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# THE IMPLICATION OF FAIR VALUE ACCOUNTING FOR GENERAL INSURANCE COMPANIES

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ABSTRACT

The International Accounting Standards Board is undertaking a project to develop an Accounting Standard for Insurance. The basis for these proposals is that assets and liabilities should be shown at fair values (market values for quoted instruments). This is an updated version of a paper, prepared by a Working Party established by the General Insurance Research Organisation (GIRO) of the General Insurance Board of the actuarial profession of the United Kingdom, which was first presented to the GIRO Conference in October 2002. This paper summarises and comments upon the principal features of the proposals as they have emerged up to February 2003. The paper considers the implications for general insurance companies of these proposals. In particular, it examines the concept of market value margins, and the practical issues that insurance companies are likely to encounter in implementing them. The emphasis of the paper is on reporting for general insurance business, although many of the principles apply equally to life assurance.

KEYWORDS

Fair Value; Entity Specific; Financial Reporting; International Accounting Standards; Market Value Margins; Non-Life Insurance

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## 1. Overview and Introduction

1.1 The implementation of the International Accounting Standards Board's (IASB's) Draft Statement of Principles (DSOP) will require fundamental changes to the statutory financial reporting by insurance companies. This paper sets out to discuss the key issues and implications arising from the DSOP proposals, as they will affect non-life insurance and reinsurance companies.

1.2 The IASB has stated that an International Financial Reporting

Standard (IFRS) for insurance contracts "...should prescribe the accounting and disclosure in general purpose financial statements by insurers and policyholders for all insurance contracts...". The reference to all insurance contracts includes reinsurance contracts. The IFRS will not consider other aspects of accounting by insurers and policyholders, which are already covered by existing International Accounting Standards (IAS). The IASB started drafting the DSOP in November 2001.

1.3 The European Parliament has ratified a directive to require listed companies in member countries to provide statutory financial statements in accordance with IAS from year end 2005. In individual countries the requirement to account under IAS may be extended beyond that required by the European Parliament. In the United Kingdom it seems likely that all regulated insurance and reinsurance companies will be required to report under IAS. In addition, the Accounting Standards Board has already put in place moves to close the differences between U.K. Generally Accepted Accounting Principles (GAAP) and IAS. The timeframe for implementation of IAS, or the equivalent, for all insurers will certainly extend beyond 2005, but all the signs are that reporting is moving towards IAS, and that companies should be considering these proposals now.

1.4 The life insurance industry appears to have responded more quickly to the IASB's insurance contracts project, but the project has significant implications for the non-life insurance industry. Companies need to be thinking about the implications of the proposal, both from the standpoint of practical implementation issues and in the context of business strategy. Given the desire to establish an insurance contracts standard at the earliest possible date, the timeframe for comments on the exposure draft, once produced, may be relatively short, and the industry needs to be ready to respond.

1.5 The fair value concept has stimulated theoretical discussions and challenged traditional actuarial thinking. Actuaries are now more willing to embrace the concepts of financial economics and adapt techniques already established within the banking and securities industry for insurance valuations. To date, however, relatively few practical solutions have been suggested that can be applied to real situations for statutory valuations. This paper sets out to discuss the valuation aspects of the DSOP proposals and to suggest some practical valuation solutions. The aim of the Working Party is to stimulate discussion around the implementation of the DSOP by general insurers in the U.K. in order to raise awareness and encourage the industry to prepare for the coming changes.

1.6 The DSOP requires the same treatment of insurance and reinsurance contracts. For the purposes of this paper, unless the context indicates otherwise, the term 'insurance' has been used to refer to both insurance and reinsurance.

## 2. Purposes of Financial Reporting

2.1 *General*

2.1.1 The financial reports of insurance companies are interrogated by a number of different parties with very different motivations, including regulators, equity investors, debt holders, business analysts, credit rating companies, business contacts, management, employees, policyholders, reinsurers, cedants, competitors, the Inland Revenue and the Stock Exchange, depending on the nature of the company. Some of these parties are interested in retrospective analysis of the companies' operations over the recent past, but many are more interested in making assessments of the future outlook for the business. It is commonly assumed that all information currently in the public domain will already be reflected in the share prices of proprietary insurers. Parties interested in the finances of insurance companies will want to take into account their own situations and motivations, which may result in different values being placed on the companies than implied by market activity. Further, the share price can be affected by factors other than the company's own performance, such as market confidence, which may, or may not, be consistent with the predicted out-turn based on the analysis of business performance.

2.1.2 For insurance companies, many factors are beyond the direct control of the companies' managements. Interested parties need to try to assess the impact of these factors when assessing the future performance of insurers. The complexity of the financial results of insurance companies can lead to anomalies that increase the difficulty of analysing such companies, and particularly of comparing companies. Insurance companies are currently subject to different regulations and financial reporting requirements in different territories, even within Europe, making sensible comparisons between companies across territories extremely challenging.

2.1.3 There is a tendency for complacency in the market place when businesses are generating profits and paying dividends, but panic can quickly ensue when businesses suddenly experience a downturn. In many cases the panic is due to ignorance on the part of investors as to how the business was operating, resulting in a shock when historical profits are no longer found to be sustainable. Such ignorance and associated panics can be avoided when investors have a better understanding of how the business is operating. Some market commentators have suggested that the market would not be capable of processing and comprehending more detailed information on the performance of the business. Recent shocks to the market have damaged investor confidence in this sector, but it seems inappropriate to suggest that investors would be unable to cope with a fuller knowledge of business operations. Clearly the market is likely to see some readjustments, but attitudes are already changing. The insurance market is no longer unique, and investors are seeking to make comparisons

with the banking and securities' sectors to make informed investment decisions.

2.2 *Weaknesses of Current Accounting Approaches*

2.2.1 Interpretation and comparability, over time and between companies, of insurance companies' accounts are challenges under current accounting requirements. Key items in insurance companies' accounts rely heavily on subjective judgement. Guidance is provided on acceptable accounting principles, but individual companies use different methods to arrive at asset and liability valuation figures. The appropriateness of the valuation of insurance liabilities will depend on the basis of the valuation. A valuation on a wind-up basis will typically include greater allowances for run-off costs and greater margins for prudence than a valuation conducted on a going concern basis, where a share of general expenses may expect to be met from future income, and some may argue that future profits can provide an additional margin in the event of adverse experience on the existing business. Currently companies have a choice regarding whether insurance liabilities are presented at face value or discounted for the time value of money, where discounting assumptions are largely at the discretion of the companies.

2.2.2 Comparisons of specific accounting items between insurance companies are impaired by the use of different methodologies and assumptions, and further compounded by differences in the level of detail shown. For instance, one company may show separate details for property, motor and casualty business, whilst another insurer may only distinguish between life and non-life operations. Consolidated accounts produced at the group level frequently do not even distinguish between the performance of the life and non-life businesses.

2.2.3 The current statutory bases of accounting in the U.K. and in a number of other countries has been criticised for not reflecting the true emergence of profit and change in the value of the business. Embedded value calculations have been proposed as an alternative approach. This technique includes a front loading of profit recognition, which is not generally considered appropriate for accounting purposes. Embedded value is most appropriately used as a technique to value future profitability rather than for profit allocation.

2.2.4 GAAP tend to lock companies into valuation assumptions that raise questions as to the extent of the realism that exists in the financial reports prepared. Particular problems with the analysis of GAAP accounts are that:

— they cannot analyse life and non-life separately in consolidated accounts;
— they cannot analyse new business separately from existing business;
— investment gains can be used to meet earnings targets;

— it is possible to manipulate the timing of profit emergence; and
— there is limited information to permit the objective assessment of company management.

2.2.5 Many of the users of accounts are seeking to compare and analyse risk and return. The difficulty in assessing risk factors arises from the variable standards of disclosure and aggregation, the sensitivity and materiality of many of the key assumptions underlying the accounts and the effects of gearing.

2.2.6 The chapter on presentation and disclosure under the insurance contracts DSOP has not yet been published, but it is understood that the IASB is working towards more detailed disclosure than has been required in the past, with the aim of overcoming some of the shortcomings of current accounting procedures.

2.3 *Users of Accounts*

2.3.1 In order to ensure that companies' accounts are relevant, it helps to consider who is likely to use the accounts and what their concerns are. In the remainder of this section we have listed many of the key users of accounts and their priorities.

2.3.1.1 Equity investors will be interested in:
— investment performance;
— management quality;
— market growth;
— capital management;
— information on profits and cash flows;
— risk and uncertainty;
— embedded value;
— asset/liability management; and
— the competitive advantages of individual companies.

2.3.1.2 In addition, business analysts seek to assess the profitability and prospects of the business by considering:
— the sources of financial information;
— performance forecasts;
— economic profit;
— the return on risk-adjusted capital;
— proper value;
— market growth;
— market share;
— customer retention; and
— customer penetration.

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2.3.1.3 Debtholders' primary concern is the risk of default, for which they will take into account:
— the likely adequacy of cash flows generated to service loans;
— the likely adequacy of the asset base to cover obligations on default; and
— the measurement of restrictive covenants.

2.3.1.4 Management and employees are interested in:
— the source of financial information;
— earnings;
— the expense ratio;
— the claims ratio;
— the embedded value; and
— job security.

