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**ACTUARIAL APPRAISAL VALUATIONS OF  
LIFE INSURANCE COMPANIES**

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**ABSTRACT**

Merger and acquisition transactions involving a life insurance company are particularly relevant to the professional actuary's work. This paper describes and critiques current approaches to determining actuarial appraisal values of life insurance companies. It proposes a new approach. It proposes more meaningful disclosure in connection with any appraisal valuation, and examines the nature of certain differences between an actuarial appraisal value and GAAP shareholder equity.

This paper is intended primarily to address approach, interpretation, and concept. It does not discuss all matters that should be considered in determining a fair purchase/sale price for a life company.

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**I. INTRODUCTION**

**T**HE purchase/sale price in many acquisition and merger transactions involving life insurance companies is based upon considerations that include an actuarial appraisal valuation performed by or on behalf of the buyer, or the seller, or both. An actuarial appraisal value should be a consideration in almost every such transaction. It is clearly one of the most important inputs to the determination of a fair and reasonable price for a life company. It does not, however, necessarily represent the fair purchase/sale price, since quantitative and qualitative factors that are not accounted for or reflected in an actuarial appraisal value may have a material effect upon fairness or reasonableness in a particular circumstance.

Why is an actuarial appraisal valuation so important? First, an actuarial appraisal value of a life company is judged to represent a realistic assessment of the economic value of the enterprise. It is unique in that it cannot be determined from, nor is it equal to, either (1) the market value of traded securities of the life company or (2) shareholder equity as reported in financial statements of the life company. Second, where the merger or acquisition transaction is a material transaction to a corporate entity, the management and board of that entity have an

obligation to be satisfied that the purchase/sale price is fair and reasonable. This requires, among other things, that the management and board make a judgment as to the economic value of the life insurance company and of the consideration offered in the transaction for the company. The consideration may take the form of cash, securities (including securities of another life company in a merger transaction), or a combination of cash and securities. It is difficult to envision a credible judgment of the economic value of a life company that does not at least reflect consideration of an actuarial appraisal valuation. Third, there is a familiar adage that every company has problems, and from a buyer's perspective the challenge is to identify major problems *before* the purchase is consummated. An actuarial appraisal is one of the more effective procedures for identifying existing problems because of the depth of investigation required for such an appraisal.

Undeniably and unequivocally, an actuarial appraisal valuation is important. It should be performed in all but the rarest of circumstances. Unfortunately, current approaches used to determine an actuarial appraisal value vary considerably. Given precisely the same information, the same actuarial assumptions, and the same results of calculations, approaches currently in use will produce appraisal values that vary significantly.

It is the purpose of this paper to describe and critique current approaches for determining an actuarial appraisal value of a life company, to propose a new approach judged to produce a more meaningful and appropriate appraisal valuation than current approaches, and to examine the nature of certain differences between an actuarial appraisal value and GAAP shareholder equity.

## II. CURRENT APPROACHES

Current approaches for determining an actuarial appraisal value for a life company involve the implicit or explicit assignment of an appraisal value to each of three components. The *value of business in force* represents an appraisal value of the future earnings stream expected from insurance business in force at the date of valuation and reflects a realistic estimate of expected future revenues and costs associated with such business. The *adjusted net worth* represents an appraisal value assigned to capital (and surplus) funds, and certain other amounts judged to be in the nature of such funds, as of the valuation date. The *existing structure value* represents an appraisal value related to the ability and capacity of the existing corporate and sales structure to produce profitable business in the future. A description and critique of current approaches for

determining an actuarial appraisal value for each of these three components follow.

#### A. *Value of Business in Force*

The accounting basis of earnings projections, the treatment of federal income tax, and the interest rates used to discount projected earnings to a present-value basis are all critical factors in the determination of an appraisal value for business in force.

##### 1. ACCOUNTING BASIS

The alternative accounting bases existing at the time current actuarial approaches to valuation of life companies were developed were statutory, tax, and cash. Today, financial results also are reported in conformity with generally accepted accounting principles (GAAP).<sup>1</sup>

With one exception, actuarial appraisal valuations generally are based upon projected earnings stated in accordance with normal statutory accounting practices. Statutory earnings appear to be considered the most appropriate basis for determining an actuarial appraisal value, since it is such earnings that most accurately represent *available earnings*, that is, amounts available for either investment in new business or withdrawal from the company.

The exception is that changes in certain liability items normally are not reflected in projected earnings on business. This is consistent with the treatment, in the determination of adjusted net worth, of such items as more in the nature of surplus than liabilities. This pertains to such items as deficiency reserves, cost of collection in excess of loading thereon, cash values in excess of reserves, and a portion of the provision for policyholder dividends payable in the following year. However, this exception cannot be justified conceptually where projected earnings underlying an appraisal valuation are intended to represent available earnings, a representation that otherwise seems clearly implicit in the use of statutory earnings.

##### 2. FEDERAL INCOME TAX

On the basis of the view that no buyer is willing to purchase pre-tax earnings and no seller should expect to sell on a basis reflective of pre-tax earnings, current approaches generally reflect the effect of federal income tax. At least two ways of reflecting the tax have been observed in practice. Under one approach, projected after-tax statutory earnings are determined. The appraisal value is then taken as the present value of such

<sup>1</sup> As will be noted in Sec. V, reported GAAP earnings and shareholder equity usually are materially different before and after a purchase transaction.

after-tax earnings, where the present value is determined using an appropriate discount rate. The second way is inextricably linked to the discount rates. An appropriate discount rate is set, and projected pre-tax earnings are discounted at that rate. The effect of federal income tax is then reflected by determining and presenting a lower, equivalent discount rate associated with after-tax earnings. For example, assume that an appraisal value of business in force equal to \$2 million is generated by discounting projected pre-tax statutory earnings at a discount rate of, say, 15 percent. The effect of federal income tax is then expressed by determining a lower rate, say 11–12 percent, at which projected after-tax earnings on business in force could be discounted to produce the same value of \$2 million. The result is that the adjustment for federal income tax is not reflected in the determination of the appraisal value assigned to in-force business but is reflected in the expected rate of return (discount rate) associated with a given appraisal value.

The reasonableness of a discount rate applied to pre-tax earnings is difficult if not impossible to judge before the fact, since it reflects an assumption as to the relative impact of tax and an acceptance that the equivalent after-tax discount rate is reasonable. At a minimum, the second way of reflecting an adjustment for tax confuses the already difficult issue of what the discount rate actually represents or is intended to represent. In any event, it still requires a determination of projected after-tax earnings if the equivalent after-tax discount rate is to be reasonably accurate.

### 3. DISCOUNT RATE(S)

Current approaches almost always describe the discount rate as a rate that is commensurate with the degree of risk inherent in the realization of the earnings stream being discounted—a risk rate of return on the value assigned to business in force.

