

insurance matters

Focusing on the non-life industry

Creating value from
capital modelling

M&A trends


Solvency II and QIS 4

Lessons from the
sub-prime crisis

Price optimisation



If you would like to discuss any issues raised in this publication please contact Nick Hall – nick.hall@watsonwyatt.com Telephone +44 (0)1737 241144



Welcome to insurance matters

Welcome to our first edition of *insurance matters*, a publication launched to help our non-life Insurance and Financial Services clients stay abreast of developments in the industry. Given the timing of its publication, we have designed the inaugural issue to tie in with the 2008 GIRO Convention in Sorrento. Many of the authors featured in this issue are speaking at GIRO, and you can find details of their sessions in the 'GIRO speaker profiles' section on page four.

The forthcoming regulatory changes of Solvency II and IAS are driving companies to improve their risk management processes and better understand risks. Actuaries have a significant role to play in helping to build better processes and financial models for pricing, reserving, business planning and economic and regulatory capital calculation. In addition to this, the global credit crunch and soft market conditions are concentrating attention on investment returns and the pricing of risks.

The articles in this edition of *insurance matters* cover a range of areas that we hope will be of interest to clients in these challenging conditions. Although aspects such as Solvency II require thought and preparation, as discussed in the relevant articles, it remains true that the core profitability of an insurer will be dictated by the validity of its pricing strategies. We have accordingly included features on the latest pricing developments, from price optimisation to best practice in pricing.

Lastly, in addition to articles on other insurance fields, we thought it would be of interest to GIRO attendees to include some more 'volcanic' material: see page six for information about the local dangers!

We very much hope that you find this edition of *insurance matters* useful to you and your organisation, and we welcome your comments.

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Watson Wyatt GIRO speakers

Watson Wyatt's Insurance and Financial Services general insurance team

The Watson Wyatt general insurance team comprises more than 60 specialist associates around the world, with 25 associates based in the UK.

Our non-life team includes experts in Solvency II, enterprise risk management, capital modelling, personal and commercial lines pricing, reserving, M&A, run-offs, securitisation, catastrophe modelling and expert witness work. In Europe we operate from offices in the UK, Ireland, France, Belgium, the Netherlands, Germany, Spain, Italy and Hungary, and this wide geographical base helps us to work effectively with multinational clients in the key European markets.

Our range of consulting expertise is backed by widely-used software products designed specifically for non-life insurers. Over the last year we have strengthened our software offerings with substantial investment in Simulum, our economic capital modelling package, Pretium, our premium rating package, and IBNRS, our reserving package.

Sanjiv Chandaria

Sanjiv joined Watson Wyatt in May 2007 as a principal actuary to develop the London Non-Life business. He was previously a Director in the insurance actuarial practice of PricewaterhouseCoopers where he worked for more than 13 years. He is a Fellow of the Institute of Actuaries, a member of the American Academy of Actuaries and has a current Lloyd's practising certificate.



Sanjiv is a Lloyd's and London Market specialist but has provided consulting services for more than 16 years to a variety of organisations including Lloyd's syndicates, London Market reinsurers, personal and commercial lines insurers, captive insurers and non-insurance entities seeking to self-insure risk.

Sanjiv attended his first GIRO Convention in 1992, was Chairman of the Reinsurance Pricing working party in 1998 and 1999 and has also presented at several GIRO workshops including Reinsurance Purchasing Strategies, Transfer Pricing and Reserve Uncertainty.

Sanjiv is married with two young children and much of his time outside of work is family orientated. He is also a keen golfer; his lowest handicap having been 11 but this has steadily been rising over the last few years and now stands at 19. He also enjoys following cricket and football.

Sanjiv will be running Workshop D1 – London Market Pricing in the Soft Market. This will be an up-to-date version of the workshop run earlier in the year at the Institute's pricing seminar. If you would like further information on this topic please contact sanjiv.chandaria@watsonwyatt.com

James Tanser



James is a senior consultant who specialises in predictive modelling of insurance risk and is primarily involved in statistical premium rating of personal lines business.

He has served on several of the UK Institute of Actuaries' working parties and this year chaired the working party looking at effective ways to model customer purchasing behaviour. Over the last 10 years, James has been closely involved

in the development of Watson Wyatt's predictive modelling software system, Pretium.

An avid sailor, James participated in the 2006 Atlantic Rally for Cruisers – the world's largest transatlantic sailing event – successfully crossing the 2,700 nautical mile course from Las Palmas de Gran Canaria to St Lucia in the Caribbean, and gained the qualification of RYA Yachtmaster Ocean. His other interests include reading, cooking and fine wine.

If you are interested in predictive modelling techniques that can be applied to analysing customer behaviour, James will be running Workshop A1 – Report from the demand modelling working party with Owen Morris, or you can contact james.tanser@watsonwyatt.com

Graham Fulcher



Graham joined Watson Wyatt in August 2008 as a principal actuary, having previously worked as Chief Actuary of ACE European Group – running a large team of over 30 staff with responsibility for all areas of actuarial work including reserving, pricing, capital management and catastrophe modelling and input to reinsurance purchasing and planning.

Graham has served on a variety of Institute Actuarial Working Parties, more recently chairing the Catastrophe Modelling working party which was awarded the Brian Hey prize at the 2006 GIRO conference, and the Securitisation working party which he will present at the 2008 GIRO Convention. He is an active member of the Institute of Actuaries Climate Change working party and presents widely on the topics of catastrophe modelling, climate change and securitisation. He is also Deputy Chair of the London Market Actuaries Group.

A keen follower of cycle racing and football, Graham is married with two young daughters, is an active member of his local church, reads widely and reportedly likes indie, punk and grunge music. He will be presenting at Plenary 4 – Lime Street, Wall Street and Main Street – reporting back from the Securitisation working party.

For further information on insurance securitisation please contact graham.fulcher@watsonwyatt.com



Ryan Warren

Ryan is a principal actuary in our non-life team and a member of the Insurance and Financial Service's UK management team. Ryan is a member of the Current Issues in General Insurance Committee of the Institute of Actuaries and is a regular speaker at Institute events.

Ryan works in a variety of general insurance areas in the UK and overseas. His particular areas of skill include: personal and commercial lines pricing, applying GLMs in non-standard situations, assisting UK and London Market insurers with ICA calculations and submissions, and independent expert work.

Ryan's hobbies include golf, fly fishing and sailing. True to his origins he is also a passionate supporter of the Springboks South African Rugby team.

If you are interested in learning more about Predictive Modelling Techniques in Commercial Lines Pricing Ryan will be running Workshop C1 with Buu Truong or you can contact ryan.warren@watsonwyatt.com

Rob Collinson



Rob is a principal consultant, having joined Watson Wyatt in September 2007 with

19 years of experience in general insurance. He previously led the global non-life modelling team at Deloitte & Touche.

Rob specialises in the design and implementation of major commercial capital modelling offerings in the context of a wide range of businesses, including London Market enterprises, international mutuals and multinational composites. Rob is currently involved in the development of stochastic capital modelling approaches, including Watson Wyatt's software system, Simulum.

A regular industry speaker, Rob's group workshop at this year's GIRO Convention will discuss the fungibility of capital. He has also recently published an article in *Insurance Day* on 'Objective Optimisation Strategies'.

His interests include breeding horses and participating in competition dressage. Rob is also a former international middle distance runner.

To find out more about capital you can attend Workshop E4 – Capital: Rigidity, Fluidity and Fungibility which will be run by Rob and Simon Pollack or you can contact rob.collinson@watsonwyatt.com

Richard Bulmer



Richard is a principal actuary at Watson Wyatt and his areas of experience include: reserving exercises for

a wide range of UK personal lines companies, Irish companies, London Market companies and captives and providing litigation support and/or acting as an expert witness in respect of various disputes.

Richard also leads the Watson Wyatt Solvency II Group and is a member of the UK government's Treasury Department Solvency II Roundtable. He is a regular speaker on Solvency II related subjects at external conferences and seminars.

Richard was a member of the General Insurance Board of the Faculty and Institute of Actuaries from 1999 to 2004 and has chaired working parties on reinsurance bad debt provisions and securitisation. He is also a Fellow of the Society of Actuaries in Ireland.

