Report of the
Understanding the Business Better Working Party

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1. **OVERVIEW**

1.1 Background

Our working party was commissioned by the Reserving Oversight Committee (ROC) – the successor body of the General insurance Reserving Issues Task Force (GRIT) – to explore the issues around understanding the business better for actuarial claim liability reserving. One of the conclusions from the GRIT report ‘A Change Agenda for Reserving’ presented to the Institute of Actuaries on 27 March 2006, is that ‘considerable improvements can be readily made to the reserve estimation process through actuaries understanding better the constitution and commercial issues surrounding the business making up each reserving class.’

The focus of our research was not only on how better understanding of the business can assist the reserving actuary but also that this is a two way process and effective interactions with various functions within and external to the organisation will also add value for the business.

This paper is intended to aid nearly and recently qualified actuaries who are beginning to have significant interactions with the wider business.

This paper documents the collective thoughts of the working party with input from other actuaries in the profession. Whilst we hope it will provide some ideas for consideration during the reserving process it does not constitute formal guidance. The views in this paper do not necessarily represent the views of our employers.

1.2 Outline of Paper

The paper is split into a number of sections:

1. **Case studies.** This first part of the paper documents a number of case studies where certain features of the business made actuarial claims reserving considerably more difficult and the reserve estimates more uncertain. We look at some of the issues faced from these experiences and lessons learned.

2. **Interaction with the business for more effective claims reserving.** The next section explores interactions with the business to facilitate more effective claims reserving and the consequences and impact to the business.

3. **Practical ideas to take forward.** We consider some best practice approach and ideas for challenge and feedback loops and ways to gain buy-in from the business.

4. **International considerations.** We make some observations on the implications for working across international territories in understanding the business better.

1.3 Acknowledgements

We would like to thank those other members of the profession who have participated in the work of this working party for some of its life, and to those who were interviewed for the case studies and provided other useful insights. We would like to give special thanks to Adrian Ericsson, Liz Prior, Andrew Binns, Catherine Barton, Richard Doman, Matthew Harris, David Hart, Ian Hilder, Alex Lee and Simon Sheaf.

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2. INTRODUCTION

The importance of understanding the business better for reserving is well recognised by actuaries, especially following the GRIT report recommendations. It was commented during our research that the issues and difficulties raised are not new to the actuarial profession or the companies. We did, however, find the understanding or awareness of what could make reserving more effective was often taken for granted.

Our aim is to document and share the experiences of the past (it’s always easier to see with hindsight) and to explore aspects of the two way relationship with the business.

In practice, actuaries work in teams and they may have established relationships with the business already. Those that don’t are at risk of missing key reserving information that is known elsewhere in the business – this paper is aimed at providing an introduction to those interactions which could be crucial along with some food for thought.

Our study has not considered specific IT systems or related issues.

2.1 What is meant by effective reserving in this paper?

We believe effective reserving can be seen in a dual context.

The first usually is the way in which information (quantitative and qualitative) is considered to improve the actuaries’ understanding of the business and to adapt the reserving assumptions and methodology to the issues in order to obtain a reserve estimate – whether it be a best estimate or for other purposes such as at a specified percentile.

The GRIT report explored this aspect of understanding the business better and noted that “traditionally the actuary will seek to identify changes in the business that are important to the reserving methodology by discussion with the underwriter, claims staff etc. However GRIT’s view is that the role of the actuary in General Insurance may now be sufficiently mature that a more structured process of understanding the business should form an integral part of the actuarial methodology.”

In this paper, we present some thoughts on how to interact with the business to achieve this aim but we also feel it is important to understand how to make the most effective use of the reserve estimates – we see this as the second context in which “effective reserving” should be considered.

Reserving can be considered effective when, in addition to the points above, the business places credibility on the reserves, and they are actively used as a tool to steer and manage risk of the business. An example of this would be to create the interactions that allow the reserving process to act as an early warning system for things going wrong. This is another facet that we attempt to draw out - the interactions with the business to create credibility, confidence and a benefit to the business.
3. CASE STUDIES: LEARNING FROM THE PAST

We selected six reserving case studies to document in this paper with the purpose to learn from the past experiences of other actuaries. Some of these cases are well known in the industry while others are more associated with particular businesses. We interviewed a number of different general insurance actuaries in the profession and have summarised the general background, key issues and lessons learnt of each case study below. This is done in an anonymous fashion to ensure confidentiality.

The case studies covered are:

- North American Extended Warranty – Byas Mosley
- Legal expenses
- Reinsurance market spiral – LMX
- Market wide large losses
- US liability
- Cashback policies

3.1 Case Study 1: North American Extended Warranty – Byas Mosley

3.1.1 Background

Extended warranty business was written throughout much of the London Market and Lloyd's of London in the late 1980s. Most policies were for motor extended warranty, but other electrical products such as white goods were also insured. Typically, the cover starts at the expiry of the manufacturer’s warranty and can continue for several years thereafter.

In the late 1980’s there were some large line-slip schemes reinsuring the direct extended warranty business. Many of these reinsurance contracts or line-slips were written by a third party administrator that did not take part in the risk. Whilst some of these schemes performed quite well, there were schemes which were loss making and caused significant concern within the market.

The Byas Mosley line slip was one of these loss making schemes. During the 1990’s, the insurance broker Byas Mosley had brokered a book of extended warranty business that covered private motor vehicles, white goods and computers. We have based our discussion around the Byas Mosley line slip in our case study.

3.1.2 Issues & Implication to Reserving

The claims experience had been good during the first few years but it became apparent that the business had actually performed much worse than expected as losses started to come in after a few years (typically after the manufacturer’s guarantee expired). In some cases, the problem of deteriorating results were compounded by falling premium rates, an over-reaction to the early false impression of favourable claims experience.

Not only did the underlying exposures earn over a long period - typically seven years - many of the contracts in the lineslip were written on an excess of loss basis. This meant that losses took a long time to reach the layers, and when they did, they led to very high loss ratios, sometimes in the thousands, due to the non-proportional gearing nature of the aggregate stop-loss coverage.

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The most significant factor impacting the performance of the business was that often the way that the business was administrated and sold offered little or no protection against moral hazard. For example, it wasn’t uncommon for administrators to remind policyholders of their soon-to-expire coverage, with the result being a surge in claims towards the end of the contract period. This was the result of the administrators having vested interest in the risks sold (they did not take part in the risk), and that they were often remunerated solely based on volumes sold.

There was an additional issue for companies who did not split out extended warranty as a class on its own (but have included it within other classes of business). For these companies, their claims experience on the reserving classes containing extended warranty business would be distorted by the features of the extended warranty business (usually only paid amounts and no outstanding amounts). The hidden extended warranty business within larger reserving classes had typically led to underestimation of reserves for these reserving classes.

3.1.3 What happened next
In the mid-1990s a market wide consultative committee was set up to facilitate information flows to and from participants involved in the Byas Mosley business. Initially, the consultative committee consisted of underwriting and legal representatives. Actuaries were recognised for their skills during this process and started to become involved in the consultative committee at a later stage. We note that prior to this, there had been little actuarial involvement in the reserving of this business.

Actuaries soon realised that standard actuarial reserving techniques were not applicable for this type of business as the eventual outcomes can be dependent on individual court cases. To estimate the ultimate cost of the involved reinsurers and syndicates, the actuaries started by building a model using ground up losses as key inputs. Actuaries were able to obtain ground up data from several sources, however, the different data sources did not always reconcile, sometimes with material differences. In light of data issues, it was felt that a more pragmatic approach was required to estimate the ultimate losses.

The UK actuaries encouraged the involvement of specialists in the US, particularly US actuaries, and became heavily involved in the facilitation of discussions between the various parties and participants. The aim was to consolidate and incorporate all available information and different views to arrive at a reasonable set of data and assumptions to use for the model. Stress testing and scenario testing were also performed to assist participants with understanding the level of uncertainty and the sensitivity to the assumptions and data used. Actual against expected analyses were regularly performed using claims data from US actuaries of each scheme to validate the ground-up ultimate claims estimates. A Microsoft Excel report was then issued to market participants every quarter to show their share of the latest estimated reserves.

3.1.4 Lessons
The lessons from this experience are:

- The way that the business was administrated and sold provided little protection against moral hazard. In this case study, moral hazard could have been avoided to some extent if the administrators had some vested interest in the performance of the business. The following arrangements are commonly used to align the interest of the businesses and administrators:
  - Requiring the administrators to retain some part of the risk.

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To have a remuneration arrangement with the administrators that is linked to the performance of the business (rather than being purely volumes based).
However, reserving for profit commission can be tricky along with building in feedback loops and use of exposure methods.

It is important to understand the drivers of claims when estimating reserves. In this case study, the expected timing of the losses was probably not well understood. The early favourable loss experience of the business had led to more loss making business being written.

Care needs to be taken when grouping business into classes for reserving purposes. There needs to be a balance between having too many reserving classes (statistically less reliable with smaller volumes) and too few reserving classes (the reserving classes would not be very homogenous and features of different business could distort the reserving analysis, as seen in this case study).

Actuaries need to have access to timely, relevant and accurate data in order to monitor and understand the performance of the business. Frequent monitoring would allow early detection of performance issues; this will give the business more time to take corrective actions and hence reduce financial damage. Performance monitoring is more important for longer tail or longer term business where issues would only become apparent after a period of time, as illustrated in our case study.

It is important to recognise the value of bringing in specialist opinion in underwriting, pricing and reserving, especially in new areas of business.

The early establishment of a market steering committee for problem accounts can help coordinate the participants’ response, accelerate remedial action and share any costs.

### 3.2 Case Study 2: Legal Expenses

#### 3.2.1 Background

In the late nineties, a new type of liability product emerged in the UK insurance market covering after the event (ATE) legal expenses. The policy indemnified claimants, who were often individuals making their claim on a no-win no-fee basis, for the defendant’s legal costs and expenses, and often also the ATE policy premium, in the event that the claim was unsuccessful.

Although dealing with a specific case study, the principles are likely to be valid for any new product.

#### 3.2.2 Issues & Implication to Reserving

Reserving was initially based on underwriting assumptions, but the actuary was brought in to provide an external reserve opinion.

As this was a new line of business, there was very little data available to the actuary for reserving purposes. Underwriters did not have a great deal of experience in the product, although were confident in the profitability of their underwriting, and claims teams did not have experience of dealing with these types of claims. Discussions with underwriting and claims, although useful, could not give the full picture and reserving based on this would rely on the quality of underwriting rather than providing an independent view.

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3.2.3 What happened next

The key thought process was to identify who would understand these types of claims, namely the lawyers conducting these cases.

The actuary then performed a survey of the leading legal firms, to understand the claim process and form the assumptions of a cost/probability model.

This came out with higher projected losses compared to those based on underwriting assumptions but also showed a wide range of uncertainty. As a result, the communication with management became crucial, both informing them of the profitability concerns but also the great uncertainty associated with the product.

