

# Actuaries of Smaller Insurers Working Party Report, GIRO 2013

## *Big things come in small packages*



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## 1 Abstract

### 1.1 Purpose of the working party

The “actuaries of smaller insurers” working party consists of members of the UK profession who are either currently working for or have recently worked for an insurance firm that is “small” or has a small actuarial function<sup>1</sup>. The main aim of the working party is to build a network of members who do not have the backup of internal support from large actuarial teams, to provide an opportunity to speak to others who have faced similar situations.

Most of us had previously worked for larger insurers, and therefore have a good insight into the way in which these experiences can differ. Individually we have learned many lessons and made many mistakes, and this paper is a collection of some of the things that we wish that we had known when we started working for smaller insurers. We hope that it helps at least one other person.

There is some overlap between the subject of this paper and that of the 2008 paper “*The Opportunities and Hazards of being a Lone Actuary*” by Winter et al (hereafter referred to as “the *Lone Actuary* paper”), and the working party acknowledges the significant leg-up that that paper gave us. To avoid unnecessary duplication of effort, we have shamelessly plundered its content in developing this paper.

This paper deals with the challenges and possibilities presented by working for a small insurer or even for a small team in a large insurer. The *Lone Actuary* paper focused on professionalism implications of working alone. This paper revisits these issues, but it also covers technical challenges, and describes some of the ways in which members of the working party, in their positions as actuaries of small insurers or in small actuarial teams, have addressed these challenges. The authors work in the general insurance market, so most of the examples are from that market; however many of the issues are equally applicable to life insurance actuaries.

### 1.2 Common themes

The roles of members of the working party cover a wide variety of technical areas. However there are some very consistent themes in our experiences (and the experiences of others whom we have consulted) of working for smaller insurers, or as the first actuary in a company. The main themes are:

- Roles in smaller insurers are challenging, and generally very rewarding
- There is much more variety than working for larger companies
- There is the potential for serious CV enhancement
- There is the potential to innovate and set your own direction
- Visibility and expectation of the actuarial function in a small firm will be high
- Exposure to, or even becoming part of, senior management at an early stage of your career
- Greater interaction with non-actuaries, which means communications have to be clear, concise and often non-technical
- There is always too much to do
- You are unlikely to have any handover
- You can, and are expected to, contribute in areas where you are not an expert
- Data is often less well organised than you would want it to be
- You will have to work with smaller volumes of data, which can make judgements more challenging
- You need to stick your neck out
- It can be professionally lonely

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<sup>1</sup> We have not attempted to define “small”; some working party members work for large insurers who have a small actuarial function. The common factor is that we have faced issues that commonly affect smaller insurers

- Independent peer review / validation is a consistent problem area
- Recruitment can be challenging, particularly at the junior level
- In companies that aren't used to employing actuaries, you may have to fight hard for a suitable CPD budget
- The generosity of typical actuarial study support packages comes as a surprise to many employers
- The job is likely to deviate substantially from the initial job description

Clearly this list includes a lot of factors that some people would find challenging and uncomfortable, and this kind of role is not for everyone. For example, not knowing what you will be working on tomorrow is part of the fun of working in a varied role, but not everyone would enjoy this.

### 1.3 Messages

The messages that we would like readers to take away from this paper are:

- If you're in a small insurer, you are not alone – there is a network of people who are in or have been in similar situations. Join the working party.
- You don't always have to rely on consultants to figure out how to solve a problem or benchmark your approach against "market practice"
- You don't always have to rely on the reinsurance market to give appropriate prices for extreme risks; there are useful sources of data relevant for many types of risk, and there is a toolkit of methodologies that can help to deal with issues that are specific to smaller insurers
- If you are considering a role in a smaller firm, we hope that this paper gives you a good understanding of the challenges involved, and an ability to make a more informed decision. The authors feel that the positives far outweigh the negatives.

### 1.4 Paper structure

The main part of the paper consists of a list of situations that are commonly encountered by actuaries of smaller insurers.

In many cases, the advantages and disadvantages of working in a small firm stem from the same source, and are in some cases two sides of the same coin. For example, one of the major advantages is the variety of work you get to be involved in; whereas one of the major disadvantages is the variety of work you have to be involved in.

For each of the situations discussed in this report we outline what we see as the main pros and cons (relative to working for a larger company), and how, based on our collective experience, the cons can be mitigated. The paper concludes with a list of tips for people who work, or are thinking of working, for a smaller insurer.

### 1.5 Other resources

In addition to this paper, we have developed two separate reference documents, which are available to members of the working party:

- Methodology toolkit, which discusses in more detail some of the approaches that we have used to tackle small insurer issues, and
- Log of external datasets, which lists freely-available datasets that can be useful in tackling the challenges that we identified in this paper, such as market-wide statistics that can be used in benchmarking an insurer's own large claims experience, or to construct an initial expected ultimate for reserving.

## 1.6 Next steps

After GIRO 2013, the energies of the working party will be less focused on producing future reports, and more focused on building a wider network of actuaries from smaller insurers, to facilitate discussions with people facing similar situations, and to further develop the methodology toolkit and list of datasets, which will provide more practical help to the working party's current and future members. We plan to provide CPD opportunities for working party members, in the form of regular talks on the approaches and methodologies included in our toolkit.

## 1.7 Caveats

We acknowledge the obvious self-selecting bias in the composition of the working party – as actuaries who have chosen to work for small insurers, clearly most of us feel that the positives of working for smaller insurers outweigh the negatives. However we recognise that this kind of role is not for everyone, and we have made every effort to be honest and balanced about the pros and cons.

In this paper we have used generalisations to illustrate the differences that we have experienced between working for smaller and larger companies. Not all similar-sized firms face the same challenges, and nor can all firms solve the same challenge in the same way.

The views expressed in this paper are those of the authors themselves and not necessarily of their employers.

## 2 Situation: baptism of fire

*Challenging and unstructured first few months; little documentation or handover; high expectations; need to think on your feet; more manual work*

### 2.1 Description

Starting a role with a small insurer often feels like the proverbial baptism of fire. Whereas large or established firms often have a well-documented and embedded governance structure, a standard induction program and peer support, in small firms it is more likely that you will have to work at short notice on projects you were not anticipating, think on your feet and figure out solutions as you go. There may be a need to do more manual work initially than you would want to do in the long term.

This situation is particularly likely if you are the first actuary in a company, but even if you are not, there is no guarantee you will have a structured handover from a predecessor. Many small firms have a culture of trust in the expert and a “*you tell me - you’re the actuary*” approach.

Some might welcome this and relish the idea of shooting from the hip and being super pragmatic, learning new skills quickly and on the fly. Others may, however, find this less appealing.

### 2.2 Pros and cons

#### **Pros**

Successful navigation of a difficult induction will earn the respect of peers and colleagues and help establish you quickly in the firm. This will be your first opportunity to show your value and translate some of your experience into real and practical contributions to a small business where effort is likely to be recognised and ultimately appreciated and rewarded. Your role might quickly expand into other functions. This not only broadens your influence and engagement with the business, but could contribute significantly to the skills and experience section of your CV. If nothing else it will ensure your role has a broad range of challenges. In some large organisations, similar efforts might simply go unnoticed.

Navigating a tough induction should be eased by less bureaucracy in smaller firms. You are likely to require less sign-off to get structures in place and you will benefit from a wider scope of options or opportunities to change existing structures. This is especially the case if these processes are seen as historically inefficient – or non-existent.

Doing more of the manual work and being more hands on has some advantages. The additional time spent getting to grips with the data can give you valuable insight into the business and enable you to spot trends and outliers which will help any further analysis and personal understanding of the specific features of the firm.

#### **Cons**

Undoubtedly in a new role with high expectations, you will have some significant challenges to overcome. Some key pitfalls and obstacles to look out for include:

- Visibility and expectation of the actuarial function in a small firm will be high. The function is usually perceived as a well-remunerated and expert function, often a last resort when no-one else can offer a solution.
- Requirement to act on own opinion and with little peer review may not suit everybody and could lead to significant stress from a sense of exposure or lack of resource – especially if

coming from a large function in a well-funded organisation with a robust governance structure in place.

- Resources are often more scarce and the expected return on investment often unrealistic. Resource requirements of the actuarial function may seem large compared to other back-office functions in small firms. You will quickly have to learn to justify and secure funding.
- As you don't have the support of large teams of analysts, a large portion of your time may be taken up manipulating data, cleaning data and running processes which would be automated in a larger organisation.
- Often in smaller firms processes are not "joined up" - you need to be extra careful about how you use the results of your analyses. For example the financial accounting process may use different data to the reserving process and you need to make sure that you can reconcile any differences between the two before recommending a reserve value to book in the accounts.

These challenges will fuel the so-called baptism of fire, but need not make the role of the new actuary in a small firm completely unpalatable. We consider some suggestions on how to manage these issues.

### 2.3 Mitigating the cons

Don't wait for invitations or offers of support. Being proactive will help you cope with hitting the ground running and getting support structures into place. You will need to work on relationships across functions. Small firms will expect you to contribute quickly, and it is therefore important that you build a strong internal network of peers.

Be brutally organised - not just in your personal organisation but also in how the function is structured. Have short meetings with strict agendas. Keep your calendar up to date and make sure you establish a good rapport by attending meetings arranged by others on time and start contributing as soon as you feel comfortable.

Prioritisation is important, in small organisation resources need to be focused on value add activities. Avoid the temptation to tackle familiar issues first, focus on what makes a difference and build your credibility early on.