In his spare time, Richard is involved with his local church and enjoys walking in coastal areas and throughout the Surrey Hills. He supports Yorkshire Cricket Club and enjoys playing cricket and various other sports with his son.

If you are interested in learning more about Solvency II, Richard will be running Workshop D6 – Theoretical and Practical Aspects of QIS 4 or you can contact richard.bulmer@watsonwyatt.com



Dangers around Sorrento

Kirsty Gray takes a look at the risks of living near an active volcano.

This year's GIRO Convention is being held in Sorrento on the Amalfi coast of Italy. Looking out from Sorrento over the Bay of Naples gives a sense of peace and tranquility, with no hint that the African and Eurasian tectonic plates meet below it or of the dangers lurking behind. However, Mount Vesuvius, regarded as one of the most dangerous volcanoes in the world, lies only nine kilometres east of Naples.

So, while you sip limoncello at the drinks reception at the Hilton Sorrento Palace, spare a thought for the destructive power of the volcano nearby!

Explosive facts

Vesuvius is best known for the eruption in AD 79 which led to the destruction of Pompeii and Herculaneum. It is estimated that the eruption lasted around 19 hours and released about four cubic kilometres of rock and ash over a wide area. 1,150 remains of bodies have been recovered in and around Pompeii and remains of about 350 people have been found at Herculaneum, although this is thought to be a fraction of the total number of fatalities. Such massive eruptions are called Plinian (after the famous Romans Pliny the Younger, who wrote a surviving eye-witness account, and his uncle Pliny the Elder who died because of the blast). They appear after millennia of inactivity, previous examples being around 1,660 BC and 6,000 BC.

Less massive but still very destructive eruptions occur after centuries of inactivity. The most recent was in 1631 and killed more than four thousand people in what was then a sparsely populated area. The then Viceroy of Naples had a marble inscription made warning "generations to come" of what

happened and (using an early form of actuarial projection!) saying that "the present illuminates the future with its light", that the same event has happened "twenty times since the sun has appeared", and that each time it is "followed by great extermination for any who hesitate".

Eruptions have taken place over thirty times since AD 79 – most of them being of the less severe Strombolian type. The latest was in 1944 when several villages were destroyed along with 88 aircraft from a US bomber group.

Since 1944 there have been no eruptions, but that does not indicate that the danger has gone. Indeed, the potential for the volcano to erupt suddenly and cause widespread damage and disruption to the 3,000,000 people now living close by is very serious: this has been the longest length of time without an eruption in the last 500 years.

The area around the upper part of Vesuvius has been turned into a National Park to ensure no further building can take place, and financial

incentives have been put in place for people to move away from the area. However, the Osservatorio Vesuvio in Naples closely monitors the seismic activity, and emergency evacuation plans are in place for the 600,000 people living in the most dangerous area. The plan assumes a warning period before the eruption of at least two weeks. Showing the accuracy of the Viceroy of Naples warnings, it has been estimated that if the 1631 eruption did occur without any form of prior evacuation 400,000 people would be killed in less than five minutes.

If you are interested in visiting Vesuvius, coaches can take you to within 1,000 metres of the summit and from there you can take the spiral walkway around the mountain to the crater at the top and stunning views of Naples and the bay below.

The archaeological areas of Pompeii and Herculaneum, designated UNESCO World Heritage sites, are amongst the most popular tourist sites in Italy and are only a short trip from Sorrento. But you might just like to check the level of seismic activity before you go!

Lloyd's and the London Market:

capital management and pricing trends

Sanjiv Chandaria presents headline results from a recent Watson Wyatt survey

Watson Wyatt recently conducted a survey of practitioners in Lloyd's and the London Market, with the intention of gauging current trends in pricing and capital management. Our research was based on questionnaires completed by, and interviews with, actuaries and senior management from organisations across the market.

The survey showed that the top five issues in the sector are as follows:

■ Underwriting in a soft market

Whilst 84 per cent of respondents believed their underwriters would write business which is expected to achieve a below target return, even more (92 per cent) believed their competitors would write such business.

■ Capital management

Capital management processes and models are considered to be of value in day-to-day business decisions but not yet well embedded, particularly in respect of underwriting and reinsurance purchasing.

■ Competition

69 per cent of respondents felt the new Lloyd's syndicates started in 2007 and 2008 would impact the underwriting cycle either by accelerating the fall in rates or making rates fall further or both.

■ Embedding capital and risk management into the business

There is some way to go before capital models are fully embedded. For example, only 40 per cent of respondents review their capital model when major changes occur in the business.

■ Talent management and retention of staff

Demand for well qualified and experienced insurance professionals continues to be high. In particular, actuaries are being used very selectively in pricing risks given their scarcity and cost (mainly on risks where they are perceived to add the most value).

insurance matters in the numbers

400,000

The estimated number of people that would be killed in less than five minutes if a Vesuvius eruption occurred without any form of prior evacuation.

See page 6

84%

Of respondents to Watson Wyatt's, Lloyds and the London Market Survey believe their underwriters would write business which is expected to achieve a below target return.

See page 7

30%

The annual rates of return on equity achieved in CEE.

See page 15

31%

The Chief Risk Officer Forum has suggested that diversification across risk types within legal entities could reduce capital requirements by 31%.

See page 21



A man with glasses, wearing a dark suit, a blue checkered shirt, and a purple tie, is smiling and looking towards the camera. He is standing outdoors in front of a light-colored building with white-framed windows. A blue container and some greenery are visible in the background.

Creating value from capital modelling

Rob Collinson explains how companies can create value from capital models.

Capital models are now ubiquitous throughout the UK insurance community following the highly successful implementation of the ICA risk-based capital regime – a trend set to expand throughout Europe as Solvency II approaches completion within the next few years.

Insurers are placing additional demands on these models to create value, whilst regulators stress the importance of the risk-based framework pervading all aspects of operations. This article considers an approach by which an internal model can be integrated within the organisational decision-making framework.

The regulatory trend

In the *FSA Lessons learned* publication, it was noted that significant progress has been made to effectively model the capital requirements of a business under stressed conditions, but that more emphasis needs to be applied to the risk dynamics of the business in less extreme situations.

In our own experience, we have noted that many models have been designed to consider the impact of stressed conditions on the value of assets and liabilities without adequate integration with strategic and tactical decision-making frameworks. In light of this observation we would emphasise that more work is required to embed risk models as part of the corporate risk management framework.

Looking forward, this integration of risk and capital management frameworks is particularly important to organisations wishing to use internal models for Pillar 1 capital requirements under Solvency II.

Barriers to the use of capital models

The use of capital models to inform strategic and tactical business decisions presents insurers with a number of key challenges. These include:

- **Time.** Many decisions need to be made within a relatively short timescale, whereas capital models have traditionally required a significant period of time to calibrate, run and interpret.
- **Ease of interpretation.** Capital models typically produce large volumes of complex output. It is important that consistent reports are produced to enable non-technical consumers to absorb and interpret this information effectively, hence allowing better-informed decisions. Ideally, it should be possible to present a consistent format of analysis to decision-makers that is broadly independent of the nature of the decision.
- **Relevance.** Analysis based upon the output from the capital model must retain the key features pertinent to the decision, whilst maintaining the clarity necessary to inform non-technical decision-makers.





Capital-based approach to decision support

Generally, capital models can best contribute information to business decisions when these can be broken down into a set of choices such as:

- Should we undertake a particular course of action?
- If so, to what extent?
- Is there a 'better' course of action?

Clearly, this raises the question of what precisely is meant by 'better'. When considering such choices within a capital framework it is possible to define objective criteria under which one course of action may be evaluated against another. This article suggests an approach by which scenarios may be objectively ranked and presented in a consistent manner that is broadly independent of the nature of the decision.

The method that we consider is highly general, but within this article we consider two specific examples of business decisions to illustrate the approach.

Example 1: Deciding on asset allocation

In this simple example, we consider what proportion of equities should be held in the mix of assets supporting technical reserves. The analysis follows the steps set out below:

Prepare a base model and a number of alternative possible scenarios.

Prepare the capital model in a number of scenario configurations ranging from 0 to 100 per cent equities. Other investment classes are cash and bonds. Each model is then run with an appropriate number of simulations.

Consider the capital requirement for each strategy.