3.2.4 Lessons

The lessons the actuary took from this experience were:

- To always challenge data and information supplied by the business.
- To understand the business better, consider who is best placed to inform the actuaries and whether an external non-traditional source may have more objective or insightful viewpoint.
- Where understanding is limited, e.g. in the absence of data, the actuary should communicate this to management so that the company can consider holding a margin for uncertainty.

3.3 Case Study 3: Reinsurance Market Spiral - LMX

3.3.1 Background

A reinsurance spiral occurs when reinsurers operating in the same market provide each other’s excess of loss covers, with very little coverage being provided by reinsurers outside the market. This results in the transfer of exposures between the reinsurers in the same market. When a large catastrophe occurs, it is possible that the total claim cost or a large part of the reinsurance risk is “trapped” in the market and will return to the participants. The losses are passed through reinsurers like a “musical chairs” game and the music stops when the net capacities of all the reinsurers are exhausted in the loop. The reinsurer who ran out of capacity will be left “without a chair” and will be the one to pick up the losses.

The London Market Excess-of-loss (LMX) spiral arose during the 1980s when a number of Lloyd’s of London syndicates and other London Market companies each wrote multiple layers of reinsurance cover reinsuring each other. The information available about the underlying risks was inadequate and the reinsurers accepted further exposure for risks they had already covered. The companies and syndicates were effectively reinsuring their own losses after they had passed through their reinsurers’ own reinsurance programmes.

During the late 1980s there were a number of large market losses including UK Storm “87J” (Lloyd’s catastrophe codes), Hurricane Hugo and Piper Alpha. The problems caused by the LMX spiral became acute when these large market losses started to go through the London Market.

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3.3.2 Issues & Implication to Reserving

There was far less actuarial involvement in general insurance reserving at the time that the issues associated with the LMX spiral became apparent. However, there were two major issues with reserving for the large market events:

- The size of the loss to the market was uncertain, particularly initially.
- The share of the loss to be borne by each company or syndicate was almost impossible to predict.

Each reinsurer’s share of a loss was very sensitive to its reinsurance programme and that of its cedents and reinsurers. The loss would pass through the spiral of reinsurance covers until one of the participants ran out of reinsurance protection, in which case one of the following could happen:

- One company would retain all the remaining losses; or
- Insolvency of one or more of the participants would act to break the spiral. (This would be better news for the insolvent participant’s reinsurer than the cedent!)

A further complication to the reserving is the impact of commutations made between participants in the spiral. Once a contract has been commuted no more recoveries can be made against it. In addition, recoveries may not be made on the outwards reinsurance contract when the inwards policy has been commuted, thus breaking the spiral.

3.3.3 What happened next

The LMX spiral is still ongoing, with a number of London Market reinsurers still holding reserves against the associated losses. This highlights how difficult the issues have been to resolve.

There have been collaborative efforts made by some participants to estimate their share of the spiral. This involved information sharing on programme structures and in some cases led to successful settlement of liabilities between companies after reaching agreement on sharing arrangements. However, the process was complicated and long due to the sensitivity of business information. A number of commercial issues needed careful considerations and this may have prevented more participants from sharing information.

Different methods are used to estimate the reserves, including the following:

- Fitting curves to the notified claims: This involves estimation of the parameters of a chosen statistical distribution based on the actual claims experience. Expected future losses can be extrapolated from the chosen distribution once the parameters are estimated. Statistical distributions frequently used for modelling claims include the Lognormal and Gamma.
- Survival ratios: These are used to estimate how many years it would take for claims to exhaust the current level of loss reserves. It is calculated on the level of claims payments, for instance averaged over the last five years (“five-year survival ratio”). A five-year survival ratio of 20 indicates that it would take 20 years to exhaust reserves if annual claims payments remained the same as the average in the last five years. This method is frequently used for the estimation of very long tailed liabilities or latent claims such as asbestos.

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These methods may lead to appropriate best estimates for the claims but will not illustrate the associated uncertainty and the risk carrier could possibly end up with a much higher share of the loss than expected.

3.3.4 Lessons
The London Market has learnt lessons from the LMX spiral and the way business is written has changed as a result. There is more information available on the risks written to allow a reinsurer to monitor its exposure and prevent it from unwittingly reinsuring itself. Alongside this, insurers and reinsurers are much more aware of aggregations of risk than in the past. However, there may be still some differences in interpretation of information; for example, actuaries may consider a “retro” policy to be an excess of loss on and excess of loss layer, while many underwriters may not see it as a “retro”.

Internal data systems have improved dramatically over the past 20 years and much more comprehensive policy and claims information is collected. In addition, external data systems have also improved, for example the centralisation of information at Lloyd’s of London.

Despite all the improvements in data gathering and understanding exposures, there are situations where the underlying exposures are still unclear e.g. when no original insurer information is available in bordeaux notifications or where there is no fixed location on the insured so it is difficult to know where the exposure lies (like in cargo where the assets are not fixed).

3.4 Case Study 4: Market wide large losses
3.4.1 Background
There are a number of historical events that have resulted in very large insured losses across the global insurance industry. These market-wide losses are generally categorised into man-made or natural perils and tend to affect more than one class of business. In the last ten years, man-made events affecting insurance include the 2001 US terrorist attacks ("WTC"), Enron, Worldcom, Laddering and more recently sub-prime; and for natural catastrophes there are North Atlantic hurricanes, European windstorm, UK floods, Asia Pacific tropical storms and various earthquakes around the world.

Our discussion will give a brief overview of the reserving issues on WTC and the 2005 hurricanes Katrina, Rita and Wilma ("KRW"). These two market wide losses have a number of interesting factors:

- Unique features of the loss
- Timing in the insurance cycle
- Financial impact
- How the actuarial profession sought to quantify the size of the loss for reserving

We have only considered the impact of the insured losses for this case study.

WTC – On September 11, 2001 terrorists hijacked four planes on the East coast of the United States and two of these planes, both Boeing 767’s, were flown into the World Trade Center twin towers in New York. This caused over 2,500 deaths from casualties

These methods may lead to appropriate best estimates for the claims but will not illustrate the associated uncertainty and the risk carrier could possibly end up with a much higher share of the loss than expected.

3.3.4 Lessons
The London Market has learnt lessons from the LMX spiral and the way business is written has changed as a result. There is more information available on the risks written to allow a reinsurer to monitor its exposure and prevent it from unwittingly reinsuring itself. Alongside this, insurers and reinsurers are much more aware of aggregations of risk than in the past. However, there may be still some differences in interpretation of information; for example, actuaries may consider a “retro” policy to be an excess of loss on and excess of loss layer, while many underwriters may not see it as a “retro”.

Internal data systems have improved dramatically over the past 20 years and much more comprehensive policy and claims information is collected. In addition, external data systems have also improved, for example the centralisation of information at Lloyd’s of London.

Despite all the improvements in data gathering and understanding exposures, there are situations where the underlying exposures are still unclear e.g. when no original insurer information is available in bordeaux notifications or where there is no fixed location on the insured so it is difficult to know where the exposure lies (like in cargo where the assets are not fixed).

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in the towers, the surrounding area and passengers onboard the planes. Both the North and South towers collapsed within two hours of the impact followed later by the collapse of No. 7 World Trade Center and subsequently a number of further buildings around the area had to be demolished.

**KRW** – On August 23, 2005 Hurricane Katrina swept in from the Atlantic ocean over Florida, strengthening as it progressed over the Gulf of Mexico before making second landfall across Texas and Louisiana. In New Orleans, the worst affected area, the hurricane caused the levee system to fail, flooding significant portions of the city and causing the greatest loss of life since the 1928 Okeechobee Hurricane. Hurricane Katrina was followed closely in September 2005 by Hurricane Rita and then in October 2005 by Hurricane Wilma, both also hitting the Gulf of Mexico. KRW also caused extensive damage to onshore and offshore oil and energy operations. The paths and intensity of the three hurricanes are illustrated below.

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3.4.2 Issues & Implication to Reserving

The claims development pattern of large market losses do not conform to the patterns normally observed in other claims and hence, standard actuarial reserving techniques are often not appropriate. In fact, the claims development is invariably unique from large loss to large loss. There are a number of challenges for the reserving actuary in estimating reserves which include but are not limited to:

- Understanding the nature of the losses and exposure to the insurer
- Ascertain the size of the market loss
- Selection of estimation approach – “top down” (allocating share of market loss) and “bottom up” (policy exposure and limits)
- Understanding, quantifying and communicating the uncertainty around any loss estimates. This was a particular concern for Lloyd’s signing actuaries at the immediate year end that followed the large market loss.

Whilst both the WTC and the 2005 hurricanes KRW constitute large loss events the reserving implications for both differed substantially.

The World Trade Center attacks were an unprecedented event, particularly the total collapse of the buildings. By contrast Gulf of Mexico hurricanes are common, the issues for KRW arose from the size and combination of the losses, and also other specific details discussed below (eg, flooding, levees etc).

The timing of these losses within the insurance cycle also had a key impact. WTC was a smaller financial loss in comparison to KRW but had a far more significant impact on the number of insurance entities that went into run-off as a result.

WTC

The WTC attacks were unprecedented and the insurance industry was uncertain of the immediate next steps. Defining what had happened, assessing the extent of the damage and understanding the insurance contracts written added to the complexity. In the immediate aftermath it was difficult to assess the extent of the damage to infrastructure like the underground shopping centre and the metro collapse. Later there was the dispute over how many losses had been sustained – were each of the four hijacked planes one loss, were each of the two twin towers separate losses or was the single objective and coordination of the terrorists sufficient to define it all as a single event.

The different insurers were more or less prepared to accept the overall scale of the loss but it was difficult for a market wide view of the losses to form. This led to a range of initial loss estimates, exacerbated because these were a small number of large, volatile and uncertain losses. At the Institute and Faculty of Actuaries general insurance conference (GIRO) in 2001 there was a wider market discussion about the possible surprises that could arise from the claims. Given this and the short period to the end of third quarter of that year it is understandable that the market estimates were very uncertain.

WTC affected mainly aviation and property classes but many other classes of business also had exposure. The ultimate claim estimates for the direct aviation losses and the direct property losses have been fairly stable (excluding the one loss or two debate) over time, although a significant portion remains unpaid. The bodily injury liability claims

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on property policies took time to establish causing delays and arguments amongst the various parties. However, by the end of the third quarter 2001, most insurers had to have accounted for the loss, forcing the market to form an opinion of the size of WTC at a very early stage in its development.

The reinsurance losses were more complicated due to a number of factors. There were wordings issues with many reinsurance contracts written on a “follow the fortune” basis. The reinsurance of Lloyd’s and London market cedents was generally on a consistent reserve basis but outside of London there was wide disparity in approaches to producing case estimates.

