

# Fair Value Measurement of Liabilities: Methodologies and Implications in Life Insurance Accounting

ROSARY ANNE B. DAVID  
*rosary\_david@yahoo.com*

## Abstract

Limitations of the current statutory reserving standard in the Philippines necessitated a move towards a fair value measurement of insurance liabilities, which has been recently mandated by the local Insurance Commission on a draft circular issued in 2010. In this paper, we discuss the methodologies and implications associated with fair value accounting, using a building block framework for measuring insurance contracts. A comparative analysis between this approach and the existing statutory standard is presented from an actuarial perspective.

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**Key words** insurance accounting, reserve valuation, Actuarial Mathematics

## 1 Introduction

The valuation of policy liabilities forms a crucial part of a life insurance company's financial operations, largely affecting the long-term solvency and profitability of the business. However, the weaknesses and inconsistencies in current insurance accounting practice have called for a review of existing standards and methodologies. Recent developments in both the international and local level have generally been characterized by a shift towards fair value accounting, moving from a book value basis to a market-consistent one. *Fair value*, as defined by the International Accounting Standards Board [6], is "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date," otherwise referred to as the *exit price* [1]. This paper seeks to discuss the implications of moving towards fair value liability reporting, as recently mandated by the Philippine Insurance Commission through a draft circular [10].

Insurance accounting has often been described by investors and analysts as a "black box" due to its limited capacity to provide meaningful information on the insurer's financial position and performance. The distinctive nature of an insurance contract, as opposed to other financial instruments, along with the diverse array of accounting principles and models currently existing, makes it extremely complex for users to derive clear insight into the economics of insurance contracts [7]. The increasing emphasis on transparency and convergence especially in light of the recent global financial crisis has called for a single, high-quality standard that better meets the needs of the users.

Current insurance practice has further been marked by accounting mismatches. The approach in valuing life insurance liabilities has historically been one of a "locked-in" basis, while assets reflected in the balance sheet are on a market value basis. That is, the value of assets responds to fluctuations in interest rates and reflects current market conditions while the liabilities do not. This creates a problem for insurers as marking only one side of the balance sheet to market potentially distorts equity and earnings of the company [2].

The current way of valuing assets and liabilities, especially under a volatile economic environment, can lead to spurious income patterns that are potentially deceiving and can likewise be subject to misinterpretation. However, while standards regarding the asset side of the balance sheet have witnessed a more readily and effective implementation of fair value principles, steps toward fair valuation of the liability side of the balance sheet have been more slow and difficult, since a true market for insurance liabilities does not exist or is very thin at least [3].

The International Accounting Standards Board (IASB) has responded to the current issues of life insurance accounting by pushing for a single international financial reporting standard (IFRS) for valuing insurance contracts. The Philippine life insurance industry has generally followed the same inconsistent treatment of assets and liabilities under Philippine Financial Reporting Standards (PFRS) accounting, using a fixed valuation interest rate for liabilities that is not reflective of current market conditions. In light of the limitations of the current valuation standard, and in line as well with current international developments, the Insurance Commission has mandated a shift to a local accounting standard of fair valuation of liabilities, in a draft circular [10].

As insurance companies are still in transition phase at the time of this writing, no final set of guidelines has been released by the Insurance Commission. It is however, expected to be in accordance with the most recent standards issued by the IASB [8][9]. The implications of such IFRSs are therefore becoming an increasingly relevant topic in the local insurance business. Note that this paper limits most of the discussion on life insurance and puts particular focus on traditional insurance products. Expansion of principles applying to general insurance and reinsurance is beyond the scope of this paper.

## 2 Methods

Statutory reserves valuation uses the traditional net premium method given by [4]:

$$\text{Liability} = EPV(\text{death benefits}) - EPV(\text{future premiums}).$$

with a single discount rate. It only includes mortality (death) benefits with no provisions for expenses and no provisions for risk.

