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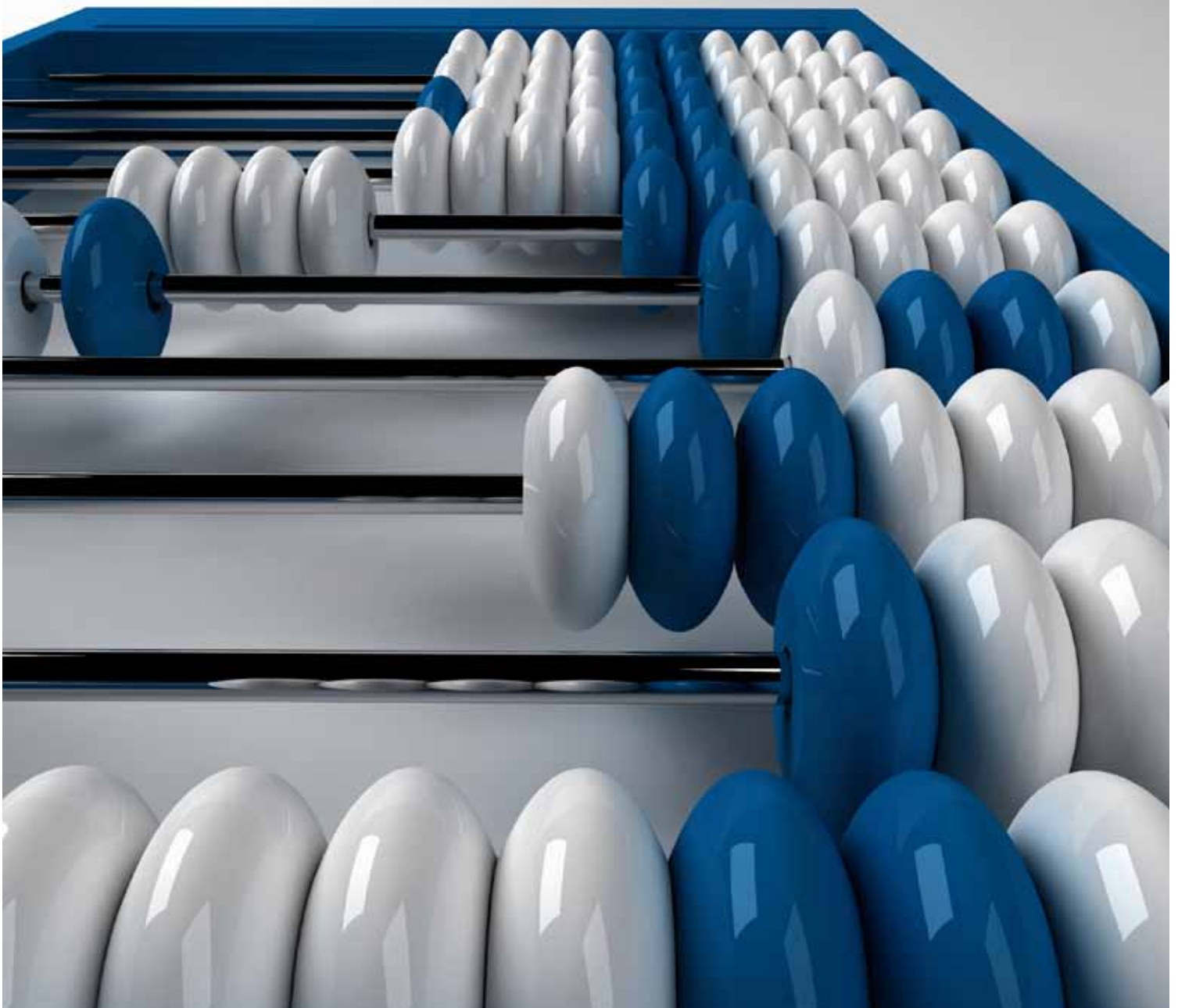
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May 2012



# 2011 Embedded Value Results Generating Value





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## EXECUTIVE SUMMARY

### Background

- The effects of market volatility continued in 2011, another year characterised by a challenging economic climate. Furthermore, the delays in emergence of clear guidance for Solvency II and International Financial Reporting Standards (IFRS) 4 Phase II added to the lack of clarity surrounding future reporting and regulatory capital requirements for insurance companies. Amid this uncertainty embedded value remains an integral part of insurance companies' disclosures to communicate value generation and financial robustness.
- As events unfolded, the European Insurance Chief Financial Officers Forum (CFO Forum) issued guidance relating to embedded value reporting during 2011 covering (1) the removal of its intention that *Market Consistent Embedded Value Principles*<sup>®</sup> (MCEV Principles<sup>1</sup>) would be the only recognised format of embedded value as at the end of 2011, (2) there being no requirement to reflect Solvency II for reporting periods up to and including 30 June 2012 and (3) guidance on the sovereign debt crisis.
- Based on our review of 29 companies, around 50% still use the European Embedded Value Principles (EEV Principles) rather than the MCEV Principles. However, more than 80% use some form of market-consistent valuation in their embedded value reporting.

### Embedded Value Results

- The CFO Forum members reported a combined embedded value of £227 billion (€271 billion<sup>2</sup>) at the end of 2011 compared to £252 billion (€295 billion<sup>3</sup>) at the end of 2010. The majority of companies experienced falls in their embedded values, with only a small handful experiencing modest increases.
- Allianz, AXA and Zurich Insurance Group (Zurich) reported the three largest embedded values. The top performers (by percentage increase) were Hannover Re, Legal & General and SCOR.

### New Business Results

- The value of new business added remained fairly stable with the CFO Forum members reporting a total value of new business of £8.6 billion (€10.3 billion) in 2011 compared to £8.4 billion (€9.8 billion) in 2010.

### Embedded Value Methodology Hot Topics

- The lack of companies switching from EEV to MCEV Principles was not surprising given that the CFO Forum removed its mandatory requirement, for members, that the MCEV Principles should be the only recognised embedded value reporting basis from 31 December 2011.
- Three key areas in embedded value methodology stood out this year as *hot topics*. These were (1) the construction of the risk discount rate, especially allowances for liquidity, (2) allowing for cost of capital, including the cost of residual non-hedgeable risks and (3) recognising the time value of options and guarantees.

### Construction of the Risk Discount Rate

- The majority of companies continue to use a bottom-up approach to determine the risk discount rate.

<sup>1</sup> Copyright © Stichting CFO Forum Foundation 2008.

<sup>2</sup> Sterling to Euro exchange rate as at 31 December 2011.

<sup>3</sup> Sterling to Euro exchange rate as at 31 December 2010.

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- Around 60% use swaps as the underlying basis for the risk-free yield curve, with the remainder using government bonds.
  - Liquidity premiums have increased significantly where these have been applied. At year-end 2011, ten companies had liquidity adjustments in excess of 100 bps for certain regions or businesses, compared to only one company at year-end 2010. In many cases, the liquidity premium was calibrated in a manner consistent with that described in the fifth Quantitative Impact Study (QIS5) for Solvency II.
  - Reinsurers generally assumed zero liquidity premiums.
  - Sensitivities to the liquidity premium were generally reported as a 10 bps adjustment to the liquidity premium, where applied.
  - The continuing debate and uncertainty regarding to the so-called *matching adjustment* and *countercyclical premium* under Solvency II may lead to future divergence between the reference rate used under embedded value and Solvency II reporting.
  - Around 50% of companies disclosed that they had extrapolated the risk-free curve, most of them using an approach consistent with QIS5. Again, extrapolation is another key area under the spotlight for Solvency II, which may have led to the increased level of disclosures in this area.

#### **Cost of Capital**

- The disclosed average cost-of-capital charge in respect to non-hedgeable risks (by MCEV companies) has shown some convergence, but a range of approaches remains across companies.
- Some companies specifically noted an alignment of the underlying cost-of-capital approach with the developing Solvency II framework.
- A number of companies also provided sensitivities in respect to allowing for diversification benefits between covered<sup>4</sup> and non-covered business.

#### **Time Value of Options and Guarantees**

- In general, market-consistent approaches were used to value options and guarantees. In addition, implied volatilities for interest rates and equities were based on year-end data; companies generally used at least 1,000 economic scenarios.
- Many companies disclosed allowances for dynamic policyholder behaviour.

#### **Disclosures**

- Differences in the interpretation and application of the EEV Principles and the MCEV Principles by companies remain and this presents challenges for investors and analysts alike in carrying out direct comparisons between companies. Embedded value results nevertheless continue to provide useful insights in terms of emerging trends, current position and future developments regarding profitability, sustainability of capital sources and creditworthiness.

#### **Other Measures of Value**

- Based on our analysis of CFO Forum members, company-specific embedded values continued to exceed market capitalisation at the end of 2011, with the gap widening between the two measures since the end of 2010.

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<sup>4</sup> Business that is valued using an embedded value methodology

- Despite the original hope of convergence between IFRS, Solvency II and embedded value reporting, significant differences remain. Consequently, companies are still to be faced with the challenge of clearly communicating results as they balance the alignment of different reporting bases and methodologies during 2012 and beyond.
- Given the different intended purposes of embedded value and Solvency II reporting, it remains to be seen how achievable convergence will be in practice. This will ultimately depend on whether additional margins of prudence are imposed under Solvency II such as the restrictions on the application and size of the liquidity premium and the allowance for non-hedgeable risks.

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## INTRODUCTION

The effects of market uncertainty and volatility continued in 2011, another year characterised by a challenging economic climate. Governments continued with initiatives aimed at reducing deficits, encouraging liquidity and promoting market cohesion. Market confidence remained fragile and consumers continued to demonstrate caution.

In respect to Solvency II and IFRS 4 Phase II, the delays in clear guidance added to the uncertainty regarding future reporting and prudential requirements for insurance provisions of companies. However, embedded value remains an integral part of many insurance companies' disclosures as companies aim to communicate the strengths of their business models in generating value and demonstrating financial robustness.