2.3.1.5 Business contacts (brokers, reinsurers, etc.) will want to conduct similar analyses to those of equity investors, in addition to:
— the continuity of sales and services;
— ongoing solvency; and
— insight into the companies' pricing and trading policies.

2.3.1.6 Credit rating companies will wish to investigate:
— the cost of capital;
— the risk associated with income production;
— proper value;
— asset quality;
— asset/liability management;
— expense ratios; and
— claims ratios.

2.3.1.7 Regulators are interested in:
— expense and claims ratios;
— a proper valuation;
— asset quality and asset/liability management;
— the reinsurance adequacy, quality, spread;
— the quality of management and systems and controls;
— risks and exposures;
— trends and market influences; and
— future plans.

2.3.2 The Inland Revenue requirements for determining taxable profit may differ from those used by the company for statutory accounting purposes. The Inland Revenue will use the statutory accounts of a company as a starting point for determining the taxable profit.

2.3.3 The Stock Exchange wishes to ensure that listed companies continue to meet the minimum requirements.

2.4 *Desirable Features for Accounting Procedures*

Companies will be interested in producing reports and accounts that portray the business in a favourable light to shareholders, debt holders, rating agencies and the regulators. The bodies setting the accounting standards should set rules and guidelines which ensure that companies' reports and accounts provide a balanced picture of the companies' business and provide sufficient disclosures to support appropriate business analysis by relevant interested parties. The Working Party has attempted to identify the criteria that would be ideal for a set of accounting principles. A number of the desirable criteria are conflicting, and any set of principles will be, at best, a compromise between theoretically desirable and practically achievable. The Working Party's list of ideal characteristics for financial statements, from both the points of view of the users and of the preparers of accounts, are that they are:

— transparent;
— consistent over time (in terms of methodology and assumptions);
— consistent with broader accounting principles;
— likely to promote sound economic behaviour by management and users of the accounts;
— objective;
— easy to audit;
— quick to conduct;
— simple to understand and to calculate;
— based on data readily available;
— using existing systems;
— cost efficient;
— consistent with other valuation bases, e.g. regulation, tax, pricing; and
— accompanied by a meaningful management discussion of the more important drivers of the business and the experience of the period being reported on.

## 3. Fair Value in General Purpose Reporting — the IASB Proposals

3.1 *IASB Purpose*

3.1.1 Currently there is no IAS for insurance contracts, and some of the existing standards that might otherwise be appropriate specifically exclude insurance contracts when considering some issues. As a result, insurance companies accounting under IAS rules are left, at present, with uncertainties regarding how to deal with these issues. In the absence of an IAS for insurance contracts, insurance companies are expected to account

according to the principles of IAS, but can make use of appropriate local GAAP.

3.1.2 In 1997 the International Accounting Standards Committee (IASC), which has since been replaced by the IASB, decided that a standard for insurance was required, and put in place the insurance contracts project. The aim of the project is to develop a standard for insurance contracts that is consistent with the conceptual framework definitions of assets and liabilities.

3.1.3 Key drivers behind the decision to produce an international financial reporting standard (IFRS) for insurance contracts have included:

— the increasing globalisation of the insurance industry, which has led to a need for a consistent accounting standard across different territories, where accounting standards are currently widely varied;
— the breakdown in traditional operational areas between different financial service providers, which has led to a need for consistent accounting between the insurance industry and other segments of the financial service industry; and
— the need for greater consistency of regulatory supervision, both across different territories and across the financial services industry.

3.1.4 The European Union has made reporting under IAS mandatory for all listed enterprises, including listed insurance companies, by 2005. This decision increases the urgency for which guidelines on accounting for insurance contracts are required.

3.1.5 The United States of America has been represented in discussions on the development of IAS, including that for insurance contracts, although, until recently, there has been no suggestion that there would be any move away from U.S. GAAP. The New York Stock Exchange considered requiring listed companies to implement IAS, but the proposal does not appear to have been progressed. In the post-Enron environment, market commentators are suggesting that a major overhaul of U.S. GAAP is required, and that switching to IAS may be an appropriate alternative.

3.2 *IASB Progress to Date*

3.2.1 The IASC started the project on insurance accounting in 1997. The Issues Paper was published in December 1999, with comments requested up to 31 May 2000. The project steering committee has considered the comments received in formulating a report to the IASB. The report was in the form of a Draft Statement of Principles (DSOP).

3.2.2 The IASB began discussing the DSOP in November 2001, and these discussions are still (in February 2003) on going. Eleven chapters of the DSOP have been published on the IASB website, with the currently unpublished chapters covering disclosure, performance-linked insurance contracts and presentation. The IASB has reserved the right to make

amendments to the published chapters, and decisions will only become final after completion of a formal ballot to issue an International Financial Reporting Standard.

3.2.3 Since the start of the fourth quarter of 2001 the IASB initiated a series of field visits. Further field tests were carried out in 2002. The field visits were intended to assess the practical and conceptual issues that arise in measuring insurance contracts under the proposals. In total, 20 visits were planned across nine countries. Key themes arising from these visits, which have fed back into the IASB deliberations, are that:

— the cost of implementing a prospective approach is onerous, but may be justified by the benefits;
— the market value margin is highly subjective, and more guidance is required;
— there is general agreement that the use of stochastic models is conceptually appropriate, but there are concerns about the practical implementation of such models;
— the treatment of non-insurance contracts requires more guidance than that currently available in IAS 39; and
— implementation of the proposals will require significant technical and human resources.

3.2.4 None of these findings should be particularly surprising to anyone who has read the DSOP in its current form. What is not clear is to what extent the IASB will respond to the issues raised or will consider them to be a side effect of change that needs to be dealt with by the industry. It is of note that the IASB has sought the opinions of the International Actuarial Association (IAA), which is currently in the process of producing responses to the IASB on the DSOP. It would be hoped that the IAA would provide useful comment in respect of the market value margin and the use of stochastic models.

3.3 *DSOP Proposals*

3.3.1 Under many existing accounting regulations, insurance companies are given special treatment or are exempt from certain requirements, because the nature of insurance business is such that it does not lend itself to be meaningfully interpreted under the same principles that can be applied to non-insurance companies. The IASB is seeking to develop principles that can be applied to insurance that also are consistent with the broader principles applying to other industries and, most particularly, to other financial service industries.

3.3.2 The proposals being developed are for insurance contracts and not for insurance companies. This recognises the fact that traditional markets are disappearing and greater overlaps are occurring within the financial services sector, particularly between insurance, banking and securities. The proposals

will apply to all insurance and reinsurance contracts, whether held as the insurer/reinsurer or as the policyholder, regardless of whether the company concerned is an authorised insurer or reinsurer.

3.3.3 The DSOP is lengthy and detailed. It is, however, well structured and laid out, and so is easier to read than one might expect for such a large document.

3.3.4 The proposals start with a definition of insurance contracts and go on to clarify the treatment of different types of contracts, but the bulk of the proposals are focused on valuation. The DSOP is made up of 13 Chapters plus an executive summary, of which Chapters 1-6 and 8-12 are published on the IASB website. Presentation of financial statements is to be covered in Chapter 13. It is understood that the IASB is waiting for the final view of the joint working group considering financial instruments, since presentation for insurance should be consistent, as far as possible, with presentation for other financial instruments.

3.3.5 The current form of the DSOP starts off by defining an insurance contract for the purpose of interpretation in the context of all IFRSs and IASs. The definition is not the same as currently used for most accounting purposes, and may result in some companies having to account for existing insurance business as non-insurance business in future, and vice versa. Particular changes include the exclusion of all credit risks from insurance risk. Further, the definition of an insurance contract relies on the interpretation of uncertainty, defined as there being: "a reasonable possibility that an event affecting the policyholder or other beneficiary will cause significant change in the present value of an insurer's net cash flows arising from that contract.'' The DSOP highlights the need to consider both the probability of an event and the magnitude of its effect, but does not specify further what constitutes 'reasonable possibility' or 'significant change'.

3.3.6 The DSOP then sets out a list of contracts that should be excluded from treatment as insurance contracts, even if they meet the definition, and goes on to consider the treatment of contracts that bundle together insurance and non-insurance elements.

3.3.7 Overall objectives and issues for the recognition and measurement of insurance contracts are stated. This section includes consideration of the use of entity specific value and fair value, which we cover in more detail later.

3.3.8 Chapters 4 and 5 of the DSOP cover the core valuation principles associated with estimating the amount and timing of cash flows and adjustments for risk and uncertainty. These two chapters plus Chapter 6 on discount rates are the key areas of consideration in the remainder of this paper.

3.3.9 The remaining chapters cover performance linked contracts (not available to-date), reinsurance, other assets and liabilities, reporting entity

and consolidation, interim financial reports, presentation (not available to-date) and disclosure (not available to-date). Treatment of reinsurance contracts is the same as for insurance contracts, and there is to be no netting off of reinsurance assets against insurance and reinsurance liabilities. The DSOP currently indicates which other IAS standards should be considered for treatment of non-insurance assets and liabilities.

