

**Reserving: Making Allowance for Changes in Terms and Conditions and
Other Coverage Issues**

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1. *Executive Summary*

1.1 Background

- 1.1.1 One main objective of the working party is to compile an inventory of Terms & Conditions changes for classes of business where those changes have had a material impact on the claims costs and development profile.
- 1.1.2 The other is to provide information to assist actuaries in making allowance for changes to terms and conditions when carrying out reserving analyses.

1.2 Conclusions

- 1.2.1 The main findings from the working party are listed in the following paragraphs.
- 1.2.2 There are fewer changes in terms and conditions which can be explicitly identified as having a systematic impact on a block of business than were originally anticipated. This view was taken after speaking with a number of actuaries and underwriters.
- 1.2.3 Many of the changes in terms and conditions identified appear to be of far less significant impact on the reserving process than had been anticipated, although we have identified a few changes that have been significant. Generally these changes have been specific to a particular class or a particular time in the market. Therefore, although these changes provide an explanation for some of the observed divergence between the cyclical movement in recorded premium rates and cyclical movement in ultimate results, the conclusion is that there must be other factors that contribute to this divergence, possibly to a more significant extent.
- 1.2.4 Although there are frequent coverage changes at an individual risk level that have a significant impact on the expected profitability of that risk, we have

identified few changes that are sufficiently material and that occur in a sufficient systematic way at a sub-class, class or portfolio level that they would have a material impact on the reserving process.

- 1.2.5 The key conclusion we are able to draw from the work we have carried out is that changes to terms and conditions do not appear to be such significant contributors to the observed reserving cycle than was previously thought to be the case. It has been demonstrated in the past that rate indices have in many cases understated the amplitude of the underwriting cycle in terms on results and this understatement has often been attributed to inadequate recognition in the indices of changes to terms and conditions.
- 1.2.6 We recognise that this conclusion may be surprising to members of the profession, and in particular contradicts some of the expectations articulated in the GRIT report. In this context we note that we have sought views from members of the profession in our work, but no compelling evidence was forthcoming. Nevertheless, we invite further debate if contradictory opinions remain.
- 1.2.7 As a result, the inventory of specific changes in terms and conditions and their effects is less extensive than originally thought. Therefore, we broadened the scope of the work beyond the original terms of reference to include consideration of changes in a more general manner and to consider other potential issues that may contribute to items such as rating index errors as much or even more than T&C changes.
- 1.2.8 The working party has also been unable to uncover much in the way of previous research into this issue. Whilst there are some existing papers discussing coverage issues for specific classes of business, they are generally lacking in quantitative detail. However, there is more existing work relating to structural issues such as attachment points or deductibles, which are generally better understood.

1.3 General

- 1.3.1 For the purpose of this paper, terms have been divided into two main categories; coverage terms, for example, the nature of a loss that can be recovered against the policy, and structural terms, for example, the quantum and timing of the cashflows between insurer and insured resulting from a recoverable loss. Further, policies have also been grouped into cyclical or one-off changes to make a total of four categories. Cyclical changes are those likely to change and then reverse over the course of the cycle (e.g. coverage of legal costs in addition to indemnity amounts). One-off changes are those made in response to a specific event that are unlikely to be reversed (e.g. third party war limits for aviation excess following 9/11).
- 1.3.2 The views expressed in the paper are not necessarily the views of the working party as a whole and they are not to be taken as the views of the Institute of Actuaries or the employers of any working party member.

2. *Introduction*

2.1 Background

2.1.1 This paper summarises the findings of the working party entitled “Making Allowance for Changes in Terms and Conditions and Other Coverage Issues”. This section, Section 2, covers the working party’s objectives, and Section 3 summarises previous work that we found on the same subject. Section 4 considers whether changes in terms and conditions matter when we perform reserving analysis whilst Section 5 summarises the results from our survey of the key terms and conditions and their changes over time. Section 6 to 9 look at potential short and long term solutions for capturing the changes in terms and conditions and making allowance in the reserving work for them.

2.1.2 The motivation behind the establishment of the Working Party came from the GRIT report – “A Change Agenda for Reserving: Report of the General Insurance Reserving Issues Taskforce” – presented to an Institute of Actuaries sessional meeting on 27th March 2006. In particular the working party was formed in response to two recommendations:

- “We recommend that the profession, if possible in conjunction with other market bodies, commissions an inventory of terms and conditions for selected lines of business. These can then be tracked and monitored against changes in market practice and made available to all interested actuaries”
- “syllabus should be extended to include more on how terms and conditions can change and affect the liabilities of the insurance contracts (note that we also suggest that the profession needs to carry out research to identify and monitor changes in terms and conditions)”

2.1.3 In general, the two tasks that we considered would be of value were:

- Compile an inventory of Terms & Conditions changes for classes of business where those changes have had a material impact on the claims costs and development profile.
- Provide information to assist actuaries in making allowance for changes to terms and conditions when carrying out reserving analyses.

2.2 Original Working Party Terms of Reference

2.2.1 Based on this, the following terms of reference were formulated:

- Define lines of business where changes to terms and conditions are material reserving issues, focusing on London Market business, since this is the market where terms and conditions show the greatest variation.
- Identify and review any previous work carried out in this field.
- Compile a list of key terms and conditions that have changed over time, and particularly those that change over the course of an insurance cycle.
- Define in layman's terms what each of the Terms & Conditions mean, and how their changes can change the profitability on a risk.
- Identify the current status of the Terms & Conditions and define an approach for tracking over the market cycle – consider establishment of standing committee?
- Indicate the extent to which each Term & Condition has changed over the past five to ten years.
- Quantify the impact of changes to the insurance Terms & Conditions where appropriate.

2.2.2 Provide indicative benchmarks to indicate impact; or propose an example methodology to assess the impact that can be adapted to particular

circumstances noting that the impact may be more complex than simply changing to loss ratio. For example, it may change the development profile, or it may have a different effect on primary and excess layers.

2.3 Expanded working party objectives

- 2.3.1 As the working party uncovered few material and systematic changes to terms and conditions that would be significant features to consider in a reserving process, we have broadened our remit.
- 2.3.2 The working party has also considered the ways in which companies could refine their processes for dealing with terms and conditions changes. Over time this may improve the level of information captured and potentially mitigate the impact of any future coverage changes not identified by the working party.
- 2.3.3 We have also considered what other aspects of portfolio changes are not adequately reflected in rating indices, and which may in fact be more material than the terms and conditions changes.