In setting an appropriate discount rate, the first way of adjusting for federal income tax (i.e., discounting after-tax earnings) requires consideration only of the degree of risk related to the realization of after-tax earnings on business in force. The second way clearly also requires consideration of the impact of the federal income tax, since the discount rate chosen is applied initially to pre-tax earnings and the equivalent after-tax discount rate is not known until after the appraisal value of the business has been determined. In addition, in some situations the discount rate also has been described as a measure of the reasonableness of the overall composite rate of return represented by the total appraisal value assigned to all components.

It can be concluded that discount rates currently applied in actuarial appraisal valuations represent a mixture of considerations: risk commensurate with the realization of projected earnings, federal income tax effects, and the composite rate of return associated with the total appraisal value assigned to the company.

### B. *Adjusted Net Worth*

Current approaches generally reflect consideration of statutory capital and surplus funds and other amounts judged to be in the nature of such funds (for example, deficiency reserves, cost of collection, mandatory securities valuation reserve, and nonadmitted assets). The most common appraisal value assigned to adjusted net worth is the total statement value of these items or, implicitly, the statutory book value of assets deemed to back these items. In some cases, this statutory book value has been reduced to reflect an adjustment of underlying assets from a book-value basis to a market-value basis.

The appraisal value assigned to adjusted net worth under current approaches may be viewed, in any event, as the present value of projected investment income expected on such funds, where such present value is determined using a discount rate precisely equal to the earned yield rate expected on the funds.

The pre-tax rate of investment income reasonably expected to be earned in the future on such funds, at least to the extent they are necessary to support insurance operations, should not be materially greater than that expected on assets backing policyholder reserves. The reason is obvious; such funds are intended to ensure solvency of the enterprise under adverse circumstances and to provide a reserve of last resort. It therefore would be imprudent to expose assets backing necessary statutory capital and surplus funds to materially greater investment risks than assets backing policyholder reserves. The restricted nature of prudent investment alternatives for assets backing necessary statutory capital and surplus funds prompts a characterization of such funds herein as *sterile capital funds*.

Current approaches assume in effect that a buyer is willing to buy the adjusted net worth component on the basis of an expected after-tax rate of return (today) of about 4–5 percent. Equivalently, current approaches assign a risk rate of return of about 4–5 percent to the projected future earnings on adjusted statutory net worth. (A pre-tax yield rate on assets backing adjusted net worth of, say,  $7\frac{1}{2}$ –8 percent, likely would result in an equivalent after-tax rate of return of 4–5 percent, since such pre-tax investment income would bear tax at approximately full corporate tax rates.)

### C. *Existing Structure Value*

The most common approach to determining an appraisal value for this component is to take existing structure value as represented summarily by the present value of future statutory earnings on new business expected to be issued after the valuation date. (The comments presented under *Value of Business in Force* regarding the accounting basis of earnings and the treatment of tax and discount rates also apply to determining existing structure value.)

Two specific methods of calculating the present value of future statutory earnings on new business have been observed. Under the first method, the present value of future earnings is calculated for each year's projected sales as of the beginning of the year of sale, and each future year's value of sales is then discounted to the date of valuation. The rate used to discount the value of a given year's sales from issue to the valuation date is often higher than that used to discount expected future earnings to the point of issue. (Two discount rates appear to be used more often where a single forecast of future sales is made; a single discount rate appears to be used more often where there is a range of forecasts of future values.)

The second method for calculating the present value of future statutory earnings on new business consists of projecting total earnings on future sales of all years (i.e., earnings projected in a future year reflect the effect of sales of that year and of all other years after the valuation date). Projected total earnings on new business are then discounted to the date of valuation, and the resulting present value is taken as the appraisal value of new business.

The two methods should result in the same appraisal value if the same discount rate is applied uniformly. The use of two discount rates in the first method, which reflects the greater risk associated with the realization of a given level and mix of sales than with the realization of projected future earnings on such sales, precludes the association of a specific rate of return with the resulting appraisal value. Since a meaningful interpretation of results by users of the valuation is critically important, it would seem preferable to reflect the marginally greater risk associated with the realization of a given level and mix of sales through multiple valuations at a uniform discount rate rather than through the use of two discount rates.

### D. *General Observations*

It is almost certain that the results of current approaches to actuarial appraisal valuations are not now understood by users of such valuations,

at least in two respects. The first concerns the overall expected rate of return associated with the total appraisal value assigned to the company. The all-industry median after-tax rate of return on equity as reported by *Forbes* (January 1, 1977, p. 118) was 12.9 percent for the latest twelve months and 12.7 percent for the latest five-year average. Excluding two transportation industry classifications, the remaining twenty-eight industry classifications show a range of five-year average after-tax rates of return on equity of 9.1-17.7 percent, with nineteen of the twenty-eight companies falling in the range 11-15 percent. It is likely that a buyer would expect the after-tax rate of return on total capital invested in a life company to be consistent with these rates.

It is also likely that an actuarial appraisal valuation would be meaningful to a nonactuary only if such a person were aware of the composite overall after-tax rate of return that could be expected on a total appraisal value assigned to the company. The composite after-tax expected rate of return on the total appraisal value is seldom determined or presented in current actuarial appraisal valuations.

The second item that probably is not recognized by users of the valuations is the implicit assumption that the apparent after-tax rate of return (i.e., discount rate) on any or all components will be realized only if projected earnings are either (1) withdrawn as they emerge or (2) reinvested as they emerge to yield a rate of return equivalent to the rate at which such earnings were originally discounted. In other words, current approaches assume that the earnings discounted are available earnings. It may or may not be feasible to withdraw or to reinvest projected earnings as they emerge. For example, it may be necessary for regulatory or practical reasons to maintain a specific level of statutory capital and surplus funds in the future (e.g., to maintain a specific ratio of statutory capital and surplus to liabilities or assets), and therefore to retain all or a portion of the earnings emerging on the business in order to achieve this objective. To the extent emerging earnings are retained within the company as sterile capital funds (statutory capital and surplus funds) yielding a relatively low after-tax rate of return, the actual rate of return realized on the business will be less than that indicated by the actuarial appraisal valuation. The present value of the excess of the expected rate of return over the actual rate of return achieved on such emerging earnings retained within the company can be taken as the *marginal cost of sterile capital* and is a cost typically ignored in current approaches. In current actuarial appraisal valuations, this implicit assumption is seldom disclosed and the marginal cost of sterile capital funds is seldom recognized.

It may be concluded that there currently is no classical approach for determining an actuarial appraisal value of a life insurance company. Results and their interpretation can differ materially depending upon the adjustments for federal income tax, the manner in which the results are presented, the level and meaning (implicit or explicit) of discount rates applied in the valuation of individual value components, and other factors.

In summary, it is apparent that there are inconsistencies, deficiencies, and contradictory logic in the various approaches now applied for determining actuarial appraisal values of life companies. In these circumstances, consideration of a new approach is warranted.

