Embedded Value Calculation for a Life Insurance Company

Frédéric Tremblay[1]

[1] Frédéric Tremblay, FSA, FCIA, is an Actuarial Consultant, Industrial Alliance, Corporate Actuarial Services, 1080 Grande Allée Ouest, C.P. 1907, Succ. Terminus, Québec G1K 7M3, Canada, frederic.tremblay@inalco.com

ABSTRACT

During the past few years, we have seen a new tool gaining importance in the appreciation of life insurance companies. After having been used by European countries, the embedded value calculation has now made its appearance in North America.

In this paper, we will take a look at the embedded value for a Canadian company. Even if this paper has been written in a Canadian context, the principles behind the embedded value calculation also hold for any company in any country. First, we will look at how the profits emerge from a life insurance company. Next, we will look at the formulas behind the embedded value and discuss how the assumptions can be determined. Then we will analyze the movement of the embedded value from one year to another and identify elements having an impact on the embedded value. Finally, we will look more closely at the use of the embedded value.

1. INTRODUCTION

The financial results of life insurance companies are very complex to analyze. They are prepared according to accounting and actuarial principles varying from one country to another. The financial community often uses the price-to-earnings ratio as a tool to analyze and compare companies. The profits generated by the company in one year are no guarantee of the future. It is impossible to determine the value of a company using these simple results. Everything around a life insurance company is tied to solvency and the nature of the products sold is long term, which makes this type of business unique.

Over the years, life insurance companies have built tools to help them analyze and understand their financial results. Most of these tools do not hold a long-term vision of the profitability for the company, relying solely on the short-term financial results. One tool has the ability to synthesize the information on long-term profitability in one simple value; this tool is called the embedded value.

The embedded value is the calculation of the value of a block of business that considers all the requirements an insurance company can have. This is the calculation of the present value of surplus distributable to shareholders based on best estimate assumptions.

2. DEFINITION OF EMBEDDED VALUE

The embedded value is the valuation of a company's current in-force value without taking into account its capacity to generate new business. By definition, it is then a minimum value for the company according to the assumptions used in its calculation. The embedded value can be adjusted by adding the estimated value of future new sales to obtain the appraisal value of the company (actuarial appraisal is discussed in section 7.2).

The embedded value is defined as the value of in-force business plus the value of the free capital. The value of in-force business is the present value of the amounts generated by the in-force that will be distributable to the shareholders in the future. Distributable amounts are discounted using the return expected by shareholders on their investment. The free capital is the capital in excess of what is currently required to meet the government's regulatory capital requirements under the assumptions of the embedded value. This amount could be immediately distributable to the shareholders.

Even though the value of future new business is not included in the embedded value, the value of one year of new business is often disclosed as a separate item that will be used externally, so the volatility of this value is clearly an important issue. According to the *Interim Draft Paper on the Considerations in the Determination of Embedded Value for Public Disclosure in Canada*, published in September 2000 by the Committee on the Role of the Appointed/Valuation Actuary of the Canadian Institute of Actuaries, new business for embedded value reporting purposes should be defined in a manner consistent with the company's current financial reporting practices. Any change to this definition should be disclosed, otherwise there could be unexplained variation in the value. We need a precise definition of new business to distinguish it from in-force business. This definition is most important for group insurance, individual annuities with tax-free transfers, renewable deposits contracts and reinsurance, because we need to clearly distinguish between a new issue and a renewal of contract.

3. FORMULAS

3.1 AFTER-TAX PROFITS ON IN-FORCE

The after-tax profit on in-force business is defined as:

$$\begin{gathered}\text{Premiums(P)}\\ +\text{Investment Income(II)}\\ -\text{Benefits(B)}\\ -\text{Expenses(E)}\\ -\Delta\text{SR}\\ -\text{TaxOnIncome(T)}\\ =\text{AfterTaxProfits}\end{gathered}$$

where ΔSR is the increase in statutory actuarial reserve. The benefits include death benefits, withdrawal benefits, survivorship benefits, etc. The expenses include compensations paid to agents, premium taxes, investment income taxes, etc. The tax on income is equal to:

$$TaxOnIncome = (P + II - B - E - \Delta\text{TR}) \times Tx$$

where ΔTR is the increase in tax reserve and Tx is the tax rate.

