



With increasing pressure on insurance management to understand the outputs of financial modelling, Rachel Gordon finds out if firms are heeding the call.



# Not just for geeks

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FROM ITS ORIGINS of arguably being a geek's paradise, the world of financial modelling is coming into its own and going mainstream. A number of insurers say they now ensure board members — no matter what their backgrounds — have at least a fundamental understanding of this area, previously shrouded in mystique. Certainly, insurers are now expected to utilise financial modelling to create an underlying business rationale for what they actually need to execute their respective business strategies. The upshot? Modelling is no longer the sole domain of the 'techies'.

The drivers for this change in approach include *Solvency II*, but many are keen to emphasise this new regulatory capital regime is not being viewed in isolation. In fact, as a result of the financial crisis and growing scrutiny on governance, both directors and non-executives cannot use ignorance as an excuse if an insurer is investigated for poor risk control.

It is widely held that UK insurers are relatively advanced in their modelling techniques — this is because of the existing regime of Individual Capital Adequacy Standards. However, the expertise among financial directors and, in particular, actuaries now needs to be disseminated to a wider audience.

Financial modelling is being viewed as central to enterprise risk management known as ERM — something of a buzzword, even if its actual meaning would appear logical, namely assessing risk right across the business.

As Andy Davies, finance director at Markel International, says: "Enterprise risk management is not about finding the perfect model, it is about having a strong risk management culture which ensures that risk is understood, controlled and effectively

communicated. Effective ERM should be part of an insurance company's DNA."

He describes the core components of ERM as: aligning risk appetite and strategy; enhancing risk response decisions; reducing operational surprises and losses; seizing opportunities; and improving the deployment of capital. Mr Davies argues that there must be close interaction between the board and employees and a culture of openness to encourage discussion and understanding.

**Most senior managers have been given one-to-one model walk throughs with experts.** Pickernell

The banking crisis has no doubt encouraged insurers to pay far closer attention to risk — and modelling — which is used extensively to assess areas, such as pricing, reserving and capital adequacy. Therefore, it cannot be pushed into a silo. Whatever their resources, most insurers are now prepared to explain, albeit in relatively simple terms, the rationale and results of modelling exercises and, if relevant, allow this function to be performed by their consultants.

So, for anyone planning to move into that next big role, maybe now is a good time to read up on stochastic models, namely an area devoted to the theory and applications of probability. Or familiarise themselves with Monte Carlo methods — a class of computational algorithms that rely on repeated random sampling to compute their results. Monte Carlo methods are often used when simulating physical and mathematical systems. However, beyond the mathematics, there is no doubt that insurers want their financial modelling to be used for qualitative as well as quantitative purposes.

Paul Pickernell, Ecclesiastical Insurance's

capital modelling actuary, comments: "Training on our financial models is an important aspect of integration into the business. Not only have we held board training days, but most senior managers and some non-executive directors have been given a one-to-one walk through of the models with a technical expert to understand how they work and the application to the business."

He adds that financial modelling is also part of Ecclesiastical's leadership programme and features on a financial awareness course designed for team leaders and managers. "The practical uses of financial modelling have been communicated widely to ensure it is clear to staff how it can impact on their day jobs." In total, around a quarter of the insurer's staff have been trained on financial models.

#### Strategic decisions

Mr Pickernell emphasises that financial modelling combined with the corporate risk appetite plays an important role in key strategic decisions. "For example, last year it was used to identify where we could increase our reinsurance retentions, without materially increasing risk. We've also used our models to influence investment strategy, as well as potential business acquisitions, such as the investment in South Essex Insurance Brokers. We use a popular software tool that enables us to build our own models. This gives us the best of both worlds: a standard piece of software that is professionally maintained by a third party, which is robust, runs quickly and is easy to use; but also the ability to then build specific models within the software, which is tailor-made to our company's structure and risk profile."

He continues: "Our models are used as an extra tool in assessing the risks our business faces and enables us to make more informed

decisions. We believe, by bringing the financial models out of the realm of theory, and firmly into practice, we have become more efficient, streamlined and forward-thinking.”

The Ecclesiastical example demonstrates how some insurers now view modelling as an intrinsic part of their decision-making process in range of key areas, rather than just being focused on *Solvency II*.

As Rory O'Brien, managing partner with actuarial consultant EMB, says: “Companies like ours can provide all the software that's needed and go in and do the work, but if the sole focus is to meet the *Solvency II* ‘use test’, then an insurer is missing an opportunity. We think there is an upside, and insurers should not only embrace *Solvency II* but look to use this as a way of improving enterprise risk management across the business.” He adds there is already increasing demand to run board training programmes, which are also being taken up by non-executives.

