

**GAAP FOR NONGUARANTEED-PREMIUM
LIFE INSURANCE**

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ABSTRACT

Many actuaries and accountants currently are faced with various questions regarding the appropriate method of applying generally accepted accounting principles (GAAP) to nonguaranteed-cost, nonparticipating life insurance contracts. This paper identifies and discusses certain critical issues, such as the development of appropriate valuation assumptions, the applicability of the "lock-in" principle, and the evaluation of recoverability of deferred acquisition cost. In addition, the paper describes a valuation procedure that may be used to implement prospective changes to current valuation assumptions for in-force policies.

INTRODUCTION

OVER the past several years, significant changes and modifications have been made to traditional life insurance contracts in response to consumerist pressures and increasingly vigorous competition among life insurance companies. As a result, a new species of life insurance contract has been introduced to the market. This contract does not conform to either of the traditional categories of life insurance policy, namely, participating or guaranteed-cost nonparticipating. The nonguaranteed-premium (NGP) life insurance policy is being marketed by stock life insurance companies as a nonguaranteed-cost, nonparticipating contract. This product, which is also referred to as an adjustable-premium, indeterminate-premium, or premium reduction policy, appears to cope effectively with the stock life insurance company's need to satisfy the competitive demands of the marketplace while still complying with the requirements of state insurance regulators.

Many life insurance executives believe that the NGP policy may become the predominant nonparticipating product marketed by stock life insurance companies. If that expectation is realized, a significant portion of the earnings reported to the shareholders of life insurance companies ultimately may be derived from policies of this type. This possibility was not anticipated

during the early 1970s when GAAP was formulated for stock life insurance companies. Consequently, the focus of those who contributed to the development of GAAP methodology for nonparticipating insurance was on the guaranteed-cost contract.

This paper examines the applicability of certain elements of traditional GAAP methodology to the nonguaranteed-cost contract. The characteristics of the NGP contract are examined. The financial statement consequences of using different types of valuation assumptions are explored. The possibility that changes to current valuation assumptions applicable to in-force policies might become necessary is discussed, and a procedure for implementing such changes is described. Finally, the considerations involved in testing for recoverability are reviewed. While the focus of this paper is primarily on permanent rather than term insurance, the financial reporting principles discussed herein would apply to both types of coverage.

POLICY CHARACTERISTICS

The primary difference between the NGP contract and the participating and guaranteed-cost nonparticipating contracts lies in the premium structure. Under each of the two traditional forms of life insurance contract, the policyholder knows all future gross premium requirements at the date of issue. Under the NGP contract, however, the initial gross premium is guaranteed only for a certain period of time. The company reserves the right to establish a new gross premium at the end of the initial guaranteed period, subject to a stipulated maximum defined in the contract. The contract may impose a limit on the number of times that the gross premium may be changed.

The premium adjustment provision in certain NGP contracts explicitly states that premium changes will be based on revised expectations as to future interest rates, mortality rates, persistency rates, and expense levels—or some combination thereof. Other contracts simply state that the company reserves the right to charge a premium that is less than or equal to the guaranteed maximum. Generally, there is some wording that defines which policies will be treated as a single class in the premium redetermination process. In addition, the contract normally provides that deterioration in the policyholder's health will not be considered in the premium change process.

The NGP contract is similar to a guaranteed renewable health insurance policy in that benefit levels are specified at the date of issue but premium rates are subject to adjustment in the future. In all other respects, it is similar to the traditional nonparticipating contract. Of particular significance is the fact that NGP contracts are required to provide nonforfeiture benefits

that are guaranteed at the date of issue. Such benefits must be calculated on the basis of assumptions and methods that comply with current regulatory requirements, which do not permit recalculation of cash values in the event of premium adjustments.

INITIAL ASSUMPTIONS

To calculate the reserve for future policy benefits and the unamortized balance of deferred acquisition costs in conformity with GAAP, the actuary must make assumptions as to investment yield, mortality, persistency, expenses, and other factors. Actuarial and accounting literature stipulate that the valuation assumptions should be characterized by conservatism that is reasonable and realistic. This objective generally is achieved by choosing valuation assumptions that are based on the most realistic expectation as to future experience, modified to provide for the risk of adverse deviation.

