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# FINANCIAL RATIO ANALYSIS SYSTEMS

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- o National Association of Insurance Commissioners' Early Warning System
  - What is the Insurance Regulatory Information System (IRIS)?
  - To what extent do IRIS results correlate with eventual financial difficulties?
- o A.M. Best Company ratios
- o Conning and Company solvency ratios
- o California Department of Insurance Empirical ratios
- o For each of the above:
  - What ratios are reviewed?
  - What are appropriate and inappropriate uses of each system?
  - What changes might be recommended to improve correlation?

MR. JOHN O. MONTGOMERY: This discussion was prepared from an article in the April 1986 Property and Casualty Edition of the Best's Review (Volume 86, Number 12) and formula explanations for A.M. Best's rating and analysis worksheets for Life and Health Insurance Companies sent by Raymond G. Shepard, Financial Analyst, Life and Health Department, A.M. Best Company. Currently the A.M. Best Company rates nearly 4,000 insurance companies equally divided between life and health insurers and property and casualty insurers. In the last decade widely fluctuating investment returns, the increasing variety of products, the increasing number of leveraged buy-outs by hungry raiders and the rapidly expanding litigious nature of the American public have turned the task of providing ratings into a nightmare. Like the NAIC, A.M. Best and all competing rating services have found the need to almost constantly modify their surveillance techniques. Presented here is the current A.M. Best Rating System, and it will undoubtedly change as changes in financial reporting make more information available.

The A.M. Best Rating System has six areas of evaluation -- three each under two major categories, quantitative evaluation and qualitative evaluation. Areas of quantitative evaluation are (1) profitability, (2) leverage and (3) liquidity. Areas of qualitative evaluation are (4) amount and soundness of reinsurance, (5) adequacy of reserves and (6) management.

## PROFITABILITY

Profit is essential to a strong and enduring insurer. It measures the competence and ability of management to provide services and prices attractive to the policyholders in competitive markets, and to compare favorably with its peers in cost control and efficiency. To attempt to measure profitability, the majority of the analyses conducted by A.M. Best are in the area of evaluation. Many of these test results are compared over a five year period to observe trends. Many of these results are published each year in the Best's Review.

For each insurer are determined and published the basic profitability tests:

1. *Yield on Investments.* Net investment income expressed as a percentage of the mean cash and invested assets plus accrued investment income minus borrowed money. This ratio does not reflect capital gains or income taxes. The usual range is 7% to 12%, with an industry norm of 9.4%.

2. *Net Operating Gain to Net Premiums Written.* Net operating gain as a percentage of net premiums written. This ratio does not include capital gains. The usual range is any result greater than zero, and the industry norm is 7%.

3. *Profit Margin.* The sum of the net underwriting income, tabular interest and interest on policy or contract funds as a percentage of net premiums written. A positive result indicates that the company has priced

its portfolio of products at levels which produce a profit after payment of expenses and policy benefits and prior to investment income. A negative figure reflects the dependency of the company upon investment income to offset underwriting deficits. The industry norm for this test is -8%, with the usual range being any result greater than -20%.

4. *Net Operating Gain to Total Income.* Net operating gain as a percentage of total operating income. This ratio does not include capital gains. The usual range is any result greater than zero, and the industry norm is 5%.

5. *Return on Equity.* Net operating gain as a percentage of prior year capital and surplus. This test reflects the return on capital and surplus from insurance operations and investments. The usual range is any result greater than zero, and the industry norm is 10%.

6. *Benefits Paid to Net Premiums Written.* Total benefits paid as a percentage of net premiums written. Benefits paid include death benefits, matured endowments, annuity benefits, accident and health benefits, disability and surrender benefits, group conversions, coupons and payments on supplementary contracts. The usual range is any result less than 90%. The industry norm is 50%.

7. *Commissions and Expenses to Net Premiums Written.* Commissions and expenses incurred as a percentage of net premiums written. Commissions and expenses include commissions and expenses on both direct and assumed business, general insurance expenses, insurance taxes, licenses and fees, increase in loading and other miscellaneous expenses. They exclude commissions and expense allowances received on reinsurance ceded. The usual range is any result less than 85%. The industry norm is 45%.

8. *Change in Capital and Surplus.* The annual percentage change in capital and surplus. The usual range is -10% to 50%, and the industry norm is 10%.

Reports on premium income related to profitability which are published include:

- *Direct Premiums Written.* Premiums received on business written directly by the company and prior to any reinsurance transactions.

- *Reinsurance Assumed.* Premiums received from other insurance companies for business assumed through reinsurance.

- *Annuity/Other Fund Deposits.* Income collected under annuity deposit administration contracts which is held by the company at interest. Although annuities may be purchased in the future for plan participants, this income is generally not subject to premium taxes at the time of collection.

- *Gross Premiums Written.* Direct premiums written plus reinsurance assumed plus annuity/other fund deposits.

- *Reinsurance Ceded.* Premiums paid to other insurance companies for business ceded under reinsurance agreements.

- *Net Premiums Written.* Gross premiums written less reinsurance ceded.

Published reports on premium income distribution (%) related to profitability include:

- *Individual Life.* The sum of ordinary life (including variable ordinary life) and industrial life premiums expressed as a percentage of total net premiums written.

- *Annuity Plus Fund Deposits.* The sum of individual and group annuity premiums plus annuity and other deposit funds expressed as a percentage of total net premiums written.

- *Group Life and Group A&H.* The sum of group life (including variable group life) and group accident and health premiums expressed as a percentage of total net premiums written.

- *Credit Life and Credit A&H.* The sum of credit life and credit accident and health premiums expressed as a percentage of total net premiums written.

- *Other A&H.* All other individual accident and health premiums expressed as a percentage of total net premiums written.

Not usually published but used in A.M. Best's analyses are such ratios as death benefits to net premiums; commissions and expenses to net premiums; and benefits paid to net premiums. These are determined by line of business.

Also not usually published are detailed analyses of operations that are conducted separately for ordinary life, credit life, credit disability, total credit life and disability, group life, group accident and health, total group operations, group annuities and individual annuities, and total life operations. For each of the two annuity analyses of operations, ratios of expenses to direct premiums, expenses to net premiums and expenses to reserves are calculated, along with a ratio of benefits to net premiums. For each of the credit life, credit disability and group accident and health lines are calculated ratios to direct premiums, separately of commissions, expenses, and the sum of commissions and expenses. Corresponding ratios to net premiums are also calculated. For each of the group and credit analyses mentioned above, ratios to net premiums are calculated separately of benefits; increase in reserves; commissions; general insurance and loading expenses; insurance taxes, licenses and fees, excluding federal income tax; dividends to policyholders; federal income taxes; net gain after federal income tax; net investment income; and the sum of the transfers from separate accounts and miscellaneous.

Renewal expense ratios are usually not published but are calculated separately for group life and ordinary life and all business combined. For the analysis of ordinary life operations, calculations are made of ratios of lapses and surrenders of various types, proportions of ordinary premiums ceded to ordinary gross premiums, proportion of amount of business issued to amount in force, and separately for first year versus total ordinary business ratios of commissions to direct premiums, commissions to collected premiums and first year net premiums to total net premiums. By "net premiums" is meant net of reinsurance ceded premiums, not valuation net premiums. The analysis of total life operations contains calculations of the average size policies issued and in force separately for industrial, credit and group life insurance, as well as the average size premium for all life insurance combined.