Because of legislative requirements, the tax reserve is sometimes different than the statutory reserve. This creates a timing difference between the period profits are earned and the time the tax is paid on those profits. So in one year a company can have high profits with low tax to pay while in another year the company can have low profits but a high tax to pay. To prevent this, companies hold a deferred tax provision[2]. This provision is used to account for the timing difference between the statutory profits and the tax profits and it recognizes the gain or the loss of having to pay for the tax earlier or later in time compared to the time statutory profits are earned.

[2] The calculation of this provision is described in the educational note *Future Income and Alternative Taxes* published in December 2002 by the Committee on Life Insurance Financial Reporting

By definition, this provision taxes the company on profits as they are earned and recognizes immediately the gain or the loss due to the timing difference. For policies issued after 1995, income in Canada is taxed on a statutory basis. This means the tax reserve is equal to the statutory reserve for those policies. For the sake of simplicity, in this paper we will assume the tax reserve is always equal to the statutory reserve. This is a conservative assumption if the tax reserve calculated for policies issued before 1996 is higher than the statutory reserve. This is because taxing those products on the statutory profits has the effect of not including the gain from being able to pay the tax later than the profits are earned. However, this assumption would not be correct if the tax reserve is lower than the statutory reserve because the subsequent recovery of taxes paid sooner than profit was earned would not be reflected.

3.2 RELEASE OF MARGINS

Pre-tax profits released from the reserves are essentially the provisions for adverse deviation (PfADs). PfADs are profits held back in the reserves in addition to the amount necessary to cover the future liabilities because of conservatism included in the calculation of reserves (which is required by actuarial principles to make sure that the actuarial reserves are sufficient should experience deviate unfavorably from expected). Those PfADs flow through the income statement when experience shows that such provisions are no longer necessary. Without margins in reserves, the present value of profits would be null, profits would be released at policy issuance through a negative reserve, and there would be no more profits to be released in the future. Negative reserves can arise because Canadian statutory reserves are calculated using the gross premium. The gross premium is sufficient to cover future benefits as well as issue expenses therefore creating a negative reserve in early policy years.

The present value of profits in the embedded value calculation is not simply the present value of margins calculated with the reserve methodology, because it would assume that the present value is done using the valuation interest rate. In fact, shareholders require a higher rate of return than the valuation rate, so the present value of profits should be lower than the present value of margins calculated using the valuation rate.

3.3 ASSETS

The following graphic shows the total assets held by a life insurance company:

Free Capital
Locked-in Capital
Provision for adverse deviation
Best Estimate Liabilities

As we saw in section 3.2, the best estimate liabilities and the provisions for adverse deviation compose the reserve. The locked-in capital is the capital that the company must hold according to the regulatory authorities. It is a percentage of the Minimum Continuing Capital and Surplus Requirements (MCCSR) or its provincial equivalent. Companies must hold more than 100 percent of the MCCSR because the calculation does not explicitly address some risks. The Office of the Superintendent of Financial Institutions (OSFI) expects each institution to keep a capital level at no less than the supervisory target of 150 percent MCCSR[3]. The free capital is the capital of the company in excess of the locked-in capital at the valuation date.

The embedded value will be composed of the same values as the total company assets. However, the free capital will be included at its market value in the embedded value. The locked-in capital will be less than its market value because we have to reduce it by the future expected cost of keeping it, as we will see in the next section. As explained in section 3.2, the value of the margins will be lower than the value of the assets backing it because the present value of the release of margin will be done using a higher rate than the valuation rate. The best estimate liabilities are given no value in the embedded value because they will be used to cover future liabilities or contingencies; they are not a profit.

3.4 COST OF LOCKED-IN CAPITAL

The question is how can keeping capital cost something? The capital comes from the shareholders and they expect a higher return on their money than the risk-free rate of return available on the market because there is a risk of

[3] See MCCSR guideline, p. 1-1-2

investing in the company. The company invests this capital in low-rate assets, such as risk-free assets, and the company has to pay income tax on the return it gets from this investment. The shareholders will require a return equal to the risk-free rate plus a risk premium, so the company needs additional profits to cover the risk premium plus the income tax. The after-tax profits needed in addition to the after-tax investment income on the assets backing the capital to cover shareholders' expectations are the cost of the capital. The rate of return required by shareholders is the hurdle rate (see section 4 on the discussion of the assumptions to learn more about the hurdle rate).