KRW

The issues that have made Hurricane Katrina difficult from a reserving standpoint were generally not hurricane related. It was the overall unexpected size of the flooded area, and also issues around whether the loss damage was caused by a flood or by a hurricane (leading to coverage disputes). This subsequently demonstrated that whilst many of the natural catastrophe proprietary models had been useful in estimating the extent of insured losses for a large number of small risks, they capabilities were limited at the time where the damage was to large commercial risks.

There was additional uncertainty arising from legal disputes around the failure of the levee system, which in many cases occurred many hours after the storm had moved inland. Levees in New Orleans breached in over 50 different places submerging 80 percent of the city. These legal disputes caused delays and uncertainties in quantifying the true cost of the loss.

Reinsurance exhaustion was also a problem within the Lloyd’s and London Market, with the three large insured hurricanes occurring close together within one year and insurers strained to cover each event.

3.4.3 What happened next

WTC

There were significant interactions within the business at the time in estimating and reviewing the reserves. It is likely that the focus was initially driven at least in part by not only the size of the loss but also its high profile nature. Many companies set up multi-disciplinary internal working parties to review the claims including underwriters, claims, actuarial, finance and reinsurance. This meant that actuarial and claims could quickly understand what the issues were. The significant developments which came through in January 2002 were then quickly reflected in the year end Statement of Actuarial Opinion (SAO) for Lloyd’s syndicates because the multi-disciplinary working parties encouraged quick information flows. This methodology, adapted and refined during KRW, has now become market practice for large or unusual losses.

There were collaborative efforts and healthy debates on the treatment of the binary event from the profession with a wide number of groups involved. The General Insurance Board of the Faculty & Institute of Actuaries issued a paper and supplementary guidance note in December 2001 (with addendum December 2002) to assist actuaries on the “practical and technical considerations for their year end work arising from the WTC event and to suggest possible wordings for reports and opinions produced”.

The suggested wordings helped actuaries signing the annual SAOs for Lloyd’s syndicates communicate the level of materiality and uncertainty in the reserves and also on property policies took time to establish causing delays and arguments amongst the various parties. However, by the end of the third quarter 2001, most insurers had to have accounted for the loss, forcing the market to form an opinion of the size of WTC at a very early stage in its development.

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The suggested wordings helped actuaries signing the annual SAOs for Lloyd’s syndicates communicate the level of materiality and uncertainty in the reserves and also
inform external auditors considering whether the accounts required a fundamental uncertainty wording.

There are four suggested wording options which were subsequently revised and reissued to be used for future large losses:

- **Wording 1** – I am satisfied that the company/syndicate has no material exposure to the Large Loss.

- **Wording 2** – The company/syndicate has material exposure to the Large Loss. However, this exposure does not lead to a material increase in the uncertainty of the company/syndicate’s total reserves [in an adverse direction].

- **Wording 3** – The company/syndicate has material exposure to the Large Loss. This increases the uncertainty of the company/syndicate’s total reserves, but does not increase that uncertainty [in an adverse direction] significantly beyond the normal range of uncertainty for insurance liabilities at this stage of development.

- **Wording 4** – The company/syndicate has material exposure to the Large Loss. The ultimate amounts of these claims are subject to a great deal of uncertainty which, combined with their total size, increases the level of uncertainty for the total reserves of the company/syndicate significantly beyond the normal range of uncertainty for insurance liabilities at this stage of development.

At the time of WTC (unlike KRW) the market was not performing well and companies had been releasing reserves on under performing business. As such, the large capital strain which occurred because of WTC was difficult for some companies to bear and ultimately led to many leaving the market. KRW was a far larger insured loss than WTC but its effect on companies was reduced since when the losses occurred in 2005 insurers were better capitalised at that point of the insurance cycle.

**KRW**

Many companies made use of complex catastrophe models to assess the impact of KRW. However, these models at the time were not able to include secondary effects that affect (and normally increase) the loss beyond what would have been expected. The best known of these for KRW is the demand surge which occurred in the Gulf of Mexico and New Orleans. Demand surge can be defined in an insurance context as the temporary increase in repair/mitigation costs above the standard level of costs, resulting from the secondary impacts of the natural catastrophe itself. In the Gulf of Mexico, there was a skill and supply shortage for even assessing which oil rigs had been damaged before they could be repaired.

For Katrina, there was also the issue of coverage inflation where existing insurance exclusions or limits proved politically and legally very difficult to apply. For example the Mississippi Attorney General filed a suit asking courts to clarify that insurance companies must cover the water damage following the breach of the New Orleans levees, and that they could not enforce the water damage/flood exclusions in hurricane protection policies. These disputes took a long time to resolve.

### 3.4.4 Lessons

Some of the lessons learnt from WTC and KRW include (but not limited to):

- Understanding that the timing of the market large losses in the insurance cycle can have a widely different impact on the insurance industry and individual re/insurers.
When the loss occurs at the bottom of a cycle as for WTC, the consequences on the insurance industry is larger as the capital buffers have not been built up to absorb the loss.

- The approaches taken to reserving in the market during WTC were later used for other large loss events, such as KRW. There are now more market consistent ways to estimate large losses and determine wordings of uncertainty.

- The lessons learned from Hurricane Katrina in particular have led to modelling firms reviewing their treatment of demand surge and other secondary events in their proprietary models thus improving the assessment of impact of major catastrophe events. It has also raised awareness of the importance of understanding the catastrophe models used, the effect and need for the model variables and how these vary by software.

- KRW occurred when the UK Individual Capital Adequacy Standard (ICAS) regime was in place and hence became a useful benchmark for the level of underwriting and subsequent reserving risk.

- Actuaries to consider classes unexpectedly giving rise to losses when reserving for large loss events e.g. the World Trade Center caused significant Specie losses, while Hurricane Katrina gave rise to Financial Institution crime losses arising from thefts from cashpoint machines.

3.5 Case Study 5: US Liability

3.5.1 Background

In 1995, the Private Securities Reform Act was brought into force in the United States. This was designed to reduce the number of lawsuits by reducing the number of class actions. The advice given at the time was that it would be beneficial to insurers and it led to insurers increasing their exposures to US liabilities.

At the time, many insurers were distracted by the potential fallout from the millennium bug, as well as the dot com bust. These factors pre-occupied insurers and market conditions deteriorated over the next few years. The result tended to be weaker terms and conditions and rates softened considerably. At the same time, a number of companies and syndicates wrote long term contracts that had to be honoured when the experience turned out to be much worse than expected.

3.5.2 Issues & Implication to Reserving

Insurance companies started to recognise this issue in mid 2001. This was as the notified claims deteriorated beyond expectations due to a higher than expected frequency of claims. At this point the action taken was generally to strengthen reserves. The drivers of the experience were not always fully recognised at this point, so at this time it was not known how big the issue would be.

Insurers writing direct business were able to identify multi year contracts and gain an understanding of their exposure. However, reinsurance accounts added a further layer of complexity as cedents were able to attach multi year contracts to treaties. Information for the reinsurers was poor at this time and so it was difficult to find out which contracts were multi year and how many years were covered. Where information on the number of years covered was available it tended to be incomplete. For example,
at best for a reinsurance contract it may have been possible to find out the average term of the underlying policies.

Another issue was that at the time direct insurers were attempting to maintain premium by offering lower deductibles and higher limits. This resulted in the severity of claims increasing alongside the frequency.

3.5.3 What happened next

Setting reserves at this time was largely subjective as there was limited data available in relation to underlying contract lengths. Over time, when more data was available, actuaries started to use an accident year profile combined with a benchmark to calibrate to an underwriting year reserve. This was only possible when the contracts were more mature.

The other added complication was the increased exposure per policy – the underwriting limits allowed were fully exposed more frequently. Standard actuarial reserving methods like the Bornhuetter-Ferguson typically used premium as an exposure measure but for these policies, exposure per policy would have been far more effective and possibly have led to less “dampening” of the emerging experience than using methods that relies on a prior expectation of ultimate losses. Alternatively, adjusting the premium used in the Bornhuetter-Ferguson method for explicit rate changes and underlying exposure would also have been useful.

Due to the late emergence of data on this issue, the portfolios deteriorated from initial reserve estimates.

3.5.4 Lessons

The lessons the actuary took from this experience were:

- The problems were particularly exacerbated by poor data on the underlying exposure.
- In order to identify the issues sooner and prevent the deteriorating portfolios, a more detailed level of information would be required. For example, a policy download from cedents with full exposure information by changing underwriting year would enable multi year contracts to be identified.
- More attention was needed to understand if the data within years are homogeneous. It may not be enough to simply look at underwriting guidelines.
- In general, the lack of data was a concern for the market as a whole. The wider implications on the business have been to increase controls and create more accountability for underwriters. In some cases, the issue increased the recognition of actuaries within a company and highlighted the different areas they could be utilised.
- Actuaries have become more aware of issues such as multi year contracts arising and therefore, especially within the treaty casualty market, the reserving has been influenced by this.
- When applying standard actuarial reserving methodologies, actuaries should consider whether typical exposure methods are appropriate and if other methods not usually considered in early development years for long tail classes (eg chain ladder) may still be useful and provide additional insights to the experience.

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3.6 Case Study 5: Cashback Policies

3.6.1 Background
Cashback policies have been widely written on extended warranty products for a number of years. Although terms and conditions vary the broad operation works as follows: an extended warranty is sold with a ‘cash back’ bonus, often used as a marketing device. If the policy remains claims free throughout the warranty period then the policy holder is able to claim back the original premium amount after a fixed number of years, say five, and usually within a defined period, say six months.

3.6.2 Issues & Implication to Reserving
Despite returning the premiums to policyholders, the policy can be profitable where a significant number of policyholders fail to submit the appropriate forms to claim back their premium subject to investment performance and pricing assumptions. Due to the long policy period and the time lag receiving cash-back claim form, reserving for such claims is dependent on a number of assumptions and benchmarks in order to assess the likely proportion of claimants that will make a cash-back claim. These assumptions are difficult to verify at the onset of the policy until the warranty period expires – as such any errors in the assumptions will be compounded for each accident year period until the experience on the first year can be observed.

There is a risk in the way these policies were marketed that there was unfair representation by the insurer or unfair policy terms resulting in mis-selling of policies. This would lead to closer scrutiny by the regulator with political implications.

Furthermore as the number of these policies was small and so in some cases did not appear to be material to the insurer, they were often hidden in a grouping with other business.

3.6.3 What happened next
A number of these policies in the UK were reserved based on benchmarks which later proved inappropriate. In particular cultural differences between the countries where the benchmarks were obtained and the countries where the benchmarks were applied dramatically affected how well the policy forms were safeguarded and returned at the correct moment. For example, the claim rate in Germany was much higher than the available historic UK rates.

Publicity around the cash-back policies over the period when policyholders could claim prompted a larger number of policyholders to claim. For instance, bad publicity around the fairness of short periods to claim the cash back and refusal to pay claims to those who were only slightly outside of the period led to wider awareness of the policy terms and conditions. In some instances the policies were sold through a retailer who kept details of the purchasers and contacted them during the claim period as a reminder and to market upgrade products.

