

TOWARDS A STANDARD FOR MARKET-CONSISTENT EMBEDDED VALUE REPORTING

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Abstract: Demand from investors for objectivity, comparability and consistency in embedded value reporting is leading many insurance companies to calculate their European Embedded Values on a market-consistent basis. However, there has been significant debate about what actually constitutes a market-consistent embedded value, creating further confusion for investors. In this paper we seek to focus on the fundamental objectives of investors and propose a set of standards for market-consistent embedded value reporting. These standards are explicitly designed for ease of investor communication and to fit cleanly into the European Embedded Value principles.

Keywords: Embedded value, market-consistent, MCEV, supplementary reporting, European Embedded Value Principles, CFO Forum, Life Assurance

1. INTRODUCTION

1.1 Background

Investors outside North America have long held embedded values and embedded value profits as the most useful area of financial reporting for life assurance companies. In contrast to the primary accounting measures, the embedded value approach reflects the impact of the actions and decisions of the current generation of management rather than gradually unwinding the legacy of the past. The benefits of implementing a successful new business strategy, for example, will be fully reflected in embedded value reporting but will not be fully recognised for many years in the primary accounts.

For these reasons, embedded values and embedded value profits offer investors an alternative to the primary accounting balance sheet and profit and loss account that paint a more meaningful picture of the business.

However, there has always been significant judgement necessary in the preparation of embedded values, and a recurring criticism of investors is the difficulty of comparing results across companies. Indeed, investors are generally more concerned that published results are objective, comparable and consistently allow for what are seen as the key drivers of value, than they are with whether the final number represents absolute truth as a measure of shareholder value. Some in the industry believe that the difficulties investors have with what is such an important measure within the life insurance industry contribute to a general undervaluation of company stocks, leading to a cost to raising capital for the insurance industry that is higher than it might otherwise be.

These issues were recognised by the industry with the publication of the European Embedded Value (“EEV”) principles, which offered a standard set of principles for the calculation of embedded values. These were welcomed by investors as a strong step forward, but are

generally believed to have not gone far enough. Questions over comparability and consistency remain, most prominently in terms of the allowance for risk – clearly a key area for the valuation of insurance business.

In an effort to address these questions, an increasing number of insurance companies are choosing to publish their European Embedded Values on a market-consistent basis. A Market-Consistent Embedded Value (“MCEV”) uses an objective basis to allow for financial risks, and can therefore go some way towards addressing the concerns of the investor community.

A consequence of the wide interest in MCEV has been significant debate, not so much focussed on how MCEV can be best utilised to address the concerns of investors, but more driven by what some might characterise as a holy-grail-like quest for absolute truth in a measure of shareholder value. Unfortunately, this has created further confusion for investors.

In this paper, we seek to focus on fundamental investor objectives. We propose a set of standards for MCEV reporting, the application of which would lead to greater consistency and comparability amongst companies. This paper does not, however, cover disclosure or analysis of movement, both of which are important issues in their own right.

1.2 Purpose and structure of paper

In preparing this paper our aim is to provide a set of MCEV standards that:

- Fit cleanly into existing embedded value reporting structures, in particular the European Embedded Value principles (of which we assume a good knowledge)
- Provide robust yet non-technical definitions that can be easily communicated to and understood by investors and, in particular, clearly demonstrate the improvements MCEV provides in objectivity, consistency and comparability

These standards are intended as a “straw man” to take the debate on embedded value reporting forward in a direction that we consider will be most useful for the industry and investors. The technical arguments around many of the areas which are covered by these standards have been well rehearsed elsewhere (see bibliography) and are not repeated in this paper.

We have structured this paper by first describing the components of value within an MCEV, then considering in turn the way in which each one is valued under MCEV. The overriding theme is that the values are based on financial economic principles and are calculated from the perspective of investors in the life insurance company.