3.3.10 A fundamental change for U.K. insurers and reinsurers implementing IAS is the recognition of assets and liabilities that replaces the deferral and matching approach used under U.K. GAAP. The effect of this change is that insurers will need to estimate the total outstanding liability for all future losses based on a closed book of contracts, which is akin to an underwriting year valuation approach. Unearned premium reserves and deferred acquisition costs will no longer be recognised. Expenses will be accounted for as they are incurred.

3.3.11 On first inspection this approach results in profit recognition on inception of the policy. Although strictly this is true, the application of a market value margin in the valuation defers recognition of part of the profit over the term of the future cash flows. In exceptional circumstances, the DSOP permits the market value margin to be set such that the profit at the valuation date is zero, thus deferring recognition of profit until a more reliable estimate of the market value margin can be made. If, of course, the policy is expected to result in a loss, then this will be recognised immediately, together with a risk margin which will reduce over time as the cash flows come through.

### 3.4 *Future Developments*

3.4.1 At this time the IASB is still discussing the DSOP, and it is understood that controversy remains over a number of the proposals. It seems likely that the proposals may change, perhaps significantly, before a final standard is produced. Whilst this may encourage insurers to think that they should not rush to consider implementation of the proposals, the timescales that are being imposed by European legislation will potentially demand implementation in a relatively short time frame. It now appears certain that an IAS basis of reporting will be required for listed companies, and probably for all regulated companies between 2005 and 2008. Although the eventual standard may differ from the current DSOP in specifics, the broader valuation principles have sufficient support within the IASB and from regulators and the wider market place to ensure that they will be implemented in some form.

3.4.2 The original proposals were for an exposure draft for insurance contracts to be produced by late 2002, with the IFRS to be released in 2003, for implementation from 2005. In May 2002 the IASB recognised the delays in the timetable and split the project into Phase I and Phase II. Phase I will be an interim measure, and the full implementation will occur with Phase II.

The intention is that an exposure draft for Phase I will be introduced in the second quarter of 2003, followed by an IFRS in 2004, in order that implementation of Phase I will be possible in 2005 in accordance with the E.U. timetable. However, Phase I will not have an IAS for insurance contracts. This will be in Phase II. The IASB has not announced a timetable for the exposure draft or IFRS for this phase. The expectation is that the implementation for Phase II will occur around 2007 or 2008.

## 4. Immediate Issues for Non-Life Insurers

### 4.1 *Immediate Issues*

4.1.1 It is not too soon for general insurance companies to be thinking about how they will implement IAS. The DSOP represents a significant change in accounting procedures for insurers previously using either U.K. GAAP or U.S. GAAP. There has been a tendency to-date for the non-life insurance industry to assume that the IAS proposals will not have a huge impact and will represent a relatively straightforward transition. The Working Party and other market participants are starting to recognise that this may not be the case, and that an investment in impact studies would be appropriate at this stage.

4.1.2 Whilst the DSOP throws up a number of practical issues for implementation, the DSOP also needs to be considered in terms of its impact on the reserves that the company is required to hold and the effect that this may have on future business strategy. Interpretation of the proposals suggests that results will be much more volatile in future. This is primarily due to the fact that the valuation approach is to be based on current market conditions in most circumstances, but is exacerbated by the fact that claims equalisation reserves and catastrophe provisions are not permitted under the proposals.

4.1.3 Whilst under current accounting guidelines insurers are expected to set prudent reserves, explicit allowances for the time value of money and the risk and uncertainty of the cash flows are not common. Under the DSOP proposals the insurers will be required to separately identify the expected value of future cash flows, the market value margin and the discount. The nature of this analysis may well result in the identification of provisions that are different from those accepted for statutory reporting purposes over the recent past.

4.1.4 Studies undertaken to attempt to assess the impact of discounting provisions have demonstrated that, once there is an appropriate allowance for risk and uncertainty, the discounted provisions for classes of business with relatively long development tails, such as casualty business, can be lower than the undiscounted best estimate provision. For classes of business with shorter development tails, for instance household business, the discounted

provisions, including a margin for uncertainty, are generally greater than the best estimate undiscounted provision. For classes of business that will reach settlement in the relatively near future the value of the required margin for uncertainty generally exceeds the discount for the time value of money. As the term to settlement increases, the value of the discount generally increases more rapidly than the margin, until, for most long tail classes, the margin for uncertainty is less than the discount, and discounting provisions becomes a capital efficient approach.

4.1.5 The implications under the DSOP proposals are that insurers underwriting short tail business will need to hold higher reserves than is currently the case, giving rise to an additional capital cost. However, the principle of the DSOP proposals is to put a market value on the liabilities. Currently the market is pricing short tail contracts without allowing for an additional capital cost implied by analyses of risk margins. This implies that either the risk margins contemplated for such classes are too large or that the premiums that the market is charging are currently too low. It can be argued that the market does have an appetite to write short tail business at the rates currently being charged, and that it does see this business as having a lower risk margin than we do. It is the market view of the risk margin that the DSOP asks us to use, and not any individual opinion on a theoretical risk margin.

4.2 *Effect on Results*

4.2.1 Insurance company results will be more volatile from year to year under the IASB proposals than under current U.K. statutory accounting requirements. Currently insurers are able to smooth their results to some extent by using long-term assumptions about profitability, whilst under the DSOP proposals assumptions are closely linked to current market conditions. We would expect to see companies' results reflecting the rises and falls of the insurance cycle to a greater extent than has been observed in the past. However, we would expect to see all market participants experiencing broadly the same trends at the same time.

4.2.2 The change from a deferral and matching approach to an asset and liability approach to annual accounting will change the timing and recognition of profit. However, whether this accelerates or delays the emergence of profit will depend on the class of business. The discounting of provisions and recognising profit at the inception of the policy are counterbalanced by the margin for uncertainty which will unwind whilst claims are being paid.

4.2.3 Discounted claims provisions, adjusted for a margin for uncertainty, give rise to a different profit signature over the term of a contract than the combined effect of undiscounted best estimate claims' provisions and unearned premium reserve. This will lead to a change in the capital requirements of different types of contracts compared to those

currently experienced by companies. If the current pricing basis is considered to be reasonable, and hence is used as a basis for estimating the market value margin consistent with the concept of fair value, then the overall cost of capital over the term of a contract would be expected to be unchanged from the current situation. The change in the profit signature may lead to changes in the timing of the requirement for capital, which could present issues for insurance companies. Currently, contracts may suffer capital strain due to high initial expenses (that are not all deferred as acquisition costs) at the outset, and profits are expected to emerge over the remaining terms of the contracts. Under the DSOP proposals, assuming that the best estimate assumptions are borne out in practice, expenses will be recognised as they are incurred, removing this initial capital strain. Profits will be recognised over the term of the policy as the margin for risk and uncertainty is released. This profit stream will be offset by the discount unwinding up to final settlement. The overall profit signature for a contract will depend on whether the discount partly, completely, or more than, offsets the release of margin.

4.2.4 Interpretation of company reports and accounts by interested parties has been a cause for concern, as initial restatements of company balance sheets suggest that provisions will need to increase, leading to a fall in recognised profits, at least over the conversion period. In the medium term, once analysts have had the opportunity to review restated reports and accounts for all insurers and factor any additional information into their decision making process, it is reasonable to assume that the market will benefit from additional investor confidence brought about by improved disclosure. If problems are to occur, they will be a short-term symptom of the market reacting to improved information that may reveal unsatisfactory operational characteristics that are not currently identifiable under statutory reports and accounts.

4.2.5 A greater area of concern will be how U.K. insurance companies will compare with similar companies operating in different territories and with the banking and securities industries. Increasing globalisation and overlap between insurance and the securities market has increased the need for comparisons to be made. One of the stated aims of the IASB for the insurance contracts' project is to improve consistency of reporting across territories and across industries. Given the significant differences in reporting for insurance companies around the world, it is difficult to gauge how U.K. insurance companies will compare once more consistent bases of reporting have been achieved and how analysts and investors will respond.

## 5. Purposes of this Paper

5.1 The DSOP proposals are of a radical nature, and will present a number of problems for non-life insurers and reinsurers attempting to

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account under IAS principles. There has been a lot of theoretical discussion around the proposals, both by the IASB and in the wider market, but the Working Party feels that the key issue arising from the proposals at this time is how insurance companies apply the proposals in practice. There have been a number of papers produced that cover approaches for coming up with market value margins, but many of the proposed techniques are subject to significant practical limitations or have no track record. Reliable annual reporting is extremely important to companies which do not want to be seen to be misleading investors and policyholders. Restatement of accounts due to methodology and assumption changes would be undesirable, and the Working Party anticipates that, whilst theoretical arguments surrounding new valuation techniques may provide intellectual challenges for actuaries, most companies will be more comfortable using methods with established track records wherever possible for annual accounting purposes.

5.2 The Working Party has written this paper to focus on the key issues in the DSOP associated with the valuation of insurance assets and liabilities, and suggests practical techniques that could be used to conduct these valuations in accordance with the DSOP. The Working Party has not spent time considering issues that do not relate directly to the valuation requirements unless they could indirectly affect the valuation approach. This paper does not consider issues that are clearly explained and unambiguous within the DSOP. The Working Party feels that much of the DSOP is sound and sensible, and a number of key questions that were raised at the issues paper stage have been addressed in the DSOP. Whilst the DSOP is still under discussion by the IASB and remains subject to change, the valuation sections (Chapters 4, 5 and 6) of the DSOP appear to be fully drafted. These chapters focus on the principles of valuation, but do not provide advice on how to do the actual calculations. This paper has focused on possible solutions to the questions raised by the valuation proposals.