A basic underlying concept of GAAP is that revenues and costs (expenses and policy benefits) should be matched. For life insurance contracts, premium income is defined to be the revenue against which costs are matched. Periodic charges for costs reflect the change in the reserve for future policy benefits and the unamortized balance of deferred acquisition costs, which depend on the valuation assumptions employed and the company's actual experience. If valuation assumptions are realized, the resulting pattern of profit will be related primarily to premium income.

Clearly, the current gross premium paid by the NGP policyholder will be the company's revenue until the company exercises its right to adjust the premium. Because the current gross premium reflects the presumption that current actual or anticipated experience will continue to be realized in the future, valuation assumptions should reflect a similar presumption to achieve a reasonable matching of revenue and cost. Such valuation assumptions most likely will contain a more modest explicit provision for adverse deviation than might be appropriate for a similar guaranteed-cost contract. However, the premium structure of the NGP contract implicitly provides for adverse deviation, because a significant difference between actual and assumed experience may be provided for, within limits, by adjusting the current gross premium. The following example illustrates that differences in the explicit provision for adverse deviation may affect significantly the matching of revenue and cost and, consequently, the pattern of reported profits. While the example focuses on the interest assumption, differences in other assumptions might produce similar results.

Consider a whole life policy issued to an insured aged 35. The company has guaranteed a maximum gross premium of \$12.60 per \$1,000 of insurance, but is allowing the insured to pay a current premium of \$10.60 per \$1,000.

The company has calculated two sets of GAAP factors, all assumptions except the interest rate being identical. The first set of GAAP calculations is based on a level 8 percent interest assumption, which is 0.5 percent lower than the level interest assumption used in calculating the current premium. The second set is calculated on the assumption that the interest rate will be 8 percent for five years and then grade down uniformly to an ultimate rate of 5 percent at the end of twenty years, which is 0.5 percent lower than the interest assumption used in calculating the maximum premium. The resulting premium relationships are shown below:

Assumption Basis	GAAP Benefit Premium	GAAP Expense Premium	Total GAAP Valuation Premium	Current Gross Premium	Percentage GAAP Margin
Level interest	\$6.13	\$3.16	\$ 9.29	\$10.60	12.4%
Graded interest	7.63	3.05	10.68	10.60	(0.8)

A significantly different pattern of reported profits would emerge under the two sets of assumptions. Where valuation assumptions are based on level interest, profits will amount to 12.4 percent of premium, plus or minus an amount resulting from differences between actual and assumed experience, as long as the current premium rate is maintained. If the graded interest assumption is used, losses in each year will amount to 0.8 percent of premium, plus or minus an amount resulting from differences between actual and assumed experience. In this example, the margins for the risk of adverse deviation contained in the graded interest rates are much larger in the later policy years than they are initially. In fact, the ultimate margins are so large that an expected loss is indicated. Assuming, however, that on a realistic basis the product is expected to generate profits over its life cycle, actual reported earnings as a percentage of gross premium will increase significantly over time as the margins for adverse deviation are released. An earnings pattern of this nature does not match revenue and cost reasonably and appears to be unduly conservative. A more appropriate matching of revenue and cost would be achieved by choosing valuation assumptions that are reasonably related to those underlying the current gross premium.

In practice, it is not unusual to encounter differences between current premiums and guaranteed maximum premiums that are at least as large as those shown in the example above. In the event that economic conditions change significantly, a company may exercise its right to adjust the current gross premium in accordance with the terms of the contract. This action

may result in a significant increase or decrease in the company's revenue. Thus, it is necessary to consider what adjustments, if any, to the current valuation assumptions are appropriate in order to maintain a reasonable matching of revenue and cost in the GAAP financial statements.

WHEN CONDITIONS CHANGE

The NGP contract is designed to allow companies to adjust future premiums for in-force policies in accordance with revised expectations as to the economic factors that are reflected in the pricing of a life insurance policy. Presumably, changes in premiums will be triggered by *significant* expected changes in economic conditions. Certainly, such changes will be influenced and disciplined by competition in the marketplace, by each company's operating performance, and, possibly, by the actions of insurance regulatory authorities. Although it is difficult to anticipate the extent to which companies will revise current premium rates on in-force policies, it is highly likely that some revisions will occur.

Current actuarial and accounting literature require that the valuation assumptions be "locked-in" at the date of issue and used in all future reserve calculations. Exceptions to this principle are permitted (a) in the event that loss recognition is necessary or (b) in the event that deviations between actual and assumed persistency cause material distortions to the financial statements.