2. MARKET-CONSISTENT EMBEDDED VALUE

MCEV is the present value of the contribution of the covered business to shareholder distributable earnings. This is defined as the sum of the following three components:

- The free surplus allocated to the covered business
- The value of the required capital allocated to support the in-force covered business, allowing for the costs associated with holding that capital
- The value of future shareholder cash flows emerging from assets backing the in-force covered business, allowing for both the intrinsic and time value of any inherent financial options and guarantees

These components of value are as set out in the EEV principles and are familiar to investors. The defining characteristic of MCEV is the way in which these components are valued, particularly in terms of the allowance for risk.

3. FREE SURPLUS

The free surplus is the excess of the total market value of assets allocated to the covered business over and above the required capital and the in-force statutory liabilities.

The free surplus is not required to support the in-force covered business and is valued at its full market value with no adjustment for any costs of holding capital.

The value of the free surplus is driven by the total market value of assets allocated to the covered business which is defined below.

3.1 Market value of assets allocated to the covered business

All assets allocated to the covered business are included in the total market value of assets, including those that may be excluded under prudential reporting. Assets are valued at their market prices.

Where a market price is not readily available, assets are valued at an estimate of their market price calculated using generally accepted asset valuation techniques on a basis consistent with observable market data. Examples of assets that may fall into this category include: private equity, over-the-counter options, collateralised debt obligations, leveraged loans, holdings in non-life subsidiaries and mortgages.

Assets deemed to be required to cover liabilities to stakeholders other than shareholders or policyholders – for example holders of long term debt and short term creditors – are not allocated to the covered business. These liabilities are taken at their market value if it exists; otherwise they are valued using a market-consistent approach on a basis consistent with the main MCEV calculations.

4. VALUE OF REQUIRED CAPITAL

The value of required capital is the present value of the future releases to shareholders from the assets backing the required capital.

An important feature of MCEV is that all assets are valued at their market value and the value attributed is unaffected by projecting and discounting associated future investment income and gains. This definition is therefore equivalent to the market value of the required capital less the present value of the costs associated with holding the required capital.

4.1 Quantum of required capital

The required capital is the amount of capital for which the distribution to shareholders is restricted due to it being required to support the in-force covered business.

The distribution to shareholders could be restricted for any reason that relates to the in-force covered business – this includes both external supervisory requirements and internal requirements.

Capital for which distribution is restricted because it is required to support the writing of new business does not form part of the required capital and is treated as part of the free surplus. In this situation it is acknowledged that part of the free surplus will, in reality, be locked into the company and there will be costs associated with holding this capital. However, these costs are attributable to new business and not in-force business, and are therefore reflected in the market-consistent value of new business not in the MCEV.

4.2 Cost associated with holding required capital

The cost associated with holding required capital is the present value of all monetary costs directly associated with holding the required capital. These costs are:

- The additional taxation incurred by the company, over and above that allowed for in the cash-flows emerging on in-force business, as a direct result of holding the additional capital
- The additional investment expenses incurred, over and above those allowed for in the cash-flows emerging on in-force business, as a direct result of holding the additional capital .

These costs are explicit cash flows and are valued by projecting the required capital forward over time, calculating the associated costs, and taking their present value in a way consistent with the market-consistent shareholder cash flow valuation principles set out in section 5.1.

The level of these costs relative to the amount of the required capital is company specific and should be determined by the company concerned as such.

4.3 *Other valuation adjustments*

A number of other factors affecting company valuation have often been debated in the context of the cost of capital. Two areas particularly heavily debated are agency effects and the cost of financial distress.

Agency effects relate to the potential for management to make decisions that are not aligned with the best interests of shareholders. This can lead to both opportunity costs and monetary costs.

Opportunity costs mean that shareholder value would be higher if particular opportunities were taken advantage of, not that shareholder value has been reduced. For this reason, the opportunity costs associated with agency effects are not deducted from MCEV.

Agency effects can also lead to direct monetary costs such as, for example, the cost associated with maintaining overly lavish offices. Any monetary costs arising from agency effects are allowed for in the value attributed to the in-force covered business (generally this will be implicit in the expense assumptions) and not in the cost of holding the required capital.