The capital requirement is then calculated for each strategy. Whilst the basis must remain consistent between scenarios, capital may be estimated for any appropriate measure of impairment (such as probability of ruin or probability of a ratings downgrade).

The capital requirements from each scenario may then be compared.

Figure 1 | Capital versus strategy



Figure 2 | Return on capital versus capital required



Figure 1 (on the previous page) demonstrates how the capital changes as the proportion of equities is varied from 0 (scenario 1) to 100 per cent (scenario 11).

From **Figure 1** it can be seen that increasing the proportion of equities initially results in a reduction of capital requirements as the improved asset performance is well diversified against insurance risk. As the proportion of equities continues to increase, however, capital becomes increasingly driven by the simulations in which equities perform poorly and where this can no longer be 'diversified out'.

From this analysis it can be seen that strategy 7 gives rise to the lowest capital requirement.

However, this has considered only the 'downside' risks of any given course of action, not the possible rewards.

Consider the reward associated with each strategy.

We now consider the expected benefits associated with each strategy. For each case we calculate the expected return on capital. These calculations indicate that initially, as the proportion of equities increases, the expected reward increases more quickly than the capital requirement resulting in an increasing return on capital. After strategy 9, however, this trend reverses.

This analysis indicates that strategy 9 is preferred. How can these conclusions be reconciled? We need to combine risk and reward.

Consider risk and reward simultaneously.

In this analysis we plot return on capital against capital required. Additionally, we also consider the amount of capital available and the 'hurdle rate' describing the minimum acceptable expected performance.

In **Figure 2** (on the previous page) each point indicates a particular scenario. This diagram may be interpreted using the following criteria:

- Any point to the left and higher in the diagram may be considered 'better' than another strategy in the sense that less capital is required whilst a higher return on capital is achieved.
- Only strategies to the left of the red 'available capital' line may be considered, as others are not affordable with current resources.
- Only strategies above the orange 'hurdle rate' should be considered as all others fall below the minimum performance criteria.

Based upon these criteria, only those strategies in the top left quadrant satisfy both performance and affordability constraints. In this case, strategies 8 and 9 have been identified as having the highest expected performance whilst remaining under the available capital constraints.

It can also be demonstrated that the choice of reward measure can materially affect the analysis. For example, if expected insurance result is used in place of return on capital then we obtain a curve where increasing the proportion of equities always results in an improved reward measure.





Example 2: Deciding on a reinsurance structure

The approach outlined in Example 1 is highly general and may be applied to a very wide range of problems. For instance, we can use this method in the context of outwards reinsurance to address the following questions:

- Is the current structure good value for money?
- Should purchasing decisions be made at a group or line of business level?
- What is the right price for outwards cover?

We can apply the method by breaking the outwards reinsurance structure into 'program levels' and consider these as strategies. For instance:

- Strategy 11 – fully gross – no reinsurance.
- Strategy 10 – catastrophe cover only.
- Strategy 9 – catastrophe and high level XL only.
- Strategy 8–2....
- Strategy 1 – all reinsurance.

We plot the capital requirement and return on capital for each strategy. For instance, the return on capital results appear in Figure 3.

The risk and reward perspectives can be combined, giving the graph of return on capital against capital required shown in Figure 4.

This case study brought out the following points:

- Running the business gross of reinsurance results in the highest expected return on capital. However, this results in an extremely large capital requirement, well beyond the resources available.
- As additional reinsurance treaties are added, both capital requirement and expected return on capital decrease.
- As more reinsurance is added, it is possible to observe a systematic decrease in value. In the most extreme case additional reinsurance is purchased which makes no difference to, or even increases, the capital required.

Figure 3 | Return on capital versus strategy



Figure 4 | Return on capital versus capital required



“ More work is required to embed risk models as part of the corporate risk management framework. ”

- A relatively small number of scenarios require less capital than that available whilst providing a better return than the hurdle rate. Additionally, all such scenarios require far less reinsurance than that currently purchased.

This analysis is of particular benefit in the following cases:

- Identifying candidates for commutation.
- Highlighting misalignment between reinsurance purchasing strategy and corporate risk management.
- Measuring the marginal benefit of additional reinsurance.

Conclusion

Whilst we have considered two simple examples within this article, the approach set out is highly general and may be applied to a wide range of situations including the pricing of deals and entry into new lines of business.

It is important, however, to note that the analysis we have described does not make the decision: rather, it provides objective information regarding the likely quantitative implications of the courses of action considered. As always, key inputs such as choice of risk measure and risk appetite will materially affect the conclusions, and these assumptions must be derived from the experience and aims of the company.

The approach outlined highlights a highly general structure under which a range of strategic decisions may be evaluated using a consistent approach. It is a powerful tool for the executive decision-maker.



**Simulum 3 is coming...
December 2008**

For more information on Simulum 3, please contact
Rob Collinson on +44 (0) 1737 241144

watsonwyatt.com

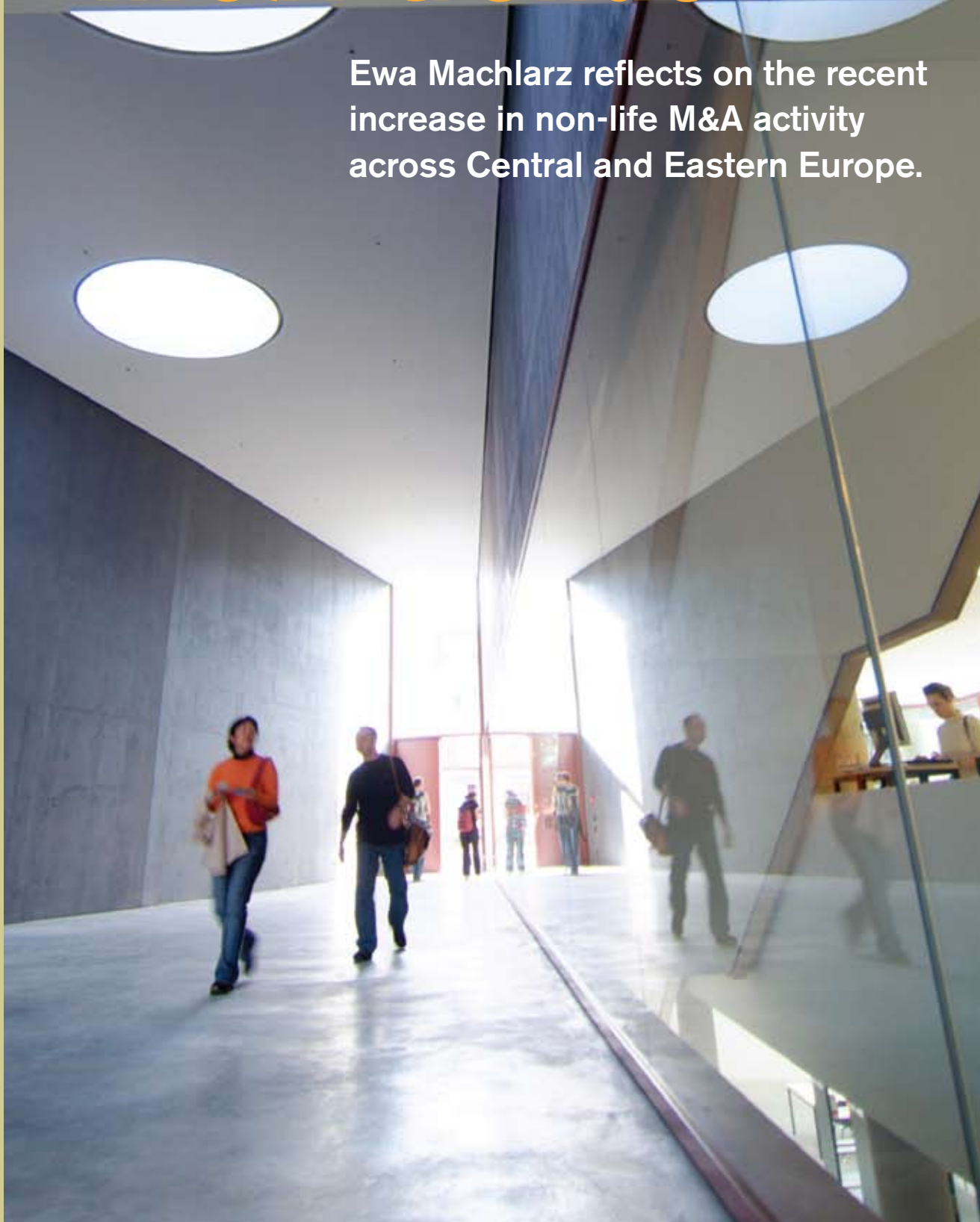
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 **Watson Wyatt**
Worldwide

M&A trends

Ewa Machlarz reflects on the recent increase in non-life M&A activity across Central and Eastern Europe.