Also not usually published are various ratios by Schedule H of business, which are calculated for each line of accident and health insurance and in total. These include loss ratios, expense ratios, combined loss and expense ratios, underwriting results (the ratios of the gain from underwriting before dividends to policyholders for each line of business to the total for all lines combined) and claim reserve deficiency.

The statutory underwriting profit margin also is determined for each columnar line of business in the Summary of Operations (Page 5 of the NAIC Annual Life and Accident and Health Blank). This is determined as the percentage ratio of (a) the sum of the net gain from operations plus interest paid on policy funds plus tabular interest (from page 6) less the net investment income to (b) the sum of premiums, annuity considerations and deposits.

## LEVERAGE

Leverage increases return on capital but also increases the risk of instability. A.M. Best compares the leverage of each insurer with industry norms to evaluate the relative degree of risk to the policyholders. The types of leverage reviewed by A.M. Best for life and health insurers includes reinsurance leverage, reserve leverage, a determination of "net capital and surplus" and "over-all insurance exposure," and the calculation of a set of capital and surplus ratios. Under the Liquidity Evaluation routine, included later, another leverage item, investment leverage, is described.

A.M. Best publishes six leverage tests. The first is Change in Net Premiums Written (percentage change in net premiums written from the previous year). This test is a measure of the growth in underwriting commitments with a usual range of -10% to 50%. The industry norm is 10%.

The second test is Direct Premiums Written to Capital and Surplus. This test reflects the leverage, before reinsurance assumed and ceded, of the company's current volume of direct business in relation to its statement capital and surplus, with an acceptable maximum value of direct premiums to capital and surplus of 4.0 and an industry norm of 1.7. The adjusted test result may reflect adjustments made to statement capital and surplus, which includes the addition of mandatory securities valuation reserves (MSVR), plus any other miscellaneous voluntary reserves reported as liabilities, plus the equity in net unearned premiums for accident and health business, plus equity in net deficiency reserves, plus the equity in life reserves, if applicable.

The Net Premiums Written to Capital and Surplus test reflects the leverage, after reinsurance assumed and ceded, of the company's current volume to net business in relation to its statement capital and surplus. This test measures the company's exposure to pricing errors in its current book of business. The maximum acceptable value of net premiums to capital and surplus is 3.9, with the industry norm being 1.6. The adjusted test represents applicable adjustments made to statement capital and surplus.

The Surplus Relief test reflects the relationship of commissions and expense allowances on reinsurance ceded to year end statement capital and surplus. The use of surplus relief can be the result of "surplus strain," a term used to describe any insurance transaction wherein the funds collected are not sufficient under statutory accounting rules to cover the liabilities established.

Since statutory accounting rules set minimum levels at which the capital and surplus account must be maintained, a line of business or policy that reduces this account places a "strain" on the company's financial resources and its ability to continue to write new business from a statutory perspective. If surplus strain would continue to persist for a period of years, the company's solvency could be in jeopardy. An additional concern would be the reinsurers providing the surplus relief, since the solvency of the reinsurers would have a direct effect on the company ceding the business. The maximum value for surplus relief is 30%, and the industry norm is 5%. The adjusted test is net after deduction of commissions and expense allowances on reinsurance assumed.

If the results of the next test, Reinsurance Ceded to Gross Premiums Written, are substantially larger than industry averages, the reasons should be reviewed. Unless the nature of the business is such that substantial reinsurance is customary to protect against the risk of large losses or catastrophes, a high ratio often indicates that the purpose of the reinsurance is largely financial -- that is, that the company's surplus or profits are not adequate to support the company's book of business without the financial help provided by reinsurance. The maximum value for reinsurance ceded premiums to gross premiums written is 40%. The industry norm is 8%.

A company whose Exposure to Surplus ratio is substantially higher than the industry median may be a company that is highly leveraged; that is, it may be writing more business than its capital and surplus can support. The maximum value for insurance exposure to capital and surplus is 20, with the industry norm being 8. In the adjusted test, insurance exposure is net after the deduction for a portion of reinsurance business ceded with professional/quality reinsurers, while capital and surplus is also adjusted for the equity in net unearned premiums for accident and health business, plus the equity in life reserves, if applicable.

This last test, (Insurance Exposure to Capital and Surplus), shows the relationship of total life and health insurance exposure of risk to adjusted capital and surplus. Adjusted capital and surplus includes statement capital and surplus funds plus the mandatory securities valuation reserve and other voluntary reserves reported as liabilities, plus the equity in net deficiency reserves, less dividend reserve deficiencies, less operating losses incurred during the year, less surplus or debentures, and less 20% of common stock holdings.

Related to the Leverage Tests, certain balance sheet items are published:

- *Cash and Securities.* Cash and invested assets less investments in affiliates and less real estate properties occupied by the company.

- *Investment in Affiliates.* Bonds, stocks and short-term investments in affiliates, and real estate properties occupied by the company.

- *Other Assets.* All other assets not included in cash and securities and affiliated investments.

- *Total Admitted Assets.* Sum of cash and securities, investments in affiliates and other assets valued in accordance with state laws and regulations.

- *Policy Reserves.* Aggregate reserves established for life, annuity and accident and health business plus supplementary contracts.

- *Conditional Reserves.* Mandatory Securities Valuation Reserve and miscellaneous voluntary reserves reported as liabilities.

- *Other Liabilities.* All other liabilities not included in policy reserves and conditional reserves.

- *Total Liabilities.* Sum of policy reserves, conditional reserves and other liabilities.

- *Capital and Surplus.* This item is the sum of paid-in capital, paid-in and contributed surplus and net earned (unassigned) surplus. It is the difference between total admitted assets and total liabilities.

There are analysis considerations in the leverage evaluation, some of which may not be published. The leverage evaluation starts by determining various statistical items, such as total direct premiums written, total reinsurance assumed premiums, premiums and annuity considerations and other fund deposits, gross premiums written, reinsurance ceded premiums and net premiums written and then percentages of direct premium income and net premium income by line of business. Next are various breakdowns by total and by line of business of the amount of insurance issued and in force, the ratio of business assumed to in force, and the ratio of ceded to in force.

Various reinsurance leverage indicators are calculated, such as (1) surplus relief (percent of commissions and expense allowances on reinsurance ceded to capital and surplus); (2) adjusted surplus relief (percent of net excess of commissions and expense allowances on reinsurance ceded over those on reinsurance assumed to capital and surplus); (3) percent reinsurance ceded premiums to gross premiums; (4) percent reinsurance recoverable to capital and surplus; (5) percent total reserve credit for reinsurance ceded to capital and surplus; and (6) separately for group A&H, credit disability and other accident and health, the ratios of reinsurance ceded premiums to gross premiums.

Various items useful in the analysis of reserve leverage are calculated, such as (1) life insurance reserves and separate totals for Total, those calculated by the Commissioners' Reserve Method, those calculated by the net level method and those calculated by other methods; (2) deficiency reserves; and (3) reserve by various interest assumption categories: Less than 3%, 3% to 3.5%, 3.5% to 4%, 4%, and greater than 4%.