As the policies entered the period for cash back claims the experience deteriorated in comparison with the benchmarks used for pricing and reserving.

Some of the policies were written through a captive insurer and reinsured into the London market and Lloyd’s through a stop loss policy. As such there was a gearing effect of the poor performance and much of the deterioration flowed straight into Lloyd’s
where the three year accounting rules had concentrated the original cash back policy years into a single open year.

3.6.4 Lessons
The lessons that can be taken away from this case study are:

► Always seek to understand the policies by discussing with those with front line experience – in this instance the retailers understood more of the product than the insurer because they were involved in the sale.

► To always critically review the relevance of benchmarks and consider the level of uncertainty that they introduce. Consider the impact of the realisation of this uncertainty.

► Where classes or subclasses are considered too small to warrant detailed attention ensure that the risks in the class are well understood and consider conducted in-depth reviews on a rotation basis.

► Avoid being wedded to triangle-based reserving methods where the claims development profile doesn’t meet the assumptions or has a far longer tail than the historic development.

► Consider the level of prudence required where there is a significant gap between the date of policy issue and the date at which a claim may arise as this always amplifies any errors in the original assumptions.

► In some cases such as a Part VII transfer, insurers are required to write to the insured with a reminder of the policy conditions and to consider the communication plan in reserving for these accounts. This would have an impact to the re-claims rates and behaviour of policyholders.
4. Interaction with the business for more effective claims reserving

This section explores the interaction between the actuarial reserving function (referred below as "reserving function" or "reserving actuary") and the following key business areas:

1. Claims and specialist areas
2. Underwriting (including Sales and Marketing)
3. Pricing and Catastrophe Management
4. Finance and Management
5. Reinsurance
6. Other parties – Group, auditors, consultants, regulators
7. Capital and Risk Management

The interactions explored can be broadly summarised into three forms:

- Communication – reserve estimates (what they represent, exclude or include), associated uncertainty, discussion of assumption setting.
- Feedback – emerging issues observed in the reserving process to aid other areas of the business, implications for business planning, reinsurance purchase, capital modelling.
- Data & Information – the interactions in collecting inputs and outputs, management information and reporting.

As discussed in section 2, effective claims reserving is about how information is used to improve the diagnostics and application of actuarial methodologies as well as making better business use of the estimates and reserve process.

4.1 Claims and specialist areas

Effective claims reserving lies at the very core of a successful (re)insurance company.

Frequent interaction between the reserving team and claims and specialist areas such as legal, medical, engineering etc. teams can ensure that the reserving actuaries are able to incorporate as much relevant information (qualitative and quantitative) in their estimate of claims liabilities as possible. Often there are claims issues that require input and discussion from both the claims and reserving actuarial teams to form a common view and approach across the organisation. These may be material individual claims or large market-wide issues like North Atlantic hurricanes, sub-prime, asbestos or UK motor bodily injury periodic payments.

Communication with claims and other specialist functions can help the reserving actuaries develop a better and deeper understanding of the underlying issues regarding the claims. There are a number of benefits to a collaborative relationship between the claims and specialists. The three key areas we discuss below are:

- Claims handling procedures and the life cycle of a claim
4.1.1 Claims handling procedures and the life cycle of a claim

The reserving actuary should understand the life cycle of a claim and how a particular life cycle is captured on their data system in order to fully interpret claims development data.

Understanding the life cycle of a claim requires knowledge of the claims handling process, often at an individual claim level. A close working relationship with the claims team can help the reserving actuary understand the implications of the life cycle of a claim and the effects of any changes to the overall reserving process. An example of the life cycle of a claim is shown in the diagram below:

The actuary will benefit from discussing with claims and specialists in detail the treatment of claims by their company’s claims handling teams and how they flow through to data systems. This may differ by class of business.

The more knowledge that the actuary can gain about the treatment of claims, the better they can allow for any changes in processes or limitations in the claims data captured on IT systems.

Consequences and impact to business and reserving

Communication is the key to effective interaction between claims management and the reserving process within an organisation.

If reserving actuaries and claims managers do not interact, actuaries may miss important information or misinterpret things within the data used. By not understanding the life cycle of a claim, actuaries may make allowances for future development that may not be necessary if the claims data is better understood.
If claims teams do not understand the inputs to an actuary’s work they may not know which changes in claims handling practices are likely to affect an actuary’s work and hence may not notify them of these in a timely manner.

4.1.2 Large market loss and catastrophe reserving
When a large market loss or catastrophe occurs there may be many views and opinions regarding the size and financial impact of the event within the company, ranging from management, claims, legal advisors, underwriters, actuaries and so on. Often the clamour for an “early number” can lead to many opinions being presented by many different teams, often on differing bases. As seen in several of the case studies documented in section 2 the claims team and the actuaries need to coordinate at an early stage to ensure that a consistent view is being presented to management. This will reduce contradicting assumptions being used in the reserving analyses and any nasty surprises when results are released. Often the actuaries can add insight on reinsurance or requirements for IBNR/IBNER that may be missed out from initial estimates.

“Normal” large losses often require less intervention from actuaries in that there is little substitute for the expert knowledge of a particular large claim that will be possessed by specialists. The actuary needs to focus on the likely strength of the case reserving, perhaps by reference to the past performance of the large loss triangle, assuming the same case reserving philosophy has been in place over a reasonable amount of time. In many cases a good knowledge of internal claims reserving rules can help interpret the (changing) strength of case reserves.

Consequences and impact to business and reserving
The actuary’s view of the ultimate cost of an event could be very different from that calculated by other internal parties. Allowance for true IBNR, IBNER/R or reinsurance could change a portfolio from being profitable to being unprofitable. Management need to be informed of all financial variables related to large losses or catastrophes at an early stage in the process in order to understand the true underlying profitability of an account and give guidance on the likely current financial year result.

Where management are receiving mixed messages from claims, underwriting and actuarial, it can reflect poorly on all parties and solutions will tend to be imposed rather than developed from a best-practice standpoint.

4.1.3 Key performance indicators and other management information
In many large (re)insurance companies management information are being produced to monitor the performance of claims or special claim projects or initiatives. The actions from special claims projects are likely to change the development data and influence the key performance indicators (KPIs) being monitored.

Where major claims initiatives have been embarked upon it is important that actuaries understand the potential effect that these initiatives may have on their data, be it actual average costs or changes in the speed of settlement. Being pro-active in claims settlement may reduce claims settlement periods, but may cause claims to be settled that may have “gone away” before pro-active settlement was introduced.

In addition to understanding the possible impact of any claims initiatives to the reserving process, the reserving actuary can also provide useful insights and assistance to the claims team. It is important for management and claims to also be aware of the consequences to any changes to the claims process and find ways to measure the effectiveness of any actions.

If claims teams do not understand the inputs to an actuary’s work they may not know which changes in claims handling practices are likely to affect an actuary’s work and hence may not notify them of these in a timely manner.

4.1.2 Large market loss and catastrophe reserving
When a large market loss or catastrophe occurs there may be many views and opinions regarding the size and financial impact of the event within the company, ranging from management, claims, legal advisors, underwriters, actuaries and so on. Often the clamour for an “early number” can lead to many opinions being presented by many different teams, often on differing bases. As seen in several of the case studies documented in section 2 the claims team and the actuaries need to coordinate at an early stage to ensure that a consistent view is being presented to management. This will reduce contradicting assumptions being used in the reserving analyses and any nasty surprises when results are released. Often the actuaries can add insight on reinsurance or requirements for IBNR/IBNER that may be missed out from initial estimates.

“Normal” large losses often require less intervention from actuaries in that there is little substitute for the expert knowledge of a particular large claim that will be possessed by specialists. The actuary needs to focus on the likely strength of the case reserving, perhaps by reference to the past performance of the large loss triangle, assuming the same case reserving philosophy has been in place over a reasonable amount of time. In many cases a good knowledge of internal claims reserving rules can help interpret the (changing) strength of case reserves.

Consequences and impact to business and reserving
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Consequences and impact to business and reserving

It is understandable that if management information provided by the claims team is giving a different and conflicting message to that presented by the reserving team, it would create confusion and possibly incorrect decisions made by stakeholders.

Lack of understanding or appropriate allowance for any changes to the claims process may lead to ultimate costs for certain classes being under or over-stated. This can particularly cause an issue where profitability of a class is borderline and thus the performance of the book is highly sensitive to the reserve estimates. Management also need to understand the extent in which the impact of any initiative is already incorporated in the reserving actuary’s work and avoid double counting potential benefits.

4.2 Underwriting (including Sales and Marketing)

Underwriters can have a varying degree of influence depending on whether we are referring to personal lines or the London Market. In personal lines, underwriters may get involved in overall strategy and difficult/unusual risks however in the London Market they will look at and price each individual risk.

Areas we will discuss below are:

- Understanding business written
- Understanding changes
- Terms and conditions
- The rumour mill
- Buy-in for reserving

4.2.1 Understanding business written

Underwriters are the people closest to the business and hence can provide detailed information at an individual risk or portfolio level.

The information requested from underwriters may vary depending on IT systems and the information already captured there, however it is always worth having the discussion to ensure that the systems are being used as you had assumed.

Some of the things which an actuary should usually ask (but the list is not exhaustive) are:

- Intended loss ratio – although this should generally be tested and validated, it provides a useful starting point, especially for new business.
- Mix of business between geographical locations, subclasses of business
- Limits or excesses
- Line sizes
- Any multiyear contracts
- Any delegated authority business

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- Limits or excesses
- Line sizes
- Any multiyear contracts
- Any delegated authority business
Consequences and impact to business and reserving
Fundamental to proper reserving is understanding the underlying business; lack of understanding can lead to incorrect conclusions.

When applying benchmarks, in order to find the most appropriate match you must understand exactly what is within your own book of business. An inappropriate benchmark can result in under or over reserving.

Multyear contracts would also lead to longer exposure periods and hence longer development patterns.

4.2.2 Understanding changes
As well as understanding the business, it is important to understand where the business changes. This can be obvious changes such as a different mix of business, or more subtle such as limits and excesses remaining constant but line sizes increasing.

Consequences and impact to business and reserving
Of equal importance to initially understanding the business being written is understanding when and how the business changes. Often the key assumption in reserving is that the historical data is representative of the current mix of business. If the mix of business has changed over time then reserving assumptions for example, development patterns and starting loss ratios may no longer be appropriate and lead to incorrect reserves being posted.

It is generally useful to set up a feedback loop with underwriters so there is a process by which the actuarial team are informed of significant changes in the business.

4.2.3 Terms and conditions
Quoting from the GRIT paper, “The Terms And Conditions of the business are important for understanding what has been written. But keeping track of changes in Terms and Conditions is always difficult.”