3. *Summary of Previous Work*

3.1 Introduction

3.1.1 The working party found little existing research in the field of terms and conditions, in particular the effect of changing terms and conditions over the underwriting cycle.

3.1.2 However, we list here a group of relevant papers and provide the reader with the salient points. We complete this section by providing alternate sources that can provide up-to-date information on changing terms and conditions in the general insurance marketplace.

3.2 GIRO Paper – The Premium Rating of Commercial Risks (1997)

3.2.1 This paper develops three approaches to the premium rating of commercial risks depending on the size of the business. The paper aims to assist the actuary to provide a rigorous approach to risk assessment, a firmer basis for underwriting decision making, and an improved treatment of large claims and their allocation to the portfolio.

3.2.2 Of particular interest to the reader of this paper are the appendices, covering premium rating information and details of common variations of contract terms, from which the reader may extrapolate the likely cost of a change in contract terms. The paper in particular covers liability insurance, in addition to commercial motor and commercial property.

3.3 GIRO Paper – Employers' Liability Insurance (2000)

3.3.1 The paper summarises the background to UK employers' liability insurance. The paper serves as a useful reference point for this area of insurance, providing, in particular for the reader of this paper, details of the legal and

contractual framework, key features of claims and claims reserving and a discussion of current issues affecting this market.

3.4 Evaluating Variation in Contract Terms for Casualty Clash Reinsurance Treaties¹

3.4.1 The authors examine variations in event definitions and commutation clauses which are commonly encountered in casualty catastrophe reinsurance contracts in the market. Changes in these aspects of the contract may affect the exposures the reinsurer is asked to cover. In this paper, these variations are contrasted with emphasis given to the effects this may have on the pricing / underwriting process.

3.5 Evaluating the Effect of Reinsurance Contract Terms²

3.5.1 This paper measures the efficiency of contract terms by estimating the distribution of the present value of cash flows. To meet this aim, the paper examines paid and incurred aggregate distributions as a function of time over the life of a contract. Sensitivity of the results to changes in the parameters of the underlying loss model is investigated. The techniques described in this paper may be useful when evaluating the effect of changing contract terms.

3.6 Terms and Conditions in a Harder Property Market: Coinsurance, Blanket Insurance and More³

3.6.1 The focus of this paper is to identify the specifics as to how terms and conditions in the property market had become soft, and the subsequent

¹ By Emily Canelo and Bryan C. Ware, FCAS

² James N. Stanard and Russell T. John

³ By Emily Canelo and Bryan C. Ware, FCAS

hardening of terms and conditions in the post 9/11 environment. Many of the ideas explored in this paper have been found to be experienced by the wide-ranging examples of changing terms and conditions as included in the later sections of this paper.

3.7 Additional sources of relevant information

- 3.7.1 The reader of this paper might find additional information relating to current changes in terms and conditions from a variety of sources, including international broker publications such as the Marsh half-yearly Insurance Market Reports. Information of this kind will be useful to the reader in order to keep up-to-date with current shifts in market terms and conditions, and hence will help in the extrapolation of the cost of these shifting terms and conditions.

4. *Do we care about Term and Condition Changes?*

4.1 What do we mean by terms and conditions?

4.1.1 In the broadest sense, terms and conditions could include every clause on an insurance contract, since these will be the determinants for the admissibility of a claim, for the quantum and for the timing of payment. Indeed, the definition could be broadened even further to include legislation, which can also contribute to the determination of liability. In practice, however, we are interested in those features of the insurance contract which have a tendency to change over a period of time, and where those changes can have a material impact on the liability to pay claims under the contract, or on the timing of either advice or payment of those liabilities. These changes may occur either with the ebb and flow of the underwriting cycle, or may be one-off modifications to the cover given.

4.1.2 To generalise, these terms and conditions might be characterised as falling into two types, although they are related,

- Those that relate to the coverage given – i.e. the nature of the loss that can be recovered against the policy
- Those that relate to the structure of the policy, defining the quantum and timing of the cash-flows between insurer and insured that results from a particular loss to the insured. Into this category would fall policy terms such as no claims discounts, swing premiums, aggregate deductibles and limit.

4.2 What is the reserving impact?

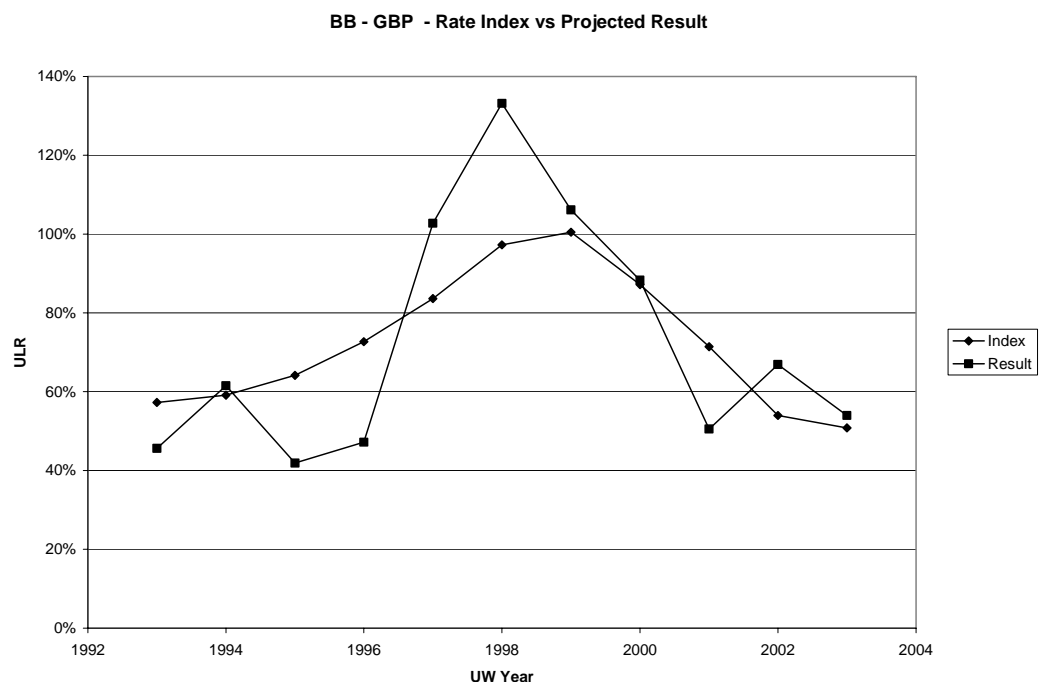
4.2.2 To the extent that changes in terms and conditions affect the expected liability payments, or the timing of either advice or payment, under the insurance contract, these changes clearly have implications for reserving if they affect a

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material proportion of risks at the portfolio level (or some other sublevel appropriate for reserving).