The analysis of change in capital and surplus contains few differences from that shown in the capital and surplus account of the NAIC Blank.

The analysis of cash flow is merely a simplified format of the NAIC Reporting Blank Cash Statement (Page 4a of the reporting blank).

The development of "Net capital and surplus" is a very complex process designed to empirically adjust for such items as affiliated assets, minimum capital plus surplus requirements, and surplus notes.

Total insurance exposure (risk) is determined by taking the mean of total life policy reserves and deposit fund liabilities plus the amounts of various classes of life insurance in force weighted as follows: 16% of whole life and industrial life face amount, 8% of term and credit life face amount, and 4% of group life face amount (excluding Federal Employees Group Life Insurance and Service Employees Group Life Insurance). The sum of this mean plus four times the reported accident and health earned premiums generates the company's gross overall insurance exposure.

Capital and Surplus ratios are measures of overall risk potential. They include (1) ratios to net capital and surplus of overall insurance exposure for net premium, for net premiums plus deposits, and for gross premiums and (2) corresponding ratios to the sum of the statement capital and surplus plus the mandatory securities valuation reserve.

## LIQUIDITY

An insurer should be prepared at all times to meet its obligations. Liquidity enables the insurer to meet unexpected needs for cash without the untimely sale of investments. A.M. Best publishes six Liquidity Tests.

Current Liquidity, the first test, expresses cash and unaffiliated securities as a percentage of adjusted liabilities, where adjusted liabilities represent total liabilities less conditional reserves and Separate Account liabilities. This test measures the proportion of net liabilities covered by cash and unaffiliated investments. If this test result is less than 100, the company's solvency could possibly be dependent on the collectibility of premium balances or the marketability of investments in affiliates or other uninvested assets. This ratio assumes the collectibility of all amounts recoverable from reinsurers. The usual range is any result greater than 90%, and the industry norm is 110%. The adjusted test represents applicable adjustments made to statement capital and surplus.

The Overall Liquidity test measures insurance assets as a percentage of adjusted liabilities. The usual range is any result greater than 110%, and the industry norm is 130%. The adjusted test represents applicable adjustments made to statement capital and surplus.

The test of Common Stocks and Real Estate to Capital and Surplus measures the sum of common stocks and real estate as a percentage of statement capital and surplus. If this test result is substantially larger than industry averages, the investment portfolio should be reviewed. Common stocks are very volatile investments subject to potentially large fluctuations from year to year. Real estate holdings can sometimes be carried at higher than market value and could be difficult to liquidate should the need arise. The usual range is any result less than 95%, and the industry norm is 25%. In the adjusted test, common stocks may be adjusted for money market type securities, which may be reported as common stock investments. The adjusted test also represents applicable adjustments made to statement capital and surplus.

Affiliated Investments to Capital and Surplus measures investments in affiliates as a percentage of statement capital and surplus. The industry norm is 20%, with a maximum acceptable value of 60%. The adjusted test represents applicable adjustments made to statement capital and surplus.

The Non-Admitted Assets to Admitted Assets test expresses non-admitted assets as a percentage of total admitted assets. The industry norm is 1%, with a maximum acceptable value of 3%.

The Investment Leverage test measures the effect on capital and surplus of a 20% drop in common stock prices and a 2% rise in interest rates. Statutory surplus is not affected by a change in bond values, but if it were, this ratio measures what the effect would be. It represents the company's exposure to fluctuation in the market value of bonds, equities and mortgage loans. The usual range is any test result less than 50%, and the industry norm is 15%.

Related to the liquidity tests are the published Cash Flow Tests. The first, Net Cash Flow, shows funds provided from operations plus the net effect of capital and surplus paid in, dividends to stockholders, borrowed money, change in foreign exchange, and miscellaneous funds provided and applied. It includes realized capital gains but excludes funds provided from disposition of investments and cost of investments acquired. It represents the change in cash and invested assets from all sources except unrealized capital gains.

The Net Cash Flow to Quick Assets test measures net cash flow as a percentage of quick assets. Quick assets are the sum of cash, unaffiliated short-term investments, unaffiliated bonds maturing within one year, government bonds maturing within 5 years, and 80% of unaffiliated common stock. These are assets that generally are easily convertible into cash without a material effect on statutory surplus. If cash flow is negative, this ratio measures the proportion of quick assets needed to cover a continuation of cash flow at the same rate of another year. The usual range is any result greater than 0. The industry norm is 30%.

The Quick Liquidity test gives quick assets as a percentage of adjusted liabilities. This test measures the proportion of net liabilities covered by cash and quickly convertible investments. It indicates a company's ability to reduce its premium volume or to reinsure a portion of its outstanding liabilities without needing to sell long-term investments or to borrow money. The usual range is any result greater than 10%, and the industry norm is 35%.

The liquidity evaluation process includes the following items, some of which may be published:

- Insurance Assets (total assets before adding amounts from the separate accounts statements).
- Admitted Assets (total assets, including those from the separate accounts statements).
- Ratios to insurance assets for each of the invested asset categories and for cash.
- Percentage change in insurance assets and in admitted assets.
- Under a title "Distribution of Other Insurance Assets" are two items, 4% of Insurance Assets and 25% of Capital and Surplus.
- Ratios to total insurance assets for each of collateral loans, other invested assets, cash and invested assets, premiums due and deferred, reinsurance ceded asset items, and amounts receivable from affiliates.
- Ratios to Total Admitted Assets for each of the separate accounts assets and for non-admitted assets.
- Ratios to capital and surplus for each of real estate, common stock, and total affiliated assets.

- Ratios to the sum of capital, surplus and the MSVR for common stock.

- Ratios to net premiums of each of net agents' balances and agents' debit balances.

- Ratios of policy loans to ordinary life reserves.

- Ratios of affiliated bonds to total bonds and affiliated stock to total stock.

The quality categories used for bonds are U.S. Government Bonds, "A" rated or better quality bonds, "BBB" rated bonds, other rated bonds, non-rated public bonds, non-rated private bonds, non-amortizable bonds, and bonds in default (at par value).

## AMOUNT AND SOUNDNESS OF REINSURANCE

This the first of the qualitative evaluations and is important especially for smaller insurers. A.M. Best reviews each insurer's reinsurance program to see whether coverage is adequate for the potential risks involved.

Under the liquidity evaluation the ratio of the amounts receivable for reinsurance ceded to capital and surplus was determined. This is a vital tool in this qualitative evaluation of the reinsurance program. If this ratio is relatively small or moderate (less than 50%) it is often advantageous to deal with only one reinsurer. However, should the ratio exceed 100%, there may be a need to diversify reinsurers.

For large amounts of reinsurance ceded recoverables, whether reinsurers are diversified or not, there may be quality problems if significant amounts are due from reinsurers that are either low rated or for which little information is available. This could significantly affect a Best's rating.

Unusually large amounts of reinsurance, whether or not there are quality or diversification problems, arouses a question of purpose. There is definitely the potential that the amount or location of the reinsurance is motivated by financial, tax or regulatory concerns instead of risk spreading. Significant amounts of such reinsurance may distort reported results or remove underlying assets and liabilities from normal disclosure and regulatory review. Generally significant amounts of reinsurance motivated by financial rather than risk concerns have an adverse effect on a Best's rating.

