PURCHASE ACCOUNTING: A FRESH LOOK

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ABSTRACT

The American Academy of Actuaries identified two general approaches to the purchase accounting problem in its Interpretation 1-D. The approaches are referred to therein as the defined initial reserve method and the defined valuation premium method, and the Interpretation does not show favoritism toward one or the other. This paper submits a "best" method, arrived at through the following steps: (1) the purchase accounting problem is defined, (2) the effects of the defined initial reserve method and the defined valuation premium method on the ensuing profit projection and resulting balance sheet are examined, and (3) one method is shown to be the most consistent mechanically and most consistent with generally accepted accounting principles (GAAP).

Finally, this paper discusses a few of the considerations in setting the actuarial assumptions to be used for purchase accounting. The task is slightly less difficult when using the method suggested as best.

Accounting for the tax effects of a purchase is beyond the scope of this paper.

I. INTRODUCTION

The purchase accounting problem is to value assets and liabilities acquired in the purchase of either a life insurance company or a block of life insurance business. It is assumed that generally accepted accounting principles are to be followed. The balance sheet captions involved might therefore look as follows:

Assets:
  Invested assets acquired
  Profits on acquired in-force
  Goodwill

Liabilities:
  Reserves on acquired in-force
  Investment

The items of concern are profits and reserves. Valuation of the other items is generally straightforward; a few comments on them are appropriate to clarify the framework involved. The investment is shown as a liability for convenience; it is really a reduction of cash or other assets representing the consideration paid. It is shown as a liability since it is a credit, and the debits and credits have to balance. The investment may be zero if a block of business is acquired. Goodwill is the balancing item, and is presumed to represent the value of intangibles like agency force, product portfolio, and administrative expertise. It is therefore associated with the acquisition of a company, and should be taken as zero when a block of business is being acquired. In the unusual case of negative goodwill, the profits asset should be reduced rather than putting up a "badwill" liability. Note that valuing assets acquired involves an implicit discount rate applied to anticipated income to be generated by the assets.

The problem, then, is first to value reserves. Only after that is done can profits be projected, since reserves released is one of the profit elements. A GAAP reserve has three components: future benefits and expenses, future valuation premiums, and unamortized deferred acquisition costs. The latter is zero, since the purchasing company did not issue the business. Benefits and expenses can be projected once assumptions are set (assumptions are dealt with in Section V). That leaves the valuation premium as the unknown.

The defined valuation premium method assigns a value to the unknown:

Valuation premiums for the acquired business are taken as the gross premiums less a reasonable profit allowance for the risk assumed by the acquiring corporation [1].

After that, the reserves on acquired in-force can be calculated. Of course, a "reasonable profit allowance" is a subjective amount, so this method could be viewed as producing a continuum of reasonable reserve balances.

The defined initial reserve method is more direct at the outset: a predetermined amount is assigned to the reserve. The Academy suggests the amount used by the purchaser in setting the purchase price as a possibility [1]. Again, subjectivity is involved. Other possibilities that might prove satisfactory are (1) invested assets acquired, (2) statutory reserves, (3) historic GAAP benefit reserves, (4) gross premium reserve using most likely assumptions, (5) gross premium reserve with some provision for adverse deviation, (6) GAAP benefit reserves produced using current assumptions, and (7) reserves (of any given type) less the present value of profits projected using such reserves. It is evident that the defined initial reserve method also entails subjectivity, and offers a continuum of reasonable reserve balances.

Once the reserve is fixed, valuation premiums can be determined (using modeling techniques beyond the scope of this paper). The usual reasonableness test in practice is to compare the resulting valuation premiums with gross premiums. In this way the defined valuation premium method and the defined initial reserve method are mirror images. One might wonder how either method could be selected as the better.

II. VALUING A BLOCK OF BUSINESS

Interpretation 1-D did not contemplate a profit projection as such. It did suggest that part of the valuation premiums could be taken out and used to fund an asset item for financial statement purposes. The benefit reserve would increase by the amount of the asset, so the balance sheet would still balance.

Accounting practice has since evolved so that a formal profit projection is made. The present value of profits is one of the assets acquired. This asset is not funded by a split-off from the valuation premium, as the Academy contemplated, but by the excess of the gross premium over the valuation premium. Since the latter is left intact, the benefit reserve does not change. Something else must give to keep the balance sheet in balance.

To assist in understanding the profit projection, a simple model will be used. The parameters of the model are as follows:

Purchase date: 12/31/83
Product: A five-year annual premium endowment, but no deaths or withdrawals ever occur
Gross premiums: $180 per $1,000
In-force: $1,000,000 issued at each of the dates 1/1/80, 1/1/81, 1/1/82, and 1/1/83; total in-force is $4,000,000
Expenses: $5 per $1,000 in-force, incurred at the beginning of each policy year
Assets acquired: $1,650,000

Under this model, the only assumption to be concerned with is interest. In the defined valuation premium method, an interest rate is needed to determine the reserve. In the defined initial reserve method, an interest rate is needed to determine the valuation premium. In both cases an interest rate is needed for projecting profits, since one of the profit elements is interest earned on reserve balances. In practice, expense, mortality, and withdrawal assumptions also would apply.

Accounting theory says that the projection should include margins for adverse deviations from assumed experience (i.e., it should be on the conservative side). The projections that follow are based on an interest earnings rate of 9 percent. Whether this (or any other rate) is sufficiently conservative would, in practice, be a matter for discussion, argument,

and seasoned judgment. Fortunately, this paper does not have to be concerned with such things; we can use 9 percent here with a clear conscience.

With that background, the available methods can be applied to the model and the results examined. To start, imagine that the defined initial reserve method is being used with an acquisition of a block of business. Then our balance sheet is simplified to the following:

Assets:
    Invested assets acquired $1,650,000
    Profits on acquired in-force   To be determined

Liabilities:
    Reserves on acquired in-force   To be determined

Here are some possible initial reserve balances, with corresponding valuation premiums:

VALUATION PREMIUM PER $1,000

Reserves	9 Percent Interest	5 Percent Interest
$1,700,000.	$172.22	$198.60
1,800,000.	161.36	188.11
1,900,000.	150.50	177.62
2,000,000.	139.64	167.13

The premiums are needed to compare with the gross premium of $180 and to enable calculation of reserve increases for succceding years. Based on the valuation premiums, arguments can be made that any of the above initial reserves is reasonable. For example, the current GAAP assumption of 9 percent produces valuation premiums equal to 96 percent of gross if the initial reserve is $1.7 million, and 90 percent of gross if it is $1.8 million. Profit margins of 4 percent and 10 percent are fair. On the other hand, premiums for the block were set some time ago, when 5 percent may have been a valid interest assumption. Valuation premiums of $177.62 and $167.13 produce margins of 1 percent and 7 percent, indicating that initial reserves of $1.9 million and $2 million are not out of line.

So a number of initial reserve balances are plausible; perhaps examining various profit projections will add insight as to how to proceed. Tables 1 and 2 show the relevant projections using valuation rates of 5 percent and 9 percent, respectively.

When the reserve valuation premiums are based on the same interest assumption as interest earnings (here 9 percent), profits emerge in proportion to the gross premium margin. For example, with an initial reserve

of $1.7 million, the first-year profit equals gross premiums of $720,000 less valuation premiums of $689,000 plus interest (since premiums are received at the beginning of the year).

The effect of using a different reserve valuation premium assumption is to change the incidence of profits, but not the total. The valuation premium and corresponding interest assumption determine the reserve changes each year, but the entire initial reserve must eventually run off in every case.

The trick in dealing with a block of business, since there is no goodwill, is to make profits plus invested assets equal reserves (then the balance sheet balances). One way to do this is to discount the profits at the required rate, as summarized in the table at the top of the next page.

