THE INSURANCE EXPENSE EXHIBIT AND THE ALLOCATION OF INVESTMENT INCOME

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THE INSURANCE EXPENSE EXHIBIT
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Introduction

The statutory Annual Statement enables state regulators to monitor the profitability and financial strength of insurance enterprises. Most revenues and expenditures that relate to particular policies, such as premiums and losses, are shown by line of business. Revenues and expenditures that cannot be directly associated with particular policies, such as investment income and general expenses, are shown only in the aggregate.

The primary focus of state regulation is on the ability of the insurance company to meet its obligations to policyholders and claimants. Profitability is an important consideration, since a consistently unprofitable insurer may soon find itself in financial distress. But the focus is on overall profitability, not on the profitability of each business segment.

But aggregate information does not suffice for all users. Rate regulators, for instance, must determine if premium rates by line of business are inadequate or excessive. Investors must determine if the capital used to support a given block of business is earning a satisfactory return. The insurer's management must determine which segments of the company are meeting desired profit levels.

The Insurance Expense Exhibit (IEE), filed by April 1 as a supplement to the statutory Annual Statement, provides the needed additional information. All revenues and expenditures, whether or not they are associated with particular policies, are allocated to lines of business. Various sets of operating returns are calculated, so that profitability by line of business may be measured.

Expense allocation may be complicated, but it is not conceptually difficult. Investment income allocation, however, particularly when used to measure the total return by line of business, requires subjective assumptions: "How should surplus be allocated to lines of business?" "Should the investment returns on policyholder supplied funds differ from those on capital and surplus funds?" "How should policyholder supplied funds be defined?"

These are not idle questions. They have been debated for years by actuaries and regulators, and their answers form the framework of the new investment income allocation procedure in the IEE. This paper reviews this allocation procedure and the resultant measures of profitability by line of business in the NAIC financial statements.

Casualty actuaries are often asked to complete the investment income columns in their companies' Insurance Expense Exhibits. In addition, they are often asked to evaluate the IEE profitability measures: to tell their managements whether the operating returns shown in the

IEE accurate reflect the performance of each line of business. Careful study of the investment income allocation procedures in the IEE is needed to respond to such questions.

The Structure of the Insurance Expense Exhibit

The Insurance Expense Exhibit (IEE) was substantially revised for 1992.[1] The structure of the Insurance Expense Exhibit can best be understood by considering first the pre-1992 IEE. The *1991* IEE contained four parts:

- Part I – Allocation to Expense Groups
- Part II – Allocation to Lines of Business
- Part III – Citing Adjustment for Effect of Premium Discounts and Retrospective Rating
- Part IV – Exhibit of Workers' Compensation Earned Premiums and Incurred Losses by States (Direct Business)

For the 1992 IEE, Parts III and IV have been eliminated. The structure of Part I remains unchanged, though there are several line revisions.[2]

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[1] The statutory procedures for completing the IEE are documented in the *NAIC Proceedings*, 1992, Volume IA, pages 338-341, "Summary of Changes to the Proposal of the Insurance Expense Exhibit Working Group to the Blanks (EX4) Task Force," as well as in the NAIC instructions to the IEE.

[2] The most significant 1992 change in Part I of the IEE relates to line 18, "Taxes, licenses and fees," which now has the following four components:

a. State and local insurance taxes, deducting guaranty association credits of ____;
b. Insurance department licenses and fees
c. Gross guaranty association assessments
d. All other (excluding federal and foreign income and real estate)
  e. Total taxes, licenses and fees (a + b + c + d)

The guaranty fund credits and assessments on lines 18(a) and 18(c) are new with the 1992 Annual Statement and Insurance Expense Exhibit. In many states, premium tax liabilities are reduced by the amount (or a portion of the amount) of state guarantee fund assessments. Thus, "Guaranty association assessments which have resulted in premium tax offsets should be netted in line 18(a) and the amount of credit taken disclosed in the space provided" (*NAIC Proceedings*, 1992, Volume IA, pages 339).

The 1991 Annual Statement, page 11, and IEE, Part I, had "payroll taxes" for line 18(c). In the 1992 IEE, "Payroll taxes (lines 8b) should be allocated to the same column as the related salaries" (*NAIC Proceedings*, 1992, Volume IA, pages 339).

Part II has been expanded into two parts. The structure of the IEE is now as follows:

- Part I – Allocation to Expense Groups
- Part II – Allocation to Lines of Business Net of Reinsurance
- Part III – Allocation to Lines of Direct Business Written

These changes reflect the use of the IEE. Parts III and IV of the pre-1992 IEE dealt with workers' compensation, and they were rarely used by industry analysts (other than the National Council on Compensation Insurance) or by regulators.[3] The old Part II was extensively used, but it was incomplete for some purposes. In particular, the investment income allocation procedure in the pre-1992 IEE was inconsistent with that in the NAIC *Profitability By Line By State* reports. The 1992 revisions have rectified many of the problems with the old IEE.

IEE Part II: Allocation to Lines of Business Net of Reinsurance

> *The purpose of Part II is to allocate elements of total profit (or loss) net of reinsurance to lines of business.*
>
> – *NAIC Proceedings*, 1992, Volume IA, pages 339

Part I of the IEE, like Part 4 of the "Underwriting and Investment Exhibit," divides expenses along two dimensions: (a) expense classification, such as advertising, rent, salaries, or equipment, and (b) expense groups, which are loss adjustment expenses, other underwriting expenses, and investment expenses. The IEE has a more refined division of "other underwriting expenses" into

- Acquisition, field supervision and collection expenses
- General expenses
- Taxes, licenses and fees

Part II of the IEE shows the allocation of all revenues and expenditures to lines of business, where the figures are net of reinsurance. Part III shows a similar allocation for direct

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Real estate taxes are excluded from line 18 because they are shown separately on line 20: "Real estate taxes."

[3] Cf. the *NAIC Proceedings*, 1991 Volume IIA, "Insurance Expense Exhibit Working Group of the Blanks (EX4) Task Force," January 29, 1991, page 457: "There was a brief discussion concerning Parts III and IV concerning Workers' Compensation. The only organization which has indicated using those parts of the IEE is the National Council on Compensation Insurance (NCCI)."

business, except that investment income is not included in Part III.

In Parts II and III, lines of business are shown along the vertical axis (i.e., they are rows), and revenue and expenditure categories are shown along the horizontal axis (i.e., they are columns).[4] A decimal point in an IEE line of business indicates that a finer breakdown is being used in the IEE than in the Annual Statement. For instance, the Underwriting and Investment Exhibit in the Annual Statement shows "Line 19: Auto liability." The IEE shows

Lines 19.1, 19.2: Private Passenger Auto Liability and
Lines 19.3, 19.4: Commercial Auto Liability.

Personal and commercial auto often have different expense characteristics (e.g., agents' contracts may provide a higher commission rate on personal auto), so this subdivision is appropriate for the IEE.

This paper concentrates on the investment income allocation procedures used for completing Part II of the IEE, columns 18 and 20. There are only passing references to Parts I and III of the IEE; in particular, there is no discussion of the expense classifications in Part I of the IEE. This paper begins with descriptions of the first 16 columns of the IEE, which are used in the investment income allocation procedure. It then reviews the computations needed to determine the entries for columns 18 and 20, and it provides an arithmetic example of the procedure.

