WHAT RATIOS REALLY MATTER

Working Party Members

AJ Arterton
JW Dean (Chairman)
N Michaelides
AH Silverman
AR Vince


August 1993
CONTENTS

Introduction

What ratios really matter to......

I Security analysts

II Investors

III Management

APPENDIX

Ratios utilised by security analysts
INTRODUCTION

What ratios really matter? Well it depends who is using them!

This was one conclusion the working party rapidly came to. It allowed us to develop a framework as to who would use ratios and to what end. With this in mind we defined the principal users as follows:

1) Security analysts,
2) Investors, and;
3) Management

Our enquiries revealed (to us) that these groups not only look at differing sets of ratios but also adopt differing approaches to the utilisation of those ratios. Ratio analysis is essentially quite different for each category of user.

Many of the ratios discussed in this report are used by all three categories of user but they are usually used for differing purposes. Take the solvency margin for example. The security analyst is concerned with the solvency margin as a long term indicator of financial health and stability, the investment analyst is interested in the solvency margin as an indicator of potential performance relative to other insurance companies (can the insurer respond to a hardening market) and management (aside from the measurement of statutory solvency) are more concerned about what the security and investment analyst think about their reported solvency margin.

Objectives of the Users and common ratios used

Security analysts

The security analysts are primarily concerned with the claims paying ability of the insurance company that they are assessing. To that end they are looking at ratios that measure both short term and long term ability to pay claims. Their analysis necessarily focuses on reserve and liquidity ratios in order to be able to form a view on the financial stability and hence claim paying ability of the company. In addition, they also focus on the profitability and management strategy of the company in order to form a view as to the future stability of the company.

The security analyst is not looking for outstanding underwriting performance but solidity; a company that represents a safe security that will be able to pay claims to policyholders as and when they fall due.

As a result of this need to assess the current and future stability of these companies the analysis of ratios undertaken is usually extensive, and many ratios are computed and qualitatively assessed in order to reach a conclusion about a particular company.
It could be argued that security analysts are 'ratio driven' because they regularly monitor a very large number of insurers, certainly relative to investment analysts. It is clear, however, that the better security analysts spend considerable time evaluating company management and strategy. They also genuinely look ahead long term.

**Investors**

Many fund managers appear not so concerned about the long term viability of an insurance company but are more focused on shorter term relative value measures. The institutional investor usually maintains a portfolio of investment shares and is looking to switch within that portfolio from one company to another as one or another becomes a perceived investment opportunity.

The investment analyst is therefore usually looking for ratios that give an indicator of comparative performance against other insurance companies. The classic measures of comparative performance are dividend yield and new asset/share price ratios. These are backed up by analyses of underwriting margins (by geographic location/line of business), return on capital employed, solvency etc. These are all measures that can be quickly derived from financial statements and used to form a view on the comparative performance of one company relative to another.

Analysis tends to be quickly and frequently produced owing to the nature of the investment market. The analysis does not tend to be the same depth as that performed by the security analyst. At its most superficial level, the analyst is looking for a story to move the market. The fund manager may be keen to listen.

The working party perhaps became too cynical of the 'investors' approach. Fund managers have to deal with their client's own views on performance which are often measured relative to benchmark indices. Investment analysts are asked to feed this process.

**Management**

Management are the users and producers of the most ratios. This necessarily follows from their need to manage their business from both an operational and financial perspective.

They therefore need operational statistics on areas such as pricing, productivity, lapses, renewals, competitor pricing, etc in order to control the day to day running of their businesses. In addition, they also require measures of financial performance such as loss ratios, solvency, expense ratios, liquidity ratios, investment ratios, etc in order to manage
the financial performance of their business. The financial information is not only required by themselves but also to present and explain financial results to investors and security analysts.

The utilisation of ratios tends to be disseminated between the layers of management. Boards tend to concern themselves with investor relations type ratios whilst junior management tend to focus on operational management. It is the role of middle management to link these two disciplines.

Do you agree?

Whether you do or don't, we invite you to read the rest of this paper which sets out our findings and the reasoning behind our conclusions.