Should a significant change in the current premium rate for an NGP contract also be a potential exception to the lock-in principle? In order to address this question, we must consider the fundamental purposes served by that principle.

The primary objective of a company's financial statement to shareholders is fair presentation, in conformity with GAAP, of the financial position and the results of operation of the company. Consistency of presentation is a principle that is followed unless continued adherence to present methods or assumptions would not serve the purpose of fair presentation. The lock-in principle is a way of achieving consistency; exceptions to that principle may be justified by the need for fair presentation.

Will adherence to the lock-in principle promote the fair presentation of financial results for NGP policies? The answer to this question depends on whether companies use the unique feature of this product—the right to change the gross premium in response to changing economic conditions.

It is reasonable to conclude that, as long as the current premium is not changed from its initial level, the lock-in principle should be observed. If the magnitude of the variation between actual and assumed experience is not significant enough to trigger a premium change, then consistency is

served by continuing to calculate policy reserves and unamortized deferred acquisition costs on the basis of the original assumptions. In addition, if there are significant variations between actual and assumed experience, but, for competitive or other reasons, no premium change is implemented, it would be consistent with current GAAP procedures to observe the lock-in principle unless loss recognition is required or material distortions to the financial statements will result from deviations between actual and assumed persistency.

On the other hand, if there is a change in one or more of the economic factors considered in the pricing process that is significant enough to trigger a change in the premiums, then the applicability of the lock-in principle must be questioned. Since the premium change affects the level of future revenues, it is necessary to determine whether future charges against those revised revenues will continue to provide a reasonable matching. The first step would be to estimate the pattern of profits that emerges if valuation assumptions are not changed. This pattern then should be compared with the one that emerges if current valuation assumptions are changed to reasonably reflect the changes in pricing assumptions. If the comparison reveals that there is a significant difference between the two profit patterns that might lead to material differences in future financial statements, current valuation assumptions should be "unlocked" in the interest of continued fair presentation.

The emphasis is on changing current valuation assumptions prospectively because the change in premiums is made on the basis of revised expectations as to interest, mortality, and so forth. Balance-sheet values reflecting the reserve for future policy benefits and the unamortized balance of deferred acquisition costs at the date premiums are revised should not change, because, unless loss recognition is required, the prospective change in valuation assumption should not be imputed to periods preceding the premium change.

MECHANICS OF PROSPECTIVE CHANGES

The actuarial methodology by which prospective changes to valuation assumptions may be implemented is generally described in actuarial literature. The purpose of this section is to review that methodology and to describe a potentially simplifying valuation procedure that has been used in practice.

The objective is to recalculate future policy benefit reserve increments or decrements and future deferred acquisition cost (DAC) amortization from benefit reserve and DAC levels existing at the date on which premiums are changed on the basis of revised assumptions. The first step in the process

is the calculation of new valuation premiums. For the benefit reserve, the present value of new valuation premiums, when combined with the existing benefit reserve, will be sufficient to provide for the present value of future benefits based on the revised assumptions. Similarly, for DAC the present value of revised future valuation premiums must be equal to the existing value of DAC plus the present value of costs to be deferred in the future based on the revised assumptions. For discussion purposes, we will assume that future maintenance expenses are provided for as a future benefit.

Symbolically,

$${}^B P'_x = \frac{A'_{[x]+t} - V_{x+t}}{\ddot{a}'_{[x]+t}} \quad (1)$$

and

$${}^E P'_x = \frac{U_{x+t} + E'_{[x]+t}}{\ddot{a}'_{[x]+t}}, \quad (2)$$

where

x = Insured's issue age;

t = Policy duration at date on which valuation assumptions are changed;

${}^B P'_x$ = Revised valuation premium for future benefits;

$A'_{[x]+t}$ = Present value of future benefits based on revised assumptions;

V_{x+t} = Benefit reserve that exists at the date on which the assumptions are revised;

${}^E P'_x$ = Revised valuation premium for DAC;

$E'_{[x]+t}$ = Present value of future acquisition costs based on revised assumptions;

U_{x+t} = Value of unamortized DAC that exists at the date on which assumptions are revised;

$\ddot{a}'_{[x]+t}$ = Present value of future premiums payable at the rate of \$1 per year, based on revised assumptions.

