Market-Consistent Embedded Value – An Indian Perspective

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Abstract

This paper is intended to briefly discuss the meaning and purpose of Market-Consistent Embedded Value calculation and the viability of such calculation in the Indian scenario.

Keywords

Embedded value; Appraisal value; Market consistent embedded value

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1 An introduction to Embedded Value ("EV")

1.1   The failure of traditional reporting methods to give a realistic view of the underlying profitability of the business has led to the wide use of EV techniques by managements of life insurance companies in recent years. Statutory earnings figure may be distorted due to new business strain. Generally Accepted Accounting Principles ("GAAP") earnings make an allowance for new business strain but do not consider the company's cost of capital. The EV approach overcomes such deficiencies by quantifying the change in the underlying economic worth of the business.

1.2   EV can be defined as "the value of the realistic future profit stream from the company's existing business together with the value of any net assets separately attributable to shareholders." EV is the sum of the following two components:

- Net asset value ("NAV"), which is the present value of the earnings arising from the net assets allocated to shareholders. The net asset value is usually taken to mean the market value of the free assets in the shareholders' fund, after tax.

- Value of business in-force ("VIF") or present value of future profits ("PVFP"). VIF is taken to be the present value of the shareholders' cash flows based on the in-force covered business. These are basically future transfers to shareholders based on an initial allocation of assets to the policy liabilities consistent with the calculation of the net asset value.

1.3   EV methodology assumes an appropriate shareholders' risk discount rate, an appropriate asset mix, and an investment return for each class of asset.

1.4   EV does not consider the expected future profits arising from future new business. However if EV is to be computed for valuing a company in the event of a merger or acquisition then an estimate for such future new business may be added, in which case it is referred to as Appraisal Value.

1.5   The appraisal value of a company is an extension of EV to incorporate the value of future profits from future new business. This may be summarized as follows:

   Net free assets
+ <u>Present value of future profits from in-force business</u>
= Embedded value
+ Present value of future profits from future new business
   (Goodwill usually calculated as a multiple of the value of one year's new business)
+ <u>Control premium or other special factor</u>
= Appraisal value

Statutory versus embedded value profit

1.6   The fundamental difference between statutory and EV profit relates to the timing of profit emergence rather than the amount of profit that ultimately arises. When

calculating statutory reserves, prudence is the overriding principle and this will typically defer the emergence of profit. EV calculation is intended to be more realistic and hence generally includes fewer margins for prudence. By anticipating future profits, the EV approach will tend to show profit emerging sooner than statutory profits.

Uses of EV calculation

1.7 EV is most often used for profit reporting for published accounts, profit reporting for internal management accounts, management incentive schemes, business unit management, financial planning and inter-company comparisons.

1.8 Appraisal value may be used in valuing a company for merger or sale, demutualisation, floatation of proprietary insurers on a stock market, assessing the fair share price for an existing quoted insurer and in determining a "shadow" share price for an unquoted insurer for various purposes.

Shortcomings of EV approach

1.9 The EV approach assumes investment return for each class of asset. However, this is not directly adjusted to allow for the market risk premium, rather an indirect approach is used by the choice of risk discount rate. EV is therefore not directly based on the risk characteristics of the cash flows being valued.

1.10 EV also fails to explicitly capture the impact of options and guarantees. There is no accepted rationale for the allowance made in risk discount rate for guarantees and options, asset/liabilities mismatch, default risks on corporate bonds and for economic cost of capital.

1.11 The allowance for non-market risks is also via an implicit allowance in the risk discount rate, rather than by more objective means. The allowance may therefore fail to reflect the company's own view of the risk capital required to support the business.

1.12 Market-Consistent Embedded Value ("MCEV") attempts to overcome most of these limitations.

2 Market Consistent Embedded Value

2.1 This part of the paper describes the components of value within MCEV, and how each one of these is valued under a market consistent framework. MCEV methodology is based on valuing all cash flows consistently with the price that they would achieve in the capital markets.

2.2 The requirement of the management for a consistent reporting framework that links risk, capital and value has led to a shift from EV to a more market-consistent approach for the valuation of insurance business.

2.3 In a market-consistent valuation all projected cash flows are valued in line with the prices of similar cash flows that are traded in the open-market. For example, the cash flows arising from equity are valued in line with the market price of the equity. Additionally, liability cash flows are valued in line with the traded assets they closely resemble. A fixed liability due in five years would be valued in line with a five year zero coupon bond. For cash flows where no exact traded price exists, a combination of economic theory and numerical analysis (interpolation or extrapolation) is utilised to arrive at a value. The key factor for determining the value is the no arbitrage principle, and a figure is arrived at so that it prevents switching between asset classes to create any value.

2.4 In addition to valuing cash flows market-consistently, MCEV approaches may make specific allowance for non-market risk, either by estimating the price of transferring such risks to third parties (a "market value margin" approach) or by analysing the impact of these risks on the so-called frictional costs to shareholders caused by the insurance company structure including limited liability, costs of financial distress, and exposure of shareholder capital to double taxation of investment returns.