### III. THE "NEW" APPROACH

#### A. *Conceptual Issues*

Three conceptual issues need to be considered and resolved before an approach to valuation can be formulated: the accounting basis of projected earnings to be discounted, the treatment of federal income tax, and the nature of the discount rates to be applied.

#### 1. ACCOUNTING BASIS

Earnings for a life company considered for acquisition are now generally available on at least four accounting bases: statutory, cash, tax, and "historical-GAAP" (i.e., generally accepted accounting principles as set forth in the industry audit guide, *Audits of Stock Life Insurance Companies*). In addition, earnings after the date of acquisition generally must be reported in conformity with "purchase-GAAP," generally accepted accounting principles appropriate for a purchase transaction, which likely will differ materially from historical-GAAP earnings. (In some cases, historical-GAAP earnings must continue to be reported after purchase.)

It is asserted in this paper that earnings accounted for in an actuarial appraisal valuation should be available earnings, that is, earnings available for reinvestment in new business to the extent required and accepted, and for withdrawal from the company in the form of shareholder dividends. This position is supportable from the viewpoint that an appraisal value is representative of economic value and therefore recognizes the time-value cost of money.

While federal income tax may impose an undesirable cost on amounts withdrawn from the company, it does not limit the amount that can be withdrawn. Statutory financial position and state insurance law do limit the amount that can be withdrawn from the company. Further, statutory



financial results determine the amount of capital funds required to support a given level and mix of new business. GAAP earnings reported before and after a purchase date are significant to the extent that they represent earnings reported to shareholders, the investment community, the Securities and Exchange Commission, and potential shareholders. However, GAAP earnings do not purport to represent amounts that could be withdrawn from the company or that are otherwise available for reinvestment in new business. Thus GAAP earnings may be a relevant and significant consideration in a purchase transaction—in testing for possible dilution of earnings reported to shareholders, for example—but they are not considered relevant in a determination of economic value.

In summary, available earnings are judged to be based upon statutory earnings for the company, subject to involuntary and voluntary limitations—involuntary, for example, to the extent of state holding company laws and state minimum statutory capital and surplus requirements, and voluntary, for example, to the extent of management decisions to retain a given level of statutory capital and surplus. In determining actuarial appraisal value, involuntary limitations clearly should be considered and accounted for; voluntary limitations clearly should be considered, and preferably should be accounted for.

## 2. FEDERAL INCOME TAX

It is difficult to envision any buyer willing to purchase a stream of earnings without due consideration of expected tax effects on such earnings and, thus, any seller expecting to sell on a basis that does not reflect the anticipated tax effects on earnings values. It seems quite clear, then, that all projected earnings considered in an actuarial appraisal value determination, and the resulting appraisal values, should reflect “applicable federal income tax effects.”

A generalized definition of “applicable federal income tax effects” is not possible because of (1) the unique and complex basis on which life insurance companies are taxed and (2) the many factors that could affect the level and incidence of future taxes payable. If a reasonable range of forecasts of the future tax position of the company can be developed, it is prudent and appropriate to reflect as a cost the estimated federal income tax on the total emerging statutory earnings, including any excess tax solely attributable to the level of shareholder dividends anticipated in a future year. In other words, available earnings generally should be taken as the total statutory earnings after all federal income tax effects attributable to such earnings.

If the future tax position is expected to differ from that based only on

the future operating characteristics of the life company being valued (e.g., where it is intended that the life company would be merged or consolidated for tax purposes with another insurance company), an appraisal value could be determined from the potential buyer's viewpoint to reflect the impact of such merger or consolidation on the expected future tax position. In such cases, the resulting appraisal value would be unique to that buyer's expectations.

### 3. DISCOUNT RATE(S)

There are two views one could take toward the nature of discount rates applied. Under the *risk rate appraisal* view, the discount rate represents a rate of return commensurate with the risk associated with the realization of the particular earnings stream being discounted. Under the *composite yield rate appraisal* view, the discount rate represents a rate of return commensurate with the return on investment (i.e., yield rate) required, or likely to be required, by a buyer on the total appraisal value assigned.

The risk rate appraisal concept requires considerable judgment on the part of the actuary in assessing the absolute and relative degrees of risk associated with a particular stream of projected earnings. Current approaches have reflected, either explicitly or implicitly, an appraisal of the risks associated with each of three sources of earnings—earnings from business in force, earnings on adjusted net worth, and earnings from new business.

In many cases, however, the same discount rate has been applied to new-business earnings as to earnings on in-force business, with such discount rate reflecting implicitly a composite appraisal of the risk associated with the combined earnings from these sources. In other cases, as noted previously, two discount rates have been applied to earnings from new business, thereby reflecting a different appraisal of risk before as compared with after the point of sale.

In principle, the risk appraisal concept inherently would not require the application of any specific number of different discount rates as long as information on future earnings is developed in a manner that permits and supports an appraisal of risk associated with such earnings. At one extreme, there could be applied a single discount rate commensurate with the risk associated with the realization of the total projected earnings stream. At the other extreme, a multitude of discount rates could be applied to reflect the relative degrees of risk associated with various sources of earnings. For example, discount rates could vary by line of

business (1) over time, with higher rates applied to earnings expected to emerge in more distant future years, or (2) with the nature of the underlying contingencies, such as investment, expense, mortality, lapse, and morbidity.

The composite yield rate appraisal is conceptually distinguishable from the risk rate appraisal by the relevance of the discount rate. Under the former view, this rate is related to a reasonable buyer expectation regarding the overall rate of return on the total appraisal value, rather than to an actuarial appraisal of the risk. Where the composite yield rate applied to discounted projected earnings is also reasonably commensurate with the actuaries' judgment as to the risk associated with the realization of total projected earnings, the composite yield rate appraisal does not necessarily result in a different appraisal value from that obtained under a risk rate appraisal.

A nonactuary likely will be familiar with and understand the concept of return on investment and be able to judge independently the reasonableness and acceptability of the after-tax rate of return associated with total appraisal value. A nonactuary likely will not understand or be able to judge the meaning and reasonableness of an absolute appraisal value in isolation. Therefore, any total appraisal value for a life company will be meaningful to a nonactuary (whether buyer or seller) only if there is a disclosure of the composite after-tax expected rate of return on the total appraisal value. This view was expressed by D. Alan Little, F.S.A., in a concurrent session discussion entitled "Mergers, Acquisitions, and Valuation of Stockholder Equity" at the Society of Actuaries meeting in Atlanta on May 1, 1969. Mr. Little said that "the acquiring company *must* be in a position to know its yield at various price levels" (emphasis added; [5], p. D242).