Don't reinvent the wheel or take on too much. This could significantly reduce the time it takes for you to contribute and show demonstrable results. Remember you can influence change over time.

Never be afraid to ask questions – especially early on during the honeymoon period. After becoming part of the furniture it would seem odd if you still did not know what a particular acronym stands for.

Maximise the resources available to you, particularly the intellectual assets of colleagues with experience of the business. Even a good relationship with the CEO's personal assistant can be a valuable resource when you are new to the organisation and need to get something done or organised quickly.

Use guidance and regulation as often as you can to reinforce your view. Being an outsider it can be difficult to convince the business of change and developments. Educating the company and peers on requirements set out in, say, the Level II guidance from EIOPA can give weight to your suggestion.

### 3 Situation: role creep / “jack of all trades” syndrome

*Variety of work; some of it outside areas of expertise; roles not easy to define in advance; roles likely to evolve, and priorities to be overtaken; management's and candidates' expectations may not be realistic*

#### 3.1 Description

In small firms, it is common for the role to be different from the role that you expected when you accepted the job. Sometimes this is because the job description was not as good as it could be (see discussion below on our job description survey), but often it is because of the fast pace of change in smaller firms, and the actuary's contribution to the business being valued.

Whilst this is generally positive, there may be situations where the actuary is expected to become involved in areas outside their expertise. (This can include areas of traditional actuarial work in which you are not skilled, or other non- traditional actuarial subjects on which you are invited to opine because of your valuable contributions in other areas.) This can lead to a situation where you are involved in a broad range of work but not able to devote sufficient time to any individual task. A typical actuary in a small firm might be involved in all of these areas: M&A, rate modelling, pricing for individual risks, systems development, investment decisions, capital management, catastrophe modelling, reinsurance negotiation and placement, forecasting, strategy and planning, commutations, MI projects, risk management, ORSA, reserving.

Actuaries in smaller firms often get involved in work which, in a larger firm, would not necessarily be done by actuaries. Also, many firms expect their actuary to take the lead role in Solvency II implementation. While the actuarial function has an important role to play, under Solvency II, there is also a significant focus on risk management.

#### **Job description survey**

We surveyed the members of the working party and some other contacts who had recently worked for a small insurer to see if any consistent patterns emerged.

#### **Survey approach**

We took around 50 sample phrases from recent job adverts, covering management responsibilities, business responsibilities, technical responsibilities, skills and traits and prospects, and asked respondents if:

- The phrase described something they were expected to do in their role
- The phrase was mentioned in the job spec provided at interview stage
- Management had at the outset expected them to perform this function

#### **Summary of findings**

- Jobs were typically broader than either the actuary or their management expected
- Actuaries' and management's expectations of the scope of the roles were very similar
- There was a significant discrepancy between the job descriptions and management's and actuaries' expectations. They covered a lot of the skills and traits required, but did not cover well the business and management responsibilities

**So what?**

Prospective employers and recruiters take note. Anecdotally, it seems that job descriptions are improving but they could still do better in terms of reflecting management's actual expectations.

The fact that reality often turns out to be different from expectations can be used as a selling point - this highlights the fact that in small firms there is plenty of opportunity to grow your role, and with it your experience.

**3.2 Pros and cons****Pros**

Exposure to a broad range of non-actuarial work can help to prepare an actuary for more senior management roles in future. For a more junior actuary, or student, a variety of work could help them decide in which area they would like to specialise.

For a particular project or process, you can be involved from 'end to end' starting with data manipulation through to communication with senior management.

Another benefit of working in a smaller firm is the interaction with senior management from all areas of the business. Being the only point of contact for actuarial work, there is also likely to be frequent contact with the Board of Directors.

Working with limited resources and support often requires creative and pragmatic solutions to problems, which is either a pro or a con depending on the way a person prefers to work.

Actuarial students working in small teams often gain exposure to several software packages.

Predictability is over-rated! Ok we know the stereotype actuaries get tagged with but even we need new challenges from time to time. In small insurers this is pretty much guaranteed.

**Cons**

The "lone actuary" might be expected to offer advice which is outside of their area of expertise. In this situation it is very difficult to balance the need to contribute with the requirement to maintain professional standards. This can be particularly difficult if the advice being sought is actuarial by nature, but you lack the experience or expertise to provide a suitably robust answer.

Working too widely across a range of areas, not having time to develop a deep knowledge of any individual issue can make it more difficult to move back into a specialist role.

Trying to manage the expectations of several key stakeholders puts additional pressure on a "lone actuary".

**3.3 The opposite problem**

In some cases an actuary of a smaller insurer might encounter the opposite problem. You may offer to help in some areas but face resistance because people have been doing it without you in the past and don't see the benefits that you could offer or regard your involvement as interference. This problem is not exclusive to actuaries of smaller insurers, or indeed to actuaries in general, but can be a significant challenge in a company which has not previously employed actuaries.



When beginning a new role in a firm that hasn't previously employed an actuary, ownership of processes such as reserving might be a concern. For example, if the finance function had previously "owned" reserving, there are often initial uncertainties when a new actuary arrives. It is important, on starting a role, to communicate with the previous owners of the processes so that the demarcation of responsibilities is clear. Additionally, they will probably have built up valuable knowledge from running the process in the past which will help when you begin your new role.

### 3.4 Mitigating the cons

One way to deal with the "jack of all trades" syndrome is to clearly set out your capabilities and responsibilities when accepting a role with a smaller insurer. When taking on work outside your area of expertise you need to communicate clearly the limitation of your knowledge and experience. Input from actuaries on areas with which they are not particularly familiar may still prove to be valuable. It is vital that it is communicated to the relevant parties at the outset under what circumstances further technical advice or assistance may be required.

In addition, the following items could mitigate the "jack of all trades" competency issues:

- Having a significant degree of actuarial experience before taking on the "lone actuary" role. Of course, it is down to the individual in question to decide, in advance of taking on a role, whether or not one has adequate experience for a particular role. However, the longer a person has been involved in the insurance sector, the more likely it is that they will have come across a particular problem or pitfall and so is likely to fulfil the competency criterion.
- Talking to one's peers. This may be on a one-to-one basis with actuarial contacts working in a similar area and/or attendance at market meetings and seminars. There are currently a wide variety of these latter meetings, varying from focused groups (e.g. Lloyd's Market Actuaries Group) through to the annual GIRO conference. Although these discussions are not a panacea for lack of experience, they are likely to prove useful, not least because it is likely that a particular issue for one actuary is potentially going to impact others as well.
- Attendance at relevant seminars and courses. As well as discussion with peers, conferences can also provide relevant technical development to assist a "lone actuary" in working competently. The working party felt that, within the general insurance arena, we were particularly well catered for in this regard, with many excellent courses available to interested members.
- Setting up robust and transparent procedures from the outset. These may assist in explaining to others how one has approached a particular analysis and may also make it easier to update certain aspects of a process, as one gains more experience.
- The potential for peer review. When there is no-one on hand to check one's work, it can be hard to take a step back and sense check it oneself. Having a second review of some aspects would provide some further comfort to the individual involved. The issue of peer review is covered in more detail in a later section of this report.

In addition to these measures, joining the working party provides an opportunity to discuss challenges with actuaries in similar roles who may have overcome similar challenges.

## 4 Situation: development and innovation

*Opportunity to influence strategy earlier in one's career; may be fewer barriers to change - which is rewarding for people with an innovative streak - but not all small companies are as welcoming of change*

### 4.1 Description

Actuaries in smaller firms are often expected to think of new solutions rather than copying established ones - especially when starting an actuarial function from scratch, when there may not be anything to copy - so there is a need to be innovative and adaptable. There are often fewer barriers to change than in larger and more established firms. Innovation also demands decisiveness and action; no process improves from just talking about it - decisions need to be made so that concepts can be replaced with actions and finally results.

One simple example is where many small insurers face a complex choice between using the standard formula to calculate SCR under Solvency II, and seeking approval of an internal capital model. This will be strongly influenced by budget, available resources or perceived value for money. Here the actuary will be relied upon to provide innovative solutions and strong expert recommendations to allow for effective decision making.

This important characteristic of limited resources and focus on cost-benefit will be almost universally applicable to small firms. There will be a significant expectation on the actuary to be innovative and maximise use of scarce resources. Decision-making will need to be effective as there is limited scope for shared responsibilities.

### 4.2 Pros and cons

#### **Pros**

Sometimes quick wins are easier in a small firm (as it takes less effort to make small changes), which may make it easier to get buy-in and get decisions made and signed off.

Actuaries working for smaller insurers are often involved at an earlier stage in their careers in high-level management discussions, and gain valuable experience in the strategic decision-making process, and which items matter most to those responsible for running the company.

Often in smaller teams, there is the opportunity to build or modify reasonably easily an existing process (such as a reserving process). This is due to the pragmatic approach these processes often require when having only limited resource to implement them. Exposure to the 'end to end' process can help to give the perspective needed to come up with ideas for change, and the scope to implement them.

Small firm management structures will almost certainly ensure that an actuary remains central to the decision-making process and will constantly challenge to ensure that systems and structures are run as optimally and innovatively as possible.

#### **Cons**

Not all companies enjoy the same freedom to change. In a small firm that forms part of a larger group of companies, then depending on the level of control exerted by the parent, there may actually be very little opportunity for the actuary to influence major decisions, even if group decisions do not represent the best fit for the particular subsidiary. Being a smaller part of the group structure could limit bargaining positions and some decisions may simply be imposed on the division. Similarly some regulation that is specific to firms classified as small

could be a requirement and limit scope for internal decision-making which in turn could hamper innovation.