Components and valuations

2.5 At its simplest, MCEV of an insurer is the difference between the market value of the assets and the value of the liabilities assessed on a market-consistent basis (the estimated value of these liabilities if they were traded, by reference to observed values of similar or replicating traded assets). The liabilities include payments to policyholders but also any payments to other parties other than shareholders, hence including expenses and tax, with the latter perhaps represented by a "deferred tax liability" item.

2.6 An alternative (and in theory equivalent) approach is to value projected future shareholder cash flows directly (as in a traditional EV), on a market-consistent basis. In this case, projected shareholder tax can be valued directly. MCEV in this case can be represented as the present value of the contribution of the covered business to shareholder distributable earnings. It is defined as the sum of

- The free surplus allocated to the covered business

- The value of the required capital allocated to support the in-force business, allowing for the costs associated with holding the capital

- The value of future shareholder cash flows emerging from assets backing the in-force covered business.

The distinguishing characteristic of MCEV is the way these components are valued, particularly in terms of the allowance for risk.

2.7   For liabilities (or shareholder cash flows) which are independent of financial risk, or where the impact on cash flows of financial risk is symmetrical, a "certainty-equivalent" approach can be taken, with assets assumed to earn risk-free rates of return, and cash flows being valued using risk-free discount rates. (This is before consideration of frictional capital effects, considered later.) A key question here is what is the risk-free rate, with several possible answers including:

- Using the government bond yield curve, which may be the most prudent approach. Government bond yield curves may be depressed in some markets by demand exceeding supply at some durations. It is also possible for holders of government bonds to earn an additional risk-free return by entering into repo arrangements – in an arbitrage-free market this would suggest that yields on government bonds must be lower than risk-free.

- Using the swaps yield curve, which may be more robust as (depending on the market) the swap market is at least as liquid as the government bond market and often goes out further along the yield curve. However swaps do involve some credit risk (inherent in achieving the floating leg of a swap), suggesting that the swap curve may be higher than risk-free.

- Using an intermediate rate – either the government bond curve plus an adjustment to reflect the possible distortions referred to above, or the swap curve less an allowance to reflect credit risk.

2.8   The risk-free rates discussed above are those which can be earned on highly liquid assets. To the extent that the liability cash flows being valued are less liquid than these assets it might be appropriate to use a different risk-free rate to reflect this.

2.9   Financial options and guarantees are valued using option pricing techniques. Given the complexity of such options in typical insurance contracts this often needs to be done using stochastic simulation models. Issues arising with the valuation of options and guarantees include:

- The choice of volatilities etc for the calibration of the asset model

- The degree to which management decision rules (for example, bonus rates and investment strategy) are modelled

- The degree to which policyholder behaviour in different scenarios (for example, propensity to lapse and take-up rates for option) is modelled

2.10   MCEV provides a more objective solution to the risk discount rate dilemma, enabling assets, liabilities and other capital related costs all to be valued in line with the market. At the same time, policyholders' options and guarantees are taken into account that is consistent with the pricing of options in financial markets. Certain cash flows should be valued at risk-free rates, although the definition of what is a risk-free rate is open to some debate.

Allowing for frictional costs

2.11   Approaches to allowing for non-market risk in MCEV calculations currently vary widely. Some companies ignore non-market risk on the grounds that such risks are diversifiable from a shareholder perspective. Other companies are adopting a "market value margin" approach, attempting to approximate the cost which would be incurred to transfer such risks to a third party. Others are attempting to allow for "frictional costs" which are additional costs to shareholders caused by the particular structure of insurance companies (in particular, the need to hold a certain level of capital, and the taxation regime insurers are subject to).

2.12   Frictional costs include taxation effects, financial distress costs, costs and agency costs. Taxation effects, including double taxation of investment returns on shareholder capital, can be readily modelled and often are. Financial distress costs (costs incurred when adverse risk outcomes result in a shortage of capital) are in theory best assessed by generating random occurrences of the (main) risks in a stochastic projection at company level – in practice this is difficult, and approximate allowances may therefore be made. Agency costs are the most subjective and difficult to model, and are therefore often ignored.

2.13   There are different points of view with respect to valuation of frictional costs. Some argue that frictional costs should not be allowed for on (avoidable) market risk. These could be hedged out (for cost equal to the market value of liabilities) and hence there is no "market value margin". Others argue that if the insurer is deliberately mismatching, this creates capital requirements and frictional costs. Another point of view is that "financial distress costs" should not be allowed for in the value of in-force business as they arise from a desire to keep capital levels high enough to maintain franchise value, and so should be attributed to new business. Others argue that a stable series of in-force cash flows should be more valuable than a volatile one, as this reduces the expected future capital-raising costs to finance new business.

2.14   Other issues in calculation of MCEV include liquidity premium and credit risk on reinsurance. If insurance liabilities are predictable and hence can be replicated (to some extent) by illiquid assets, should a rate higher than risk-free be used to value

them? Should a deduction be made for the risk of reinsurer default in valuing reinsurance recoveries? What about the value of reinsurance premiums payable?