A rating is improved by reinsurance that is normal, appropriate and sound. A rating is affected adversely by reinsurance that is inadequate, excessive, inappropriate or unsound.

## ADEQUACY OF RESERVES

Basically speaking, the adequacy of an insurer's reserves is essential to an evaluation of profitability, leverage and liquidity, because reported net income is what remains after the change in reported reserves has been deducted, and because reported policyholders' surplus is what is left over after reported reserves have been deducted. For the purpose of this analysis the items calculated in the leverage quantitative evaluation for reserves in various splits, such as by reserve method and by valuation interest groups, might be used. However, it is not clear from the material made available to me just how A.M. Best conducts its determination of the adequacy of reserves.

## MANAGEMENT

The competence, experience and integrity of management, although elusive qualities to measure, are important to the determination of success in the insurance business, where financial responsibility and security are far more vital than most other forms of business activity.

A.M. Best has, during the past 80 years, developed close working relationships with the managements of the insurance companies it reports on. This obviously plays an important role in the continuing evaluation of the performance of an insurance company.

## OTHER PUBLISHED REPORTS

### Operations

- *Net Investment Income.* Gross income from investments less investment expenses but before Federal Income Taxes.

- *Net Underwriting Income.* Gain from operations, excluding net investment income and income taxes, but after dividends to policyholders (if applicable).

- *Income Taxes.* Income taxes incurred plus extraordinary taxes for prior years.

- *Net Operating Gain.* Reflects net premium income, net investment income and miscellaneous income less losses, operating expenses, reserve changes, dividends to policyholders and income taxes, but before capital gains.

- *Other Investment Gains.* Realized (less taxes) and unrealized capital gains, change in non-admitted assets, and change in foreign exchange.

- *Change in Conditional Reserves.* Change in liability for unauthorized reinsurance, change in excess of statutory reserves over statement reserves, and change in miscellaneous voluntary reserves reported as liabilities.

### Distribution of Insurance Issued

- *Total Life Insurance Issued.* Face amount of total life insurance issued during the year.

- *Ordinary Issued.* Indicates ordinary life insurance issued as a percentage of total life insurance issued.

- *Credit Issued.* Indicates credit life insurance issued as a percentage of total life insurance issued.

- *Group Issued.* Indicates group life insurance issued as a percentage of total life insurance issued.

- *Total Life Reinsurance Assumed.* Face amount of life insurance assumed through reinsurance by the company during the year from other carriers.

**Distribution of Insurance In Force**

- *Total Life Insurance In Force.* Face amount of life insurance in force at beginning of year plus life insurance issued directly and assumed from other carriers during the year, less all surrenders, decreases, lapses, deaths, expiries and other terminations.

- *Ordinary In Force.* Indicates ordinary life insurance in force as a percentage of total life insurance in force.

- *Credit In Force.* Indicates credit life insurance in force as a percentage of total life insurance in force.

- *Group In Force.* Indicates group life insurance in force as a percentage of total life insurance in force.

- *Life Reinsurance Ceded.* Face amount of life insurance in force for which the risk is ceded to other carriers.

**Accident and Health Statistics**

- *Accident and Health Premiums Written.* Accident and health premiums received during the year adjusted for the change in uncollected premiums.

o *Accident and Health Underwriting Results.* Operating results after incurred claims, increase in policy reserves and total expenses, but before investment income.

## CAVEAT

A.M. Best always includes a statement with its published reports such as:

> While the information contained in this report was obtained from sources believed to be reliable, its accuracy is not guaranteed. We do submit the data to a rigorous, computerized cross-checking routine to verify its arithmetic accuracy.
>
> However, we do not audit the companies' financial statements and therefore cannot attest to the accuracy of the data provided to us. Consequently, no representations or warranties are made or given as to the accuracy or completeness of the information presented herein, and no responsibility can be accepted for any error, omission or inaccuracy in our reports. Caution should be used in the interpretation and comparison of the information shown due to differences in the lines of business written, methods of product distribution, investment philosophy, reserving assumptions or for other reasons.
>
> Sources of Information -- The information presented in this report is based upon each insurance company's sworn annual financial statements as prescribed by the National Association of Insurance Commissioners and as filed with the various insurance commissioners in states in which the companies are licensed to do business. In addition, our reports reflect supplemental information obtained by us, such as data supplied in reports, audit reports prepared by certified public accountants, annual reports to stockholders and reports filed with the Securities and Exchange Commission.

## A.M. BEST'S RATING ANALYSIS

### Adjustments for Rating Analysis

For companies assigned a Best's Rating (A+ to C), Leverage and Liquidity Tests for the current year also are shown as adjusted by A.M. Best for Rating Analysis. This is not to suggest that the reported data or statutory accounting is incorrect.

First, these "Adjusted Tests for Rating Analysis" reflect adjustments to selected balance sheet items to provide a more current and comparable basis for the evaluation of the performance of an insurance company. The size of the risks that an insurer may prudently underwrite, assume or maintain is closely tied to its adjusted policyholders' surplus, sometimes referred to as its capacity and, in recent literature, as the vitality surplus.

Second, and equally important for rating analysis, are adjustments that reflect an insurer's relationship with other affiliates and companies; when a company owns subsidiaries, the adjusted tests for the parent company are based on the consolidation of the group. When a company is 100% reinsured, the adjusted tests shown are those of the reinsurer. When an insurer invests in a subsidiary that is not a life and accident and health insurance company, the invested asset is excluded to remove the effect of pyramiding.

### Rating Assignment Procedure

Assignment of Best's Rating and Financial Size Category is made in the spring of each year shortly after the company has submitted its annual financial statement (due March 1). Official notification by letter is sent to the chief executive officer of each company together with a preliminary proof of the company's report and financial exhibits as they will appear in various publications. The company is permitted up to 15 days to comment on and discuss its report and Rating before release of the Rating via the weekly publication Best's Insurance Management Reports. The assigned Rating subsequently is reviewed based on the company's six and nine months' quarterly financial reports.

The company is notified of any proposed change in the Rating, which again would be communicated to the subscribers via weekly and monthly publications.

**Best's Rating Classifications**

Of the 1,650 life/health companies reporting for the 1986 ratings in Best's Insurance Reports, if last year's percentages still apply, approximately 1,105 (67%) would be assigned a rating from A+ (Superior) to C (Uncertain). The remaining 545 (33%) would be classified as Rating "Not Assigned." As discussed later, the "Not Assigned" category has ten classifications which identify why a company was not eligible for a Best's Rating. Explanations of the six Best's Rating classifications follow.

A+ (Superior) is assigned to those companies which, in A.M. Best's opinion, have achieved superior performance in profitability, leverage and liquidity when compared to the norms of the life/health insurance industry. On a relative basis A+ (Superior) rated insurers generally have demonstrated the strongest ability to meet their respective policyholder and other contractual obligations.

A (Excellent) is assigned to those companies which, in A.M. Best's opinion, have achieved excellent performance in profitability, leverage and liquidity when compared to the norms of the life/health insurance industry. On a relative basis A (Excellent) rated insurers generally have demonstrated a strong ability to meet their respective policyholder and other contractual obligations.