During 2011, the CFO Forum met a number of times and issued several public statements and guidance to the insurance industry of Europe relating to embedded value reporting. These covered the following areas:

- **Not only one embedded value approach.** In April 2011, the CFO Forum withdrew its intention that the *Market Consistent Embedded Value Principles* (MCEV Principles) would be the only recognised format of embedded value reporting from 31 December 2011. This was in light of the on-going development of insurance reporting under Solvency II and the International Financial Reporting Standards (IFRS).
- **No requirement to reflect Solvency II until mid-2012.** In September 2011, the CFO Forum issued transitional guidance that, up to and including the 30 June 2012 reporting period, there would be no requirement to make allowance for the developing Solvency II regimes when applying the MCEV Principles or the "European Embedded Value Principles" (EEV Principles).
- **Reflection of stressed market conditions.** In December 2011, the CFO Forum issued guidance relating to the current sovereign debt market conditions, suggesting that an allowance within the reference rate be used in the embedded value, or alternatively that an equivalent disclosure should be provided as a sensitivity.

In this publication, we focus on embedded value results as at year-end 2011. In addition, we provide an overview of the methodology approaches companies used from around the world, covering a range of current *hot topics* that companies may wish to consider when developing and enhancing their embedded value approaches in the future. These include:

- Determining the risk discount rate (RDR).
- Calculating the cost of capital (CoC).
- Assessing the cost of residual non-hedgeable risks (CRNHR).
- Evaluating the time value of options and guarantees (TVOG).
- Disclosures in embedded value reporting.
- Other measures of value (market capitalisation, IFRS, and Solvency II).

Before covering these topics in detail, we also provide a high-level overview of some of the key components of an embedded value calculation.

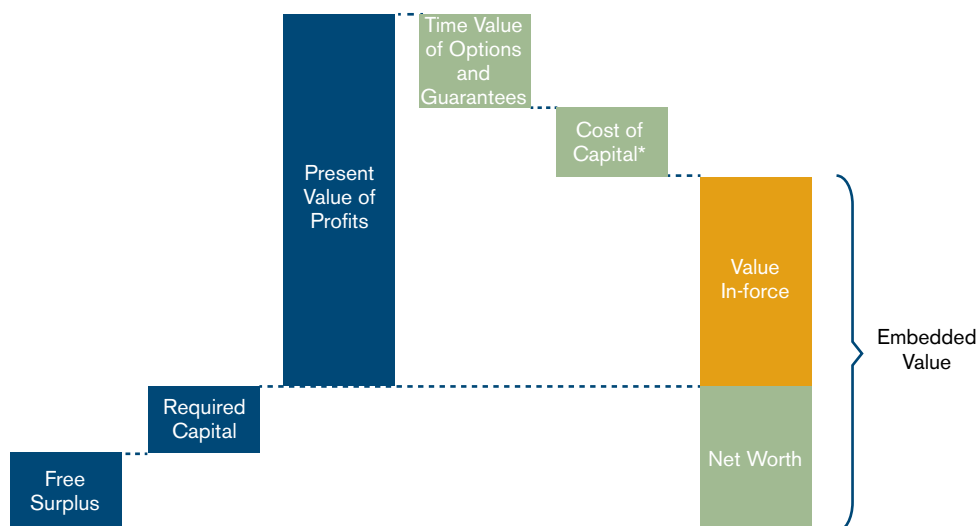
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**Embedded value remains an integral part of many insurance companies' disclosures as companies aim to communicate the strengths of their business models in generating value and demonstrating financial robustness.**

## EMBEDDED VALUE OVERVIEW

The embedded value of a company is intended to be a measure of the value of the shareholders' interests in the business. Over time, various principles and guidance have been issued by industry bodies to achieve consistency in the way embedded values are calculated between companies and reporting periods. Two of the main sets of guidance currently used by companies are the EEV Principles and the MCEV Principles. A brief outline of the methodology under these sets of principles, including key terminology, is described below and shown in Figure 1.

FIGURE 1: SUMMARY COMPONENTS OF EMBEDDED VALUE



\* Under the MCEV Principles, the cost of capital is split into frictional costs and the cost of residual non-hedgeable risks. Companies using the EEV Principles may also choose to adopt this approach.

Under both the MCEV and EEV approaches, the embedded value is calculated as the sum of the *net worth* and *value of in-force* (VIF) of the business.

The *net worth* is equal to the *required capital* plus *free surplus* where:

- **Required capital** is the market value of assets, attributed to the business over and above that required to back the liabilities for the business and whose distribution to shareholders is restricted. The level of required capital may be set by reference to regulatory capital requirements, rating agency capital requirements to achieve a target credit rating, internal model capital requirements, or a combination of these.
- **Free surplus** is the market value of any assets allocated to, but not required to support, the in-force business at the effective date of the embedded value calculation.

The *VIF* is equal to the *present value of future profits* (PVFP) less the *time value of options and guarantees* (TVOG) less the *cost of capital* (CoC) where:

- **Present value of future profits** is the present value of the net of tax shareholder cash flows from both the in-force business and the assets backing the associated liabilities. The PVFP includes an allowance for the intrinsic value of financial options and guarantees but not cash flows arising from projected future new business. The economic assumptions used to calculate the PVFP can



differ under EEV Principles and MCEV Principles. Under EEV, the PVFP may be calculated using real-world investment return assumptions and a discount rate that includes a margin for risks not captured elsewhere in the calculation. Under MCEV, the PVFP is typically calculated using a *certainty equivalent* approach whereby assets are assumed to earn a return based on a risk-free curve and all cash flows are discounted using the same risk-free curve, though other approaches are possible.

- **Time value of options and guarantees** is the additional value of financial options and guarantees above the intrinsic value already allowed for in the calculation of the PVFP. This is typically calculated using stochastic techniques.
- **Cost of capital** is a deduction from the PVFP in respect to the additional costs from investing in assets backing the required capital via an insurance company rather than directly. Under EEV, the CoC is the difference between the required capital held at the effective date of the embedded value calculation and the present value of the projected releases of the required capital. Whereas under MCEV, the CoC is split into two independent components; the *frictional costs of capital* and the *cost of residual non-hedgeable risks* (CRNHR).
  - **Frictional costs of capital** reflect items such as the taxation and investment costs that arise on the assets backing the required capital.
  - **Cost of residual non-hedgeable risks** reflects the expected cost of capital related to non-hedgeable risks that can have an asymmetric impact on shareholder value (to the extent these risks have not already been reflected in the PVFP or TVOG). These can include both financial and non financial risks.

The number of companies using MCEV Principles and EEV Principles from our sample of 29 is shown in Figure 2. Companies reporting under the EEV Principles may also choose to carry out a market-consistent calculation and this split is also shown in Figure 2.

In addition, some companies follow equally valid approaches that do not entirely conform to either the MCEV or EEV Principles. For example, Swiss Re reports under a basis known as its *economic value management* framework.

The overall frameworks used by companies have generally remained static over 2011, with more than 80% of companies using some form of market-consistent valuation. Only one company, Vienna Insurance Group (VIG), moved from a market-consistent EEV approach to an MCEV approach. Given that the CFO Forum announced the withdrawal of its intention that MCEV would be the only valid approach from 31 December 2011, the fact that most companies have not switched to adopt MCEV is not surprising. Figure 2 shows the position of companies at year-end 2010 and 2011, with the only difference compared to year-end 2010 being the change of VIG as noted above.

The overall frameworks used by companies have generally remained static over 2011, with more than 80% of companies using some form of market-consistent valuation.

FIGURE 2: EV REPORTING PRINCIPLES

EV REPORTING PRINCIPLES	2010			2011		
	CFO FORUM MEMBERS	OTHER COMPANIES	TOTAL	CFO FORUM MEMBERS	OTHER COMPANIES	TOTAL
EEV	2	1	3	2	1	3
MARKET-CONSISTENT EEV	5	7	12	5	6	11
MCEV	8	4	12	8	5	13
OTHER	2	0	2	2	0	2
<b>TOTAL</b>	<b>17</b>	<b>12</b>	<b>29</b>	<b>17</b>	<b>12</b>	<b>29</b>

\* Numbers of companies based on a sample of 29

\*\* Swiss Re do not report explicitly under either EEV or MCEV principles but under a framework called Economic Value Management