Lower discount rates are associated with lower valuation rates because

TABLE 1

PROFIT PROJECTIONS FOR MODEL, 5 PERCENT VALUATION RATE

(Amounts in Thousands)

RESERVE PATTERN	YEAR			
	1	2	3	4
$1,700 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	216	191	147	84
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	102	310	529	759
Profit	$ 18	$ 26	$ 26	$ 18
$1,800 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	225	197	150	85
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	141	340	550	769
Profit	$ 66	$ 62	$ 50	$ 29
$1,900 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	234	202	153	86
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	180	370	570	780
Profit	$ 114	$ 97	$ 73	$ 41
$2,000 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	243	208	156	87
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	219	400	590	790
Profit	$ 162	$ 133	$ 96	$ 52

Initial Reserve (000)	Valuation Interest	Desired Present Value (000)	Required Discount Rate
$1,700	5%	$ 50	27
1,700	9	50	33
1,800	5	150	16
1,800	9	150	17
1,900	5	250	14
1,900	9	250	14
2,000	5	350	12
2,000	9	350	13

TABLE 2

PROFIT PROJECTIONS FOR MODEL, 9 PERCENT VALUATION RATE

(Amounts in Thousands)

RESERVE PATTERN	YEAR			
	1	2	3	4
$1,700 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	216	190	146	83
Benefits.......................	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	118	311	521	750
Profit......................	$ 34	$ 25	$ 17	$ 8
$1,800 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	225	195	149	84
Benefits.......................	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	156	341	542	761
Profit......................	$ 81	$ 61	$ 41	$ 20
$1,900 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	234	201	152	85
Benefits.......................	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	195	371	563	772
Profit......................	$ 129	$ 96	$ 64	$ 32
$2,000 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	243	206	154	86
Benefits.......................	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	233	401	584	783
Profit......................	$ 176	$ 132	$ 88	$ 44

the latter have the effect of deferring profits. This is true in general, since lower valuation rates usually mean higher reserves.

As larger and larger initial reserves are used with a given valuation rate, the required discount rate decreases monotonically, approaching a limit of the assumed earnings rate (here 9 percent). When the initial reserve drops to $1,650,000 an infinite discount rate is needed to reduce the present value of still-positive profits to zero.

The same patterns result as long as the assets acquired exceed the gross premium reserve. If these key values are equal, required discount rates will always be zero. If assets acquired are less than the gross premium

TABLE 3

PROFIT PROJECTIONS AND PRESENT VALUES, 9 PERCENT VALUATION RATE

(Amounts in Thousands)

RESERVE PATTERN	YEAR			
	1	2	3	4
$1,700 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	216	190	146	83
Benefits.....................	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	118	311	521	750
Profit......................	$ 34	$ 25	$ 17	$ 8
Present value of profits: $72				
$1,800 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	225	195	149	84
Benefits.....................	1,000	1,000	1,000	1,000
Expenses	20	10	15	5
Reserve decrease	156	341	542	761
Profit......................	$ 81	$ 61	$ 41	$ 20
Present value of profits: $172				
$1,900 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	234	201	152	85
Benefits.....................	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	195	371	563	772
Profit......................	$ 129	$ 96	$ 64	$ 32
Present value of profits: $272				
$2,000 initial reserve:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	243	206	154	86
Benefits.....................	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	233	401	584	783
Profit......................	$ 176	$ 132	$ 88	$ 44
Present value of profits: $372				

reserve, no nonnegative discount rate can make the balance sheet balance.

These considerations all point up the artificiality of the reserve mechanism when used in profit projections. Different reserves result in different profits and different discount rates. One attempt to justify some of this is the argument that higher reserves are more conservative, so the resulting profits are less "risky," so a lower discount rate is correct. On the contrary, high reserves are just as certain of running off as low reserves.

TABLE 4

PROFIT PROJECTIONS AND PRESENT VALUES

(Amounts in Thousands)

RESERVE PATTERN	YEAR			
	1	2	3	4
$1,700 initial reserve, 100% valuation rate:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	216	174	127	71
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	296	343	437	624
Profit	$ 212	$ 41	−$ 86	−$ 129
Present value of profits: $72				
$1,700 initial reserve, straight-line runoff pattern:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	216	162	108	54
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	425	425	425	425
Profit	$ 341	$ 112	−$ 117	−$ 346
Present value of profits: $72				
$1,700 initial reserve, random runoff pattern:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	216	200	32	61
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	0	1,700	− 500	500
Profit	−$ 84	$1,425	−$1,119	−$ 264
Present value of profits: $72				
$1,628 initial reserve, 9% valuation rate:				
Premiums	$ 720	$ 540	$ 360	$ 180
Interest	210	186	144	83
Benefits	1,000	1,000	1,000	1,000
Expenses	20	15	10	5
Reserve decrease	90	289	506	742
Profit	$ 0	$ 0	$ 0	$ 0
Present value of profits: $0				

The fact that different reserves produce different present values, even though all experience assumptions are the same, is a weakness of the purchase accounting method.

The method can be improved upon in either of two ways:

1. Gross premium reserves based on the assumed interest earnings rate could be used. The projected profits would be zero each year, and discount rates would be irrelevant.
2. The assumed interest earnings rate could be used for the discount rate. Then the present value of profits is insulated from the initial reserve and subsequent reserve runoff pattern, as illustrated by the projections in Tables 3 and 4.

The last of the above projections actually employs gross premium reserves, as evidenced by the zero profit amounts. It is included to help show that, in every case, the present value of profits equals the excess of the defined initial reserve over the gross premium reserve. If the liability is increased by any given amount, so is the asset. What is really happening is that part of the gross premium is being used to reduce the liability and the rest to increase the asset. Such a split would make sense if the purchaser had deferred acquisition costs to recover. Since he does not, the best approach is to simplify the balance sheet and use the gross premium reserve.

The two improvements previously mentioned are seen to be the same: one uses the gross premium reserve directly, and the other results in using the gross premium reserve as the most straightforward approach.

The discussion so far has treated purchase accounting from the point of view of the defined initial reserve method (DIRM). However, everything that has been said is equally applicable to the defined valuation premium method (DVPM), since the methods are mirror images. Compare the steps:

DIRM	DVPM
Decide on an initial reserve.	Decide on a valuation premium (percent of gross).
Force out a valuation premium.	Force out an initial reserve.
Calculate subsequent reserves.	Calculate subsequent reserves.
Project profits.	Project profits.

The most consistent approach mechanically is to use a gross premium reserve (or a valuation premium of 100 percent of gross), in which case no profit projection is needed. The subjectivity of selecting an initial reserve or valuation premium is eliminated, the trade-off between the size

of the initial reserve and the present value of profits is eliminated, and the balance sheet is simplified.

The rest of this paper treats the DIRM and DVPM as one method, referred to as DIRM/DVPM. The phrase "gross premium method" will refer to the use of a gross premium reserve with provision for adverse deviation in the assumptions (i.e., the suggested "best" approach).

There is only one problem left: the balance sheet does not balance yet.

Assets	$1,650,000
Reserves	$1,628,000

In the interest of conservatism, the difference should be added to reserves and taken into income over the life of the block of business. This could be done by adding more margin for adverse deviation to the reserve assumptions, or simply by factoring up this and subsequent reserve balances.

Suppose the problem were the opposite:

Assets	$1,600,000
Reserves	$1,628,000

Then margins for adverse deviation should be reduced, lowering the reserve. If margins are eliminated and a problem remains, a loss should be recognized. Goodwill should not be set up when only a block of business is acquired.