2.15   MCEV techniques are especially valuable for companies implementing hedging programs to manage market risk. MCEV is increasingly being applied in countries such as the UK, Netherlands and Switzerland where regulators are starting to move towards a market-consistent basis for valuation and capital requirements. It is being used to validate product pricing, to evaluate hedging strategies, incorporate reconstructions, and as a basis for negotiation in company purchases and sales.

3 MCEV: An Indian Perspective

3.1   Accurate financial assessment of values forms a vital component of the whole mechanism of statutory or other reporting by life companies worldwide. Thinking on newer reporting methods and analysis tools continues as changes in the market structures and operational dynamics force previously used tools into redundancy. Developments in the more advanced insurance markets than India's over recent years has seen the emergence of new techniques as 'Market-consistent valuations'.

3.2   Even as thought leaders in the western markets begin to understand the techniques of market consistent reporting for themselves, it is important for us in India to be able to obtain an objective view of these new methods and analyse their implications to the realities of the Indian market. This section attempts to capture how - and to what extent – does MCEV impact the way Indian life companies should be preparing their financial reports.

3.3   As we get into the discussion whether the market-consistent approach to reporting is indeed ideal for the Indian life companies, it is important for us to review once again the outstanding features of MCEV in this context:

MCEV as superior to other valuations techniques

3.4   The need for market-consistent valuations arises out of the need for accurate understanding of the nature of assets and liabilities in the portfolios of life companies and the need to manage in-force business well with proper understanding of the extent to which new business being written is profitable.

3.5   Current methods of valuing companies in markets such as the UK typically use the EV/appraisal value approach as a base line measure of the value of the life business. Arguably, MCEV is seen as more appropriate and it is expected that ultimately the EV approach will be replaced when companies and analysts become sufficiently familiar with features of market-consistent assessments.

3.6   Currently in India, most of the financial reporting takes place on statutory basis. There have been attempts to apply EV and other techniques, but these have been met by varying degrees of success. Going forward, we could expect Indian life companies to embrace a reporting standard with elements of MCEV as relevant to India.

Valuation of options and guarantees

3.7   MCEV allows for valuation of options and guarantees in the asset portfolio of insurance companies, using a stochastic modelling approach. Currently, in India, the financial market in derivatives and various kinds of swaptions is not yet as developed and occurrence of such assets backing the liabilities of an insurance company is relatively rare.

3.8   Taking this view, the relevance of MCEV principles in India might not be immediately appealing. However, as the financial markets develop and as regulations get more relaxed in terms of providing flexibility to insurers to decide the most optimal portfolios for themselves, the need for market-consistent basis of reporting will be inevitable.

Risk discount rate dilemma

3.9   A discount rate that reflects the risk inherent in each cash flow is used to value cash flows for products that do not have any options or guarantees attached to them. Such policies include simple products for which risks are diversifiable as well as more complicated ones like unit-linked products.

3.10   A market-consistent approach enables assets, liabilities and other capital related costs to be valued more realistically as it provides a more objective solution to the risk discount rate dilemma. Unit linked products are gaining popularity in India. By using a market-consistent approach to value these, a more informed assessment of the level of risk facing a company may be made.

Reporting and agency costs

3.11   Use of market-consistent embedded valuations enables sources of profit for an insurance company to be separately identified – whether arising from taking insurance risk or through investments made by the company. This gives management an additional awareness of its risk and some flexibility in the way information may be released in the market and to the shareholders.

3.12   Agency costs, defined as a mark down to the value of the capital invested in a company, tend to be greater for companies with less transparent financial reporting. This mark down arises due to conflicts of interests between the management and the shareholders. Given the very nature of cash flows in insurance companies, they may appear particularly opaque compared to companies in other industries and are likely to be impacted more by this.

3.13   The above points relating to the complex relations between management and the shareholders have an especially interesting implication for the Indian life companies, most of which are joint ventures between a domestic and a foreign partner. Firstly, there is the obvious element of joint venture partners wishing to understand the exact nature of risk behind their investments in the venture, for which market-consistent reporting is immediately appealing.

3.14   More significantly, it is apparent that given market-consistent tools and more transparent reporting methods, the information about profitability and financial health of insurance companies can be filtered into the market more reliably. This will have important bearing on investor sentiments once insurance companies in India start

making public offerings in a few years from now. To be able to satisfy the investors of their financial status, it is imperative for the insurance firms to adopt at least some form of market-consistent reporting.

3.15 While it can be seen that market-consistent valuation techniques have an intuitive appeal as well as being theoretically a stronger basis for valuation, it must be emphasised that practical application is not as straight forward. Building robust stochastic models and processes require commitment and resources. Currently, the Indian market is still in developing stage and care must be taken to build a model more closely adhering to the realities in this emerging market.

3.16 Indian life insurance companies can further learn from the knowledge gained in this field by their foreign collaborators in the joint venture, many of whom have already started embracing the market-consistent valuation methods in their internal reporting.

3.17 Moreover, market-consistent principles themselves are in a nascent stage of development with very few companies worldwide reporting strictly in accordance with it. Indeed, there is a belief that true market-consistent valuations are currently not possible. However, many of the required but undeveloped techniques are now being developed. Consequently, a cautious approach to developing market-consistent reporting techniques in India is recommended.

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