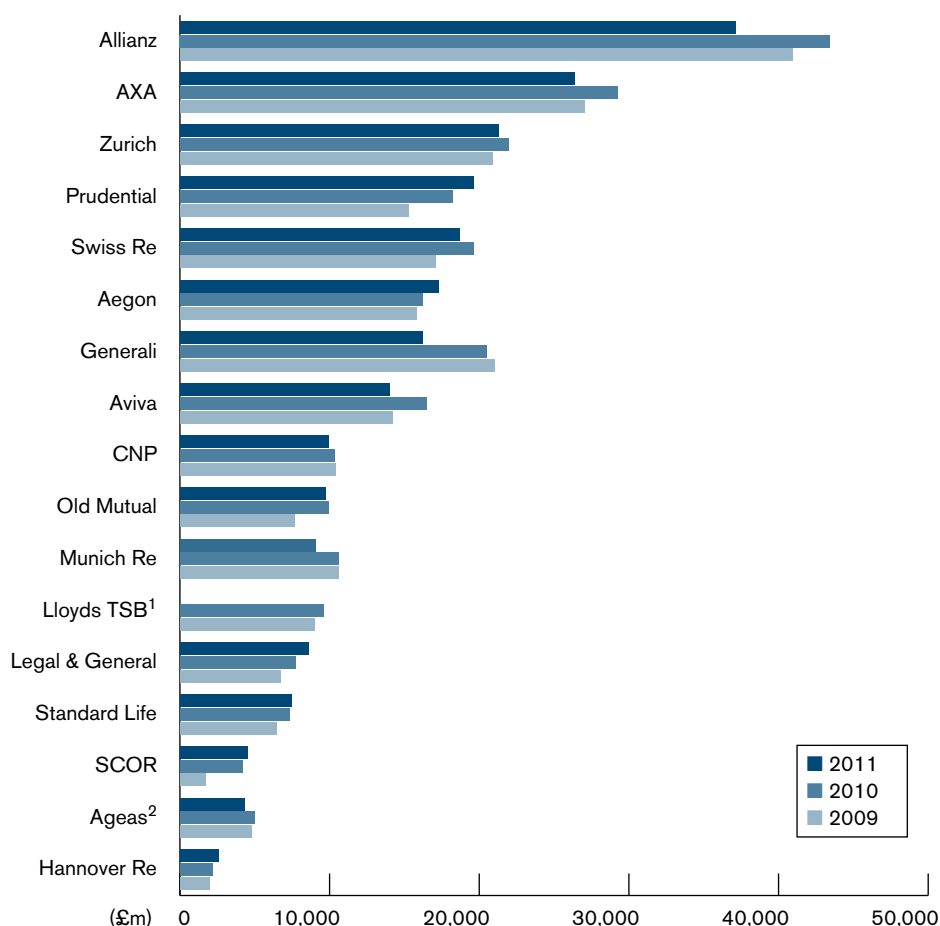
Insurers in 2011 operated against a backdrop of continuing economic turmoil, a deepening Eurozone crisis and slowing (even negative) economic growth. As such, many companies' embedded values decreased over 2011 and only a small number modestly increased.

## EMBEDDED VALUE RESULTS

### Embedded Value

Insurers in 2011 operated against a backdrop of continuing economic turmoil, a deepening Eurozone crisis and slowing (even negative) economic growth. As such, many companies' embedded values decreased over 2011 and only a small number modestly increased. Overall, the CFO Forum members had a combined embedded value of £227 billion (€271 billion<sup>5</sup>) at the end of 2011 compared to £252 billion (€295 billion<sup>6</sup>) at the end of 2010 (a reduction of 10%). Figure 3 shows the embedded value results of current CFO Forum members over the last three year-ends.

FIGURE 3: PUBLISHED EMBEDDED VALUE RESULTS AT YEAR-END 2009, 2010 AND 2011



<sup>1</sup> Lloyds TSB did not disclose its group MCEV but did publish the value of new business at the end of 2011.

<sup>2</sup> Ageas embedded value is the total of 'life' and 'non-life & other insurance'.

The embedded values considered in Figure 3 include both covered<sup>7</sup> and non-covered business. Allianz, AXA and Zurich retained the top three positions in terms of the largest combined business.

<sup>5</sup> Sterling to Euro exchange rate as at 31 December 2011

<sup>6</sup> Sterling to Euro exchange rate as at 31 December 2010

<sup>7</sup> Business that is valued using an embedded value methodology

embedded values. During 2011, the top performers based on percentage increases in embedded value were Hannover Re, SCOR and Legal & General.

- Hannover Re experienced growth for a number of reasons, including an increasing value of new business and higher-than-expected investment returns over 2011. Hannover Re's domestically managed operations saw a greater contribution from financing treaties whereas its other global operations reflected the opposite with a greater proportion of its VIF being in respect of treaties providing risk cover. Figure 4 shows the contribution from new business which was characterised by positive contributions from a number of territories and from its involvement in longevity swaps.
- Each of Legal & General's business divisions (Risk, Savings, Investment Management and International) performed well over 2011. The Risk division completed its first £1 billion-plus pension bulk annuity scheme and highlighted growth in its pure longevity insurance solutions. Gains in operational efficiencies and improved return on capital light products and solutions, together with a focus on asset accumulation allowed, were all cited as drivers for its 2011 results.
- SCOR cited its business model as one of the reasons it was able to weather the difficult economic climate. SCOR completed a number of structural changes over 2011, including disposal of its annuity business in the United States, establishing a new subsidiary in Australia and a new life office in Mexico and integration of acquisitions such as Transamerica Re. SCOR also completed its first UK longevity transaction during 2011.

Some of the largest percentage reductions in embedded value were seen by Generali, Allianz and Aviva.

- Generali's relatively strong MCEV operating earnings in 2011 were offset by a relatively large negative contribution from economic variance, which was primarily driven by the significant widening of credit spreads, poor equity market returns and increased volatility.
- Allianz's primary reasons cited for a reduction in its embedded value were the lower interest-rate environment, widening credit spreads and volatile financial markets. This led to an increase in the impact from the cost of options and guarantees and a reduction in free surplus that was due to the increase in required capital amounts. Notably the increase in Italian government bond spreads gave rise to a significant increase in required capital.
- Aviva reduced its holding in Delta Lloyd as part of its wider group strategy which resulted in the Delta Lloyd no longer being included as part of Aviva's covered business. Instead, Aviva's reduced holding in Delta Lloyd is brought through on an IFRS basis for the Group MCEV reporting. The MCEV operating earnings by region were varied, with the UK division seeing an increase whilst Europe, North America and Asia Pacific experienced decreases. The economic variance for the covered life and pension business also had a negative impact on Aviva's MCEV earnings during 2011.

### Value of New Business

Despite general concerns about consumer confidence, the results for new business remained fairly positive. Approximately two-thirds of companies increased the value of their new business over 2011.

The total value of new business (VNB) written by the CFO Forum members topped £8.6 billion (€10.3 billion) in 2011, only slightly up from £8.4 billion (€9.8 billion) in 2010. This represents an impressive performance given the tough economic climate.

Figure 4 shows the value of new business over the last three years for our sample of companies. Prudential, AXA and Generali retained the top three positions in terms of VNB in 2011. The top performer based on percentage increase in the VNB was SCOR, which saw a doubling of VNB in

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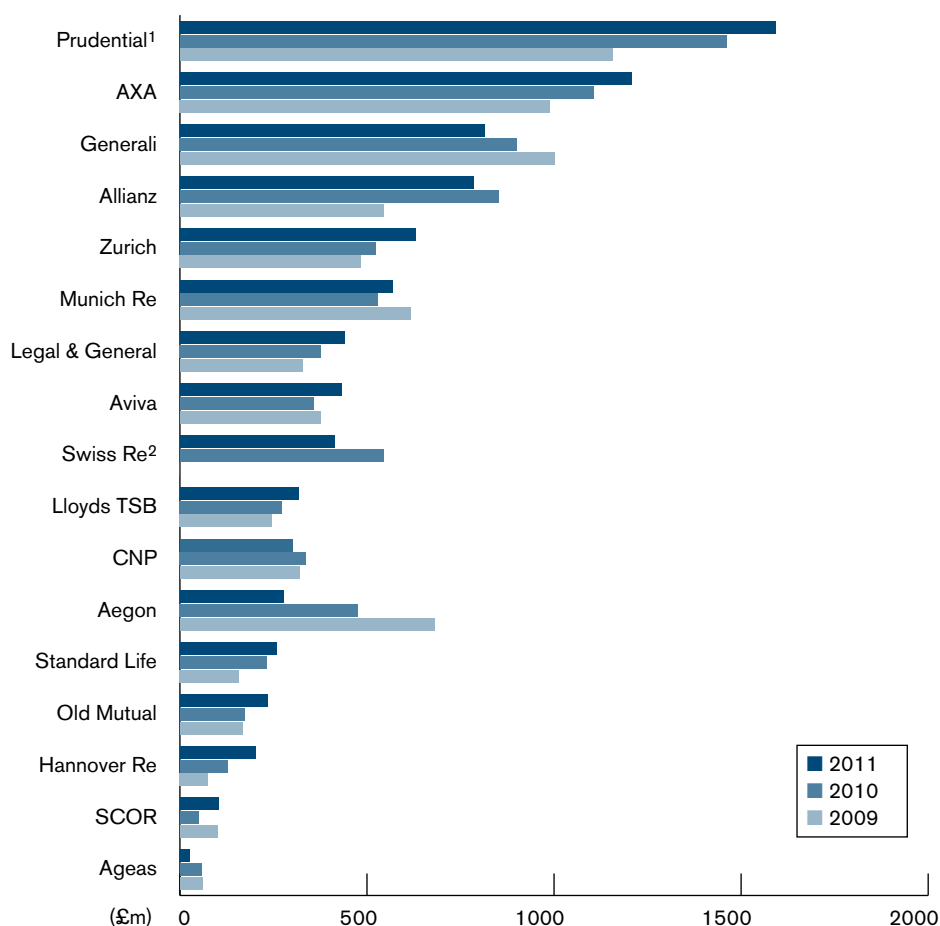
**Despite general concerns about consumer confidence, the results for new business remained fairly positive. Approximately two-thirds of companies increased the value of their new business over 2011.**

**Underlying the value of new business results, the average new business margin for the CFO Forum members increased from 2.4% in 2010 to 2.5% in 2011.**

2011 compared to 2010, reported to be driven from its core business, the successful integration of Transamerica Re and improvement in margins on business sold.

Underlying the value of new business results, the average new business margin for the CFO Forum members increased from 2.4% in 2010 to 2.5% in 2011. This was partly offset by a reduction in the overall volume of new business sold of around 3%, resulting in the slight increase in total VNB observed for CFO Forum members. However, individual companies' results varied with around two-thirds reporting an increase in the VNB (largely driven by higher new business margins) and one-third reporting a reduction in the VNB (largely driven by lower new business volumes).

**FIGURE 4: PUBLISHED VALUE OF NEW BUSINESS AT YEAR-END 2009, 2010 AND 2011**



1 Prudential's disclosed gross of tax VNB has been adjusted by the relevant 2011, 2010 and 2009 UK tax rate.  
2 The Swiss Re VNB only includes the value from its underwriting activities.