III. VALUING A COMPANY

Now imagine that the acquisition is of a company (albeit a small one), and that the parameters are unchanged from Section II except for one addition: consideration paid—$100,000. The incomplete balance sheet is as follows:

Assets:
Invested assets acquired	$1,650,000
Profits on acquired in-force	. . .
Goodwill	. . .

Liabilities:
Reserves on acquired in-force	. . .
Investment	$ 100,000

Here there is no balancing problem; goodwill is included. If goodwill comes out negative, faulty assumptions are indicated.

Compare completed balance sheets under the gross premium reserve method and one of the DIRM/DVPM applications from Section II:

	Gross Premium	DIRM/ DVPM
Assets:		
Invested assets	$1,650,000	$1,650,000
Profits	0	155,000
Goodwill	78,000	95,000
Liabilities:		
Reserves	1,628,000	1,800,000
Investment	100,000	100,000

Goodwill will be be lower under the gross premium method as long as the discount rate for profits exceeds the interest earnings assumption. Here the former is 15 percent and the latter is 9 percent. Using these rates and our model (and a 9 percent valuation rate), every increase of $100,000 in the initial reserve results in an increase of $9,000 in goodwill and an increase of $91,000 in profits. If the discount and earnings rates were equal, any change in the initial reserve would produce a like change in profits (goodwill would be unaffected, always equal to the excess of the gross premium reserve over net assets acquired).

The best method from a purely mechanical point of view would involve straightforward determinations of (1) initial and subsequent reserves and (2) asset allocation between goodwill and profits.

It was argued earlier that using a gross premium reserve (in connection with a block of business) has certain mechanical advantages. Similar advantages apply when valuing a company, such as the following:

1. The mechanics are simplified. Resulting balance sheet accounts do not depend on the relationship between the discount rate and the interest earnings rate or that between the reserve valuation rate and the interest earnings rate.
2. Calculating a gross premium reserve is a more objective and straightforward process than deciding upon a "reasonable" initial reserve or valuation premium. Subsequent reserves can be determined prospectively rather than being forced out retrospectively.
3. In valuing a company, the presence of goodwill negates the effect of varying the initial reserve. The function of the reserve is to level income, and goodwill and profits are both amortized in proportion to premiums. If experience assumptions are good, income will emerge as a level percentage of premium irrespective of what the initial reserve was.

These considerations point out that the most consistent approach mechanically is to use a gross premium reserve.

The DIRM/DVPM approach is in effect a gross premium valuation. A net premium is used in the reserve computation, but the difference be-

tween it and the gross premium is discounted and set up as an asset (profits). The only real difference is that the discount rate does not equal the investment earnings rate. This difference is usually justified by the argument that profits are risky, so a higher risk-cognizant rate of return should be used for discounting. That argument is rebutted in Section IV.

Under the DIRM approach, the valuation premium may exceed the gross premium. In that event, as the American Academy of Actuaries points out [1], margins for adverse deviation should be reduced until the deficiency is made up. If a deficiency still exists using most likely assumptions, the initial reserve must be increased. In either case, not only has a gross premium valuation been performed, but some or all of the margins for adverse deviation have been eliminated. This is a result of subjectively deciding upon an inadequate initial reserve. The DVPM counterpart to this situation, not treated by the Academy, is a case in which the reserve calculated using the valuation premium is unrealistically high. It would be better and simpler to use a gross premium reserve with full margin for adverse deviation.

In summary, the gross premium reserve is the most practical approach to purchase accounting, whether for a block of business or a company. The next section treats theoretical aspects of the problem.

<center>IV. GAAP</center>

The preceding section remarked that the defined initial reserve method or the defined valuation premium method, together with the profit projection, resembles a gross premium valuation. The only differences are in the discount rate and the balance sheet presentation. If the discount rate equals the earnings rate and the profits asset is netted against the reserve liability, the result is the approach argued in this paper to be best.

In fact, the only logical discount rate to use is the earnings rate. The reserve is future benefits less future valuation premiums, both discounted at the earnings rate. Profits are future premium margins, where the margin is the excess of the gross premium over the valuation premium. It makes no sense to discount one part of the gross premium at one rate and the other part at another rate. If the valuation premium is to be received, so is the premium margin. Splitting the two is incorrect. Conclusion: the gross premium reserve method is correct.

The same conclusion can be arrived at from another line of argument. A common misconception is that profits are a return on investment, and should therefore be discounted at a "risk" rate. In fact, a life insurance acquisition is not an investment in the sense of the word contemplated

in the preceding sentence. To see this, suppose that statutory reserves exceed net assets acquired (usually the case). Then the acquiring company has invested some of its surplus in the business acquired. But surplus is a figment of the accounting discipline. It cannot be invested any more than a balance sheet can be invested. All assets of the company will earn income at the same rates regardless of how much surplus is left on the books. No assets have been invested. Discounting profits at a ''risk'' rate higher than the earnings rate is incorrect. Conclusion: the gross premium reserve method is correct.

The source of the misconception that depleting surplus is investing money is probably the surplus-strain phenomenon in life insurance. If surplus is too low, new business activity is restricted. Management must always consider alternatives. In doing so it may compare internal rates of return. That does not justify using internal rates of return for financial reporting purposes.

It remains to show that the gross premium method is the most consistent method from the viewpoint of life insurance generally accepted accounting principles.

The central source of life insurance GAAP is the AICPA industry audit guide [2]. In discussing revenue recognition for life and endowment contracts, the guide states:

The process of assuming these risks and gradually being relieved from such risks represents an essential function or service performed by a life insurance company. The risks of adverse deviations from which the company is relieved during an accounting period, therefore, constitute an important measure of performance that should be recognized in determining the timing of the recognition of premium revenues and related costs. [P. 68]

This requirement is met when reserve assumptions include margins for adverse deviation.

A little further on, the audit guide states:

Any profit in the premium in excess of provisions for adverse deviation will emerge in relation to premium revenues. Profits emerging as a level percentage of premiums give recognition to the importance of the sales effort as a source of profit.

This happens when the reserve valuation premium is less than the gross premium. The difference is not needed to fund the reserve; therefore it emerges as profit.

The reserve calculation possibilities in purchase accounting are:

1. Use gross premium reserves with no margin for adverse deviation. All profit

is recognized at purchase. This is in conflict with the audit guide, since the acquiring company is assuming risks.

2. Use gross premium reserves with adequate margin for adverse deviation. This is in keeping with the audit guide. The acquiring company did not put forth the sales effort, so profits should not emerge as a level percentage of premiums.

3. Use net valuation premium reserves with adequate margin for adverse deviation. This is in conflict with the audit guide, since profit will recognize both assumption of risk and sales effort. The sales were not made by the acquiring company, and so the effort should not be a source of profit.

Conclusion: the gross premium method is GAAP, while the DIRM/DVPM approach is not.

Setting up a profits asset could be interpreted as an attempt to make DIRM/DVPM conform to GAAP. With such an asset, the excess of gross premiums over net premiums will not emerge as future profits (more precisely, the excess would be offset by asset amortization). The problem is that unless the discount rate equals the earnings rate, two different margins for adverse deviation from the interest assumption are being used. If the rates are equal, the result is a gross premium reserve arbitrarily split into an asset and a liability, as demonstrated in Section II.

The question of which method is GAAP can also be approached from the direction of *Accounting Principles Board Opinion No. 16* [3]. That opinion defines the purchase method of accounting, although it does not deal with life insurance specifically.

Paragraph 87 of *Opinion 16* states that

all identifiable assets acquired . . . and liabilities assumed . . . should be assigned a portion of the cost of the acquired company, normally equal to their fair values at date of acquisition.