4.2.3 Most actuarial reserve projections for immature business make some assumption about the profitability of the business prior to the emergence of any claims data. This will typically be based either on prior years of the same account, adjusted for rate changes, or on pricing assumptions, which generally will also be based upon prior years' experience, again adjusted for rate movements. Whichever of these approaches is used there is a requirement to make an assessment of the impact on profitability that will result from those changes.

4.2.4 In principle, the impact of these changes should be reflected in a premium rate index, and if it is, then from the perspective of profitability, the issue is probably dealt with. However, experience suggests that premium rate indices do not fully capture the extent to which profitability changes over the course of a market cycle. This is illustrated in the following graph, based on Lloyd's market data, which was originally presented in the cycle survival kit.



- 4.2.5 This graph simply shows that actual profitability varied by more than would have been suggested by the premium rate index. It does not necessarily mean that the explanation lies in terms and conditions, as there are other potential causes for the disparity between the two lines on the graph, on some of which we have considered in section 9.
- 4.2.6 It should probably be recognised at this stage that insurers in general, and Lloyd's in particular, have made significant progress in terms of price monitoring since the time covered by the graph above, so it is possible that more of the actual variation in profitability would be picked up by the rate index. However, it would be complacent to believe that there would be no difference through the current market cycle.
- 4.2.7 The second reserving impact relates to the assumption concerning consistency of development profiles over time. Some changes to both coverage and policy structure have the potential to change the development profile, which has clear consequences for reserving analyses.
- 4.2.8 Another consideration is that when terms and conditions are weak, one would expect claims to be contested more extensively in court as there is greater scope for legal debate on the extent of liability. This would not only lengthen the development profile for such risks but also would lead to greater claims handling costs, which can already be a significant element of any claims experience. The following graph is a comparison of claims handling costs against underwriting profit, both as a percentage of net earned premium, drawn from FSA data.

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4.2.9 Although there may be other effects at play, the above graph does suggest that, in general, when underwriting profit is low, claim handling costs are high.

4.3 Conclusion

4.3.1 Whilst our intuition tells us that we should care about changing terms and conditions with regards to reserving, it is not always clear what the actual impact is. In particular;

- Quantification of the impact is difficult, on both profit and development profile.
- Some impact may be already built into the rate index
- It is important to retain some focus, identifying the key changes that either have impacted reserving or have the potential to do so

5. *Survey of Key Terms and Conditions and their Changes over Time*

5.1 Introduction

5.1.1 In order to identify the key changes in terms and conditions as they had affected reserving in the past, the Working Party undertook two alternative approaches to soliciting views of market practitioners:

- Interviews of underwriters in our own organisations
- Survey of General Insurance Actuaries (identified through GIRO attendance list plus those who identified themselves as working in non life reserving).

5.1.2 The results of the survey of terms and conditions changes is set out in Section 10 and this section summarises these results using the classification system described below.

5.2 Grouping of survey results

5.2.1 We took the results of our survey and grouped the changes identified into a matrix, as follows.

	Change in coverage	Change in structure
Cyclical change	X	X
One-off change	X	X

5.2.2 We defined cyclical changes as those likely to be reversed when the market reverses, for example, if they were introduced as the market softens, following a period of profitability (hard market), then they are likely to be withdrawn as the market subsequently hardens, following a soft market.

- 5.2.3 One-off changes are typically in response to a specific event or set of circumstance, for example, 9/11, Enron, Katrina
- 5.2.4 The distinction between structural and coverage changes is much more open to judgement. It is probably simplest to think of coverage changes as those that impact what losses are covered by the policy and structural changes as everything else.
- 5.2.5 We shall discuss cyclical changes in coverage first, as these account for the bulk of those reported to us. Within this section the majority of the changes relate to either Liability or Catastrophe Lines of business.

5.3 Cyclical changes in coverage – Liability business

- 5.3.1 The covering of legal costs under Liability policies is a typical example of cyclical change. In a hard market legal costs are usually included within any policy limit (costs inclusive), however, during a soft market they are often ‘in addition’, particularly in reinsurance contracts. For example, in a hard market the maximum amount payable by the (re) insurer is the limit in respect of a claim, whether indemnity amounts or legal costs. However, in a soft market legal costs may be in addition so there is increased coverage as the (re) insurer becomes liable to pay the limit plus the legal cost incurred defending that claim.
- 5.3.2 Another example is the extension of Directors and Officers Liability (D&O) coverage during the soft part of the cycle, either to cover all directorships of a particular individual or as an extension to ‘entity’ level cover, seen during 1997 to 2001. The covering of all directorships of an individual means an increase in exposure as a director of a large international company may also hold directorships in smaller, riskier companies.
- 5.3.3 Further, allowing entity level coverage at the height of the dot-com boom led to disastrous results for the D&O insurers in the late 1990s, with loss ratios of 300 to 400% being common across many books of business. Subsequent legal

proceedings then often centred on whether the individual or the company was at fault. To avoid such complications coverage began to be offered which didn't cover the individual - rather the entity was covered significantly broadening the scope for claims on this coverage.

- 5.3.4 Other examples of cyclical coverage changes within Liability lines include the recent pressure, as the market turns down, to include batch claims and coverage excess of limited Self Insured Retentions. On the positive side extended reporting periods were reduced to 12 months back in 2002.