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## METHODOLOGY HOT TOPICS

Based on our analysis of companies' embedded value methodologies, there are a number of evolving practices and emerging market trends in three key *hot topic* areas. These include (1) the construction of the risk discount rate, (2) how to allow for the cost of capital, including cost of residual non-hedgeable risks, and (3) recognising the time value of options and guarantees. We consider each of these in detail below.

### The Risk Discount Rate

The risk discount rate is one of the key assumptions required for a company's embedded value calculation (under either MCEV or EEV) as it is used to discount the projected cash flows.

In determining the risk discount rate, companies consider a number of key areas, such as:

- Whether to construct the risk discount rate using a *bottom-up* or a *top-down* approach. To comply with the MCEV Principles, a *bottom-up* approach is required.
- The underlying basis for the risk discount rate – typically swap rates or the return on government-issued debt.
- Allowing for the potential existence of a liquidity premium.
- Extrapolating for longer durations where reliable data in the asset market may not exist.

Companies may adopt a number of different approaches to address these areas, which in some cases will be dependent on whether they are reporting under the EEV or MCEV Principles. An overview of the approaches used to determine the risk discount rates by companies as at year-end 2011 is provided in Figure 5. Each of these areas is expanded in further detail in the subsequent sections.

### Construction of Risk Discount Rate

Companies can construct their risk discount rates using either a top-down or bottom-up approach. However, in practice, only a small handful of companies use a top-down approach (three out of 29 in our analysis), whilst the vast majority use a bottom-up approach, including all MCEV reporting companies.

The top-down approach considers the risks a company is exposed to as a whole in order to derive a risk margin that applies to all future cash flows. This may be achieved, for example, by considering the company's *weighted average cost of capital*. By comparison, a bottom-up approach considers the risks to which each cash flow (or group of cash flows) is exposed, to determine a cash-flow-specific risk margin. Under EEV, companies can either use a top-down or bottom-up approach, whereas under MCEV a bottom-up approach is required.

MCEV Principle 13 states that: *VIF should be discounted using discount rates consistent with those that would be used to value such cash flows in the capital markets*. To illustrate, equities are generally expected to yield returns above a risk-free asset to compensate for the additional risk inherent in equities. As such, under a market-consistent basis, to value equity cash flows, a risk discount rate that reflects the additional risk should be used. This logic equally applies to liability cash flows by valuing them consistently with traded assets that exhibit the same (or similar) characteristics. Therefore, where cash flows are fixed or vary linearly with market movements, companies can adopt the *certainty equivalent* approach (i.e., assets are assumed to earn a rate based on a risk-free curve and all cash flows are discounted using the same risk-free curve so as to achieve the same result). However, where companies use illiquid assets to match their liabilities this can be reflected in the risk discount rate. The certainty-equivalent approach may also be adopted by firms reporting under the EEV Principles.

Based on our analysis, companies have not generally changed their approaches to the risk discount rate over 2011 in terms of whether they use a top-down or bottom-up methodology. Going forward, we believe companies should continue periodically to consider the suitability of their chosen approaches and challenge its appropriateness when setting economic assumptions.

FIGURE 5: OVERVIEW OF RISK DISCOUNT RATE CONSTRUCTION

OVERVIEW OF COMPANIES' APPROACHES TO DERIVING THEIR DISCOUNT RATE

Company	Principles	Risk Discount Rate Methodology	Underlying Basis for Risk Discount Rate	Liquidity Premium	Extrapolation of Risk-free Curve
<b>CFO Forum Members</b>					
Aegon	EEV	Top Down	Gov. Bonds	Not disclosed <sup>3</sup>	Not disclosed
Ageas	EEV	Bottom up	Swaps, -10 bps for credit risk	Yes, QIS5 <sup>4</sup>	Yes, QIS5 <sup>7</sup>
Allianz	MCEV	Bottom up	Swaps, -10 bps for credit risk	Yes, QIS5	Yes, QIS5
Aviva	MCEV	Bottom up	Swaps	Yes, QIS5 <sup>5</sup>	Yes, method not disclosed
AXA	EEV	Bottom up	Swaps	Yes, QIS5	Yes, QIS5
CNP	MCEV	Bottom up	Swaps, -10 bps for credit risk	Yes, QIS5	Not disclosed
Generali	EEV	Bottom up	Swaps	Yes, QIS5	Yes, QIS5
Hannover Re	MCEV	Bottom up	Swaps	No	Not disclosed
Legal & General	EEV	Top Down	Gov. Bonds	Not disclosed <sup>3</sup>	Not disclosed
Lloyds TSB	EEV	Bottom up	Gov. Bonds	Yes, method not disclosed	Not disclosed
Munich Re	MCEV	Bottom up	Swaps	No	Yes, other <sup>8</sup>
Old Mutual	MCEV	Bottom up	Swaps	Yes, method not disclosed	Yes, method not disclosed
Prudential	EEV	Bottom up	Swaps (Annuities) <sup>2</sup> Gov. Bonds (Other)	Yes, method not disclosed	Not disclosed
SCOR	MCEV	Bottom up	Swaps	No	Not disclosed
Standard Life	EEV	Bottom up	Gov. Bonds	Yes, method not disclosed	Not disclosed
Swiss Re	Other <sup>1</sup>	Bottom up	Gov. Bonds	No	Not disclosed
Zurich	MCEV	Bottom up	Swaps	Yes, QIS5	Not disclosed
<b>Other Companies</b>					
Chesnara	EEV	Bottom up	Swaps	Not disclosed	Not disclosed
Achmea (Eureko)	EEV	Top Down	Gov. Bonds	Not disclosed	Not disclosed
Resolution (Friends)	MCEV	Bottom up	Swaps	Yes, other <sup>6</sup>	Yes, method not disclosed
Irish Life & Permanent	EEV	Not disclosed	Swaps	Not disclosed	Not disclosed
Mediolanum	MCEV	Bottom up	Swaps	No	Yes, other <sup>9</sup>
Phoenix	MCEV	Bottom up	Gov. Bonds, +10 bps	Yes, method not disclosed	Yes, method not disclosed
PZU	EEV	Bottom up	Gov. Bonds	Not disclosed	Yes, other <sup>9</sup>
Royal London	EEV	Bottom up	Gov. Bonds	Not disclosed	Not disclosed
St James's Place	EEV	Bottom up	Gov. Bonds	Not disclosed	Not disclosed
Storebrand	EEV	Bottom up	Swaps	No	Yes, other <sup>10</sup>
Swiss Life	MCEV	Bottom up	Swaps	Yes, QIS5	Yes, QIS5
VIG	MCEV	Bottom up	Swaps	Yes, QIS5	Not disclosed

1 Swiss Re uses an Economic Value Management framework.

2 Prudential uses swaps for its UK shareholder-backed annuity business.

3 An allowance for a liquidity premium can be regarded to be implicit within the spread over the risk-free rate for certain assets.

4 QIS5 methodology to deriving the Liquidity Premium is to take 50% of (corporate spread over swaps less 40 bps) if greater than zero.

5 Aviva uses 60% of (corporate spread over swaps less 40 bps) if greater than zero for US business.

6 Methodology stated as consideration of negative basis trade and structural models.

7 QIS5 methodology for extrapolation is the Smith-Wilson approach.

8 Nelson-Siegel extrapolation methodology.

9 Spot rates after a certain duration are set level and equal to the rate at that duration.

10 Norwegian and Swedish swap markets deemed insufficiently liquid beyond 10 years. Equilibrium rate used for 20+ years with linear interpolation between 10 and 20 years.

### **Basis for Risk-free Rate**

To begin the construction of a suitable risk discount rate curve, companies will typically identify returns on assets in the market that are a proxy to the *risk-free* rate. The MCEV Principles term this proxy the *reference rate*. In practice, the starting point for the reference rate is either government bonds or interest-rate swaps, based on interbank lending rates. However, in reality, no assets exist that are completely risk free, as even bonds issued by the most secure government will carry some residual level of risk.

Based on our study, almost all companies reporting under MCEV Principles use swap rates as the starting point for the reference rate, whereas the majority of companies reporting under EEV use government bonds. This may come as no surprise, as MCEV Principle 14 states that swap rates should be used where they can be considered reliable. Phoenix is perhaps a notable exception as it reports under MCEV but uses government bonds as the basis for its reference rate (plus 10 bps). However, acknowledging that this is a departure from the MCEV Principles, Phoenix also disclosed a sensitivity in its embedded value reporting using a swap-based reference rate. Switching the basis of the reference rate to swaps instead of government bonds was shown to reduce the Phoenix Group MCEV (which includes both covered and non-covered business) by around 2% at the end of 2011, compared to around 13% at the end of 2010.

**Based on our study, almost all companies reporting under MCEV Principles use swap rates as the starting point for the reference rate, whereas the majority of companies reporting under EEV use government bonds.**

In countries where a developed swap-rate market does not exist, companies have tended to use government bonds to derive the risk-free curve. However, alternative techniques have also been implemented. For example, VIG derived the assumed Croatian yield curve from the Euro swap curve plus a constant spread (reflecting the difference between the Euro swap and Croatian government yield curve).

Companies that opted to use swap rates as the basis for their reference rates also needed to decide which swap rates to use. Industry practice seems to suggest swaps based on interbank lending rates, such as the London Interbank Offered Rate (LIBOR) in the UK for sterling-based cash flows. Three companies (Ageas, Allianz and CNP) reduced the swap rate by 10 bps as at the end of 2011 in line with the analysis carried out by the CFO Forum ahead of the Solvency II QIS5. This adjustment to the swap rates was recommended as the underlying rate (e.g., LIBOR) contains some level of compensation for the credit risk associated with lending money to a bank, even for a short duration.