Terms and conditions are the areas of contracts which can often slip during a soft market leading to more risk accepted with no change in premium. Capturing these is extremely difficult as they are often small changes which are individual to each risk.

The only people who are going to know whether terms and conditions are changing above what can be recorded on IT systems are the underwriters. They will generally have a view on the overall marketplace and their book of business.

Consequences and impact to business and reserving
It is very difficult to allow for changes in terms and conditions however the reserving actuary should generally have an idea about which direction the changes are going. Incorrect views on changes in terms and conditions can essentially mean exposure bases are underestimated or a likely increase in claim frequency/severity is not incorporated into the reserves.

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4.2.4 The rumour mill
Within the London Market underwriters will become aware of issues, often before they become claims. This is especially true in reinsurance, where cedents may not formally notify reinsurers of a potential problem but instead have an “off the record” discussion.

Using this information can enable reserving actuaries to begin allowing for potential losses before they are notified, hence better understanding the true IBNR provision.

Consequences and impact to business and reserving
The difference between using this information source and not may be minimal in many cases, however it is a question of proactiveness. In some cases making provision for these types of loss may be inappropriate; however making management aware of the potential for adverse reserve movement is a valuable part of the reserving process.

4.2.5 Buy-in for reserving
Although reserving must remain independent of the underwriters, having their support is extremely helpful for gaining the buy-in of the wider business.

A good relationship with the underwriters can generally be built by investing the time in explaining the reserving process and decision making. This allows underwriters to focus on areas where they believe the assumptions to be incorrect and provide evidence of this.

It is important to remember that the underwriters will generally have a particular view either to increase or decrease the loss provision, hence the arguments presented will often be one sided. Actuaries should always bear this in mind when discussing changes to the reserving assumptions with underwriters.

Consequences and impact to business and reserving
There may be very good reasons why actuaries and underwriters disagree about the appropriate level of reserves for their account. However, where possible, agreement will make the process of agreeing reserve with management a smoother, more efficient process.

Taking the time to try and agree reserves is also a key step in building relationships with the underwriters. This will also ensure that the feedback loop between underwriters and the reserving team remains intact facilitating the passage of information regarding new business and changes in mix of business.

4.3 Pricing
In many companies the pricing and reserving teams work separately and as such need to interact to ensure more effective reserving and pricing. The work completed by each team has many overlapping aspects, often requiring assumptions for the same parameters yet both teams may be exposed to differing data sets. We do note that for some companies there is an explicit separation of reporting lines to ensure some independence between the reserving and pricing areas.

Interaction of pricing information for reserving assumptions as describe in further detailed below, including:
  - Initial expected loss ratios
  - Development patterns

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Interaction of pricing information for reserving assumptions as describe in further detailed below, including:
  - Initial expected loss ratios
  - Development patterns
4.3.1 Interaction of pricing information for reserving assumptions

There are many assumptions that are used in both pricing and reserving. The pricing team will often be able to inform the reserving team of useful information, for instance, changes in the mix of business and terms and conditions.

A key assumption used in reserving is the prior loss ratio (BF Prior/IELR) that feeds into the BF estimate. The loss ratios produced by the pricing team can be a good starting point for this estimate especially if a given class of business does not have enough relevant historical data.

Other assumptions that the pricing team will have information on which may be of use to the reserving team include development patterns, rate changes, claims size distribution and inflation assumptions.

Consequences and impact to business and reserving

Assumptions used in pricing will inevitably be on a different basis to those required for reserving, i.e. pricing assumptions may target best estimate whereas reserving assumptions may demand more prudence. This therefore should be taken into consideration.

The reserving and pricing team may also use different sub sets or segmentation of the data (e.g. mapping of classes of business) and as such produce differing assumptions which cannot easily be shared across teams.

The interaction between the pricing and reserving team will ensure consistency in the assumptions used albeit on different bases.

4.3.2 Feedback loop for emerging issues

The pricing team should be able to inform the reserving team of various issues that arise whilst undertaking the pricing of key risks. They will potentially be able to gather more information from the underwriters and/or other parties (i.e. brokers) than the reserving team. This would include items such as changes to terms and conditions, line sizes and limit profiles.

The reserving team should be able to inform the pricing team of various issues that arise whilst undertaking the reserving of each line of business. The reserving team should be able to identify issues such as changes to claim frequencies, claim severities and new types of claims emerging etc.

Consequences and impact to business and reserving

The information exchanged from the pricing team to the reserving team will enable the reserving team to be better informed on how the book is changing and will affect their assumptions used in reserving, it could affect the most recent year of account materially.

The information exchanged from the reserving team to the pricing team may lead to the pricing team amending their assumptions on certain risks. This may then provide an
additional feedback loop to the reserving team where the reserving team are using information from the pricing team to set prior loss ratios.

The feedback loops between the teams will ensure that both teams are producing more informed assumptions and this will help maintain credibility to other areas of the business.

4.3.3 Data consistency checks

The reserving and pricing team can essentially be using the same data. If this is the case then any errors can be identified more easily (as more scrutiny of the data) and eliminated.

One team may have access to more data which may be of use to the other team. Interaction between both teams will ensure more informed decisions can be made and more independent scrutiny of the data.

Consequences and impact to business and reserving

Data consistency checks will ensure more robust pricing and reserving from a data credibility view point. Key assumptions are often based on historical data and as such both teams will benefit from the knowledge that the data is likely to contain fewer errors if it can be reconciled with another data source.

4.4 Management and Finance

Two key stakeholders for the reserving function are management and the finance area.

A strong relationship between the reserving team and management and finance will allow all parties to have the most appropriate information for inclusion in their decision making processes. It is vital effective two-way communication occurs between these parties.

Management and Finance often utilise the technical expertise, knowledge of the business and judgements of the reserving actuaries. Similarly, input from Management and Finance are important contributions to the reserving process. By developing these relationships, Management and actuaries can share knowledge and understanding of business/industry issues. We believe this pooling of knowledge and expertise should be to the benefit of the company.

The interactions we explore are:

- Management
- Finance
- Business and Operational Planning

4.4.1 Management

Management of the company are ultimately responsible for the held reserves, and will have final sign-off on any variation above or below the recommended actuarial best estimate. The reserving actuaries should communicate the basis of the “best estimate” reserves ie what the estimate allows for and the uncertainty and risk attached.

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In some cases implicit margins exist within the actuarial assumptions (eg undiscounted reserves), although post-Solvency II this should no longer be an issue. Reserving actuaries may currently be asked to separate these out between a “true” best estimate and risk margins. In practice this can be difficult.

When setting the held reserves of the company Management may have other considerations in addition to the reserves recommended by the reserving actuaries. These may include risk appetite regarding the volatility of the reserves, knowledge of possible commutations, a desire to stabilise results over time and targeting of a particular combined operating ratio for the business in line with business plans.

The “target” results may have previously been communicated to investors and the wider investment community and therefore Management are under pressure to deliver this. Therefore there may be a desire to manage the reserves volatility.

Management sometimes (although certainly not always) focus on the “big picture” as they tend to be most interested in the company or group result. Therefore they may only wish to see the reserves split into the significant businesses for their company. This may be high level product e.g. motor, property, and liability or by country depending how the business is structured.

Consequences and impact to business and reserving

Actuaries need to be commercially aware of the impact of their recommendations and influence in the business, and not take a ‘black box’ approach based solely on statistical results. We believe judgement should be exercised – do the results feel right? Actuaries should be able to explain why their views have changed since the last reserving exercise (including but not limited to data and model change effects and other external influences), particularly when the actuarial projection is moving out of line with management expectation. Management may lose faith with the actuarial reserving process it perceives does not really understand the underlying business or the volatility from that changes in their assumptions.

Reserving actuaries should seek to understand the reasons and sentiments behind any management adjustments applied to the best estimate result when booking the reserves. The actuary would generally have input to this process, and should also have feedback from management on the reasons behind any decisions. Margins may be needed to make greater allowance for risk factors and uncertainties deemed too extreme to be fully included in the best estimate reserves. Actuaries can assist management in attempting to quantify these factors and the additional reserves which should be held for them.

When setting their reserve recommendation the reserving actuary will often have external pressures. If their recommendation does not align with the Management’s target result there may be pressure placed on the actuary, and a conflict of interest may arise with the actuary’s professional standards and any statutory role they have. In these cases it is important that dialogue(s) with management takes place as early as possible, and that these are clearly documented. It is important to maintain independence and transparency in the process.

 Ultimately the final decision on the level of held reserves lies with management, however the responsibility of communicating the overall result can fall to the reserving actuary.

When considering the risk factors and their potential impact the actuary needs to ensure that each factor is appropriately discussed with management and documented. There is
a risk that only factors which give the result desired will be selected, or the financial impact will be assessed at a lower level.

When supplying information to management the actuary needs to provide the information at an appropriate level of detail for their needs. This may be at a more aggregated level than is used for the reserving analysis, which will be meeting other business needs and so may be more granular. Proportionality and materiality should be considered, although care needs to be taken to ensure that one do not miss a lot of small issues which together become significant.

4.4.2 Finance

A key interaction between reserving actuaries and finance often relates to how reserves are booked in the company’s accounts, once a decision on level has been agreed by management. This may be more frequent with a monthly reserve booking but a quarterly reserve committee process with management. The reserve booking will also tend to be at a lower level of detail than used for reporting in the company, so may be split by product, sub product and operating company or business.

Given the short reporting deadlines often in place, a roll forward from the last completed actuarial analysis may be used. This can be performed by the reserving actuaries or the finance team. If not calculated by the actuaries it is important they provide sufficient information to allow the booked reserves to be calculated, discussing any factors used or assumptions with finance and appropriate reconciliations and checks on the results are performed.

Actuarial reserving exercises will often feed directly into finance, and so any delays in producing these figures may reduce the time available to finance. Again, communication of potential delays to the finance department is important as early as possible.

Finance may also provide key performance indicators and other statistics to the business to aid with their management and operation, e.g. to underwriting looking at sales and profitability. Reserves form a part of this so the actuaries may be asked to input to the commentary accompanying the data.

Consequences and impact to business and reserving

The Finance department’s chief concern is often the accuracy of the reserves booked to the company’s accounts, and that these reserves are at the expected level. The company may also have Sarbanes-Oxley or Financial Control Framework requirements in place.

Actuaries often need to ensure appropriate documentation and audit control is maintained, to allow reconciliation of the booked reserves back to the reserves set by the reserve committee. When discussing the reserves with finance it is worthwhile for the actuaries to consider the appropriate level of materiality and detail required.

Any commentary provided to support the management reports produced by finance should be at an appropriate level of detail and content for the target audience. More detailed questions on the result are often best taken off-line and discussed on a one to one basis, so addressing directly the needs of the individual concerned.