5.3 This paper is not intended to provide the definitive solution on how to apply the DSOP valuation principles in practice. Instead, it is intended to raise awareness of the issues facing non-life insurers in relation to the implementation of IAS, to suggest some possible practical solutions to the valuation and to stimulate discussion regarding the impact of the DSOP on the non-life insurance industry. Whilst the method of valuation of insurance assets and liabilities represents a key concern, the impact of the DSOP proposals is far wider, having implications for future business strategy and management.

5.4 The extent to which a final IFRS will change from the current DSOP is highly uncertain. The IASB is currently working its way through discussing all the current proposals. Field visits are still under way, and there are proposals to conduct further field tests. Once an exposure draft has been produced, there will be a consultation period before an IFRS is finally released. The potential for significant revisions does not justify waiting to

consider the impact of the current proposals. The time frames are relatively short, with possible implementation by 2005 throughout Europe. Furthermore, general insurers need to have considered the proposals in order to contribute to the consultation process, which may be relatively short, given the IASB current proposed timetable to produce an IFRS by 2004.

## 6. Fair Value and Entity Specific Valuation

6.1 The key sections of the DSOP are Chapters 4 and 5. Very careful reading is required to appreciate the differences between, and the common elements of, the 'fair value' and 'entity specific' approaches. The differences are, in practice, very limited — the concept of the market price of risk underlies both, as does mean expected value. These differences are likely to be less material than the range of practical approaches to risk margins which we will find when companies start to implement the DSOP. The entity specific concept may have been developed to make the fundamental changes embodied within the DSOP more palatable to some people.

6.2 In December 1999, when the *Insurance Contracts Issues Paper* was published, the principle of valuation was that of fair value, defined as: "the amount for which an asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm's length transaction", or as: "the amount that the enterprise would have to pay a third party at the balance sheet date to take over the liability".

6.3 Given the lack of a liquid secondary market in insurance liabilities, the identification of fair value amounts from the market is not realistic. Suggestions have been made as to how prices in commutation transactions and some reinsurance transactions could be used to identify fair value, and we have considered this later in this paper. Most transactions occurring in the market, however, are not between equal parties, but are, instead, between two parties where one has a significant negotiating advantage, for example due to the poor credit rating of one of the parties. As a result, it has been recognised that it would be necessary to estimate the fair value of insurance contracts that would exist if there were a liquid secondary market in non-life insurance liabilities. The fact that such a market does not exist may be taken to suggest that a fair value between willing parties does not actually exist, because there is a gap between the price that a willing party is prepared to buy and to sell the same book of insurance contracts.

6.4 The concept of fair value for insurance contracts was intended to be consistent with accounting principles for other sectors of the financial services industry. Following the decision that the banking and securities industry is not currently in a position to move to fair value, the emphasis has shifted for insurance contracts. In the DSOP, entity specific valuation is proposed as an alternative, with the guidance that insurance contracts should

be valued on an entity specific basis as long as IAS remain broadly in their current form. If, however, IAS 39 is replaced by an IFRS requiring fair valuation of assets and liabilities, then insurance contracts will also be subject to fair valuation. The current DSOP describes the approaches for both fair value and entity specific value, implying that the eventual insurance contracts IFRS would not be rewritten in the event of a change to IAS 39.

6.5 As previously noted, fair value for insurance contracts needs to be estimated in most instances, as market prices are not readily available. The principles for entity specific valuation and fair valuation are broadly the same for non-life insurance, except for some key assumptions. For fair value all assumptions should be market based, whereas under entity specific valuation assumptions, that are likely to depend upon entities' own management of operations, such as expenses, should be specific to the entity.

6.6 A key difference between the entity specific value and the fair value of a book of insurance contracts relates to the treatment of the market value margin. For entity specific value, the non-market assumptions are to be based on the entity's own experience or expectations, whilst under fair value the non-market assumptions are to be based on the experience or expectations of a typical market player. Market value margins are to be determined by unit of account, where each unit of account consists of books of contracts that are subject to substantially the same risks. Under both fair value and entity specific value, market value margins are to be additive.

## 7. Valuation Components

### 7.1 *Expected Value*

7.1.1 The DSOP first requires insurers to identify the present value of all pre-tax expected future cash flows arising from the closed book of insurance contracts. These cash flows are to include all future claims' payments and associated expenses, premium receipts, transaction-based taxes and levies, policy administration expenses, overheads and (non-reinsurance) claim recoveries. The valuation approach has similarities to the embedded valuation calculations used in life insurance, but the DSOP valuation excludes cash flows that would arise from renewal of contracts, except when that renewal is potentially valuable to the policyholder because the terms of the renewal significantly restrict the insurer's freedom to reprice the contract.

7.1.2 The DSOP specifies what should be taken into account when coming up with assumptions for the entity specific value or fair value. This is a comprehensive section of the DSOP, and does not warrant further discussion in this paper.

7.1.3 Some market practitioners are of the view that the non-life insurance industry has been identifying best estimates of reserve requirements

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for many years and that this part of the new requirements does not present a problem. Counter arguments suggest that statutory provisions are currently set at varying degrees of prudence, as insurers tend to build implicit margins into their reserve estimates through adjustments to the underlying assumptions. Currently, in many cases the best estimate is interpreted as the median or mode, so that, in practice, there is a negative margin of prudence. The overall level of margin in a company's provisions is generally unknown until the business is fully run off, and even then emerging profit or loss may arise from good or bad fortune rather than from positive or negative margins. Economic conditions at the valuation date are likely to influence the level of margin that is being held, with more optimistic assumptions being made when poor experience has demanded that additional provisions need to be established. The presence of unquantified margins does not permit companies to manage their risk effectively, and they are potentially tying up capital in provisions unnecessarily or running the risk that margins are not as large as assumed when poor loss experience is encountered. In practice, the proposal that companies have to identify proper expected loss provisions in the first instance is perhaps a more radical change than acknowledged to-date.

7.1.4 The element of the provision relating to extreme adverse developments (whether of claims or in relation to reinsurance non-recovery), included in the best estimate, will be very uncertain. If this element is material, then additional disclosure would be appropriate.

7.1.5 The DSOP favours a stochastic method of valuation, but permits a deterministic valuation. In the non-life insurance industry it is not common practice to use stochastic reserving methods for regular valuations. Views of the members of the Working Party on the use of stochastic or deterministic methods are mixed. It can be argued that, for insurers to identify the expected loss provisions in the first place, it will be necessary to estimate the shape of the overall loss distributions for different books of contracts. This rationale implies some use of stochastic techniques to obtain consistent distributions (when aggregating sub-classes or between gross and reinsurance provisions), as favoured by the DSOP and supported by the Financial Services Authority (FSA), where practicable. Stochastic modelling is, however, time consuming and expensive, and does not necessarily provide more reliable results than deterministic techniques. In fact, for some accounts of business the additional information required for stochastic modelling may not be available, rendering such models inappropriate. We conclude that, for some portfolios, it would be very difficult to use stochastic techniques and the results would be of little practical use. The regulators in the U.K. are, subject to practicality and cost-effectiveness, in favour of stochastic modelling techniques to demonstrate the adequacy of capital resources going forward. Such modelling approaches would require the inclusion of new business and renewals, which are not required for

accounting purposes. In other respects there is consistency between the stochastic modelling that will be required under the *Integrated Prudential Sourcebook* (IPSB) and that desired by the IASB. Given the clear overlap in process requirements, companies should certainly be considering addressing implementation of changes under IAS and the IPSB together rather than as separate exercises. In this paper we have considered both stochastic and deterministic approaches to entity-specific valuation.

### 7.2 *Market Value Margin*

7.2.1 There is a long way to go before we can establish a consensus on a practical methodology and assumptions to implement a market value, or risk, margin. The DSOP sets out the problem, which represents, perhaps, the greatest challenge in the entire project.

7.2.2 The DSOP requires the entity specific value or fair value of insurance contracts to reflect risk and uncertainty. Ideally the IASB would prefer the adjustment to be made to the expected future cash flows, but adjustments to the discount rate are considered to be an acceptable alternative. The margin for risk and uncertainty, referred to as the market value margin, must reflect the market's appetite for risk, whether on an entity specific or on a fair valuation basis. This market risk preference is to be based, as far as possible, on observable market data.

7.2.3 After considerable deliberation, the IASB have taken the view that the market value margin should reflect both diversifiable and undiversifiable risk. Clearly there are arguments to say that diversifiable risk can be removed by holding a sufficiently varied portfolio of risks, and hence the market value margin should not reflect diversifiable risk. The opposing view is that, whilst diversifiable risk can be removed in theory, this is not wholly achievable in practice due to limitations in the range and volume of risks available to be underwritten. Further, the IASB is of the opinion that market prices for commutations and similar transactions would reflect diversifiable risk.