The following description proceeds column by column. The phrase in italics at the start of each subsection gives the column number and the column caption. The description notes the cross-checks to other statutory exhibits, the type of allocation to line of business, and sundry differences between the entries in the IEE and those in the Annual Statement.

Premiums

1. Premiums written: The written premium entries correspond by line of business to page 8, "Underwriting and Investment Exhibit," Part 2B, "Premiums Written," column 4, "Net premiums written,"[5]

2. Premiums earned: These entries correspond by line of business to page 7, "Underwriting and

[4] The opposite arrangement was used in the pre-1992 IEE.

[5] These Annual Statement entries are carried to page 7, Part 2, "Premiums Earned," column 1, "Net premiums written." The total for all lines combined is also carried to page 12, "Exhibit 3 - Reconciliation of Ledger Assets," line 1, "Net premiums written." This figure should agree with line 32 of the IEE.

Investment Exhibit," Part 2, "Premiums Earned," column 4, "Premiums earned during year."[6]

Accrued retrospective premiums are reported in one of two ways.

- They may be reported as a separate asset and not as an offset to the unearned premium reserve. This is the treatment on the statutory balance sheet, where an asset for accrued retrospective premiums is shown on line 9.3. The unearned premium reserve on line 9 of page 3 does **not** have an offset for accrued retrospective premiums, since it is taken from page 8, column 5, line 34, not line 32. [The line of business offsets in column 4, lines 1 through 31, are removed in column 5, line 33.]

- They may be reported as an offset to the unearned premium reserve and thereby included in earned premiums. This is the treatment in the Underwriting and Investment Exhibit (page 7) and in the earnings statement (page 4).

The IEE uses the second procedure. Accrued retrospective premiums are reflected in the unearned premium reserves and in premium earned (columns 2 and 10), not in agents' balances (column 11). [See also the discussion below of column 11.]

The earned premium entries should also equal the figures in Schedule P, Part 1, column 4, line 11: "net earned premiums in the current year," according to the Schedule P subdivision of lines of insurance. In most instances, Schedule P does not have as fine a breakdown by line of business as the IEE has. For example, Schedule P combines "Fire," "Allied lines," "Inland Marine," "Earthquake," "Glass," and "Burglary and Theft" into a single "Special Property" category, though these are separate lines of business in the IEE. In a few instances, however, both Schedule P and the IEE have a finer breakdown by line of business than other Annual Statement exhibits have. For instance, both Schedule P and the IEE divide automobile liability into personal and commercial components, though the rest of the Annual Statement (except for the "Page 14" exhibits) does not.

10. Unearned Premium Reserves: The unearned premium reserves correspond by line of business to page 7, "Underwriting and Investment Exhibit," Part 2, "Premiums Earned," column 4, "Unearned Premiums." These unearned premium reserves reflect accrued retrospective premiums; see the also discussions of column 2 and of column 11.

Dividends

3. Dividends to policyholders: Dividends to policyholders on *net* business is reported in aggregate (all lines combined) on page 4, "Statement of Income," line 14a, "Dividends to policyholders." The "allocation" to lines of business in the IEE is a direct allocation, not a formula allocation. That is, the insurer knows which policies received the dividends and

[6] In addition, the aggregate amount for all lines combined on line 32 of the IEE ("Total") should correspond to the entry on page 4, "Statement of Income," line 1, "Premiums earned."

therefore to which lines of business they should be allocated.[7]

Dividends to policyholders on *direct* business is reported

- by line of business in the IEE, Part III;
- by state in the Annual Statement, Schedule T, "Exhibit of Premiums Written," Column 4, "Dividends paid or credited to policyholders on direct business"; and
- by line and by state on page 14, column 4, of the Annual Statement, "Dividends paid or credited to policyholders on direct business."[8]

Paid dividends to policyholders are shown on page 13 of the Annual Statement, "Exhibit 3 – Reconciliation of Ledger Assets," line 16, "Dividends to policyholder on direct business less $____ dividends on reinsurance assumed or ceded (net)." Paid dividends may be reconciled to incurred dividends by adding the change in reserves:

Paid dividends – beginning of year reserve + end of year reserve = incurred dividends.

The required reserve figures are shown on page 3 of the Annual Statement, "Liabilities, Surplus and Other Funds," line 10(b): "Dividends to policyholders declared and unpaid," column 1 (current year) and column 2 (previous year). In other words

  Page 4, line 14a (incurred dividends)
= Page 13, line 16 (paid dividends)
– Page 3, line 10(b), column 2 (beginning of year reserve)
+ Page 3, line 10(b), column 1 (end of year reserve).

Note that *statutory* accounting requires reserves only for declared dividends to policyholders, not for projected (but undeclared) dividends to policyholders. *GAAP* requires dividend reserves for projected dividends as well.[9] For instance, suppose that on each March 1 the insurer's

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[7] In some cases, the policy form does not correspond to Annual Statement lines of business. For instance, a policy may cover both "Other Liability" and "Products Liability," and the dividend may not differentiate between them. In such instances, the insurer must make a formula allocation of the dividend.

[8] Dividends to policyholders is more closely related to direct business than to net business. Most reinsurance arrangement reimburse the primary insurer for losses paid to policyholders, not for dividends paid to policyholders.

[9] Compare AICPA's *Audits of Property and Liability Insurance Companies* (New York: American Institute of Certified Public Accountants, 1990), page 115: "GAAP requires policyholder dividends that are undeclared as of the balance sheet date to be estimated and accrued. Under SAP, however, policyholder dividends are not recorded as liabilities until declared." See also page 119, item "g." See also David L. Holman and Chris C. Stroup,

board of directors declares dividends to policyholders based on the previous calendar year's experience. For GAAP financial statements, the company must project expected dividends relating to the experience of the current accounting period and book these as a liability, even though the company will have no legal obligation to policyholders until the declaration by the board of directors on March 1. For statutory financial statements, no estimate need be made and no reserve need be booked for undeclared dividends.

Losses and Loss Adjustment Expenses

4. Incurred Loss: The incurred losses correspond by line of business to page 9 of the Annual Statement, "Underwriting and Investment Exhibit," Part 3 - Losses paid and incurred," column 7, "Losses incurred, current year."

These are *calendar year* incurred losses. The incurred losses in Schedule P are *accident year* incurred losses. The supporting exhibits in Schedule P (Parts 2, 3, and 5) show losses combined with allocated loss adjustment expenses. Losses are shown separately from allocated loss adjustment expenses only in Part 1 of Schedule P. To determine calendar year incurred losses from Schedule P, one must use Annual Statements of successive years and subtract the incurred losses (for all accident years combined) in the previous statement from the corresponding incurred losses in the current statement.[10]

Paid losses by line of business are shown on page 9 of the Annual Statement, "Underwriting and Investment Exhibit," column 4, "net losses paid." Net loss reserves by line of business are shown in column 5 for the current year and column 6 for the previous year. Incurred losses are therefore columns 4 + 5 − 6, or

Paid losses − beginning of year reserve + end of year reserve = incurred losses.