Paragraph 88 then sets forth guides for assigning values to the assets and liabilities. One of these guides is the following:

Other liabilities and commitments, including . . . contracts, . . . [should be valued] at present values of amounts to be paid determined at appropriate current interest rates.

The above is applicable to life insurance, since reserves are liabilities and policies are contracts. How should "present values of amounts to be paid" be interpreted? It is a logical step to define amounts to be paid as net amounts to be paid; that is, future benefits less future premiums. That leads to the use of a gross premium reserve as the fair value of life insurance business acquired. Further, "current interest rates" can hardly be interpreted to mean risk rates of return.

It is helpful to see how *Opinion 16* suggests valuing receivables, since future premiums could be viewed as such (in contrast to future benefits, or payables). Amounts to be received should be discounted at current interest rates, according to the opinion [3]. It is gross premiums that are to be received, not net premiums. Again, a current interest rate is not a risk rate.

Finally, business acquired should not be deemed analogous to inventories. *Opinion 16* would value inventories at selling price less a profit allowance for the selling effort [3]. First, the life insurance business acquired has already been sold, while inventories have yet to be sold. Second, it is not the acquiring company that put forth the selling effort.

Of the various approaches to purchase accounting, that referred to herein as the gross premium method is the most consistent with generally accepted accounting principles.

V. ASSUMPTION SETTING

Setting experience assumptions with the gross premium method is a subjective process, but it should involve only prospective considerations. With the DIRM/DVPM approach, it is unclear whether past experience should play a part. For example, a "reasonable" profit margin can be deemed reasonable only in light of past experience. The resulting net valuation premium is in reference to the entire life of the policy. An approach that has been suggested is assumption grading. The valuation premium would be determined using assumptions equal to past experience for past years and current estimates for future years. Such an approach causes mechanical complications. The gross premium method has the advantage of only looking forward.

The interest assumption causes enough distress to warrant special comment. It was stated in the introduction that valuing assets involves an implicit discount rate. To be consistent, reserves should be determined using a similar rate reduced by a margin for adverse deviation. This is because a valuation rate is really a discount rate. The amount of acquired assets relative to the gross premium reserve is not a consideration in setting the valuation rate; only the average discount rate of the acquiring company in valuing all its assets (not just those acquired) is a factor. Since this is the case for the gross premium method, it also is the case for the DIRM/DVPM. Finally, it is true for DIRM/DVPM profit projections, even though the valuation rate is there disguised as an earnings rate. It is a common misconception that when the initial reserve exceeds assets acquired, the interest assumption for the profit projection should be reduced.

REFERENCES

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3. ———. *Accounting Principles Board Opinion No. 16—Business Combinations.* August 1970.

DISCUSSION OF PRECEDING PAPER

BARRY PAUL:

Mr. Eckley's paper is a welcome addition to the actuarial literature on purchase accounting. This topic is often unnecessarily veiled in a cloak of mystery. Mr. Eckley presents the subject with clarity and insight. I do not agree, however, with the author's overall conclusion that a gross premium reserve approach is the "best" method for purchase accounting. The purpose of this discussion is to expand upon two areas that were touched on in the paper: (1) the mechanical aspects of purchase accounting valuation and (2) the distinction between valuation for purchase accounting purposes and valuation for the purpose of appraising the value of a life insurance company. Several specific comments are also presented in areas where I disagree with the author's conclusions.

1. Mechanical Aspects

The paper presents a simple model to illustrate profit projections. The model assumes a level interest rate and constant maintenance expenses per $1,000 in-force. While these assumptions are certainly appropriate for a model, they tend to obscure a significant mechanical problem that is inherent in purchase accounting valuations.

Typically, insurance company reserve valuations are performed by applying unit reserve factors to an in-force file. Reserve factors are usually stored for all appropriate plan/issue age/duration cells. However, an additional variable may be required to define a cell for purchase accounting valuation purposes. This variable is the policy year of issue. Since purchase accounting assumptions are chosen to be current as of the purchase date, the choice of certain assumptions creates a practical valuation problem for companies that use the traditional plan/issue age/duration approach. Consider the following:

1. Interest assumptions frequently are graded down for conservatism from an initial rate reflecting the average portfolio yield at the purchase date to a lower ultimate rate.
2. Maintenance expenses often are assumed to increase at some rate of inflation from the purchase date.
3. Although deferred acquisition costs are written off as of the purchase date, heaped renewal commissions that are incurred after the purchase date should be capitalized and amortized through the factor mechanism.

465

Unless a separate set of reserve factors is computed for each year of issue, these assumptions cannot be reflected accurately in purchase accounting reserve factors. The key point is that grading should begin from the purchase date, not from the issue date. This is a mechanical problem common to all the methods discussed in the paper—DIRM, DVPM, and the gross premium reserve method. One practical solution that has been used to avoid the calculation of factors for each year of issue is to model the in-force into ratebook eras. A separate set of factors is calculated for each era. The purchase accounting assumptions are then appropriate for the average duration of the in-force for each era. For example, the initial interest rate would be used in the calculation of the factors for all durations prior to the average duration at the purchase date. The interest rate would then grade downward for subsequent durations.

2. *Purchase Accounting versus Actuarial Appraisals*

The paper presents the argument that the only "logical" discount rate to use for financial reporting purposes is the earnings rate. As stated in Section IV, "A common misconception is that profits are a return on investment, and should therefore be discounted at a 'risk' rate. In fact, a life insurance acquisition is not an investment in the sense. . . ." While the author provides reasoning that attempts to support this point of view in the context of purchase accounting, I believe that a stronger case can still be made for the interpretation of the discount rate as a risk rate of return, particularly in the context of an actuarial appraisal.

The distinction between an actuarial appraisal and a purchase accounting valuation is a subtle one. The actuarial techniques and assumptions are essentially the same. However, the purposes are often quite different. One purpose of an actuarial appraisal is to provide a prospective buyer with information that represents a reasonable basis on which to establish a purchase price and make a purchase decision. Once the purchase is made, the purpose of purchase accounting is to provide a framework by which management can measure the performance of the company in light of expectations at the time of the purchase. Acquisitions are, in fact, measured as return on investment.

Several items typically included in an actuarial appraisal are not considered appropriate for a purchase accounting balance sheet. These items include the value of the agency force, the value of states' licenses, and the company charter. Regardless of the accounting rules that guide the treatment of such intangible assets for financial reporting purposes, a prospective buyer wants to know what the company is worth in total,

with all quantitative and qualitative considerations taken into account.

A key quantitative consideration is the discounted value of the existing business in force. An actuarial appraisal including the present value of profits discounted at the *reserve* interest rate would be misleading to a prospective buyer. The number would overstate the value of the business precisely because it ignores the risk element inherent in the insurance in force.

The author argues that "if the valuation premium is to be received, so is the premium margin. Splitting the two is incorrect." The operative word here is "if." The risk factor is not only that the future premium may not be received, but that even if it is, the business may not be as profitable as expected. It seems more appropriate to reflect an element of risk and use a higher rate to discount uncertain future profits.

While I have emphasized the importance of the discount rate in the appraisal process, an analogous argument can be made to support the use of a consistent discount rate for a purchase accounting balance sheet present value of profits. The use of a higher rate to discount the profit portion of the premium produces reserves (net of the present value of profits) that are larger than the gross premium reserves. The table in Section III of the paper illustrates this fact. This table is reproduced here in a revised format that highlights the comparison of reserves (net of the present value of profits).

	Gross Premium	DIRM/ DVPM
Assets:		
Invested assets	$1,650,000	$1,650,000
Goodwill....................	78,000	95,000
Liabilities:		
Reserves (net of profits)	1,628,000	1,645,000
Investment.................	100,000	100,000

The reserves (net of profits) are not only more conservative, but more realistic in light of the purchaser's expectations. In fact, if the buyer had based the purchase decision on an actuarial appraisal that reflected the risk element in the profits, it is quite likely that the investment (purchase price) would have been smaller. Goodwill also would have been reduced accordingly.