7.2.4 The definition of books of contracts will be important, since market value margins are to be additive across books of contracts, but the market value margin calculated for each book of contracts will reflect all diversification and correlation within that book of contracts. If a company can justify calculating the market value margin for fewer large books of contracts, it is likely to come up with a smaller overall market value margin than if it conducts the valuation based on a greater number of smaller books of contracts. Clearly, the ability for a company to control its result in this way will depend on its ability to justify larger books of contracts as being subject to substantially the same risks. This feature means that company balance sheets will not reflect the advantage of being a large insurer underwriting a broadly diversified portfolio of business. (Alternatively, they will not reflect the disadvantage of being a small insurer with an undiversified portfolio.)

7.2.5 The DSOP permits that, in exceptional cases, when no reliable estimate of the market value margin can be made at the initial recognition of the insurance liability, the market value margin should be set such that no net underwriting profit or loss is recorded from the contract until a reliable estimate can be made. It is of note that the IASB will permit the market value margin to be set in this way, but still requires the company to come up with an estimate of the present value of expected future cash flows emerging from the contract. The DSOP indicates that this approach is only permitted in exceptional circumstances, which is not consistent with current market practice. Lloyd's of London uses a three-year funded accounting approach that will not be permitted under IAS, although this market is already moving towards the use of annual accounting. Many insurance companies, particularly those operating in the London Market, do not attempt to estimate the profit expected to emerge on books of contracts underwritten in the twelve months previous to the accounting date, and sometimes for longer periods. Under the DSOP proposals, best estimates of expected future losses will be required for all contracts, regardless of the period since the inception of the policy.

7.2.6 The *Insurance Contracts Issues Paper* originally stated that margins could be positive or negative, depending on the nature of the risk and uncertainty. However, the principle of the market value margin, as defined in the DSOP and consistent with the principle of fair value, would always result in an increase in the value of reserves compared with the best estimate. In the absence of a liquid secondary market in insurance liabilities, the valuations underlying transactions occurring through commutation and similar activity will be influenced by the positions of the respective parties in the deal. The DSOP requires that the effects of illiquidity and market imperfections should be excluded from entity specific value or fair value, unless there is persuasive evidence to allow quantification from observable market data. In practice, approaches that seek to use actual transactions to place a value on the market value margin will inevitably reflect the inherent illiquidity and market imperfection, and to exclude these elements would require information that is not readily available.

7.2.7 The DSOP currently states that claims equalisation reserves and catastrophe reserves are not permitted to be treated as liabilities. Consistent with this, the market value margin may not be used to smooth profit from year to year. The assumptions used to set the market value margin are to be consistent from one time period to the next, hence unjustified variations in assumptions to offset short-term variations in profitability are unlikely to be acceptable to auditors. A class of business that develops greater volatility of outturn would, however, justify a larger market value margin to reflect the increased uncertainty attaching to the business and further delay the recognition of profit.

7.3 *Discounted Value*

7.3.1 The entity specific value or risk free value should be a present value based on discounting future cash flows at the pre-tax market yield on risk free assets, referred to as the risk free rate for the purpose of this paper. The currency and timing of the cash flows from the risk free assets should be consistent with the currency and timing of the future cash flows from the portfolio of insurance contracts. The DSOP defines risk free assets as those assets with readily observable market prices whose cash flows are least variable for a given maturity and currency.

7.3.2 At this stage, it is not clear to what extent the requirement regarding matching of the timing of future cash flows from the risk free assets used as a basis for the risk discount rate and the timing of the insurance liabilities will be enforced. At the broadest level, this would require identification of the return on a portfolio of risk free assets that will generate the same overall level and timing of cash flows as those generated by the insurance contracts. This would give one risk free rate that can be applied to the whole portfolio of insurance liability cash flows. At a more refined level, this implies that cash flows with different timings should be discounted at different rates. The ease with which it is possible to match liability cash flows with a portfolio of risk free assets will be a key factor in settling on an acceptable approach.

7.3.3 In the U.K. we typically refer to government securities when considering risk free assets. The range of gilts available is not sufficiently long term to match all general insurance cash flows, hence it is likely that some estimation of yields in respect of notional longer-term assets is required. Possible options considered to identify risk free rates at suitable terms include the projection of the actual yield curve, which is available for shorter durations, or to use the rates of return on longer-term good quality company bonds, where available, and to make an appropriate adjustment for the risk attaching. The volatility of yield curves at higher durations also presents a problem for the discounting of insurance cash flows. An alternative proposal is to develop a model for the yield curve consistent with current market conditions, as required by the DSOP, and to use this as a basis for discounting at the risk free rate.

7.3.4 The DSOP permits adjustment of the discount rate to reflect risk and uncertainty as an alternative to adjusting the future cash flows. Many market practitioners feel comfortable with using a risk discount rate to allow for both the time value of money and to provide a margin for risk and uncertainty. The requirement that the market value margin should reflect market risk preferences based on observable market data presents a problem when using a risk discount rate. Whilst risk discount rates have been used widely, the risk adjustment is made implicitly, and typically would include a margin for the uncertainty of future insurance and reinsurance cash flows and the uncertainty of the future stream of income and capital from the non-

insurance asset portfolio, the latter adjustment not being applicable under the DSOP. Information is not widely available in the public domain to enable insurers to benchmark adjustments to the risk free discount rate for most classes of business, although the introduction of IAS and the insurance contracts standard may be the catalyst for wider sharing of views of risk margins for different types of risk.

7.3.5 Actuaries are increasingly looking to financial economics as a source of solutions for risk adjusted discounted valuation techniques. Recently actuarial thought has embraced the concept of deflators as a potential valuation tool. The Working Party has considered the practical use of deflators in both the life and non-life insurance industry. In the life insurance industry deflators have been considered to provide an appropriate solution for estimating entity specific value or fair value. The benefits to policyholders under with-profits and unit-linked life insurance contracts are directly linked to the assets held to back those liabilities. Deflators can be determined, based on the asset mix held by the company in its with-profits and unit-linked funds. These deflators will reflect the risk free discount rate appropriate for the cash flows matching the liabilities plus the risks associated with the income and capital streams from the assets. Applying these deflators to the insurance liabilities will give present values that reflect the investment risks. The resulting present values do not include a margin for risk associated with variation in the risk specific to the insurance contracts, for example mortality, morbidity or withdrawal risk.

7.3.6 For the vast majority of non-life insurance contracts there is no link between the benefits paid to policyholders and the return on the non-insurance assets. Deflators suitable for non-life insurance contracts would need to reflect the uncertainty inherent in the underwritten risks. Ideally, such deflators should be determined, based on the actual cost of transactions on contracts that are similar in terms of the nature of the risk and the timing of the future cash flow streams. Given the limited number of relevant transactions conducted, there are unlikely to be sufficient suitable data to use for the determination of deflators.

7.3.7 A further argument against the use of deflators for statutory accounts purposes is also being taken on board by the life insurance sector. Deflators are a relatively new technique for the insurance industry, and do not have an established track record when compared with traditional risk adjusted discount rate approaches. Whilst the Working Party supports the used of modern valuation techniques throughout the general insurance industry for suitable valuation purposes, there must also be concerns that techniques used for statutory reporting purposes will provide consistent results year after year. The development and use of new valuation techniques should be encouraged by the industry, so that new tools are identified and understood. The Working Party encourages further consideration of the role

of deflators in non-life insurance valuations and would be interested to see developments in this area. The role and use of deflators is covered in Jarvis *et al.* (2001).

## 8. Risk and Uncertainty

### 8.1 *Nature of Non-Life Insurance Risk*

8.1.1 In any arm's length non-life insurance transaction, the liability will not be taken on simply for the expected value of the future cash flows. The party accepting the risk will require a larger sum, and this would not be due purely to uncertainty surrounding the estimation of the liability profile. The fact that this margin exists suggests that some allowance for risk is required in calculating the fair value of insurance liabilities.

8.1.2 In principle, the risk margin should be proportionately greater as uncertainty increases. It does not matter, in this context, whether the uncertainty arises out of fundamental uncertainty or process uncertainty. This can be seen, to some extent, in reinsurance rates, where the rate on line may not vary very much with the level of the attachment point for high level reinsurance. There are, of course, other factors behind this feature, such as the reinsurer being subject to anti-selection, so being unable to fine tune rates to the risk, but a major reason is that the reinsurer's capital is limited and the capital usage is related to exposure rather than to risk. This is precisely the type of factor that fair value accounting is trying to reflect.

8.1.3 Uncertainty about the future cash flows from a book of insurance contracts includes uncertainty that can be modelled and uncertainty that can be identified, but not quantified with any degree of reliability. Uncertainty arises from many aspects of the liabilities and the valuation process. Large losses may give rise to additional, frictional costs, which are not reflected in the expected outcomes, for example the loss of goodwill if a company is forced to stop trading. The valuation methodology may exclude certain potential liabilities, such as unknown latent claims not reflected in past experience. Even short tail classes of business can have extreme uncertainty. A high degree of uncertainty attaches to property business, where there is a potential for catastrophe losses. Immediately after a catastrophic event the extent of the loss may be unclear. For instance, will it be a total loss or can it be repaired? Margins in discount rates are unsuitable in the aftermath of such an event. The appropriate margin for uncertainty may exceed the discount and bear little relation to the period until claims can be settled or quantified with reasonable certainty.

8.1.4 Generally, as claims mature we become more certain about the eventual outturn. When considering a book of contracts the overall uncertainty will reduce over time, unless adverse experience indicates that the original view of the uncertainty attaching to the liabilities was inadequate.