The proposed model of the IASB in the IFRS Phase II Insurance Contracts Exposure Draft (subsequently referred to as ED 2010/8 in this paper) adopted a *building block* framework to valuing policy liabilities at market value, focusing on the amount, timing, and uncertainty of cash flows expected by the insurer as it fulfills its obligations [7]. It is important to note, however, that the model proposed in the ED 2010/8 is an entity-specific, rather than a fair value, model. An entity-specific value may reflect other factors that may not be available or relevant to other market participants. The ED 2010/8 proposal, more particularly referred to as the *current fulfillment value* approach, stipulates that all future cash flows integral to the fulfillment of insurance contracts must reflect the perspective of the insurer. This is not based on fair value concepts, which uses more of an exit price notion. In practice, however, an entity-specific and fair value measure will be very close, since the insurer and the market may be assumed to have identical knowledge about the characteristics of the liability for the purpose of determining fair value [3]. Hence, the model still serves as a useful guide for the local industry as the same conclusions or methodologies still apply, provided that the specific insurer's views on cash flows and risk are replaced by those of the typical market participant.

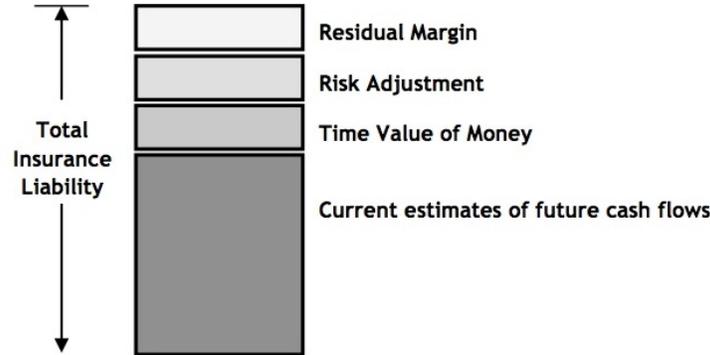


Figure 1: Building block model for fair value method.

In the building block model shown in Figure 1, best estimate of liability is given by

$$\text{Liability} = EPV(\text{cash outflows}) - EPV(\text{cash inflows}) + \text{risk adjustment} + \text{residual margin}.$$

Net future cash flows arising from the contract incremental to a portfolio of insurance contracts and related directly to insurance contract activities are to be incorporated. This includes premiums, claims and benefits paid to policyholders plus associated costs, cash flows resulting from options and guarantees, policy administration and maintenance costs, among others. Note that this also includes incremental acquisition costs, which are the costs of selling, underwriting, and initiating the contract that would not have been incurred if the contract was not issued. All other direct or indirect acquisition costs will only be recognized as they are incurred. Other exclusions from cash flows are investment returns, reinsurance payments, and income tax among others.

The discount rate not only takes into account the time value of money but it should also be consistent with current market prices for instruments with cash flows whose characteristics reflect those of the insurance contract liability [7]. The discounting process shall, in effect, reflect the market yield curve for risk-free instruments (i.e. those which expose the holder to negligible credit risk), but with an adjustment for illiquidity. This is assuming that the cash flows of insurance contracts are not directly dependent on the performance of specific assets (which is usually the case for traditional products as opposed to unit-linked contracts). The liquidity adjustment is included in the discount rate as insurance contracts generally do not exhibit the same liquidity characteristics as other financial assets. Estimates of cash flows and discount rates must also be "internally consistent" to avoid double-counting or omissions.

Risk adjustment must quantify the estimated effect of uncertainty about the amount and timing of the future cash flows. The risk adjustment shall be "the maximum amount the insurer would rationally pay to be relieved of the risk that the ultimate fulfillment cash flows exceed those expected." Permitted techniques by the IASB in estimating the risk adjustment include: a) confidence level technique (otherwise known as Value at Risk or VaR), which expresses the probability that an actual outcome will be within a specified interval, b) conditional tail expectation (Tail Value at Risk or TVaR), which incorporates the expected value of extreme losses, and c) cost of capital, which applies a factor to the entity's estimated capital over the lifetime of the contract [7].