In recent years, there has been an industry move to use overnight deposit rates such as the Sterling Overnight Index Average (SONIA), instead of the traditional LIBOR, as the discount rate for swap valuation purposes. The banking industry in particular has been an early adopter of this approach, and many fixed income desks now use this methodology as standard in their market pricing. Overnight deposit rates are viewed by these banks to be more consistent with the need for counterparties to re-balance collateral on a daily basis. This will become increasingly more widespread, as the entire interest rate swap market moves towards central clearing, under the forthcoming Dodd-Frank and European Market Infrastructure Regulations.

Use of a discount rate based upon SONIA, for example, may also have advantages over one based on LIBOR because:

- It is based upon data from actual transactions rather than a survey of opinions.
- It should contain less of a premium for credit risk as the term of the deposit is overnight rather than the usual three to six months for LIBOR.

This may indicate that a reference rate based on a SONIA swap rate may be considered a better proxy for a *risk-free* yield. At present, the market for swaps based on SONIA is not as developed as that of LIBOR. Therefore, a SONIA swap rate may not be suitable in determining the reference rate for an embedded value calculation as the duration at which data becomes unreliable is much shorter.

If the market for such swaps were to become more developed then the use of SONIA swap rates may offer a valid alternative.

#### **Allowance for Liquidity Premium**

Typically, the additional return on an asset over the risk-free yield is considered to be made up of three key components, which compensate for (1) the expected cost of defaults of the issuer, (2) the uncertainty surrounding the unexpected cost of defaults and (3) other risks predominantly thought to be in respect of the illiquidity of the asset, particularly in adverse conditions (known as *liquidity premium*). Consequently, companies that closely match their asset and liability positions to mitigate spread risk may consider it appropriate to make an allowance for the latter part of the additional yield they expect to receive in the form of a liquidity premium adjustment.

As at year-end 2011, an increased number of companies applied a liquidity premium adjustment to their reference or risk-free rates in a similar fashion to that described in QIS5. In summary, this approach specified a liquidity premium estimate given by 50% of the (spread less 40 bps), subject to a minimum of zero, where the 40 bps represented the long-term level of expected default costs and the 50% split the remaining spread between the liquidity premium and the unexpected cost of defaults. In QIS5, the assumed spread was based on the spread of corporate bond yields over the swap curve in the relevant currency and duration determined in two stages (i.e., by taking the combination of the corporate bond spreads over government bond yields and the spread of swaps over government bond yields). Most companies also apportioned varying levels of the liquidity premium to different groups of business using the *bucket style*<sup>8</sup> approach described under QIS5.

A few companies, such as Allianz, CNP and Swiss Life, disclosed that they did not use the two-stage approach described above to determine the U.S. and European spreads over swaps. Instead, they determined the spreads directly using other sources of market data. For example, Allianz stated it believed this to be a more appropriate methodology, as the disturbances in some sovereign debt markets had led to distortions in government bond spreads.

In general, allowances for liquidity premiums have significantly increased and for some companies more than doubled in certain regions since year-end 2010, as shown in Figure 6. This may come as no surprise given the increased credit spreads observed in financial markets in the latter half of 2011 compared to 2010. Furthermore, some companies, such as Swiss Life and Zurich, adjusted for a liquidity premium at the end of 2011 after having made no similar allowance at the end of 2010.

Companies disclosing that they applied no liquidity premium adjustment at the end of 2011 were predominantly reinsurers including Hannover Re, Munich Re, Swiss Re and SCOR, but also included insurers Mediolanum and Storebrand. Despite the increased focus on allowances for liquidity premiums, more than one-quarter of companies chose not to disclose whether they had applied liquidity premium adjustments or not. Aegon and Legal & General adopted a top-down approach to setting their risk discount rates and therefore disclosed the yields that were used rather than the value of liquidity premiums as these are implicit within the approach. Consequently, Figure 6 summarises only those companies for which the use and value of a liquidity premium adjustment was explicitly disclosed.

<sup>8</sup> Under QIS5, 100%, 75%, 50% or 0% of the calculated liquidity premium was applied depending on the company's business. These standard proportions are commonly known as the *risk bucket*. The factors considered in determining what proportion of the liquidity premium to apply to a category of business may include, inter alia, the duration of the business and predictability of the cash flows. Generally the use of a higher proportion of the liquidity premium would be justified on longer duration business with more predictable cash flows such as annuity business.



FIGURE 6: SUMMARY OF LIQUIDITY PREMIUM ADJUSTMENTS AS AT YEAR-END 2010 AND 2011

SUMMARY OF LIQUIDITY PREMIUM

Company	Underlying Basis for Risk Discount Rate	Liquidity Premium Method	Value at 2010 (bps)	Value at 2011 (bps)
<b>CFO Forum Members</b>				
Ageas	Swaps	QIS5	45 (UK) 23 - 34 (Euro) 46 - 50 (US)	71 (UK) 43 - 53 (Euro) 70 (US)
Allianz	Swaps	QIS5	59 (Euro) 64 (US)	118 (Euro) 103 (US)
Aviva	Swaps	QIS5	109 (UK Annuities) 36 (France) 36 (Spain) 66 (US Immediate Annuities) 56 (US Other)	130 (UK Annuities) 118 (France) 88 (Spain) 133 (US Immediate Annuities) 113 (US Other)
AXA	Swaps	QIS5	79 (UK) 36 (Euro) 56 (US)	132 (UK) 108 (Euro) 90 (US)
CNP	Swaps	QIS5	55 (Euro)	108 (Euro)
Generali	Swaps	QIS5	79 (UK) 36 (Euro) 56 (US)	135 (UK) 118 (Euro) 102 (US)
Lloyds TSB	Gov. Bonds	Method not disclosed	75 (UK Annuities)	119 (UK Annuities)
Old Mutual	Swaps	Method not disclosed	75 (US) 45 (OMSA Immediate Annuities)	50 (OMSA Immediate Annuities & Fixed Bond business)
Prudential	Swaps (Annuities) Gov. Bonds (Other)	Method not disclosed	92 (UK Annuities)	135 (UK Annuities)
Zurich	Swaps	QIS5	No allowance	130 (UK) 60 (Euro) 90 (US)
<b>Other Companies</b>				
Resolution (Friends)	Swaps	Other	75 (UK Annuities)	90 (UK Annuities)
Phoenix	Gov. Bonds	Method not disclosed	48	90
Swiss Life	Swaps	QIS5	No allowance	107 (Euro) 108 (US)
VIG	Swaps	QIS5	25 (All)	100 (Euro) 80 (Other)

At year-end 2011, liquidity premiums applied generally fell within the range 40 to 135 bps compared to 20 to 110 bps at year-end 2010. However, there has been a general widespread upward shift in the values of the liquidity premiums applied. Only one company in our sample disclosed a liquidity premium in excess of 100 bps for the 2010 year-end compared to ten companies at the end of 2011. Furthermore, in many countries, high levels of liquidity premium were disclosed for all business, not just annuities.

Recognising the sensitivity of the results to the liquidity premium, a number of companies also disclosed embedded value sensitivities to the size of the liquidity premium included within the reference rate. These sensitivities were generally based on a 10 bps increase to the liquidity premium or the removal of the liquidity premium. Swiss Re does not include a liquidity premium in its main results and therefore, provide sensitivities to the inclusion of 10, 50 and 100 bps liquidity premiums, which result in an increase in embedded value.

With many companies choosing to align the calibration of the liquidity premium to QIS5, recent developments arising from the draft European Parliament ECON report of March 2012 around the matching premium (now called *the matching adjustment*) and countercyclical premium are of particular interest. The matching adjustment, and in particular the restrictive conditions around its application, looks set to remain an area of debate and discussion which may lead to a divergence between the reference rate used by companies under embedded value and Solvency II reporting in the future.

### **Yield Curve Extrapolation**

In order to calculate the VIF component, some companies require a risk-free curve that extends to very long durations, reflecting both current market conditions and long-term economic views. This may pose a challenge where available market data is of a shorter duration than the projected cash flows. Even where data is available for very long swap contracts or sovereign bonds, as the case may be, the market may not be sufficiently deep or liquid for such data to be reliable. Therefore, to obtain suitable rates at such long durations, companies may extrapolate the risk-free yield curve from the last observed liquid market data point (*last liquid point*, or LLP) to some long-term equilibrium rate (sometimes referred to as the *ultimate forward rate*, or UFR). Extrapolating the risk-free curve from the LLP may help to reduce the impact on the VIF calculation of volatility that is due to demand and supply imbalances for the long durations in the asset market.

There are a number of extrapolation methods available to companies to use, such as:

- Assuming that a flat rate continues beyond a certain point.
- Assuming a margin over government bond yields at longer durations.
- Adopting an approach consistent with QIS5.
- Using the Nelson-Siegel method, which fits a model to the observed yield curve.

Figure 5 shows that around half of the companies disclosed that they were using extrapolation techniques. Of those disclosing their extrapolation methodologies, the QIS5 approach was most prevalent, with the majority stating that the parameters used were also in line with QIS5. Some companies did vary the parameters, though, such as Generali, which assumed an LLP of 30 years for sterling (instead of 50 years as recommended in QIS5) and a maturity at which the UFR is reached of 120 years (instead of 90 years, the basis of the extrapolated interest rate curves provided in QIS5).

Suitable values for key inputs into the chosen extrapolation method, such as the LLP, the UFR and the maturity at which the UFR is reached, can vary over time. As such, companies should ensure that these values are fit for purpose before using them in their embedded value reporting. The draft European Parliament ECON report of March 2012 for the Omnibus II Directive proposes an amendment to the Solvency II Level 1 text in respect of the extrapolation of the risk-free rate term structure. The proposed text specifies that the LLP for the Euro curve should be 20 years under current market conditions (compared to 30 years under QIS5) and that, for all currencies, the UFR should be *reached* 10 years after the LLP (compared to the maturity at which the UFR is *reached* being 90 years under QIS5).