As discussed earlier a benefit of working for a smaller insurer is that you can make changes more easily. The downside is that so can others in the company, such as claim departments or operational functions. As an initial mitigation measure you should agree processes with relevant departments for informing you of changes, but this is unlikely to pick up all changes as in many cases the person making the change is unaware of the impact on processes downstream.

If you are the first actuary in a firm, colleagues may not be familiar with actuarial work, and it may be difficult to get people to change established practices. Small firms often have an established way of working – innovation may imply change, which will require careful change management. Decisions made in other functions may now be handled within the remit of the actuarial function, where perspective and opinion may be different. In short – innovation and delegated authority may not initially be welcomed, especially in a small firm setup.

Developing new processes increases the documentation burden. This can be difficult for small firms with limited resources. It is important to strike a balance between innovation and additional load on teams.

#### 4.3 Mitigating the cons

Before accepting a role, it would be useful to discuss how your personal appetite for innovation and change fits with the company culture, and to know about the company's approach to decision-making - whether decisions are made by committees; circumstances where parent company approval is needed before ideas can be implemented, etc.

Establish clear lines of communication and transparency. You can mitigate the effect of changes made by other departments by making sure there is open communication with the relevant process owners to discuss your observations and try to identify the causes of any inefficiency. For example, based on the working party's experience it is often much easier to find out about a change to a claims process if you are able to clearly demonstrate the effect on the claims data to the claims manager.

Ensure that all actuarial processes which rely on data inputs from other functions have a step in the data analysis process to identify changes in the data which could indicate that there have been changes in the upstream processes.

Innovation and change often leads to some element of resistance. In a small firm with established processes and culture this can be the case. Initial resistance or reluctance need not stall innovation or important decision-making processes. Resistance or push back can be addressed through clearly communicating to the relevant stakeholders the benefits of the change. This will often require compromise at some level. A practical approach could be to provide suitable training to stakeholders through training sessions and workshops, building a sense of understanding and involvement that will lead to improved cooperation.

Good cross-functional interaction and collaboration will ensure mutual understanding, not just of any changes or decisions made, but also of the mutual benefits. Working closely with stakeholders is usually simpler in smaller firms as most functions are geographically less dispersed. Being able to demonstrate why a decision or innovative suggestion is mutually beneficial can stimulate buy-in and co-operation. Change may not always be welcomed in a small firm, but is arguably easier to manage, by ensuring strong cross-functional collaboration and communication.

## 5 Situation: having a boss who is not an actuary

*Opportunity to set up function as you see fit; boss may place less importance on professional standards / TASs; potential for pressure on key decisions, e.g. reserving*

### 5.1 Description, including pros and cons

If you are the most senior actuary in a firm you may feel a lot of pressure when it comes to decisions such as reserving which have an immediate impact on the company results. In this position one is likely to have a boss who is not an actuary and it may be difficult for them to check that the work has been completed competently. For a smaller insurer, the financial results are often more sensitive to small changes in IBNR forecasts and thus the actuary may come under more pressure with little room for flexibility.

This situation applies to actuaries in larger companies too, but having a boss who is not an actuary is likely to occur earlier in the career of an actuary in a smaller company.

If you are in the position of “senior actuary” within a small team you are also responsible for ensuring that the work is done in accordance with professional standards. One of the core principles in the Actuaries’ Code is that an actuary carries out their professional duties competently. Other actuaries or students may be relying on the fact that they are “acting under the direct supervision of another member who is taking professional responsibility for that work”.

Another area which you need to consider is compliance with technical actuarial standards (TAS). A boss who is not an actuary might not see the value in the extra time and effort needed to ensure work is TAS compliant<sup>2</sup>, especially if the work to-date has been carried out by others not covered by TAS (non-actuaries or actuaries who are not members of the UK profession). It is also difficult to know that the work of the team is TAS compliant, particularly if you are placing reliance on work of others who are not covered by TAS.

A boss who is not an actuary might immediately think that the senior actuary is best placed to assume the role of actuarial function holder. This might be a significant expansion of responsibilities and you should take care to consider whether you are comfortable in this position. You should also consider whether a suitable structure is in place to ensure there is independence between the roles of the actuarial function and the risk management function.

Having a boss who is not an actuary gives you the opportunity to set up an actuarial department and processes as you see fit. This gives you the opportunity to innovate, and not have to stick to tried and trusted actuarial methods. This can be an advantage but there will inevitably be mistakes and issues which require some flexibility.

A boss who has been in a role without actuarial support for a while probably has built up a fair degree of actuarial knowledge, through interaction with consultants and necessity. This can be advantageous but you might need to spend time justifying changes you want to make to existing processes.

### 5.2 Mitigating the cons

- There is always a balancing act between meeting your boss’s needs and ensuring you maintain professional standards. In interview, explore the prospective boss’s understanding of the need to act in a professionally responsible manner

<sup>2</sup> However in our experience, when you do go to the effort of writing a TAS-compliant report, it often results in positive feedback, particularly from non-execs.

- For reserving, set up a clear delineation between best estimate and booked reserves, with clear ownership of each number.
- Focus on the way you communicate your messages, and make sure they are clear and can be understood by a largely non-actuarial board of directors.
- If necessary you may be able to encourage your auditors to recommend steps to enhance TAS compliance etc.

There is also support available from the profession for actuaries who do not have a more senior member who they can approach within their organisation. The forums which are currently available within the profession include:

- General Insurance Board for all areas of practice
- Professional Support Service – helps with any issues of professional conduct and interpretation of existing rules/codes
- Local actuarial societies
- Informal discussion groups
- Member interest groups
- Informal network of former colleagues and acquaintances

Additionally the working party has discussed the following ideas for expanding the support to “lone” actuaries.

- Support from Actuarial Research Centre – it might be a good idea to have support from the profession on technical issues in the form of making relevant research and current practice available to ‘lone actuaries’.
- There is no formal representation of actuaries from small insurance companies in the actuarial profession, something which was considered an extreme possibility in the *Lone Actuary* paper
- A group for actuarial students working in small teams. Students might face situations where they might not be able to get the best advice from their manager (e.g. about their exams) and want the opinions of others on different issues (for example finding out if it helps to use online tutorials, or flashcards etc, before they are purchased).

## 6 Situation: not having a formal system for training, study support and CPD

*CPD and study support requirements come as a surprise to some smaller firms*

### 6.1 Description, including pros and cons

Many large firms have in-house training facilities, significant training budgets, and a structured approach to assessing training needs for each employee on a regular basis. Smaller firms may not have such structures; this doesn't mean that training doesn't happen, but it usually means that it is on a more ad-hoc, demand-led basis. This extra flexibility and lack of rigidity can be attractive, but it can mean that each amount spent on training is subject to individual scrutiny and may be regarded more negatively. As well as the cost, time out of the office matters more when there are fewer people who are able to cover each other's responsibilities.

In addition to the normal skills training, actuaries need to comply with CPD requirements. Not all employers expect to have to make this investment - particularly if you are the first actuary.

Also many companies are not used to the levels of study leave that are normal for actuarial trainees and some may not have a suitable study policy. Students who are progressing well with the exams will look for exam support when considering a new employer, and if a company is unable to describe how it will support them, this will be a distinct disadvantage.

A good study package includes both specification for time off to study and also salary increases which are associated with exam passes, which gives students some clarity about how their salary will increase in the future and how their success will be acknowledged. If a company does not have a formal study package then it is easier for the salary of an actuarial student to fall behind the market salary which increases the risk of that student leaving for another better paid position.

### 6.2 Mitigating the cons

Before you start a role, ensure that you make the company aware of the requirements for CPD for qualified actuaries. If building a team is a foreseeable part of your remit, make sure that they are aware of the cost and time commitments involved in employing student actuaries. Be ready to articulate the benefits for the company of having well trained and educated staff who are more able to develop and contribute to the growth of the company.

It may be useful to be able to demonstrate what is normal in the market. The Institute and Faculty of Actuaries website includes details of the expected amount of time required to pass each exam which can easily be built into a training program for students. Also various firms publish salary guides that set out the average level of salaries for different professions. These guides are used by larger companies to set pay levels and the detail provided for actuaries is split by area of work, seniority, years' experience and numbers of exams passed.

If the prospective employer is not prepared to meet the costs and time commitments of CPD, but you still wish to proceed with the role and take on the costs yourself, you should still make the employer aware that you will need to take time from work (out of your annual leave if necessary) to attend conferences, sessional meetings and other events in order to keep up your professional standards.

Lack of formal training system - if you think the pros would outweigh the cons, then use your position of influence to make a case for change. Otherwise, work within the limitations that the existing system imposes, by being flexible about how training benefits are taken - this usually means planning ahead to give yourself a chance of taking the training before it becomes urgent.

## 7 Situation: growing the team

*Opportunity to build your own team can be appealing; small firms have less “prestige”, and it can be hard to attract candidates; can build roles around the candidate; important not just to hire “mini-me”s*

### 7.1 Description

Some small companies limit their actuarial recruits to one, but in many cases if their first foray into recruiting actuaries is successful, further hires follow. The lone actuary will be required to transform from a roll-up-your-sleeves technician to an able-to-delegate manager. Whilst this transformation will not be without growing pains, the challenge for the technician to become a more team-focussed manager will be a rewarding one.