B+ (Very Good) is assigned to those companies which, in A.M. Best's opinion, have achieved very good performance in profitability, leverage and liquidity when compared to the norms of the life/health insurance industry. On a relative basis B+ (Very Good) rated insurers generally have demonstrated a satisfactory ability to meet their respective policyholder and other contractual obligations.

B (Good) is assigned to those companies which, in A.M. Best's opinion, have achieved good performance in profitability, leverage and liquidity when compared to the norms of the life/health insurance industry. On a relative basis B (Good) rated insurers generally have demonstrated a reasonable ability to meet their respective policyholder and other contractual obligations.

C+ (Fair) is assigned to those companies which, in A.M. Best's opinion, have achieved fair performance in profitability, leverage and liquidity when compared to the norms of the life/health insurance industry. On a relative basis C+ (Fair) rated insurers generally have demonstrated a weak ability to meet their respective policyholder and other contractual obligations.

C (Uncertain) is assigned to those companies which, in A.M. Best's opinion, have achieved poor performance in profitability, leverage and liquidity when compared to the norms of the life/health insurance industry. On a relative basis C (Uncertain) rated insurers generally have demonstrated a weak and uncertain ability to meet their respective policyholder and other contractual obligations.

**Best's Rating Modifiers**

The following Rating Modifiers may be assigned to a Best's Rating classification of A+ through C. These modifiers are used to qualify the status of an assigned Rating. The modifier will appear as a lowercase suffix to the Rating (i.e., A c or B w or C x).

"c" -- Contingent Rating -- is assigned to a company when there has been a decline in performance in its profitability, leverage and/or liquidity but the decline has not been significant enough to warrant an actual reduction in the company's previously assigned Rating.

The following Rating Modifiers are used to identify a company whose assigned Rating is based on an affiliation with one or more other life/health insurers.

"e" -- Parent Rating -- indicates the Rating assigned is that of the parent of a new affiliated company. To qualify, the new company must be eligible for a Rating based on its own performance after attaining five consecutive years of representative experience and must have interim leverage and liquidity performance comparable to that of its parent.

"r" -- Reinsurance Rating -- indicates that the Rating and Financial Size category assigned to the company are those of an affiliated carrier which reinsures 100% of the company's net business.

"p" -- Pooled Rating -- is assigned to companies under common management or ownership which pool 100% of their net business. All premiums, expenses and losses are prorated in accordance with specified percentages that reasonably relate to the distribution of the policyholders' surplus of each member of the group. All members participating in the pooling arrangement will be assigned the same Rating and Financial Size category, based on the consolidated performance of the group.

**Ratings "Not Assigned" Classification**

Approximately 445 companies, or 27% of the companies reported on in Best's Insurance Reports, are not eligible for a Best's Rating (A+ to C). These companies are assigned to a Rating "Not Assigned" (NA) classification, which is divided into ten classifications to identify why the company was not eligible for a Best's Rating. The primary reason is identified by the appropriate numeric suffix. If additional reasons apply, they will be referred to in the report on the company as set forth in Best's Insurance Reports, Life/Health.

NA-1 Inactive is assigned to a company if it has no net insurance business in force or is virtually dormant. A.M. Best may continue to report on an inactive company if it is associated with an active group or an unaffiliated stock company pending sale to a new owner.

NA-2 Less than Minimum Size is assigned to a company whose admitted assets or annual gross premiums written do not meet A.M. Best's minimum size requirement of $1 million. Exceptions are: the company is 100% reinsured by a Rated company; or is a member of a group participating in a business pooling arrangement; or was formerly assigned a Rating and is expected to meet the minimum size requirement within a reasonable period of time.

NA-3 Insufficient Experience is assigned to a company which meets A.M. Best's minimum size requirement but has not accumulated at least five consecutive years of representative operating experience. For most companies, the year that we anticipate assigning a Rating is referred to in the report on the company as set forth in Best's Insurance Reports, Life/Health Edition. For all life/health companies in this category which are wholly owned subsidiaries of a Rated life/health insurer, the Rating of the parent company will also be shown for reference purposes in Best's Insurance Reports, Life/Health Edition, until such time as the subsidiary is assigned a Best's Rating.

NA-4 Rating Procedure Inapplicable is assigned to a company when the nature of its business and/or operations is such that A.M. Best's normal Rating procedure for life/health insurers does not properly apply. Those companies writing lines of business uncommon to the life/health field; companies not soliciting business in the United States; companies whose sole insurance operation is the acceptance of business written directly by a parent, subsidiary or affiliated insurance company; or those writing predominantly property/casualty insurance under a dual charter would be assigned to this classification.

NA-5 Significant Change is assigned to a previously Rated company whose representative operating experience has been or is expected to be significantly interrupted or changed. This may be the result of a change in ownership and/or management whereby the existing book of business is sold or reinsured; a significant revision in the portfolio of coverages offered; or any other relevant event or events that have affected or may affect the general trend of a company's operations. Depending on the nature of the change, A.M. Best's rating procedure may require a period of from one to five years to elapse before the company is eligible for a Rating.

NA-6 Reinsured by Unrated Reinsurer is assigned to a company which has reinsured a substantial portion of its book of business or maintains considerable amounts of reinsurance recoverable in relation to policyholders' surplus with reinsurers which have not been assigned a Best's Rating.

NA-7 Below Minimum Standards is assigned to a company that meets our minimum size and experience requirements but does not meet the minimum performance standards for a Best's Rating of "C."

NA-8 Incomplete Financial Information is assigned to a company which fails to submit, prior to A.M. Best's Rating deadline, complete financial information for any year in the current five-year period under review. This requirement also includes all domestic life/health subsidiaries in which the company's ownership exceeds 50%.

NA-9 Company Request is assigned when a company is eligible for a Rating but disputes A.M. Best's Rating assignment or procedure. If a company subsequently requests a Rating assignment, A.M. Best's policy normally requires a minimum period of three years to elapse before the company is eligible for a Rating.

NA-10 Under State Supervision is assigned when a company is under conservatorship; rehabilitation; receivership; or any other form of supervision, control or restraint by state regulatory authorities.

**Best's Financial Size Category**

The Financial Size Category is an indicator of the relative size of an insurer based on its adjusted policyholders' surplus. The size of risks that an insurer may prudently underwrite, assume or retain is closely tied to its adjusted policyholders' surplus, sometimes referred to as its capacity. To provide stability and safety, an insurer should limit its maximum loss exposure on a single risk (or group of related risks) to a relatively small percentage of its policyholders' surplus -- normally 1% or 2%, and only in very rare cases as much as 10%.

The Financial Size Category is based on the company's reported policyholders' surplus plus Best's adjustments for conditional or technical reserves treated as liabilities by the companies that provide a more current and comparable basis for the evaluation of the performance of an insurance company.