The discount rate(s) applied in the determination of an actuarial appraisal value should be in conformity with the risk rate appraisal concept. In other words, projected after-tax earnings should be discounted at a rate commensurate with the risks associated with the realization of such earnings. A risk rate appraisal value is both meaningful and unique. It is independent of the value that would represent a desirable rate of return on capital invested in a life company as viewed by a buyer or seller. Assessment of the risks associated with the realization of projected after-tax earnings necessarily requires consideration of the assumptions and contingencies underlying such earnings. It is this appraisal and assessment of risks that only an actuary is qualified to make on the basis of his professional education, training, and experience.

Further, a uniform discount rate should be applied to projected *total* earnings for the company in those cases where such a rate can be determined as appropriately reflective of risks associated with total earnings emerging from all sources. Application of a uniform discount rate to total projected after-tax statutory earnings is judged to be preferable for the following reasons:

1. It produces a specific expected rate of return on the total appraisal value assigned and, therefore, more meaningful results to a user of the valuation.
2. It permits a more realistic determination of expected federal income tax effects, a determination that cannot be made easily or accurately on the basis of separate analyses of individual components of total earnings.

It is not expected, however, that a uniform discount rate can be determined and applied appropriately in every life company appraisal valuation. In those cases where a uniform discount rate is not reasonably determinate, the equivalent composite rate of return on the total appraisal value should be determined and disclosed.

#### *B. Risk Appraisal Approach*

Comments presented above support a resolution of conceptual issues that are essential for formulating an approach for determining an actuarial appraisal valuation of a life company. Specifically, (1) projected earnings to be discounted are available earnings and are based upon normal statutory accounting practices, (2) earnings considered in an appraisal valuation are after all applicable federal income tax effects, and (3) discount rates selected should be commensurate with the risks associated with the realization of projected after-tax earnings. In addition, a preference has been expressed for the application of a uniform discount rate to total projected earnings where such a rate is reasonably determinate.

At the risk of being simplistic, the valuation approach proposed and described below represents a capitalization of projected future earnings, where such earnings mean total after-tax statutory earnings. Practically, results produced by the proposed approach can differ materially from those produced by current approaches. Conceptually, the proposed approach also differs materially from current approaches yet appears to be consistent with the following stated beliefs of others: "An investment in a life insurance company should be an investment in future earnings power ([4], p. 145)"; "The value of a life insurance company's stock is the present value of its future earnings [Waid J. Davidson ([8], p. D173)]."

### 1. ALLOCATION OF ASSETS

The initial step in the proposed valuation approach is to allocate assets notionally to specific types of liabilities and to capital and surplus funds. For example, policy loans would be allocated to individual plans to the extent that significant concentrations of loans by plan exist, with any remaining unallocated policy loans assigned to related reserves on permanent ordinary life business. Remaining assets would be matched against groupings of liabilities based upon the nature and maturity of assets and liabilities. The remaining comments presume that a reasonable allocation of assets has been made.

### 2. ANALYSIS OF INITIAL CAPITAL FUNDS

Initial capital funds considered in the appraisal valuation should include only statutory capital and surplus funds (hereinafter referred to as "initial capital funds") as of the date of valuation. Unlike the procedure under current approaches, initial capital funds should not be adjusted to reflect the addition to such funds of certain liability and/or non-admitted asset items (e.g., deficiency reserves and mandatory securities valuation reserve). Nevertheless, certain adjustments to such funds may be appropriate to the extent necessary to reflect revaluations of statutory asset or liability items. For example, certain asset items, such as real properties and mortgages, and certain liability items, such as actuarial reserves, claim liabilities, and outstanding litigation, may be revalued on the basis of an independent analysis of their statement values. Any such adjustments should be limited to those permissible under statutory accounting practices and realizable at the date of valuation.

Initial capital funds (capital and surplus as of the valuation date, adjusted as described above) then should be split into two components—"necessary capital funds" (i.e., capital and surplus necessary to support the business) and "excess capital funds" if any. The amount of necessary capital funds could be determined using a risk-theory approach, but most often the amount is determined so as to be consistent with a management decision to maintain a specific ratio of statutory capital funds to liabilities or assets. The estimate of excess capital funds as of the date of valuation may be determinable only after completion of other valuation steps, or may be reasonably determinable on the basis of a review of the initial financial position and the nature of current operations of the company.

### 3. APPRAISAL VALUE OF EXCESS CAPITAL FUNDS

The appraisal value of any excess initial capital funds as of the valuation date should be taken as their realizable value on that date. This is

the value which could be realized currently on such funds, either as a dividend to shareholders or as an investment in new business.

#### 4. APPRAISAL VALUE OF OTHER COMPONENTS

The remaining steps in the proposed risk appraisal valuation approach are applicable in those situations where a uniform discount rate reflective of the risks associated with total projected earnings can be determined. (Modifications in approach where such a uniform rate is not reasonably determinable will be considered later.)

1. A projection of pre-tax statutory earnings would be developed for business in force by line, necessary capital funds, and new business expected to be issued in the future by line. Any adjustments made to reflect revaluations of statutory asset and/or liability items, as described under "Analysis of Initial Capital Funds," should be accounted for in the determination of projected pre-tax earnings.
2. Taxable income and federal income tax would be calculated on the basis of projected total pre-tax earnings.
3. Projected total after-tax statutory earnings for the company (pre-tax earnings minus federal income tax effects) would be discounted to a present-value basis as of the date of valuation using a rate(s) judged to be reflective of the risks associated with the realization of projected earnings. To the extent that any portion of projected total after-tax earnings is deemed to be required as an addition to necessary capital funds, such portion of earnings should be (1) treated as an addition to initial necessary capital funds and (2) deducted from projected total after-tax statutory earnings before such earnings are discounted to a present-value basis.

The resulting present value(s) of after-tax earnings, together with the value of any excess capital funds, would be taken as the appraisal value (or range of such values) for the company. An allocation of such value(s) between capital and surplus funds and insurance, and/or by line of business, could be developed where desirable by allocating the tax to those sources. For example, the tax on earnings on capital and surplus funds might be taken as 40-45 percent of such earnings, with the balance allocated to insurance earnings.

#### 5. APPRAISAL VALUE OF OTHER COMPONENTS (ALTERNATE APPROACH)

If a uniform discount rate reasonably reflective of the risks associated with total projected earnings cannot be developed, subsequent steps necessarily reflect a valuation of at least three components of value: necessary capital funds, business in force, and existing structure value. The proposed approach for valuation of each such component is described below. The resulting appraisal value for the company would equal the

appraisal value assigned to each component plus the value of any excess capital funds as of the date of valuation. (Note: Any adjustments made to reflect revaluations of statutory asset and/or liability items should be accounted for in the determination of projected pre-tax earnings related to each component.)

*a) Value of Necessary Initial Capital Funds*

To value the necessary capital funds as of the date of valuation, the after-tax investment income on necessary initial capital funds should be projected. The projection should be based on the estimated net-of-expense yield rate(s) related to supporting assets and the estimated federal income tax reasonably allocated to pre-tax investment earnings on such capital funds. This stream of projected after-tax earnings then should be discounted at a rate(s) commensurate with the risks associated with the realization of such earnings.

