Examining his method from a technical standpoint, some of us observed:

(1) It relates the investment income from an accumulation of years to earned premiums of a particular year. A company that is growing rapidly and building reserves rapidly would have a smaller accumulation of invested "policyholder funds" than would a comparatively stable company and as a result the rapidly growing company would have a smaller element of investment income in its rate making process. The justification for having a smaller amount is not apparent.

(2) The composition of invested assets is ignored. It averages investment income among all assets and between stockholders' and policyholders' interests. The result may be unfair to the shareholders as a company may feel that shareholders' funds may be invested in long-term obligations with the higher yields which normally accompany lack of liquidity.

(3) A company deciding to strengthen its loss reserves would give future policyholders the benefit of a larger investment income element in rate making, all other things being equal. On the other hand, by weakening reserves a company could get a larger allocation of investment income for shareholders.

(4) Another approach would be to measure from actual experience the dates at which funds are received from policyholders and disbursed as expenses and claims. Such a procedure would recognize the lag in premium collections, the payments of commissions and other costs arising when the policy is written, the impact of payroll audit and retrospectively rated business, the spread of certain costs through the term of the policy and the disbursement of losses and expenses over a period of years. These patterns of income and outgo can be expected to vary by line and by company.

There is no preferred way to estimate a segmentation of investment income between that which might be thought of as emanating from insurance-oriented funds and that which may be thought of as emanating from shareholders' funds. While we do not need such a segmentation for rate making purposes, from time to time it is helpful to have one for internal management purposes. The character of the particular purpose will influence the judgment used in the selection of alternatives to be incorporated into the method. I believe Mr. Bailey's paper will serve as a very helpful point of reference.

DISCUSSION BY RUTH SALZMANN

Mr. Bailey's provocative and interesting paper on underwriting profit from investments lends itself to five areas of discussion:

1. THE TERMINOLOGY

The author used the terms *investment income from underwriting, underwriting income from investments,* and *funds held in trust for policyholders.* Such wording confuses and disturbs the reader not only because of the departure from established concepts, but because of the legal implications. This disinterest in wording by the author is unfortunate because such terminology detracts from an otherwise valuable actuarial contribution.

Terminology has been a problem for this reviewer as well. The expressions *premium* and *non-premium funds* are used in this discussion to avoid any inaccurate legal connotations. By definition then, premium funds are moneys received as income from policyholders which immediately become commingled with other corporate funds. The term non-premium funds refers to the "other corporate funds."

2. THE QUANTIFICATION OF INVESTED PREMIUM FUNDS

a. General Comments

Mr. Bailey gives excellent coverage to the problems involved in separating invested assets into premium and non-premium funds. He points out the complications, the judgment areas, and the many considerations that should be made. He makes it clear that this measurement is not an easy one because balance sheet items do not fall neatly into black and white categories.

b. The Method Analyzed

The author's method first establishes an adjusted capital and surplus amount by rearranging old and creating new balance sheet accounts. This adjusted figure becomes the invested non-premium funds, and the invested premium funds are obtained by substracting the non-premium funds from total invested assets. In the beginning of his paper, the author suggests a balance sheet derivation of these two items; the actual calculation is only a simplified version thereof. Although the short-cut used may produce reasonable answers, a full disclosure of what such a short-cut encompasses would have been helpful to the reader. In other words, balance sheet arithmetic says that invested assets equal the sum of liabilities and capital and surplus less non-invested assets. Therefore, what Mr. Bailey obtains by subtraction for invested premium funds is really the sum of the loss and loss expense reserves, the unearned premium reserve and all unspecified liabilities less all non-invested assets. Exhibit 1 attached uses 1966 INA data to show the full significance of Bailey's simplified approach.

c. Criticisms of Bailey's Method

(1) The basis for computing the equity in the unearned premium reserve used by Mr. Bailey is reasonable; but due to the inexact science of allocating expenses by function, the actual measurement of this equity should be studied further. In addition, consideration should be given as to whether the equity in the unearned premium reserve should be calculated by line of insurance or for the company as a whole. The need for such a decision arises because the total of the equities calculated by line of insurance does not equal the equity when it is calculated for all lines combined. This is because the distribution of unearned premium by line of insurance differs materially from the distribution of written premiums by line.