To reflect our view that there are three fundamentally different users of ratios, the paper is divided into three sections:

"What ratios really matter to"

I  Security analysts

II  Investors

III  Management
SECTION 1 "WHAT RATIOS REALLY MATTER" - TO SECURITY ANALYSTS

The number of ratios utilised by security analysts in practise is large although familiar ratios such as the solvency ratio appear in many guises. In assessing solvency of insurance companies, single ratios cannot be relied on to detect problems, but rather a combination of key ratios are needed which when viewed together lead to the conclusion that problems exist. This Section seeks to highlight the more commonly used ratios, and comment on their merits and demerits, and one is afraid to say their possible susceptibility to manipulation.

To begin with who is a security analyst and who do they work for? Broadly the security analyst is a person who is charged with looking at the underlying security of an insurance company from the perspective of its ability to meet claims both now, and in the future. The distinction is valid as a policyholder may have short term insurance objectives (eg motor physical damage) or long term insurance objectives (eg employers' liability) and will consequently have differing requirements about the future strategy of the insurance company with whom he obtains cover.

Security analysts tend to either work for insurance companies monitoring the security of potential cedents, or for third parties. In the latter case the third parties may be brokers acting on behalf of clients or professional rating agencies who either act for an insurance company to give it a claims paying rating in order to attract quality business or investment from third parties, or companies who sell reports on other companies providing an external security analysis function to those companies who do not run their own department or who value a second opinion.

As previously discussed these analysts are invariably trying to assess the ability of an insurance company, or indeed a reinsurance company to meet its policyholder liabilities both past, present and future. In order for one to assess this, in terms of ratios one must develop ratios that assess not only the condition of a company at the present time, but also give an indication as to its future financial strength. The ratios utilised must detect the types of risk to which an insurance company is typically exposed ie

Underwriting/ Pricing risk
Loss development risk
Exchange risk
Investment risk
Liquidity risk

The first two risks are specific to insurance companies, whilst the other three although not specific, tend to have a more dramatic effect on insurance companies than other types of company.

The ratios selected in any assessment of security must adequately detect the above risks.
However, exposure to these risks can be detected in many ways through use of ratios such as deterioration of prior period reserves, or an investment portfolio analysis by investment category. Some ratios will give clues to multiple problems. An example would be rapid and significant growth in premium income which might indicate an error in pricing. The increase in business would also require reserves to be established in the correct currency, with an asset realisation profile to match the expected payment pattern.

However, it should also be noted that ratios cannot explicitly be used to detect qualitative problems with the management, the computer systems and impending regulatory or judicial changes. These additional factors must be borne in mind when assessing the security of an insurance company.

Having reviewed some recent failures and near failures to look for trends in ratios as an indicator to financial instability one can conclude that there are no overall measures. Recent failures have been caused by financial mis-management, inadequate rate setting (usually evidenced by dramatic premium growth) and uncontrolled underwriting. In all cases, with the odd minor exception, the deterioration in the results has happened extremely quickly with the ratios prepared from the previous set of financial statements appearing to show a healthy company.

WHAT ARE THE KEY RATIOS?

Having reviewed publicly available documentation issued by some of the major security rating agencies we have identified what are considered in our view to be the key ratios. They fall into four major discrete categories as follows:

- overall
- profitability
- liquidity
- reserves

We have tabulated the use of the more commonly used ratios under these caption headings for the three major rating agencies in the appendix to this paper.

Overall

This term has been adopted as a generic term to cover those ratios that do not properly belong to any of the other classes as described above. The principal overall ratios are as follows:

*Solvency ratio*
*Growth in net premium*
*Retention quotient*
The solvency ratio is defined as the net assets divided by the net written premium and yields an absolute percentage. This ratio is analogous to asset turnover in a non-insurance company sense and is an indicator of over-trading. It is common for security analysts to benchmark with this ratio giving a target range which a company is supposed to be within, with the benchmark being set by an empirical correlation that companies below the expected range have had a tendency to fail. Those above the expected range may come under pressure to speculate, although this clearly will be a lesser concern.

Growth in net written premium is again an absolute measure. Rapid growth in net premium is often an indicator of deficient rates, and an indicator that unexpired risk reserves may require to be established. Sometimes even if the rates are good the rapid growth can overload the current computer and accounting system capability of a company so its loses control of its management reporting, its foreign exchange exposure and its changing payment profile. The growth may be in a new line of business where loss reserving requires to be performed on inadequate information. In all cases rapid growth may have serious ramifications and analysts again tend to benchmark against past failures to give growth tolerance limits which they do not like companies to exceed.