3.5 EMBEDDED VALUE CALCULATION

3.5.1 Profits to shareholders method

The more direct way to calculate the embedded value is through the profits to shareholders method. This method calculates the profits available to the shareholders each year and then takes the present value of those profits. The profits available to shareholders are defined as:

$$\begin{gathered} AfterTax\,\mathrm{Pr}\,ofits \\ +\,AfterTaxInvIncomeOnCapital \\ -\,IncreaseInCapital \\ =\mathrm{Pr}\,ofitsToShareholders \end{gathered}$$

In the last formula, the AfterTaxInvIncomeOnCapital is the investment income earned by investing the capital. The increase in capital is the amount of capital that has to be held in addition to what was held in the previous period. It is the change in locked-in capital. As the business ages, capital is released and completely distributed back to shareholders.

The present value of the profits to shareholders will be calculated at the hurdle rate (see section 4 on the discussion of the assumptions to learn more about the hurdle rate). The initial amount of capital at the beginning of the projection will be equal to the locked-in capital. The free capital is the capital in excess of the locked-in capital at the valuation date and it will be added to the present value of profits to shareholders to get the total embedded value. This amount of capital is immediately distributable to the shareholders.

3.5.2 Cost of capital method

Another way to calculate the embedded value is called the cost of capital method. In this method, the embedded value is stripped into three parts: the total capital (free capital plus locked-in capital) plus the present value of future after tax profits less the present value of the cost of capital. The present value of future profits is simply the present value at the hurdle rate of the after tax profits, and the free capital is the capital in excess of the locked-in capital at the valuation date.

As we saw in section 3.4, the cost of capital is the cost of having to pay the shareholders a higher return on capital then the return the company can earn on the assets backing the capital. In the embedded value calculation, the capital that the company has to pay is the locked-in capital (see section 3.3 on assets).

According to the definition we give it above, the cost of capital in a given year can be translated into the following formula:

$$
\begin{gathered}
HurdleRate \times Capital_t \\
- AfterTaxInvIncomeOnCapital \\
= CostOfCapital_t
\end{gathered}
$$

where $Capital_t$ is the locked-in capital at the beginning of year t and $CostOfCapital_t$ is the cost of the capital at the end of year t.

3.5.3 <u>Profits to shareholders method equals cost of capital method</u>

The methods presented above are equivalent. This section presents the reconciliation of the two methods.

According to the profits to shareholders method, the embedded value is equal to the following:

$$
\begin{aligned}
EmbeddedValue &= FreeCapital + PV(\text{Pr}\,ofitsToShareholders) \\
&= FreeCapital \\
&\quad + PV(AfterTax\,\text{Pr}\,ofits + AfterTaxInvIncomeOnCapital - IncreaseInCapital) \\
&= FreeCapital + PV(AfterTax\,\text{Pr}\,ofits) + PV(AfterTaxInvIncomeOnCapital) \\
&\quad - PV(IncreaseInCapital)
\end{aligned}
$$

where PV( ) represents the present value of the items in parentheses at the hurdle rate.

According to the cost of capital method, the embedded value is equal to:

$$
\begin{aligned}
EmbeddedValue &= FreeCapital + LockedInCapital + PV(AfterTax\,\text{Pr}\,ofits) - PV(CostOfCapital) \\
&= FreeCapital + LockedInCapital + PV(AfterTax\,\text{Pr}\,ofits) \\
&\quad - PV(HurdleRate \times Capital \ - AfterTaxInvIncomeOnCapital) \\
&= FreeCapital + LockedInCapital + PV(AfterTax\,\text{Pr}\,ofits) \\
&\quad - PV(HurdleRate \times Capital \ ) + PV(AfterTaxInvIncomeOnCapital)
\end{aligned}
$$

The two formulas above have parts in common that we can remove to get the following equality to be proved:

$$
\begin{gathered}
PV(IncreaseInCapital) \\
= \\
PV(HurdleRate \times Capital \ ) - LockedInCapital
\end{gathered}
$$

or

$$
\begin{gathered}
PV(HurdleRate \times Capital \ ) \\
= \\
PV(IncreaseInCapital) + LockedInCapital
\end{gathered}
$$

