themselves.

11.2 I believe that this will be an exciting process, which most actuaries will embrace with enthusiasm. An added dimension will be the potential growth in membership of the EC, with Austria and Sweden already having applied for membership, and others standing in the wings, such as Norway, Finland and Switzerland, not to mention Turkey, Cyprus and Malta.

11.3 Looking a little further ahead, there is the possibility of Poland, Hungary and Czechoslovakia seeking membership of the EC. I have been privileged over the last year or so to have been much involved in the process of establishing insurance supervision in Poland and Hungary and in assisting in a modest may in the formation of an actuarial profession in each country. In Poland they are starting with the immediate advantage of a new insurance law which lays certain responsibilities upon the actuary and envisages the actuary as having a professional responsibility, rather than an obligation to follow a set of rules.

11.4 I look forward to the day when actuaries throughout Europe will have a clearly defined professional role in both life and non-life insurance and where they will be regarded by all supervisory authorities as the key to an effective system of supervision in an innovative and competitive single European market in insurance.

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## Appendix

### GN1: Actuaries and Long-Term Insurance Business

#### Classification (see APC)

This Guidance Note is classified in relation to the code of professional conduct as *mandatory*.

#### Scope

United Kingdom and Republic of Ireland.

#### Application

Appointed Actuaries, actuaries who are directors or senior employees of long-term insurance companies.<sup>1</sup>

#### Legislation or Authority

This Guidance Note is written with specific reference to actuaries appointed in terms of the Insurance Companies Act 1982. Actuaries responsible for long-term insurance business written by bodies other than those authorized under the Act are expected to follow the same principles. In particular, actuaries advising Friendly Societies authorized under the Friendly Societies Act 1974 and actuaries appointed in terms of the Insurance Acts 1909 and 1985 in the Republic of Ireland are expected to interpret this Guidance Note with reference to these Acts.

#### First issued

May 1975.

#### Latest revision

December 1988.

#### A. The Appointed Actuary

**1.1 Introduction.** The responsibilities of actuaries who are appointed in terms of Section 19 of the Insurance Companies Act 1982 are central to the financial soundness of long-term insurance business of their companies and the reputation of the profession, therefore, depends in no small measure on the proper discharge of these responsibilities. It is incumbent on all Appointed Actuaries to ensure, so far as is within their authority, that long-term business is operated on sound financial lines. This guide has been prepared to help such actuaries to a proper understanding of their responsibilities and to indicate the framework within which the profession expects them to work at all times.

**1.2** The essence of a profession lies in upholding its standards, technical and ethical, in the public interest. Any Appointed Actuary who becomes doubtful as to the proper course to adopt in relation to a potentially significant problem is strongly advised to

<sup>1</sup> Es wird nur Teil A betreffend Appointed Actuaries publiziert.

seek help and advice from his professional body by approaching the Honorary Secretaries.

**2.1 Considerations affecting acceptance of an appointment.** Any actuary, before accepting appointment as an Appointed Actuary, must consider most carefully in the light of his previous experience and work whether acceptance would be in line with proper professional behaviour and standards. No actuary should act as Appointed Actuary if he does not have the necessary practical experience. An exception to this might be where arrangements have been made for the Appointed Actuary to have recourse on a professional and formal basis to an actuary who has such experience.

2.2 A potential Appointed Actuary who has not already worked in close touch with his immediate predecessor has a professional duty to consult him (if this is possible) to discover whether there are any professional reasons why he should not accept the appointment. He should make this clear to his prospective principal and seek his permission to hold such consultations. If such permission were withheld it would be a material factor which would be relevant to the prospective appointee's decision as to the propriety of accepting the appointment.

2.3 Where his financial interests in an insurance company by their nature and size are or become such that a conflict of interest would, in the normal course of events, arise or seem to arise, an actuary should not accept the position of Appointed Actuary or continue in it as the case may be. If temporarily in a special situation a conflict of interest arose, or would seem to arise, the Appointed Actuary before making a report should first ask the company to obtain a report from an actuary who has no conflict of interest.

**3.1 Extent of the Appointed Actuary's responsibility.** The profession's rules of conduct make it clear that every actuary acting in his professional capacity, whether remunerated by salary or fee, has a duty to his profession and his responsibility to his principal must be consistent with this. The Appointed Actuary is, however, in a special position in that:

- (a) he is appointed and remunerated by the company, and at the same time;
- (b) he has responsibilities and obligations to the Department of Trade and Industry by reason of his statutory duties, which arise from the Department's supervisory functions aimed at the protection of policyholders.

3.2 It is seldom that these two aspects of his appointment conflict. If they do, however, it is the duty of the Appointed Actuary to advise the company as soon as he is of the view that a course of action is being, or is proposed to be, followed which seems likely to lead him to withhold subsequent actuary's certificates in the normal form. It is also his duty, if the company persists in following such a course of action, to advise the Department of Trade and Industry, after so informing the company<sup>2</sup>.