For these reasons there is no explicit additional allowance for agency effects as a cost associated with holding capital within MCEV. MCEV is intended to provide investors with information to make their own judgements about the company's value. In interpreting this information investors will make their own allowance, if any, to reflect the impact of additional agency effects.

The cost of financial distress represents the potential for significant reduction in shareholder value in the event of the company entering into a state of financial distress. This reduction is driven primarily through the potential for the company to close to new business and is therefore an important factor when assessing the total value of a company (i.e. including goodwill or franchise value). However, the cost of financial distress is not a significant item in the context of the value of in-force business and there is no explicit allowance for it in MCEV.

5. VALUE OF SHAREHOLDER CASH FLOWS EMERGING ON IN-FORCE COVERED BUSINESS

The value of shareholder cash flows emerging on in-force covered business is the present value of the future surplus emerging into shareholder distributable earnings from the assets backing the statutory reserves. It is made up of the sum of two components:

- Intrinsic value of shareholder cash flows
- Time value of embedded financial options and guarantees

5.1 *Intrinsic value of shareholder cash flows*

The intrinsic value is the present value of projected shareholder cash flows before any allowance for the time value of embedded financial options and guarantees, but allowing for other risks in a way consistent with finance theory.

5.1.1 *Projection assumptions*

5.1.1.1 *Economic assumptions*

The intrinsic value of shareholder cash flows is calculated by projecting shareholder cash flows on a single expected economic scenario. The expected economic scenario includes both asset returns and other economic indices such as retail price inflation.

The expected economic scenario represents “real-world” expectations for returns on the various asset classes and economic indices and is calculated using a generally accepted asset model calibrated to current market conditions. Standards in relation to asset model calibration are described in section 5.2.

5.1.1.2 Non-economic assumptions

The non-economic assumptions under MCEV are set such that the corresponding projected shareholder cash flows represent the mean of the distribution of potential shareholder cash flows under the expected economic scenario. In many cases this is different to the “most likely” or “best estimate” outcome.

In assessing the mean of the distribution of potential shareholder cash flows all potential sources of cash flow relating to the covered business should be considered. This includes “exceptional” sources such as cash flows that may arise from operational risks such as misselling. It also includes expenses associated with corporate governance that may be charged to shareholders’ funds.

The assumptions in relation to the cash flows should be consistent with other aspects of the valuation. For example, particular care is required in relation to pension scheme liabilities, where an assumption relating to the funding requirements is often implicitly included within the expense assumption. In this situation, the difference between the pension scheme’s funding requirements calculated on a market-consistent basis and the value of the funding implicit in the expense assumption should be calculated, and any surplus or deficit should be included within the total market value of assets allocated to the covered business.

In conjunction with the discounting approach and the allowance for options and guarantees, setting projection assumption to give the mean outcome to shareholders ensures that the balance of upside and downside risk is allowed for in a way that, in accordance with finance theory, is consistent with shareholders’ attitudes to risk.

It is acknowledged that under MCEV an element of judgement does remain in the assessment of the appropriate non-economic projection assumptions and hence in the allowance for risk

that is unrelated to the market. However, the judgement required is explicit and relates to tangible and measurable quantities: the inclusion of all cash flows and the accuracy of the assumptions themselves. This tangibility improves transparency and ease of communication, and the measurability allows the accuracy of the judgements made to be assessed retrospectively.

5.1.2 Discounting approach

The present value of the total projected shareholder cash flow is calculated using a “bottom-up” approach which considers each underlying component of shareholder cash flow separately depending on the associated risk.

In accordance with finance theory, a differentiation is made between financial risk – where investors weight downside more heavily than upside – and non-financial risk where investors weight upside and downside equally. Investors are able to diversify non-financial risk and therefore, over the whole of their investment portfolio, can be confident of obtaining the mean outcome overall. This is not the case for financial risk which, by its very nature, cannot be diversified.