5.4 Cyclical changes in coverage – Property Cat business

- 5.4.1 Cyclical changes tend to be a response to changes in profitability and availability of capital. In the case of Property Catastrophe lines the changes are far more sudden and observable than the gradual movement typical of Liability lines of businesses. Over recent years two 'events' 9/11 and the hurricane season of 2005 have stuck most vividly in the memory. As a result these have been the focus of changes reported to us.
- 5.4.2 Whether these changes are cyclical or more permanent remains to be seen but given the traditional short-term memory of the catastrophe writing market, we have taken them to be cyclical unless there is strong evidence to suggest otherwise.
- 5.4.3 As a result of the losses in the 2005 hurricane season, most notably Katrina, there have been a number of changes to the terms & conditions, in particular in the Marine / Energy business lines. Many have seen limitations put on the losses from the Gulf of Mexico wind events, in some cases these have even been excluded completely.
- 5.4.4 Similarly, less cover has also been offered for Contingent Business Interruption (CBI), which indemnifies the insured against business income losses resulting from property damage to a 3rd party (e.g. a supplier unable to provide raw

materials following property damage). This has been particularly prevalent in the energy market as Katrina affected such a significant proportion of the market that even those insured not directly impacted suffered losses as market capacity was severely reduced.

- 5.4.5 The 'hours' clause is another feature that has varied through the cycle. This is perhaps a more generic type of change, which defines number of hours during which a claim can arise to be allocated to a single event. Therefore, the longer the hours clause, the higher the indemnity costs are expected to be.

5.5 Cyclical changes in structure

- 5.5.1 As is the case with changes in cover, the majority of examples reported in our survey were from Liability and Property Catastrophe lines. However, there was one specific exception and also one general exception of note.
- 5.5.2 The provision of **multi-year contracts**, particularly in the London Reinsurance Market, is likely to appear during the soft part of the underwriting cycle. Contracts tend to be one year in length but in the soft markets, brokers often push for multi-year terms locking the insurer in for a fixed period at the unprofitable rates of the softer part of the cycle. The provision for the renegotiation of premium during the multi-year term may also be relaxed, which means that the insurer would not be able to charge a retrospective adjustment premium should experience be worse than expected.
- 5.5.3 A '**Severe Inflation**' indexation clause on Motor excess of loss policies was introduced in the soft market of the late 1990's. Insurers often bought reinsurance with a Severe Inflation clause, often 30 to 40%. This was more of a reaction to increased expected profitability of reinsurance but it could have an impact on loss development patterns (as effective retentions are higher for same nominal original limits), and possibly on IELRs if the change of indexation basis is not allowed for in a rate level index.

5.5.4 Within Liability lines '**Swing rating**', reductions and increases in deductibles and limits are commonplace through the cycle.

5.5.5 Similarly for '**Limits**', in particular Property Catastrophe lines will often see reductions or increases in deductibles and limits generally in relation to windstorm losses. For example the provision of sub-limits on perils within regions is likely to appear during the hard part of the underwriting cycle. Introducing this effectively limits the claims from individual windstorms, with improved profitability expected to follow.

5.6 One-off changes

5.6.1 These changes are invariably a result of an insurer being forced to pay claims where they were not expecting to pay and revising their terms to avoid paying such claims in the future.

5.6.2 These claims could have been unexpected either because the underwriter expected such an event to occur but had thought that the wording provided adequate protection, or because the event itself was totally unexpected and nobody had even thought to add appropriate protection to the wording.

5.6.3 The change of cover from an occurrence basis to claims made for many Liability classes is one of the most significant one-off changes of recent years. Such is the impact that for certain classes it has meant the reintroduction of cover, where insurers were previously reluctant to offer at any price. More generally, this change has led to a shortening of the development tail, in some cases significantly.

5.6.4 As mentioned above, some changes that happen as a result of catastrophes are temporary and some appear more permanent (although it is often difficult to know which will stand the test of time in particular in a soft market). The introduction of Terrorism exclusions on many Property policies and the removal

of Third party war liability on Aviation as a result of 9/11 both have the potential to fall into the latter category.

5.6.5 Other changes include the introduction of mould exclusions in Property cover, the extension of cover for new buildings to include contaminated land and Avian flu exclusions in Employers Liability and Public Liability.

5.6.6 In many cases, where there has been a one-off change, it makes sense to separate them from the 'mainstream' claims and reserve for them separately. This assumes that these 'special' claims can be identified and separated within the reserving data and that there is a reliable method available to perform a reserving exercise on these claims in isolation.

5.6.7 However, there are some cases where the prior data can be adjusted for the change relatively easily. For example the introduction of an excess for bodily injury claims in Public Liability can be allowed for by simply reducing the claim amounts (and numbers) as if the excess had always been in place.

5.7 Conclusion

5.7.1 There are several areas where changes to policy terms are material issues, and any reserving process should endeavour to allow for these.

5.7.2 There are a number of cyclical issues that have caused problems in previous soft markets, and the relatively benign claims environment of recent years in some classes is perhaps in part a product of this and insurers should be wary of relaxing coverage as the market softens.

5.7.3 Many other changes are in response to significant past events and are likely to be of more use in adjusting past data than in preventing future issues, although the mistakes of the past can be an invaluable resource for avoiding future unplanned exposures and should be borne in mind whenever revised wordings are being considered.

6. *Short Term Solutions*

6.1 Introduction

6.1.1 This section considers what short term actions actuaries and insurers could take to improve the way that terms and conditions changes are allowed for within their business.

6.1.2 From our discussions and commentary above, we hope it is apparent that there are several hypothetical impacts of terms and conditions on the reserving cycle. Often, one can hazard an educated guess as to the expected nature of key headline changes which the reserving actuary is aware of at the time of the reserve review. However, a more controlled approach is ideally required to ensure all significant impacts of changes in terms and conditions are captured in the reserving process.

6.1.3 Whilst there are many levels of detail at which one can attempt to understand the specific impacts of changes in terms and conditions for any particular book of business, in this section we have provided some straight forward suggestions to obtaining a high level understanding of the main changes so as to be better placed to allow for their potential impact within the reserving process. In section 7 we provide insights into some longer term solutions which may provide a more robust framework for considering the impact of changing terms and conditions but which may require considerably more significant changes to an organisation's systems and processes to successfully implement.