3.3 The Appointed Actuary, as such, has no executive authority within the company (even though he may also, in another capacity, have an executive position and authority). The responsibility for company decisions must, both in law and in practice, rest with the board of directors. The Appointed Actuary's duty is to advise the company on those matters relevant to his statutory duties. Having regard to the paramount impor-

<sup>2</sup> This duty applies, notwithstanding the Institute's *Memorandum on Professional Conduct and Practice* and the Faculty's *Memorandum on Professional Conduct*.

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tance of this advice in the context of long-term business, he must have a right of direct access to the board of directors and this must be explicit from the inception of his appointment.

**4.1 The duties of the Appointed Actuary.** The statutory responsibility of the Appointed Actuary as required under Section 18 of the Insurance Companies Act 1982 is to carry out, from time to time, and to report on an investigation into the financial condition of the office, including a valuation of its liabilities. Although, as a statutory requirement, an investigation is to be made only at specific intervals, the profession regards it as the Appointed Actuary's duty to take all reasonable steps to ensure that he is, at all times, satisfied that if he were to carry out such an investigation the position would be satisfactory.

4.1.1 More precisely, Section 18 makes it the statutory responsibility of the Appointed Actuary to determine in accordance with any applicable valuation regulations any excess of the assets representing a long-term fund over its liabilities. He must also identify separately any excess which relates to a part of such a fund if there are policyholders with a right to participate in profits which also relates to that part. The company is permitted by Section 29 to make transfers of assets representing its long-term funds to the extent that they have been shown by a recent Section 18 investigation to exceed the amount of the liabilities, subject to the provisions of Section 30 relating to allocations to any participating policyholders.

It is the Appointed Actuary's professional responsibility to advise the company on the extent to which it would be appropriate to distribute any excess to policyholders or transfer it to shareholders and to make recommendations for its specific allocation.

4.1.2 The profession therefore regards it as the duty of the Appointed Actuary to take all reasonable steps to ensure that the company's constitution or authorized procedures are or will be such that it will not make or undertake to make a specific allocation of profit in a long-term fund (whether to policyholders, shareholders or both) before the directors have obtained from him and duly considered a written report containing his observations and recommendations on the subject.

4.2 The financial position of the company is particularly affected by:

- (a) the premium rates on which existing business has been, and current new business is being, written;
- (b) the nature of the contracts in force and currently being sold, with particular reference to all guarantees;
- (c) the existing investments and the continuing investment policy;
- (d) the marketing plans, in particular the expected volumes and costs of sales;
- (e) the current and likely future level of expenses;
- (f) the extent of the company's free estate;
- (g) the reinsurance arrangements; and
- (h) the company's policy in regard to the nature and timing of allocations of profits to policyholders and/or shareholders.

4.3 Information on the above items and any other relevant information must be made available to the Appointed Actuary for him to carry out the necessary financial investigations, and to be able to be satisfied as to the continuing financial state of the company. A prospective Appointed Actuary must make sure that the necessity for such in-

formation is fully understood by the company, and that suitable arrangements are made to ensure that this information is forthcoming.

**5.1 Premium rates and policy conditions.** A prime responsibility must lie with the Appointed Actuary to satisfy himself that the premium rates being charged for new business are appropriate. That is to say they should be sufficient to enable the company in due course to meet its emerging liabilities, having regard to the items listed in 4.2 above, not least the extent of the company's free estate. The Appointed Actuary may need to have regard to the provisions of Section 37(2)(a) of the Insurance Companies Act 1982.

5.2 The statement that a premium rate will be sufficient cannot in fact be an absolute statement – it is inevitably a probability statement because it depends on such future events as mortality, the return on investments, and the expenses. The adequacy or otherwise of premium rates cannot, therefore, be other than a matter of judgement. It is the responsibility of the actuary to exercise this judgement. In exercising this judgement he may reasonably have regard to the free estate of the company.

5.3 The required judgement will, of course, need to be based on the use of sound techniques. Attention may be specially drawn to the complex questions of tax relief and allowances for a new company, adequacy of provision for expenses, and contracts involving various options, including guaranteed surrender values, particularly if financial conditions could arise in which the policyholder could gain by surrender and re-entry.

5.4 It may be that a practicable premium basis, whilst commercially justifiable, will involve significant new business strain. The actuary must be satisfied that the company will be able to set up the necessary reserve, and must indicate any limits on the volume of business that may prudently be accepted.

5.5 He will take into account the shareholders' assets in a proprietary office. However, it cannot automatically be assumed that they are equivalent to free reserves held as part of the long-term fund because they can be used for other than long-term business.

**6.1 Actuarial investigations.** The Appointed Actuary must satisfy himself as to the existing business. To do so he must consider the liabilities, the corresponding assets, and their interrelationship.