In summary, the use of the earnings rate to discount future profits tends to overstate the appraisal value of a company and, consequently, to understate realistic reserves.

3. *Other Comments*

In Section III Mr. Eckley states that "if goodwill comes out negative, faulty assumptions are indicated." This is not necessarily the case. The acquiring company may have purchased the target company at a "bargain-basement" price. This might occur for a variety of reasons. As an example, the target company may be under rehabilitation, in which case the company might be acquired for little more than book value.

In Section IV the author concludes that "the gross premium method is GAAP, while the DIRM/DVPM approach is not." This conclusion appears to be based on faulty logic. The conclusion that "the acquiring company did not put forth the sales effort, so profits should not emerge as a level percentage of premiums" is based on a literal, but erroneous, interpretation of the audit guide. While it is true that the audit guide states that "profits emerging as a level percentage of premiums give recognition to the importance of the sales effort as a source of profit," this statement does not imply that the converse is true. The fact that the acquiring company did not put forth the sales effort does not imply that profits should not emerge as a level percentage of premium. It is a fundamental principle of GAAP that all costs (benefit costs, maintenance expenses, and acquisition costs) should be recognized in proportion to the expected revenue stream. There is nothing unique about purchase GAAP that supersedes this principle. Even though there are no acquisition costs, all other costs should still be spread in proportion to premium income.

NORMAN E. HILL:

Purchase accounting is a controversial area with many diverse opinions. Comments made in response to a paper like this are usually to voice disagreements. Nonetheless, acquisitions and mergers and resulting purchase accounting are becoming associated more closely with the actuarial process. Therefore, any paper such as this serves a very useful purpose in promoting knowledge and discussion in the profession.

In Section I the author claims that "the investment is shown as a liability for convenience." Actually, for the purchase of the company, the amount of the investment is the new consolidated capital and surplus. This point may seem to be an accounting nicety, but it should be remembered in communication with the latter profession.

In the next paragraph, the author states that "unamortized deferred acquisition cost is zero." This is not always true. Many purchase accounting calculations generate a new deferred acquisition cost, or provide the means to extract a deferred acquisition cost from a unitary reserve.

This amount is a recalculated deferred acquisition cost, to be sure, but it usually retains this label.

The author devotes a considerable amount of time to the defined initial reserve method (DIRM). Under this method, the initial (unitary) reserve *and* goodwill are known at the start. However, the accounting profession objects strongly to this method, and I believe they would prevail here. They definitely want goodwill or excess cost to be a balancing item rather than one known in advance. It is probably more productive to concentrate on the defined initial premium method, under which the actuarially calculated items (reserves and some assets) are not known in advance but are calculated.

The phrase "margins for adverse deviations" mentioned in the audit guide has been a source of confusion. The phrase does not require that margins be quantified, or that they be set up for each duration. In fact, the need for conservatism against adverse deviation is needed more at durations occurring many years from now. Interest grading employed by many companies seems to accommodate the need for this "provision" even if specific margins are not added.

The author indicates that deferred acquisition cost is zero. This in turn implies that the portion of gross premiums needed to amortize this asset can now be allocated for certain purposes to profits. Therefore, for purchase accounting calculations, gross premiums might be allocated somewhat as follows:

1. Benefits, 40 percent.
2. Maintenance expense, 15 percent.
3. Profits for this purpose (based on 35 percent acquisition and 10 percent normal profit margin), 45 percent.

The net single premium (NSP) equals the present value of future benefits and expenses. The resulting calculations are as follows:

1. Reserve = NSP − present value of 55 percent of future gross premiums.
2. Unitary reserve or liability net of a new deferred acquisition cost = NSP − present value of 90 percent of future gross premiums.
3. Gross premium reserve = NSP − present value of 100 percent of future gross premiums.
4. Reserve and present value of profits:
   a) Reserve as in item 1 above.
   b) Present value of profits = present value of 45 percent of future gross premiums.

The present value of profits may be discounted at the reserve interest rate or it may be discounted at a higher "risk rate of return."

The NSP above may be completely consistent with the various net premiums. However, for a five-year-old policy, interest assumptions may start from the current duration going forward. If followed literally, this would mean that NSP would be based on, say, 9 percent graded to 6 percent from duration 5, and the net premium would be based on 9 percent graded to 6 percent from duration 0. Alternatively, the net premium can also be based on 9 percent graded to 6 percent from today, with a number of optional choices made for the elapsed five years. Either choice seems defensible. The NSP obviously should start with current assumptions from today. If the net premiums are based on 9 percent graded to 6 percent from duration 0, they can be argued to represent a "current" profit margin for newly issued business.

In Section II the author states that "the effect of using a different reserve valuation premium assumption is to change the incidence of profits, but not the total." This statement is often made to emphasize that any reserve, built up to any level, must ultimately be released to zero. However, in projecting profit streams for a block of business, investment income is often based on reserves for each duration. The higher the reserves at any point, the higher the investment income for that year, and vice versa. Therefore, aggregate earnings including investment income may vary.

Later in the same section, the author states that "high reserves are just as certain of running off as low reserves." However, the level of reserves at any point determines the degree of advance funding. Even ignoring the allocation of investment income on reserves, the incidence of profits (affected by reserve releases) is vitally important to investors today. They cannot be expected to wait forty or more years for all the reserve releases to balance out.

The author states that "the best approach is to simplify the balance sheet and use the gross premium reserve." The accounting profession objects strenuously to any unitary reserve unless an asset portion is carved out, however artificially, so that both asset and liability are blown up. I believe the underlying reasoning on this point is sound, namely, that the purchaser has acquired some intangible assets related to long-term profitability of business in force. Therefore, the gross premium reserve approach represents a simplification, rather than a complication, of the entire process.

In Section III the author states that "if goodwill comes out negative, faulty assumptions are indicated." Actually, goodwill is significantly affected by the purchase price. Buyer and seller can negotiate a relatively low (or high) purchase price, to cause goodwill to be relatively low (or high). If assumptions bear any relationship to the reality of this negotia-

tion, goodwill will be positive or negative, with the chips falling as they may.

He then states that "goodwill and profits are both amortized in proportion to premiums." I am not certain whether the author is recommending this approach. However, in all cases I have seen in which both goodwill (excess cost) and an actuarial intangible asset are separately identified, goodwill is amortized straight-line, usually over forty years.

In Section IV the author states that "the only logical discount rate to use is the earnings rate. . . . It makes no sense to discount one part of the gross premium at one rate and the other part at another rate." I totally disagree with this statement. For a closed block of business, the present value of projected revenues is of course the present value of 100 percent of future gross premiums. Because of the risks inherent in long-term contracts, the chance that 55 percent of this present value (needed for reserves) would be realized is significantly greater than the chance of realizing the full 100 percent. Therefore, it is defensible to discount the present value of 45 percent of future gross premiums (the profits) at a higher or risk rate of return.

He then states: "A common misconception is that profits are a return on investment, and should therefore be discounted at a 'risk' rate. . . . Surplus is a figment of the accounting discipline." Actually, life company profits come from three sources: investment income on capital and surplus, the closed block of business as of the date of acquisition, and future business.