5, 6, 8, and 9: Loss adjustment expenses: Unpaid loss adjustment expenses are shown by line of business separately for allocated and unallocated expenses in columns 8 and 9 in the IEE. Total (i.e., allocated plus unallocated) unpaid loss adjustment expenses by line of business are shown on page 10 of the Annual Statement, "Underwriting and Investment Exhibit," Part 3A, column 6, "Unpaid loss adjustment expenses." Thus, the sum of columns 8 and 9 in the IEE should equal

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"Generally Accepted Accounting Principles," in Insurance Accounting and Systems Association, Inc., *Property-Liability Insurance Accounting*, Fifth Edition (Durham, NC: 1991), page 14-7: "Under SAP, dividends to policyholders generally are not recorded as liabilities until they are declared by the company's board of directors. GAAP requires that all undeclared policyholder dividends be accrued at the balance sheet date, using an estimate of the amount to be paid."

[10] Care must be taken in the treatment of the "prior years" lines in Schedule P. See the discussion below regarding loss adjustment expenses.

column 6 of page 10 of the Annual Statement.[11]

Incurred loss adjustment expenses are shown by line of business separately for allocated and unallocated expenses in columns 5 and 6 of the IEE. Calendar year incurred loss adjustment expenses are *not* shown by line of business in the Annual Statement. The aggregate loss adjustment expenses incurred for all lines combined is shown on page 4, "Statement of Income," line 3, "Loss expenses incurred," and on page 11, "Underwriting and Investment Exhibit," Part 4, "Expenses," line 22, column 1, "Total loss adjustment expenses incurred."

Schedule P shows cumulative paid loss adjustment expenses by line of business and by accident year in Part 1, columns 7 – 8 for allocated expenses and in column 10 for unallocated expenses. The loss adjustment expenses paid in the current calendar year can be derived from successive Annual Statements. For instance, the unallocated loss adjustment expenses paid in the current calendar year equals

- Part 1, column 10, line 12 ("total") of the current year's Schedule P

– • Part 1, column 10, line 12 – line 1 (= "total" – "prior years") of the previous year's Schedule P.[12]

The previous year's unpaid loss adjustment expense is found on page 10, column 6, of the previous year's Annual Statement. As is true for losses (see above), the current calendar year's incurred loss adjustment expenses, as reported in the IEE, equals the current calendar year's payments plus the change in reserve.[13]

7. Unpaid losses: Unpaid losses by line of business should agree with the entries on page 10 of the Annual Statement, "Underwriting and Investment Exhibit," Part 3A, column 5, "Net losses unpaid excluding loss adjustment expenses." The aggregate figure for all lines combined is also shown on page 3, "Liabilities, Surplus and Other Funds," line 1, "Losses," column 1 (current year).

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[11] See the *NAIC Proceedings*, 1992, Volume IA, page 339.

[12] The "prior years" line in Part 1 of Schedule P shows the paid amount in the current calendar year, not a cumulative paid amount. Since one wants the amount paid in the current calendar year for this cross-check, one wants the current statement's figure for the "prior years" line, not the change from last year's figure to this year's figure.

[13] This is the statutory cross-check. Readers who wish to fully understand the interrelationships among the Underwriting and Investment Exhibit, Schedule P, and the IEE should trace these numbers in their company's statutory statements. It is unlikely that any Part 7 examination questions will require this level of expertise.

Agents' Balances

11. Agents' balances: The aggregate total for all lines combined should equal the sum of

- line 9.1, "Premiums and agents' balances in the course of collection," and
- line 9.2, "Premium, agents' balances and installments booked but deferred and not yet due."

Line 9.3, "Accrued retrospective premiums," is *not* included in the IEE definition of agents' balances, since they are already deducted from unearned premium reserves (see above). On page 8 of the Annual Statement, "Underwriting and Investment Exhibit," Part 2A, "Recapitulation of all Premiums," accrued retrospective premiums are entered as negative amounts in column 4, "Reserve for rate credits and retrospective adjustments based on experience." The "total reserve for unearned premiums" in column 5 is the sum of columns 1 through 4, where columns 1 through 3 are

- Column 1: Amount unearned, running one year or less from date of policy
- Column 2: Amount unearned, running more than one year from date of policy
- Column 3: Advance premiums

Earned premium is defined as written premium minus the change in the unearned premium reserve, or

  Earned premium
= Written premium
+ Beginning of year unearned premium reserve
− End of year unearned premium reserve.

A decrease in the end of year unearned premium reserve causes a corresponding increase in the year's earned premium. The accrued retrospective premium asset decreases the end of year unearned premium reserve on page 8, so it increases the earned premium on page 7, column 4, of the Annual Statement. The "profit or loss" in column 17 of the IEE begins with the earned premium in column 2. Thus, accrued retrospective premiums are already included in the "profit or loss" figure, and they need not be entered again in "agents' balances" (column 10).[14]

The allocation of agents' balances to line of business is a direct allocation, not a formula allocation, in most cases. The allocation shown in column 10, as well as the allocation for the

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[14] Compare the *NAIC Proceedings*, 1991 Volume IIA, "Insurance Expense Exhibit Working Group of the Blanks (EX4) Task Force," March 22, 1991, Attachment Four–B, page 450: "Unearned premium reserves will be net of retrospective premiums, therefore line 9.3 will no longer be subtracted from reserves."

Both the IEE and page 2 of the Annual Statement show the admitted portion of agents' balances, or the amount which is not yet 90 days overdue. The non-admitted amount is shown on page 12, "Exhibit 1 – Analysis of Assets," line 9.1. Line 9.3 may also show a non-admitted amount, which is 10% of the non-secured accrued retrospective premiums.

previous year end, is used in the allocation of investment income by line of business (see below).

Underwriting Expenses

12, 13, 14, and 15. Expenses: The expense items for all lines of business combined should equal the corresponding amounts in Part I of the IEE, as follows:

- IEE, Part II, column 12, "Commission and brokerage expenses incurred," line 32 (total) should equal IEE, Part I, column 2, "Acquisition, field supervision and collection expenses," line 2h, "Net commission and brokerage." The allocation to line of business is generally a direct allocation.

- IEE, Part II, column 13, "Taxes, licenses and fees incurred," line 32 (total) should equal IEE, Part I, column 4, "Taxes, licenses and fees," line 22, "Total." The allocation to line of business is a combination of direct allocation and formula allocation.

- IEE, Part II, column 14, "Other acquisition, field supervision and collection expenses incurred," line 32 (total) should equal IEE, Part I, column 2, "Acquisition, field supervision and collection expenses," line 22, "Total," minus line 2h, "Net commission and brokerage." The allocation to line of business is generally a formula allocation (see New York Regulation 30).

- IEE, Part II, column 15, "General expenses incurred" line 32 (total) should equal IEE, Part I, column 3, "General expenses," line 22, "Total." The allocation to line of business is generally a formula allocation (see New York Regulation 30).

16. Other Income less Other Expenses: The aggregate amount for all lines of business combined in this column should equal page 4 of the Annual Statement, line 13 minus line 5. Page 4, line 13 is "total other income," and it may be a positive or negative amount. Page 4, line 5 is "aggregate write-ins for underwriting deductions," and it is generally a positive amount.

Do not confuse the "other expenses" in column 16 of the IEE, Part II, with "other underwriting expenses" on page 4, line 4, of the Annual Statement. The "other underwriting expenses" on page 4, line 4, equals the sum of columns 12, 13, 14, and 15 in Part II of the IEE.

Also, note that the "net gain or loss from agents' or premium balances charged off," which appears on line 10 of page 4 of the Annual Statement, shows up on Part II of the IEE in column 16, "other income less other expenses," not in column 11, "agents' balances." The column 11 shows the currently admitted portion of agents' balances. Recoveries of amounts previously not admitted, as well as charge offs of amounts previously admitted, show up in column 16.