6.2 He should take all reasonable steps to satisfy himself as to the data, and if he has any doubts, he must ask the management for written assurances as to the correctness and completeness of the data.

6.3 The Appointed Actuary must use liability valuation methods that are appropriate to the contracts in question, taking into account not only the principal benefits, but any ancillary guaranteed benefits such as surrender and paid-up values and any options.

6.4 Appropriate provision must be made for future expenses of continuing the existing business, having regard to the possibility that the company might be closed to new business.

6.5 Subject to any statutory regulations, the responsibility for investment policy rests with the directors of the company, as also does the decision as to the value to be placed on the assets in any balance sheet.

6.6 The Appointed Actuary must decide the rates of interest to be used in the valuation of the liabilities. These are affected by his estimates of the likely future proceeds of the existing assets and of the rate at which future investment will be possible. In relation to the existing assets, he must assess the nature of the portfolio and consider what rate of

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return, capital and income is likely to be realized over the future period relevant to the liabilities. According to his judgement of this he must decide the basis of his valuation of the liabilities.

6.7 The Appointed Actuary must also pay regard to the relationship between the term of the assets and that of the corresponding liabilities. The importance of this will vary widely from one situation to another, but experience suggests that this can be an area of particular danger.

6.8 At one extreme, for example, for a company with a large portfolio of long-established with-profit business, and where the company is transacting (and seems likely to continue to do so) a steady volume of new business which is small in relation to the existing business, the possibility of insolvency arising from mismatching of assets and liabilities may be minimal.

6.9 At the other extreme, for a company transacting a volume of non-profit new business which is very large in relation to the existing portfolio and which has only a small free estate, matching of asset proceeds to liability outgo may be critical to solvency. The dangers are increased if there are alternative guarantees or options which could, in certain circumstances, require a different distribution of assets by term.

6.10 The Appointed Actuary must decide whether, in his judgement, the investment policy pursued by the directors is, or could become, inappropriate having regard to the nature and term of the company's liabilities. If this is the case, he must advise the company of the constraints on investment policy necessary to protect the position of policy-holders.

6.11 The Appointed Actuary should have regard in his valuation to the nature of the company's reinsurance arrangements including any financing provision implicit therein. If he considers these arrangements are appropriate or inadequate he should advise the company on the modifications necessary to protect the position of the policy-holders.

6.12 The Appointed Actuary must satisfy himself that, in aggregate, the margins in any published valuation of the liabilities, including any margins required by statute, are adequate having regard to his assessment of the risks inherent in the nature and conduct of the company's business.

7.1 **Insolvency.** It is apparent from the foregoing that most of the problems with which the Appointed Actuary is concerned are not capable of precise assessment but are, rather, matters of judgement. In some circumstances, this judgement may appropriately be based on the actuary's estimates of the most probable outcome – perhaps, for example, in relation to bonus distribution. If, however, judgement is required in a matter which may affect the solvency of the company, much more rigorous standards must be applied. (Two such contrasting situations are exemplified in 6.8 and 6.9.)

7.2 The possibility of insolvency, or intervention by the Secretary of State on the grounds of the company's being unable to fulfil the reasonable expectations of its policyholders, may arise from factors, some of which are within the control of the company and some not. To the extent that they are under the control of the company, it is the Appointed Actuary's duty to assess the limits within which the company must act and to advise the company of the necessity for these limits.

7.3 The actuary must consider all external factors outside the control of the company

which could lead to insolvency and must then take whatever action he considers necessary. The profession requires that any Appointed Actuary should pay the most scrupulous regard to prudent judgement in these matters.

8.1 **Written reports.** The Appointed Actuary is required as part of his statutory duties to report to the Department of Trade and Industry in a prescribed form on actuarial investigations carried out under Section 18 of the Insurance Companies Act 1982. It is his professional duty first to report in writing to the directors on the results and implications of any such investigation, whether or not an allocation of profits is involved.

8.2 If he has reason to believe that the company plans to announce or otherwise undertake to make a specific allocation of profits to policyholders and/or shareholders in anticipation of the results of a Section 18 investigation (notwithstanding that, to comply with Section 29(2), confirmation that the investigation shows a sufficient excess of assets over liabilities must precede an actual transfer of assets out of the long-term fund), the Appointed Actuary must take all reasonable steps to ensure that the directors will be in a position to consider a suitable written report from him on the subject before the announcement is due to be made or the undertaking given.

8.3 In reporting on and making recommendations in respect of any proposed allocation of profits the Appointed Actuary must consider the factors listed in paragraph 4.2 above and any others he thinks are significant, and must carry out appropriate financial investigations including an appraisal of the relevant experience. He must include in his report such information and discussion about each factor, and about the results of his financial investigations, as may be necessary to enable the directors to judge the appropriateness of the allocation and understand its implications for the future conduct of the company's long-term business. In particular, but without prejudice to the generality of this requirement:

8.3.1 If the report anticipates the results of a Section 18 investigation he must indicate and discuss how in the context of statutory requirements the allocation will be financed.