M&A activity in the non-life insurance sector across Central and Eastern Europe (CEE) has increased substantially in the last financial year. Much of this has been driven by insurers' market-entry strategies with the potential for high premium and profitability growth. The prices being paid, however, appear to already include a strategic premium – raising the question of whether shareholders will actually benefit from paying the current high prices.

Geographical patterns

Multinational insurers are beginning to gain a firm foothold in the insurance sector across CEE countries and into Asia. For example, over the last 36 months, multinationals have taken over the majority of the non-life insurance companies in Turkey. Those owning operations in the country now include AEGON, AIG, Allianz, Aviva, AXA, Ergo, Eureka, Generali, Groupama, Liberty, Mapfre, TBIH and Zurich (See **Figure 1** overleaf). With only a few local companies left in Turkey, multinationals have turned their sights to other CEE countries with high growth potential such as Romania, Bulgaria and Slovakia. Russia is the next obvious target with the potential for high volumes of business, whilst the Ukraine is also starting to attract interest.

Supply and demand

M&A activity has been driven by factors affecting both the supply and demand sides of transactions. On the supply side, the credit crunch has been significant, with bancassurers in many CEE countries deciding to offload their non-life assets to repair their balance sheets. For most bancassurers, non-life insurance is considered to be a non-core activity as it is not as closely aligned to banking as it is to life assurance (where the amount of funds available for investment is attractive to banks). So for those affected by the credit crunch and looking for additional financing, the sale of non-life insurance assets is an attractive option. In addition, the likely significant increase in required capital under Solvency II has caused bancassurers to further question the benefits of retaining their non-life insurance businesses.

On the demand side, competition for the available insurance assets in CEE was already strong as companies in mature markets such as the UK have been finding it increasingly difficult to grow organically, and so have been looking for growth potential elsewhere. This has forced organisations to think strategically about where they should best deploy their capital in the near future. The credit crunch has not had the same impact on insurance companies as it has had on bancassurers, and as such, insurers are in a relatively favourable position with an opportunity to increase their portfolios as the non-life insurance

assets come back onto the market. In addition, the implementation of Solvency II could make geographical diversification more attractive to non-life insurer groups by reducing overall group capital requirements. That said, the precise treatment of groups and the extent to which the transferability of capital within a group will be allowed under Solvency II is still uncertain.

Pricing and profitability

Demand for CEE non-life insurance assets has also been driven by the historically high profitability of companies in these markets. The annual rates of return on equity achieved in this region have often been above 30 per cent: such returns are difficult to find in more developed insurance markets.

In addition, in most of the transactions we have seen in Turkey and in CEE countries, the target companies usually have a relatively high proportion of reinsurance. In less developed insurance markets, such reinsurance has allowed use of the reinsurers' expertise in pricing some products and lines of business, as well as reducing the volatility of bottom-line financial results. It has also meant, however, that a large amount of profit is passed on to these reinsurers.

As multinationals acquire the companies, the pricing expertise of the reinsurer becomes less important. In addition, reducing the volatility of results through reinsurance is not as important, as the volatility of a subsidiary's results can be absorbed



Figure 1 | Multinationals in the Turkish Insurance Market

| Multinational | Company | Year |
|---------------|--------------|--|
| AEGON | Ankara | 2007 |
| AIG | Greenfield | Founded in 1989 |
| Allianz | Şark Sigorta | Partner in Şark Sigorta in 1988; JV with Koç Group; 2008 buys out Koç shares in 2008 |
| Aviva | Greenfield | Founded in 1988 |
| Axa | Oyak Group | JV with Oyak Group in 1999; 2008 buys out Oyak shares in 2008 |
| Ergo | İsviçre | 1996 |
| Eureko | Garanti | 2007 |
| Generali | Greenfield | Founded in 1989 |
| Groupama | Başak | 2006 |
| Liberty | Şeker | 2007 |
| Mapfre | Genel | 2007 |
| TBIH | Ray | 2007 |
| Zurich | TEB | 2007 |
| Groupama | Güven | 2008 |
| HDI/Talanx | ihlas | 2007 |

within group worldwide results with relative ease. Furthermore, to the extent that some reinsurance remains necessary, the multinationals will have greater negotiating power with reinsurers because of the amount of business they transact worldwide. All of this implies higher retained profits for the insurance company, justifying a higher purchase price.

In less developed insurance markets, pricing techniques for non-life insurance products are usually less sophisticated than those in the UK and some other western European countries. This provides an opportunity for companies to employ these techniques to extract further value from the purchase. As more and more multinationals purchase businesses in CEE, however, competition in these areas is likely to increase leading to correspondingly lower profitability: there may be only a small window of opportunity to achieve high profits in CEE.

Although the possible future growth in volumes, the reduced dependency on reinsurers and the potential to apply more sophisticated pricing techniques make local CEE insurers very attractive to multinationals, from our experience the prices being paid are significantly greater than would be indicated by financial projections of the local companies as they stand – in other words, a strategic premium is being paid which appears to take into account much, or all, of the value that can be generated.

Expected developments

We expect M&A activity to increase over the next couple of years in the CEE region. There will be further consolidation of the markets with companies trying to get a foothold in each. The multinationals will end up with operations in most countries across Europe and there will be few large local companies left.

Indeed, it is possible that demand for acquisitions will outstrip supply. Such is the strategic imperative of multinationals to spread their risks and their global brand that there is the possibility that those multinational insurers which have been unable to acquire a non-life insurance operation in a particular territory will enter into a bidding war, forcing prices up beyond realistic valuations. It appears that this may already have occurred in a few cases.

There are, however, a number of factors which could slow down M&A activity, the most obvious being the depth of multinationals' pockets. Large unexpected events such as catastrophes could sharply reduce multinationals' net asset values and their ability to fund acquisitions. Another potential influence could be one of the key drivers of demand: Solvency II. At the moment it remains unclear how group companies will be treated with regard to the transferability of capital between companies within the same group.

There is also the risk that some deals will turn sour. This is a particular risk where a multinational buys the insurance operations of a bancassurer and the seller becomes a distribution agent of the purchaser. In this case, the interests of the bank's shareholders may not be fully aligned with the interests of the insurance company's shareholders, the insurer seeks high profitability, the bank seeks high commissions (and hence volumes). In such cases, distribution and service level agreements are key to the overall success of a transaction.



Solvency II and QIS 4 – time to prepare

Richard Bulmer and Dean Swallow look at some of the issues and challenges facing insurers in the run-up to implementation of Solvency II.



Preparing for Solvency II

Although the year 2012 may at first seem distant, companies which delay may well find themselves at a significant disadvantage when Solvency II becomes fully operational. Furthermore, as demonstrated by the example on the right, there are a number of milestones which need to be passed prior to implementation. This is particularly the case for those firms intending to make use of an approved internal model. These milestones are:

- **Four years prior to implementation –** internal model development and parameterisation, staff training, raising awareness of Solvency II requirements and identifying issues.
- **Three years prior to implementation –** documentation of internal model and risk management processes, additional model development and parameterisation, begin process of 'embedding' internal model into decision-making and risk management processes.
- **Two years prior to implementation –** continue and build on use of internal model in risk management and decision-making processes, final model developments and documentation.
- **Final year leading up to implementation –** apply to FSA for internal model approval, FSA review, incorporate feedback.

Figure 1 | SCR internal models

| Internal risk management | Regulatory capital requirement |
|---|--|
| Use test: Is the actuarial model genuinely relevant for and used within risk management? | Calibration test: Is the SCR computed by undertaking a fair, unbiased estimate of the risk as measured by the common SCR target criterion? |
| Base methodology/actuarial model | |
| Statistical quality test: Are the data and methodology underlying both internal and regulatory applications sufficiently reliable to support both satisfactorily? | |
| <ul style="list-style-type: none"> ■ high level of embedding (including regular reporting to board) ■ full or partial models – approval process | |

Clearly, there is a great deal of preparation, ongoing development and documentation that needs to be completed prior to successful implementation in 2012. The process needs to be started early enough to be able to demonstrate that the 'use test' has been met, and also to afford the FSA sufficient time to carry out its review.