Allocation of Investment Income by Line of Business

The allocation of investment income by line of business in the 1992 and subsequent Insurance Expense Exhibits differs from the corresponding allocation in previous years. However, the allocation in the IEE is now the same as the allocation in the NAIC "Profitability by Line by State" reports.

Before 1992, the allocation procedure was documented in the footnotes to the IEE. Now the allocation procedure appears in the instructions to the IEE. The allocation procedure is also described in the *Proceedings of the NAIC*, 1992. Volume 1A, pages 339-341.[15]

This paper examines the allocation procedure on three levels:

- *Conceptual:* the philosophy underlying the allocation procedure.
- *Components:* the insurance elements comprising the allocation formula, as well as the adjustments made to several of these elements.
- *Data:* the data sources for the elements of the allocation formula (primarily the previous columns of Part II of the IEE).

The NAIC instructions to the IEE show the arithmetic formula, with little or no explanation of the allocation philosophy or the rationale for the adjustments. This paper describes the concepts and formulas of the allocation procedure, and it provides a detailed example to assist the reader in understanding the method.

Conceptual Level

The allocation of investment income to line of business in the IEE rests upon three principles:

1. The investment income allocated to each line of business is in proportion to the investable funds associated with each line of business. Investable funds include (i) funds attributable to insurance transactions and (ii) funds attributable to capital and surplus.

2. Funds attributable to insurance transactions are loss reserves plus unearned premium reserves minus prepaid expenses and minus uncollected premiums. [The adjustments to the unearned premium reserves for prepaid expenses and uncollected premiums occurs in some parts of the allocation procedure, not in all parts (see below).]

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[15] The allocation procedure is strictly prescribed by the NAIC: "Although various methodologies might result in reasonable allocations of investment income to lines of business. the following formulae for allocating investment gain must be used in completing the allocation for Column 18, Investment Gain on Funds Attributable to Insurance Transactions and the allocation for Column 20, Investment Gain Attributable to Capital and Surplus" (page 339).

3. Capital and surplus are allocated to lines of business in proportion to total reserves plus earned premium for the year.

Component Level

The allocation procedure uses the following principles to derive the items in the "conceptual level":

1. For balance sheet items, the *averages* of the current year-end values and the prior year-end values are used. These balance sheet items are

   - Net loss and loss adjustment expense reserves
   - Net unearned premium reserves
   - Net agents' balances
   - Policyholders' surplus

   The allocation procedure refers to these as "mean surplus," "mean net agents' balances," and so forth. [For example, mean surplus is the average of policyholders' surplus at December 31 of the current year and policyholders' surplus at December 31 of the prior year.]

2. Prepaid expenses, or "acquisition expenses," are

   Commission and brokerage expenses incurred
   \+ Taxes, licenses, and fees incurred
   \+ Other acquisition, field supervision, and collection expenses incurred
   \+ one half ($^1/_2$) of general expenses incurred.

3. Net investment gain or loss is composed of net investment income earned and net realized capital gains or losses. It does *not* include unrealized capital gains or losses.[16]

The Allocation

The allocation procedure works as follows:

A. Allocate the company's mean surplus to line of business in proportion to

   Mean net loss and loss adjustment expense reserves
   \+ Mean net unearned premium reserves
   \+ Earned premium for the year

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[16] This is not an anomaly of statutory accounting. GAAP financial statements also exclude unrealized capital gains from the statement of earnings.

Note that unearned premium reserves are not adjusted for agents' balances or for prepaid expenses, in this part of the allocation procedure. The unearned premium reserves represent the amount the insurer is required to hold, not the amount of investable funds derived from premiums.

B. Determine the company's overall "investment gain ratio" as

Net investment gain ÷
(Mean net loss and loss adjustment expense reserves
\+ Mean net unearned premium reserves
\- Mean net agents' balances
\+ Mean policyholders' surplus).

Recall that "net investment gain (or loss)" is composed of net investment income earned and net realized capital gains or losses. It does *not* include unrealized capital gains or losses.

Agents' balances are a component of written premium and therefore of the unearned premium reserve. But agents' balances are not an investable asset, so they are subtracted from the unearned premium reserve in determining the investment gain ratio.

In statutory accounting, prepaid expenses are an expenditure, not an asset. Prepaid expenses reduce policyholders' surplus, so they are already "subtracted" from the investable assets in the denominator of the "investment gain ratio." [In contrast, most agents' balances are admitted assets, so they do not reduce policyholders' surplus.]

In this part of the formula, the reserves, agents' balances, and surplus are for all lines combined.

C. For each line of business, the "investment gain on funds attributable to insurance transactions" (column 18) is the company's investment gain ratio times the funds attributable to insurance transactions for that line of business. This latter item is determined as

Funds attributable to insurance transactions =
Mean net loss and loss adjustment expense reserves
\+ Mean net unearned premium reserves x [1 – (prepaid expenses ÷ written premiums)]
\- Mean net agents' balances.

Prepaid expense are funded from surplus, not from insurance transactions, since the full (gross) unearned premium reserve must be held as a liability. The ratio of prepaid expenses to written premiums shows the percentage of each premium dollar that must be funded from surplus. The mean net unearned premium reserves are therefore multiplied by the complement of this ratio.

D. For each line of business, the "investment attributable to capital and surplus" (column 20) is the total investment gain for that line of business minus the "investment gain on funds attributable to insurance transactions." The total investment gain for that line of business is the company's investment gain ratio times the investable funds associated with that line of business. The investable funds associated with that line of business equal that line's

  Mean net loss and loss adjustment expense reserves
+ Mean net unearned premium reserves
− Mean net agents' balances
+ Allocated policyholders' surplus.

Since policyholders' surplus is already reduced by prepaid expenses in statutory accounting, there is no need to reduce the unearned premium reserves by these expenses.

This completes the allocation procedure for investment income. The section below shows the data sources for each element of the procedure.

Data Level

All the data elements for the allocation of investment income to line of business are taken from the Annual Statement or from prior columns of the IEE. The following abbreviations clarify the formulas:[17]

LR_{lob}	Mean net loss and loss adjustment expense reserves by line of business
LR_{tot}	Mean net loss and loss adjustment expense reserves for all lines combined
$UEPR_{lob}$	Mean net unearned premium reserves by lines of business
$UEPR_{tot}$	Mean net unearned premium reserves for all lines combined
PPE_{lob}	Net prepaid expenses, or net acquisition expenses, by line of business
AB_{lob}	Mean net agents' balances by line of business
AB_{tot}	Mean net agents' balances for all lines combined
WP_{lob}	Net written premium by line of business for the current year
EP_{lob}	Net earned premium by line of business for the current year
EP_{tot}	Net earned premium for all lines combined for the current year
PHS_{tot}	Mean policyholders' surplus for all lines combined
PHS_{lob}	Policyholders' surplus allocated to the line of business
PHS_{rat}	Policyholder surplus ratio
IG	Net investment gain
IGR	Investment gain ratio
IG_{it}	Investment gain by line of business on funds attributable to insurance transactions
IG_{cs}	Investment gain by line of business attributable to capital and surplus

1. *Net loss and loss adjustment expense reserves* are taken from page 10 of the Annual

[17] The NAIC instructions use different abbreviations: A1 for LR_{lob}, A2 for LR_{tot}, B1 for $UEPR_{lob}$, and so forth, through L for IG_{it} and M for IG_{CS}.