The present value of future benefits and expenses and the annuity factors will vary with issue age and policy year at the valuation date. The values do not necessarily depend on the actual year of issue, since one set of assumptions might have been used for a number of years of issue. The revised valuation premiums, however, will vary with issue year because the existing benefit reserve and DAC that are used in the calculation vary with the exact policy year at the date valuation assumptions are changed.

While the fact that revised factors necessarily will vary by issue year is of little theoretical concern, it does have some practical significance. In

practice, many companies vary their GAAP assumptions by broad issue-year groups within plan. Typically, one set of factors might be used for a number of issue years. Since the approach described above requires that factors vary by issue year, companies may experience a substantial increase in the number of reserve factors that must be calculated and stored. In addressing a similar problem on guaranteed renewable health insurance policy reserves, one company has implemented a procedure that, to some extent, mitigates this practical problem.

The procedure, which may be referred to as the "delta P " approach, is designed to provide a method by which factors based on the revised assumptions applied from the date of issue can be used to value the benefit reserves and DAC for each issue-year/issue-age cell. A supplemental calculation then is performed to value the unamortized difference between the revised benefit reserve and DAC values and the old benefit reserve and DAC values that existed at the date on which assumptions were changed. Future financial statement values for benefit reserves and DAC then are determined from factors based on revised assumptions applied from the date of issue, plus or minus the unamortized difference between the old and new values that existed at the date on which assumptions were changed.

Recall that the revised valuation premium is calculated as

$${}^B P'_x = \frac{A'_{[x]+t} - V_{x+t}}{\ddot{a}'_{[x]+t}}.$$

Subsequent to the date on which assumptions were revised, future financial statement benefit reserves will be calculated as

$$V'_{x+s} = A'_{[x]+s} - {}^B P'_x \ddot{a}'_{[x]+s}, \quad (3)$$

where s is the current policy year at a valuation date.

In the text below, double-primed symbols denote premium and reserve factors calculated on the basis of the revised assumptions applied from the date of issue. Note that the net single premium and annuity factors retain a single prime because these factors are independent of the policy year in which the revision occurs.

Denote a benefit reserve valuation premium based on revised assumptions applied from the date of issue as ${}^B P''_x$. In the numerator of equation (1), add and subtract the present value of this valuation premium at the date on which assumptions are changed. The result is

$${}^B P'_x = \frac{A'_{[x]+t} - {}^B P''_x \ddot{a}'_{[x]+t} - V_{x+t} + {}^B P''_x \ddot{a}'_{[x]+t}}{\ddot{a}'_{[x]+t}}. \quad (4)$$

V'_{x+s} , the benefit reserve for policy duration s based on revised assumptions applied from the date of issue, may be expressed as

$$V'_{x+s} = A'_{[x]+s} - {}^B P'_x \ddot{a}'_{[x]+s}; \quad (5)$$

equation (4) may then be expressed as

$${}^B P'_x = \frac{V''_{x+t} - V_{x+t}}{\ddot{a}'_{[x]+t}} + {}^B P''_x. \quad (6)$$

The difference between the benefit reserve based on revised assumptions applied from the date of issue and the benefit reserve at the date on which assumptions were changed, divided by the revised annuity factor, will be called the benefit delta P , $\Delta^B P$. Symbolically,

$$\Delta^B P_x = \frac{V''_{x+t} - V_{x+t}}{\ddot{a}'_{[x]+t}}. \quad (7)$$

From equations (6) and (7),

$${}^B P'_x = \Delta^B P_x + {}^B P''_x. \quad (8)$$

Then, from equations (3) and (8),

$$V'_{x+s} = A'_{[x]+s} - (\Delta^B P_x + {}^B P''_x) \ddot{a}'_{[x]+s}. \quad (9)$$

Consequently, from equations (5) and (9), future financial statement benefit reserves may be calculated as

$$V'_{x+s} = V''_{x+s} - (\Delta^B P_x) \ddot{a}'_{[x]+s}.$$

With respect to the DAC, the objective is to amortize the DAC existing at the date assumptions are changed, on the basis of the revised assumptions. Any acquisition costs incurred subsequent to the date assumptions are revised would be capitalized in the appropriate amounts and amortized on the basis of the revised assumptions. By using equation (2) and following a process similar to that used in deriving the delta P for the benefit reserve, one may derive a delta P for acquisition costs, $\Delta^E P$. Specifically, it may be shown that