Residual margin pertaining to the contract profit to be deferred and reported over the

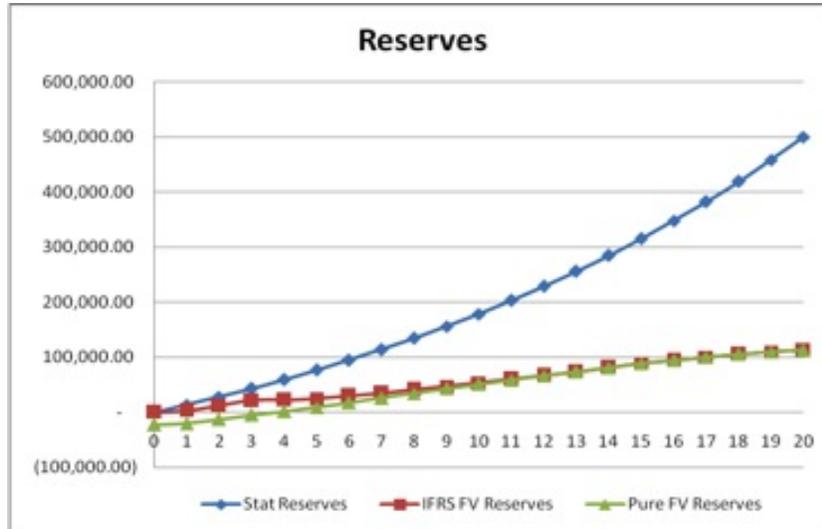


Figure 2: Statutory, IFRS Fair Value and pure Fair Value Reserve patterns for a 35-year old policyholder with face amount P500,000.

life of the contract is also included. Adjusting for residual margin is the only element unique to the IASB model; the first three blocks are usually accounted for in any fair value methodology. For further discussion on the ED proposal, the reader is referred to [7].

### 3 Results and Discussion

For statutory, the usual net level premium method of valuation was adopted using a 6% valuation interest rate. For fair value, two methods were used: a) the IASB proposal with residual margin included, referred here as IFRS FV reserves; and b) a "pure" fair value method, which used only present value of cash flows and risk adjustment. This was done to evaluate the impact of incorporating residual margin in the model. Mortality was based on 2001 CSO Mortality Table composite rates [5].

For fair value reserve calculations, the cash flows incorporated were not encompassing; only the most common and essential cash flows in an insurance product were recognized, such as premiums, commissions, administrative expenses, policy taxes, death benefits, surrenders, and maturities. All benefit transactions (e.g. settlement expenses) were assumed to be zero to simplify calculations.

Yield curve (risk-free rates) as of June 2011 from Bloomberg was used for discounting, adjusted for 50% liquidity premium and 20% investment tax. Risk adjustment was estimated using a cost of capital approach as 150% of solvency margin, where solvency margin was approximated as 2 per thousand of sum insured. Residual margin was amortized upon discretion, using the slope of mortality rates (reflective of claims experience) as basis for increase in release factor. Figure 2 shows the reserve patterns for a 35-year old policyholder with a face amount of P500,000, for the standard Statutory Reserves, IFRS Fair Value Reserves, and pure Fair Value Reserves.

It can be observed that first-year reserves were highest under the net level premium method. This immediately implied higher capital strain on new businesses due to large first