Internal model approval

In order to be approved by the FSA, internal models will have to meet a use test, calibration test and statistical quality test, as summarised in **Figure 1**.

The **use test** requires (re)insurance undertakings to demonstrate that the internal model is widely used within the business, and plays an important part in the company's risk management systems, strategic decision-making processes and economic and solvency capital assessment and allocation processes. The model also needs to be updated regularly to ensure that it remains appropriate to the company's ongoing risk profile. While this may appear similar to the use test currently applied by the FSA in respect of the ICAS regime in the UK, it is expected that the conditions will be more stringently applied with evidence required via concrete examples that the model has been 'embedded' in the business. Obviously, it will take time to build up such evidence and satisfy the use test.

In addition, the Solvency II framework will require significantly more documentation than is currently required by the FSA, including setting out details of the design and development of the model.

The **calibration test** essentially involves demonstrating that the Solvency Capital Requirement (SCR) assessment has been undertaken using the specified solvency criterion of 99.5 per cent VaR over a one-year time horizon. This differs from the current ICAS solvency criterion, which is based on run-off to ultimate with a one-year underwriting horizon. The model will need to be able to determine the relevant balance sheet items and thereby assess the solvency of the company at the end of the year. This includes modelling the year-end re-reserving process, given the projected claims experience over the year.

It may also be necessary to run a benchmarking test, using a prescribed set of data and assumptions, in order to check the reliability of the model. The model will therefore need to be sufficiently flexible to carry out this test. The requirements of the statistical quality test are potentially quite onerous. In particular, the specification in the draft Solvency II directive includes the requirements that:

- The internal model should be based upon current and credible information and realistic assumptions, which undertakings should be able to justify to the supervisory authorities.
- Credit may be taken for diversification effects provided the supervisory authorities are satisfied that the system for measurement of these effects is adequate.

In many cases, particularly in relation to tail volatilities and correlations, there will generally be a lack of relevant, credible data for parameters to be set at a high level of confidence. Furthermore, the amounts involved are typically material in the context of the overall capital requirement. Although the exact requirements of the FSA in these cases are not yet known, they are likely to involve a balance between the parameters derived from historical data, prudence and theoretical considerations.

In attempting to satisfy the statistical quality test, companies may find it beneficial to include an independent review of their model parameterisation. This would help to demonstrate that the key parameters have been set objectively and are consistent with best practice across the market.



Figure 1 | Actuarial function – Solvency II draft directive

Actuarial function – Solvency II draft directive

- To coordinate the calculation of technical provisions
- To ensure the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions
- To assess the sufficiency and quality of the data used in the calculation of the technical provisions
- To compare best estimates against experience
- To inform the administrative or management body of the reliability and adequacy of the calculation of the technical provisions
- To oversee the calculation of technical provisions in the cases set out in Article 80
- To express an opinion on the overall underwriting policy
- To express an opinion on the adequacy of reinsurance arrangements
- To contribute to the effective implementation of the risk management system referred to in Article 43, in particular with respect to the risk modelling underlying the calculation of the capital requirements set out in Chapter VI, Sections 4 and 5 and the assessment referred to in Article 44

Actuarial function

The Solvency II directive envisages an ‘actuarial function’. This role does not have to be fulfilled by an actuary, but is likely to be an actuary or actuarial group for many companies. The anticipated role of the actuarial function holder is summarised in the table above.

As can be seen, this is a wider role than that currently undertaken by most non-life insurance actuaries. Where necessary, it may be possible to outsource some of the actuarial function requirements if sufficient in-house resource and expertise are not available.

Initial observations from QIS4

The fourth CEIOPS quantitative impact study (QIS4) took place from April to July 2008 and the results are due to be published by CEIOPS around November 2008. There appears to have been a higher level of participation in QIS4 than was the case for QIS3, including a stronger participation by groups.

Standard formula for SCR and MCR

There is a common misconception that the SCR requirement will be similar to the current ICAS requirement in the UK. While this may be so in certain cases, our experience is that many companies participating in QIS4 are finding that the

standard formula is producing a relatively high SCR compared with that under ICAS. This appears to be largely because the premium risk and reserving risk factors in the SCR standard formula are significantly heavier than would seem to be implied by recent experience. This was identified as an issue in the QIS3 report, but has not been addressed sufficiently in the QIS4 specification.

The Minimum Capital Requirement (MCR) formula has been completely re-worked between QIS3 and QIS4 and is now producing higher capital requirements for many companies.

In our view, it is essential that companies have a good understanding of their likely SCR and MCR calculations, based on the standard formula. Even if companies are permitted to assess their SCR using an internal model, they are likely to be required to calculate the SCR using the standard formula for at least a couple of years following the implementation of Solvency II. It also remains to be seen how willing European insurance regulators will be to accept SCR internal model assessments which are significantly below the SCR using the standard formula.

Impact of Solvency II on insurance groups

Some of the key Solvency II issues affecting insurance groups are as follows:

- Groups are likely to be able to calculate their SCR at the group level, provided funds can be transferred freely around the group entities.

“ There is a common misconception that the SCR requirement will be similar to the current ICAS requirement in the UK. ”

- Each entity may be required to satisfy the MCR locally.
- For solvency purposes, a single regulator will be appointed to lead the group supervision. Typically, this would be the regulator applying to the parent company.
- It remains to be seen what approach will be taken in cases where the parent is not domiciled in Europe.
- If an internal model is being used to calculate the group SCR, approved by the lead regulator, then each of the local regulators would need to agree that the model is appropriate for local entities (if not, the standard formula could be enforced).
- Solvency reporting will be at the consolidated group level.

Given the ability for a group to claim diversification credit between entities, it appears that Solvency II may encourage significant merger and acquisition activity across Europe, due to the potential for greater capital efficiency as part of a group than as a standalone insurer. Companies with weaker capitalisation may become particularly vulnerable acquisition targets.

There will inevitably be winners and losers in this process, and the winners are most likely to be those which are well prepared to meet the many challenges presented by Solvency II.

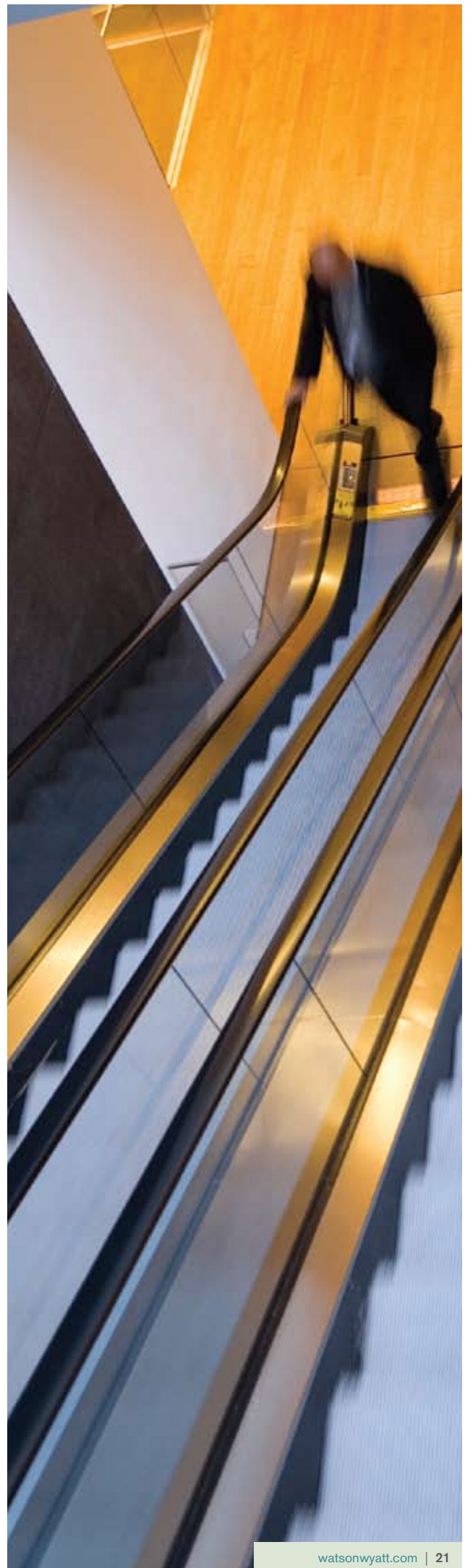
QIS4 has been testing a number of possible alternatives for assessing the SCR at a group level:

- A default method which involves applying the SCR standard formula to the consolidated group position.
- The sum of the solo SCRs, based on the standard formula.
- The sum of the solo SCRs, adjusted for intra-group transactions.
- A group SCR assessment which is based on the group internal model and other qualitative information.