If the discount rate selected is the rate of return that would apply if an investor had bought the securities backing such funds (an 8 percent bond would yield 8 percent, a 5 percent stock would yield 5 percent, etc.), the appraisal value of statutory capital and surplus funds can be taken as the statement value of such necessary capital funds, reduced by the expected tax rate on the resulting investment income.

*b) Value of Business in Force*

The actuarial appraisal value assigned to business in force on the valuation date should be the present value of estimated future after-tax earnings on such business, where the present value is determined using a discount rate(s) commensurate with the risk associated with the realization of such earnings. Projected pre-tax earnings should conform to normal statutory accounting practices and therefore should reflect changes in deficiency reserves, cost of collection, and so on. The determination of appropriate and reasonable estimates of tax effects and discount rates necessarily will be unique for any particular circumstance. A discount rate of the order of 12 percent seems reasonable in the current economic climate as a risk rate of return associated with future earnings on a mature block of in-force business.

*c) Existing Structure Value*

In situations where a reasonable estimate of future sales cannot be made, it may be best to assign an appraisal value of zero to this component.

If a reasonable estimate of future sales is possible, existing structure value should be determined on the basis of a valuation of projected new sales, taking into account the essential characteristics of such sales (e.g.,

the distribution by plan, mode, and issue age). Such a valuation would represent the capacity and capability of the enterprise to produce new profitable business. Where this approach is possible, the determination of an actuarial appraisal value for this component could be developed along either of the lines noted in the description of current approaches.

*d) Cost of Sterile Capital*

The appraisal values developed for necessary capital funds, business in force, and existing structure value (i.e., new business) assume that underlying projected after-tax statutory earnings, as they emerge, either are fully withdrawn or are reinvested in new business to yield a rate of return equivalent to the rate at which such earnings are discounted. As previously indicated, the discount rate applied will not be realized as a rate of return if any portion of emerging earnings is retained within the company as necessary capital funds. The discount rate applied will be realized as the rate of return if a marginal cost of sterile capital is determined and offset against appraisal value(s) otherwise established.

Assuming that the portion of emerging after-tax statutory earnings expected to be retained as necessary sterile capital funds can be estimated each year (for example, as a percentage of the annual increase in reserves), the marginal cost of sterile capital generally can be determined as the excess of the discount rate applied over the after-tax yield rate earned on supporting assets each year, discounted to the valuation date. This adjustment has the effect of replacing the earned yield rate with the discount rate on the portion of projected earnings deemed not to be available earnings.

*C. Composite Yield Rate Considerations*

The proposed risk rate valuation approach described above may or may not produce an after-tax rate of return on the total appraisal value assigned that will be consistent with the expectations of a reasonable buyer. It appears that buyer expectations of an after-tax rate of return on an equity investment today might be of the order of 10-15 percent. Since each buyer will have his own perception of an acceptable rate of return, the actuary should determine and disclose in any actuarial appraisal the composite after-tax rate of return expected on total value assigned.

IV. COMPARISON OF APPRAISAL VALUES

It was stated previously that actuarial appraisal values determined under current approaches can vary significantly. Comparative results produced by typical current approaches and by the proposed risk ap-



praisal approach are illustrated in this section. (All results shown are hypothetical and are not intended to reflect any actual situation.)

#### A. Value of Company

What is the actuarial appraisal value of Hypothetical Life? More specifically, on the basis only of each of the following actuarial statements, would you judge an offer price of \$12,000 for Hypothetical Life to be reasonable or unreasonable?

Actuary A states: "The value of Hypothetical Life is estimated to lie in the range \$12,150-\$17,650. Values were determined as equal to (1) the adjusted statutory book value plus (2) the present value of projected before-tax statutory earnings on business." (If, as might logically be expected, one focuses on the midpoint of the range presented, \$14,900 could be taken as the best estimate of reasonable value.)

Actuary B states: "I estimate the actuarial appraisal value of Hypothetical Life to be \$11,650, assuming a willing buyer and a willing seller engaged in an arm's-length transaction. This value is equal to (1) statutory capital and surplus funds, including certain items judged to be in the nature of such funds, adjusted to reflect a restatement of related assets from a book value to a market-value basis, plus (2) projected after-tax statutory earnings on business, discounted at 15 percent to a present-value basis."

Actuary C states: "I have estimated the range of actuarial appraisal values of Hypothetical Life, and the expected after-tax rates of return related to each value within such range, to be as shown below. The amounts shown represent the present values of projected total after-tax statutory earnings, where such present values are determined by using discount rates equal to the rates of return indicated. It is my opinion that an after-tax rate of return of between 11 and 15 percent would be commensurate with the nature and degree of risks associated with the realization of projected earnings in the circumstances."

	After-Tax Rate of Return	Actuarial Appraisal Value
11%	.....	\$10,500
15	.....	8,000
19	.....	6,000

All three actuarial statements are based on the same information and calculation results. The statements of Actuaries A and B are intended to illustrate results that could be expected from current approaches. Actuary C's statement is intended to represent results that could be expected under the proposed risk appraisal approach. The results are presented solely to illustrate generally the relative amounts produced by various approaches. They assume that initial capital funds at the valuation date would be fully retained within Hypothetical Life and that all projected earnings could be fully withdrawn as they emerge.

### B. *Composite Yield Rates*

As previously stated, a nonactuary likely will be able to judge the reasonableness of a determined appraisal value only if the composite after-tax rate of return related to such value is disclosed. Actuary C did disclose the after-tax rates of return (i.e., yield rates) associated with the appraisal values presented. The illustrative statements of Actuaries A and B, however, included no disclosure of the composite after-tax rate of return expected on the total appraisal values presented. The composite rates nevertheless can be estimated, as follows:

1. The underlying assumption as to the expected pre-tax yield rates on capital funds is 7 percent if related assets are taken at book value, and 8 percent if related assets are taken at market value. Equivalent after-tax yield rates on capital funds would be 3.85 and 4.40 percent, respectively, on the basis of an assumed effective tax rate of 45 percent applicable to such earnings.
2. The estimated composite after-tax rates of return on Actuary A's stated range of appraisal values are 6.7 percent on the high-range value of \$17,650 and 9.8 percent on the low-range value of \$12,150. For example, the high-range value is comprised of (a) capital funds of \$5,650 at book value with an after-tax rate of return of 3.85 percent plus (b) value of business of \$12,000, which is equal to projected before-tax earnings discounted at 11 percent with an equivalent after-tax discount rate of 8 percent. The weighted average return can be estimated as  $[(5,650 \times 0.0385 + 12,000 \times 0.080) \div 17,650]$ , or 6.7 percent.
3. The estimated composite after-tax rate of return on Actuary B's stated appraisal value is 10.5 percent.

### C. *Commentary on Approaches Illustrated*

The methods applied by Actuaries A and B to determine an actuarial appraisal value are illustrative of current approaches.