The commentary should be designed to support the figures so should detailed any issues the audience should be aware of that may impact how they manage their business and any decisions they may make.
4.4.2 Business and Operational Planning

Reserves and future claims levels (claims ratios) form a key part of the business planning for the company. This is both for current reserving levels and how they are expected to change over time based upon company and market actions.

Although the final plan may be at a high level it will usually be built up from individual product or operating company level plans, so the level of detail and input provided by the actuaries will need to be appropriate to these needs. There may also be a need to transform the reserves from the standard reserving classes to those used for planning such as if a product is reserved in totality but split by broker and direct sales for planning purposes.

Consequences and impact to business and reserving

Business and operational planning is a key business tool both for internal management and for external discussions with regulators and rating agencies etc. Therefore it is important that the reserving input is fit for purpose.

The company will often base its ongoing strategy and business operations using this plan, so the reserving inputs need to be appropriate and clearly understood by all stakeholders.

The starting point of current reserve levels and claims ratios will have been discussed at recent reserve committees and reserve review meetings with the business, so there should be a consensus of views. Subjectivity then enters into the projection of the claims ratio for future years in the plan. This is when discussion with the business (Pricing, Underwriting and Claims departments) is required to debate and agree the assumptions for premium rate changes, claims inflation and risk mix changes as these will all impact the claims ratio. The ratio may also be impacted by any expected prior year reserve releases or strengthening which will impact future year claims ratios.

4.5 Reinsurance

For some companies, the reserving function is only responsible for the estimation of the gross reserves and the reinsurance estimates are provide by another business area. Where the gross and net reserves are the responsibility of the reserving function, the Reserving Actuary needs to fully understand the underlying reinsurance programmes and key issues relating to the expected recoveries.

The three main areas we explore are:

- Understanding the reinsurance structure
- Differentiating and communicating gross and net uncertainty
- Feedback to the reinsurance managers

4.5.1 Understanding the reinsurance structure

For consistency it often makes operational sense for the reserving function to calculate both the gross and net of reinsurance claims reserves. However, in some cases, it will be another team that performs the administration (purchase and maintenance) of reinsurance covers. For the purpose of this discussion, we will assume a separate
“reinsurance team” are responsible for the reinsurance administration, although the same principals will apply if this is not the case.

Although it is sometimes possible to project reinsurance or net claims using aggregate triangulated data and conventional actuarial techniques, the reserving actuary will need to consider whether this is appropriate. For some portfolios, a lower level of granularity is required and the reserving actuaries will need to fully understand the reinsurance structure to accurately reflect this in their analysis and calculation of net reserves. The information needed will include, but is not limited to:

- Classes/policies covered
- Exclusions of cover
- Inception/Expiry dates
- Basis of cover (e.g. claims made, risks attaching during)
- Type of cover (e.g. proportional, excess of loss)
- Specifics of the contract e.g. cede percentages, excesses, limits
- Reinstatements of cover and corresponding reinstatement premiums

This level of detail will not always be available or practical for use in estimating the net reserves. In any case, a high level appreciation of the reinsurance programme is crucial to ensure consistency of the assumptions between policy or claim cohorts and to the gross reserves. The reserving actuary will need to consider how best to gather and use the information available. At a minimum, data split between proportional and non-proportional programmes may enable a different methodology to be used for proportional and non-proportional (ie excess of loss) reinsurance.

Consequences and impact to business and reserving

Reinsurance recoveries are an offsetting asset to claim liabilities and can be a material item on the balance sheet. Inaccurate or inconsistent reinsurance estimations can lead to misstatement of results and inaccurate profit figures. These in turn can lead to inappropriate business decisions made over underwriting, cashflow management, purchase of future reinsurance protection and commutations of policies or contracts.

The impact on future reinsurance purchasing can be significant leading to inappropriate reinsurance protection with either excessive cost for relatively little benefit, or inadequate cover exposing the business to risk which it did not intend to take.

Similarly, inaccurate calculations of recoveries could lead to commutations being suggested/agreed which prove to be a poor deal for the business or expose the business to risk which it is not intending to take.

There is also the potential financial cost to the business from reinsurance recovery leakage, where valid recoveries are missed.

All of these items help to build credibility with the business when done accurately.

4.5.2 Differentiating and communicating gross and net uncertainty

There are many stakeholders who are interested not only in the absolute value of the reserves, but also the potential for future deterioration (or improvement). This is usually

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quantified by a combination of explicit stochastic reserving and individual claim analysis.

Using an example where a significant loss to the company has been quantified between £10m to £20m. If reinsurance protection exists on a £20m x £10m reinsurance contract, while there is considerable gross uncertainty, the net uncertainty will be greatly reduced and possibly insignificant.

Although it is important to communicate to management the gross uncertainty, it is also key that they are aware of where reinsurance protection negates/mitigates this and where substantial net uncertainty exists. Where reinsurance protection is being utilised it is important to remember offsetting factors such as reinstatement premiums and reinsurance bad debt when communicating the net position.

**Consequences and impact to business and reserving**

An understanding of net and gross uncertainty allows reserving and management to focus appropriately on the issues which could impact the financial results and the reserving actuaries can help facilitate this in their role.

**4.5.3 Feedback to the reinsurance managers**

The reinsurance managers will need to fulfil reporting requirements to their reinsurers.

Different companies will have different data systems, so the level of reporting from actuarial to the reinsurance department will differ. Where the reserving function is responsible for preparing the gross claims data in some way, they will either need to provide this to the reinsurance managers or provide details of incurred reinsurance recoveries after processing themselves. In other circumstances, the data will be available from IT systems, so the actuaries will just need to provide gross IBNR.

The reinsurance managers may also need to notify reinsurers of any potential large claims. There is usually an agreed threshold for any IBNR claims to be reported to the reinsurer.

**Consequences and impact to business and reserving**

Incorrect reporting to reinsurers can damage relationships and ultimately could lead to coverage being denied such as under non-disclosure clauses. It is essential that accurate figures are provided in a timely manner to enable the reinsurance managers to fulfill their obligations.

As with all interactions, providing the requested information in an accurate and timely manner is conducive to a better working relationship.

**4.6 Other parties – Group, auditors, consultants, regulators**

Companies are required to provide quantitative and qualitative information to external parties such as, but not limited to rating agencies, regulators, consultants, the media and the auditors of the organisation. It is often necessary for the reserving function to manage the dialogue with these parties. A major part of the quantitative information often relate to claims and reserving, which tend to be the largest liability item in the balance sheet. The reserving function is usually involved in the communication of this information due to their knowledge and expertise in the area.

quantified by a combination of explicit stochastic reserving and individual claim analysis.

Using an example where a significant loss to the company has been quantified between £10m to £20m. If reinsurance protection exists on a £20m x £10m reinsurance contract, while there is considerable gross uncertainty, the net uncertainty will be greatly reduced and possibly insignificant.

Although it is important to communicate to management the gross uncertainty, it is also key that they are aware of where reinsurance protection negates/mitigates this and where substantial net uncertainty exists. Where reinsurance protector is being utilised it is important to remember offsetting factors such as reinstatement premiums and reinsurance bad debt when communicating the net position.

**Consequences and impact to business and reserving**

An understanding of net and gross uncertainty allows reserving and management to focus appropriately on the issues which could impact the financial results and the reserving actuaries can help facilitate this in their role.

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As with all interactions, providing the requested information in an accurate and timely manner is conducive to a better working relationship.
The ways we can ensure good interaction and communication with ‘other parties’ include:

- Submission of information to external parties
- Demonstrating and receiving feedback on reserving processes to Auditors
- Internal Reporting and communications with head office/group and other entities or business units

4.6.1 Submission of information to external parties

The reserving function is often responsible for gathering and preparing information to be submitted to external parties on a periodic basis such as regulators (in the form of insurance returns), external auditors (for data and documentation) and rating agencies (input into presentations or other documents). Their in-depth knowledge regarding the company’s reserves means they may also be involved in meeting with these external parties to discuss the information provided and answer any queries. These meetings with external parties generally have a significant influence on their view of the company and in particular the held reserves.

Consequences and impact to business and reserving

Actuaries can assist to positively manage relationships with external parties by ensuring that information on reserves communicated by them is both correct and provided in context. This includes making sure that the information is clearly understood by the people that will be directly communicating with these external parties, if it is not themselves.

Actuaries need to understand and manage the expectations of external parties. For example, the company risks reputational damage and a penalty for late submissions to the regulators if returns are incomplete or late. In the case of an external actuary performing the valuation or providing an actuarial opinion on the company’s reserves, the company needs to understand the reasons behind any concerns and where applicable, provide further quantitative or qualitative information to resolve the issues.

Companies benefit from effective communication with regulators, external consultants and rating agencies. Feedback from external parties also allows actuaries to gain industry knowledge and understand areas of differences with competitors.

4.6.2 Demonstrating and receiving feedback on the reserving process to auditors

An insurance company’s claims reserve is typically the largest liability item on the balance sheet. As such, the Reserving Actuary is required to help external auditors build confidence in the company’s reserving processes and controls. This involves the actuary providing information and documentation to the auditors, attending meetings to discuss the reserving processes and controls and receiving feedback from the auditors on a periodic basis. Ultimately, the auditor may have a different opinion on the company’s held reserves (within materiality limits) but the auditor has to have opinion of the company’s reserves.

Consequences and impact to business and reserving

Actuaries need to fully understand the expectations from the auditors and the regulators of its reserving processes and controls. As the company receives external opinion of its reserving processes and controls, it’s reserving processes should become more

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rigorous and become closer to best practice as it addresses the shortcomings from the auditor’s or regulator’s feedback. Timely communications and actions taken early can prevent potential audit sign off issues and hence avoid penalties from the regulator and reputation damage to the company.

The actuaries will also gain knowledge on key market issues and benchmark information from the auditors (and consultants), the robustness of the company’s reserves will improve by reflecting this additional market information.

4.6.3 Internal Reporting and Communications with head office/group and other entities or business units

Companies that manage their business via business units, divisions, branches or subsidiaries will usually require results to be reported to head office or the group management functions periodically. These results are usually consolidated and used for strategic and monitoring purposes and allow the analysis of the ‘big picture’, which will flow back down to individual business units.

For claims reserves, the reserving function would normally provide information according to reporting instructions. This requires understanding of timelines for reporting, structure and contents of information required. Some insurance companies are also required to perform reserving work under guidelines or certain standards which apply across all entities within the same group. Typically, actuaries would need to discuss with the head office and other business units to seek clarification on matters, and to achieve consistency of reporting amongst entities.

Consequences and impact to business and reserving

The Actuary’s choice of reserving assumptions could be different to the recommended guidelines from head office. The Actuary should consider the appropriateness of the reserving guidelines to their portfolio and communicate any differences and justifications of the Actuary’s own assumptions to the head office. The reserving guidelines are likely to be fine-tuned over time through iterations of feedback from business units to the head office.