To avoid confusion of Best's Ratings with the Financial Size Category, the latter is represented by roman numerals ranging from Class I (the smallest) to Class XV (the largest).

| Financial Size Category | Adjusted Policyholders' Surplus ($ Millions) | | |
|---|---|---|---|
| Class I | Up | to | 1 |
| Class II | 1 | to | 2 |
| Class III | 2 | to | 5 |
| Class IV | 5 | to | 10 |
| Class V | 10 | to | 25 |
| Class VI | 25 | to | 50 |
| Class VII | 50 | to | 100 |
| Class VIII | 100 | to | 250 |
| Class IX | 250 | to | 500 |
| Class X | 500 | to | 750 |
| Class XI | 750 | to | 1,000 |
| Class XII | 1,000 | to | 1,250 |
| Class XIII | 1,250 | to | 1,500 |
| Class XIV | 1,500 | to | 2,000 |
| Class XV | 2,000 | to | more |

**FURTHER READING**

1. Montgomery, John O. "Empirical Ratios Second Report," written for the NAIC Life and Health Actuarial Task Force and the NAIC Life and Health Financial Ratios Working Group to be presented at the NAIC meeting in June 1986.

2. NAIC. "Using the NAIC Insurance Regulatory Information System," from the 1985 Life and Health Edition.

MR. FREDERICK S. TOWNSEND JR.: I've been asked to comment on Conning and Company's Credit Rating Analysis, which assesses the solvency of major life insurance companies. Perhaps I should just take a minute to contrast the differences between A.M. Best, Standard and Poor, and Conning and Company. I think that everyone here is familiar with A.M. Best, which publishes ratings on every company in the insurance industry. Standard and Poor offers to go through a rating procedure for insurance companies. The rating procedure is paid for by the insurance company. After the rating of the company's claim-paying ability is determined, the company has the option of either having the rating published or not. In the case of Conning and Company, we don't put it out in a general market publication. We don't go to companies and ask them to be rated by us. Our customer base has been people who are purchasing contracts from insurance companies:

- o General Agency groups that are considering association with given life insurance companies;

- o Insurance brokers who are considering the placing of business or a business relationship with insurance companies;

- o Commercial lending departments of banks that are considering doing business with various insurance companies; and

- o Others who are concerned with the solvency of life insurance companies.

At present we are in our third year of providing these services, and we have two services which I will describe. The first service is a 200 page book called the Life Solvency Monitor. The second service is called Comprehensive Life Solvency service. The basic service contains statistics on some 66 companies and is published annually. The comprehensive service contains quarterly updates on individual companies as ordered by the customer. The basic service is quantitative in nature. We look at companies on a relative basis and assign numerical ranking to them based on risk exposure. The comprehensive service is a qualitative writeup on each company. We look at each company on an absolute basis, not relative to its competitor, and assign ratings to it based on fundamental analyses very similar to the type of analysis that Standard and Poor goes through.

## LIFE SOLVENCY MONITOR

This is an annual 200 page publication. All data are derived from NAIC blank analyses. We selected 60 U.S. companies and 6 Canadian companies that are alleged to be the major GIC writers in the United States. Thirty of these companies are rated A+ by A.M. Best. Surely not all have the same financial strength. There must be some differences between them. This is essentially why we decided to come up with relative ranking based upon our perceived exposure to risk within the industry. If some company came out absolutely worst in every category that we look at, it would end up with a bottom ranking of 59. If some company was absolutely tops in every category that we look at, it would come out with a solvency ranking of 112. So we have a scale which ranges from 59 to 112. This ranking is based purely on quantitative analysis of risk -- no fundamentals. We originally looked at a tremendous volume of data and probably had 150 ratios for each company -- very similar to the extensive volume of data that A.M. Best looks at. We tried to make the product simpler for the user and came down to 7 principal areas of risk. The question was, How can a life company exhaust its surplus? We came up with 7 considerations:

(i) Adverse mortality.

(ii) Adverse morbidity.

(iii) Bad assets.

(iv) Change in carrying value of assets.

(v) Adverse interest rate change in bond values.

(vi) Intercompany transactions.

(vii) Payback of surplus relief.

Having taken these seven risk factors, we ranked all 66 companies on each of 5 measures (we combined the 7 risk factors into 5 measures):

(i) Mortality and morbidity deviation relative to a company's surplus position;

(ii) Assets at risk (excluding policy loans and other assets not at risk) relative to a company's surplus position;

(iii) Asset stability ratio -- we assigned certain haircuts* to certain asset categories to recognize the risk of change and carrying values of certain asset categories;

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* "Haircut" is a stockmarket expression for trimming the value of an asset such as used in the formula for developing the Mandatory Security Valuation Reserves.

(iv) Bond maturity schedule -- for the potential of adverse interest rate changes; and

(v) Investment in affiliates and surplus relief.

When I say surplus, I am including MSVR.

Subjective weighting factors (which are reviewed annually) are then applied to each of the five risk rankings to determine a composite solvency ranking. The range of ranking based on the 1984 convention statements which appeared in our 1985 publication is as follows:

| Range of Ranking: 1984 | |
|---|---|
| Possible Range: | 59 to 112 |
| Actual Range: | 65 to 100 |
| 52 Best's "A+" Companies: | 76 to 98 |
| 95-98 | 5 |
| 90-94 | 10 |
| 85-89 | 17 |
| 80-84 | 17 |
| 76-79 | 3 |
| | 52 |

**Problems**

When we originally did the Life Solvency Monitor we were looking at just the U.S. branch operations of Canadian companies; they operate with minimal surplus position for federal income tax purposes. We discontinued that with our 1986 book. We now look at the Canadian companies on a whole company basis. We had the problem of having quasi-GAAP surplus in the Canadian statement compared to statutory surplus in U.S. statements, so we took every Canadian company and attempted to adjust its Canadian convention blank to the comparable U.S. numbers. This is quite a laborious exercise, and we visited 5 of the 6 Canadian companies in the book. They were all upset at our using their U.S. branches. They wanted us to use the whole company, and they didn't mind us adjusting the Canadian blank to a comparable U.S. basis.

What they seemed to mind the most was the comparison with their peer companies in Canada, because they felt that the reserve standards varied sharply from company to company within Canada, and that certain carrying values of assets also varied sharply from company to company, particularly with respect to real estate properties. This year we just put 60 U.S. companies in the front of the book with the 6 Canadian companies to the back of the book, and we have a separate chapter on the Canadian companies because of the problems involved in trying to relate them to U.S. companies. But we do also rank them compared to the 60 U.S. companies.

Use of the NAIC blank led to the following problems:

(a) *Reliance on numbers.* Numbers don't tell you everything; numbers can be wrong.

(b) *Validity of measures.* Should someone be penalized for an investment in an affiliate? It depends on what the affiliate is. Is it a subsidiary life company that is handling universal life for you, or is it a property casualty company that is operating at a 150 combined ratio?

(c) *Inaccuracy of companies.* In the 5 year historical exhibit on page 14 of the convention statement there was a new section where you show your investment in affiliates. There are three categories -- bonds, stocks and short term investments. 15 out of 60 companies in our book took their total company short term position and entered it as a short term investment in affiliates on that page. 25% of the companies we are dealing with are major companies which have very extensive staffs preparing the convention statement. A company with no affiliates and no subsidiary listed 200 million as a short term investment in affiliates.

(d) *Inaccuracy of software vendors.* A very popular software vendor had a program being used by several major companies in which the schedule D maturities are laid out wrong.

There were the following problems related to the analysis of assets:

(a) *Valuation of Real Estate and Mortgages.* What is the real market value of the real estate and mortgages held by a life company?

(b) *Quality of Bond Portfolio.* Not all bond portfolios have the same quality. There will be a new schedule in the 1986 blank which not only shows the distribution of the bond maturity but also the ranking of the bond portfolio by the company's choice of rating service.