#### 1. CAPITAL FUNDS

Actuaries A and B assigned an appraisal value to statutory capital and surplus funds equal to the full face value of those funds (whether that value was at book or market). Their approach to valuing the funds did not reflect a capitalization of expected after-tax earnings on the funds, although the value assigned implicitly assumes that after-tax earnings are discounted at a risk rate of return equal to the earned after-tax rate of investment income on such funds. The appraisal value assigned to statutory capital and surplus funds under current approaches would be reasonable only where a risk rate of return of 4-5 percent (today) on the portion of the purchase/sale price represented by such value is judged reasonable.

Actuaries A and B also included liability items such as deficiency reserves, the mandatory securities valuation reserve, and so on, in the appraisal value of initial capital funds (i.e., adjusted book value). The amounts of such liability items will be available for withdrawal or reinvestment in new business only as they are released over time. Clearly, the present value of these amounts becoming available over a number of years is not equal to the full face value of these items on the valuation date.

## 2. VALUE OF BUSINESS

Actuary A made a judgment as to an appropriate risk rate of return (i.e., discount rate) based on projected before-tax earnings on business. The discount rate selected was, say, 15 percent (using the approximate midrange value). This produced an equivalent risk rate of return on after-tax earnings of 11 percent. The earnings discounted were described as "statutory" earnings, although changes in certain liability items that normally are taken into account in determining statutory earnings (e.g., deficiency reserves) were not recognized in the earnings projected. The projected after-tax earnings discounted are obviously greater than available earnings and, as a result, the appraisal value is greater than the present value of available earnings.

Actuary B made a judgment as to the appropriateness of a 15 percent risk rate of return based on projected after-tax earnings on business. The preceding comments regarding overstatement of available earnings also apply to Actuary B's valuation of business.

Actuary C made a judgment as to the appropriateness of an 11-15 percent range of risk rates of return based on projected total after-tax earnings. Earnings projected did conform to normal statutory accounting practices.

It was stated that all values presented reflect an assumption that projected earnings could be fully withdrawn as they emerge. If the appropriate assumption had been that only two-thirds of total after-tax earnings could or would be withdrawn as they emerged, the effects would have been as follows:

1. The appraisal values presented by Actuaries A and B likely would not have changed from those shown, since current approaches generally do not consider this issue.
2. The appraisal values presented by Actuary C (\$6,000, \$8,000, and \$10,500) would have been changed to approximately \$4,000, \$5,500, and \$8,000, respectively. (These values should not be taken as necessarily reflective of the degree of change but merely as indicative of the fact that earnings retention can have a significant impact on appraisal values.)

## V. APPRAISAL VALUE VERSUS GAAP EQUITY

An actuarial appraisal value of a life company has been described as reflective of economic value on the basis of a projection of expected future available earnings and discount rates commensurate with the risks associated with the realization of such earnings. Either before or after purchase, shareholder equity reported in conformity with generally accepted accounting principles is not intended to represent the economic value of the enterprise. Nevertheless, when an actuarial appraisal value differs significantly from shareholder equity as determined in accordance with GAAP—as is most frequently the case—the parties involved in a purchase transaction are usually surprised. For reasons that will be stated, an actuarial appraisal value (i.e., economic value) of a life company generally should differ materially from such shareholder equity.

Shareholder equity and earnings are determined and reported (1) before the date of a purchase transaction, in conformity with GAAP as described in the industry audit guide, *Audits of Stock Life Insurance Companies*, and (2) on and after the date of purchase, in conformity with *Accounting Principles Board Opinion No. 16*. The restatement to purchase-GAAP (i.e., *APB Opinion No. 16*) most often results in a material change in shareholder equity and in the level and incidence of GAAP earnings from those reported in conformity with GAAP prior to the purchase date. While GAAP shareholder equity and earnings following a purchase are important in any transaction (e.g., dilution of reported earnings), GAAP shareholder equity is not necessarily relevant to, or indicative of, economic value as the term is used herein.

There are several reasons for the lack of any correlation between an actuarial appraisal value and GAAP shareholder equity; four of the more significant of these are as follows:

1. Actuarial assumptions appropriate for use in an appraisal value determination are inappropriate for use in a determination of actuarial items for a GAAP financial statement. Actuarial assumptions typically used in an appraisal valuation reflect best estimates with respect to future interest, mortality, lapse, expense, morbidity, and so on. GAAP, purchase and historical, requires provision for adverse deviation in actuarial assumptions from such best estimates and therefore requires more conservative actuarial assumptions than are appropriately reflected in an appraisal valuation. Further, historical-GAAP requires that assumptions be appropriate for the point in time when the underlying policies were issued, whereas purchase-GAAP and actuarial appraisal valuations call for actuarial assumptions that reflect current expectations. Finally, purchase-GAAP requires a restatement of invested assets to fair value—typically taken to mean fair market value—

- while actuarial appraisal valuations typically reflect assets and expected yields based on the statutory book value of assets.
2. Discount rates applied in actuarial appraisal valuations to determine the present value of future revenues and costs represent risk appraisal rates (e.g., 12 percent, 15 percent, etc.), while the present value of future revenues and costs included in GAAP financial statements reflect discount rates equal to the assumed rates of interest earned on underlying invested assets.
  3. Full provision for expected future federal income taxes is reflected as a cost in an actuarial appraisal valuation but not in either historical-GAAP or purchase-GAAP financial statements. The most apparent difference in this area relates to future expected federal income taxes based on taxable investment income; GAAP financial statements reflect no provision for such future taxes but an appraisal valuation appropriately reflects as expected future costs a full provision for such taxes.
  4. Actuarial appraisal valuations reflect the value assigned to the expected earnings stream associated with future new business, whereas shareholder equity reported in GAAP financial statements reflects only the operating results based upon current business in force.

Except where the appraisal value assigned or attributable to new business is a material portion of the total actuarial appraisal value for a company, an actuarial appraisal value as of a particular date usually will be less than shareholder equity reported as of the same date under either historical-GAAP or purchase-GAAP.

In conclusion, the purpose, methodology, and assumptions underlying an actuarial appraisal valuation differ from those underlying GAAP financial statements, and consequently an actuarial appraisal value will differ from GAAP shareholder equity.

#### VI. CONCLUSIONS

There currently is no classical approach for determining an actuarial appraisal value of a life company. The conceptual bases and the results can differ materially under current approaches, and the user of such an appraisal typically is uninformed about the meaning and implicit assumptions of a given appraisal methodology. As an example, the discount rate applied to earnings on business in force may be a rate commensurate with the risk only, a rate commensurate with the risk but modified to reflect the composite yield requirement, or a rate commensurate with the risk but modified to reflect the fact that pre-tax earnings are being discounted.