6.2 Underwriter Input

6.2.1 One of the key themes from our research has been the lack of clarity around what changes in terms and conditions have actually occurred and which ones of these are expected to have a material impact on reserves. One of the most efficient ways of capturing at a high level the main changes which have occurred within a portfolio of business is through detailed discussions with

underwriters, as they have the most intimate knowledge of the business written within the organisation and are most likely to be aware of any significant and systematic changes for that particular book. In addition, the underwriter should be able to provide qualitative indicators as to the intended impact of these changes in terms and conditions and potentially the market drivers for introducing these changes.

- 6.2.2 We would recommend that any good reserving process should include some form of input from the underwriting team within the organisation. Within this framework, a discussion on changes in terms and conditions should be key and it should supplement any wider discussion on changes in premium rates and other underwriting drivers which the actuary should consider in the reserving process.
- 6.2.3 In practice however underwriters are usually very busy and might struggle to find a dedicated time for regular discussions of coverage issues, especially as most of the time there will be no material changes to report. As such it may be best to embed any feedback into a business units' usual reporting processes, for example as an agenda item in unit meetings. Where that feedback highlights potential issues that may impact reserving further discussions can be set up as necessary.
- 6.2.4 Underwriters also regularly review their policy wordings and make minor changes to the phrasing. In general, these slight revisions tend not to make any material impact, but they will then tend to apply to the majority of business written so if there is any material change at a risk level then it will have a material impact at portfolio level. As far as possible actuaries should be kept informed of all such changes, with regards to the potential impact and to the cohorts of policies affected.

6.3 Rate Monitoring

- 6.3.1 One of the key inputs from underwriters into the reserving process is through providing an understanding of the main changes in premium rates and the drivers behind these changes. There is an ever increasing focus within organisations to understand the level of actual change in premium rates and the need to dissect this into the contribution from pure rate movements and the implicit change in rates driven by changes in terms and conditions (both coverage and structural). Often it is the case that the pure premium rate change information is gathered easily upon renewal of each policy. However, capturing the impact of changes in terms and conditions is often a subjective exercise which requires judgement from the underwriter. Never the less, ensuring that the impact of each of these elements is captured separately and reviewing the information available will help inform the actuary as to how significant changes in terms and conditions have been.
- 6.3.2 In addition, reviewing the information captured within the organisations rate monitoring system and challenging the underwriters as to the aggregate indicators from this system will assist in forming a qualitative view as to the extent to which terms and conditions have changed and thus help the actuary determine the extent to which the homogeneity of claims data in more recent periods differs from prior periods.

6.4 Areas for adjustment within the reserving process

- 6.4.1 There are two main areas within the reserving process where changes to terms and conditions should be explicitly allowed for; in selection of initial expected loss ratio (“IELR”) assumptions for use within the Bornhuetter-Ferguson method and in determining the development tail selection within triangular methods such as the chain ladder. This is not to suggest that adjustments to other parameters within other methods should not also be considered.

- 6.4.2 There are many factors which typically drive the selection of IELR assumptions ranging from premium rate changes to claims inflation impact. Often there may be a tendency to consider policy wording factors implicitly while deriving each IELR assumption.
- 6.4.3 However terms and conditions changes can be material factors in themselves, and making explicit allowances for these separate drivers within the IELR assumption would lead to better discipline in allowing for changes in terms and conditions within the reserving process.
- 6.4.4 Similarly, when selecting development tail assumptions in triangulation methods, making an explicit adjustment for the impact of any changes in terms and conditions (even if a purely subjective adjustment) will help isolate the impact of this assumption and assess the degree of influence it has on the resulting reserves.

6.5 Consideration of new extreme loss scenarios

- 6.5.1 Consideration of extreme loss scenarios is a key form of risk management within any company, with the potential losses in certain disaster scenarios regularly monitored to ensure that the company is not excessively exposed. In general however these extreme loss scenarios are based on past catastrophes, with little consideration to any totally unprecedented events that may happen in the future and against which a company should endeavour to protect itself.
- 6.5.2 By their very nature such events are all but impossible to predict and extremely unlikely to ever occur, and as such any work tightening terms and conditions and limiting higher levels of coverage that are never expected to be claimed against will mostly yield little benefit. Conversely however, since such events are considered totally out of the scope of any realistic claim then restricting coverage in such extreme circumstances should cost little in the way of premium.

- 6.5.3 At present the question asked when considering extreme loss scenarios is what scenarios are realistic and need to be protected against, and as events unfold the markets concept of what is realistic is expanded to include new events and that protection is then added retrospectively. To take 9/11 as an example, no major Aviation losses in respect of third party liability were expected before 9/11, but after the event wordings were revised to explicitly cap that exposure at \$50m.
- 6.5.4 Had companies considered the further question of just how much they were willing to be exposed to such a previously unimaginable and unrealistic event they could have added that explicit limit on exposure before the event for little cost. In general companies should always consider what limit of liability they are truly intending to take on and make that explicit in their wordings rather than relying on the limit being implicit because an event breaching that limit would be unrealistic, as history suggests unrealistic events will continue to occur.

6.6 Conclusion

- 6.6.1 The impact of terms and conditions changes is often at best extremely difficult to technically quantify, at least with existing data, and as such any allowances are likely to be subjective.
- 6.6.2 There is however significant scope for improvement in the feedback processes within the company, and wherever possible there should be formal channels of communication where coverage issues can be raised. Even if the resulting adjustments are then subjective, at least the issues are raised and the actuary is informed enough to know that a subjective adjustment may be necessary.
- 6.6.3 Even the actuarial processes themselves may benefit from greater discipline with regard to terms and conditions changes, and any implicit adjustments should be made explicit and auditable where possible.

7. *Long Term Solutions - Coverage*

7.1 Introduction

7.1.1 In general, processes for allowing for or even capturing terms and conditions issues are fairly underdeveloped within the industry. Although many coverage issues will apply at the margins of exposure and may never generate sufficient claims volumes for technical pricing, without some improvements to market data it will be difficult to make any progress towards a more robust understanding of terms and conditions.

7.1.2 This section and the following section therefore considers what long term solutions companies might be able to put in place to address the weaknesses in data capture and to enable future refinements to actuarial approaches to terms and conditions. This section looks at coverage issues, with structural issues being discussed in section 8.

7.1.3 The first section considers what long term goals a company should set itself with regards to coverage issues, and each of the following sections sets out the pitfalls a company might encounter in meeting those goals with possible strategies to mitigate those issues.