Although overall uncertainty reduces, the claims settled later are likely to be those that initially had the highest levels of uncertainty attached.

8.1.5 Reinsurance is a means of reducing the uncertainty of the eventual out-turn from a book of insurance contracts. Under the DSOP, inwards insurance and reinsurance contracts are to be considered separately from outwards reinsurance, and each will attach its own risk margin, the former appearing as liabilities on the balance sheet and the latter as assets. It would seem reasonable to assume that there should be some correlation between the risk margin on the outwards claims and the inwards claims to which the outwards claims relate. Depending on the nature of the reinsurance, the actual risk margins may be very different on the inwards and outwards accounts, for instance a high layer excess of loss reinsurance contract will not have the same cash flow profile or risk margin as the underlying inwards business that it is protecting. A finite risk reinsurance may have a significantly lower margin. In addition, the risk margin on the outwards reinsurance contracts will also reflect the credit risk attaching to the reinsurer.

8.1.6 The DSOP considers the elements of model, parameter and process risk in considering the assessment of risk margins. The distinction between diversifiable and non-diversifiable risk is also considered, but the DSOP concludes that market transactions would reflect both diversifiable and non-diversifiable risk, hence there is no need to distinguish between these risk categories. This point is considered further in the following section.

8.2 *Diversifiable versus Non-Diversifiable Risk*

8.2.1 The inclusion or exclusion of diversifiable risk from the market value margin is a key area of debate. At present the DSOP comes down in favour of including diversifiable risk. Arguments for excluding diversifiable risk include:

— finance theory holds that diversifiable risk is not relevant for capital market participants;
— it is harder to find a market price for diversifiable risk; and
— the unit of account becomes critical under the current requirements of the DSOP, and could possibly be used to manipulate the overall level of reserves.

The arguments presented for including diversifiable risk in an entity specific or fair valuation are:

— including diversifiable risk is more intuitive; and
— it is the basis for actual pricing in the insurance market, for instance in commutation transactions.

8.2.2 The financial theory argument suggests that the margin applied should make an explicit allowance for the systematic risks embedded in the

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liabilities, but not for the non-systematic or diversifiable risks. This view is consistent with the concepts of financial economics, for instance in the use of the capital asset pricing model (CAPM). The DSOP does not go along with this view, because the idealised assumptions underlying CAPM, including highly efficient and liquid markets, are not borne out for general insurance. The IASB's argument appears to be borne out in practice where, in commutation deals, investors demand a risk premium for taking on insurance risks such as a claim frequency and/or claim severity that could, in theory at least, be diversified away.

8.2.3 The clear advantage of the DSOP proposals, as they stand, is that there is no need to attempt to distinguish between diversifiable and undiversifiable risk or to try to quantify the two elements separately. The proposals require that insurers take into account both sources of uncertainty in order to come up with the market value margin. This would seem to be consistent with existing market transactions, where practitioners consider the overall uplift in best estimate reserves that is required to cover the overall risk and uncertainty attaching to a portfolio of business.

8.2.4 As discussed earlier, the market value margin is to be set by units of account. Allowances can be made for diversification, reducing overall volatility within a book of insurance contracts that meet the definition of unit of account. When all the separate market value margins are combined to give an overall value for the company, no allowance may be made for the effects of diversification between different units of account or, indeed, between different companies when consolidating up to the overall group level. As a result, broadly based insurers will not receive credit for the advantages of diversification compared with insurers specialising in certain lines of business within their balance sheet. The benefits of diversification will be released as profits from the market value margin over the remaining term to settlement of the outstanding losses. It would be appropriate to provide information on such diversification benefits, where material, in the notes to the accounts.

8.3 *Own Credit Rating*

8.3.1 The IASB has considered whether the entity specific or fair value of liabilities should reflect the insurer's own credit rating. It is argued that, conceptually, fair value should reflect an insurer's own credit rating in the same way that the value of outwards reinsurance contracts should reflect the reinsurer's credit rating. Allowance for the insurer's own credit rating throws up a number of practical problems, and the IASB has decided to exclude own credit rating from the current DSOP proposals, subject to further investigation at a later stage. Intuitively, it does not make sense to include an insurer's own credit rating, as the value of the insurance contract liabilities would fall as the insurer's credit rating deteriorated, such that the asset would always at least equal the liabilities, and it would be impossible, at

least theoretically, for an insurer to be declared insolvent. However, the insurer's credit rating is highly relevant when considering commutations, and (in a different context) Eurotunnel made savings when refinancing its debts precisely because of their impaired value.

8.3.2 Most users of the accounts (except shareholders in some circumstances) will be more interested in figures calculated without allowance for the insurer's own credit rating. This will enable a clearer comparison of companies and a better assessment of the insurer's ability to meet its liabilities in full.

## 9. Valuation Methods

### 9.1 *Techniques Available*

9.1.1 Actuaries have been coming up with reserve estimates using the range of traditional reserving techniques for many years. Reserve estimates have been developed on different bases, best estimate, prudent, optimistic or pessimistic, usually determined through the actuaries' judgement either at the overall level of reserves or in respect of individual assumptions. Over the last two decades the developments in computing have enabled actuaries to handle much larger volumes of data and to undertake many calculations in relatively short time frames. This shift to greater reliance on computers to handle the basic calculations involved in valuations has reduced time and cost constraints, enabling actuaries to embrace a range of techniques for valuation purposes. Inevitably their increased practical use has encouraged professional interest in these areas and the development and refinement of the techniques available. The freedom provided by increased computer power has given the actuarial profession the opportunity to embrace techniques from financial economics and develop the use of those techniques in the context of general insurance.

9.1.2 The DSOP proposals present a new challenge for non-life insurance valuations. Valuations have been conducted for a wide range of reasons in the past, but, where it has been necessary to identify margins in reserves, approaches involving actuarial judgement and implicit allowances have usually been considered adequate. The DSOP proposals, however, require that the market value margin is explicit and based on observable market and non-market data in order to come up with the entity specific value. Further, to fulfil these requirements auditors will need to be satisfied that the methodology used meets the principles of the standard, and therefore any valuation methods will need to be sufficiently transparent to be auditable.

9.1.3 The Casualty Actuary Society Task Force on Fair Value Liabilities produced a white paper (Casualty Actuarial Society, 2000) on fair valuing property/casualty insurance liabilities, which considered a wide

range of methods, including CAPM and other techniques derived from financial economics' principles, as well as more traditional actuarial and statistical techniques based around historical claims patterns and the modelling of claims distributions. This paper is a worthwhile point of reference for anyone wanting to consider the range of valuation options available. However, it clearly demonstrates that, despite the range of techniques available, all approaches have their benefits and weaknesses, and there is no one ideal method for valuation under the DSOP proposals.

9.1.4 As previously stated, the Working Party set out to develop practical solutions to the valuation requirements of the DSOP, and, as such, we have considered those criteria that we believe are important for statutory reporting valuations. Other techniques not discussed in this paper will be appropriate for other valuation requirements, and may be developed to provide a suitable method for statutory reserving. There are severe limitations in techniques that are derived from financial economics, given that the key assumptions of efficient markets do not apply to the non-life insurance industry. Further techniques that take into account insurance companies' share prices as a means of evaluating systematic and non-systematic risks will reflect the risks inherent in the stock market rather than the risk associated with underwriting certain classes of business. Stock market prices will also include allowances for intangibles that may not appear on the face of the balance sheet. Certainly, an insurance company's share price will reflect the risk associated with the business that it underwrites, but it will also reflect the attitudes and concerns of investors about the short and long-term performance of company values. At the time of writing the U.K. stock market is at a six-year low, yet the non-life insurance industry is experiencing a period of optimism, with huge premium rate increases being achieved at the same time as tighter terms and conditions are being imposed by insurers. Clearly there are other factors affecting insurance company share prices than anticipated future business performance.

9.1.5 Traditional actuarial valuation techniques are also found wanting in providing a method to meet the requirements of the DSOP. These techniques do not readily allow for objective assessment of margins in reserves. Techniques such as the chain ladder method are often criticised for being over parameterised, leading to greater potential for parameter error. Attempting to adjust the underlying assumptions to build in margins requires a considerable degree of judgement, and small adjustments can have a significant cumulative impact on the overall result.

9.1.6 Notwithstanding these criticisms of current techniques, we need to find solutions to the DSOP valuation proposals. Without doubt market consensus will be a key driver of the methods and assumptions used in the future. However, at this stage individuals need to consider the most appropriate techniques and how these can be applied in practice.

9.2 *Practical Limitations*

9.2.1 In Section 2.4 we set out the desirable features of a suitable method for statutory valuations. Consideration of this list will help to assess whether a method is potentially suitable for statutory valuation purposes. Clearly it will not be possible to achieve all the desirable features, and it will be necessary to consider the relative importance of each when comparing methods. Techniques that are quick to conduct and simple to understand and calculate are likely to fail to be consistent with the broader accounting principles set out in the DSOP. The stochastic reserving techniques advocated by the DSOP can be very complex and time consuming. In addition, the data requirements required are usually more onerous, which may not be possible without significant IT investment for some companies.