Statement, "Underwriting and Investment Exhibit," Part 3A, column 5, "net losses unpaid excluding loss adjustment expenses," plus column 6, "unpaid loss adjustment expenses." The "mean" value is determined by averaging the amounts in the current and prior Annual Statements.

2. *Net unearned premium reserves* are taken from page 8 of the Annual Statement, "Underwriting and Investment Exhibit," Part 2A, column 5, "total reserve for unearned premium." The "mean" value is determined by averaging the amounts in the current and prior Annual Statements.

3. *Net prepaid expenses* are determined from the prior columns in Part II of the IEE, as

$$\text{Net prepaid expenses} = (\text{column } 12 + \text{column } 13 + \text{column } 14 + {}^{1}/_{2}\ \text{column } 15)$$

4. *Net agents' balances* for all lines combined is taken from page 2 of the Annual Statement, line 9.1 plus line 9.2. Agents' balances by line of business are taken from column 11 of the Part II of the IEE. The "mean" values are determined by averaging the amounts in the current and prior Annual Statements and Insurance Expense Exhibits.

5. *Written and earned premium:* Net written premium is taken from column 1 of Part II of the IEE, and net earned premium is taken from column 2.

6. *Mean policyholders' surplus* for all lines combined is the average of columns 1 and 2 on line 26 of page 3 of the Annual Statement.

7. *The policyholders' surplus ratio* is defined as the ratio of policyholders' surplus to the sum of loss reserves, unearned premium reserves, and annual earned premium, or

$$PHS_{rat} = PHS_{tot} \div (LR_{tot} + UEPR_{tot} + EP_{tot})$$

8. *The policyholders' surplus allocated to each line of business* is determined as the product of the policyholders' surplus ratio and the sum of loss reserves, unearned premium reserves, and annual earned premium for that line of business, or

$$PHS_{lob} = PHS_{rat} \times (LR_{lob} + UEPR_{lob} + EP_{lob})$$

9. *The net investment gain* is taken from the Annual Statement, page 4, "Statement of Income, line 9A, "net investment gain or loss." Line 9A of page 4 is the sum of line 8 ("net investment income earned," or interest, dividends, and rent) and line 9 ("realized capital gains or losses"). Unrealized capital gains and losses, which appear on line 19 of page 4, are not included in line 9A.

10. *The investment gain ratio* is defined as the investment gain divided by investable assets, or

$$IGR = IG \div (LR_{tot} + UEPR_{tot} + PHS_{tot} - AB_{tot}).$$[18]

11. The investment gain by line of business on funds attributable to insurance transactions is determined as

$$IG_{it} = IGR \times \{LR_{lob} + UEPR_{lob}\,[1 - (PPE_{lob} \div WP_{lob})] - AB_{lob}\}$$

This is the entry for column 18.

12. The investment gain by line of business attributable to capital and surplus is determined as

$$IG_{cs} = [IGR \times (LR_{lob} + UEPR_{lob} + PHS_{lob} - AB_{lob})] - IG_{it}$$

This is the entry for column 20.

The 1992 Revisions

The major differences introduced in the 1992 IEE regarding the allocation of investment income are as follows:

- Before 1992, there was a separate "capital and surplus" account, similar to a line of business. The investment income attributable to capital and surplus was not allocated to lines of business. In 1992, the separate "capital and surplus" account was removed, and the investment income attributable to capital and surplus is allocated to lines of business.

- Before 1992, the investment income allocated to lines of business reflected primarily bond

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[18] In theory, one might make other adjustments to investable assets, such as for "bills receivable, taken for premiums" (line 11 of page 2 of the Annual Statement). Most of these other adjustments are minor, and would not materially affect the allocation procedures.

David Eley has pointed out to me that the "investment gain ratio" is applied to the investable assets by line of business. It would be extremely difficult, if at all practical, to make these adjustments by line of business. To properly allocate investment income, the investable assets by line of business should sum to the total investable assets used in the allocation procedure. Moreover, although the investment gain ratio without these adjustments may be slightly inaccurate in any one year, over a period of several years the ratio works well.

Mr. Eley is correct. These practical considerations overwhelm any theoretical advantages from additional adjustments.

returns, not common stock dividends or capital gains.[19] Thus, the investment yield on funds attributable to capital and surplus differed from the investment yield on funds attributable to insurance transactions. In 1992, stock dividends and realized capital gains are treated as other investment income, so the difference in investment yields has been eliminated.[20]

- More funds are attributable to insurance transactions in the 1992 and subsequent Insurance

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[19] In the 1991 IEE, the "adjusted investment income" that is allocated to lines of business is defined as "Annual Statement, page 6, part 1, column 8, lines 10 – 11 – 12 – 2.1 – 2.11 – 2.2 – 2.21" (see step "B" of footnote "D" in the 1991 IEE). Part 1 of page 6 shows "interest, dividends, and real estate income," not capital gains. Column 8 shows the amount earned during the year. Line 10 shows the total (gross) investment income. Column 11 shows the investment expenses incurred, and column 12 shows the real estate depreciation. Lines 2.1, 2.11, 2.2, and 2.21 show dividends on (i) unaffiliated preferred stock, (ii) affiliated preferred stock, (iii) unaffiliated common stock, and (iv) affiliated common stock, respectively.

The investable assets to which the "adjusted investment income" was compared also excluded common stocks. The "investment income ratio" used for the allocation of investment income to line of business therefore reflected primarily bond returns, not stock returns.

Step "J" of footnote D to the 1991 IEE defines "investment income attributable to the capital and surplus accounts" as Annual Statement page 4, line 8, less the investment income allocated to lines of business. Page 4, line 8, equals page 6, column 8, lines 10 – 11 – 12 – 13. Line 13 is "aggregate write-ins for deductions from investment income," and it is usually a small amount.

A major portion of net investment income attributed to the capital and surplus account reflected the difference between stock and bond returns. Step "K" of footnote D to the 1991 IEE says "Realized capital gains attributable to capital and surplus accounts = Annual Statement, page 4, line 9. Page 4, line 9, comprises all realized capital gains, as shown on page 6 , part 1A, line 11.

This separation of stock dividends and realized capital gains from other investment income was no longer considered appropriate. In 1992, the division between investment income attributable to insurance transactions and that attributable to capital and surplus relates to the earnings base (i.e., the amount of funds in each section), not to the type of investments "associated" with each section.

[20] Cf. the *NAIC Proceedings*, 1991 Volume IIA, "Insurance Expense Exhibit Working Group of the Blanks (EX4) Task Force," March 22, 1991, Attachment Four-B, page 450: "The separate treatment of realized capital gains was eliminated with the effect of relating the same rate of return to capital and surplus that is related to insurance transaction funds." Compare also the letter from David F. Eley to Dan Atkinson of February 22, 1991, "Formula for Allocating Investment Income to Lines of Business" in the *NAIC Proceedings*, 1991 Volume IIA, page 454: "A second change is that all investment gain, including realized capital gain or loss, is allocated equally. There is no longer any disparity between the rate of return earned on funds derived from the insurance transaction and the rate of return earned on capital and surplus."

Expense Exhibits than were attributed to policyholders in the pre-1992 IEE.

Profit or Loss

Part II of the IEE shows three columns of profit or loss:

- Column 17: Pre-tax profit or loss excluding all investment gain
- Column 19: Profit or loss excluding investment gain attributable to capital and surplus
- Column 21: Total profit or loss

All three columns are pre-federal income tax, though the "pre-tax" caption appears only in column 17.