Assets corresponding to capital and surplus normally need not be liquidated to pay benefits. Therefore, the present value of their profits or investment returns can be discounted at the same rate, which equals that on the assets themselves. Assets corresponding to the closed block opening reserves earn investment income but must be supplemented by future premium revenues plus reinvestment, if future profits from this source are to be realized. Therefore, the greater complexity and uncertainty associated with this block of assets justifies a higher risk rate of return for their associated future profits.[1]

The author states that " 'current interest rates' can hardly be interpreted to mean risk rates of return." I disagree completely. Interest rates and discount rates should be associated with relevant facts and circumstances. Profits associated with long-term unilateral insurance contracts will invariably be discounted at a higher rate than the same dollar amount

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[1] Companies' investment philosophies often differ between assets corresponding to capital and surplus, and assets corresponding to policy reserves.

of profits associated with fully collateralized assets. Therefore, "current interest rates" seem fully consistent with the risk rates of return concept.

In Section V the author states that "a 'reasonable' profit margin can be deemed reasonable only in light of past experience." As previously indicated, net annual premiums can be based on assumptions that are synchronized with net single premiums. If the assumptions are reasonable, then resulting profit margins should be reasonable. On the other hand, profit margins may be set at levels appropriate for newly issued policies. If these profit margins correspond to pricing assumptions that have been actuarially tested, then they should be considered "reasonable."

HOWARD L. ROSEN:

My comments on Mr. Eckley's paper can be highlighted as follows:

In Section III the author makes a statement about negative goodwill. Actually, negative goodwill is not "faulty"; it may even indicate a "good deal" for the purchaser.

Although it is somewhat subjective, the use of a GAAP valuation premium gives a reasonable indication of the profit stream expected by the purchaser. Subsequent reserves are not forced out retrospectively but result from the valuation premium and the other assumptions.

Goodwill usually is amortized not in proportion to premiums but over some period such as forty years on a straight-line basis.

On a closed block of business, the probability of realizing profits is risky. More specifically:

1. Different lines of business are riskier in nature than others; for example, non-cancelable accident and health is typically riskier than life.
2. The discount rate should be a composite of (a) yield on assets, (b) risk inherent in the business, and (c) desired yield on the part of an investor.

Profits are a return on investment; otherwise, why do insurance companies pay out acquisition expenses that will exceed first-year premiums?

Surplus may in fact be invested. Assets comprising surplus may be invested for growth, while assets backing liabilities are invested (generally) for security. Totally different investment philosophies govern the two.

The present value of profits may be expressed as the present value of a defined percentage of gross premiums. Contrary to what the author implies in Section III, no detailed projection of all components of future profits is required.

MITSURU KADOYAMA:

The first part of this discussion presents a rationale for including a meaningful value for the acquired in-force in the purchase balance sheet. The second part presents a commonly used approach that, it is suggested, is more appropriate than the use of gross premium reserves. This approach produces an allocation of the purchase price and subsequent earnings that are more consistent with the perspectives of the acquiring company at purchase.

1. *Rationale*

Since the issuance of the Academy's Interpretation 1-D on purchase accounting, there has been a growing awareness that an asset representing the value of the acquired in-force, apart from the reserves, needs to be recognized in the purchase GAAP balance sheet. The Interpretation describes methods of calculating an asset, but then suggests that the reserve be increased by an equal amount. This treatment makes the value asset wholly cosmetic, so in reality the Interpretation addresses only reserves.

The need for a separate meaningful asset can be seen by comparing the acquired in-force to, say, a mortgage. Once a set of reserves has been adopted, a stream of future earnings can be projected. While the mechanism required to realize these projected earnings is far more complex, and the earnings much less certain, than future payments on a mortgage, each involves future income with certain expectations of realization, and should be accounted for in a similar manner.

In insurance accounting, mortgages are generally carried in the balance sheet at the discounted value of the future payments yet to be received, using the purchase yield rate. The income for a year is the payments received, less the amortization of this "principal." The net effect is to earn the purchase yield rate on the unamortized balances each year.

The projected income stream from the acquired in-force should be accounted for in an analogous manner. Present values of the then remaining projected income stream (present value of future profits [PVFP]) should be carried as the unamortized value asset, and the earnings from the acquired in-force become the income generated by the in-force less the amortization of this asset. The yield rate used to discount the income stream should be the risk rate of return appropriate for the circumstances at the date of purchase.

While arguments have been made for using projected statutory or other earnings as the basis of the PVFP, it seems most consistent to use projected earnings based on the actual reserves to be used, that is, the purchase reserves, in order that the amortization match the income.

2. *Suggested Approach*

Let us examine the results where the PVFP at purchase and the PVFP at subsequent dates are the discounted values of the projected purchase reserve earnings. The opening balance sheet is as follows:

Assets:		Liabilities, equity:	
Fair value of assets	A_0	Purchase reserves	R_0
PVFP....................	V_0	Other liabilities	L_0
Goodwill	G_0	Purchase price...........	P

where $A_0 + V_0 + G_0 = R_0 + L_0 + P$. From this, $P = V_0 + (A_0 - R_0 - L_0) + G_0$, that is, the purchase price is made up of the value of the in-force acquired, the net assets after allocation of reserves and other liabilities, and goodwill.

Then, if the reserve assumptions are exactly realized, the earnings in year t relating to the acquired in-force and net assets can be derived as

$$EARN(t) = V_{t-1}j_t + (A_{t-1} - R_{t-1} - L_{t-1})i_t - (G_{t-1} - G_t) ,$$

where j_t is the yield rate used to discount the projected profits to obtain the PVFP, and i_t is the portfolio rate attaching to the net assets. Earnings are comprised of (*a*) return at the investor's yield rate j_t on the unamortized value of the in-force, plus (*b*) return at the portfolio yield rate on the other net assets, less (*c*) the amortization of goodwill. This result is consistent with the expectation of the allocation made initially. The derivation of the earnings is given at the end of this discussion.

Mr. Eckley's proposed gross premium reserve approach is a special case where the investor's yield rate j_t is equal to the reserve interest rate. While his approach takes much of the subjectivity out of purchase reserving, it ignores the general perception that the portion of the purchase price spent for the in-force should yield a higher return than for the relatively "safe" net assets.

In this context, the choice of an appropriate investor's yield rate should be relatively noncontroversial. On the other hand, the perception of the appropriate level of valuation premiums, and the resulting profit margins to be capitalized, varies widely. In practice, valuation premiums ranging from less than 50 percent to as high as 100 percent of the gross premiums have been used to calculate purchase reserves. Correspondingly, profit margins ranging from over 50 percent to as low as 0 percent of gross premiums have been capitalized as the PVFP asset. The low valuation premiums occur when the valuation premium is the benefit and maintenance expense portion of the GAAP premium.

However, it seems appropriate that purchase accounting reflect the perspective of the purchase as much as possible. Currently most actuaries think of profit margins in terms of statutory or historical GAAP margins. Accordingly, the PVFP assset in the purchase balance sheet should be based on comparable profit margins in the gross premiums, such as 10 or 15 percent, depending on the gross premium levels.

Having determined the profit margin, the balance of the gross premium becomes the valuation premium for the purchase reserves. Together with "current" assumptions for the future, these valuation premiums are used to calculate the reserves prospectively. In this approach the perceived profit margin is the determining parameter, and the valuation premium is the by-product.

In practice things are not so neat. Usually the purchaser arrives at the purchase price without regard to the constraints of the subsequent purchase accounting. It is only after the purchase balance sheet has been prepared that the actual allocation of the purchase price to the in-force, net assets, and goodwill is determined. Unless the purchaser went through a preliminary exercise of restating everything to the purchase accounting basis to determine values, the resulting allocation of the purchase price will differ from the purchaser's expectations. Varying the actuarial assumptions, which include profit margins and investor's yield rates, may improve the allocation, but very likely no set of reasonable assumptions will yield the allocation arrived at in the appraisal process. In this situation purchase accounting can reflect only the perspectives and not the actual values involved.