The aggregated results for the group could give a misleading picture if business units do not report the results correctly in a timely and consistent manner. This will increase the risk of setting inappropriate strategies that will have negative long term effects.

4.7 Capital and Risk Management

In many companies the reserving and capital teams are structured together as part of an Actuarial Finance function. Even within a common management structure improving the interaction between the teams will lead to more effective reserving and capital modelling. The capital team rely on many inputs from the reserving process in their capital modelling.

The risk management team should also work closely with the reserving team to reduce and mitigate risks in the reserving process.

Key interactions with the business should include:

- Exchange of information and feedback for capital modelling
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There are many common assumptions used for both reserving and capital modelling. Using the same reconciled data will ensure consistency and aid in reconciliation and validation of the data and the outputs from the modelling.

Consequences and impact to business and reserving

Reserves form a key component of the liabilities in the capital model. It is important for the reserving actuary to share the basis of the reserves supplied, as both best estimate and booked reserves which may include a risk margin are used. The assumptions used in calculating these reserves will allow the capital actuary to determine if any adjustments are required for their modelling. For example, to determine whether any risk allowances can be offset when calculating diversification benefits between portfolios or regions.

Reserving and capital actuaries may both require the base data triangles. Using just one set will ensure consistency and make reconciliation easier. There may however be a need to consolidate the data if the capital modelling is performed at a more aggregated level than the reserving team operate at. It may also be required if capital modelling is based upon a regulatory or company entity structure whilst reserving is on a management reporting structure, which may then require transformation, to get the required basis.

The capital team also require future cash flows of how the reserves will be paid out in future. Current market reserving process is often focused on estimating the level of total reserves and not necessarily concern with on pattern of the future payments. It is therefore important that appropriate understanding and rigor is applied by the reserving actuary when setting the payment pattern as they are aware that it will also be used in the capital models.

The capital team will use these payment patterns in their models. They can therefore provide a valuable feedback loop to the reserving actuaries, providing information on how actual payments in the year compare to those assumed in the patterns.

4.7.2 Processes and controls around reserving

Risk can work closely with the reserving team to develop a best practice approach to the reserving process and methodology. This will include:

- Validation of data throughout the reserving flow starting from the extract of the data from the insurers’ claims and policy data, through the reserving triangles and calculations to the final reserves booked in the companies’ accounts.
- Validation and testing of models and spreadsheets to minimise the risk of coding or other errors.
- Ensure clear and detailed documentation of the reserving process is produced and updated whenever changes are made.
- Ensure that there is ongoing discussion, challenge and debate with the business including underwriting, pricing and claims.

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- In addition to confirming the correct data has been used in the reserving process, it will aid the external audit as it provides a full end to end picture of the reconciliation of the data.
- By testing models the risk of errors is minimised so ensuring the calculations used to calculate the reserves are operating as expected and coded by the reserving actuary. This will provide confidence in the reserves presented to the management and used elsewhere in the business, whilst assisting with external audit signoff.
- Detailed and up to date documentation will aid the reserving team especially new members joining, whilst providing a reference for those more experienced. This will help to ensure processes are operated and planned so reducing the risk of reserving error.
- Risk can act as a facilitator to these discussions with the business, to ensure they happen regularly and that the appropriate people attend and participate effectively. This will help to reduce the risk of missed information which should have been considering in the reserving decision making process.
- We note that the extent to which the internal audit function is involved will vary by company.

4.7.3 Signoff of reserves by reserving and management

A formal signoff process with its supporting documentation will benefit both reserving and management. It allows the key features and assumptions made when setting the reserves to be captured. In addition details of those factors related to risk factors and how these input to the selected risk margin should be documented along with rationale for change since the previous period.

Risk can act as facilitators and auditors of this process to ensure it is working effectively. They can ensure that the reserves booked in the accounts are those expected by the reserving actuary and management.

Consequences and impact to business and reserving

By not have a robust process there is a risk of errors in the reserves set in the company accounts, or not having sufficient information or rationale for why the decision was made. This may also be required for external parties including auditors and regulators.

4.7.4 Peer Review

Internal or external peer reviews could be used to constructively challenge the assumptions and judgments made by the reserving actuaries. For the reserving actuary, it is worth checking if there is sufficient and appropriate evidence on which to base a conclusion, referring to both the quantity and quality of evidence.

This review can be performed or facilitated by Risk depending upon their actuarial knowledge and skills. They may therefore just oversee the work which is performed by another part of the business.

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Consequences and impact to business and reserving
Performing peer reviews will allow an independent view of the reserving and may identify areas for future development for the reserving actuary to allow them to be more effective in future.

It may also identify any areas which may need to be investigated or reviewed in future.
5. Ideas for best practice

There are a number of overriding principles which will be valid for any relationship. These include timely response to queries, proactivity and regular two-way contact.

In this section we will review the interactions discussed in the previous section and suggest ideas for best practice to help build, maintain and get the most out of these relationships. Where appropriate we will consider some questions which may be useful to incude in conversations with the relevant parties.

5.1 Claims and specialist

Claims Handling Procedures and the Life Cycle of a claim

It is generally considered best practice for the reserving team to build relationships with the claims teams at the earliest opportunity. Both sides can usually benefit from an understanding of the processes of the other. Reserving actuaries should understand the key performance indicators (KPIs) on claims reserving effectiveness, the structures of their claims teams and the reasons for this structure. The claims teams should be aware of the benefits and limitations of the actuarial analysis. This will include understanding the requirements of the actuaries for consistent case reserving practice and keeping actuaries up to date with any changes as these can significantly affect development patterns and hence actuarial estimates.

There is no set way to establish this working relationship, but good interaction will usually consist of regular formal meetings between claims and actuaries (of which minutes to the meeting should generally be kept for an audit trail). This will also usually be combined with more regular informal catch-ups between key stakeholders. Both teams may also benefit from spending time sitting in the other department.

The types of questions which may be helpful in discussions with claims teams will depend on whether the business is personal lines or London market, direct or reinsurance. The following questions could be asked of a personal lines claims team:

- Notification of claim
  - When the First Notification of Loss occurs — how does this claim get recorded?
  - Incident Date — how is this allocated, particularly on a late reported claim?
  - How is the peril or claim type determined and can/does this change in the future?
  - How is the initial reserve set up?
  - How is it checked if a claim is valid?
  - What happens if it looks like it will be a large claim?
  - What are the heads of damage — windscreen, escape of water, freeze etc

- Case Reserving
  - How and when will a true case reserve be moved to?
  - How often will this get revised?
  - What would trigger a revision?
  - What happens if a recovery is anticipated?
  - What is exactly included in the case reserve?

- Payments
  - How do payments occur and how are these recorded?
  - How does co-insurance/Reinsurance get recorded?

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Large Loss and Catastrophe Reserving

A good model for interaction on catastrophes involves requests for information on estimates going to a single point of contact. Often this is a senior member of the claims or actuarial team. It is important that before the information goes back up to senior management that consultation occurs with all concerned parties to ensure that the information presented will take into account everything that will make up the cost of those claims. Interaction with Finance will then occur to ensure that attempts to “book” an estimate have been passed by both claims and actuaries.

Often, an estimate will be required soon after a catastrophe. Although all parties should generally be consulted, the level of data available for the actuary and the key parties who should be involved will depend on the type of business. In the personal lines market, raw data is usually available relatively quickly from an IT system. The claims team should be consulted for any backlogs but the data is often fed back at an early point. The actuary should be aware of the significant drift which could occur in the next month as late reported claims trickle in and mis-coded claims get re-aligned to the correct causation.

In the London Market and especially reinsurance and retrocession, the underwriters will usually contact cedents/insurers to get the latest estimates of likely insured losses. The claims team will begin handling the claims later as they become formally notified. So the actuary will rely largely on the information gathered by the underwriters and may only be responsible for collating. In order to set an IBNR load, the actuary should consult the underwriters and claims team to try and establish how accurate these estimates provided by clients will be, especially where the underwriters may have qualitative information. Management may also require an estimate before this information is available, in which case the actuary will usually need to consult with the catastrophe risk modelling team who can use their models to establish an initial estimate. The actuary may be able to use actual experience of prior events to estimate the loss.

Claims Key Performance Indicators and other Management Information

Interaction between claims and actuaries can be improved if a common language can be agreed upon. For example, care should be taken that where average claims costs are quoted by either team, it should always be stated if these average costs allow for IBNR. Similar rules may apply to quoted claims frequency, particularly when pricing teams also become involved. Claims frequency could be stated including or excluding nil claims on notified or settled basis and may easily be misinterpreted. Finally, the inclusion of (notional) Loss Adjuster Fees may be required in data for external consumption and pricing needs.

One way of improving communication between claims and actuarial could be to have exchange visits between the two teams. Many actuarial graduate schemes include placement in claims handling teams for a short period and this can only be a positive development. Actuarial teams could actively encourage claims specialists to explore the actuarial work being done in their company. A recent claims away day at a major...
insurer asked if the claims teams had “hugged an Actuary” today. Whilst this may be taking things a little far, a simple coffee from time to time between claims specialists and actuaries can bear fruit.

5.2 Underwriting
Building a relationship with the underwriting team where both teams can openly communicate issues and findings to each other will be invaluable to the reserving process. Key lines of communication will cover:

- Explanation of roles – in order to promote a good working relationship with the underwriting team it is necessary for the reserving team to communicate how the reserving process works and its effect on the underwriters. Often the underwriters will have a stronger relationship with the pricing team as they are a direct recipient of the pricing team’s analysis. It is important for the underwriting team to understand how the reserves feedback into the business.

- Results & Findings – feedback sessions to the relevant underwriting team of reserving results and observations made in the reserving process (i.e. trends in certain types of claims etc) will be of use to the underwriters and will hopefully encourage a feedback loop for underwriters to inform the reserving team of any arising issues they observe.

- Transparency – it is important to explain how changes in underwriting can affect reserves, i.e. changes in terms and conditions, perhaps by performing sensitivity analysis to present to the underwriters. This should enable the underwriters to appreciate how changes in business will affect the reserves both in a positive and negative direction.

5.3 Pricing
Clear communication is the key to ensuring an effective relationship between the pricing and reserving teams, which will promote a better understanding of the issues affecting the business for both teams.

Communication of the following issues is useful to aid the development of a successful working relationship:
5.4 Management and Finance

The Reserving Actuary is responsible for providing a best estimate of reserves to management. However, in a good relationship, the actuaries will not be providing purely this. GN12 provides a summary of what should generally be included in an actuarial report and this gives indications of what should be communicated to management in the course of normal reserving.

Some of the things their communication of the reserves may include are:

- Best estimate reserve
  - What basis the reserve has been calculated on e.g. statutory, local or group reporting, tax authority
  - At what level the reserve is done – product (and possibly sub product), distribution channel, gross or net of reinsurance
  - Whether any implicit loadings or adjustments been applied
    What the key assumptions are which could materially impact the reserve level.