The possibility of building up an actuarial team and leaving a legacy on the company is something that a lot of actuaries working in smaller insurers find appealing. There is huge scope to grow teams and be involved with work that is both interesting and experience enriching providing that the actuarial team is able to demonstrate good value for money. Team structures are flexible and thus retention of key staff may be easier in the longer run given that opportunities can be created to suit individual and team aspirations.

The following skills become important as soon as you make your first hire:

#### ***Delegation***

This can be a challenge for anyone who has been working alone for a while. When a company is expanding quickly, this skill needs mastering quickly if the actuary is to be able to perform their other managerial duties. Switching from a bottom-up to top-down approach in a quickly expanding team can be a challenge. Delegation is very much a matter of trust and being able to ask the right questions. If you only have 10 minutes to review a task that took 3 days to complete, what are the key questions you would ask?

#### ***Identifying training needs for staff***

In a growing company chances are that the actuarial team will remain lean. It's important that all team members can fill in for each other. This makes managing holidays and study leave much easier. The actuary will need to identify the training needs for each team member individually.

#### ***Varying management style***

Different people respond differently to different stimuli - some thrive on money, others on recognition and others still on many other things. The actuary will need to adjust their management style to the individuals, especially when it comes to communicating failure, for example a missed deadline or a silly error. Most people respond very positively to appreciation for a job well done. Having worked alone for a while the actuary might overlook this simple motivational technique.

#### ***Interpersonal skills and soft skills***

When the team grows it's important to create cohesion. It's not all about work and deadlines. The actuary should show an interest in the team members' personal life and strive to not cross the line between a healthy interest and nosey-ness. This line will be different for every team member. Finding the balance between leading a team but still showing an interest in the team members' personal lives is a skill that only experience will perfect.

#### ***Documentation***

When knowledge has to be shared or even transferred documentation becomes an important tool. Whilst in the days of the lone actuary it's very unlikely that huge amounts of time were spent on documenting processes, in a rapidly growing company the need for documentation becomes significant. Under Solvency II, documentation will become a real burden, but when

documentation is used as a training tool, it actually adds value instead of just ticking one of the many Solvency II boxes.

### ***The actuary's own development***

On top of all that the actuary needs to make sure that they themselves receive the required training and CPD opportunities and keep developing professionally. The challenge is to not just be a source of knowledge but to improve yourself as well. This, arguably, is the biggest challenge of all.

## **7.2 Pros and cons**

Recruiting actuaries and trainees can be more difficult in smaller firms as they may not have the “prestige” of larger ones. We believe that the benefits of working in smaller insurers apply to students as much as to qualified actuaries, as it can provide a greater insight into how businesses really work. However, candidates are often under the illusion that larger firms offer greater variety of work.

If you have been working alone for some time, any bad habits or blind spots that you have developed over the years will have gone unchecked, and may be passed on to your team. This is particularly likely if you fall into the trap of recruiting “mini-me”s. It is tempting to think that more of the same will solve the problem; it may well do in the short term, and you may spend less time arguing about a course of action. But for long-term success you also need a team to have a breadth of ideas and approaches and a balance of skills, including an independence of thought and a willingness to challenge you if they do not agree with your judgements.

Lack of rigidity in roles means that when recruiting you may be able to fit the job around the person. However for some job levels - such as nearly qualified actuaries - it can be a disadvantage if you are not able to point at a prospective “manager” role in a short timeframe.

If you hire trainees, the lack of peer support - and indeed peer competition - could be an issue for some, and in some cases it may be harder to prepare fully for exams unless the trainees are highly motivated.

Within the company there may well be some surprise at the rewards a student actuary may expect to receive – in particular the expectation of the size of salary awards given on exam success. It is worthwhile establishing a salary scale well in advance of any exam results, and to make sure that you know what the company will (or will not ) accept so that salary expectations can be managed during the recruitment process.

Because of the variety of work covered by a small company actuarial team, the inability to dedicate individuals full time to any specific discipline can mean that long-term development and research can fall by the wayside.

## **7.3 Mitigating the cons**

When recruiting:

- Be aware that it may be tempting for some recruiters to inflate salary expectations, if they know that you don't already employ a large number of actuaries. Push back; ask who is offering the salaries quoted, and consider whether you need to be competing against these firms.
- Be ready to articulate the benefits of working in small firms, and in particular to dispel the myth that larger firms offer greater variety of work. At the same time, be up front with candidates about the cons of smaller firms, especially with respect to the inability to plan workloads very far in advance and the requirement to change tack on a regular basis to sort out immediate issues. This is part of the fun of working in a smaller firm, but not everyone enjoys this.



- Look for people who are prepared to question and challenge you, point out blind spots etc;
- Ensure there is a fit with the existing team, as the politics of a small team mean that, if two people constantly disagree, it can become very disruptive and divisive.
- Be aware of a new recruit's probationary period, and if it is not working out, do not let the opportunity of the probationary period go by to change your mind. A small team can ill afford to "carry" someone who is not performing well. (By contrast, some larger firms may be able to find the person another role that is more suited to their strengths, or accept that in a large team, there will inevitably be some less strong performers.)
- If you recruit trainees, speak to actuaries from other small insurers (e.g. through the working party) about setting up study groups.

When managing a small team, the human factor becomes a key element. It is very much dependent on your personal style as to whether more junior staff will feel free to question and challenge work that you are doing – while that would also be true in any working environment, it is also more likely that in a small team a junior member of staff (rather than a peer) would be sense checking/reviewing the work of a more senior one.

Sound forward planning is essential because there are unlikely to be any spare resources. This means that there are no margins for error when prioritising work or undertaking recruitment.

Delegation is very much a matter of trust and being able to ask the right questions. The actuary can give simple tasks to start with so the team members become more confident. To quickly establish who in the team has the ability to grow it can be useful to throw a long list of tasks and deadlines at the team members and ask them to come up with a plan of how to meet these deadlines. This will quite quickly establish the leaders and the followers, and the actuary can then organise the team accordingly. An added benefit is that training needs in the softer skills will come to light.

Asking the right questions is very much a matter of that good old exam principle of 'stating the obvious'. The actuary won't have time to review the formulas and calculations in detail, but if the team however has been focussing on the detail they might have missed the obvious, such as:

- Has the latest data source been used?
- Do the results reconcile to the data source?
- Do the results make sense in light of the big picture
- Do the results make sense compared to the previous quarter / year-end
- Which question would the CEO or Director of the Board ask?
- What is the worst question I could get?
- What would be embarrassing to get wrong?

In order to identify training needs it can be useful to monitor the impact on the team of:

- Switching responsibilities around
- Giving tasks with tight deadlines
- Asking for detailed plans including time estimates and back up plans.

In order to keep documentation up to date and to share knowledge the team members should review and update the documentation for the part of the process they are responsible for. As responsibilities are switched around, documentation will be kept up to date.

The actuary is responsible for her/his own development. There are plenty of CPD events available. Finding the time to go is always an issue so the best thing to do is book the event well in advance and plan your work around it. It's far too easy to find an excuse not to go. Stick to the plan!

## 8 Situation: independent peer review

*Independent peer review hard to achieve with a small team; but there are alternatives to using external consulting actuaries*

### 8.1 Description

In a large firm, peer review by another actuary is often the default for ensuring that up to date methods are being used and a robust process is being employed, in areas such as reserving or capital modelling.

Peer reviewing and validating capital models can be very challenging, particularly with limited resources. Often, there may not be enough actuaries in-house to both parameterise/run the model and to validate it. Other teams may be able to assist, such as internal audit, finance and risk management. This provides a good opportunity to work with mixed discipline teams but has the drawback of being knowledge intensive and a potential drain on the actuarial team when retraining others.

The requirement for validation to be demonstrably independent has come to the fore as part of Solvency II internal model standards. One way to achieve this would be to have a mirror “actuarial control function” to independently verify the work of the “actuarial risk takers”. In most circumstances this would be disproportionate.

### 8.2 Pros and cons

In a smaller firm there are often not enough other people internally with sufficient knowledge to review actuarial work. This can be an uncomfortable situation to be in as you do not want to create doubt about the quality of your work, but at the same time working in a small insurer often means that you are working with new methods or tools.

A formal peer review is probably the best in terms of assurance and where certificates are being signed, it almost certainly should be there in some form, but it is also likely to be the most costly option as external support (e.g. from consultants) is likely to be required. From the company's perspective, the cost of doing this may seem to weaken the argument for having an in-house actuary in the first place.

Some of the drawbacks of the need for independent review are as follows.

- If the need for independence dominates thinking in terms of governance and structure this can encourage a silo approach, which can erode one of the main benefits of working in a smaller firm, i.e. being involved in lots of areas of work.
- There is a danger that this turns into a consultants' charter (although intelligent use of external resource may be a valuable source of information).
- In a small team with limited expertise you can end up in a situation where you are “marking your own work” (see further discussion in section 9)
- In some circumstances an informed view might be more desirable than an independent one

### 8.3 Mitigating the cons

There are other options to formal peer review, both internally and externally. These quasi-peer reviews may come from a variety of sources such as:

- Wider group actuarial resources (e.g. from a parent or sister company), which may be available even if one is fairly isolated day to day.

- Non-actuaries with significant insurance expertise (e.g. reserve review committees and boards)
- External actuaries employed for a particular task (e.g. Lloyd's sign-off actuaries)
- Other consulting actuaries looking at the company for some reason (e.g. through M&A or audit work)
- Reinsurance brokers modelling claims for reinsurance purposes
- Stakeholders in the company (e.g. shareholders or capital providers) taking an interest in the reserving or capital figures
- Regulators reviewing figures (this may be seen as a last resort).