The profit or loss equals revenues minus expenditures, on an accrual (not paid) basis. Thus

- Column 1, "premium written," is on a paid basis. Column 2, "premium earned," is on an accrual basis. Earned premium (column 2) is used in the profit and loss calculation, not written premium (column 1).

- Columns 7 through 10, the loss reserves, loss adjustment expense reserves, and unearned premium reserves, are liabilities, not expenditures. Column 11, "agents' balances," is an asset, not a revenue item. Columns 7 through 11 do not enter the profit or loss calculation.

- Column 16, "other income" is a revenue item. Columns 3 through 6 (policy benefits, or losses incurred, loss adjustment expenses incurred, and policyholder dividends) and 12 through 15 (expenses) are expenditure items, so they enter the profit or loss calculation.

The formula for column 17 is therefore

$$\text{column } 17 = \text{ columns } 2 + 16 - 3 - 4 - 5 - 6 - 12 - 13 - 14 - 15.$$

Investment income is a revenue item. Thus column 19 equals column 17 + column 18, and column 21 equals column 19 + column 20. This completes Part II of the IEE.

Allocation Procedures: An Illustration

The discussion above is abstract; an illustration should clarify the procedures. The example below reviews the various steps in the allocation of investment income:

- Allocating surplus to lines of business
- Calculating the investment gain ratio
- Calculating the prepaid ("acquisition") expense ratio
- Determining the investment gain on funds attributable to insurance transactions

- Determining the investment gain attributable to capital and surplus

In the illustration, we are completing the investment gain columns in Part II of the 1993 Insurance Expense Exhibit, using data from the 1992 and 1993 statutory financial statements. The IEE is for a commercial lines insurer that writes only two lines of business: workers' compensation and other liability. All amounts in the illustration are in millions of dollars.

Allocation of Surplus to Lines of Business

We must first allocate policyholders' surplus to lines of business. Line 26 of page 3 of the 1993 Annual Statement shows statutory surplus of $500 million at December 31, 1992, and of $700 million at December 31, 1993. The earned premiums, unpaid losses, unpaid allocated loss adjustment expenses, unpaid unallocated loss adjustment expenses, and unearned premium reserves for workers' compensation and other liability shown in the table below are taken from the 1992 and 1992 Insurance Expense Exhibits, columns 2, 7, 8, 9, and 10, for rows 16 and 17. Alternatively, these figures may be taken from the Underwriting and Investment Exhibits in the 1992 and 1993 Annual Statements: earned premiums from Part 2 (page 7), column 4; unearned premium reserves from Part 2A (page 8), column 5; unpaid losses from Part 3A (page 10), column 5; and unpaid loss adjustment expenses from Part 3A (page 10), column 6.

	Workers' Compensation		Other Liability	
	'92	'93	'92	'93
Earned premium, year ending 12/31/9_	350	450	200	200
Loss and LAE reserves, 12/31/9_	1,400	1,700	600	600
Unearned premium reserves, 12/31/9_	75	125	100	100

The IEE investment income allocation procedure requires that we allocate the company's *mean* surplus to line of business in proportion to

Mean net loss and loss adjustment expense reserves
\+ Mean net unearned premium reserves
\+ Earned premium for the year.

In this allocation, there is no adjustment of the unearned premium reserves for agents' balances or for prepaid expenses. Mean surplus is the average of the December 31, 1992, surplus and the December 31, 1993, surplus, or ($500 million + $700 million) ÷ 2 = $600 million. Mean surplus is used because investment income is earned over the course of the year.

Mean reserves are used, both for loss and loss adjustment expenses and for unearned premium.

The 1993 earned premium is used, not the average 1992 and 1993 earned premiums.

- For workers' compensation, the sum of mean reserves and annual earned premium is

$$[(1{,}400 + 1{,}700) \div 2] + [(75 + 125) \div 2] + 450 = \$2{,}100 \text{ million.}$$

- For other liability, the sum of mean reserves and annual earned premium is

$$[(600 + 600) \div 2] + [(100 + 100) \div 2] + 200 = \$900 \text{ million.}$$

- The mean surplus allocated to workers' compensation is

$$(600) \times [2{,}100 \div (2{,}100 + 900)\,] = \$420 \text{ million.}$$

- The mean surplus allocated to other liability is

$$(600) \times [900 \div (2{,}100 + 900)\,] = \$180 \text{ million.}$$

Investment Gain Ratio

We proceed to determine the "investment gain ratio." The workers' compensation and other liability figures are reproduced below.

	Workers' Compensation		Other Liability	
	'92	'93	'92	'93
Agents' balances, 12/31/9_	35	45	10	10
Earned premium, year ending 12/31/9_	350	450	200	200
Loss and LAE reserves, 12/31/9_	1,400	1,700	600	600
Unearned premium reserves, 12/31/9_	75	125	100	100

In addition, we take the following investment income and capital gains figures from the 1992 and 1993 Annual Statements, from the following exhibits:

- Net investment income: Page 4, line 8 = Underwriting and Investment Exhibit, page 6, Part 1, item 15.

- Realized capital gains: Page 4, line 9 = Underwriting and Investment Exhibit, page 6, Part 1A, item 11.

- Unrealized capital gains: Page 4, line 19 = Underwriting and Investment Exhibit, page 6, Part 1A, item 12.

Policyholders' surplus was $500 million at December 31, 1992, and $700 million at December 31, 1993, as shown on page 3, line 26.

Investment Income and Policyholders' Surplus ($000,000)

	'92	'93
Net investment income, year ending 12/31/9_	250	250
Realized capital gains, year ending 12/31/9_	100	50
Unrealized capital gains, year ending 12/31/9_	100	150
Policyholders' surplus, year ending 12/31/9_	500	700

The company's overall "investment gain ratio" is defined as

Net investment gain ÷
(Mean net loss and loss adjustment expense reserves
\+ Mean net unearned premium reserves
− Mean net agents' balances
\+ Mean policyholders' surplus)

"Net investment gain" for 1993 is used, not the average of the 1992 and 1993 values. It consists of net investment income earned (line 8 of page 4) and net realized capital gains or losses (line 9 of page 4). It does *not* include unrealized capital gains or losses (line 19 of page 4).

In this example, "net investment gain," or line 9A of page 4 of the Annual Statement, equals

$250 million + $50 million = $300 million.

The reserves, agents' balances, and surplus figures are needed for the company as a whole, not for each line of business. In this example, the figures are

- Mean net loss and loss adjustment expense reserves are

  ($1,400 M + $1,700 M + $600 M + $600 M) ÷ 2 = $2,150 million

- Mean net unearned premium reserves are

$$(\$75\ M + \$125\ M + \$100\ M + \$100\ M) \div 2 = \$200 \text{ million}$$

- Mean net agents' balances are

$$(\$35\ M + \$45\ M + \$10\ M + \$10\ M) \div 2 = \$50 \text{ million}$$

- Mean policyholders' surplus is

$$(\$500\ M + \$700\ M) \div 2 = \$600 \text{ million}$$

The "investment gain ratio" is

$$[\$300\ M \div (\$2{,}150\ M + \$200\ M - \$50\ M + \$600\ M)] = 10.34\%$$

Prepaid ("Acquisition") Expenses

We now proceed to determine the prepaid expenses by line of business. We take the following data from the 1992 and 1993 Insurance Expense Exhibits (figures in millions of dollars):

	Workers' Compensation		Other Liability	
	'92	'93	'92	'93
Written premium, year ending 12/31/9_	400	500	200	200
Commission & brokerage, year ending 12/31/9_	40	50	200	30
Taxes, licenses & fees, year ending 12/31/9_	8	10	5	5
Other acquisition expenses, year ending 12/31/9_	8	10	5	5
General expenses, year ending 12/31/9_	40	60	20	20

Prepaid expenses, or "acquisition expenses," are defined as

Commission and brokerage expenses incurred
\+ Taxes, licenses, and fees incurred
\+ Other acquisition, field supervision, and collection expenses incurred
\+ one half ($^1/_2$) of general expenses incurred.