More meaningful disclosure is essential. This should include an explanation of methodology and any implicit assumptions, regardless of the valuation approach or method applied. A risk appraisal approach has

been proposed. It is based upon projected available after-tax earnings and is more singular in its conceptual base than the methods in current use. It is considered a valid approach for actuarial appraisal valuations, with the understanding that the composite yield rate is relevant to any judgments or representations concerning the reasonableness of the total appraisal value assigned to a company.

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## DISCUSSION OF PRECEDING PAPER

JOSEPH C. NOBACK:

We are indebted to Mr. Turner for his thought-provoking paper, in which he has examined a number of issues that have been raised by past actuarial appraisals.

Instead of taking up each of these issues and perhaps discussing it out of context, it may be helpful to consider the determination of an appraisal for each of three separate parties. Let us consider a well-managed, profitable life insurance company that has maintained continuing studies of its experience in its several homogeneous lines of business and has documented its actuarial assumptions. The three parties we are considering are (1) the current management and board of directors, (2) a potential acquiring company, and (3) a shareholder holding minority stock interest.

In the perspective of the current management and board, the company is a going concern. All of its parts are vital to its continued success, just as all organs of the human body contribute to its health, vitality, and efficient functioning. In their view it has neither "excess capital" nor "sterile capital." Furthermore, any segmentation of the company would be arbitrary. The value of the company is determined on a going-concern basis. Actuarially, this value is measured by the present value of projected future statutory earnings, after federal income taxes, using reasonable assumptions for future mortality, morbidity, persistency, commissions, expenses, and investment income. These earnings should be discounted at a rate that reflects management's confidence in the projected actuarial assumptions and the return that reasonably could be achieved in alternative long-term investments of equal quality.

A potential acquiring company has a different perspective. For example, it may believe that it can operate the company more efficiently and with less capital and surplus. Or, it may seek to increase its market share by infusing new capital. If the former is the case, the value of the company is, as Mr. Turner suggests, the sum of the "excess capital" (that the regulatory authorities will permit to be released) and the present value of projected available statutory earnings, after federal income taxes, using the adjusted capital and surplus. Such projections would be made with actuarial assumptions appropriate for the potential acquiring company. Available earnings could be about 85 percent of total earnings.

The value of the stock held by a minority shareholder is, in my opinion, the present value of the expected future dividends, adjusted for capital appreciation.

In each case, the appraisal depends upon the future statutory earnings of the company after federal income taxes, derived on a going-concern basis. Each projection uses an additional actuarial assumption, namely, the inflow of new business year by year. The projection of the future after-tax statutory earnings can be carried out by an annual recursive cycle utilizing modules of marketing, insurance, investment, federal income taxes, and shareholders' dividends.

An appraisal is an estimate of intrinsic worth based upon alternative future scenarios. Each scenario should be composed of a set of reasonable, consistent, and appropriate actuarial assumptions, and tests of different scenarios will produce a range of values. The appraisal will fall within the range of values produced by the different scenarios.

It is pertinent to emphasize that the rate of discount should depend upon the confidence the appraiser has in the actuarial assumptions, especially where a value is being placed on the future issues. Whenever future after-tax earnings are discounted at a higher rate (say 19 percent) than the projected ratebook is to yield (say 10 percent), the future business has a negative value, even though the actuarial assumptions may be conservative. In short, the appraiser can undervalue a company by his combined choice of assumptions and discount rate.

Mr. Turner is quite correct in his assessment that management needs a realistic actuarial appraisal of the company's economic value. This is especially true if a potential merger or acquisition is involved.

ROBERT C. TOOKEY:

As stated in the introduction to his provocative paper, Mr. Turner advocates a new approach to the appraisal of life insurance companies. The emphasis is on concept. The numerical result in no way purports to represent the final price of a company, because of the many relevant determinants that are properly omitted from the paper

First, I will address the author's second objective: to examine the nature of differences between GAAP book value and appraised value. His treatment appears to be quite accurate, convincing, and comprehensive. When asked why one company sold for nearly twice its GAAP book value while another was priced at only 80 percent thereof, I pointed out that GAAP book value was merely a number that could be considered quite innocuous when recognized as that and nothing else. If this re-



sponse is not adequate (amazingly, it usually is), may we feel free to quote Mr. Turner's poignant remarks on the subject.

My experience confirms the author's observation that the first two appraisal approaches (as employed by Actuary A and Actuary B in the Hypothetical Life appraisal) enjoy nearly universal usage. However, in many cases it might be pointed out that idle capital funds, if not put to use, might have to be discounted for sterility. I recall that in one appraisal this was done because the capital funds were a high percentage of the total appraised value of the company.

In choosing an approach for a specific appraisal, consideration might be given to the following:

1. The author's approach is most suited to the situation in which the purchaser plans no changes and the operation will continue on its present course.
2. Most potential buyers prefer to see the appraisal sectored into the three components referred to in the paper. This makes the author's suggested "Actuary C" approach difficult if the sectored approach is excluded.
3. Since most buyers are other life insurance companies or holding companies with life company investments, they have plans to convert "sterile surplus" into "fecund funds." Indeed, the purchaser's own sterile surplus might have precipitated the acquisition. This observation has been made by members of the investment community and has been given as one of the reasons that a life insurance company often can afford to pay more for another life company than can the typical industrial company.
4. The author's approach completely ignores the adjustments to capital and surplus that traditionally are made, such as the mandatory securities valuation reserve, a percentage of nonadmitted assets, and deficiency reserves. Should they not be added to the surplus account if they are properly sterilized *immediately* along with the capital funds?
5. The present appraisal approach is better suited to valuing a so-called shell company in which there is little or no business in force and no agency plant but a number of state licenses, the value of which constitutes the principal premium (excess of purchase price over capital funds) paid for the company.
6. The yield on sterile funds was taken as 52 percent of the yield obtainable on fully taxable investments. Should some consideration be given to the net yield if tax-exempt securities were included in the total investment portfolio? Municipal bonds and preferred stocks are now yielding a composite rate of around 7 percent. Recognition of these rates of return could produce a higher yield assumption for sterile funds.

The foregoing has not been intended as a disputatious discussion of Mr. Turner's fine paper. These comments have been presented merely to share some of my own experiences and views on the subject of life company appraisals.

STEPHEN D. BICKEL:

I would like to congratulate Mr. Turner for a timely and well-conceived paper. It should go a long way toward clearing up the inconsistent thinking that has characterized these appraisals.

It is helpful to me to think of the "risk appraisal" approach as a discounted dividend method rather than a discounted earnings method. "Available earnings" are so defined as to represent reasonable amounts of dividends that could be paid to stockholders.

The fundamental value of a life company to a purchaser is represented by after-tax dividends discounted at after-tax interest rates. The value can differ considerably depending upon the tax treatment of dividends received by the purchaser. The tax position of the purchaser also should be a factor in selecting the composite yield rate, since the pure interest portion of the rate could vary from 4-5 percent to 8-10 percent.