Dan Wilkinson, head of operations, risk and compliance for Travelers, points out that financial modelling has been an intrinsic part of his company's ERM work for more than four years. He trained as a lawyer and also has sales experience, as well as working for the Australian owned life company AMP, which gives him a wider perspective than many who have purely worked in actuarial. “I take a common sense approach to modelling; it is a tool to help us take a holistic approach and hook up our knowledge on all the different risks.”

### Information dissemination

Having invested in this area over the last few years, Travelers now has three full-time professionals who are dedicated to modelling, having originally only had one person devoting half their work time to this area. Beyond this, external consultants are used and there is a strong emphasis on disseminating information about modelling, largely through the risk committee.

More than half the executive board are part of this; Travelers in the UK is formed of two businesses, the insurance company and a Lloyd's syndicate, and Mr Wilkinson is head of risk on both committees. “We believe in a collaborative effort; finance, actuarial and underwriting need to understand what the company drivers are, what could happen in the future and what business we want rather than just focusing on regulatory issues.”

He says choosing the right technology is clearly important. Travelers uses EMB's Igloo, which he says is “not unlike Lego — you plug it in and build what you need”.

Markel's Mr Davies agrees that modelling — or rather the work achieved through this — needs embedding within the whole company. He points out that the industry has experienced some nasty surprises, which have shown how modelling can be flawed, typically with the catastrophe losses from Hurricane *Katrina*. “The board needs to be absolutely clear on its risk appetite and it also helps if you have a flat structure, which we do at Markel. This allows you to communicate strategy and go beyond software and spreadsheets. You need to avoid models being seen as only relevant to the finance and actuarial departments; you need to see a model as relating to the whole infrastructure of the business.”



It's healthy for the industry to improve analytics — and there has been enormous progress. Turnbull

He explains that annual and day-to-day activities are analysed through various risk maps, capital models and sensitivity metrics and, in addition, external factors such as market movements and the actions of competitors are communicated to the business. Finally the activities and results of the business are reported back to the board through effective risk management and reporting.

But Mr Davies adds that, with the current focus on *Solvency II*, there is a danger of overcomplicating matters. “A clear articulation of risk strategy and risk appetite is an essential starting point in embedding risk management across an organisation. These statements of corporate objectives act as a reference point against which all risk-taking and risk mitigation activity within the organisation should be benchmarked. They provide governance and define boundaries within which risk-based decision-making can occur and provide a clear framework for the selection of one course of action over another.”

Markel believes in bringing underwriters, wherever possible, to share in modelling results — and above all in ensuring that common, straightforward language is used from the top downwards. Mr Davies argues that even when dealing with complex areas, a clear structure using the right people focused on relevant areas brings simplicity and profitable results.

Markel's UK team are likely to discuss modelling analytics through three formal committees. The first covers ‘incurred but not reported’ claims and profit and loss, where underwriting and reserving are discussed. The second is the investment committee, which relates to investment performance and strategy; while the third is the capital and risk committee, which scrutinises risk and capital management.

Focusing, for example, on IBNR and P&L, Mr Davies comments: “A thorough and

robust reserving process is the cornerstone of a successful organisation. It is important that underwriters and management agree on the IBNR results as this ensures one version of the truth. Having two sets of numbers causes confusion, wastes time and results in poor decision-making. The meetings also need to be performed on a consistent and regular basis. At Markel, IBNR meetings are held quarterly with the P&L meetings taking place on a monthly basis.”

Meanwhile, Andrew Turnbull, chief actuary at Torus UK, says the trend towards a heightened focus on modelling is welcome. “It's very healthy for the insurance industry to improve its analytics — it's vital to have a good framework — and there has been enormous progress. In years gone by it was numbers on the back of a napkin.”

Torus UK is a young insurer — launched in 2008 — and was, therefore, able to take an approach to modelling that was unencumbered by legacy business and systems. The company provides commercial, professional and specialty insurance and reinsurance products to a global client base through its UK, US and Bermuda-based insurance subsidiaries. Mr Turnbull says the company is committed to using the latest technology and has cut modelling times down significantly, integrating this into the business overall.

Indeed, it is becoming more commonplace for actuaries to play a wider role within their businesses and Mr Turnbull is responsible for the oversight and management of the risk analytics function of the Torus group of companies, including technical pricing and catastrophe modelling for all lines of business. Additionally he serves as chief operating officer for Torus Insurance (Bermuda) and is responsible for leading the group's reinsurance and structured products business.