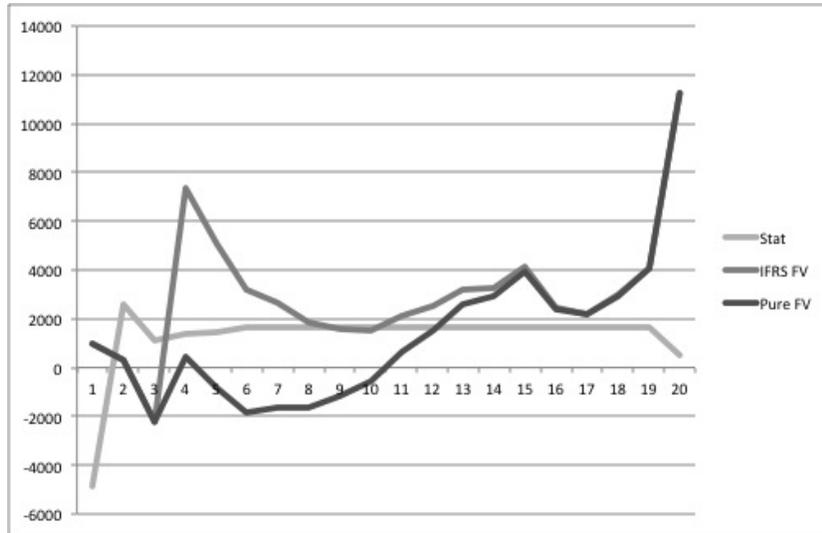


Figure 3: Statutory, IFRS fair value and pure fair value income stream patterns.

year expenses being incurred by the company. For IFRS FV reserves, the residual margin was released starting with time  $t = 4$ , with a sudden decline in slope from  $t = 4$  to  $t = 5$ . Under a pure fair value method, we allowed negative reserves. Without a residual margin, this implied that a gain was recognized at contract inception.

Of particular interest is the bottom line impact of such liability calculations on the earnings and equity of the company. Hypothetical financial statements were constructed to illustrate the impact of moving towards fair value. Figure 3 shows the corresponding profit patterns appearing in the income statement for each method, statutory reserves, IFRS fair value reserves, and pure fair value reserves, over a 20 year period.

Income stream was as expected for statutory reserves, with very low first year profits due to high acquisition expenses and then stabilizing thereafter. For IFRS fair value, it can be observed that the profit pattern was more volatile than under a statutory framework. Profits were higher than under a pure fair value method due to amortization of residual margin.

A simplified balance sheet was also simulated, with a starting paid-up capital of P50,000. Assets were assumed to earn interest at risk-free rates. Figure 4 shows the net worth of the company over a 20 year period. Net worth under a statutory framework did not look appealing, assuming assets and liabilities were measured inconsistently. A more stable movement of net worth under both IFRS and pure fair values was observed, assuming assets earned at risk-free rates.

## 4 Conclusion

A net premium method is designed to cover benefits only, without explicit recognition of expenses [13]. The method is highly conservative, focuses on establishing company solvency and complete adequacy. It thus typically produces higher reserves than other valuation methods. Furthermore, implementation is efficient and straightforward, imposing uniformity and easy comparability across different entities. However, conservative valuation continues

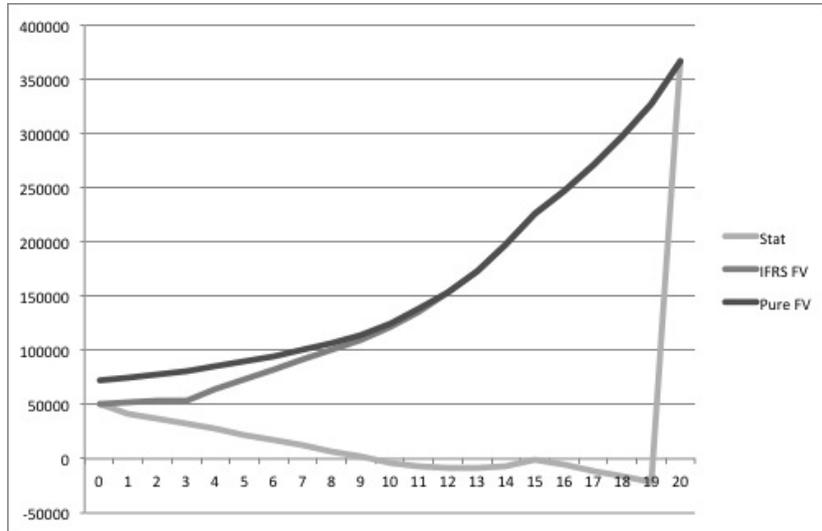


Figure 4: Statutory, IFRS fair value (IFRS FV) and pure fair value net worth over a 20 year period.

to remain relevant in the Philippines, because policy reserves represent the entity's biggest and most important obligation. Nevertheless, net level premium reserves are usually avoided by surplus-conscious companies, as it requires significant first year reserves [13] [11].