Support from a sister or parent company is always useful. If you are totally on your own then the company has a significant key man risk and you should consider how that risk is being managed

The following can help you assess whether you have suitably independent processes.

- Putting in place a strongly codified process (objective pass/fail criteria) will help avoid doubt about decisions.
- Ask yourself whether anyone can tamper with your message.
- Ask yourself whether anyone can exert undue influence on what you think
- Understand the weaknesses in your processes, particularly where the result of a process is used to validate the process itself. One example (that doesn't just apply to small firms) is where many reinsurance programs are designed with input from the internal model, and that same internal model will measure alignment to risk appetite.

On issues of independence and governance it is well worth engaging with the company secretary, as this should be one of their areas of expertise. Similarly compliance, internal audit or risk management may have useful views. If there is overlap between your role and these responsibilities then that raises further questions about independence and capacity.

## 9 Situation: conflicts of interest

*Small teams with many responsibilities - could end up “marking your own work”; important to identify potential conflicts, document them and agree how to resolve them*

### 9.1 Description, including pros and cons

The Actuaries' Code (ED29) sets out requirements on conflicts of interest as follows:

- Unless they decide not to act, members will disclose in writing to their client any steps they have taken, or propose to take, to reconcile any conflict or potential conflict of interest
- Members will not act where there is a conflict of interest that has not been reconciled

For an actuary in a smaller insurer, the “client” is their employer, and this is a key professional requirement that needs to be fulfilled.

In small firms it is quite common for one actuary or one small team to cover many different roles. This can be one of the appealing factors for a candidate considering taking on the job, and there can also be advantages for the firm in having various roles combined in this way. A major advantage is good communication – there is little (or no) need to worry about how product specific knowledge on pricing/capital modelling/reserving are kept in line, and feedback loops can be very direct.

However, this can lead to internal conflicts of interest. The most likely problem to arise is where part of your role is a first line of defence/risk taking role, and part of the role a second line of defence/control function. In the execution of a “control” part of your role you may end up in the position where you are effectively “marking your own work”.

For example:

- The same individual does pricing and reserving for a line of business
  - The firm may view the reserving process as being a check on the quality on underwriting, and would expect the reserving process to flag up where emerging experience is not in line with the assumptions when the business was taken on
  - If the reserving method relies heavily on an initial expected loss ratio – which effectively was set by you in the pricing work – there may be a natural reluctance to move away from this and admit that you may have got things wrong
- The same individual responsible for pricing and capital modelling of a line of business
  - The firm may view capital modelling as a control on the business, certainly in relation to adherence with risk appetite
  - A close link between capital modelling and pricing is desirable, not least for demonstrating the use test. However, if the capital model is based on the assumption that all risks are captured by the pricing process, any gaps in pricing would also turn into gaps in the capital model.
- The same individual is responsible for first line of defence activities such as pricing and reserving, and also has responsibility for a second line of defence risk management function. This has a clear peril in that much of the risk of an insurance business is likely to be related to pricing and reserving

### 9.2 Mitigating the cons

Suppose that a conflict of interest is identified. The first step is to then work out – who cares and why? It may not be much of an issue – particularly if there are a range of controls over a certain risk. Careful consideration of how the risk would actually manifest itself will help determine the way that risk needs to be managed/mitigated/communicated – and at the same time is likely to show the areas that need some additional oversight.

It should always be possible to propose solutions to mitigate the risk. One simple method would be to use a 4-eyes principle – using someone else who is more independent of the issue but who has suitable skills. This could be using other professionals within the company - it is not just actuaries who have transferrable skills, and many underwriters and claims handlers have a good understanding of the issues that an actuary is trying to deal with.

However, a situation which provides mutual assurance (A checks B's work and B checks A's work) has its own risks – both overt and possibly also more subtle where A may feel that they have been too critical of B compared to the degree of scrutiny that their own work has been put under.

However you propose to mitigate the risk, probably the most important action to take is to document what you're doing to manage the situation, and ensure that this is approved at an appropriate level. Just showing that you are aware of the issue and flagging it is a good step, and will hopefully prompt more diligent oversight by governing bodies/individuals than would otherwise be the case – which could be all that is needed.

## 10 Situation: small volume of data

*Harder to identify “normal” patterns, or true outliers; hard to measure frequency of rare events; additional uncertainty may mean that assumptions tend to be more prudent*

### 10.1 Description, including pros and cons

Working with small volumes of data is not a problem unique to smaller insurers; this also occurs when larger insurers have lower-volume products, or have only recently launched or revamped their product. However it is a factor in almost every piece of work by actuaries in smaller insurers. It can be due to small volumes of business, or the company not having been in existence for a long time, or both. Also, if a company has introduced new products or changes its risk mix substantially, available historical data may not be relevant.

Examples of the kinds of issues resulting from data sparseness include:

- Difficulty in identifying extreme events, such as large claims or catastrophes – they could be not represented in your data, or even if they are, it is difficult with low volumes of data to measure how “extreme” an event is. (Similarly, it can be difficult to identify normal events – how do we know what is normal when we have limited historical data?)
- Difficulty in measuring correlations – measuring correlation empirically requires high volumes of data. Note that in this case, being small could be an advantage, because you are not distracted by historical data, which can be worse than useless in measuring correlations between risks, allowing you to focus on deriving assumptions based on common sense reasoning (i.e. expert judgement)
- Actuaries in smaller insurers may tend to be more prudent than in larger companies, because of the extra uncertainty introduced by data sparseness
- Since a smaller firm often has a smaller portfolio of business, or has been writing business for a shorter period of time, small fluctuations can have a big impact on patterns. Each reserve review can be like looking at data for the first time. This increases the time it takes to complete a routine model update, which might not take as long in a larger company.
- In pricing, there may not be adequate volumes of data for good GLMs, so we can’t have as much confidence in the models. Pricing actions may tend to be more focused at the portfolio level than the individual / segment level. Yet smaller insurers still operate in the same markets as larger players who can invest in more sophisticated models
- Many reserving approaches rely on applying information about fully-developed years to more undeveloped years. In firms that have not been in existence for a long time, there may not be any fully developed years with which to calibrate these models.

### 10.2 Mitigating the cons

Combining different types of risks (e.g. multiple small portfolios) can be useful to improve the credibility of datasets, but it can be a challenge to persuade underwriters that this is appropriate; often they can identify characteristics of their portfolios that makes them believe that they are unique. This is particularly relevant for reserving development patterns.

Familiarise yourself with freely available sources of data, such as the list maintained by the Working Party, which can give you more confidence in assessing whether your experience is “normal” or “extreme”.

Familiarise yourself with methodologies for dealing with smaller datasets, such as those in the list maintained by the Working Party. We have recorded methodologies covering areas such as:

- Modelling own large claims experience against market benchmarks, and constructing experience-adjusted distributions
- Pragmatic approach to correlations
- Building prior ultimates for reserving based on externally-available market data

## 11 Situation: data management

*In a small firm, you may need to invest a lot of effort in managing actuarial data; this investment can be very worthwhile; spend the time at the outset to design a future-proof data framework, with an emphasis on flexibility, automation, clarity of definitions and validation.*

### 11.1 Description

Data is an asset which must be well looked after in order to get maximum value out of it. Actuarial data have a key role in informing insurers' strategic decisions, so can be extremely valuable. We have already discussed how data sparseness can be an unavoidable problem for smaller insurers, but the way in which a company manages its data, and indeed the way in which an actuarial function manages its data, can cause just as many problems for actuaries.

In many start-up companies, the joys of working with straightforward data and systems from the outset can turn into a headache if the systems are not future-proofed to cope with increased scale and new sources or formats of data. Flexible design and automation are key.

The following three parts of the data management process are of interest here:

- Obtaining the raw data that we use in the correct form for us to use it
- Storing the enriched data that we create (the "results")
- Storing the assumptions and reasoning that we have used to enrich that data

Here are some example scenarios that you might encounter as the actuary in a small firm. In reality the scenarios are not mutually exclusive, and you may find parts of each to be true.

Scenario	Description
You're on your own and nothing is set up	<p>There may be no reporting capability in a small insurer and you may be reliant on extraction and manipulation of data from a number of source systems. This can be time consuming especially if volumes are large as the desktop tools usually used by actuaries are not good at coping with large volumes of data.</p> <p>In this situation if you are a lone actuary there may well be no one to review your interpretation/manipulation of the data.</p>
A reporting database exists	<p>There may already be some form of reporting database and there may also be database developers available but no actuarial reports currently set up.</p> <p>In this situation the challenge is to specify what you need and communicate this to the relevant people so that they can build it. Two areas which will require careful thought are the treatment of currencies and exchange rates, and class of business mappings.</p> <p>You may also need to assess the quality of work being carried out and whether best practice is being followed. This can be a challenge in itself as actuaries are by no means experts at data modelling.</p> <p>Often in a small insurer there is a lack of documentation around what has been created and it is difficult to decipher the logic behind reports.</p>
A reporting database exists and actuarial reports are already set up	<p>In this situation the policy, premiums, claims and other information exist and are easily accessible within some form of data warehouse. However the challenge is to identify those enriched data items created by the actuarial department that are suitable for saving back to the data warehouse so as to be available for the rest of the business. You are likely to need to perform allocations and this can be challenging.</p>



## 11.2 Suggested activity

### ***Do your homework***

Actuaries use data all the time, and many believe that they know a lot about data. Sometimes this confidence is misplaced. There is no formal training in the actuarial exams on data modelling techniques.