7.2 Long term goals

7.2.1 **Catalogue of terms** – A relatively simple but useful first step would be a catalogue of the main terms and conditions that each different business line tends to encounter. Ideally this should address both the fundamental cover offered by a “standard” policy wording and any alterations from endorsements or exclusions.

Centralising the information stored would assist in identification of possible areas of risk or possible inconsistencies within the business, as well as defining

a frame of reference for all terms and conditions that can be built on in any further analyses.

7.2.2 **Policy level capture of key terms** – Coverage data at the individual policy level would allow detailed monitoring of potential exposures, both for comparison with claims information and for identification of possible risk concentrations.

7.2.3 **Claims level capture of contributory terms** – Unless the claims data has indicators as to what level of coverage caused the claim it is very difficult to tie back to the exposure information, so coverage data should be included on individual claims if possible as well.

7.2.4 **Quantification of terms** – A technical quantification of the effects of various terms would require the detailed data capture given above, and even then may be all but impossible in many cases due to low claim frequency. This would be the ultimate aim of any study of terms however, and could provide much useful information for both reserving and pricing.

7.3 **Classification of terms**

7.3.1 The subtle nuances of legal terminology can make many ostensibly similar policy terms substantially different. This can cause significant problems in any attempts to define a particular policy's cover in any concise or consistent manner.

7.3.2 This may lead to policies with quite different exposures being grouped together or at the very least will make the process more onerous as all non standard terms take longer to classify.

7.3.3 One possible solution is to review the policy wordings that the company uses and ensure that consistent wordings are used across the business. Ideally this should be linked into the contract production process so that as each set of wording / clause etc is added to the contract it is also logged on the database.

- 7.3.4 Contract wordings are evolving all the time, so even if the company standardises their wordings across the business, terms will still change slightly over time. In general these changes will apply across the business however, applying to all policies written after each update. As such there should be no particular need to capture both the type of term and the date of the term, provided units keep accurate records of changes and when they are applied.
- 7.3.5 However, in subscription markets a substantial proportion of business follows other companies and therefore uses their particular policy wordings. Data systems are likely to record the lead details, which will make it possible to group policies by wordings from specific companies, although details of the dates and nature of any updates are unlikely to be available.
- 7.3.6 With the above issues borne in mind, it should be fairly straightforward (if time consuming) to build up a set of wordings and terms with their own classification codes that can be easily logged on a policy by policy basis. A centralised set of the full wordings linked to each code could be stored on the network for reference.
- 7.3.7 Inevitably there will be some terms that are so unique or rare that there is no point in standardising them, in which case this should be marked on the policy record.

7.4 System Limitations

- 7.4.1 However the terms are classified, there needs to be scope to store the information. The most reliable and stable long term solution would be to store them as part of the policy data on the company's main system. Most such systems are unlikely to be set up to capture this information however, and will need to be expanded with various extra fields to allow this information to be stored.

7.4.2 Any approach where each term has its own field is likely to be unwieldy and difficult to maintain due to the sheer range of potential terms that could be used, especially in a diverse business. A more flexible solution would be to use more open ended fields, for example one field for the standard wording and several fields for each modification to that wording.

7.4.3 This leads to standard issues with data consistency and mis-keying of information. Perhaps the best approach is to select most inputs from a list of the commonly recurring terms, and manually enter all rare or non-standard terms. The list will need to be maintained, but this should be relatively straightforward.

7.5 Historical data capture

7.5.1 Attempts to review experience for individual terms or exclusions already divides data at a very granular level, so backfilling existing information would build up data far more quickly and make analysis more feasible. Unfortunately although all historical data is by default kept for policies as it is embedded in the actual policy documentation, it is not in a tabular format suitable for statistical analysis.

7.5.2 The complexity of legal documents means that a relatively high level of expertise would be needed to go through any documents and accurately identify the terms and conditions. Combined with the length of most policy documents and the sheer volume of policies this makes any attempt to collate existing information prohibitively expensive.

7.5.3 Companies may however have been doing some work on this already as part of their contract certainty process. At the very least, the contract certainty process checks various risks to ensure that where endorsements or exclusions are mentioned in the wording then they are actually included in the documentation. The process is unlikely to capture which endorsements are involved, focusing rather on whether compliance targets are met or not, although it does mean that there is some existing expertise in reviewing wordings.

7.6 Ongoing data capture

- 7.6.1 Although there should be no real issues in improving ongoing policy data capture, underwriters are invariably reluctant to add to their processing burden by capturing more policy data. For terms this is a particular issue as the benefits of the additional data are unlikely to be realised for a number of years.
- 7.6.2 As mentioned in the previous section, work is already underway on contract certainty which reviews policy documentation to check that all endorsements and exclusions are recorded properly, whether internally or externally. It may prove to be most practical to expand this function to include recording of the actual terms, thus freeing up more underwriting time.
- 7.6.3 Failing that however it may be necessary for the underwriters themselves to record the information. Barring the time and resource issue this would be likely to produce the most reliable information as the underwriters will have the most in depth understanding of the risk. In this case a revised set of underwriting protocols requiring underwriters to record all deviations from standard policy wording might be an effective approach.
- 7.6.4 In some respects, capture of coverage data for claims should be simpler. Claims departments are already experienced in reviewing wording to check whether claims are covered, and the vast majority of claims will fall under standard wordings anyway. Also, even for higher frequency classes claim volumes will be substantially lower than policy volumes.
- 7.6.5 One potential issue is capture of those claims that are *not* covered however, particularly if it is not covered due to an exclusion on a particular policy. Records of these claims may be incomplete, but in the long term these would need to be captured as well to accurately test the effect of any exclusions. In practice many claims that would potentially have been covered under some wordings would at least show up as a notification, so if this information is stored this may not be a material issue.