A comparison of the results emerging from the first three of these methods can then provide an indication of the potential extent of group diversification benefits. The QIS4 specification has also suggested a possible method to allow for geographical diversification of non-life underwriting risk.

The extent of diversification benefits is potentially significant. For example, the Chief Risk Officer Forum (CRO Forum) has suggested that:

- Diversification across risk types within legal entities could reduce capital requirements by 31 per cent.
- Diversification across legal entities within a geography could reduce capital requirements by 11 per cent.
- Diversification across geographies could reduce capital requirements by 7 per cent.





It remains to be seen how the final Solvency II formula will deal with these issues. However, it is likely that some insurance groups will seek to change their group structures in order to optimise their regulatory capital requirements and diversification credits under Solvency II.

Insurance groups should be obtaining an understanding of the potential effects on their capital requirements of the most likely alternatives, and considering if their current group structure is 'fit for purpose' in the new environment.

Impact of Solvency II on Lloyd's syndicates

Under the ICAS regime, Lloyd's is treated as a special case. Managing agents produce an ICA for each syndicate, which is reviewed by Lloyd's. Lloyd's then produces an ICA at the market level, and sets capital for each syndicate.

Although Lloyd's is a group in certain ways, it does not satisfy the condition of being able to transfer funds freely between entities. At present, there are many areas where it is not clear exactly how Solvency II will apply to Lloyd's. For example, there are issues relating to whether Lloyd's will be able to continue as a special case with self-regulation, and the level of capital that can be met by letters of credit posted as Funds at Lloyd's.

Further complications arise where a Lloyd's syndicate is part of an insurance group, and the

requirements in these cases are also uncertain at present. Lloyd's continues to campaign on behalf of its members to preserve its status as a special case for regulation and capital setting.

The key issue at present for Lloyd's syndicates is to keep up-to-date with developments, and understand the implications of the various possible alternatives for regulation and capital setting under Solvency II.

Conclusions

In summary, companies need to be preparing now to ensure that they will be able to meet the modelling and documentation requirements of Solvency II. The key areas to bear in mind are as follows:

- There is a great deal of preparation, ongoing development and documentation that needs to be completed prior to successful implementation in 2012.
- In order to be approved by the FSA, internal models will have to meet a use test, calibration test and statistical quality test.
- The use test will be much more stringently applied than at present, with a bank of evidence required to demonstrate that the model is embedded in the business, particularly for decision-making and risk management.
- The calibration test may require existing models to be developed further and adapted to meet the Solvency II requirements.
- The statistical quality test is potentially onerous, with parameters subjected to a higher level of scrutiny than at present.
- The documentation of models and the risk management process will need to be much more thorough than under ICAS.
- The range of activities covered by the actuarial unit may need to be expanded to meet the 'actuarial function' requirements.
- Companies should be aware of the likely SCR and MCR using the standard formula, and of the range of alternatives considered as part of QIS4.
- Solvency II may lead to significant merger and acquisition activity across Europe, as groups seek to take advantage of the rules and make more efficient use of group capital.
- The implications for Lloyd's are currently unclear. Syndicates will need to keep on top of developments and understand the implications of possible outcomes.

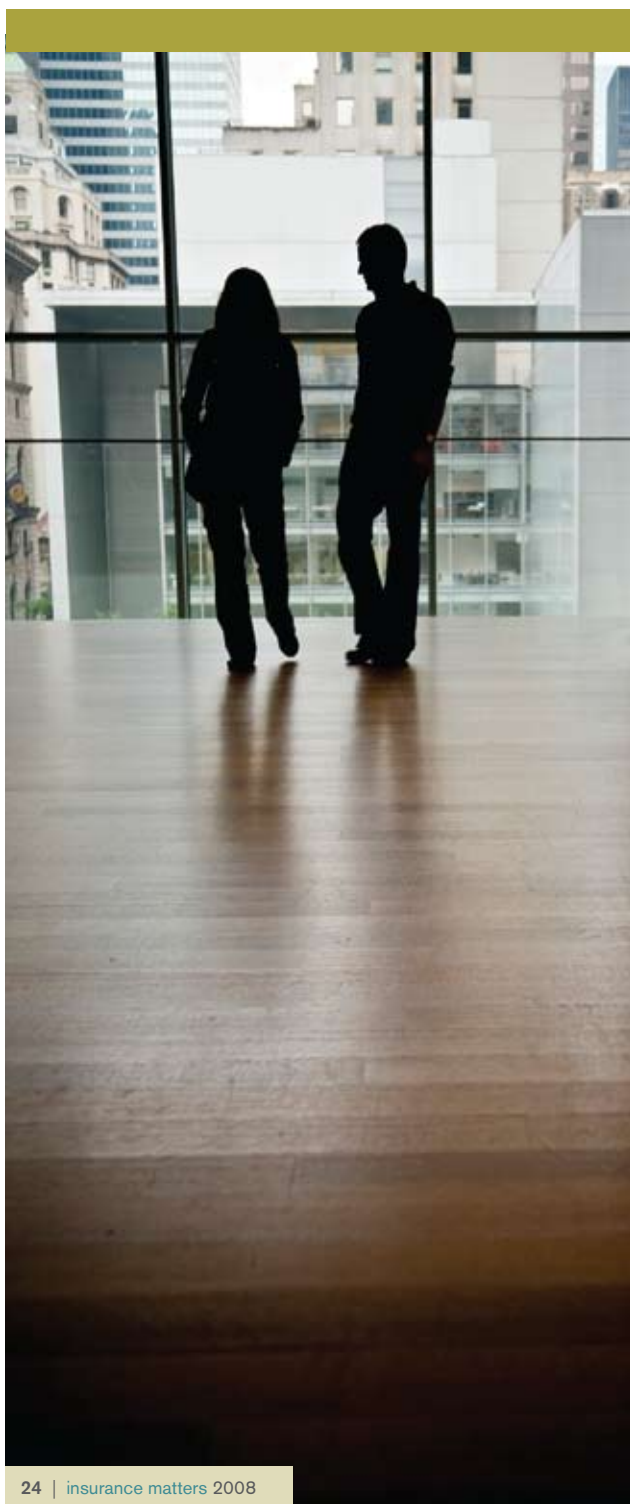
For more information on Solvency II, please visit our new website: www.eusolvency2.com



Lessons from the sub-prime crisis

Graham Fulcher reflects on lessons arising from the sub-prime banking crisis which could provide valuable insight for London market insurers.

For many London Market insurers, the main concern with the recent sub-prime crisis is managing their exposure to potential liability claims. However, the errors made by financial institutions which led to the crisis hold valuable lessons for London Market insurers, particularly as they enter into a difficult market environment of softening rates and increasing claims.



This article considers the financial services risk management errors likely to be of most relevance to London Market insurers. We have drawn heavily from the influential March 2008 paper 'Observations on Risk Management Practices during the Recent Market Turbulence'. This paper was produced for the Financial Stability Forum of the Bank for International Settlements by the Senior Supervisors Group (SSG), which comprises the main financial markets supervisory bodies of the US, UK, France, Germany and Switzerland.

Each error is identified in bold (as a direct quotation from the aforementioned report), and then followed by the implications for London Market insurers.

"Firms that experienced material unexpected losses in relevant business lines typically appeared to have been under pressure over the short term either to expand business aggressively or to defend a market leadership position."

In previous soft cycles in the London Market, the most significant losses have been experienced by companies rapidly expanding, often by naively diversifying into new lines of business to compensate as they lose business due to competition in the markets they actually understand.