Retention quotient is the measure of written premium retained ie not ceded. If the quotient is high then the insurer is retaining the business it is writing which implies it to be of good quality. If the company cedes the majority of its business then this might indicate that the business is not very good, and an analyst would question the motives for writing it. If the company was small and writing a small net account but a very large gross account, the security analyst would be concerned as to the cashflow implications of recovering paid claims, and also as to the security of the associated reinsurance recoverable.

Profitability ratios

These ratios give an indication of the financial performance of the company. Better performance, either benchmarked against other companies or in absolute terms, gives an indication that a company is well run. More importantly in the case of investment yield type ratios, and return on capital percentages, it provides a measure of the replenishment of or additions to shareholders funds. As such, these ratios are less short term in their view as they give an indication of the direction in which an insurance company is going eg a history of poor investment returns, and negative return on capital employed indicates a consumption of shareholders funds and would probably indicate a poor long term security without corrective action being taken.

The ratios more commonly used are as follows:

*Combined ratio*
*Investment income ratio*
*Investment yield*
*Return on capital employed*
The combined ratio is a composite ratio combining the loss ratio and the expense (expenses and commission) ratio into one ratio which measures the profitability of underwriting. The expense and the loss ratio are probably the ratios with the widest use in the insurance industry. The ratio itself is normally defined as the incurred claims plus the incurred expenses divided by net earned premium. It is primarily a ratio that permits one to benchmark a company very quickly against another company in terms of the overall cost of writing insurance business. A ratio of 100% would indicate a breakeven performance before accounting for investment income. It is a most useful ratio as it can be utilised to analyse the profitability of lines of business (where information permits), and also measure year on year performance in terms of trends of overall expense and loss performance which gives the security analyst some predictive information as to whether a company is declining or increasing in profitability.

The investment income ratio is defined as the investment income attributable to shareholders divided by the net earned premium. It is similar to the combined ratio, and is really a relative measure of how well management are investing the written premiums. It is really a benchmarking ratio for comparison to other companies as it is not measuring performance relative to invested assets. However, it would be expected that companies concentrating on longer tail business would demonstrate better ratios.

Investment yield is a measure of performance used to assess the return on invested assets. It is usually defined as the investment income receivable in a period divided by the average invested assets. As such it is a useful indicator of how well the investments are managed, and thus an indicator that shareholders' profits are being maximised, and from the policyholders' point of view income is being added to reserves assisting in maintaining the company in the long term. A poor ratio could indicate problems with a portfolio in terms of poor asset composition, realisation of high yielding assets for cashflow reasons, or even foreign exchange problems ie either foreign exchange losses, or assets maintained in foreign currencies to match exposures which only yield smaller amounts of income. A low ratio could, however, reflect a concentration of investment in property or equities to provide an inflation hedge for long tail business.

Return on capital employed is an overall measure of profitability. It is defined as the profit after tax divided by net assets of the company attributable to shareholders. If it is positive the shareholders funds are increasing (given that no dividend is paid from reserves), and if it is negative then the shareholders funds are being depleted, and hence the surplus from which policyholders claims may ultimately have to be paid is depleted. Sometimes one may wish to measure the growth in net assets as an indicator for the stability of an insurance company, as the treatment of realised and unrealised gains tends to differ in single countries such as the UK as well as between countries around the world. Unrealised gains can have a significant effect on the stability of an insurance company. Monitoring movements in realised and unrealised gains is performed where possible because a company which has grown its asset base in this manner through a high risk investment strategy is equally at risk in terms of losing those gains.
Liquidity

The measures of liquidity are primarily short term measures of a company's ability to meet claim payments as they fall due now or in the immediate future. Obviously, they also say something about the long term future of the company. However, poor liquidity is not necessarily a portent of doom. It might be that the company has a poor asset portfolio strategy, or a reinsurance collection backlog ie a non-liquid asset portfolio. But, the fact that these events have happened at all is a reflection on management's ability to run the company, and the pressures of trying to resolve the liquidity problem eg through short term borrowing may have serious ramifications on short term profitability and potentially the long term viability of the company.