To simplify the presentation, the following notation will be used in the proof below:

$$h = HurdleRate$$

$$v = \frac{1}{1+h}$$

$$C_0 = Capital_0 = LockedInCapital$$

$$C_t = Capital_t$$

$$\Delta C_t = IncreaseInCapital$$

$$C_{t-1} + \Delta C_{t-1} = C_t$$

The following equality is also known:

$$\sum_{t=1}^{\infty} v^t = \frac{1}{h}$$

Proof:

$$\begin{aligned}
PV(h \times C_t) &= \sum_{t=0}^{\infty} h \times C_t \times v^{t+1} \\
&= h \times C_0 \times v + \sum_{t=1}^{\infty} h \times (C_{t-1} + \Delta C_{t-1}) \times v^{t+1} \\
&= h \times C_0 \times v + h \times [(C_0 + \Delta C_0) \times v^2 + (C_0 + \Delta C_0 + \Delta C_1) \times v^3 + (C_0 + \Delta C_0 + \Delta C_1 + \Delta C_2) \times v^4 + \ldots] \\
&= h \times [C_0 \times \sum_{t=1}^{\infty} v^t + \Delta C_0 \times v \times \sum_{t=1}^{\infty} v^t + \Delta C_1 \times v^2 \times \sum_{t=1}^{\infty} v^t + \Delta C_2 \times v^3 \times \sum_{t=1}^{\infty} v^t + \ldots] \\
&= h \times \sum_{t=1}^{\infty} v^t \times [C_0 + \Delta C_0 \times v + \Delta C_1 \times v^2 + \Delta C_2 \times v^3 + \ldots] \\
&= h \times \frac{1}{h} \times [C_0 + \sum_{t=0}^{\infty} \Delta C_t \times v^{t+1}] \\
&= C_0 + \sum_{t=0}^{\infty} \Delta C_t \times v^{t+1} \\
&= C_0 + PV(\Delta C_t)
\end{aligned}$$

4. <u>ASSUMPTIONS</u>

The assumptions determination is very critical in the embedded value calculation. The embedded value is very sensitive to the assumptions underlying the calculation. Therefore, for the sake of consistency in future embedded value recalculation, it is important that the methodology used to set the assumptions produces realistic assumptions and that it be objective. The objectivity criteria is very important because we want the embedded value to reflect changes in the environment, not changes due to human judgment.

The assumptions used in the embedded value calculation can be mainly split into two categories: the economic and the non-economic assumptions.

4.1 ECONOMIC ASSUMPTIONS

The economic assumptions refer to all the assumptions related to the economic market. Those are mainly future reinvestment rates on fixed income assets, future returns on variable income assets (such as stocks and real estate), currency exchange rates, default rates, inflation rates and investment expenses.[4]

Because those assumptions have a high level of correlation, it is very important to ensure consistency in their setting. Interest rates are used to project assets and liabilities as well as to discount future profits in the embedded value (the hurdle rate). The interest rates for assets and liabilities must be consistent for each future projection year. The hurdle rate is a fixed

[4] See Interim Draft Paper on the Considerations in the Determination of Embedded Value for Public Disclosure in Canada

rate consistent with the actual environment at the embedded value calculation date. The hurdle rate must not vary for the projection period because it has to reflect the current rate curve, not the expected rate curve(s) in the future. This rate should reflect the long-term, risk free rate plus an estimate of the risk premium demanded by investors. The hurdle rate may vary according to the country in which the business operates to allow for differences in the risk free rate and the risk premium (as an example, the risk premium may be increased to reflect currency exchange rates).

The future return on variable income assets should be consistent with the expected rates on fixed income assets and with the hurdle rate. Therefore, it may be appropriate to assume that the future return on stocks is not higher than the hurdle rate. Setting the future return on stocks equal to the hurdle rate has the advantage of avoiding to create unusual embedded value movement in the future. If the hurdle rate changes we automatically change our return expectation on stocks. For mortgages, a method to reflect the relationship with fixed income returns can be to set a risk premium over fixed income assets and to assume it is constant over time. Regarding the inflation rate, a method can also be developed to have it consistent with the fixed income rates.

4.2 NON-ECONOMIC ASSUMPTIONS

The main considerations in setting the other actuarial assumptions are that they must be best estimate assumptions comparable to valuation assumptions without margins. Therefore, the assumptions should be consistent, or the same, as the assumptions presented in the Appointed Actuary's report. In the event of any regulatory restriction in the best estimate assumption set by the appointed actuary, the assumption used in the embedded value calculation should be the true best estimate, without any restriction.[5] An example of this is the mortality improvement that should be included in the embedded value projection but cannot be reflected in the valuation of liabilities.

The assumptions relating to required capital calculations or taxation (investment income tax, premium tax, corporate tax) should only reflect future changes that are announced or confirmed by the tax authorities at the calculation date.