The discount rate used to value each component of cash flow therefore depends on whether or not the cash flow is affected by the returns on any publicly traded assets (and is hence exposed to financial risk). The two categories of cash flow for discounting purposes are therefore:

- Cash flows that are unrelated to the returns on publicly traded assets
- Cash flows that are linked to the returns on certain publicly traded assets

The overall discount rate in a MCEV therefore depends on the relative weighting of financial and non-financial risk within the underlying cash flows and is effectively an output from the

bottom-up MCEV calculation. The overall discount rate should be derived and expressed as the risk free rate plus a risk margin.

There are also risks affecting cash flows – such as the option of policyholders to surrender their policy – where the link to the returns on publicly traded assets is not clear cut. These “partially market related” risks are allowed for within the time value of options and guarantees, the standards for which are described in section 5.2.

5.1.2.1 Cash flows that are unrelated to the returns on publicly traded assets

Cash flows that are unrelated to the prices of any publicly traded assets are discounted at the risk free rate.

These cash flows have been projected such that they represent the mean of the distribution of potential shareholder cash flow. This discounting approach ensures that the allowance for risk is, in accordance with finance theory, consistent with shareholders’ attitudes to risk.

5.1.2.2 Cash flows that are linked to the returns on one or more publicly traded asset

Cash flows that are linked to the returns on any publicly traded assets are discounted at the rate of return assumed for those assets before tax.

The financial risk to which these cash flows are exposed is the same as the risk on certain publicly traded assets with an observable price. This discounting approach therefore allows for financial risk in a way that is consistent with the way in which that risk is priced in the market, and is consistent with shareholders’ attitudes to risk. In particular, it ensures that no implied arbitrage opportunity exists within the MCEV calculations, and so, for example, projecting future investment income and gains on assets and then discounting does not affect the value attributed to those assets.

Furthermore, because the projection is performed such that the cash flows represent the mean of the distribution of non-financial sources of risk, this discounting approach ensures that the overall allowance for risk is, in accordance with finance theory, consistent with shareholders' attitudes to risk.

5.1.3 Practicalities

These standards set out the definition of MCEV, not the method by which it is calculated. In practice many companies use calculation techniques that are different to the above, but are mathematically equivalent, to calculate a MCEV.

A common example is the "certainty equivalent" technique under which assets are assumed to earn the risk free rate in the projection and all cash flows are discounted at the risk free rate. This is our preferred approach to calculating MCEV because it gives results mathematically equivalent to the definitions above and "automatically" ensures that all cash flows are discounted at an appropriate rate.

5.2 Time value of embedded financial options and guarantees

The time value of embedded options and guarantees is the deduction required from the intrinsic value of shareholder cash flows to reflect the impact of policyholders' financial options and guarantees embedded in the covered business. The deduction ensures that the overall allowance for risk within the value of shareholder cash flows emerging on in-force covered business is consistent with finance theory.

The time value of embedded options and guarantees is calculated using stochastic techniques on a basis that is consistent with that used to calculate the intrinsic value of shareholder cash flows for both economic and non-economic assumptions.

5.2.1 Stochastic valuation techniques

Any generally accepted stochastic approaches to valuing options and guarantees is allowable under MCEV, provided that the approach is calibrated to traded instruments wherever possible and that results are not materially distorted by any approximations made. Generally accepted approaches include Monte Carlo simulation, closed form solutions and numerical integration.

More than one stochastic model may be used to value different options or guarantees provided that the calibrations are consistent.

Specific factors that often materially affect results are management actions and policyholder behaviour. Any allowances for such factors are made on a basis consistent with the assumptions made in the calculation of the intrinsic value of shareholder cash flows under the expected economic scenario.

5.2.1.1 Management actions

Management actions are particularly material to the calculation of the time value of options and guarantees in participating funds, where there is often discretion available in the amount of profit recognised and in the investment policy.

Any management actions allowed for must be consistent with management intentions, policyholder expectations, and any formal policies agreed by the Board or with the local regulator.