For prepaid expenses, we use the 1993 figures, not the average of the 1992 and 1993 figures.

- For workers' compensation, prepaid expenses are

$$[\$50\ M + \$10\ M + \$10\ M + (0.5)(\$60\ M)\ ] = \$100 \text{ million}$$

- For other liability, prepaid expenses are

$$[\$30\ M + \$5\ M + \$5\ M = (0.5)(\$20)\ ] = \$50 \text{ million}$$

The prepaid expense ratio is prepaid expenses divided by written premium, not earned premium (see the calculations below). Acquisition expenses, underwriting expenses, and premium taxes all relate to written premiums (or written exposures), not to earned premiums.

Investment gain on funds attributable to insurance transactions

Column 18 of the Insurance Expense Exhibit asks for the "investment gain on funds attributable to insurance transactions." We now determine the appropriate column 18 entries for workers' compensation and other liability, using the accounting information from the company's 1992 and 1993 financial statements, as shown above.

For each line of business, the "investment gain on funds attributable to insurance transactions" is the company's investment gain ratio times the funds attributable to insurance transactions for that line of business.

In this example, the investment gain ratio is 10.34%, as determined above. The funds attributable to insurance transactions are defined as

Funds attributable to insurance transactions =
Mean net loss and loss adjustment expense reserves
+ Mean net unearned premium reserves x [1 − (prepaid expenses ÷ written premiums)]
− Mean net agents' balances

Prepaid expenses were determined above as $100 million for workers' compensation and $50 million for other liability. The 1992 written premium is $500 million for workers' compensation and $200 million for other liability, so the factor of

$$1 - (\text{prepaid expenses} \div \text{written premiums})$$

is 80% for workers' compensation and 75% for other liability.

The mean values for reserves and agents' balances were determined above. Using these values, the funds attributable to insurance transactions are as follows:

- For workers' compensation:

$$[(1{,}400+1{,}700) \div 2] + \{[(75+125) \div 2]\ x\ 80\%\} - [(35+45) \div 2] = \$1.590 \text{ million.}$$

- For other liability:

$[(600 + 600) \div 2] + \{[(100 + 100) \div 2] \times 75\%\} - [(10 + 10) \div 2] = \$665$ million.

The "investment gain on funds attributable to insurance transactions" is therefore 10.34% *x* \$1,590 million = \$165 million for workers' compensation and 10.34% *x* \$665 million = \$69 million for other liability.

Investment gain attributable to capital and surplus

Column 20 of the Insurance Expense Exhibit asks for the "investment gain attributable to capital and surplus." We now determine the appropriate column 20 entries for workers' compensation and other liability, using the accounting information from the company's 1992 and 1993 financial statements, as shown above.

For each line of business, the "investment gain attributable to capital and surplus" (column 20) is the total investment gain for that line of business minus the "investment gain on funds attributable to insurance transactions."

- The "investment gain on funds attributable to insurance transactions" for workers' compensation and other liability were determined above.
- The total investment gain for the line of business is the company's investment gain ratio times the investable funds associated with the line of business. The investable funds associated with the line of business equal the line's

  Mean net loss and loss adjustment expense reserves
  \+ Mean net unearned premium reserves
  \- Mean net agents' balances
  \+ Allocated policyholders' surplus.

Note carefully the distinction between "investable funds attributable to insurance operations" and "investable funds associated with the line of business." The former has an adjustment for prepaid ("acquisition") expenses. The latter includes policyholders' surplus allocated to lines of business. As noted above, prepaid expenses are already deducted from surplus. So if surplus enters the formula, there is no deduction of prepaid expenses from the unearned premium reserves.

The mean values for reserves and agents' balances were determined above, as was the allocation of policyholders' surplus to lines of business. Using these values, the investable funds associated with the lines of business are as follows:

- For workers' compensation:

  $[(1{,}400+1{,}700) \div 2] + [(75+125) \div 2] - [(35+45) \div 2] + 420 = \$2{,}030$ million.

  The total investment gain = 10.34% of \$2,030 million = \$210 million. The investment gain attributable to funds from insurance operations is \$165 million, as determined above, so the investment gain attributable to capital and surplus is $45 million.

- For other liability:

  $[(600 + 600) \div 2] + [(100 + 100) \div 2] - [(10 + 10) \div 2] + 180 = \$870$ million.

  The total investment gain = 10.34% of $890 million = $90 million. The investment gain attributable to funds from insurance operations is $69 million, as determined above, so the investment gain attributable to capital and surplus is $21 million.

Part III – Allocation to Lines of Direct Business Written

The purpose of Part III is to allocate elements of profit (or loss) on a direct basis to lines of business. Part III simulates what the results were without reflecting the effect of reinsurance.

– *NAIC Proceedings*, 1992, Volume IA, pages 340

Part III, "Allocation to Lines of Direct Business Written," is similar to Part II, except that Part III shows direct experience whereas Part II shows net experience. Two other differences result from this:

- Because most Annual Statement exhibits show net experience, not direct experience, there are few direct cross-checks from Part III of the IEE to the Annual Statement.

- Because investment income relates to net experience, not to direct experience, there are no investment income columns in Part III of the IEE.

Cross-Checks

1. Premiums written: Direct premiums written by line of business are shown in the Underwriting and Investment Exhibit, page 8, Part 2B, "Premiums written," column 1, "direct business."

2. Premiums earned and *3. Dividends to policyholders:* Direct premiums earned and dividends to policyholders on direct business are shown in the Annual Statement in Schedule T by state (columns 3 and 4) and on page 14 by line of business and by state (columns 3 and 4). The column headings in the IEE note the cross-check to Schedule T, not to page 14. The cross-check to Schedule T applies to the all lines combined row, not to the individual line of business amounts.

4. Incurred loss and *7. Unpaid losses:* Direct unpaid losses are shown in the Annual Statement by line of business in the Underwriting and Investment Exhibit, page 10, Part 3A, "Unpaid losses and loss adjustment expenses," column 1a, "Adjusted or in process of adjustment: direct," plus column 4a, "Incurred but not reported: direct"; in Schedule T by state (column 7); and on page 14 by line of business and by state (column 8). The column headings in the IEE note the cross-check to Schedule T, not to the Underwriting and Investment Exhibit or to page 14. The cross-check to Schedule T applies to the all lines combined row, not to the individual line of business amounts.

Direct losses incurred are shown in Schedule T and on page 14, but not in the Underwriting and Investment Exhibit. Direct paid losses are shown in all three places. Direct incurred losses by line of business can be derived from the Underwriting and Investment Exhibits of successive Annual Statements, since incurred losses equal paid losses plus the change in reserves. In any case, the column headings in the IEE note the cross-check to Schedule T, not to page 14 or to the Underwriting and Investment Exhibits of successive Annual Statements. The cross-check to Schedule T applies to the all lines combined row, not to the individual line of business amounts.