In this cycle, most London Market operators are now confident that they can monitor rate reductions on renewal business (in contrast to previous cycles). Monitoring rate adequacy on new business however, is a lot more challenging, and even for those companies not entering new classes, writing significant volumes of new business is likely to prove highly risky unless the company has good mechanisms in place for assessing rate adequacy on individual risks.

For those companies not entering new lines of business, following (or even leading) a market down so as to avoid losing market share is risky and is likely to lead to losses.

"Firms also noted that mortgage underwriting standards had deteriorated. An increasing portion of mortgages were being underwritten without verifying the borrower's source of income for repayment; in addition mortgages were often underwritten based upon initial 'teaser' rates rather than a rate consistent with bearing the obligation to maturity. Undeclared and undocumented second loans also served to increase borrower's payments relative to their income and decreased borrower's equity positions in the home."

Despite the considerable strides many London Market insurers have made in rate monitoring, one blind spot for many companies is the ability to monitor the extent and effect of weakening terms and conditions. Given the high level of scrutiny to which management generally subjects pure rate reductions and the setting of 'walk away' rating levels, it seems inevitable that London Market brokers will seek at the bottom of the cycle to secure better terms and conditions for their clients when further rate reductions are not possible.

"Some firms found that they could not syndicate their holdings of leveraged loans because of reduced investor appetite for those assets and they could not cancel their commitments to fund these loans."

A key risk for many financial market companies (and in particular the downfall of Northern Rock) was liquidity risk. This risk arose from the mismatch created by using short-term wholesale assets (in

particular three-month LIBOR lending) to fund longer-term retail liabilities (in particular multi-year residential mortgage lending). The problems materialised when the credit crunch withdrew the sources of short-term funding or made it prohibitively expensive.

An analogous risk for non-life insurers in a soft market is protecting business with Losses Occurring Reinsurance. This risk is increased still further when the original business includes multi-year deals. If the reinsurance market hardens (and typically the reinsurance market hardens before the direct market), the insurer will be left with a number of years of underpriced direct exposure which will either have to be run uninsured, or reinsured at prohibitive terms.

“Firms cited the usefulness of revisiting simple notional limits to highlight potential concentrations of risk. These measures are devoid of assumptions and give management a simpler perspective on the potential scale of the risks.”

In a London Market now dominated by the use of catastrophe models and management of exposure via 1-in-100-year or 1-in-250-year Probable Maximum Loss (PML); London Market insurers should not forget more traditional and less subjective measures such as Maximum Foreseeable Loss (MFL) or, even better, their total aggregate exposures.

“Some firms relied too passively on external views of credit risk from rating agencies and pricing services to determine values of their exposures.”

As the FSA commented in their *Financial Risk Outlook 2006* in the aftermath of Hurricanes Katrina, Rita

and Wilma in Autumn 2005, it became apparent that “some firms may rely too much on the output of their catastrophe models without proper consideration of the inputs”.

Although things have improved since then, some London Market insurers may still be using catastrophe models without sufficient consideration of data quality or sufficient understanding of the assumptions underlying the model.

“Because products had been created during the prior period of more benign market conditions, banks and security firms had not observed how such products would behave during a significant market downturn.”

An important aspect of the sub-prime crisis was that it came after a prolonged period of economic stability with low inflation, low interest rates and rising house prices. Many involved in the market either did not remember the property crash and high interest rates of the 1980s or were convinced that the UK had entered a new era of stability.

The London Market is faced with potentially the worst possible economic conditions for non-life insurance claims: high inflation in fuel and food prices combined with slow economic growth due to a slump in asset pricing – what some would call ‘stagflation’. But many market participants are convinced that the worst excesses of the down-cycle will be avoided.

Many London Market insurers now base their planned loss ratios on prior years’ reserved loss ratios over, say, the last five years, adjusted for a constant rate of claims inflation and for renewal rating changes. But the last five years have seen very benign claims conditions across many classes, while the next two to three

years may see very adverse economic conditions: are London Market Insurers factoring this possible reversal sufficiently into their loss picks?

Conclusion

If London Market insurers want to avoid the problems faced by their banking colleagues they would do well to reflect on the errors made and the potential parallels in the insurance industry. Many players need to be more realistic about the challenges of operating successfully in current economic and financial circumstances.



Price optimisation

Price optimisation is one of the hottest topics in personal lines pricing. In this article, previously published in *The Actuary*, James Tanser looks at the benefits and challenges.

Price optimisation has become established in the UK and a small number of other markets as the best way to build or maintain a profitable business. The price should be set so that the costs of doing business are covered, and include a reasonable margin for profit. Set the price too low and not only does each policy cost you money, you end up selling more unprofitable policies; too high and you lose market share and hence sacrifice efficiencies of scale.

In personal lines there has been a technological and informational arms race to find the perfect balance between inadequate and excessive premiums. Finding this balance is what price optimisation is all about.

What is price optimisation?

The term 'price optimisation' can describe a whole family of techniques that combine information about expected claims experience and customer behaviour to calculate premiums with regard to a particular business objective. It uses the following as building blocks:

- information on how customer characteristics affect claims experience
- retention and conversion behaviour
- propensity to purchase additional cover and products.

These components are then combined in a model which allows a company to investigate how different pricing strategies might affect the profitability of the company and the number of policies written.

The final pricing strategy selected will depend just as much on the company's objectives as on the data and models used. The same models and data will produce radically different premiums if the target is to grow volume at 10 per cent per annum rather than to maintain current volume and increase profitability. Similarly, models which consider cross-selling may lead to premiums different from those calculated by models which do not.

Why optimise?

So why should a company optimise their premiums? What is wrong with simply charging the expected costs plus a profit margin (the 'cost-plus' approach)?

Optimisation offers the possibility of achieving higher profitability than a straight-forward cost-plus approach. The method allows potentially profitable segments of the market to be identified and targeted with attractive premium rates, for example by accepting low profitability on a policy because of its future cross-selling potential. In particular, these methods enable a company to adjust premiums to allow for differing price sensitivities in different segments of the market.

The key to making this work is information. The more information you hold on an individual, the more accurately you can predict their behaviour. This means that affinity groups and similar intermediaries have a key advantage. An intermediary has much lower uncertainty over the costs (their cash flow involves a fixed net premium rather than an unknown claims cost), and often a wealth of customer information not available to the insurer. With this advantage it is relatively straightforward to optimise the commission rates, and monitor the effectiveness of the resulting premiums.

Direct writers, although they have less information than some intermediaries, are also well placed to benefit from optimisation. The ability to change rates and monitor the resulting changes in customer behaviour in close to real time allows the construction of accurate models of customer behaviour. It seems likely that optimisation will continue its move into the mainstream for this area of business.

Other insurers may find themselves struggling to build accurate models because of these information asymmetries. Small insurers may simply not have sufficient volume or flexibility to apply these methods. For larger companies who place a significant portion of their business through intermediaries, the problems will relate to the amount of data their partners are willing to give them. In the worst case, these companies may be forced back to a bare-bone, cost-plus model, producing a completely commoditised policy at the lowest cost possible, effectively ceding all the customer value to the intermediary.

There are, of course, other business models in use in the market. Not everyone is willing to join in this arms race. A number of companies are simply pricing to achieve a given market position. This approach sees prices in each segment raised or lowered so that a certain target volume is achieved, regardless of the profitability of the segment. These companies are relying on the market to get the overall price levels right, and are willing to ride the market cycle.

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Practical considerations

So, if optimisation is right for your company, what are the key areas to consider? Before you even start the work there are a number of issues which need careful thought. These include legal considerations, price promises, brand positioning and market positioning.

In the UK, the FSA has indicated that it is not seeking to be a price regulator, but this attitude may not be the case in other jurisdictions. If there is a requirement to file a rating structure, the optimisation had better produce a rating structure to file! This can affect the type of optimisation performed. In the EU, the gender directive allows (subject to the local implementation) the use of gender as a rating factor, but only if accompanied by published information on the underlying risk characteristics. While it seems unlikely that any one individual will challenge the price differential between two policies, it remains a possibility that a pressure group will require an insurance company to explain its practices. If the optimisation assumes different price elasticity for men and women, the resulting premium differential may be hard to justify on the basis of the published risk data.

Marketing material often includes price promises, such as '10 per cent off if you buy online'. Where this is the case you will need to include this restriction into the optimisation model, as it is unlikely that the exact promised differential will hold equally across all policies.