The principal ratios are as follows:

"Survival ratio"
"Technical reserves to liquid assets"
"Liabilities to liquid assets"
"Reinsurance recoverable to net assets"

The *survival ratio* measures the capacity of a company to pay its claims and expenses in any given period. Its definition is the ratio of cash and invested assets to claims and expenses paid, the higher the ratio the more free assets a company has to pay its current level of claims. A low ratio may indicate cashflow problems with an asset portfolio comprised of the wrong types of assets. Obviously, from the perspective of the policyholder, the higher the ratio the more likely the company will be able to pay a claim quickly as it will be less susceptible to asset liquidation concerns.

The *technical reserves to liquid assets* is an absolute measure of a company's ability to meet its policyholder obligations from assets. Obviously the lower the number the better able a company is to meet its obligations, especially if a liquidation becomes necessary. A number below 1 would be considered the norm according to the NAIC. In the UK this particular ratio would have to be viewed with more circumspection as in many UK companies no account is taken of the reserve payment profile and the time value of money in calculating this reserve (ie discounting), and a number greater than 1 might require further thought and explanation before a security analyst should become too disturbed. The ratio would however highlight concerns as to investment portfolio risk detecting that invested assets might not be of sufficiently liquid nature. This would be a good benchmarking ratio, to indicate a margin of safety for policyholders as the lower the number, the more free asset cover the company has to meet any deterioration in claims.
Liabilities to liquid assets is a similar ratio to the one above, but includes all liabilities. A high number here could indicate liquidity problems as an insurance company must pay all its obligations and not just those of its policyholders to continue in business. Again, the lower the number, the lower the risk to the policyholder in terms of their obligations being met.

Reinsurance recoverable to net assets measures the percentage of exposure of a company's asset portfolio to reinsurers. The ratio should be calculated in two ways as follows:

1) Reinsurance debtors/Net assets

2) (Reinsurance debtors + Reinsurance reserve)/Net assets

The first ratio measures the current exposure, and the second ratio measures the potential exposure. From a security analyst's perspective this is a rather introspective ratio as it is making observations and drawing conclusions about the security of a company through its exposure to the security of other companies. This ratio has developed in prominence in recent years especially in the UK insurance market owing to the impact of large catastrophes and the London Market Spiral. For companies involved in London market business the exposures can be very great indeed. Both these ratios are key ratios. The first gives an indication of the relative size of non-performing assets on the balance sheet, and an indication of increased level of risk of bad debts. The second gives an indication of the potential exposure to other security, and the potential degree of a company's exposure of its assets being converted into non-performing debt. In the case of the second ratio, the potential exposure could be viewed as more worrying as with the recent reinsurer failures the larger the exposure in terms of absolute balances to other reinsurers, the larger the risk of exposure to other failures! The so-called domino effect.

Reserve ratios

The last grouping of ratios that we are going to consider are those relating to reserves. Some of these could be allocated to the other headings but we have chosen to separately analyse these ratios in their own right. They give a measure of the company's financial strength in terms of asset cover for reserves, and also information on profitability in terms of assessing the adequacy of prior period reserves and hence profitability.

The key ratios identified are as follows:

"Technical reserves to shareholder's funds"
"Underwriting cover"
"Loss development to retained reserves"
Technical reserves to shareholder's funds measures the size of a company's reserves in relation to its capital base. As such, it gives a view as to how susceptible shareholders' funds are to under-reserving, or conversely from the perspective of a policyholder how much latitude is available to meet deteriorations in reserves through the utilisation of shareholder's funds.

Underwriting cover is defined as loss reserves to net premiums earned and gives a view as to the adequacy of the reserves in relation to the new risks being written as determined by the net earned premium. One rating agency uses a similar ratio which includes adjusted shareholders' funds (to ensure comparability across jurisdictions where tax authorities permit the setting up of equalisation and catastrophe reserves for example) together with loss (technical) reserves and divides this by net written premium. They note that for guidance this ratio should exceed 150%. Obviously this ratio would be useful for benchmarking against other companies, and low ratios would be an indicator of possible reserving deficiencies. Ratios will, however, vary depending on the mix of business.

Loss development to retained reserves. This ratio measures loss and loss adjustment expense development as a percentage of the opening retained reserves. Its principal purpose is to measure the impact of run-off losses on the prior year result, and give an indication of how wrong those reserves established by management were. For guidance the NAIC considers results in excess of 25% as unusual. The development could be measured as a percentage of opening loss reserves to give an indication of the margin of error. The ramifications of poor run-off are serious as it would indicate that management have not established the correct result (either wittingly or unwittingly) and the profitability of the company is called into question. In either scenario above the Security analyst would be alarmed by the poor run-off, and would have to consider the prospects of the company in the light of this information. The deterioration of prior year business would have to be fully investigated as to whether inadequate pricing or historic loss development was to blame. It may be that company was just bad at loss reserving, but that would be serious in itself as without good current loss reserve estimation, profitable rating would be impossible.