(2) Mr. Bailey's method should incorporate a more adequate basis for distributing the equity in the unearned premium reserve by line of insurance. As noted in Exhibit 1, the equity in the unearned premium reserve is one of the negative components in the compilation of "excess funds." Because these net funds are distributed by line of insurance in proportion to the unearned premium reserves by line, it follows that each component is likewise distributed. Such a distribution would be proper for the equity in the unearned premium reserve if all "equity ratios" were uniform by coverage; but, of course, this is not so. Obviously a more accurate method of assigning this item by line of insurance could be developed from the expense ratios reported by coverage in the Insurance Expense Exhibit.

(3) Uncollected balances is another non-invested asset deduction and likewise is distributed in proportion to the unearned premium reserves by line of insurance. Although uncollected balances are not available by line of insurance, and although the distribution method used by the author is rather ingenious, this reviewer believes that a more sophisticated and accurate basis could be established.

(4) Bailey's method makes no provision for non-premium funds supplied to the insurance operation when premium income is not sufficient to cover underwriting disbursements. If and when operating losses accumulate, additional funds are needed to keep the underwriting operation solvent.

(5) Bailey's method does not use mean invested assets. Because his method develops a fraction rather than a dollar base, the simplification of using year-end invested assets is perhaps justified for illustrative purposes. However, this transgression from a more accurate accounting approach should have been stressed with a recommendation that mean invested assets should be used in any final procedure.

d. An Alternative Approach

Generally speaking, all methods will produce the same answers if the same underlying assumptions and data are incorporated. One method is better than another because of its clarity, its simplicity, and its underlying assumptions. With this in mind, the reviewer has designed a more direct approach which is based upon a cash flow chart analysis. Such a cash flow chart is set forth in Exhibit 2. One can observe from this exhibit that underwriting funds in process come from both premium and non-premium sources. The non-premium funds must be sufficient to keep the underwriting operation solvent and so will equal the equity in the unearned premium reserve and the funds advanced for operating losses. Premium funds will equal the underwriting liabilities (adjusted for unassigned reinsurance funds) less uncollected balances and non-premium funds.

The actual calculation of these funds for INA is shown in Exhibit 3. Using Bailey's measurement of the equity in the unearned premium reserve, the invested premium funds were calculated to be $514,596,000 as of 12-31-66. This compares with $545,674,000 established by Bailey's method. The difference of approximately $31,000,000 is accounted for by the net effect of two items:

(1) Cash and miscellaneous net assets(a credit item) is a smaller figure in my calculation so as to correctly exclude current assets necessary to cover the payment of the current liability for dividends declared to stockholders.

(2) Non-premium funds have been increased in my calculation to provide for deficit operating balances.

With these differences and the incorporation of mean invested assets, the ratio of invested premium funds to total invested assets is 33.4% as compared to 37.7% produced by R. A. Bailey's method.

To include non-premium funds for deficit operating balances, as required by the reviewer's method, calls for the measurement thereof. The reviewer believes that this amount will be properly represented by the largest accumulated operating loss for the latest 5, 6, 7, 8, 9, or 10 calendar years. Stated another way, the deficit operating balance equals the net operating loss in the latest five years, if any, plus the operating losses in the prior five years *not offset by subsequent gains.* Any longer experience period is assumed to be impractical and unnecessary even under the most abnormal underwriting cycle. Operating losses differ from statutory losses, and this difference is defined in Exhibit 3.

3. THE RATE OF INVESTMENT INCOME EARNED ON INVESTED PREMIUM FUNDS

The third area of my discussion relates to the rate of interest earned on invested premium funds once they can be established. I have no quarrel here with Mr. Bailey's thinking except in regard to the inclusion of realized gains and losses. Because of the high degree of risk involved in this phase of the investment operation and because of the significant fluctuations from year to year, the inclusion of these gains and losses is questionable.