If you aim to set up a framework in which to store and use your data, it is useful to understand the basic concepts of data modelling, so that even if you don't carry out the work yourself, you can have informed discussions with IT specialists, and hopefully avoid being fooled into buying more than you need. Here are some links (valid at time of writing) to useful articles on this subject:

[https://en.wikipedia.org/wiki/Entity%E2%80%93relationship\\_model](https://en.wikipedia.org/wiki/Entity%E2%80%93relationship_model)

[https://en.wikipedia.org/wiki/Relational\\_database\\_model](https://en.wikipedia.org/wiki/Relational_database_model)

[http://en.wikipedia.org/wiki/Dimensional\\_modeling](http://en.wikipedia.org/wiki/Dimensional_modeling)

[https://en.wikipedia.org/wiki/Database\\_normalization](https://en.wikipedia.org/wiki/Database_normalization)

[http://en.wikipedia.org/wiki/Third\\_normal\\_form](http://en.wikipedia.org/wiki/Third_normal_form)

### ***Set expectations***

In a small firm, especially if you are the first actuary, you are likely to need to invest time and effort developing appropriate databases of meaningful and robust data. This can be difficult for a new actuary due to the weight of expectation of management to see an immediate return for their substantial investment in taking on such an expensive expert. Developing good quality data is a slow and unglamorous process, and although the benefits are clear to many actuaries, they are not always as obvious to their bosses. You will need to set expectations before you accept the job.

The responsibility for data as a whole usually resides with the operations department. You will need to work closely with them to ensure that your needs are met. Actuaries use quite a small subset of the company's data; however it is an important subset in terms of long-term strategic decision-making.

### ***Assess what is there already***

If there is nothing in existence, you should aim to extract data from the source systems into some form of reporting database. All the calculations and transformations should be done at the outset so that the reporting database is easy to report from.

Often the quick way to set up a reporting database is to extract a copy of the underlying source systems into one place and then start writing reports to combine this data into the form that people require. You should be wary of this approach as it can easily produce a system that is difficult to understand, support and modify going forward.

A key principle of designing a reporting database is that you design the data model to support the required reporting and the relationships that exist in your data. The general idea is to 'extract' data from various source systems, 'transform' the data into the designed reporting model, then 'load' the data into the database. Such routines are often referred to as ETLs ("extract transform loads"). The Transform element of an ETL routine is key. Most underlying source systems will not be designed for reporting. All the transformations you need to do to your data to get it in a useable form should be done upfront rather than in the reports or functions that are written.

Good in-house systems should be able to demonstrate:

- A full history of code changes through a version control system;
- The code changes released with each update of the reporting database;

- Master data management (e.g. exchange rates, forecasts, etc);
- Effective defect tracking and resolution; and
- The relationships enforced by the reporting database.

If available, ask to see the entity relational model for the reporting database and try to review any documentation that exists.

You could also use an external consultancy to review the methodologies in place.

With all the above you will need to tread carefully because you may find people resistant to you interfering. Historically actuaries have not had too much involvement in this area.

### ***Define your business splits***

You may need to produce new mappings or groupings for the data. For example, reserving classes or capital modelling classes can often differ from each other and the classes of business used by the rest of the business. There will usually be a number of solutions to consider and none will be perfect. This is one of the more important aspects of setting up a data model and you should not underestimate the time and thought needed to pick the best option.

Once you have decided on mappings they should be used throughout everything you do. In Excel you should always have a copy of your class mappings so that naming conventions are consistent. Things to consider carefully when producing mappings include:

- Quality of data flags used for underlying mappings
- Reinsurance cover
- Reporting requirements
- Regulatory requirements on homogeneity of analysis groups
- Materiality
- Potential future growth strategy

### ***Set up reports***

You should first review the current suite of reports to see if there is anything you can re-use for your own reporting. Claims department reports in particular can be useful. As a first step you should try to get reports working which give you flat files with the lowest level of granularity that you require. As long as there isn't too much data you can carry out the aggregation yourself once you have the lowest level.

As datasets grow you will start to be unable to use the data at its finest granularity in your day-to-day usage. You could design reports at various levels of aggregations to solve this problem. OLAP technology, though no longer considered to be leading edge, has been found to be useful in the past to set up basic aggregated datasets such as aggregate booked triangles. These rely on a dimensional model and allow you to predefine calculations at different levels of aggregation and then explore that data through pivots in Excel. An actuary on their own is unlikely to be able to implement these and you will probably need a database developer.

### ***Assess the quality of your data***

At a small insurer you are unlikely to have dedicated people to check/audit data and assess its accuracy against the original contract. While it is desirable to measure the accuracy of your data at a point in time and thus assess the controls in place, there are other ways to gain comfort around the quality of your data.

You can apply validation rules to your data. Ideally you should aim to incorporate these into

the ETL process. . This will ensure everything is carried out upfront, once and automatically. This will save you time checking aspects of the data yourself. Some suggested rules are below:

- Check dates – incident date < report date < settlement date
- Incident date within policy inception and expiry date for incidents occurring business and report date within for claims made business. Similar rules can be applied for reinsurance business.
- Negative claims
- Negative paid movements
- Claim movements over certain threshold highlighted
- Claim size <= sum insured
- Checks on currency of claims against policy currency

You should be aware that while invalid records indicate an error, valid records do not necessarily mean the data is accurate. Thus it is important not to confuse valid data with accurate data in communication.

When testing the data for accuracy you should try to keep things simple. You only need to measure the accuracy and should not concern yourself too much with dashboards and data quality reporting at this stage. It is easier and quicker for you to simply interpret the results and communicate the implications in plain English to the relevant committees.

Currently there is much attention being paid to data governance by consultancies off the back of regulatory requirements. At a small insurer you should think long and hard before implementing some of the recommended approaches (for example data consumers, producers, stewards etc).

Many of these approaches are simply impractical for small insurance companies. It is better to focus on good technical systems as an underlying foundation. Data governance is important, but not as important as having good database developers, a well-documented data model and good ETLs, which validate the data.

### ***Define terminology and approach***

Having a consistent terminology and approach within the company is important. This is one of the most challenging areas, but getting it right will save time in the long run. Leadership is required in this area and actuaries are in a great position in a small company to lead on this. You should try to define a companywide framework in which to discuss actuarial data.

Naming conventions are important. Areas where there are often a myriad of words meaning the same for different things are:

- GAAP and UWY results
- Gross and net of RI
- Gross and net of commissions
- Internal model outputs
- Rate change and PMD

Terminology used in the London Market is still very loose and terms are often used interchangeably to mean different things. The actuarial profession strives for better communication and defining technical terminology will help with this.

Some might refer to this as defining a data dictionary. It is creating a consistent and well thought out naming convention for data items that you use/produce.

### Save results of actuarial modelling

Often people store the results of a modelling exercise in results tables and summary sheets that are designed for consumption by human eyes. These might also stay within the spreadsheet where the modelling was carried out. This relies on a folder structure and title to identify a spreadsheet that relates to a certain time period for projections. It is better to extract information like this into a standard tabular format with date stamps and identifying dimensions, saving it all in one place each time the projection is carried out.

For example this table below would be how the results might be presented in Excel:

Attritional Claims as at 31/12/2012 Property In GBP						
		Gross				
		Ultimate			Ultimate	
	YoA	Premiums	Paid	Incurred	Claims	ULR
	2010	5,000,000	3,000,000	5,300,000	5,300,000	106%
	2011	6,000,000	2,000,000	4,000,000	4,800,000	80%
	2012	7,000,000	1,000,000	2,000,000	3,920,000	56%

Instead, this information could be stored in a table as below, which would make it easier to compare results with previous analyses, and mean that all historic information would be at your fingertips.

As at Date	Claim type	Class of business	YoA	Currency	Reinsurance	Measure	Value
31/12/2012	Attritional	Property	2010	GBP	Gross	Ultimate Premiums	5,000,000
31/12/2012	Attritional	Property	2011	GBP	Gross	Ultimate Premiums	6,000,000
31/12/2012	Attritional	Property	2012	GBP	Gross	Ultimate Premiums	7,000,000
31/12/2012	Attritional	Property	2010	GBP	Gross	Paid	3,000,000
31/12/2012	Attritional	Property	2011	GBP	Gross	Paid	2,000,000
31/12/2012	Attritional	Property	2012	GBP	Gross	Paid	1,000,000
31/12/2012	Attritional	Property	2010	GBP	Gross	Incurred	5,300,000
31/12/2012	Attritional	Property	2011	GBP	Gross	Incurred	4,000,000
31/12/2012	Attritional	Property	2012	GBP	Gross	Incurred	2,000,000
31/12/2012	Attritional	Property	2010	GBP	Gross	Ultimate Claims	5,300,000
31/12/2012	Attritional	Property	2011	GBP	Gross	Ultimate Claims	4,800,000
31/12/2012	Attritional	Property	2012	GBP	Gross	Ultimate Claims	3,920,000

Once you have identified results sets that it is possible and useful to store in this way you should talk to the experts about taking it a step further and designing a data model to fit your results. This will help to identify the relationships and hierarchies within your results sets. The same principles can also be applied to assumptions used to supplement the data to produce results.

If your company has a data warehouse, you can then use the database of results and assumptions you have built to create an actuarial module of the data-warehouse for reporting purposes.