9.2.2 Whatever approach is used, transparency and the ease with which a method can be audited will be key criteria. Any approach that constitutes feeding data into a black box, understood only by the originator, and taking the results produced, is unlikely to be suitable for statutory reporting purposes. Further, as already highlighted, the implications of the DSOP proposals are more far reaching than simply a number on the balance sheet, and, as such, it will be important that company managements also are able to understand the principles of the valuation approach in order to consider how future business strategy decisions will affect the reserve requirement and the bottom line result.

9.2.3 It is easy to criticise many of the valuation methods that have been around for a number of years. These techniques have been tried and tested, and their limitations are understood. There is a tendency to become carried away with enthusiasm with new techniques that are extremely attractive from a theoretical standpoint, but where the theory has yet to be tested effectively in practical situations. The old adage that the actuary is never right provides an important reality check. What matters is how good the actuarial estimates are from a particular method, which is not normally known for many years. The only proof of the reliability or weaknesses of a particular technique is the eventual run off of valued liabilities, and it takes a number of years for sufficient evidence to build up to support or reject a new method. This does not mean that new techniques should be rejected outright for statutory reporting purposes, but there is certainly the need for a sense check against the results of such techniques.

9.3 *Deterministic Approach*

9.3.1 Valuation methodologies using fixed value assumptions have a strong track record for coming up with sensible undiscounted and discounted best estimates of reserves. There is a wide range of techniques in practical use in the market, with different practitioners having their preferred techniques for different types of losses. Fixed value assumptions can be derived, based on the company's own historical claims experience for each

category of losses or taking into account market experience of losses on similar portfolios of risks. This paper does not need to expand on the variety of techniques available, as they are generally well known and well documented. For anyone unfamiliar with reserving techniques in general insurance, a good starting point is either the *Claims Reserving Manual* or the relevant professional training courses for the Institute of Actuaries and the Faculty of Actuaries.

9.3.2 These techniques do not generally build in the ability to identify margins for risk and uncertainty, nor do they systematically attempt to identify the range of possible outcomes and related mean expected outcomes. Typically, actuaries have made allowances for prudence or to determine worse scenario estimates by making implicit allowances within certain assumptions. The result of this approach is that the overall margin is not explicitly identified except to the extent that it is the difference between the margin adjusted result and the best estimate result. In these cases the individual impact of each assumption adjustment is not separately identified. Hence the make-up of the overall margin is not known.

9.3.3 There is also a risk that the value of high level reinsurance may be underestimated or even given a nil value, and conversely that the value of finite risk reinsurance may be overestimated (because the possibility of losses exceeding the limit on recoveries may not be reflected in the calculation).

9.3.4 One approach to a transparent, auditable market value margin would be the sensitivity analysis approach, where assumptions are varied in a stepwise fashion, and a range of different results are built up with greater understanding of how each step change in the assumptions affects the overall result. Considering the range of reserve estimates generated from the sensitivity analysis, the entity specific value would be selected taking into account the sensitivity of the results to changes in the assumptions and the market risk preference.

9.3.4.1 Advantages of the sensitivity analysis approach are:

— it allows the use of established reserving techniques, which are known and understood in the market and are consistent with techniques used for other valuation purposes;
— many companies already use the underlying techniques and can produce the relevant data from existing systems, so the costs element should not be prohibitive;
— the method is transparent and auditable, to the extent that it can be shown that assumptions are derived from historical claims experience; and
— varying the assumptions for the sensitivity analysis can be objective.

9.3.4.2 Disadvantages of the sensitivity analysis approach are:

— the approach does not assign probabilities to the different levels of margin;

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— the final decision on the entity specific reserve estimate will rely on actuarial judgement, based on the results of the sensitivity analysis and the interpretation of the market value margin;
— subjective elements of the approach are not readily audited; and
— setting the market value margin requires interpretation of the market risk preference.

9.3.5 An alternative approach to consider is known as 'bootstrapping'. This technique applies a simulation approach to the results of traditional deterministic valuation techniques. This technique still relies on a traditional reserving technique, which is used to fit an incremental claims payments pattern. Residual values are determined for the difference between actual historical incremental claims payments and the fitted incremental payments. Pseudo-data are derived by sampling results, and the pseudo-data are projected using the chosen reserving method to generate a pseudo-reserve. This process is repeated for a sufficient number of simulations to generate a distribution for the pseudo-reserve. The pseudo-reserve distribution is taken as a proxy for the actual reserve distribution, and can be used to come up with an appropriate margin, taking into account the market risk preference. A full description of this technique can be found in Lowe (1994).

9.3.5.1 Advantages of the bootstrapping approach are that:
— it can be applied to any mechanistic method;
— it does not require explicit distributional assumptions;
— it can split source or variability between poorness of fit or past data to model and the random nature of future payments;
— it can be used to compare variability/robustness of various traditional reserving methods;
— it can be used to come up with a margin;
— the calculation of residual values, and hence pseudo-data, is objective; and
— the approach is relatively transparent and auditable.

9.3.5.2 Disadvantages of the bootstrapping approach are that:
— it can only be applied to a mechanistic method;
— the results are sensitive to the methods used to derive the pseudo-data;
— it assumes that residuals are independent and identically distributed random variables;
— the residuals may not be uniformly distributed throughout the triangle, leading to distortions in the pseudo-reserves;
— the simulations will take time to run and lead to additional costs; and
— the method still requires interpretation of the market risk preference to determine the level at which to set the market value margin.

9.3.5.3 The technique used to identify the market value margin could be as an adjustment to the future best estimate reserve. Alternatively, the

market value margin could be determined on the basis of cash flows adjusted to present monetary values. Where the market value margin is being applied as an adjustment to the discount rate, the discount will be applied to the best estimate payment pattern.

9.4 *Stochastic Approach*

9.4.1 Stochastic models can be used to estimate reserves where assumptions relating to claims frequency or claims severity or both are modelled by a distribution. This approach will generate a distribution of reserve estimates, from which the expected value of the reserves and ranges about the expected value can be determined.

9.4.2 In order to meet the DSOPs requirements, it would be necessary to run stochastic models separately for each unit of account. The method requires sufficient volumes of historical claims data to be able to fit appropriate claims frequencies and severity distributions. The unit of account definition may present a problem if business cannot be aggregated to a sufficient volume for the model to generate sensible results.

9.4.3 The time horizon over which a stochastic model is applied can be important. In general, stochastic models are reasonably reliable in the short to medium term, but, as the time horizon lengthens, the results become less reliable. This can present a problem for companies trying to put a value on long-tail liabilities, such as latent claims, where a very high degree of uncertainty attaches to such losses.

9.4.4 The stochastic model comes up with a distribution from which a margin can be selected. The results will reflect the risk that is taken into account by the model, but it will not reflect model and parameter error. Further, the market value margin is to reflect the market risk preference. It may be regarded that the market risk preference appropriately includes an allowance for model and parameter error, so that additional further adjustment is not required.

9.4.5 Stochastic valuations techniques, whilst an established actuarial technique for many purposes, are not currently used for statutory reserving purposes. Stochastic models are particularly valuable in their ability to build in uncertainty, and are commonly used for testing the likely outturn for various scenarios, usually considering the impact of new business. The cost of developing a stochastic model for routine reserving exercises is not generally considered to be justified by the additional value gained from using such a model. It is clear from the DSOP that the IASB takes the view that the use of stochastic techniques to assess reserve requirements and risk margins is desirable, and this view is supported by the FSA (subject to practicality).

9.4.6 There are some simple approaches which are stochastic in nature, but which may appeal to non-actuaries. Where there is considerable uncertainty as to the outcome for a risk or group of risks, and limited 'hard' data from which to establish distributions, one may be able to put forward

a limited number of scenarios to represent the future, and assign probabilities to each. This is very much an 'underwriting' approach to the problem. These scenarios can then be expressed mathematically as a probability distribution, and used both to assess mean expected outcomes and also a risk margin. In this latter context, the proportional (PH) hazard approach may offer a way of applying the concept of a market level of risk aversion to an aggregate claim distribution for a book of business. The PH transform is explained in Christofides (1998).

9.4.7.1 Advantages of stochastic models are that:

— the influence of a data point depends upon the random variation in that data point;
— the reliability of the fitted model and the likely magnitude of the random variation of future payments can be estimated;
— there are fewer parameters, and they are more objective than for many traditional reserving techniques;
— the input assumptions can be transparent and auditable;
— statistical tests can verify the model assumptions made;
— they determine reserve variability and hence appropriate margins;
— they can provide greater understanding of underlying processes; and
— they are supported by the IASB and the FSA.

9.4.7.2 Disadvantages of stochastic models are that:

— they are complex and time consuming to perform;
— there is spurious accuracy;
— the results can be sensitive to the assumptions and the parameters;
— different stochastic methods may give very different results, leading to a lack of consistency between valuations;
— tail factors can be very volatile due to low volumes of claims remaining unsettled;
— there are very significant data requirements in order to achieve a reliable model;
— they are more complex and difficult to understand, both the method and the interpretation of the results;
— there is a tendency for reduced transparency and they are less easily audited; and
— the method still requires an interpretation of the market risk preference to determine the level at which to set the market value margin.