5, 6, 8, and 9. Loss adjustment expenses: Loss adjustment expenses are not reported in Schedule T, and direct loss adjustment expenses are not shown in the Underwriting and Investment Exhibit. The only cross-check listed in the IEE instructions or the NAIC *Proceedings* says:

> IEE Part III, Columns 5, 6, 8 and 9 must agree with IEE Part II, Columns 5,6, 8 and 9, respectively, excluding expense relating to reinsurance assumed and ceded.

However, direct allocated loss adjustment expenses incurred and unpaid are shown on page 14 by line of business and by state (columns 10 and 11), so a cross-check is available to columns 5 and 8 of Part III of the IEE.

10. Unearned premium reserves: Unearned premium reserves are not shown in Schedule T, and direct unearned premium reserves are not shown in the Underwriting and Investment Exhibit. For this column, however, the IEE instructions do reference the cross-check to page 14:

> Column 10 must agree with the sum of Page 14, Column 5 totals for all states plus any alien business.

11. Agents' balances, 14. Other acquisition, field supervision, and collection expenses incurred, 15. General expenses incurred, and 16. Other income less other expenses: There are no direct cross checks to any of these columns. The IEE instructions say that these figures should agree with the Part II entries after exclusion of balances or expenses related to reinsurance assumed or ceded.[21]

12. Commissions and brokerage expenses incurred: In Part I of the IEE, as well as on Part 4 of the Underwriting and Investment Exhibit in the Annual Statement, commissions and brokerage

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[21] Agents' balances related to reinsurance ceded are disclosed on page 12, Exhibit 1, "Analysis of Assets," lines 9.1 and 9.2, though there is no corresponding disclosure for amounts related to reinsurance assumed.

expenses are divided into seven categories:

2a. Direct excluding contingent
2b. Reinsurance assumed excluding contingent
2c. Reinsurance ceded excluding contingent
2d. Contingent – direct
2e. Contingent – reinsurance assumed
2f. Contingent – reinsurance ceded
2g. Policy and membership fees

Commission and brokerage expenses should appear in column 2 of Part I: "Acquisition, field supervision and collection expenses."

The column heading in Part III of the IEE notes that the total for column 12 for all lines of business combined should equal the sum of rows 2a and 2d, column 2, from Part I. Commissions and brokerage expenses were added to the Page 14 exhibits in 1992 (column 12), so a cross-check by line of business is now available as well.

13. Taxes, licenses and fees incurred: The IEE instructions list no explicit cross-check. Taxes, licenses, and fees were also added to the Page 14 exhibits in 1992, so a cross-check by line of business is available.

Profit or Loss

17. Pre-tax profit or loss excluding all investment gain: Column 17 of Part III is calculated in the same fashion as column 17 of Part II: revenues minus expenditures, on an accrual basis.

Part III has no allocation of investment income. Investment income is earned on assets actually held by the company: that is, on assets net of reinsurance. Investment income on direct business is a theoretical amount. In 1991, the IEE Working Group of the NAIC debated whether to show a theoretical investment income figure for direct business. In April 1991, the Insurance Expense Exhibit Working Group of the Blanks (EX4) Task Force voted to show such a figure in Part III:

> The working group then discussed the proposal to calculate investment income on a direct basis. Members of the advisory committee expressed concerns that the proposal creates assumptions on what would exist on a direct basis; that the numbers go beyond the financial accounting data historically included in annual statement data; that companies would be projecting income that they do not have. Members of the working group indicated that it would assist a state in seeing the impact of the state's premium dollar without excluding the reinsured portion of the premium dollar. Further, the information would be qualified using italics and footnotes in order to caution users of the nature of the data. It was moved and second that investment income on funds attributable to insurance transactions be calculated on a direct basis using italics to qualify the data. Voted to adopt with California opposed" (*NAIC Proceedings*, 1991 Volume IIA, "Insurance Expense Exhibit Working Group of the Blanks (EX4) Task Force," April 13, 1991, Attachment Four–A, page 448).

The Working Group subsequently decided not to include such figures in Part III:

> Columns 18 and 19 on Part III, Allocation to Lines of Direct Business Written will be deleted. Column 18 developed an implicit investment gain on funds attributable to insurance transactions. Column 19 developed an implicit profit or loss excluding investment gain attributable to capital and surplus" (*NAIC Proceedings*, 1992, Volume IA, pages 338).

The Measurement of Profitability

Measurement of profitability by line of business requires consideration of investment income. There are various methods of incorporating investment income (or the time value of money) in profitability measures.

The method used in the Insurance Expense Exhibit and discussed in this paper may be viewed as an "official" NAIC method. Casualty actuaries must understand this method well, both for completing the statutory financial statements and for evaluating the reasonableness of the statutory figures.

However, the IEE allocation procedures must be treated with caution: they are useful for some purposes but not for others. The following comments by two actuaries who have worked extensively in state regulation (and particularly with the measurement of insurance profitability) should make this clear.

Mr. Martin Rosenberg, formerly with the New Jersey Insurance Department, writes:

> *The allocation of surplus to the various lines of business [in the Insurance Expense Exhibit] can (and will) cause much confusion because the allocation is arbitrary.*
>
> *. . . both from the regulator's point of view as well as the insurance company's point of view, the financial results shown in the IEE for the various lines of business can not and should not be used to measure whether the premium rates are adequate or excessive. Nor should the IEE figures be used to determine if the capital used to support a line of business is earning a satisfactory return. . . .*
>
> *. . . a regulated enterprise has a right to the opportunity to earn an adequate rate of return. However, the right to an adequate rate of return does not extend to all individual services provided by the regulated entity but rather applies to the enterprise as a whole. . . .*
>
> *. . . This principle was applied to a 1992 case in which an insurer wanted to increase personal auto rates to recoup assessments to support the personal auto residual market. An Administrative Law Judge in New Jersey decided in that case that a multi line insurer's right to a fair rate of return pertains to the enterprise as a whole and does not extend to each line of insurance. Thus, the relevant measure of the insurer's rate of return was the rate of return of all lines of business combined and not just personal auto insurance.*
>
> *Insurance companies often price lines of business such as homeowners and personal auto in*

tandem. For example, typically one consideration in deciding whether to sell personal auto at a discount is whether the policyholder also has a homeowners policy with the same company. . . .

The point is that from the company's point of view, surplus is not allocated on a line by line basis. An independent measure of the return of personal auto and homeowners is not useful to the company because the financial results of personal auto and homeowners are dependent on each other.

The rate of return for the entire enterprise is the appropriate consideration from both the regulator's and company's point of view in many important applications. Therefore, it must be recognized that an allocation of surplus to the various lines of business may be arbitrary.

Mr. Richard Roth, Assistant Commissioner in the California Department of Insurance, made a tongue-in-cheek observation regarding the IEE allocation procedures during a recent panel presentation:

. . . according to the new IEE, since the underwriting and investment income is allocated based on national surplus, the loss of surplus caused by Hurricane Andrew will cause the profitability of automobile insurance in Massachusetts to improve.

These comments underscore the need for casualty actuaries to carefully analyze the profitability results that may be inferred from the Insurance Expense Exhibit.