### **Cost of Capital**

Cost of capital is typically reflected as a deduction from the PVFP to reflect the fact that assets backing the required capital are held within an insurance company rather than directly and therefore cannot be distributed to shareholders immediately. Additional costs may arise from investing in assets via an insurance company, such as additional taxation, investment expenses, or the fact that investors do not have direct control over their capital (known as *agency costs*). Cost of capital may also arise in respect of non-hedgeable risks, which are covered separately in the next section.

Under Principle 8 of the MCEV Principles, *an allowance should be made for the frictional costs of required capital for covered business. The allowance is independent of the allowance for non hedgeable risks.*

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**Of those disclosing their extrapolation methodologies, the QIS5 approach was most prevalent, with the majority stating that the parameters used were also in line with QIS5.**

Companies reporting under MCEV Principles typically allow for the frictional costs of capital within the investment income on assets backing the required capital by:

- Projecting investment returns using the reference rate net of tax and investment management expenses.
- Discounting using the reference rate gross of tax and investment management expenses.

Companies may also adopt such an approach under the EEV Principles, especially if they use a market-consistent basis. Alternatively, the cost of capital may be calculated based on the difference between the *real world* investment return assumptions and the risk discount rate.

The majority of companies using a market-consistent embedded value calculate the cost of capital using the frictional cost approach, which is the approach required under MCEV Principles. However, the definition of required capital differs between companies. As at year-end 2011, almost all companies disclosed that they set their required capital by reference to local regulatory requirements, with a slightly smaller number also taking into consideration the result from an internal capital model. Approximately half of companies also consider the level of capital needed to achieve a certain target credit rating.

In general, companies have not disclosed any major changes to CoC calculations, perhaps because other areas have demanded more attention.

#### Cost of Residual Non-Hedgeable Risks

Generally, non financial risks such as mortality, longevity, morbidity, persistency, expenses, operational and tax risks are regarded as non-hedgeable. By comparison, the majority of financial risks are generally considered to be hedgeable. However, there are still some financial risks that fall under the banner of non-hedgeable. These financial non-hedgeable risks often arise from uncertainty in setting best-estimate assumptions which can arise from a lack of deep and liquid market information. To illustrate, companies may employ extrapolation techniques to determine appropriate risk-free rates to apply at longer durations and the impact associated with this uncertainty should be captured in the CRNHR, if not already allowed for in the PVFP or TVOG. Companies that do not recognise the impact of this uncertainty may potentially underestimate the CRNHR.

Principle 9 of the MCEV Principles states: *An allowance should be made for the cost of non hedgeable risks not already allowed for in the time value of options and guarantees or the PVFP. This allowance should include the impact of non hedgeable non financial risks and non-hedgeable financial risks. An appropriate method of determining the allowance for the cost of residual non hedgeable risks should be applied and sufficient disclosures provided to enable a comparison to a cost of capital methodology.*

When assessing the CRNHR, companies usually consider the following:

- The cost of non-hedgeable risks (NHR) where they have not already been allowed for in the PVFP or TVOGs.
- The asymmetry of risks and the impact that this has on shareholder value.
- The cost associated with the uncertainty in setting best estimate assumptions.

Under MCEV Principles, regardless of how companies allow for their CRNHR, the equivalent average cost-of-capital charge should be presented. The residual capital derived in respect of the residual non-hedgeable risks should be based on a company's internal economic capital model. The cost-of-capital charge represents the excess return or risk premium that shareholders might reasonably expect on capital exposed to such residual risks. A number of companies have begun aligning their cost-of-capital approach with their developing Solvency II frameworks. We would

**The majority of companies using a market-consistent embedded value calculate the cost of capital using the frictional cost approach, which is the approach required under MCEV Principles. However, the definition of required capital differs between companies.**

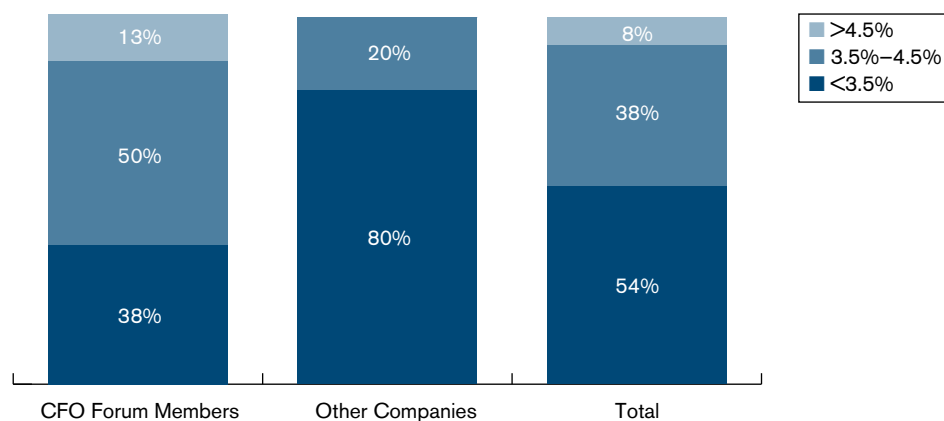
expect this trend to continue as we move closer to the Solvency II implementation date and further clarity on the final regulations and guidelines are provided.

Furthermore, the equivalent average cost-of-capital charge should be based on the capital required on a 99.5% confidence interval over a one-year time horizon. Companies may, however, determine the most appropriate level of internal capital over their self-determined future time horizons as appropriate for each company's business model and strategy. For example, selecting a higher confidence level in the capital calculation for the CRNHR may be in line with maintaining a target company credit rating.

The majority of companies continue to use approximate methods to project the residual NHR-based capital, for example by running off the initial capital derived over the projection term in line with certain drivers. The drivers reported by companies generally include reserves, premiums and sums at risk. The choice of drivers has generally remained stable.

Figure 7 shows the range of the equivalent average cost-of-capital charges based on the companies included in our analysis, split by CFO Forum members and other companies. Some companies have noted a change in their methodologies to be more consistent with their European peers, with some companies reporting an equivalent charge of 4% per annum.

**FIGURE 7: EQUIVALENT AVERAGE COST-OF-CAPITAL CHARGE FOR NON-HEDGEABLE RISKS AT YEAR-END 2011**



A lower charge does not necessarily imply a weaker assumption or lower overall CRNHR. Instead, it may capture the different extents to which companies allow for NHR in their PVFP and TVOGs, diversification, varying business models and strategies and general differences in the wider embedded value methodologies adopted by firms. The equivalent average cost-of-capital charges differ across companies. At the lower end of the spectrum, one company had a charge of 1.2% per annum, while the highest observed in our analysis was 7% per annum. The latest draft Solvency II guidance refers to a cost-of-capital charge of 6% and, whilst not directly comparable, our analysis indicates this is potentially higher than the charge companies are currently considering in their MCEV reporting.

Some companies identified particular concerns with the CRNHR approach, citing that, according to the MCEV Principles, no allowance for further risk management actions is anticipated or reflected and that this was not representative of the company's future risk profile. Consequently, providing sensitivities will help companies to demonstrate to observers the future potential impact of their risk management profiles and plans.

Companies continue, in the main, to allow for diversification in line with the MCEV Principles, which states that diversification should not be allowed for between hedgeable and non-hedgeable risks or between covered and non-covered business. However, a few companies, such as Munich Re and Zurich, have recognised diversification benefits between covered and non-covered business, perhaps in anticipation of changes to the MCEV Principles.

Overall, where companies have opted for changes to their approaches, they largely appear to have been driven by a desire for greater alignment in methodologies with Solvency II or to ensure greater consistency between companies or business divisions that are part of the same group or company. Certain challenges and areas still remain to be addressed going forward and there is likely to be continued evolution in this area.

### Time Value of Options and Guarantees

The impact of financial options and guarantees can be split into two components. The first is the effect on the PVFP in respect to the intrinsic value of such financial options and guarantees. The second is the time value of financial options and guarantees (TVOG). The TVOG is the difference between the central PVFP capturing the intrinsic impact and the average of the PVFPs over a range of scenarios obtained by stochastic calculations.

The vast majority of companies surveyed calibrate their models on market-consistent bases. The TVOG corresponds to the asymmetry in the impact over a range of scenarios on the distributable earnings by shareholders. For example, in the case of participating contracts, profits are shared between shareholders and policyholders. Losses, however, are only shared up to a certain point, after which shareholders bear all the subsequent losses. This can be further exacerbated by the actions of policyholders (dynamic policyholder behaviour).

The features of products that generally give rise to an assessment of TVOG can include interest-rate guarantees on traditional products; profit-sharing features such as bonuses or levels of credited rates, guaranteed benefits on unit-linked products and guaranteed annuity option take-up rates.