Poor run-off usually says something about the management of the company which the security analyst would be more interested in than the immediate impact of the run-off result. Although he would be interested in when the adverse development would end, and its impact on the reserves and capital base of the company, his greater immediate concern would be the reliability of current and future information!

USE OF THE RATIOS

We have touched on the use of the ratios for benchmarking in terms of either setting a level of tolerance for a ratio, or comparing it as a relative measure of performance against another insurance company. The discussion so far has been confined to viewing the ratios in isolation. In practice, a security analyst would use some or all of the above plus
additional ones not discussed above. The above has detailed those which we consider to be the key ratios, and have been seen most often in practice.

In practice, these ratios would be viewed together and probably weighted towards those which have indicated a greater chance of failure if pre-set limits are exceeded based on empirical research into the nature of past failures i.e. those ratios that gave an indication that insolvency was near. Most analysts adjust their criteria for benchmarks to distinguish between insurers and reinsurers i.e. the reinsurance quotient would be an obvious example of where the pattern of the business ceded should be different for each type of company.

The other factor not yet discussed is the emphasis placed on qualitative analysis of the results of the quantitative ratio analysis. All analysts prefer to discuss their findings per the ratio analysis in order to put them into context and to rationalise their findings. Analysts that we have spoken to emphasize the importance that they place on such discussions, and their need to communicate freely and frankly with management in order to formulate opinions on the results of their analysis.

**DATA**

An area that has not yet been discussed is data. Where do the ratios come from? They are usually produced on spreadsheets with information feeds from published financial data such as annual accounts. This data is subject to the following risks (aside from mis-keying numbers):

1) Mis-interpretation
2) Detail
3) Timeliness
4) Reliability
5) Manipulation

Mis-interpretation is of concern to the analyst in that when viewing accounts in a peculiar format i.e. not of their own country they may mis-interpret a balance and calculate a misleading ratio. However, this type of error would normally be removed after a qualitative analysis of the results and discussions with management.

A limitation in comparative ratio analysis, and indeed standalone ratio analysis is the lack of data. If the loss development information is not available because it is not disclosed in the annual accounts or the regulatory returns, or the regulatory returns are not public documents then there is a limitation to the analysis that can be performed, and the full picture of a company from a security perspective will not be obtained which may leave an analyst unable to draw meaningful conclusions. Although, in practice lack of such information might make the security unattractive in the first place.

A major problem in security analysis is the lack of timely data. Many insurance companies
in the UK produce their statutory accounts in March and April, and their regulatory returns by 30 June. By the time the information reaches an analyst's desk it is considerably out of date, especially as six months is a long time in insurance underwriting and loss development. This problem is exacerbated in the case of smaller insurance companies who might file their statutory accounts later, and receive extensions on the filing of regulatory returns.

Reliability of information is a problem, especially as insurance and re-insurance security is such an international business. The analyst derives comfort from audit opinions on statutory and regulatory returns in highly regulated and statute based environments such as the UK and the USA. However, the analyst is presented with problems in developing countries, where law and accounting practice are developing, and those countries which rely on International Accounting Standards to achieve minimum disclosure. The security analyst must be alert to ensure he is aware of the statutory and regulatory requirements of a jurisdiction, who the auditors are, whether an opinion from an auditor is required, when the last set of audited accounts were filed, were the accounts qualified, were there prior year adjustments, etc? These are some the issues the analyst must bear in mind when assessing the reliability of the data.

The last point considers manipulation of the data. Using multiple techniques of ratio analysis, and assessing run-off of results, and two year averages it should be possible to detect manipulation of balances in order to achieve favourable ratios. However, the analyst should be alert to the issue of manipulation of data as a sophisticated management could present results in a favourable light in terms of under-reserving, recognising income in incorrect periods, or manipulating accounting policies in a favourable way to for instance decrease depreciation, recognise unrealised capital gains as investment income, etc.