### TAS-D

TAS-D provides a useful aide-memoire of things to consider, which can be useful for someone taking on a new position with responsibility for data management and data quality.

## 12 Situation: regulatory attention

*Regulators focus on firms with greatest risk to financial system => smaller insurers get less regulatory attention.*

### 12.1 Description

*In this section we focus on prudential regulation, rather than conduct regulation, because of the nature of actuaries' typical interaction with regulators.*

The focus of the UK's Prudential Regulatory Authority (PRA) is to maintain stability in the UK financial system and confidence in the financial services industry and secure appropriate policyholder protection. The PRA, and the FSA prior to 2013, applies a risk based approach to regulation, which means that they focus on the firms that pose the greatest risk to the financial system. In most circumstances smaller insurance companies are unlikely to fall into this category, and are therefore likely to get less regulatory attention.

The PRA describes its approach to smaller firms as follows:

*"At an individual level smaller insurers have the lowest impact on the stability of the financial system. This motivates a baseline level of supervisory monitoring for smaller insurers so that the PRA:*

- *supervises firms on a portfolio basis using automated tools to analyse regulatory returns;*
- *examines individual insurers when a risk crystallises (as discovered through, for example, a visit to the insurer, or an approach from the insurer itself), or in response to authorisation requests from the insurer;*
- *conducts peer group analysis across sectors as a whole, to develop a clear understanding of the risks posed by both small insurers in aggregate and by a typical insurer;*
- *conducts annual assessments of these insurers, but in large peer groups.*

*Smaller insurers do not have an individual, named, supervisor and will not be visited by the PRA on a regular basis. However, all insurers regardless of category will be subject to on-site work by the PRA - with some period of notice - at any time."*

Smaller insurers are considered in groups rather than individually. Specialist / niche insurers whose characteristics differ from their peers may not feel that this is appropriate.

Common experiences among smaller insurers include:

- Being allocated junior and inexperienced PRA staff
- Being allocated different PRA staff for each iteration of a regular process<sup>3</sup>, meaning that they need to be brought up to speed on the company's risks and exposures
- Not being able to secure a review of the ICG, even when the risk profile has changed significantly. This can lead to firms needing to carry excessive amounts of regulatory capital that are not proportionate to their risk profiles. This can provide a disincentive to minimise risks.

Whereas the final decision on the Internal Capital Guidance calculation for larger companies was historically decided by an FSA panel, the final decision for smaller companies was made by the Supervisory team. This may lead to concerns if the supervisory team have

<sup>3</sup> because smaller insurers do not have a stable supervisory contact, or continuity of specialist regulatory resources such as actuarial or risk management support

experienced a high degree of turnover and are not familiar with the individual characteristics of an individual company.

The dual regulatory landscape now in place in the UK with the PRA and the Financial Conduct Authority will lead to a greater regulatory burden for all firms. It is likely that this will be felt to a greater extent in smaller firms due to limited resources.

## 12.2 Mitigating the cons

There is little that an insurer can do to affect the inevitable (and appropriate) regulatory focus on large and risky firms. It is just something to be aware of when starting a role in a small firm. If you are considering such a role, consider asking about the company's relationship with the regulator, and check that what will be expected of you in the role is realistic taking account of the PRA's stance for smaller firms.

Smaller insurers should make efforts to maintain as close a relationship with the regulator as possible, and also to take advantage of regulatory briefings provided not only by the PRA and FCA but also auditors and other consultants.

### 13 Situation: proportionate implementation of Solvency II

*Solvency II is still evolving, and it is a challenge to keep up with the changing requirements; implementing Solvency II requires an assessment of what is proportionate for the firm; proportionality is based on complexity, not on size => small firms may be at a disadvantage*

#### 13.1 Description, including pros and cons

The requirements that Solvency II is set to impose on European insurance companies have led to significant extra costs for insurers, and some of this extra cost has gone towards paying for additional work by members of the actuarial profession. Many smaller insurance companies have recruited actuaries where they would not otherwise have done so. Although it has been a painful experience for many individuals, as a group we have much to be thankful for. However the new requirements present some difficulties and uncertainties that at the time of writing have not yet been resolved.

##### ***Keeping up to date***

It is challenging for anyone to keep track of the evolving Solvency II landscape. Documents from EIOPA can run to hundreds of pages, and it is hard to keep track of which requirements are important or material. The “overhead” of keeping abreast of the requirements are likely to be disproportionately high compared to a larger team - a company with five times as many staff doesn't need to invest five times the effort to read the requirements and work out how to approach them.

##### ***Proportionality***

The fact that the proportionality principle is ingrained in the Solvency II directive sounds like good news for smaller insurers. Proportionality does not exempt small insurers from any of the Solvency II requirements but does mean that for some elements of the regulations, the process for meeting those requirements may be simpler than for others. In particular, it allows for the use of simplified methods where appropriate.

However the principle of proportionality relates to the risk and complexity of an issue or company, rather than the size of the company or the resources available. So, for example, a large predictable monoline insurer can use much simpler methods than a small multiline London Market operation. This could mean that the absolute resource required by a small company may be almost the same as the absolute resource required by a big company with the same sort of business mix/profile, which would clearly make a bigger impact on the smaller company's expense ratio.

The view on proportionality is likely to vary from the viewpoint of different stakeholders (e.g. management, policyholder, auditor, regulator). However, it will be the regulator who will ultimately decide how proportionality is interpreted for a particular entity. This will be a key issue with any implementation of Solvency II, as EIOPA have stated that there will be no more detailed guidance regarding the principle of proportionality and insurers will need to liaise with their regulators directly on a case by case basis.

Using simplified models does not remove you from the Solvency II requirements; in some ways, it amplifies the responsibilities. Documentation, reproducibility and robust process all need to be thought about when developing a simplified method. In addition, validation will be of particular importance, and may be more detailed than it would otherwise be, to confirm that a simplified approach is appropriate. Clear communication is essential, to ensure that users of the model understand the limitations of the simplified approach. This should be approached as a means for the user to know how much weight they can put on the results, rather than being designed purely to provide a defence if things go wrong in the future.

### **Actuarial function**

Solvency II formalises the need for an actuarial function within a firm. There is currently little published guidance on how the actuarial function should be constituted, but the requirements could be onerous for a small team. There may be a minimum scale for an actuarial function to enable compliance. The requirement for the actuarial team to have a detailed knowledge of reinsurance arrangements and underwriting might be easier in a smaller and less complex firm. It may, however, be hard to evidence as the governance procedures and audit trails around items such as business planning and reinsurance purchasing may not be as robust as bigger and more established insurers.

### **Documentation**

Control-minded actuaries may welcome the degree of formality that Solvency II requires, in areas such as process documentation. However in small and growing companies, where processes could change regularly as the business develops, the effort of maintaining up to date documentation could be crippling high.

### **Capital models**

Smaller firms may find it harder to justify the investment needed to develop an internal capital model. The requirements of building, parameterising, documenting, validating and using an internal model are proving to be challenging even for bigger firms with large, dedicated capital modelling teams, and the effort does not reduce in line with the size of the firm, so smaller firms may be more likely to use the standard formula to calculate regulatory capital. This may put them at a capital disadvantage, as the standard formula typically produces higher capital requirements than internal models. The option of using Undertaking-Specific Parameters to modify the standard formula depends (in current guidance) on being able to demonstrate stability, so it is currently out of reach for many smaller and/or newer companies.

## **13.2 Mitigating the cons**

To help to keep track of the evolving Solvency II requirements, there is a lot of useful information that can be accessed without cost. There is also a lot of information that hinders rather than helps.

Apply a healthy dose of scepticism when interpreting information about Solvency II requirements from anyone who wants you to buy their Solvency II services, such as actuarial consultancies. In our experience the significance of problems (or potential problems) highlighted is sometimes overplayed. For example it is not unknown for documentation within a firm to be criticised as “not being up to Solvency II standards”, although the area being documented is not directly covered by the directive. There may also be a temptation to propose a comprehensive solution to a problem that would not pass the proportionality test.

Potentially useful sources of information include:

- Guides and fact sheets from bodies such as the International Underwriting Association, that can be helpful in providing background information, guidance and education material
- The Lloyd's of London website, which has a lot of information in the public domain, including on-line tutorials and documents on risk management, ORSA, model governance, technical provisions, calculation of the standard formula and many other topics. While this is clearly their own interpretation of how the directive should be applied, it is always helpful to be able to read through suggestions of how issues can be addressed (and indeed to get clues as to where the major issues are).
- The Prudential Regulation Authority website publishes email addresses for sending queries both about the directive in general and the IMA process.
- Conversations with your peer group will also assist in finding out how the market is dealing with particular problems or issues. Your network of contacts can be increased by joining groups such as our working party. Some areas of practice also have their own bespoke network groups, such as the London Market Actuaries Group.



## 14 Situation: limited consultancy budget

*Smaller insurers likely to have a small consultancy budget; in many cases there are alternatives to using consultants; we present some suggestions for getting the best value from an engagement*

### 14.1 Description, including pros and cons

Most insurers, large and small, make use of actuarial consultancies. It's rare that an entity will have all of the necessary actuarial expertise in-house to manage every situation where actuarial input may be required. Even where the internal expertise is considered sufficient there may be a Board or compliance requirement for an external peer review of the internal actuarial work already done.

Some examples of situations where consultants may be used include:

- Independent calculation of IBNR reserves
- Review of the methodology used for internal IBNR calculations
- Review of a product rating structure, at a micro and/or macro level
- Catastrophe modelling
- Advising on the design of reinsurance programmes
- Capital modelling

It's reasonable to assume that a smaller company will have a smaller quantity of funds available for the purchase of actuarial consultancy services. The challenge is in getting the most value from this.