(c) *Quality of Investments in Subsidiary Companies.* There are differences in your subsidiaries -- some much more risky than others.

(d) *Asset Liability Matching.* The Convention Statement doesn't examine a company's investment practices to match assets and liabilities.

COMPREHENSIVE LIFE SOLVENCY SERVICE

The Comprehensive service is a writeup on individual companies based on the fundamental analysis of the company and its position in the industry, what it's doing, and what its trends are. These summaries are four to six pages in length on each company. We update the information quarterly on the quarterly statutory data filed with insurance departments. We assigned an absolute rating to each company. We have five ratings: AAA, AA, A, B and C. We rated 36 companies which are rated A+ by A.M. Best, and here is a distribution of these companies based on our ratings:

| Distribution of Companies Rated A+ by A.M. Best | |
|---|---|
| AAA | 8 |
| AA | 8 |
| A | 20 |
| B | 0 |
| C | 0 |

AAA is high ability to fulfill obligations; AA, above average ability; A, average ability; B, below average; and C, low ability. We only had one company that we rated in the B category, and it essentially had some operating loss, very high investment leverage, deteriorating cash flow position and very high leverage on the mortality risk -- obviously a company in need of capital.

These are several factors which can have an influence on a company rating. Examples of positive influences are:

(i) Large aggregate surplus and MSVR
(ii) Stable lines of business.
(iii) Low investment leverage and low insurance leverage.
(iv) Strong earnings and cash flow.

Examples of negative influences are:

(i) Affiliated company with cash demands.
(ii) Negative or declining cash flow and/or earnings.
(iii) Poor experience in high risk lines.
(iv) High investment leverage, long bond maturities and low yield rate.

We have also identified some problems with our approach. We need more classes:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AAA | AAa | AA | Aa | A | B | C | versus |
| AAA | | AA | | A | B | C | |

Also ours is a subjective judgment. How does one judge boxing, ice skating or gymnastic competition? Finally, there is the unwillingness of some companies to be interviewed.

MR. MONTGOMERY: The NAIC Early Warning System consists of twelve ratios. In addition, there are several different study projects with special purpose reports prepared concerning each project.

As an introduction to the Insurance Regulatory Information System (IRIS), these ratios are designed not only as indicators of possible future financial difficulties, but also to indicate basic changes in the operating of an insurance company brought on by management decisions, market conditions and shifting investment conditions. Any sudden change in operations will ring many bells in the system. If an insurer is aware of this, it could help the NAIC in its analysis by pointing out, at the time information is transmitted to the NAIC, such changes and their significance to operational results.

**THE TWELVE PRIMARY NAIC RATIOS**

The twelve primary ratios have been used for at least thirteen years with only a few changes in calculation rules and exceptional value criteria. Briefly, for the 1985 edition, the Life and Health company ratios are:

1. *Change in Capital and Surplus.* This is the ratio of current year-end reported capital and surplus to that reported for the previous year-end, with exceptional results identified for those ratios with a 10% or more decrease or a 50% or more increase in capital and surplus.

2. *Net Gain to Total Income.* This is the ratio of the net gain from operations to the total income result automatically identified as exceptional if the net gain from operations is zero or negative, regardless of the value of the total income.

3. *Commissions and Expenses to Premiums and Deposits.* This is the ratio of the sum of commissions for direct and reinsurance assumed plus expenses to the sum of direct and assumed premiums collected plus annuity and other fund deposits. This ratio was adjusted a few years ago to take into account reinsurance assumed and thus make the ratio more selective. Ratios of 60% or more are considered exceptional.

4. *Investment Yield.* This is the ratio of the net investment income to the average amount of cash and invested assets during the year. For 1985, results of 7% or less or 15% or more are considered exceptional. The criteria for exceptional values of this ratio have varied with the trends in interest rates, generally resulting in selecting approximately 15% or all the values calculated as exceptional.

5. *Non-admitted to Admitted Assets.* This is the ratio of the total non-admitted assets to the total admitted assets, with results of 10% or more considered as exceptional.

6. *Real Estate to Capital and Surplus.* This is the ratio of all real estate at statement value to the amount of capital and surplus, with a

result of 100% or more for companies with $5,000,000 or less in capital and surplus and 200% or more for other companies considered as exceptional.

7. *Investments in Affiliates to Capital and Surplus.* This is the ratio of the amount invested in stocks and bonds of parent, subsidiary or affiliated companies to the amount of capital and surplus, with results of 100% or more considered as exceptional.

8. *Surplus Relief.* This is the ratio of the excess of commissions and expense allowances on reinsurance ceded over such items on reinsurance assumed to Capital and Surplus. Results of minus 10% or less or 10% or more for companies with capital and surplus of $5,000,000 or less, and minus 99% or less or 30% or more for other companies, are considered as exceptional.

9. *Change in Premium.* This is the ratio of the change in the total sum of premiums, annuity considerations and other fund deposits from the previous year to the current year to such sum for the previous year. Results of minus 10% or less or 50% or more are considered exceptional.

10. *Change in Product Mix.* The percentage of premium and deposits for each product line is determined for the current and previous years, differences in such percentages calculated, and the results added without regard to sign; the sum is then divided by the number of product lines possible. There is some controversy on this process, the argument being that the number of lines should vary by company instead of being constant for all companies regardless of whether or not a company writes all lines of business. This is currently under study. Results of 5% or more are considered exceptional.

11. *Change in Asset Mix.* This ratio represents the average percentage change in asset mix obtained by a method analogous to that for Change in Product Mix. The same argument as for the Change in Product Mix exists, and this also is currently under study. Results of 5% or more are considered exceptional.

12. *Change in Reserving Ratio.* The change in reserving ratio is the number of percentage points of difference between the reserving ratio for the current and the previous years. For each of these years, the reserving ratio is equal to the aggregate increase in reserves for individual life insurance taken as a percentage of renewal and single premiums for individual life insurance. Results of equal to or less than minus 20 percentage points or equal to or more than 20 percentage points are considered exceptional.

## CORRELATION OF IRIS WITH EVENTUAL DIFFICULTIES

A study made in 1984 by the staff of the NAIC (NAIC Proceedings, 1984 Volume II, Pages 402-404) was based on 108 insurers identified from January 1, 1975, through 1982 as either having been placed in liquidation, conservation, or supervision; declared insolvent; or restricted as to their operations. Of the 108 companies, 52 had filed their statement with the NAIC 1, 2, or 3 years prior to departmental action. Of these, 19 had 4 or more exceptional values 2 or 3 years prior to action. An additional 11 companies were so classified one year prior to department action. IRIS identified 58% of the 52 troubled companies which reported.

The study identified three characteristics of good ratios: predictability, discrimination and early identification. However, the study did not appear to come to any definite conclusion about predictability except to say that a good ratio should identify companies which are having financial difficulty. Only for Ratio 1 were more than 50% of the troubled companies identified by exceptional results. Ratios 1, 2, 8, 9 and 12 identified 30% or more of the troubled companies, as shown in the following table.