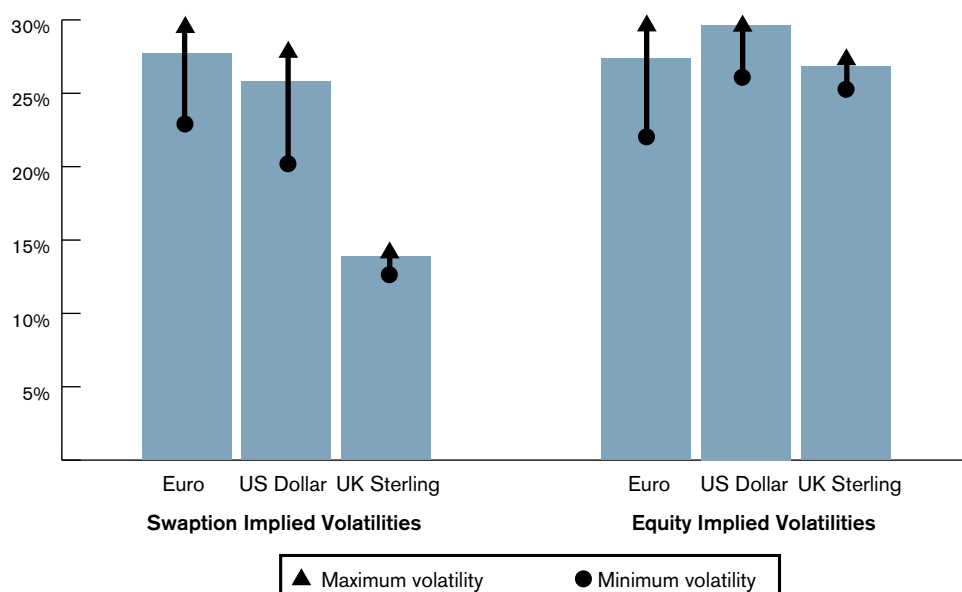
As noted, companies are required to assess the TVOG using stochastic techniques. Closed-form solutions can also be used where these lead to sufficiently accurate results but may not be suitable in valuing certain guarantees. The stochastic models must be appropriately calibrated and internally consistent with the rest of the modelling methodologies and approaches. Management actions can be allowed for which can include actions regarding the credited rate to policies, bonus rates, charges to asset shares and investment strategies. These management actions can be reflected providing that such actions have passed through the company's normal governance and approval processes, are consistent with the operating environment and take into account the market reaction to discretion.

Principle 7 of both the EEV and MCEV Principles requires firms to make appropriate allowance for the potential impacts on shareholder values from financial options and guarantees. In carrying out this assessment, an important element is the calibration of companies' stochastic models to the implied volatility from appropriate financial market instruments.

For year-end 2011, all companies that disclosed their approaches used end-period implied volatilities for interest rates and equities. The majority of companies continued to base volatility assumptions for property on historical analysis and expert opinion in the absence of meaningful option prices from which implied volatility could be accurately derived.

Figure 8 shows the average, the highest and lowest implied volatility levels used by companies complying with the MCEV Principles. Furthermore, the majority of companies continued to base asset correlations on historical market relationships. The MCEV guidance in this area requires companies to check correlations against external sources for reasonableness, which was in part in anticipation of future sources of correlation information becoming available.

**FIGURE 8: AVERAGE, HIGHEST AND LOWEST SWAPTION & EQUITY IMPLIED VOLATILITIES BASED ON MCEV COMPANIES**



\* Swaption implied volatilities are based on 20-year swap length, 20-year option term.  
\*\* Equities based on 10-year options.

Dynamic policyholder behaviour is included in many companies' assessments of TVOG. In particular, a number of companies recognise the impact of dynamic policyholder behaviour under certain economic scenarios. For example, if the spread between the credited policyholder rate and the market benchmark were to exceed certain boundaries, this would trigger a change in the best-estimate assumption for the level of lapses. In considering dynamic policyholder behaviour, certain difficulties may be encountered in allowing accurately for the rationality of policyholders exhibiting certain behaviours.

Figure 9 shows that, where information was disclosed, a large number of companies allowed for dynamic policyholder behaviour and the majority applied 1,000 economic scenarios.

**FIGURE 9: TIME VALUE OF OPTIONS AND GUARANTEES: CALIBRATION, NUMBER OF SCENARIOS AND DYNAMIC POLICYHOLDER BEHAVIOUR**

COMPANY	OPTIONS AND GUARANTEES	SCENARIOS	USE OF DYNAMIC POLICYHOLDER BEHAVIOUR *
<b>CFO Forum Members</b>			
Aegon	Real-world	Not disclosed	Yes
Ageas	Market-consistent	1,000	No
Allianz	Market-consistent	1,000 (5,000 in Germany)	Yes
Aviva	Market-consistent	Not disclosed	Yes
AXA	Market-consistent	At least 1,000	Yes
CNP	Market-consistent	1,000	Yes
Generali	Market-consistent	1,000	Yes
Hannover Re	Market-consistent	1,000	Not disclosed
Legal & General	Real-world	Not disclosed	Not disclosed
Lloyds TSB	Market-consistent	Not disclosed	Not disclosed
Munich Re	Market-consistent	1,000	Yes
Old Mutual	Market-consistent	1,000	Yes
Prudential	Both	Not disclosed	Yes
SCOR	Market-consistent	Not disclosed	Not disclosed
Standard Life	Market-consistent	Not disclosed	Yes
Swiss Re	Market-consistent	Not disclosed	Not disclosed
Zurich	Market-consistent	1,000	Yes
<b>Other Companies</b>			
Achmea (Eureko)	Both	5,000	Not disclosed
Chesnara	Market-consistent***	Not disclosed	Not disclosed
Irish Life & Permanent	Market-consistent	Not disclosed	Not disclosed
Mediolanum	Market-consistent	1,000	Yes
Phoenix	Market-consistent	Not disclosed	Not disclosed
PZU	Market-consistent	1,000	Not disclosed
Resolution (Friends)	Market-consistent	2,000	Not disclosed
Royal London	Market-consistent	Not disclosed	Not disclosed
St James's Place	N/A**	N/A	N/A
Storebrand	Market-consistent	1,000	No
Swiss Life	Market-consistent	2,000	Yes
VIG	Market-consistent	1,000	Yes

\* Indicates companies that did not disclose the use of dynamic policyholder behaviour.

\*\* St James's Place does not offer products that carry any significant financial guarantees or options.

\*\*\* Market consistent with approximations.

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## DISCLOSURES

Differences in the interpretation and approach to embedded value reporting still remains, even where EEV Principles or MCEV Principles are adopted. This continues to present challenges for companies, investors, analysts and other interested parties alike in understanding disclosures and adjusting results to fairly evaluate and compare companies on a consistent basis. Naturally, this has put more emphasis on the additional information companies provide to help more clearly identify the dynamics of the business and the value-creation strengths of business models and strategies. In certain areas, companies differ in the level of detail provided and this also presents challenges for market observers in carrying out in-depth comparisons between companies.

The EEV and MCEV Principles prescribe the minimum disclosures regarding methodologies and presentation of results. The MCEV Principles specify the format of the results presentation in Appendix A (*Presentation of analysis of earnings*) and Appendix B (*Group MCEV analysis of earnings*). Appendix A specifies the breakdown of the analysis of movement in embedded value split by distinct components of value (free surplus, required capital and the value of in-force). Appendix B specifies that covered and non-covered business should be separately presented. The MCEV Principles indicate that the non-covered business should be based, as far as possible, on the unadjusted IFRS net asset values (in practice, however, various adjustments will be required to ensure consistency).

The majority of companies stating compliance with the MCEV Principles in our sample presented their analysis of change broadly in line with Appendix A. There were also a number of EEV-compliant companies that chose to present their results consistent with Appendix A and Appendix B.

Furthermore, the EEV and MCEV Principles specify the minimum sensitivities that companies should disclose and this has helped to standardise disclosures across companies. The EEV and MCEV Principles also encourage companies to provide the results of additional sensitivities to help observers better understand the underlying dynamics of the companies' businesses. For example, a number of companies provided additional sensitivities surrounding the impact of the liquidity premium. Few companies included additional sensitivities in respect to the CRNHR, but where this was done consideration was given to the impact of increasing the charge for CRNHR or allowing for diversification benefits between hedgeable and non-hedgeable risks.

The CFO Forum published a press release at the end of 2011, which guided companies to include an allowance for the current sovereign debt crisis in the derivation of their reference rates or to assess the impact through additional sensitivities. The CFO Forum believed this move signalled a step towards convergence of MCEV with the emerging Solvency II regime. However, the on-going developments and uncertainty surrounding Solvency II meant that companies were wary of making changes to their main embedded value analyses. A few companies, such as AXA, Ageas and Generali, decided to disclose a specific sensitivity in their embedded value reporting in line with the CFO Forum's guidance for the sovereign debt crisis, and all of these companies reported a significant increase in their embedded value result under this sensitivity.

Analysts have commented that developments in embedded values over the last few years have allowed a greater understanding to develop. In particular, the increased levels of disclosures have provided the ability to compare and contrast the performance of different firms. However, one area which analysts have indicated is not particularly helpful is the continual evolution taking place, which has meant that stability in guidance and subsequent approaches has not been possible. Given the anticipated steps to further align the MCEV Principles with Solvency II, there is likely to be continued evolution going forward.

Embedded values continue to provide rating agencies with valuable information in their assessments of the creditworthiness of firms. The PVFP provides a powerful indication of the long-term profitability of companies as it provides useful signals on the strength of the company since profits can be



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used as a source of future capital (if retained in the firm). Similarly, the value of new business and new business margins can indicate the continuing strength of long-term profitability and hence the sustainability of future potential capital generation. Furthermore, additional disclosures and the component nature with which the analysis is presented assist rating agencies to drill down into the underlying key risk drivers and the areas of the company that are most important and/or where the ability to generate value is most at risk and the company's ultimate creditworthiness.

Overall, companies appear to have taken steps to align methodologies across their current (and expected) reporting metrics as demonstrated by those companies choosing to apply broadly consistent treatments of liquidity premiums and risk-free extrapolation techniques under their embedded value and QIS5 calibrations (noting that there continues to be further debate under Solvency II). After 30 June 2012, companies are required to make allowances for the developing Solvency II regime in their embedded value reporting. However, uncertainty surrounding Solvency II reporting requirements and a lack of clarity has left many unanswered questions and will continue to be a source of debate and consideration by companies.