Having a limited budget focusses the mind on exactly what is required by the business. It's all about specifics. For those actuaries who in previous lives have been caught up in large company consultancy led projects that felt like swimming in treacle the clarity of focus that a small insurer / limited budget situation can bring will feel like a breath of fresh air.

As discussed elsewhere, the actuary at a smaller insurer is likely to have to take ownership of a wider range of activities, with the consequent benefits of obtaining a greater breadth of knowledge. If used properly an actuarial consultant can help to free up the time of the small insurer actuary so that s/he is better able to concentrate on the most important areas of the business.

To get the most from consultants there is a need for negotiation and perhaps management skills. The actuary will have to ask him/herself if they feel that they have sufficient experience in this area.

Consultants are good at presentations and will say the right things and appear to be hungry for the business. There may be a real difficulty in deciding who should get the contract, especially if you are inheriting a situation where a particular firm has been used in the past and appears to be favoured by the Board or senior managers.

When the work actually gets underway you may be unpleasantly surprised by the lack of experience or knowledge of the consultancy staff who are assigned to the task. The danger is that a consultancy sees the small insurer as an appropriate training ground for its junior staff.

There may also be a need to manage expectations internally. Actuarial tasks are not necessarily proportional to the size of a company; a lot will also depend on the complexity of the company and its products.

## 14.2 Mitigating the cons

Firstly, don't assume that you have to bring in a consultant. Think about the expertise that may be available to you from outside the business. For example your reinsurance broker may be able to provide additional services for a modest price given that they are already receiving brokerage fees. Also consider the resources available through the Institute and Faculty of Actuaries - searching the library for a particular topic can provide useful material for other projects.

If you do decide to go down the consultancy route then you need to find out as much as you reasonably can about any consultancy that you are planning to use, especially if the consultancy is a relatively unknown entity. Talk to your peers and make use of your network of contacts.

Don't pay for reports that feed back to you factual information that is available from reading published materials (e.g. regulatory directives etc.). Give a clear and limited specification. If you give them an open-ended brief, it will cost more for no more benefit. Consider whether you want a written report, or just an afternoon of brainstorming ideas.

During the tendering process make it clear to each candidate firm that there are others being considered for the work. Ask them how they will add value to your business in a way that their competitors may not. Can they for example share some of their benchmark information with you, or do they have insights that can be used in other parts of the business.

You want to be certain that the consultancy staff involved with the project have appropriate knowledge and skills, so during the negotiation process ask who it is that will be doing the work and require to see their resumes. In particular you will want to know what experience they have of doing projects like the one you have in mind.

Consider other angles during the negotiation process which may encourage the consultancy to offer a keener price:

- Discuss the possibility of repeat work and ask for the one-off costs to be spread over a number of similar exercises in the future
- Ask whether the consultancy is developing any kind of software and whether they would be interested in using your company as a test-bed

The contract needs to be worded in a way that incentivises the consultancy to get the job done with maximum efficiency, so consider the use of penalty clauses for failure to meet defined objectives.

Finally, if you are not comfortable with your negotiation and/or management skills then consider attending a course which can help your development – and preferably count towards your CPD requirement.

## 15 Conclusion: list of tips

For easy reference, here is a summary of the recommendations from the earlier sections of this report, which we have organised into what to do before starting a role, what to do immediately, and what to do on an ongoing basis.

### 15.1 Before starting

- Join the Actuaries of Smaller Insurers working party, and build up a network of peers in similar roles
- Ideally, make sure that you have a significant degree of actuarial experience before taking on a “lone actuary” role
- Agree terms of reference carefully; set out your capabilities clearly (to counter jack of all trades syndrome)
- Expect the role to develop over time. Think about areas of the business you would like to be involved in; if you prove yourself then opportunities are likely to emerge
- Discuss how your personal appetite for innovation and change fits with the company culture, and ask about the company’s approach to decision-making - committees; parent company approval, etc.
- Ask about the company’s relationship with the regulator, and check that what will be expected of you in the role is realistic taking account of the PRA’s stance for smaller firms.
- Do your homework about data modelling
- Set expectations about how much effort you will need to spend getting data models in place
- There is always a balancing act between meeting your boss’s needs and ensuring you maintain professional standards. In interview, explore the prospective boss’s understanding of the need to act in a professionally responsible manner
- Make sure the company is aware of the requirements for CPD for qualified actuaries. If building a team is a foreseeable part of your remit, make sure that they are aware of the cost and time commitments involved in employing student actuaries. Be ready to articulate the benefits for the company of having well trained and educated staff who are more able to develop and contribute to the growth of the company.
- If the prospective employer is not prepared to meet the costs and time commitments of CPD, but you still wish to proceed with the role and take on the costs yourself, you should still make the employer aware that you will need to take time from work (out of your annual leave if necessary) to attend conferences, sessional meetings and other events in order to keep up your professional standards.
- Familiarise yourself with methodologies for dealing with smaller datasets, such as those in the list maintained by the Working Party. We have recorded methodologies covering areas such as:
  - Modelling own large claims experience against market benchmarks, and constructing experience-adjusted distributions
  - Pragmatic approach to correlations
  - Building prior ultimates for reserving based on externally-available market data

### 15.2 On day 1

- If you haven’t already done so, join the Actuaries of Smaller Insurers working party
- Look at the baptism of fire as an opportunity to establish yourself
- Focus on activities that make a difference and add value; avoid the temptation to tackle familiar issues first
- Don’t reinvent the wheel or take on too much. You can influence change over time.
- Now is the best time to ask questions
- Don’t wait for invitations or offers of support from other functions. Being proactive will help you cope with hitting the ground running and getting support structures into place.

- Set up robust and transparent procedures from the outset. These may help in explaining to others how one has approached a particular analysis and may also make it easier to update certain aspects of a process, as one gains more experience.
- Establish clear lines of communication and transparency. You can mitigate the effect of changes made by other departments by making sure there is open communication with the relevant process owners to discuss your observations and try to identify the causes of any inefficiency. For example, based on the working party's experience it is often much easier to find out about a change to a claims process if you are able to clearly demonstrate the effect on the claims data to the claims manager.
- For reserving, set up a clear delineation between best estimate and booked reserves, with clear ownership of each number.

### 15.3 Ongoing

- Be brutally organised, in your personal organisation, and in how the function is structured
- Maximise the resources available to you, particularly the intellectual assets of colleagues with experience of the business.
- Use guidance and regulation as often as you can to back up your views.
- When taking on work outside your area of expertise you need to communicate clearly the limitations of your knowledge and experience. Input from other actuaries (e.g. those in the working party) may prove to be valuable.
- Attend relevant seminars and courses. As well as discussion with peers, conferences can also provide relevant technical development to assist a "lone actuary" in working competently.
- You are likely to face resistance to change. Make sure you can articulate clearly the benefits of changes you propose. Be ready to compromise.
- Focus on the way you communicate your messages, and make sure they are clear and can be understood by a largely non-actuarial board of directors.
- Maintain as close a relationship with the regulator as possible, and also to take advantage of regulatory briefings provided by regulators themselves, and auditors/consultants.
- When recruiting:
  - Be aware that it may be tempting for some recruiters to inflate salary expectations
  - Be ready to articulate the benefits of working in small firms (as well as being up front about the cons), and in particular to dispel the myth that larger firms offer greater variety of work
  - Look for people who are prepared to question and challenge you, point out blind spots etc
  - Make sure there is a fit with the existing team.
  - Be aware of new recruits' probationary periods, and don't carry someone who is not performing well.
  - If you recruit trainees, speak to actuaries from other small insurers (e.g. through the working party) about setting up study groups.
- When considering working with consultants:
  - Don't assume that you have to bring in a consultant. Consider whether you can get help from reinsurance broker, actuarial profession resources, in-house non-actuaries with significant insurance expertise, non-executive directors, actuarial resources in parent / sister companies, etc.
  - Do your homework on any consultancy that you are planning to use; talk to your peers and make use of your network of contacts.
  - During the tendering process ask each consultancy how they will add value to your business in a way that their competitors may not
  - Give a clear and limited specification.
  - Don't pay for reports that feed back to you factual information that is available from reading published materials (e.g. regulatory directives etc.).
  - Consider if you need a written report, vs. an afternoon of brainstorming ideas
  - Consider the use of penalty clauses for failure to meet defined objectives.
  - Ask to see resumes of the specific staff involved with the project; check they have adequate knowledge and skills, and experience of doing directly relevant projects

- To encourage a keener price for the job, discuss the possibility of repeat work and ask for the one-off costs to be spread over a number of similar exercises in the future; ask whether the consultancy is developing any kind of software and whether they would be interested in using your company as a test-bed
  - Be sceptical when interpreting information about Solvency II or other requirements from anyone who wants you to buy their Solvency II services
- If you identify a conflict of interest:
  - Work out significance of the issue, and whether there are adequate controls over the risks.
  - Use a 4-eyes principle – using someone else who is more independent of the issue but who has suitable skills, e.g. other professionals within the company
  - Most importantly, document what you're doing to manage the situation, and ensure that this is approved at an appropriate level.
- Working with sparse data:
  - Combine different types of risks (e.g. multiple small portfolios) to improve the credibility of datasets
  - Familiarise yourself with freely available sources of data, such as the list maintained by the Working Party