A very similar issue relates to insurers having multiple brands. There is often an implicit price promise in the brand positioning, so that it might be desirable for a 'premium' brand to have a higher cost even if the optimisation implies a lower value is appropriate.

For companies with multiple brands, there is some danger of cannibalisation, where a company competes with itself for a given risk. To some extent this can be managed by careful use of restrictions and by clever use of information. However, for large organisations with a complex mix of direct, broker and affinity channels, some cannibalisation is inevitable.

Finally, a company will often also have a market position in mind, wanting to achieve a certain level of performance in terms of competitiveness by segment.

It should be remembered that placing additional constraints on the optimisation model will dampen the improvement in the final position. It is always worth running several versions of the model with some of the constraints removed to understand how these limitations affect the results. This sensitivity testing can show that some of the constraints should be removed, and this may of course require changes to the corresponding marketing messages.

It is important that the customer does not see confusing price changes following minor policy changes (and this is true at the quotation stage as well as mid-term). It is not unusual for policyholders to ask about different excess levels or additional drivers. This problem can be managed by optimising only once for each customer, and then using a schedule of adjustments (based, for example on the risk relativities) for these minor alterations. For larger changes, for example a change of address or a change of vehicle, it is probably reasonable to re-optimize to ensure that the quotation remains competitive.

Implementation

There are two main ways to implement optimisation: 'back-office' and 'point-of-sale'.

The back-office approach involves conducting the optimisation at regular intervals, alongside the regular rate review. At this point, all the key models are updated, and the optimisations run over a suitable portfolio. The output from this is an individually tailored premium for every policy looked at. This output can then be used in one of two ways. It can be used directly for renewal premiums, with the tailored premium being fed straight into the renewal systems. Alternatively, a model can be fitted to the optimised premium in order to derive a traditional rating structure which approximates the true optimal premium. In reality, the approximation can be poor, but the rating structure will give premiums which are likely to perform better against the key targets than premiums calculated under the cost-plus approach. The results of the model of optimised premium can be used to price all business, or it can be used just for new business (using the fully optimised premium for renewals).

The back-office approach is useful where a rating structure is still required – for example where intermediaries do not have access to a live pricing system, or where it is necessary to file rates. In reality, most companies will have some systems which assume the existence of a rating structure, and so the back office approach allows rapid implementation of price optimisation at relatively low cost.

The point-of-sale approach seeks to set a premium using the most up-to-date information available at the time the quotation is prepared. This potentially means that an identical risk is automatically offered



different premiums on different days only because the system's perception of the market is different. This makes the premium responsive to the market, and the model will move quickly to take advantage of changes. The point-of-sale algorithm still requires regular calibration, however, and it will need careful monitoring.

One problem with the point-of-sale approach is the extent of resources needed to compute the optimised premium. Care needs to be taken that the customer does not experience unacceptable delays when asking for a quotation.

In reality, larger companies often use both approaches, with the method varying depending on the sales

channel. This gives rise to increased risk of cannibalisation, and careful monitoring is needed.

Conclusion

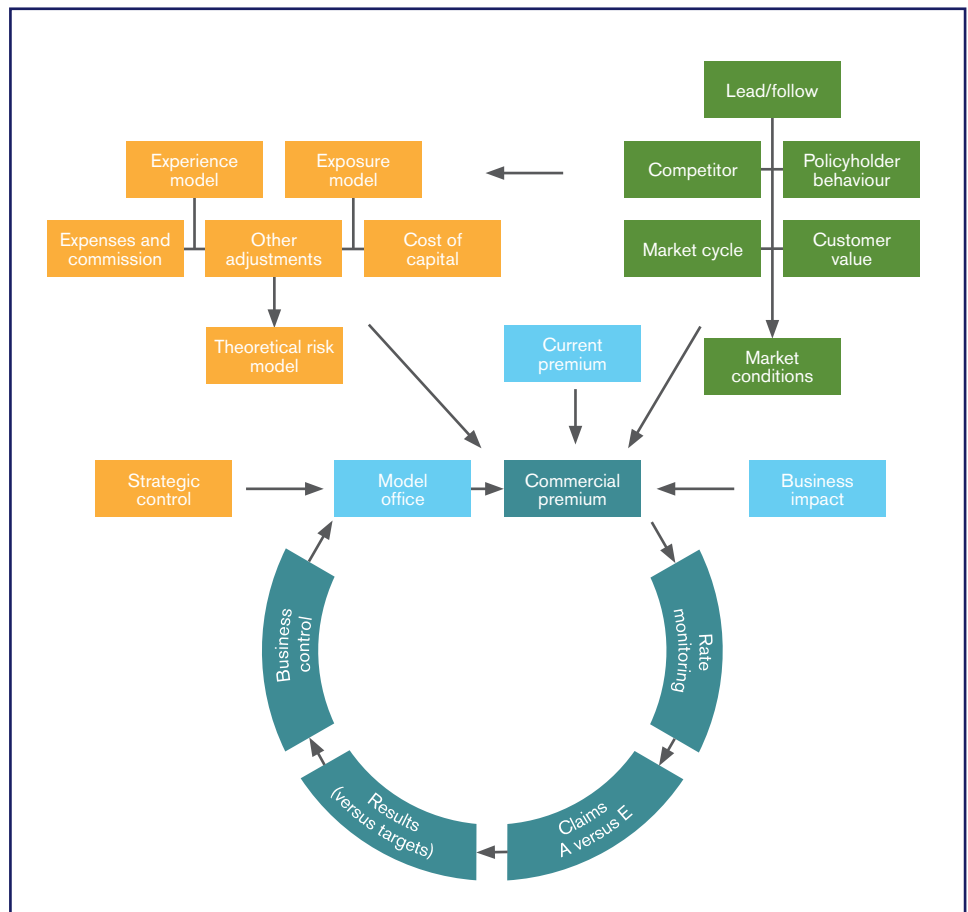
Price optimisation is here to stay and many companies have been using these techniques with great success. There remain considerable challenges for small and medium sized companies, and it seems likely that some of these will decide that optimisation is not the right choice for them. Intermediaries are the surest winners where they have a strong relationship with, and good data about, the customer. For all who decide to follow the optimisation route, there are considerable technological and management hurdles, and careful thought and preparation is vital to ensure success.



Best practice in pricing

Ryan Warren outlines best practice in the pricing function.

Figure 1 | The pricing process



Insurers are faced with soft market conditions, poor economic conditions and increasingly rigorous capital regimes. To prosper in this challenging environment, many insurers need to introduce greater governance and process to their pricing function.

Managing operational risk is increasingly seen as an important aspect of the business. While rigorous controls are the norm for claims and other functions within the company, pricing has generally received less attention even though it is fundamental to the profitability of the business.

One view of a robust and controlled rating process is set out in **Figure 1**. This process is likely to involve product managers, underwriters, analysts and actuaries.

Setting the price for a risk should involve consideration of the theoretical loss cost, the premium currently charged and the current market conditions. The potential impact on the business from writing this risk should also be taken into account, and in some cases the premium could be tested within a financial model to assess the potential return on capital for the policy within the context of the entire business.

While the specifics would generally vary depending on the class of business, the theoretical loss cost would usually involve modelling individual and/or market claims experience and making appropriate allowance for commissions, expenses, profits, reinsurance charges, investment income and the cost of capital to arrive at an estimate of the theoretical price.

The market condition considerations would usually include aspects such as the current market cycle, the competitive environment, whether the company is leading or following the cycle, potential policyholder behaviour, and the value of the policy to the policyholder.

Pricing work allowing for all of these issues should be iterative; for instance, once a product's terms and conditions are amended to better fit with market conditions, the theoretical price will need to be recalculated.

This should happen within a wider control cycle where, for example, the rate changes actually achieved are monitored, emerging claims experience is compared to that expected, and actions are taken by the business to ensure experience continues in line with the strategic and tactical directions set.

Ideally, this entire underwriting and pricing process should be fully integrated within the business. For example, the capital management function, the claims management, claims reserving, and pricing/underwriting should all be sharing information and, where appropriate, setting assumptions consistently.

Systemisation is key to ensuring a robust and successful process. This will also ensure that appropriate and adequate data is recorded for further analysis.

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