An assumption is also required to determine the appropriate level of locked-in capital. As we saw in the section 3.3 above, OSFI expects each institution to keep a capital level at no less than the supervisory target of 150 percent MCCSR. Therefore, the locked-in capital should be set to produce a solvency ratio at least equal to 150 percent. Currently, the companies that publish their embedded value in Canada are setting their locked-in capital to have a ratio of 150 percent. For the sake of consistency and to allow comparisons between companies, a target ratio of 150 percent should be used.

4.3 REFLECTING THE RISK IN THE EMBEDDED VALUE CALCULATION

[5] See Interim Draft Paper on the Considerations in the Determination of Embedded Value for Public Disclosure in Canada

The embedded value is only a best estimate. In the future, there may be differences between the assumptions used in the calculation and the reality. This is only one vision of the future.

There are a lot of ways to reflect the risk in the embedded value (the risk that the real embedded value differs from the calculated one). The best way to help people assess the risk in the embedded value is to present the sensitivity of the number to different changes in the assumptions. As an example, one could change the risk premium. A high sensitivity of the embedded value to the risk premium indicates that most of the profits are far into the future. Another test that could be done is to change the interest rate curve. In addition to the test of different assumptions, the value of some assumptions could be separately presented. As an example, one could disclose the value of mortality improvement in the projections.

The value of a higher risk block of business could also be presented separately. Segregated funds with a guarantee is a good example of a risky business with a value changing according to the stock market. Because this business can be very volatile, the embedded value associated with it could be isolated from the rest of the business and presented separately.

5. EMBEDDED VALUE RECONCILIATION FROM ONE PERIOD TO ANOTHER

The most important thing with the embedded value is not the value itself, but the change in this value over time. As we saw in section 4, the embedded value reflects one vision of the future, so two actuaries can have different expectations for the future. Even if the embedded value is different for two actuaries, the impact of the environment on the value should be similar for the two of them. As an example, if the government reduces the tax rate, the embedded value will increase. So, for two actuaries the embedded value should increase and the proportion of the increase to the embedded value should be similar for both.

The embedded value movement from one period to another is defined in the general formula below.

$$\begin{gathered} EmbeddedValue(t) \\ + NormalIncreaseInEmbeddedValue \\ + ValueAddedByNewSales \\ - DividendsPaid \\ + UnexpectedChangeInEmbeddedValue \\ = \\ EmbeddedValue(t+1) \end{gathered}$$

5.1 NORMAL INCREASE IN EMBEDDED VALUE

The normal increase in embedded value is as follows:

$$\begin{gathered} (EmbeddedValue(t) - FreeCapital) \times h \\ + FreeCapital \times i \\ = \\ NormalIncreaseInEmbeddedValue \end{gathered}$$

where h is the hurdle rate and i is the after tax investment income on capital. The free capital cannot earn the hurdle rate because the free capital is assumed to be returned to the shareholder at the beginning of the projection because it is in excess of the locked-in capital (see section 3.5 above, according to the embedded value definition, all of the excess capital is automatically returned to the shareholder at the valuation date). Therefore, any capital kept in excess of the locked-in capital is lowering the embedded value return below the hurdle rate, because this excess capital is not invested in business earning the hurdle rate, it is invested in assets earning a lower after tax rate.

Companies need the profits on their in-force business to pay the shareholders for the capital. If a company holds more capital than needed, then the in-force business may not be able to generate enough profits to pay the shareholders. This is the risk of having too much free capital.

5.2 VALUE ADDED BY NEW SALES

The value added by new sales represents the present value of the future after-tax profits on new sales less the present value of the future cost of capital. The present value of the future after-tax profits must include the strain (or the gain) at issue, but not the initial capital transfer from free capital to locked-in capital. When there are new sales, a portion of the free capital is reallocated to back the required capital of those sales. This element does not impact the total embedded value since it is only a reallocation of the total capital. If the free capital is not sufficient, then new capital must be injected to cover the new sales. This would have an impact on the embedded value and it should be disclosed as an unexpected change in embedded value.

The value added by new sales can be positive, negative or null. A negative value can arise if the new sales give a lower return on investment than the hurdle rate. If the new sales return on investment is equal to the hurdle rate, then no additional value will be created.

5.3 DIVIDEND PAID

The dividend paid represents the real dividend actually paid to the shareholders during the period. Because this dividend is paid from free capital, it directly reduces the value of the free capital and therefore reduces the embedded value.