In any event, this reviewer is inclined to believe that if investment income is ever included in ratemaking, a fair rate of return (perhaps 3.5%) should be selected. This independently established rate would then be applied to the mean invested premium funds. The deduction for premium funds not invested would also be calculated uniformly by using a stated percentage (perhaps 5%) of mean underwriting liabilities.

4. THE INTEGRATED PROFIT LOADING

Mr. Bailey makes this particularly noteworthy comment in his closing paragraph: "The *actual* underwriting profit from investments should not be added to the *expected* underwriting profit. Rather the *actual* underwriting profit from investment should be combined with the *actual* other profit or loss. . ." (Italics supplied by reviwer.) This point is important and is often conveniently overlooked. The problem of setting rate levels which will produce the profits that such rate levels anticipate remains with us. Only when this goal is accomplished will more refined cost accounting techniques along with more realistic profit standards by line of insurance contribute toward more accurate and adequate pricing in the insurance business.

5. THE PROPRIETY OF INCORPORATING INVESTMENT INCOME IN CASUALTY AND PROPERTY RATEMAKING

Mr. Bailey never poses this question and therefore never directly answers it; however, he does imply that the major stumbling block has been one of quantification. This opinion, if true, is not shared by this reviewer. Certainly the answer to this age-old question involves far more than actuarial considerations; it is even doubtful whether the final decision will be significantly influenced by the availability of scientific measurement criteria.

CONCLUDING COMMENTS

This reviewer believes that company managements today are cognizant of the "business profits" from various lines of insurance, and it is only with this knowledge that such managements are interested in taking the added risk inherent in certain lines of insurance where ultimate loss costs are subject to the uncertainties of future inflation and economic conditions. Therefore, the scientific measurement of investment income on premium funds is very important to all segments of the insurance industry, but most certainly to the stockholders. For this reason Mr. Bailey is to be commended for his many thoughts on the subject and for his suggested guidelines in the measurement of investment income by line of insurance.

Exhibit 1

Distribution of Invested Assets

per R. A. Bailey's Method

Insurance Company of North America

12-31-66

(000 omitted)

	Total	Non-Premium	Premium
Liabilities:			
Loss and Loss Expense	$ 449,947		$449,947
Unearned Premiums	435,595		435,595 *
Voluntary Reserves	0	0	
Stockholder Dividends	6,808	$ 6,808	
Unauthorized Reinsurance	17,827	17,827	
Other Liabilities	49,168		49,168 *
Total	959,345	24,635	934,710
Capital and Surplus - adjusted (1)	877,784	877,784	
Non-Invested Assets:			
Equity in Unearned	105,414		105,414 *
Non-admitted Assets	17,013		17,013 *
Uncollected Balances - admitted	184,961		184,961 *
Cash	33,030		33,030 *
Other	48,617		48,617 *
Total Deductions (2)	389,035		389,035
Invested Assets	1,448,094	902,419	545,675

(1) reported ($755,357) + equity in unearned ($105,414) + non-admitted assets ($17,013)

(2) admitted ($266,608) + equity in unearned ($105,414) + non-admitted assets ($17,013)

* components of the author's "excess funds" which are distributed by line on the basis of unearned premiums