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**Overall, companies appear to have taken steps to align methodologies across their current (and expected) reporting metrics as demonstrated by those companies choosing to apply broadly consistent treatments of liquidity premiums and risk-free extrapolation techniques under their embedded value and QIS5 calibrations.**

## OTHER MEASURES OF VALUE

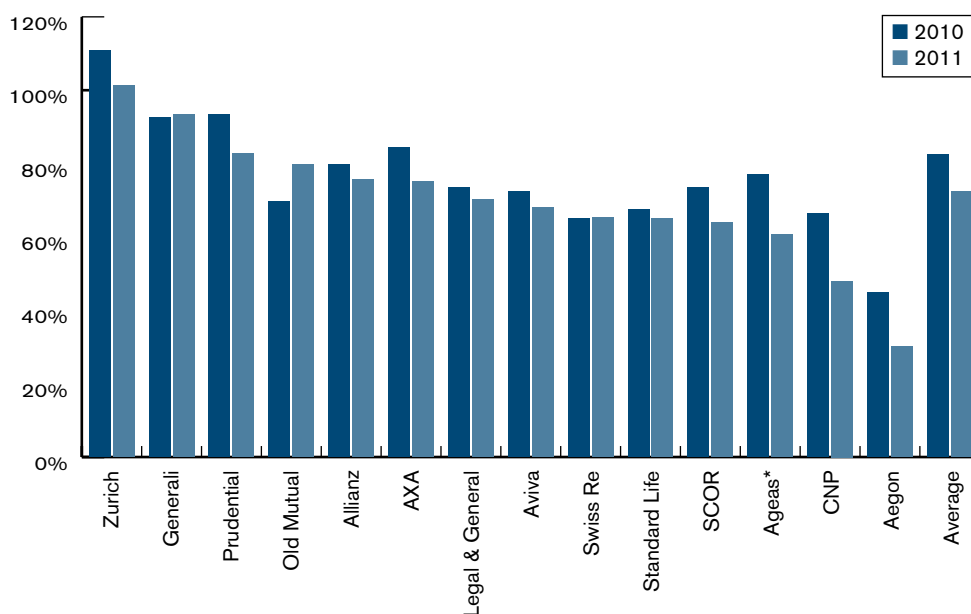
In this final section, we discuss how the results from embedded values compare and contrast with other metrics used by parties such as investors or market analysts. In particular, we consider first how embedded value compares to market capitalisation and then how developments in both Solvency II and IFRS reporting may impact embedded value reporting going forward.

### Market Capitalisation

The acid test of embedded value has always been how much the market believes the result. One simplistic way of measuring this is to compare a company's market capitalisation to its embedded value at a given point in time. However, discrepancies in the embedded value and the market capitalisation can be due to a number of reasons whose impact may not always be entirely clear. For example, no allowance is made for future new business sales or for intangible assets such as the loyalty of a customer base within a company's embedded value calculation, which may be factors investors consider and hence should be reflected within the market capitalisation. This may suggest that, as long as these items are thought to create value, market capitalisation should exceed the reported embedded value. Another reason for discrepancies may be timing differences between the availability of embedded value and market data.

Figure 10 shows the market capitalisation as a percentage of the embedded value for CFO Forum members as at 31 December 2010 and 2011.

**FIGURE 10: MARKET CAPITALISATION AS A PERCENTAGE OF EMBEDDED VALUE AS AT 31 DECEMBER 2010 AND 2011**



Excludes Lloyds Banking Group, Hannover Re and Munich Re. A comparison of their embedded values to market capitalisation has not been included because their embedded values do not contain all the business within the group.  
Market capitalisation based on share price from Bloomberg multiplied by number of shares (from companies' Report and Accounts) or taken directly from companies' Report and Accounts, as appropriate.  
\* Ageas embedded value is the total of 'life' and 'non-life & other insurance'.

Figure 10 shows that, for almost all companies considered, embedded value has exceeded market capitalisation at year-end 2010 and 2011. Furthermore, on average the gap between the two measures widened over the course of 2011. For the companies in our sample, the average market capitalisation fell as a percentage of total embedded value from 82% to 72%.

For most of the companies in Figure 10, market capitalisation fell over the year, with a number showing a reduction in the third quarter of 2011, generally coinciding with the increased volatility and uncertainty within financial markets at that time. One might therefore reasonably expect that the embedded value of companies that report on a market-consistent basis should fall as well. In fact, based on our analysis, over half of the companies (all reporting on some form of market-consistent basis) reported embedded values that either moved broadly in line with the market capitalisation or fell, but to a lesser extent than the market. As a result, the gap between market capitalisation and embedded value has increased for these companies, in general.

The results for the remaining companies we analysed were varied, with the majority reporting increases in embedded value despite market capitalisations falling. Legal & General was an exception as both market capitalisation and embedded value increased over 2011.

### Solvency II

Given the continued uncertainty around the ultimate requirements of Solvency II and the increasing pressure on implementation timescales, it remains difficult to assess what the impact on embedded value reporting will be. Acknowledging this, in September 2011, the CFO Forum issued guidance that there is no requirement to allow for Solvency II until reporting periods after 30 June 2012. However, companies should begin to consider how they might incorporate the Solvency II balance sheet into their embedded value calculations after 30 June 2012.

Companies and users of companies' accounts would ideally prefer Solvency II and embedded value reporting to converge as far as possible and that common assumptions and calculations can be used. However, it remains to be seen how achievable this may be, given that the two methodologies are intended to be used for different purposes and will ultimately depend on whether additional margins of prudence are imposed under the Solvency II regime.

Key areas where differences may apply are:

- Investment return assumptions and discount rates (e.g., matching adjustment/liquidity premium, countercyclical adjustments, allowance for sovereign debt and extrapolation).
- Contract boundaries and consideration of what constitutes new business.
- Market-related cost of capital versus the fixed Solvency II risk margin calculation.

### IFRS Developments

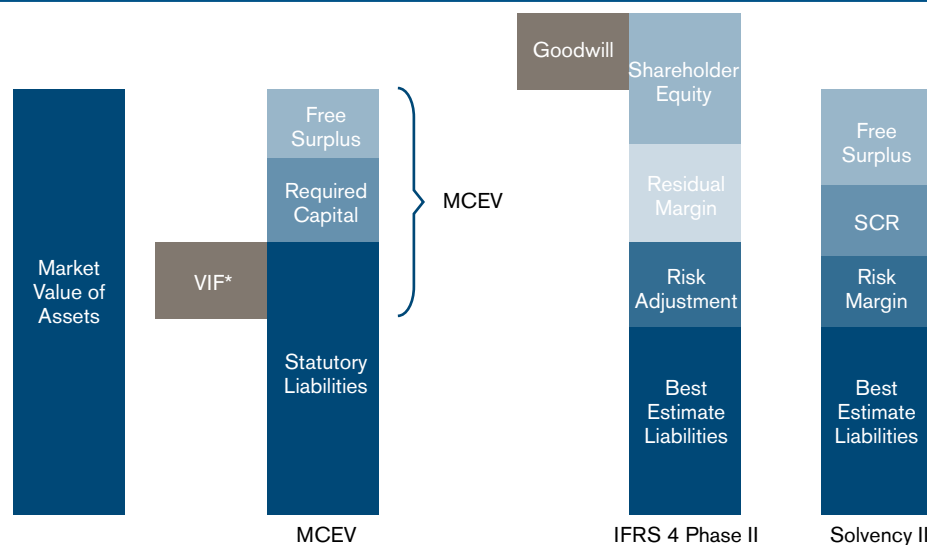
The preparation of accounts on an IFRS basis gives rise to a different interpretation and timing of profit and loss compared to the embedded values basis. This is fundamentally due to IFRS focusing on a current view of assets and liabilities together with current profit generation compared to embedded value, which also makes allowance for future earnings and the shareholder value created. Reconciliation of these different measures helps to reveal different features of firms' underlying performances. Consequently, companies reconcile their embedded value shareholder net worth to the IFRS net asset value. It is also worth noting that assets under embedded value are at market value whereas under current IFRS reporting requirements assets can be held at market value or amortised cost.

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The IFRS 4 Phase II project aims at further standardising international accounting requirements for insurance contracts. The proposed IFRS 4 Phase II balance sheet, based on the latest information, is compared to MCEV and Solvency II in Figure 11.

**FIGURE 11: COMPARISON OF MCEV, PROPOSED IFRS 4 PHASE II AND SOLVENCY II BALANCE SHEET**



\* VIF is PVFP less TVOG, CoC and CRNHR.

\*\* Size of components under each reporting metric are for illustration only.

The joint International Accounting Standards Board (IASB)/Financial Accounting Standards Board (FASB) insurance contracts project for IFRS 4 Phase II has continued to occupy significant portions of both the IASB and FASB board agendas during 2012. The IASB and FASB continue to make progress, but several differences remain.

The joint International Accounting Standards Board (IASB)/Financial Accounting Standards Board (FASB) insurance contracts project for IFRS 4 Phase II has continued to occupy significant portions of both the IASB and FASB board agendas during 2012. The IASB and FASB continue to make progress, but several differences remain. The key tentative decisions made during the early months of 2012 are primarily focused on measurement. These areas included clearer definition of the unit account, the criteria for applying the premium allocation approach and the unbundling of services and investment components from insurance contracts.

Despite the length of the joint project, significantly different views remain in the application of a number of the key areas, such as the nature and resulting amortisation of margins and recognition of acquisition costs. Furthermore, other key areas remain to be addressed, which include the presentation of information, disclosures, subsequent measurement of residual margins and transition provisions. The IASB are aiming to publish further information by the end of 2012, but it is not clear whether this will be another full exposure draft, final standards, or something in between. The FASB plan a similar timescale of its publications. Given the current progress and timescales for final standards, an effective date looks to be no earlier than 2015.

In addition to enhancing embedded value reporting and the frequent evolving guidance, companies are also having to incorporate, assess and interpret developing aspects of IFRS reporting requirements and Solvency II. Companies must also consider and assess how to better ensure that their companies' true inherent values are reflected in their market capitalisations. This is no easy feat and the challenging economic environment will continue to place demands on companies to not only maintain their value creation but also to effectively communicate their financial performances and strengths to investors, analysts and customers alike.









## CONTACT

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