5.4 UNEXPECTED CHANGE IN EMBEDDED VALUE

This last reconciliation component represents anything else affecting the embedded value. The following elements are the most frequent:

- Difference between expected assumption and actual experience for the period (interest rate, mortality, lapse, etc.);
- Change in embedded value assumptions;
- Capital injection;
- Buy back of shares by the company;
- Change in required capital formula;

- Change in tax rate;
- Acquisitions

6. EMBEDDED VALUE VERSUS STOCK PRICE

By definition, the embedded value is the present value of all future amounts that will be distributable to shareholders. Because it includes everything belonging to shareholders, it can be viewed as the price of the company, so it could easily be compared to the stock price. The only difference between the two is that embedded value excludes the value of future business and may use a different discount rate.

Any change in the environment surrounding the company will have an impact on its price. Measuring the value of those changes is a hard task; this is where the embedded value methodology becomes a useful tool. Although not giving the exact change in the stock price, the impact of the change on the embedded value can give some insights as how the market can react to the change. It is important at this point to understand that the calculation cannot give the exact impact, because there is an infinite number of factors that cannot be included in the model, such as shareholders' behavior or other companies' reactions to the change. However, the calculation can give some guidance, or it can more precisely assess the value of and the impacts of the change. As an example, the regulator can change the required capital formula. How could we get a sense of this change? Using the embedded value methodology, a projection of the required capital with the old formula and the new one can be done. The present value of the future impact, as well as the projection of the impact itself, will indicate if the change in the formula is positive or negative to the company. Without the embedded value methodology, the company can think the change is a profitable one because current solvency ratio could increase. But in fact the effect could reverse in the near future, leading to a negative impact for the company. By assessing the impact of the change, the company could react promptly and avoid future problems. Another use of the embedded value can be to test the impact of current management decisions and to know how it will affect the company's value.

7. OTHER USES OF EMBEDDED VALUE AND ITS METHODOLOGY

Embedded value itself and the calculation methodology surrounding it can be used for tasks other than trying to predict the stock price. Some of the other uses are discussed below.

7.1 COMPENSATION TIED TO EMBEDDED VALUE

As seen in section 6, the stock price variation is closely correlated to embedded value movement. According to this principle, it could be interesting to base management compensation on the embedded value movement. This is common practice in countries such as in Europe, but not in Canada. A good way of doing this can be to base compensation on the impact of decisions for which management has control. With this type of compensation, management will have to take care of the long-term impact of its decisions and it will have the tools to do so. However, we must be very careful when using embedded value because of its sensitivity to the assumptions underlying its calculation. To base compensation on the embedded value may induce manipulation of the assumptions underlying it.

7.2 ACTUARIAL APPRAISAL

The embedded value methodology can also be used to determine the purchase price of a company or a block of business. This price is also known as the actuarial appraisal.

The actuarial appraisal represents the value of the in-force business and the value of future business that the company purchased will provide. The value of the future new sales is often expressed as a multiple of the value added by one year of sales. As seen in section 5b, if the new sales return on investment is equal to the hurdle rate, then no additional value will be created by future new sales. Note that this is more likely to happen in appraisal value calculation than in embedded value calculation because the hurdle rate used for an actuarial appraisal is often higher than the hurdle rate used for the embedded value calculation.

7.3 GOODWILL

New accounting rules for business combinations and for intangible assets and goodwill were announced by the Canadian Institute of Chartered Accountants (CICA) in 2001. Since July 2001, all business combinations must be accounted for using the “purchase method.” Under this method, goodwill is the difference between the total purchase price and the fair value of net assets. The new accounting rules do not assume that goodwill declines in value over time. For fiscal years beginning on or after January 1, 2002, goodwill is not amortized. Instead, it is tested for impairment on an annual basis for applicable reporting units. The test is a comparison between the fair value of the reporting unit and its book value to determine if there is an impairment. If there is one, then the fair value of the net assets of the reporting unit must be compared to the fair value of the reporting unit to arrive at the fair value of the goodwill. The embedded value methodology, through the actuarial appraisal method, can be used to determine the fair value of the reporting unit in purchase transactions involving insurance liabilities.

8. CONCLUSION

It is important to keep in mind that the embedded value must be used carefully, always having in mind the assumptions underlying the calculation. With its advantages and disadvantages, the embedded value is a portion of a whole and it must be taken this way. This is another tool for the investment community, which in addition to price to book value, rate of return on equity, earning by source and price to earnings ratio, adds value to a company.

In addition to providing an estimated value, the embedded value methodology is a powerful learning tool. Because its methodology takes into accountnearly every aspect of a life insurance company, calculating it implies having a closer look at all those things in one single project.

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