- Analysis of movement since previous reporting period
  - Identify changes in underlying data and claims changes
  - Specify methodology changes in how the actuary has calculated the reserve
  - Quantification of currency restatement impact
  - Any other one off impacts – may be from legislation or other “shock” to the reserve level

- Uncertainty

- Data – it is important to understand where and why differences arise between pricing and reserving data. This will enable the reserving team to more easily recognise weaknesses in the data and rectify any issues that may not have previously been highlighted.

- Assumptions – it is also important to understand the reasoning behind assumptions used by the pricing team eg disease loads in liability, that will also be used by the reserving team. By investigating any differences in opinion, new information may come to light which should enable a more informed decision.

- Results & Findings – communication of results from the reserving team to the pricing team and vice versa will enable both teams to take into consideration the other teams’ findings. Either team may identify a change in the underlying data i.e. an increase in claim frequency for claims in excess of a certain threshold; which may not have been picked up in the other team’s analysis.

- Rest of the business – the reserving and pricing team should communicate to ensure a clear message is being delivered to the rest of the business. It will not be beneficial to either team if “mixed messages” are being delivered to other business users as this could reduce the credibility of both teams and have a knock on effect on relationships with other areas of the business.
At times, it is useful to illustrate the degree of uncertainty surrounding the estimates and sensitivities to changes in key assumptions by use of ranges or scenario testing. This may not necessarily be needed every quarter, however it may be useful with “reverse scenario testing” (ie combinations of scenarios that would make up a “bad” result) to demonstrate to management.

At other times a scenario type analysis may be more useful on certain issues/claims. Here the actuary would normally identify and explain any potential risk factors and quantify the financial impact of each scenario.

The actuary should also highlight where the uncertainty has materially changed between reviews.

Booked reserves

What is the split between Actuarial Indication (best estimate) and Risk Margin

What is the movement amount since the previous reporting period

What is the cause of this movement

Business and Operational Planning

What is the starting point reserves and claims ratios for the business and operational planning

What material assumptions have been made when setting the reserve level

Are there any implicit margins in the reserves. If so, are they quantifiable and if so what is their amount

How does the reserve reconcile to the assumptions made by Pricing and Underwriting on current claims ratios.

The relationship should also be both ways. Management should tell the actuaries what information they would like to see and what will help them make their decisions.

With finance, actuarial should work to provide information in the most convenient way. Also, finance deadlines are generally “hard” deadlines, so it is important to make sure any delays are communicated to the finance team as soon as possible.

5.5 Reinsurance

The relationship between the reinsurance team and the actuarial team is generally based on data provision. The simplest way of building this relationship is likely to be in doing a timely and accurate job in providing information requested. As with all relationships, this should help reciprocate similar standards.

The provision of accurate data will also build credibility with the wider business, but the provision of inaccurate data could result in the actuaries quickly losing credibility. If the business loses money due to recovery leakage or reporting clauses in contracts not being fulfilled which is owing to inaccurate information provided by the actuaries, the financial cost will be quickly evident.

Conversely, the involvement of actuarial in commutations and reinsurance purchasing can provide financial added value to the business.

At times, it is useful to illustrate the degree of uncertainty surrounding the estimates and sensitivities to changes in key assumptions by use of ranges or scenario testing. This may not necessarily be needed every quarter, however it may be useful with “reverse scenario testing” (ie combinations of scenarios that would make up a “bad” result) to demonstrate to management.

At other times a scenario type analysis may be more useful on certain issues/claims. Here the actuary would normally identify and explain any potential risk factors and quantify the financial impact of each scenario.

The actuary should also highlight where the uncertainty has materially changed between reviews.

Booked reserves

What is the split between Actuarial Indication (best estimate) and Risk Margin

What is the movement amount since the previous reporting period

What is the cause of this movement

Business and Operational Planning

What is the starting point reserves and claims ratios for the business and operational planning

What material assumptions have been made when setting the reserve level

Are there any implicit margins in the reserves. If so, are they quantifiable and if so what is their amount

How does the reserve reconcile to the assumptions made by Pricing and Underwriting on current claims ratios.

The relationship should also be both ways. Management should tell the actuaries what information they would like to see and what will help them make their decisions.

With finance, actuarial should work to provide information in the most convenient way. Also, finance deadlines are generally “hard” deadlines, so it is important to make sure any delays are communicated to the finance team as soon as possible.

5.5 Reinsurance

The relationship between the reinsurance team and the actuarial team is generally based on data provision. The simplest way of building this relationship is likely to be in doing a timely and accurate job in providing information requested. As with all relationships, this should help reciprocate similar standards.

The provision of accurate data will also build credibility with the wider business, but the provision of inaccurate data could result in the actuaries quickly losing credibility. If the business loses money due to recovery leakage or reporting clauses in contracts not being fulfilled which is owing to inaccurate information provided by the actuaries, the financial cost will be quickly evident.

Conversely, the involvement of actuarial in commutations and reinsurance purchasing can provide financial added value to the business.
5.6 Other parties

As a general rule, actuaries need to understand their audiences' interest and prepare information and adjust style of communications to a suitable level. For example, the regulators are typically focused on the overall level of reserves, much more than the adequacy or the statistical aspects of the reserves by class of business. Actuaries also need to understand the consequences of their communications to other parties. Understanding the significance of the communications will help the actuary with the preparation and the presentation of information.

With auditors, the actuaries should try to have discussions on a periodical basis and be open to discuss weaknesses of the reserving process and adequacy of reserves. They should also try to make the relationship two-way and draw on the market knowledge of the auditors.

They should actively participate in feedback loops in which they are involved and not be afraid to discuss or raise concerns when appropriate.

5.7 Capital & Risk Management

When communicating the result of the reserving analysis with capital and risk management, the actuary should consider the following items. It should be noted however that this is not an exhaustive list and the actuary should use their judgement in deciding what should be shared.

**Capital**

- Best estimate reserves and booked reserves – should use consistent basis when discussing with Finance and Management
- Future payment patterns:
  - The level of detail required e.g. product (and possibly sub product), distribution channel, gross or net of reinsurance
  - Has total future payment been scaled to the best estimate reserve? You will need to know this as the selected best estimate reserve may not have been calculated using a paid method
  - Is the pattern appropriate for both new business and runoff? If not, consider supplying separate patterns.
- Reserve uncertainty and sensitivities
  - Provide details of any reserve ranges calculated and basis used. These may have been calculated by deterministic or stochastic methods
  - What has been excluded from the calculation e.g. shocks, latent claims and legislation changes. How have these effects been added back in?

**Risk Management**

- Risk factors identified during reserving process
  - What is the risk and source
  - Financial impact on reserves of these risks
- Type of risk e.g. insurance, investment or operational risk
- Indication of likelihood of risk materialising

- Recommendations and suggestions on how risk could be mitigated
  - Impact of risk on the Business
  - Which function does it impact e.g. reserving, claims or underwriting and pricing
  - Process and business operation changes
  - Controls to identify, monitor and mitigate the risk
6. Implications for reserving across international territories

Often working across international territories in reserving creates further complications – it may be due to differences in language, cultural, regulation, accounting, professional requirements or even just idiosyncrasies within each company.

Below are some observations and additional factors the reserving actuary should consider when performing or communicating reserving across international territories.

6.1 Reserving basis

Reserving basis can vary by country and by local or group reporting depending on the valuation purpose. The difference may be due to accounting and regulatory requirements or management may require reserves on a number of different bases for local and group level reporting. The reserving actuary needs to clearly indicate when communicating reserving information the valuation basis of the reserves or what it actually represents. These can be for both internal purposes and external e.g. to regulators and tax authorities. Different reserving bases include:

- A best estimate with an explicit risk margin added to form the booked reserve. The best estimate is usually defined as the mean (expected value) of the aggregate distribution of the unpaid claims and contains no margins for prudence or optimism. For Solvency II purposes, the reserves will be calculated as the sum of a best estimate and a risk margin.

- Reserves that include an implicit risk margin i.e. it is not a “true” best estimate. This can cause problems when used for pricing if the input required for their premium rate setting should be without a margin or any other prudence loadings. Inclusion of a margin will also make it difficult when assessing ongoing reserve adequacy and runoff experience.

- Local accounting and regulatory requirements may specify a particular reserving basis to be used. This can include adding a specified, possibly formulaic, risk margin or discounting the reserves.

Reconciliation between the reserves on various different bases may also be required.

6.2 Regulation and legislation

There may be large differences in the legislation relating to a particular product between countries, which can in turn impact the reserving. For example, in the UK, Personal Accident is an accident only product with clearly defined benefit amounts based upon specific accidental injuries to the insured. In Sweden however, the majority of policies sold include specified health benefits in addition to accident benefits. Claim amount can vary depending upon disability percentage assessed by the state social security and health bodies. If these bodies admit disability then the insurer has to follow. The majority of the claims cost can relate to these health benefits. This Swedish PA product is closer to a Total and Permanent Disability or Critical Illness product in the UK than Personal Accident.

The reserving actuary needs to be aware of these differences and should be discussed with the business, typically pricing, claims, underwriting and management, to understand the particular rules relating to the product in the specific country. As reserving tends to be based upon historic trends and development factors of the claims...
data, this information needs to be historic and not just the current position. A timeline can then be developed indicating dates of historical changes with details of what was changed at those points.

6.3 Product

When reserving in a different country the reserving actuary may not be familiar with the product. As noted in a number of the case studies in section 2, there could be specific product features which would impact the approach and assumptions used in the reserving. The coverage and terms and conditions may be very different and the reserving actuary should take care not to make assumptions regarding the product even if it has the same name as another product in the UK or another jurisdiction.

It is critical that the reserving actuary discusses the product features with the business, specifically the claims, pricing and underwriting teams prior to estimating the reserves.

6.4 Role of the actuary

In some countries the role of the actuary is not recognised or does not exist in the same way as in the UK or US. This may create challenges when dealing with the business as there is not the existing relationship or involvement in the estimating the reserves. The business may be more used to simple formulaic approaches or using of standard actuarial techniques without applying judgement to the assumptions in estimating the reserve. In these instances, the actuary would need to educate or raise awareness of the reserving process (and the related uncertainty) when discussing reserves with the business. There may also be support available from the Group or Head Office level if the local operation is part of a multi-national (re)insurer.

6.5 Communication

When sharing the reserving results with the business the actuary needs to be aware of local customs in terms of communication. There may not be a culture of challenge by the business during discussion of the results. Although setting the level of best estimate reserves is the responsibility of the reserving actuary it is important they receive critical feedback and challenge from pricing, claims, underwriting and management. They may provide insights to the process the actuary has not included in their assumption and decision making process.

Another challenge may be language, especially if the local language is different to for example, the group level where the business language is commonly English. This may not create a challenge in business interactions with management where English is the common business language but can cause problems and miscommunication when dealing with other local areas critical to inputting into the reserving process including pricing, claims and underwriting.

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