When reserves are computed on an unsound basis, the surplus that emerges may be completely spurious. Management may be misled into distributing funds that will be needed at some later date to meet claim payments. Under these conditions, the company may fail because, as a result of adopting an unsound reserve basis, significant funds were erroneously distributed as dividends. As such, it is in this perspective that the current statutory method may not necessarily be always prudent. While insurers do use a low interest rate, the outcome is not very transparent [12]. For one, the inconsistency in valuing liabilities at a locked-in rate and assets at market rates results in a blurred understanding of financial progress or position. Second, given that a business operates with payouts based on asset shares, the current standard may not reflect what the liabilities are in actual practice.

A fair value approach, on the other hand, is at the minimum a gross premium type of valuation method. This produces a "best estimate" value of the liabilities of a company, i.e., a more realistic set of reserves. The approach is market-consistent, recognizes all cash flows, and includes an explicit allowance for risk. This certainly makes financial statements more transparent, with reserve liabilities still having enough capacity to meet policyholder obligations. Another advantage is that it is easy to break down and analyze changes in the liability due to the "building block" nature of the method used. However, it can be observed based on the results that the income statement may suffer due to fluctuating profits streams that can occur under a market-consistent approach. The balance sheet is also more sensitive to changes in the financial environment. Again this may have implications in the distribution of surplus among policyholders and shareholders, as there is again the risk of distributing funds that may be needed at a later time.

The current analysis shows that the shift to fair value reporting will produce reserves that are in line with current market conditions, and can still provide the company with sufficient capability to meet its obligations to its policyholders. Nevertheless, a market-consistent

framework has its share of risks that a company needs to measure, mitigate, and manage. Given its nature, a balance sheet working under a fair value framework is still prone to changes in the financial environment. Fluctuations in surplus are especially likely to occur when a duration gap exists between assets and liabilities. Shifts in economic factors such as interest rates and foreign exchange rates will also have an immediate effect on surplus. The company must ensure that additional risk management measures are in place to address this trade-off, and must be able to act on extreme or unexpected market events when they do occur.

The role of experience studies and assumption setting is now more crucial under fair value reporting due to its heightened capacity to affect underlying earnings than under a statutory framework. Profits become more sensitive to deviations in actual experience from expected (lapses, mortality, expenses), and such deviations may potentially upset the favorable surplus position of the company depending on how the assumptions are set. The company needs to ensure that assumptions going into valuation and product pricing are sound and current, with ample time spent on looking at shocks and sensitivities that are likely to happen.

Given the volatile income patterns that occur under a fair value framework, it also becomes difficult to project future earnings as one can never really speculate accurately on future market performance. As such, the company must be prudent in declaring dividends or dividend cuts, while still taking into account policyholders' reasonable expectations. Given that dividends impact the liabilities more significantly under the fair value framework than under the statutory basis, a company needs to set dividends based on a bonus philosophy that takes a total balance sheet approach, and is both consistent and equitable in nature.

Note that the net level premium method was used in this study for statutory valuation to simplify calculations and for comparative purposes. However, the said method is now rarely adopted by local insurance companies due to its tendency to incur high profit losses at the onset. It can thus be more relevant to use other net premium methods such as Full Preliminary Term (FPT) or Commissioners Reserve Valuation Method (CRVM), which both use an expense allowance (amortized over some period) to minimize the impact of high acquisition costs.

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