9.4.8 A useful summary of stochastic reserving techniques is provided in England & Verrall (2002).

9.5 *Benchmarks*

9.5.1 Under the concept of fair value, the market value margin for a book of liabilities would be the uplift required by the willing buyer to accept

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those risks. The deterministic and stochastic reserving methods described above still require interpretation of the market risk preference to determine the market risk margin. By considering the actual risk margins applied in the market for different types of liabilities, we will be able to identify market risk margins that do indeed reflect the market risk preference.

9.5.2 The IASB was forced to move away from the pure concept of fair value due to the lack of a liquid secondary market in non-life insurance liabilities to provide a basis for such evaluation, but risk margins are being set for a range of different reasons on a wide variety of different types of losses that could provide a suitable base for identifying benchmark risk margins for most books of contracts. The most obvious sources of information include the risk margins applied in commutation deals and reinsurance contracts, although risk margins applied to valuations, mergers and acquisitions and portfolio transfers should also be considered.

9.5.3 Over a period when companies are first required to identify market value margins, it seems likely that a market consensus will be reached as to the level of margin appropriate for different types of risks. The entity specific value will then require companies to determine the expected value of future losses to be discounted at the risk free rate and adjusted for the market agreed risk margin. Alternatively, the risk margin may be given as an adjustment to the discount rate. This approach would seem to be efficient for companies, understandable for auditors and the wider market, and consistent with the DSOP proposals.

9.5.4 At this time there are no agreed market risk margins, and the assessment of such margins will be down to individual companies. It would seem, therefore, for the conversion period and the first set of IAS accounts after the introduction of the insurance contracts standard, that insurers will need to rely on their own resources. Perhaps the industry should be looking to the professional organisations to set in place means of pooling knowledge on risk margin adjustments and making this information widely available. Reinsurers and consultancies would also seem to be likely sources of information on typical margins being used in practice. The sharing of information in this way may seem contrary to those who are concerned about the impairment of competitive advantage, but it is likely that disclosure requirements will ensure that companies' reserves are much more transparent in future, with best estimates, margins and discounts disclosed explicitly. Admittedly, it is not known yet whether disclosure will be required at a whole account level or at some more refined definition, though clearly, since one of the key aims to is improve comparability of company accounts, the latter would seem likely.

9.5.5.1 Advantages of benchmark techniques are that they:

— are consistent with the principles of fair value;
— include market risk preference without the need for interpretation;
— are objective;
— are quick and easy to apply, hence cost efficient;

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— are easy to audit once sufficient market information is available; and
— are easy to understand.

9.5.5.2 Disadvantages of benchmark techniques are:
— the need to obtain sufficient market data to determine benchmark margins for each book of contracts;
— the problem of comparability of different companies' definitions of units of account;
— that the margins applied to some market transactions may also include allowances for other risk factors, excluded from statutory reserves, for instance in commutations the margin may be reduced, even to the point of being negative due to the difference in credit rating of the two parties; and
— will auditors be satisfied that company margins are appropriate just because they are consistent with the market, or will statistical evidence also be required?

9.6 *Existing Approaches*

9.6.1 In Canada insurance companies are already required to provide a provision for adverse deviations, which is added to the discounted liabilities. The actuarial guidance identified three major valuation variables: claims development, reinsurance recovery and interest rate. The requirement is to determine a margin in excess of the expected value, based on the considerations listed as they relate to the block of business and the company's particular situation. The guidance provides a list of considerations for each of the three major valuation variables, and describes what should be regarded as high and low margin situations. In addition, the guidance provides a guide range for each of the three variables. The claims development and reinsurance recovery margins are applied as multiplicative factors to increase the best estimates of gross and net outstanding claims and decrease the best estimate of ceded outstanding claims, respectively. The interest rate margin is applied as an additive factor to decrease the interest rate.

9.6.2 The DSOP proposals are not entirely consistent with the Canadian approach, but the general principles are broadly similar. Given the concerns about how the market will apply the market value margin in practice, reference to the Canadian actuarial guidance, which has been in place for a number of years, provides a useful benchmark for the implementation of the IASB's proposals. The Canadian guidance can be obtained from www.actuaries.ca/publications/1993/9371e.htm

## 10. Financial Reporting and Prudential Supervision

10.1 The FSA's *Integrated Prudential Sourcebook* (IPSB) was published prior to the DSOP being made publicly available. However, the FSA has

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followed the IASB's developments closely, and has shown considerable support for the current DSOP proposals. The indications are that the IASB's proposals for statutory reporting and the FSA's regulatory requirements are closely aligned.

10.2 The FSA is enthusiastic about the proposals for the insurance contracts standard. The insurance regulators take the view that hidden margins in reserves can be quickly eaten away without management or the regulators realising that the reserve position has weakened. The presence of explicit margins will enable greater monitoring of the volatility of results, leading to stronger management control. The regulators accept arguments that it is difficult to determine sensible reserves and margins for many classes of non-life insurance business, and attempting to do so leads to spurious accuracy. The regulatory view is that stronger monitoring is key, and that this can be achieved by explicit estimates of margins. Initially, estimates will be subjective, and may attach a high degree of uncertainty, but monitoring and feedback will enable more reliable estimates to be set at successive review dates.

10.3 The regulators also hold the view that it is not sufficient to consider one scenario of future cash flows, but that it is necessary to consider a range of scenarios, and favour stochastic valuation methods for this purpose where their use is practical and cost effective. There are, however, clear differences between the valuation required by the DSOP and that required by the IPSB. The DSOP is only concerned with a closed book of business, whilst the IPSB requires demonstration of the future cash flows, including cash flows from expected new business. Further, the IPSB requires valuations on best estimate and worst reasonable case scenarios, the latter giving rise to capital requirements in excess of the entity specific provisions in most circumstances. A further difference between the DSOP and the IPSB is the definition of insurance contracts, which will result in some contracts being included in one basis and excluded from the other. The FSA anticipates that there will be overlaps between the work required under the DSOP and the IPSB, particularly with regard to data requirements, data manipulation and analysis.

10.4 Incorporating the DSOP principles into insurance company accounting would clearly tackle a number of regulatory concerns; but, as this will take a number of years to come into effect, the FSA cannot afford to wait. An important example is 'financial engineering' (which includes financial reinsurance), and, in July 2002, the FSA issued Consultation Paper 144: 'A new regulatory approach to insurance firms' use of financial engineering' (Financial Services Authority, 2002). The text of the proposed guidance note, Guidance Note P.4, which will be incorporated into the FSA's *Handbook of Rules and Guidance*, is 5 pages long, and we would suggest that interested readers go to Annex E of CP144 to look at this. In the view of the Working Party, from a general insurance

perspective, much of this guidance would be unnecessary when/if the DSOP comes into force, because the DSOP effectively requires companies to value all insurance contracts, whether assets or liabilities, in line with their economic substance.

## 11. The Role of the Actuary and the Actuarial Profession in Fair Value Reporting

11.1 The implementation of the DSOP proposals will require significant multidisciplinary support from accountants, actuaries, claims handlers, underwriters and management. No one single profession can take sole responsibility. In the non-life insurance industry, it seems likely that the IAS requirements, together with the revised regulatory requirements, will lead to a greater need for actuarial involvement. If managements are to implement the proposed changes, they will need to consider impacts more far reaching than simply changes to the calculation of reserves. It seems likely that actuarial expertise will be required in the core management of the business.

11.2 Actuaries will need to work closely with other professionals and communicate with company management in order to ensure correct understanding of fair value concepts. The actuarial profession still has a lot to learn about fair value, and an open flow of ideas with economists and accountants will be essential for the development of the appropriate skills and techniques.

11.3 The implementation of fair value principles represents an enormous challenge for the non-life insurance industry, and actuaries are one of the key groups of professionals which will be vital in smoothing the transition. In order to make this contribution, the profession needs to become open to ideas and concepts typically associated with the banking and securities industries, and to seek to understand how these concepts can be interpreted in an insurance environment. This has the potential to be a very exciting period, with opportunities for actuaries to take on roles not traditionally associated with the profession.

11.4 Whilst individual non-life actuaries can expect to be required to support companies in the implementation of the DSOP, there is also a role for the professional organisations to take a leadership role. The market focus of the DSOP proposals indicates the need for a greater sharing of the information required to set market-based assumptions and ensure consistency across the industry. There may also be requirements for guidance on the implementation of the insurance contracts standard, including the setting of assumptions and the interpretation of some elements of the principles if more precise guidance is not provided in the eventual standard.

## 12. Summary Remarks and Further Work

12.1 *Summary*

12.1.1 Generally, the Working Party regards the move towards an IAS for insurance contracts on a fair value or entity specific basis as a desirable objective. However, there is considerable concern over the practicalities of achieving a consistent objective methodology for determining market value margins as defined under the current proposals.

12.1.2 The Working Party supports the general trend among regulators and others towards a risk-based capital approach in determining and reporting non-life insurance financial requirements.

12.2 *Further Work*

12.2.1 The Working Party is aware that there is a significant further amount of work for the profession to do.

12.2.2 Further work includes:

— ongoing liaison with the IASB and other relevant bodies;
— further investigations into the methodologies and tools available;
— further investigations into assumptions and how the insurance and investment markets assess and quantify risk; and
— the development of appropriate professional guidance, in liaison with the IAA.

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