3. *Derivation of Earnings*

In the following, income taxes are ignored for the sake of simplicity. The value asset at any time is the present value of the remaining projected profits from the in-force, based on the purchase reserves and the investor's yield rate.

The earnings in year t attributable to the acquired in-force and net assets can be expressed as

> Income from the acquired in-force
>
> + Interest on accumulated net assets
>
> − Amortization of the value asset
>
> − Amortization of goodwill.

In notational form,

$EARN(t)$

$$= NET(t) + (A_{t-1} - R_{t-1} - L_{t-1})i_t - (V_{t-1} - V_t) - (G_{t-1} - G_t),$$

where i_t is the portfolio rate.

When the reserve assumptions are exactly realized,

$$NET(t) = PROJNET(t).$$

Successive value assets are related by

$$V_t = V_{t-1}(1 + j_t) - PROJNET(t),$$

where j_t is the investor's yield rate.

Substituting these, the earnings become

$$EARN(t) = PROJNET(t) + (A_{t+1} - R_{t-1} - L_{t-1})i_t$$

$$- [V_{t-1} - V_{t-1}(1 + j_t) + PROJNET(t)] - (G_{t-1} - G_t)$$

$$= V_{t-1}j_t + (A_{t-1} - R_{t-1} - L_{t-1})i_t - (G_{t-1} - G_t).$$

STEPHEN D. BICKEL:

I would like to thank the author for submitting a timely article on this subject. Actuarial and accounting practices in this area seem to be diverging. Hopefully this article, by stimulating comments and discussion, will serve as a vehicle to clear up areas of uncertainty and confusion.

The author has identified several aspects of Interpretation 1-D in which the intent of the Academy committee has not been understood.

1. The determination of defined reserves and defined valuation premiums is not intended to be subjective. In the DIRM case, the reserve is expected to be "the amount determined by the purchaser in establishing the purchase price." This method contemplates a "grocery basket" situation in which the purchase price is clearly allocated and there are no balancing items or plugs. Using the author's example, the parties may have negotiated a $100,000 purchase price, representing assets with a market value of $1,650,000; liabilities with a current value of $1,650,000; and intangibles with a value of $100,000. The $1,650,000 might have been negotiated by adding a portion of the value of future premiums to the gross premium reserve, by subtracting a discounted value of future statutory profits from the statutory reserve, or by some other method resulting from "good faith" bargaining.

In the DVPM case, the profit allowance in the gross premium and the provisions for adverse deviation are to be "those which apply to current new business issued by the Company." The method contemplates an examination of the profit allowance on current new business, which will fix the allowance used in valuing the purchased business. The actuary would not be at liberty to choose between a 4 percent margin and a 10 percent margin.

2. The DVPM is preferred over the DIRM in most cases. The Interpretation states that the DIRM should not be used unless "the elements of the purchase price were bargained for in good faith and the predetermined amount gave due consideration to appropriate provisions of APB Opinion No. 16." This restriction was inserted at the request of the AICPA Insurance Companies Committee.

3. It was not anticipated that Interpretation 1-D would apply to an acquisition of a block of business. Such transactions are not normally business combinations covered by *APB Opinion No. 16.* It was believed that such transactions were covered adequately by Recommendation 1, and would result in reserves being determined in the same manner as for new business.

If Interpretation 1-D were applied to the acquisition of a block of business in the author's example, DIRM would apply. The initial reserve would equal the negotiated amount of assets transferred ($1,650,000), and the valuation premium would be calculated as $178 per $1,000. No profit projection would be needed.

If DVPM were applied, the initial reserve calculation would presumably differ from $1,650,00. The difference would be applied to adjust valuation premiums, so that the final result would be the same as the DVPM. This result would be the same as that recommended by the author, provided that the adjustment for assets in excess of gross premium valuation reserves is applied to factor down valuation premiums.

If the difference is applied to factor up provisions for adverse deviation, the result would not be consistent with the application of Recommendation 1 to new business. Provisions for adverse deviation would be greater for the acquired block than for directly issued business, for no apparent reason. Profits would not be expected to emerge as a percentage of gross premiums for the acquired block, as they do for direct business.

If the difference is applied to factor up the total reserve, negative profits will be expected to emerge as a percentage of premium. Subject to materiality considerations, this may be a useful mechanical approach.

In the case of an acquisition of a company, the DIRM/DVPM methods contemplate an asset in the balance sheet equal to some portion of the valuation premiums, valued at the assumed earnings rate. They do not support the use of an asset calculated by discounting projected profits at a risk rate of return.

If the parties specifically allocated $1,650,000 to the business in their negotiations, that amount could qualify for the initial reserve under the DIRM, and goodwill would be $100,000. If no specific allocation qualifies, the DVPM must be used. If currently issued business has a 4 percent profit allowance in gross premiums, the initial reserve would be $1,700,000 and goodwill would be $150,000.

The methods can be summarized as shown in Table 1 of this discussion. The discounted profit method would not be significantly different from DIRM in this example, provided that the value of profits is amortized against future earnings in proportion to premium income, using the assumed earnings rate. If the value of profits is amortized using the "risk" rate of return, reported earnings would be greater in the earlier years after the purchase and lower in the later years. This "front-ending" of profits would not be consistent with the principles of Recommendation 1 or with the general philosophy of the audit guide that costs should be matched with revenues.

The remaining difference between the methods will be dependent upon the treatment of goodwill. Interpretation 1-D suggests amortizing goodwill in proportion to "expected GAAP profits." If there are no sources of expected profits other than the profits that emerge from the acquired business, the amount of goodwill under each method presumably would be written off over four years. If the $78,000 goodwill item under the gross premium valuation method were written off by reducing provisions for adverse deviation, and the excess goodwill under the other methods were amortized as a percentage of premium, using the assumed earnings rate, all four methods would produce the same result. As the author points out, the gross premium valuation method would be a somewhat more direct method of achieving this result.

On the other hand, the purchased company may continue as a going concern, in which profits may be expected to emerge from newly issued business and other lines of business. In this situation the amount of good-

TABLE 1

	Gross Premium Method	Discounted Profit Method	DIRM	DVPM
Assets				
Invested asssets	$1,650	$1,650	$1,650	$1,650
Profits	0	155	0	0
Goodwill	78	95	100	150
Liabilities:				
Reserves	1,628	1,800	1,650	1,700
Investment	100	100	100	100

will is presumably a consideration for the anticipated earnings from all sources. If the total earnings are expected to remain the same or increase, presumably the goodwill would be amortized on a forty-year straight-line basis. In this situation it is important to determine which method produces the correct amount of goodwill.

It appears to me that the DVPM is the superior choice. Under this method profits on the existing business will emerge in the form of provisions for adverse deviation and loading gains that are consistent with those for new business issued by the company. This result is consistent with the application of *APB Opinion No. 16* to other industries, in which inventories are valued at the selling price less a profit allowance for the selling effort.

The author observes that the acquired life insurance business has already been sold, while inventories have yet to be sold, and that it is not the acquiring company that put forth the selling effort. This argument would be persuasive if reserves for new business could be established on a gross premium valuation basis. However, for life insurance companies, profits are not recorded at the time of sale. Instead, profits are required to be spread over the lifetime of the contract, more as compensation for the servicing effort than for the selling effort. Since the acquiring company performs the servicing effort, it is entitled to report profits for those efforts.

It is unfortunate that practice has diverged so much in this area. Part of the problem may be that the language of Interpretation 1-D is overly permissive. Perhaps it should be revised and restated as a recommendation, under which a single approach could be recommended. The author's position that using internal rates of return for financial reporting purposes is not justified is clearly correct and should be strongly stated. The author's position that profits should not emerge as a level percentage of premiums should be considered, but, for the reasons stated above, I believe it should not be adopted.