### Way beyond requirements

The firm has developed its own software as well as using proprietary systems to cover a range of disciplines that go way beyond regulatory requirements. “We're planning to grow and we may build in potential acquisitions, for example, to include balance sheet information, what a particular buy would mean for us and to help us decide what price we should be prepared to pay,” explains Mr Turnbull.

However, no matter how advanced modelling becomes, he believes that the cyclical nature of the insurance sector will never be eradicated. “I think we can improve our knowledge but you have to be realistic about human nature and the fact the cycle has always existed, with some companies going for volume and trying to compete.”

As Mr Wilkinson says, anyone who has a vested interest in their company's performance should ensure they understand the basics of modelling. “An analogy springs to mind here, if you're young and single, the most important thing is to get your car through its MOT. When you have a family, you're far more concerned about safety aspects and how things work.”

The skill of the model practitioners — notably the actuaries — remains crucial to an insurer's overall performance. But how those numbers have been arrived at is something that many more are now needing to grasp.



Financial models have traditionally been seen as the preserve of technical boffins but the insurance industry's senior managers will need to have more than a passing understanding of what they mean in coming years, explains **Andrew Harley**.

# Modelling for the masses

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THE LANDSCAPE of how senior managers in the insurance industry use financial models is changing as the combined effects of *Solvency II* legislation and enterprise risk management practices signal a shift in responsibilities.

Models are no longer just for mathematicians and economists. Management teams will increasingly have to dip their toes into relatively uncharted waters — as regulators, rating agencies and best practice dictate that models become more fully integrated into the strategic management of insurance businesses.

BY way of example, UK insurance companies were required to notify the Financial Services Authority by the end of June if they intend to use an internal model to meet their obligations under *Solvency II*. A large majority are expected to follow this route — or at least a partial model — and to be joined by a significant proportion of insurers across Europe as the 2012 implementation deadline looms closer.

For these firms, a concerted effort to meet pre-application and final approval deadlines will be required and much of this will relate to the 'use test' — a demonstration that the business is using the internal model for key strategic decision-making.

Up to the beginning of July, it was unclear what 'passing the use test' would involve. But the latest round of consultation papers from the Committee of European Insurance and Occupational Pension Supervisors have given firms a pretty solid indication.

Paper 56 *Tests and Standards for Internal Model Approval* outlines a series of principles

for models to be accepted. All stem from a foundation principle: "The undertaking's use of the internal model shall be sufficiently material to result in pressure to improve the quality of the internal model."

THE full implications become even clearer in the first principle, which states: "Senior management, including the administrative or management body, shall be able to demonstrate understanding of the internal model." So, even the most technically shy of managers will have little choice in the matter if they wish to benefit from internal models for *Solvency II*.

#### Getting the model right

That does not imply, of course, that managers need to be wholly familiar with the inner workings and detailed formulae that produce the numbers; that's where the technical experts come into their own. Instead, they will be required to demonstrate that models are used in the strategic decision-making of the business, although not necessarily to run the business.

SENIOR leadership suddenly has a strong vested interest in getting the model right. While the *Solvency II* directive requires the risk management team to 'own' the model, senior management should be keeping a very close eye on development plans and the implementation process. With this regulatory 'call my bluff' CEIOPS has broadened and sharpened the attention that will be placed on the model across the business.

That brings us into the territory of enterprise risk management. ERM is not separate from the business — it is a way of

doing business. In the face of the economic slowdown, ratings agencies and shareholders alike are likely to be more sympathetic towards companies that can demonstrate a well-rounded view of their risk profile.

Achieving this all-encompassing risk awareness is not straightforward and does not just come about from a new set of rules and procedures. To be successful, ERM has to permeate through the business culture — risk management has to be part of everyone's day job. Since senior managers ultimately run businesses, only they can bring about this culture shift.

Part of the challenge will be to avoid some of the traps that have ensnared the banks in the recent past. Building appropriate model governance to verify that data going into the model is relevant and accurate is one step. Equally important is ensuring that decision-makers receive training to interpret model results and that they are empowered to question things that do not look right.

The response to the banking crisis was to blame the models. But, as some more contrite banking leaders have admitted, their understanding of what the models were telling them became patchy. In the absence of understanding, management judgement and checks went out of the window.

THIS is something for senior insurance industry executives to ponder as they contemplate a future under *Solvency II* and wider ERM.

POST

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