7.7 Quantification of terms

- 7.7.1 Even with the most detailed data possible, quantification of the effect of terms and conditions is likely to prove difficult at best. Many classes have very low claim frequency already, and the frequency of claims relating to non standard coverages will be lower still. As such any technical pricing of the terms and conditions is likely to be of limited credibility. In so far as data volumes are sufficient, standard actuarial techniques should be adequate for technically pricing various terms.
- 7.7.2 In general, terms are likely to be subjectively priced at best. Although this may not bring any actuarial precision to the process, it can be of use to simply discuss the potential issues and costs involved with each term. This should create greater consistency within the business, and may lead to a better understanding of the risk. Ideally legal and claims departments should participate in this process, which could add further value.
- 7.7.3 Even if the adjustments arrived at are of limited credibility there can be significant benefits for cycle management. If adjustments for terms are pre-defined then extended coverage can't simply be given away as each coverage change will be reflected in the rate strength indices. As individual risks are written underwriters may feel that adjustments are inappropriate and need review, but that review will at least be at a unit level rather than at an individual risk level in order to win a specific contract.
- 7.7.4 If underwriters are explicitly adjusting their prices depending on coverage then there is an immediate check on their adjustments relative to the adjustments other underwriters in the market make. As always it can be difficult to ascertain whether it is the internal adjustments or the market adjustments that are correct, but this is a useful source of feedback for either revision of internal adjustments or the identification of business opportunities or risks.

7.8 Conclusion

- 7.8.1 The development of robust and effective processes for addressing coverage issues is a significant and time consuming task, and would require significant input from many areas of the company such as underwriters, claims handlers, the legal, compliance and IT departments as well as the actuaries themselves.
- 7.8.2 In the majority of companies it is highly unlikely that even the most senior actuary would have the authority to instigate such a major overhaul of so many business processes, and leadership would need to come from senior management.
- 7.8.3 The actuary can however present the case for the need to improve understanding of coverage issues and hopefully encourage senior management to view it as a material issue deserving of time and resources. In practice there are many other demands on resources, and with so many inefficient processes (particularly within the London Market) it is hard to argue that this is one of the higher priorities at present.
- 7.8.4 Nonetheless it is an issue actuaries should remain aware of, and where there are discussions on refining business processes actuaries should endeavour to get involved and identify areas where some of the goals above could be met without putting undue additional pressure on scarce resources.

8. *Long Term Solutions - Structural*

8.1 Introduction

- 8.1.1 This section considers some of the more common structural issues in insurance contracts and discusses ways in which actuaries can add greater value.
- 8.1.2 In general, the ultimate goals to understand and monitor structural issues are the same as for coverage issues. Understanding of structural issues is generally far further advanced than for coverage issues however.
- 8.1.3 Data capture is in most cases well developed, with all companies capturing basics such as limits, excesses, deductibles, type of coverage (e.g. aggregate / first loss), number of reinstatements etc. This provides a far better volume of data to work from, and requires far less in the way of system or process changes.
- 8.1.4 Most companies already have a quantitative approach to structural policy issues with predefined adjustments. In many cases those adjustments are largely subjective and could benefit from actuarial review, although there are often data frequency issues that limit the scope for technical actuarial review. Some of the more common structural terms are discussed below

8.2 Attachment points (limits / excesses)

- 8.2.1 These are the most common structural features and as such are generally best understood. Most underwriters will have some sort of loss curve or increased limit factor curve. These curves have often been created some time in the past on highly subjective grounds however, and are frequently not updated or reviewed and have never been tested.
- 8.2.2 Actuarial review of these curves can often yield useful results. One quick exercise is simply to smooth existing curves. Many curves used in the market

have noticeable kinks at various stages of the curve, leading to inappropriate pricing for some layers. Bearing in mind the fundamental principle that a higher layer should never cost more than a lower layer, and that one would generally expect a relatively smooth tailing off of the risk such adjustments are easy to make manually. This does not tackle potential issues with the scale of the curve, but at least generates a more realistic shape.

- 8.2.3 Technical review of loss curves is usually best done with a curve fitting approach, often based around a generalised pareto model, particularly for excess curves. Even when there is a reasonable volume of claims this approach is fairly subjective once adjustments are made to outliers and the threshold is selected, but there is a reasonable degree of credibility.
- 8.2.4 Many units have a book of business that is sufficiently heterogeneous that the loss profile for risks is significantly different, and yet they only have a single loss curve for that business. For example, with a relatively high excess layer a small client may have no realistic exposure at that level and hence the loss curve should have tailed off before that layer, whereas a large client will still be materially exposed.
- 8.2.5 Even if sub-dividing the claims data further reduces the accuracy of technical review, actuarial assistance in developing multiple loss curves for different risk profiles can give underwriters greater flexibility to allow for the true exposures of individual clients.

8.3 Combined limits / Reinstatements / Aggregates

- 8.3.1 All of these structural variations are highly dependent on the frequency, or rather the frequency of multiple events. This frequency can be extremely difficult to estimate, partly because many risks have extremely low claim frequency, particularly at higher layers, and partly because there is no guarantee that multiple events are independent, for example, if a company has poor risk

management leading to one claim it could well have poor risk management leading to multiple claims.

8.3.2 This makes technically modelling such structural issues all but impossible. Some rough estimate of the frequency is implicit in base rates and loss curves, and with a few assumptions some estimates of the costs of these, if risks are independent can be made. This can perhaps provide a base point from which discussions of the possible level of independence can follow, and even if this is a highly subjective process there are benefits of explicitly considering dependencies.

8.3.3 Even if loadings are difficult to model accurately, allowances for these risks used within the market can frequently be inappropriately simplistic. For example, a reinstatement on a high excess layer is far less likely to be triggered than a reinstatement on a working layer, as the decreasing frequency makes multiple independent events exponentially less likely. Both layers are quite likely to receive the same simplistic loading however.

8.3.4 Such simplistic approaches may lead to useful business opportunities (or pose excessive business risks), especially if they are widespread throughout the market. For example, if a flat 10% adjustment is used for both combined limits and reinstatements, but the account is so low frequency that the effect of either is likely to be minimal, if more accurate loadings are used then business with excessive loads for reinstatements should be targeted and business with excessive discounts for combined limits should be avoided.

8.4 Sublimits

8.4.1 Defined sublimits for specific sections of exposure can be relatively common, and are something that often varies with the cycle. These terms sit somewhere between a coverage issue and a structural issue, as adjustments will depend both on what proportion of the standard exposure comes from that particular risk and on the level of the sublimit.

- 8.4.2 These should be relatively easy to model in some cases however, as claims data will often be split by the type of peril. This allows both an assessment of the proportion of exposure relating to that peril and curve fitting for a loss curve specific to that peril, which would allow accurate pricing of sublimits. In practice, many companies probably don't undergo such an exercise, and the impact of these sublimits may therefore not be fully allowed for.