$${}^E P'_x = {}^E P''_x - \Delta^E P_x,$$

where

$$\Delta^E P_x = \frac{U''_{x+t} - U_{x+t}}{\ddot{a}'_{[x]+t}}$$

Then, the unamortized balance of DAC at a valuation date s based on revised assumptions applied prospectively may be expressed as

$$U'_{x+s} = U''_{x+s} - (\Delta^E P_x) \ddot{a}'_{[x]+s}$$

By using the delta P approach, a company can calculate one set of reserve and DAC factors based on revised assumptions applied from the original date of issue. To the extent that revised prospective assumptions are imputed to a range of issue years, the same set of factors may be used for each of those years. From an administrative viewpoint, this capability is an obvious improvement compared with a requirement that different factors be calculated for each year of issue.

The complicating factor in the delta P approach is that the value of delta P must be calculated and retained for use in each future valuation. The most refined procedure would involve storing the delta P values associated with each policy in the policy master record; then, at each valuation date, the delta P values would be available as input to the reserve valuation system.

Less refined procedures also may be developed to accomplish the amortization of the initial differences. For example, since delta P is the difference between two benefit reserve or DAC values, divided by an annuity factor, it might be possible to approximate the desired result reasonably by applying amortization factors derived from the ratio of appropriate annuity values to the aggregate difference in benefit reserves or DAC that results from the recalculation of factors at the date on which assumptions are changed.

In practice, the revision of prospective assumptions likely will have less impact on the amortization of existing DAC than on the future accrual of the benefit reserve. The actuary undoubtedly will be guided by considerations of materiality as he considers possible alternative methods and approximations.

The delta P valuation procedure is a valuable tool. It is capable of handling multiple adjustments to valuation assumptions. It can accommodate situations where policy benefits as well as premiums or valuation assumptions are changed. In addition, it produces revised valuation premiums that may be compared with corresponding gross premiums as one measure of anticipated future GAAP profit margins.

RECOVERABILITY TESTING

The test for recoverability of deferred acquisition costs associated with NGP contracts generally should be based on the current gross premium. The premium adjustment provision of an NGP contract typically states that premium adjustments will be based on revised expectations as to interest, mortality, persistency, and expense rates—or some combination thereof. One may infer from this statement that, if expectations do not change, the current premium will not be changed. To assume that the company will realize its current GAAP assumption and at the same time change the policy gross premium does not appear to be logically consistent. Consequently, the initial test of recoverability should demonstrate, on the basis of current GAAP assumptions, that the current gross premiums are sufficient to provide for future benefits and renewal expenses and to recover the DAC.

If the initial test of recoverability is unsuccessful, that is, if the valuation premium exceeds the gross premium, procedures currently defined in actuarial and accounting literature should be followed. These procedures call for eliminating the provisions for adverse deviation and recalculating the valuation premium. If the valuation premium still exceeds the gross, the current gross premium is not adequate to recover all acquisition costs and only the portion of those costs that can be recovered should be deferred.

It is conceivable that, when the initial recoverability test indicates a deficiency based on current assumptions, a supplemental test that utilizes the maximum guaranteed premium, or some lower premium, might also be performed. This supplemental test would have to reflect revised assumptions that are adequately conservative to justify the position that the current gross premium would be increased at some future date. The use of such a supplemental test would appear to be appropriate only in the event that the company's representations to the policyholder include a statement to the effect that the company does not anticipate that the current rate can be maintained after a period of time, or that the company anticipates that the current gross premium will be increased at some future date.

After the date of issue, periodic tests based on current realistic assumptions are performed to determine whether future accounting losses are anticipated. In the case of a guaranteed premium contract, such an anticipated loss would be recognized by writing off DAC or establishing an additional liability to the extent of the anticipated loss. In the case of an NGP contract, a necessary consideration will be the company's right and intention to adjust the premium. If it is probable that a planned and achievable premium adjustment program will obviate future losses, permanent loss recognition may not be appropriate. Considerable judgment must be applied in such a situation.

CONCLUSION

The NGP contract is in its infancy. Various issues, including the methodology and justification for adjusting premium rates on in-force policies, are likely to be the subject of much discussion and debate in the future. Nevertheless, the basic features of the product are defined adequately to permit an examination of the accounting concepts and valuation procedures that might be appropriate for the product. This paper presents an accounting and valuation framework that is sufficiently broad and flexible to be applied in practice.

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