5.2.1.2 Policyholder behaviour

Policyholder behaviour is generally only material to the value of financial options and guarantees where it involves a policyholder's decision to take up a financial option embedded

in a policy. The most common types of embedded financial options are: guaranteed levels of encashment benefits at certain points in the contract (for example, a return of premium guarantee at the 1 year policy anniversary) and guaranteed annuity rates.

Financial option take-up rates are modelled as varying according to the value of the financial option to the policyholder. The modelling assumptions relating to the way in which take-up rates vary are consistent with past experience and are based on management's best estimate of how policyholders would behave in aggregate under differing market conditions.

In addition, irrespective of whether there is an underlying benefit guarantee, policyholders do have the option to surrender or lapse their policy at any particular time. Where policyholder persistency is believed to be correlated to financial markets this may have a material effect on value. The impact of this correlation is allowed for within the value of options and guarantees using a dynamic persistency model if necessary.

5.2.1.3 Other non-economic factors

The time value of certain financial options and guarantees is materially affected by other non-economic factors.

The most common example of this is the time value of guaranteed annuity options. Often this is materially affected by the variability in potential future mortality rates which, together with interest rates, are the key drivers of the open-market annuity rate (which can be considered as the "underlying" to which the "strike" of the guaranteed annuity rate is compared). This variability in the future mortality rate increases the volatility of the underlying, which can materially increase the time value of the option.

This is allowed for in the time value of options and guarantees using a stochastic mortality model if necessary.

5.2.2 *Participating business*

For participating business policyholder benefits are related to the performance of a specific segregated participating fund with an underpin that “policyholders’ reasonable expectations” will be met. If reasonable expectations cannot be met by the resources of the participating fund, shareholders will effectively be required to make up the shortfall. In this situation the “option” from the shareholders perspective is at a fund level rather than at a policy level, and is referred to as the burnthrough cost.

This is allowed for in the time value of options and guarantees using a stochastic model for the full with-profits fund if necessary.

5.2.2 *Economic Assumptions*

All economic assumptions under MCEV are derived from a generally accepted asset model calibrated to observable market instruments.

5.2.2.1 *Calibration of the asset model*

Calibration is to the market prices of traded assets with similar characteristics to the liabilities being valued, wherever a liquid traded market exists.

The choice of calibration assets is appropriate to the type of business being written. For example, if guarantees are deeply out-of-the-money it is not appropriate to use at-the-money option volatilities.

Market expectations for future increases in a local country consumer price index are derived from differences between the nominal and real risk free rate assumptions where risk free index linked securities are available.

There are other assumptions required within the asset model for which there is no liquid traded market to which calibration can be performed. For example, the covariance assumptions, long term equity volatility and property volatility assumptions. These assumptions are set using generally accepted methods and, in the absence of a specific reason to the contrary, remain unchanged from year to year.

6. CONCLUSION

In preparing this paper our aim is to provide a set of MCEV standards that focus on fundamental investor objectives and take the debate on embedded value reporting forward in a direction that we consider will be most useful for the industry and investors. We have endeavoured to provide standards that balance the needs of actuarial practitioners and non-actuarial users of the results and:

- Fit cleanly into existing embedded values reporting structures, in particular the European Embedded Value principles
- Provide robust yet non-technical definitions that can be easily communicated to and understood by investors and, in particular, clearly demonstrate the improvements MCEV provides in objectivity, consistency and comparability

We readily acknowledge that there are many investor questions that are not addressed by the standards set out in this paper. However, we believe that the application of the market-consistent approach to embedded value reporting across the insurance industry, in line with these standards, will significantly contribute to addressing investors' concerns around comparability and consistency, particularly in terms of the allowance for risk.

If those who believe the difficulties of investors with embedded value reporting contribute to a general undervaluation of company stocks are correct, the return on the investment in obtaining this consistency would be very significant.

7. ACKNOWLEDGEMENTS

We could not have prepared this paper without the support of our colleagues. In particular, we would like to thank Kamran Foroughi and Peter Wright for their contributions to the development and review of this paper. Any errors and/or omissions however, remain our own.

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