8.5 Profit Commissions

- 8.5.1 Many risks in the London market are written through third parties under binding agreements, and these often involve profit commissions to incentivise the third party to target profitable business.
- 8.5.2 These profit commissions do have a cost however, and all too often this is a cost that is overlooked as underwriters take the view that it is only payable if the risk outperforms expectations.
- 8.5.3 While this is true for an individual risk for a single year, when looking at costs over a number of risks or a number of years there is a definite cost, as profit commissions given to profitable risks or years are not offset by any recoveries on unprofitable risks or years, leading to an overall cost for the insurer.
- 8.5.4 Such costs can only really be allowed for with stochastic methods (or at the very least scenario testing). Where possible actuaries should be able to make use of frequency and loss distributions to estimate the variation in claims experience and hence put a price on any profit commissions.
- 8.5.5 One particular area to note is that even without any change to the terms of profit commissions, their effects can vary year on year. For example, if a binder's expected loss ratio is 70% one year and 60% the next, a profit commission paying out on loss ratios under 50% is far more likely to pay out, and yet any rate movement based on movements on the underlying business is unlikely to pick this up.

8.6 Conclusion

- 8.6.1 Structural issues lend themselves far more readily to actuarial input, and actuaries should be pro-active in managing these issues and in providing assistance to underwriters in analysing these effects, whether through improving standard underwriting tools or by assisting on individual risks.
- 8.6.2 Data is also more plentiful for structural issues, reducing the need for significant process changes.

9. *Other potential deficiencies in rate indices*

9.1 Introduction

9.1.1 This section considers what other flaws there may be in rate indices beyond ineffective allowances for changes in terms and conditions.

9.1.2 From the results of discussions with underwriters and the survey results it appears that terms and conditions changes are not perhaps as material an issue as might have been expected. Although there are a handful of major changes to terms that have been significant, there have been very few widespread changes that would distort the rate indices.

9.1.3 Nonetheless there is a notable discrepancy between the movements of loss ratios over the cycle and the movements implied by the rate indices. This is only to be expected however when one considers how rate indices are generally compiled, most indices are based on rate movements on renewed business, and those movements are usually based on a standard rating model. This leads to a number of potentially material effects that would not be allowed for in a standard rate index.

9.2 Opportunistic Business

9.2.1 Many companies, particularly within the Lloyds market, can pick up significant volumes of distressed business at rates substantially in excess of the rest of the portfolio.

9.2.2 Such opportunities may well tend to arise more in a hard market as capacity is limited and underwriters can almost name their price, thus lowering the loss ratios in a hard market. As the market softens, the business may well leave to a different insurer entirely (having been over charged initially) thus removing the loss ratio reductions previously experienced.

- 9.2.3 Neither effect would be captured in a standard rate index, and yet for some portfolios such business could have a significant impact, particularly if the rates on that distressed business are substantially out of line with the normal market rates at the time.

9.3 New Market Sectors

- 9.3.1 This is likely to give an opposite effect to opportunistic business. As income from core business drops in a soft market, many underwriters may turn to new segments of the market to make up premium income targets.
- 9.3.2 Because rate indices are generally compiled from renewing risks only, this won't be captured in a rate index, even though it may come on to the books at a substantial discount. Even if the discount isn't intentionally given, the underwriter may well simply not price the business correctly as it is unfamiliar, and due to market pressures is more likely to pick up business where he is undercharging rather than overcharging, thus being selected against.
- 9.3.3 Depending on the underwriting protocols in place, companies may be inadvertently encouraging this particular issue. If protocols limit underwriters to a maximum rate reduction from the previous year but place no limitations on new business rates, if market rates are dropping more than the protocols allow the underwriter may end up targeting new business just to circumvent the protocols
- 9.3.4 Also, as experience emerges from this business it may well be shed rather than re-priced, thus unwinding the negative effect without it being captured in the rate index.

9.4 Macroeconomic effects

- 9.4.1 Even on the renewal element of a portfolio there may be significant flaws in rate monitoring. Many rating models will take no account of macroeconomic factors, using fixed rates on e.g. fees or assets year on year.
- 9.4.2 Given how rapidly the macroeconomic environment can change, particularly over specific industry sectors, such a static model may not be responsive enough. For example, D&O claims for dotcom businesses soared as the bubble began to burst, but few companies would have revised their industry loadings for dotcom business to reflect the changing market hence understating the true rate movement.
- 9.4.3 Another example might be fee growth on a stockbroker paid in proportion to assets under management – as markets rise fees automatically increase thus raising premiums, and yet the risk of being claimed against is likely to drop if anything.
- 9.4.4 On a more general basis, intuitively one would expect a greater propensity to claim as the general economy worsens as people will look to supplement profits where they can. Such general trends could materially exacerbate any underwriting cycle and should be borne in mind in any rate indices.

9.5 Long Term Policies

- 9.5.1 One of the most notable features of the previous soft market was an increasing level of long term policies as insureds tried to lock in favourable soft market terms for a number of years. As the market turned these policies tended to have an unfavourable effect on the remainder of the portfolio, and as such constitute a type of cover that underwriters should do their best to avoid.
- 9.5.2 In a well constructed rate index this effect should show up, with these policies showing no rate change while the remainder of the portfolio improved

dramatically. Given the comparatively simplistic approach to rate monitoring in the previous soft market it is likely that these policies were not adequately allowed for in rating indices, with underwriters basing their opinion of rate movements on experience in the market at the time without making allowances for long term policies whose rate could not be renegotiated.

9.6 Conclusion

- 9.6.1 Although terms and conditions are most likely inadequately allowed for in rate indices, they are not the only factor inadequately allowed for. These are just some of the other possible flaws in rate indices that could contribute to the discrepancy, and all could well be of far greater magnitude than terms and conditions.
- 9.6.2 Although the working party had limited access to underwriters so the sample of responses is fairly small, of the underwriters spoken to many felt that these effects were the key drivers, with terms and conditions changes a second order effect at most.
- 9.6.3 Some revisions to rate indices such as the contribution of new and lapsed business and macroeconomic effects could therefore yield significant dividends, and may constitute an area for further research. Many companies are already working towards these improvements however, and the discrepancy over the coming cycle may be less pronounced than previously.

10. *Table of Survey Results*