I think the author has done the profession a service by taking a fresh look at purchase accounting, and I hope that his paper will help clear up the uncertainties that now exist.

(AUTHOR'S REVIEW OF DISCUSSION)
DOUGLAS A. ECKLEY:

The discussions of this paper are pleasing to me, in spite of the fact that no one agreed that the gross premium method is the correct approach to purchase accounting. Learned men have taken enough interest in the paper to respond to it, albeit to voice disagreement. It is my privilege to speak last, so perhaps I can speak loudest after all.

Every discussion addressed the issue of the discount rate. Messrs. Paul, Hill, Rosen, and Kadoyama disagree with my position that the only logical discount rate to use is the assumed interest earnings rate. Interestingly, Mr. Bickel, whose discussion clarifies the intent of the American Academy of Actuaries in publishing Interpretation 1-D, strongly agrees with me on this point. Mr. Bickel is a valuable ally, since he chaired the committee that authored Interpretation 1-D. Before responding to this and other points, I emphasize that the discount rate issue relates to only one of the arguments presented in the paper.

My only disappointment in the discussions is that they contain little thought on the theory of GAAP. Only Mr. Bickel and Mr. Paul touch on the timing of profit recognition.

Mr. Bickel neatly summarizes each purchase accounting method by comparing balance sheets. He follows with one or two opinions on method superiority. In doing so, he notes that the acquiring company performs the servicing of the acquired business and is entitled to profits for the effort. My position is that the profits from the release of margins for adverse deviation reward this effort. The main purpose of insurance is assumption of risk, and margins are released as risk is released. Service and profit, in theory, can be closely tied in this way. The gross premium method is in closest conformity with this thinking.

Mr. Paul does a service by delving into the mechanical aspects of a purchase, and another by contrasting purchase accounting and appraisals. With respect to his treatment of the latter I have two points to make.

I cannot agree that discounting profits at the reserve interest rate ignores the risk element in the insurance in force. GAAP accounting provides for risk in two ways. First, benefit obligations are valued by using assumptions as to future contingencies. Second, these assumptions are set so as to contain margins for adverse deviation. Provision for risk beyond that in the margins for adverse deviation is not called for by the AICPA audit guide or by GAAP in general.

Mr. Paul questions whether the gross premium method adheres to the accounting principle of matching expenses with associated revenue. It does. In fact, if experience assumptions are realized, expenses and revenue are always equal (this is illustrated in the paper). Taking another view, the real expense of a purchase transaction is the consideration paid. This consideration is matched by valuing the assumed assets and liabilities so that the net assets equal such consideration. The effect is to use historical cost for book value. All purchase accounting methods under discussion do this. The matching principle is not useful in determining which method is best.

Mr. Hill's comments impel me to respond in several places.

I made the statement that "high reserves are just as certain of running off as low reserves" in arguing that the discount rate should not be a function of the level of reserves. I was not arguing that investors care nothing about profit incidence.

Mr. Hill maintains that long-term profitability of business in force is an asset that should be separated from the reserve and entered on the balance sheet. The existence of any reserve at all implies that future outflows will exceed future inflows. In arguing the existence of an asset in such a situation, the burden of proof falls on those who would set it up. My position is that long-term profitability is not sufficient justification for a separate asset, since it (profitability) cannot be divorced from acquired invested assets and resultant investment income. If the accounting profession (my own) objects strenuously to a unitary reserve, we should pronounce to that effect, because published guidelines do not now support a separate asset.

Mr. Hill makes three arguments concerning the discount rate that should apply in valuing a separate asset. Two of his arguments are adopted in modified form by Mr. Rosen. Both discussants defend the expression of profit as a portion of gross premium, and the discounting of that portion at a higher rate than used for the complementary portion (needed to meet obligations). Their justification is that profits are risky, or less likely to be realized. But assessing probabilities is the job of the actuary in setting experience assumptions as to mortality, morbidity, lapsation, interest, and expense. These assumptions fully allow for the riskiness of future premium receipts. In doing so, they also allow for the fact that realizing 55 percent of premiums is more likely than realizing 100 percent. The actuary cannot be asked to allocate his assessments of probability partly to experience assumptions and partly to discount rates.

Messrs. Hill and Rosen also justify discounting profits at "risk" rates by allocating assets to reserves and associating different investment philosophies and different degrees of "complexity and uncertainty" (Mr. Hill) with them. Such an allocation may be useful to management, but it should not be part of GAAP accounting. More to the point, if some assets are less certain, that is reflected in the associated market values and should not be reflected again by discounting projected investment income at "risk" rates.

It is correct that insurance profits are less certain than income from invested assets (although not all invested assets are "fully collateralized"). That is why the actuary discounts premiums with conservatively determined mortality and lapsation in addition to interest. In view of

explicit recognition of these other contingencies, "current interest rates" should not include more risk recognition than is in the interest assumption. That is why I conclude that current interest rates in the context of *APB Opinion No. 16* are not "risk" rates.

If Mr. Rosen defines risk as volatility in experience, he is correct that "different lines of business are riskier in nature than others." But this risk should be allowed for by increased margins for adverse deviation in the experience assumptions, not by an increased discount rate on profits. Otherwise, if a line were not profitable, its risk could not be allowed for.

I must disagree with Mr. Rosen on one point. Desired yield of an investor should play no role in GAAP accounting; otherwise, most of the objectivity in valuing investment securities would be lost.

Mr. Rosen states that profits are a return on investment. I believe he would go on to argue similarly to Mr. Kadoyama, who draws an analogy of a life insurance purchase to a mortgage and argues that each should be accounted for by discounting income at yield rates. He then states that the insurance in force should yield a higher return than more secure assets.

In the paper I stated that a life insurance acquisition is not an investment in the sense normally contemplated. Both assets and liabilities are acquired, but the liabilities mature later than the assets, and for larger dollar amounts. The situation is more akin to purchasing property (assets) with a mortgage loan (liabilities) than it is to lending mortgage money.

The problem in requiring insurance in force to yield a higher return than more secure assets is that insurance in force is predominantly a bundle of obligations to pay benefits (liabilities). Liabilities do not earn returns. GAAP requires life insurance obligations to be valued using assumptions that contain margins for adverse deviation. This means using a discount rate below the market rate, since benefits are liabilities. Which discount rate should be used for future premiums? It is clear that GAAP associates premiums closely with benefit obligations. Both are valued using the same assumptions as to mortality and lapse. Likewise, the same discount rate should be used for both. Then the insurance contracts in force are valued wholly, rather than being split with different sets of assumptions used for each piece.

Mr. Kadoyama is concise yet general in expressing post-purchase earnings in symbolic form.

Now I succumb to my examiners and admit to three misstatements. Owing to Mr. Hill, I would now say that different reserve valuation premiums do not change total profits except as affected by interest earnings. Messrs. Bickel, Hill, and Rosen all point out that goodwill is usually amortized on a straight-line basis, contrary to my implication. Mr. Rosen

checks me on the calculation of subsequent DIRM/DVPM reserves. In using the word "retrospectively" I meant that a net valuation premium must be viewed in the light of historical GAAP margins—not that a prospective calculation would be impossible.

Messrs. Paul, Hill, and Rosen misinterpret my statement on negative goodwill. An indication of faulty assumptions is not a proof of faulty assumptions. It is logical to take a prima facie stand that a business has not been sold for less than its conservatively determined worth.

Mr. Bickel presents an excellent discourse on goodwill.

It is appropriate at this time to thank my associates at Tillinghast, Nelson and Warren, Inc., for their support, and a former associate, Robin Halpern, for her support.