Cash Flow Chart

Exhibit 2

Underwriting Operation

Property-Casualty Insurance

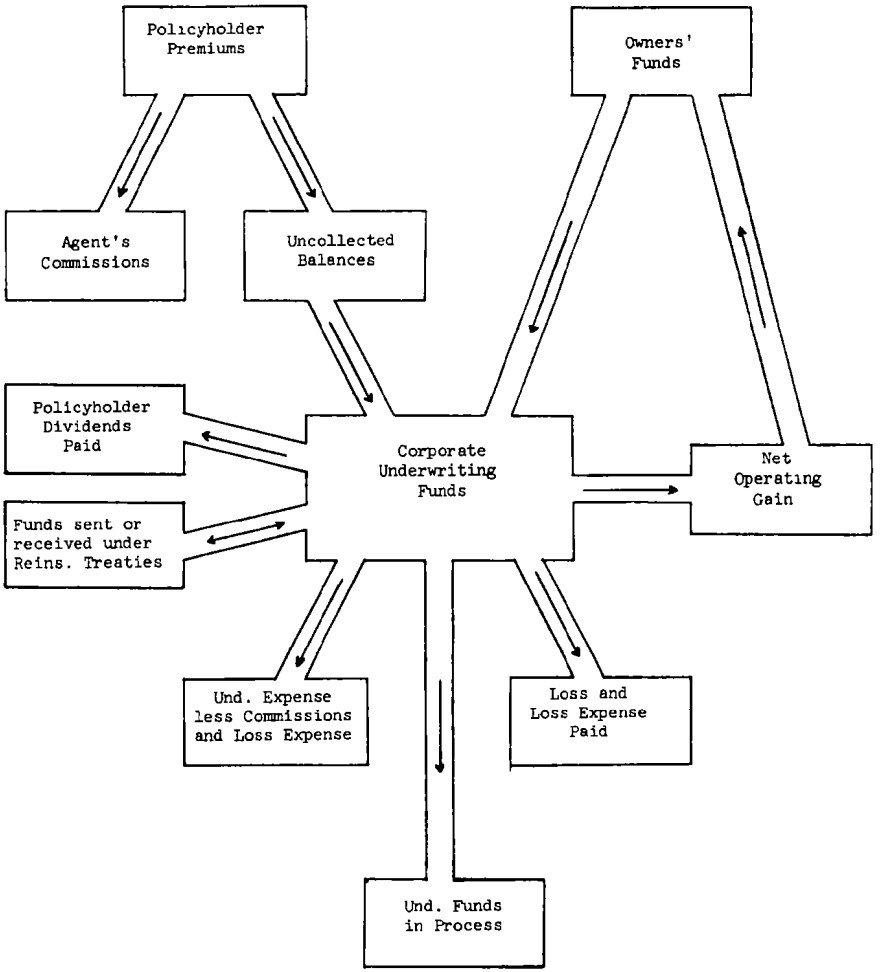

Exhibit 3

Analysis of Mean Underwriting Funds in Process

Insurance Company of North America

1966

(000 omitted)

	12-31-66	12-31-65	Mean
Underwriting Liabilities:			
Loss and Expense Reserves	$ 449,947 *	$ 401,077 *	
Other Und. Expense Reserves	14,603	13,574	
Unearned Premiums	435,595	417,616	
Policyholder Dividends	207	250	
Total	900,352	832,517	
Funds Rec'd. from Reinsurers (+)	16,591	16,731	
Funds Deposited with Reinsureds (-)	18,935	15,301	
Adjusted Total	898,008	833,947	$ 865,977
Uncollected Balances - Ledger	198,315	183,231	190,773
Underwriting Funds in Process	699,693	650,716	675,205
Non-Premium Funds:			
Equity in Unearned Premium	105,414 **	106,075 **	
Net Operating Losses***	37,886 *	27,945 *	
Total	143,300	134,020	138,660
Premium Funds	556,393	516,696	536,545
Cash & Misc. Net Assets	41,797	43,953	42,875
Invested Premium Funds	514,596	472,743	493,670
Check with R. A. Bailey's Method			
Invested Premium Funds - RAB	545,674	-	-
Total Corporate Invested Assets	1,448,094	1,504,751	1,476,422
% - RES	-	-	33.4%
- RAB	37.7%	-	-

* For greater accuracy these figures can be modified as necessary to reflect subsequent developments on loss reserves from Schedules O and P.

** As defined by R. A. Bailey so that methods can be compared. See reviewer's comments on additional studies necessary.

*** Operating Gain or Loss is defined to be the Statutory Gain or Loss less Policyholder Dividends plus the increase in equity in the unearned premium reserve. Non-Premium funds for net operating losses equal the largest accumulated net operating loss for the latest 5, 6, 7, 8, 9 or 10 calendar years, or $0 if none of these periods produces a net operating loss.