For discriminatory characteristics, two criteria were tested: (1) The test should identify twice as many troubled companies as sound companies. Ratios 1, 2, 4, 5, 6 and 11 did satisfy that criterion. (2) No more than 20% of the sound companies should lie outside the acceptable range. Tests 4, 5, 6, 7, 8, 10 and 11 satisfied this criterion. However, in comparing the two criteria for each test, Ratio 3 showed a complete lack of discrimination, while Ratios 7 and 9 showed only weak discrimination characteristics.

Aggregate 1975 - 1982 Experience

| Ratio Number | | Percentage Exceptional Results Troubled Companies | Percentage Exceptional Results Sound Companies | Ratio Troubled to Sound Company Results |
|---|---|---|---|---|
| 1 | Change in C&S | 51.5 | 21.3 | 2.4 |
| 2 | Gain to Income | 49.3 | 21.1 | 2.3 |
| 3 | Expenses to Premiums | 29.7 | 20.8 | 1.0 |
| 4 | Investment Yield | 21.3 | 7.1 | 3.0 |
| 5 | Non-admitted Assets Ratio | 15.0 | 4.0 | 3.8 |
| 6 | Real Estate to C&S | 16.9 | 4.9 | 3.4 |
| 7 | Affiliates to C&S | 5.9 | 5.0 | 1.2 |
| 8 | Surplus Relief | 31.9 | 19.1 | 1.7 |
| 9 | Change in Premium | 45.6 | 29.6 | 1.5 |
| 10 | Change in Product | 21.4 | 12.3 | 1.7 |
| 11 | Change in Assets | 16.7 | 5.9 | 2.8 |
| 12 | Change in Reserving Ratio | 48.4 | 27.1 | 1.8 |

With respect to early identification, those ratios identifying 30% or more of the troubled companies 2 or 3 years prior to department action were considered good early identifiers. Tests 1, 2, 9 and 12 met this criterion.

The study recommended some changes in criteria for exceptional value determination for Ratios 4, 5, 6, and 7, and these changes were made commencing with the 1984 results. The study also recommended discontinuance of Ratio 3, but a separate review indicated instead that reinsurance accepted Commission and Premium information should be included in the calculation of the ratio.

In summary, the study resulted in changing the criteria so that more troubled companies could be detected earlier without greatly increasing the relative number of sound companies assigned exceptional values.

## OTHER REPORTS PREPARED BY THE NAIC

In addition to the 12 IRIS Ratios there are several other reports.

### Accident and Health Claim Reserve Adequacy Ratio

This report is prepared for Life and Health and Property and Liability companies and Fraternal Associations. The ratio is for all lines of Accident and

Health Insurance combined and is expressed as a percentage of the (C) current year-end capital and surplus for the excess of (A) the sum of the claims paid during the current year on claims incurred prior to the current year plus reserves and liabilities on such claims at the end of the current year over (B) the claim reserve and liabilities at the end of the previous year. No result is calculated if either the capital and surplus (C) or both (A) and (B) are zero or negative.

**Supplemental Financial Ratios**

Five Supplemental Ratios are calculated for each company. These ratios deal exclusively with three Accident and Health Lines: Group, Credit and Other.

(a) Ratio of direct premiums for the current year to those for the previous year for all health lines of business combined.

(b) Ratio of premiums net of reinsurance to capital and surplus for all health lines of business combined.

(c) Ratio of direct expenses and commission to direct premiums for (1) Group health, (2) Credit health, and (3) Other health.

These ratios are intended to summarize the insurer's activity regarding these lines in terms of the change in premium volume, percent of capital and surplus, and marketing costs. Currently, no unusual value ranges have been established. The report is sorted alphabetically by company. All life and fraternal companies with IRIS results are included.

**Credit Life and Credit Accident and Health Profitability**

This report is by company by line by state in order of decreasing market share showing the company name, state of domicile, direct premiums written market share (%), cumulative market share (%), direct premiums earned, direct losses paid, direct losses incurred, ratio (%) of paid to premiums written, ratio (%) of losses incurred to premiums earned, and countrywide ratio (%) of losses incurred to premiums earned. Countrywide summaries are also prepared by line, by state.

**Annuity Report**

This is a special report to indicate annuity writers with either 30% or more of their total liabilities in annuity reserves or 100 million or more in annuity reserves and is important in the surveillance of such business. The report shows for each such insurer, which is identified by the NAIC Company Code, Company Name, State Domicile, NAIC Group Code and year commenced business, the following information (amounts in thousands of dollars):

1) Total amount of annuity reserves

2) Total amount of liabilities

3) Amount of Mandatory Securities Valuation Reserve

4) Total amount of cash and invested assets

5) Total amount of capital and surplus

6) Amount of Cash Flow

7) Ratio 1 -- Percentage current to prior year direct annuity considerations and deposits. (Exceptional values are greater than or equal to 125%.)

8) Ratio 2 -- Percentage of total annuity reserves to total liabilities. (Exceptional values are 30% or greater -- only these companies need to be reviewed.)

9) Ratio 3 -- Percentage of investments in affiliates to total cash and invested assets. (Exceptional values are greater than or equal to 25%.)

10) Ratio 4 -- Percentage of the sum of tabular interest plus interest paid on policy funds to investment income for all annuity lines of business combined. (Exceptional values are greater than or equal to 90%.)

11) Ratio 5 -- Excluding investments in affiliates, the percentage of the statement value of bonds maturing in more than ten years to the total statement value of all bonds. (Exceptional values are at two levels, 50% or greater, and 65% or greater.)

12) Ratio 6 -- Percentage of the sum of the statement value of bonds maturing in one year or less, plus short term investment and plus cash to the total of cash plus investment assets. (Exceptional values are at two levels, 10% or less, and 5% or less.)

13) Number of exceptional values -- Annuity writers' ratios (UN AN)

14) Number of exceptional values -- IRIS (UN IR)

15) Number of ratios not calculated -- IRIS (UN NC)

16) Examiner Team Review Flag (Yes or No) (EX FLG)

17) Percentage excess of statement value of bonds over market value of bonds to capital and surplus (AMRT EXC)

18) Percentage net change in annuity premiums and deposits to total (ANNV CHG)

19) Current year examiner team priority (CY PRI)

20) Previous year examiner team priority (PY PRI)

Note the examiner team priorities are:

1. Scanned

2. No Attention

3. Targeted Company

4. Immediate Attention Company

The cash flow calculation in the Annuity Report has been revised for 1985 to conform with the revision of the "Statement of Changes in Financial Position" to a "Cash Flow" statement. Prior to 1985 the cash flow was determined as the excess of "Total funds provided from operations" (Page 4a, column 1, line 17) over "Total other funds applied (Page 4a, column 1, line 44). Commencing with 1985 the cash flow is determined as the excess of "Net cash from operations" (Page 4a, column 1, line 20), over "Total other cash applied" (Page 4A, column 1, line 27.3).

This listing is used to prepare a condensed report of insurers of special interest to the commissioners showing three years' results but only ratios 1 through 4. Ratios 5 and 6 in the last few years were not calculable for a significant number of companies due to deficiencies in the NAIC data base. This is currently being remedied. The premium increase ratio has proven to be the most valuable indicator of oncoming financial difficulties.

The value of the ratio of tabular interest to investment income is diminished due to the lack of financial reporting of interest credited on deposits. Revisions of Exhibit 10 and the annuity exhibit (Page 16) are needed to correct this problem.