8.3.2 He must discuss the relationship between the proposed allocation and the relevant experience, and indicate whether in his opinion the continuance of a distribution policy which, in its relationship to relevant experience, was consistent with the allocation now proposed (excluding any component of the allocation that will be declared to be non-recurring) could lead in due course to an unsatisfactory position. If so, he must explain how this could appropriately be avoided.

8.3.3 In the case of with-profit business his comments under 8.3.2 must cover bonus prospects, with particular reference to the projected development of outgo on and asset cover for unreserved terminal bonus and the like in different investment scenarios.

8.3.4 He must justify his recommendations regarding the allocation and its consequences (if any) for the conduct of the company's business by reference as appropriate to:

- (a) his appraisal of the relevant experience;
- (b) his understanding of the company's financial and business objectives;
- (c) his assessment of the company's continuing ability to meet its statutory solvency requirement;
- (d) his interpretation of the reasonable expectations of the company's policyholders having regard to (a), (b) and (c). He should assume that among the conditions for the fulfilment of those expectations are:

(i) that, in the recognition and allocation of profits in accordance with the company's terms of participation and its policy in respect of the matters referred to in 4.2(h) above, groups of participating policies are appropriately and equitably distinguished having regard *inter alia* to the terms of the policies, their duration and their relevant pooled experience, and

(ii) that the company conducts its affairs, including its new business and investment strategies, with due regard for its financial resources.

8.4 If in his opinion issues required to be covered in a written report to the directors were fully dealt with in a comparable report made within the preceding eleven months and duly discussed by the board, the Appointed Actuary may report in an appropriately abridged form, as for example when interim or terminal bonus rates are being reviewed during the year.

8.5 If a parent of the company reserves the right to approve or vary decisions on matters which are required by this section to be covered in a report by the Appointed Actuary to the company's directors, he must take all reasonable steps to ensure that any such report is made available at an appropriate time to the relevant authorities within that parent.

## Summary

In this paper the author traces some of the origins of the EC solvency margin regime and the developments towards completing the single market in insurance in the EC. The role of the Appointed Actuary in the UK system of life insurance supervision is described and the origins of this system back in the mid 19th century are explored. It is shown how actuarial thinking in the UK has influenced the process of supervision and given rise to the establishment of important professional role for the actuary, rather simply a calculating function. Mention is made of the increasing importance of the *Groupe Consultatif* as an organization representing the national associations of actuaries in the EC member states, and the possibility that this organization could play a part in moving towards a more European actuarial profession in the future.

## Zusammenfassung

In der vorliegenden Arbeit wird die Herkunft der Solvenzbestimmungen in der EG nachgezeichnet und Entwicklungen in Richtung eines gemeinsamen Versicherungsmarktes in der EG dargestellt. Der Autor beschreibt die Rolle des «Appointed Actuary» im britischen System der Lebensversicherungsaufsicht sowie die Entstehung dieses Systems in der Mitte des 19. Jahrhunderts und zeigt, wie aktuarielle Denkweisen die britische Versicherungsaufsicht beeinflusst und zur wesentlichen Bedeutung des versicherungsmathematischen Berufsstandes beigetragen haben. Es wird aufmerksam gemacht auf die zunehmend wichtige Rolle der *Groupe Consultatif* als eine Organisation, welche die nationalen Aktuarvereinigungen der einzelnen EG-Staaten repräsentiert, und es wird darauf hingewiesen, dass diese Organisation ihren Teil zur Bildung eines gesamteuropäischen Berufsstandes des Aktuars beitragen dürfte.

## Résumé

Dans cet article, l'auteur retrace les origines du système de la marge de solvabilité en vigueur dans les pays européens et esquisse les développements futurs devant parachever la construction d'un marché unique de l'assurance dans le cadre du Marché Commun. Il définit le rôle de l'Actuaire attitré (Appointed Actuary) dans le concept de la surveillance en assurances-vie au Royaume-Uni et rappelle les origines de ce système qui prend ses racines au milieu du 19<sup>e</sup> siècle. La pensée actuarielle a influencé dans une large mesure le processus de surveillance et a permis l'émergence d'une profession au rôle éminent, la profession d'actuaire qui va bien au delà de celle d'un mathématicien d'assurances. L'auteur souligne l'importance croissante du *Groupe Consultatif* qui réunit les représentants des associations nationales d'actuaires des pays du Marché Commun et exprime son espoir que, dans le futur, cette organisation jouera un rôle dans le processus menant à une conception commune de la profession d'actuaire en Europe.