The discounted earnings method of valuing stocks may have developed as an approximation to a discounted dividend method. The discounted earnings method is considered to be more convenient for stocks that have not yet begun to pay any dividends. To some degree, the higher discount rate applied to earnings reflects the time interval between reported earnings and declared dividends.

Choosing the risk portion of the composite interest yield rate seems to be a difficult task. If applied to a casualty insurance company, the risk factor can be equated roughly to an adverse assumption of future revenues or future profit margins. The meaning of the risk factor for a life insurance operation is not nearly so clear. An alternative to the use of a risk factor might be to use more conservative assumptions to project the statutory earnings and to discount them at the pure interest rate.

By choosing the composite yield rate by reference to current price-dividend ratios, the risk appraisal method may be used to demonstrate the fairness of a price in terms of current market conditions.

Where new business is not a significant consideration, the purchase-GAAP technique seems to produce reasonable values. The balance sheet should contain full provision for federal income taxes. The purchase-GAAP value could be viewed as a present value of future dividends if the existing business were reinsurable on the basis of the purchase-GAAP assumptions.

(AUTHOR'S REVIEW OF DISCUSSION)

SAMUEL H. TURNER:

The discussions by Messrs. Bickel, Noback, and Tookey are very much appreciated. It is hoped that the collective views presented will

contribute to greater understanding and clarity in the determination and interpretation of values assigned to a life insurance company by actuaries.

#### *Perspective of Current Management and Board*

Mr. Noback refers in his discussion to the singular perspective of the current management and board. I am more inclined toward a belief that the perspectives of management and the board are, and should be, distinct. Different perspectives would seem to be especially important when the company is actually or potentially a party to a merger or an acquisition transaction.

#### *Sterile Capital*

Mr. Noback also states that, in the view of the current management and board, the company has neither "excess capital" nor "sterile capital." I disagree, on the grounds that Mr. Noback's view is inconsistent with observed actions that, have been, and are being, taken by enlightened managements and boards. These actions, such as increased shareholder dividend payouts and acquisitions, reflect an appreciation of capital utility and efficiency and, therefore, a recognition of excess capital funds. Mr. Tookey recognized such actions in his comment, "Indeed, the purchaser's own sterile surplus might have precipitated the acquisition." I believe that the concepts of capital utility and efficiency are universally valid. I therefore believe that the derivative notions of sterile capital and excess capital are valid in the perspectives of the current management and board as well as in the perspective of a potential acquiring company.

#### *Discount Rate(s)*

Messrs. Bickel and Noback address a significant issue in their comments regarding the discount rate. Mr. Noback states that, in the perspective of the current management and board, the discount rate "reflects management's confidence in the projected actuarial assumptions and the return that reasonably could be achieved in alternative long-term investments of equal quality." He expresses no opinion as to the discount rate in other perspectives. However, Mr. Noback does state summarily that "it is pertinent to emphasize that the rate of discount should depend upon the confidence the appraiser has in the actuarial assumptions." Mr. Bickel makes a related point in suggesting that one procedure might be "to use more conservative assumptions to project the statutory earnings and to discount them at the pure interest rate."

First, I believe that the responsibility for judging the confidence (risk)

inherent in assumptions underlying projections and/or in overall projected earnings rests solely with the appraiser. Management's expressed confidence, among other things, will be considered by the appraiser in making this judgment.

Second, I believe it is essential that in any report the appraiser describe accurately the intended meaning and perspective of the discount rate(s) used.

Third, Mr. Noback suggests that an appraisal should be based upon alternative future scenarios of actuarial assumptions. In his statement that a range of values is produced by tests of different scenarios of actuarial assumptions, he implies that a constant discount rate should be used. If the discount rate is to reflect confidence (or, alternatively, risk) realistically in each set of actuarial assumptions, a relationship suggested by Mr. Noback, then it would appear that it should not remain constant but should vary with each such scenario. Equilibrium would be achieved when all scenarios—with appropriate discount rates for each—produce substantially the same composite value.

Finally, providing for risk through the use of very conservative actuarial assumptions seems inconsistent with the return-on-investment concept. The latter is appropriate as a means of communicating findings to nonactuarial users of an appraisal report. Its use implies that risk should be recognized primarily through the discount rate(s) and not through intentional conservatism in individual actuarial assumptions. Nevertheless, it is recognized that tests of variations in particular assumptions could be useful in quantifying the sensitivity of projected earnings to such variations, judging overall risks associated with projected earnings, and setting risk appraisal discount rates.

#### *Actuarial Appraisal*

Mr. Noback states that an actuarial appraisal is "an estimate of intrinsic worth based upon alternative future scenarios." He then states in his concluding remarks that "management needs a realistic actuarial appraisal of the company's economic value." It is difficult to equate "intrinsic worth" and "economic value," if indeed they are equivalent. I offer the following definition of an actuarial appraisal: *An actuarial appraisal of a life company is an expert opinion of a qualified actuary as to the value or monetary worth of a life company.*

As applied in a merger or acquisition transaction, an actuarial appraisal reflects what an acceptable price *ought to be* or, more specifically, the range within which an acceptable price *ought to fall*.

Purchase price, on the other hand, reflects what an acceptable price is

in a particular set of circumstances at a particular point in time. It is the result of negotiated compromise between buyer and seller. It may reflect the negotiating skills of the parties, the urgency of the merger or acquisition candidates, the market values of traded securities of the parties, and other factors. While an actuarial appraisal is a relevant and significant consideration for either party, it clearly is not the only determinant of purchase price.

#### *Purchase-GAAP*

For several reasons, I disagree with Mr. Bickel's statement that, "where new business is not a significant consideration, the purchase-GAAP technique seems to produce reasonable values." Since initial purchase-GAAP shareholders' equity is equal to the purchase price by definition, it is necessary to assume that Mr. Bickel's reference to "values" produced by purchase-GAAP techniques means restated net assets and excludes any consideration of "goodwill." It also is necessary to assume that Mr. Bickel's reference to "reasonable values" means reasonableness in comparison with actuarial appraisal values otherwise assigned

First, there is no single purchase-GAAP technique in the United States. Mr. Bickel's reference to the "purchase-GAAP technique" therefore can refer only to the multiplicity of techniques now permitted under relevant guidelines published by both the accounting and the actuarial professions in the United States. My experience indicates that various techniques have been applied in practice, with significant variation in the results.

Second, it is clear that the accounting profession does not require a full provision for federal income taxes in the initial purchase-GAAP balance sheet, and that such provision has not been made in most cases. This personal observation is made in spite of my complete agreement with Mr. Bickel's statement and the actuarial profession's current guidelines to the effect that such a full provision for taxes should be made.

I would conclude that it is highly unlikely that purchase-GAAP restated net asset value would reasonably approximate an actuarial appraisal value otherwise assigned. If it did in a particular case, it would do so only by pure coincidence.