CONCLUSION

This Section has focused on the major ratios commonly used by security analysts when performing their work. It should be emphasised that no one ratio alone is an indicator of impending disaster, and that analysts form their own personal views as to what level they prefer to see ratios achieve ie benchmarks. In utilising these benchmarks the security analyst is not trying to rank insurance companies comparatively but just trying to ensure that it achieves desired criteria ie its ratios are in the benchmark range. In addition, they may weight their benchmark tests in order of importance such that a large failure in one particular ratio may be regarded as less important than a small benchmark failure in another ratio.

As discussed in the opening paragraphs the security analyst may adjust his criteria for suitability of security based on the needs of the policyholder ie short term nature ratios dealing with cashflow may be more important to a client with short term policy needs eg property damage whereas the client with long term needs, such as public liability coverage, whilst being interested in liquidity would also be far more interested in profitability and the
long term financial health of the company.

Hand in hand with the ratio analysis is the qualitative discussion of the results, which is considered a key element of the analysis process. A full discussion of the reasons behind changes in ratios, and the absolute values is key to their use in any overall assessment of security.

As a concluding remark, such analysis should be viewed with caution as recent failures have tended to appear from nowhere i.e. one year the company was solvent and A rated, and the following year it was in liquidation. Insurance companies in trouble do not tend to degrade slowly from A- to A-- to B+ to B to B- etc, etc but rather from A- to insolvency! Although this in part, is owed to the timeliness of information problem discussed above it is also the nature of insurance companies that mistakes made in key areas can destroy a company in a matter of months!
SECTION II “WHAT RATIONS REALLY MATTER” - TO INVESTORS

We have entitled this section what ratios really matter to investors to cover investors and shareholders in the broad sense of the word. The investor perspective is most highly developed by the fund management/investment analyst community who essentially develop views on behalf of clients who are the potential investors or investing shareholders. Comments have been generated both by interviewing fund managers and analysts and by identifying from circulars the key factors they refer to in forming their conclusions.

Investors are principally driven in their choice of investment by two factors:

1) The potential for capital appreciation, and

2) The potential income from a dividend stream

Such an investor may have a short term outlook and attempt to switch in and out of investments for short term capital gains, or the investor may take a longer term view and look for a stream of (increasing) dividends. The two factors are somewhat interlinked as one of the methods analysts utilise in valuing insurance companies is the dividend yield valuation model which links capital appreciation to growth in dividends.

Most investors/fund managers take a position somewhere between the above two extremes and maintain a portfolio of insurance company shares, which they adjust by switching proportions of shares held as a percentage of their portfolio from one insurance company to another. Most fund managers accept that they cannot switch out of the insurance sector if they hold a large balanced portfolio.

In assessing the investment potential of insurance companies the investor/investment analyst is continually trying to evaluate the relative merits of the insurance companies, having regard to current share prices, in order to seek out investment opportunities.

Analytical techniques

The investment analyst must use both quantitative measures (ie ratio analysis) and quantitative analysis in order to reach views on the comparative performance of different insurance companies, and these measures of assessment must be simple and quick to calculate in order to provide rapid information on relative performance in order to react to investment opportunities. We shall deal with the quantitative approach first.

As discussed above the analyst is trying to form a view as to the likely short term capital appreciation, and dividend yield performance, and his analysis must therefore focus on factors that would give short term indications as to the future dividend paying capacity, and hence dividend yield of the company. Investment analysts therefore tend to focus on profitability as a determinant in ensuring growth in the dividend. Accordingly, the investor
is interested in ratios that indicate recent or current profitability together with those ratios that indicate future profitability / prospects to assess the likelihood of growth, and more importantly establish performance against which to benchmark against other insurance companies ie comparative performance analysis.

In addition, the investment analyst also has regard to non-ratio driven determinants of current/future performance in his assessment of relative and comparative performance. The analyst also has regard to the underlying net asset value of the company compared to its quoted share price.

The analyst accordingly uses non ratio driven financial factors together with the following commonly utilised ratios:

**PROFITABILITY RATIOS:**

"Loss ratio"
"Expense ratio"
"Underwriting margin"
"Return on Equity"

**Loss and Expense Ratios**

The loss and expense ratios are the commonly used measures of insurance company performance. The analyst utilises these usually broken down further into loss, expense and commission ratios which can then be used to assess comparative performance relative to other companies. The analyst will try where possible to analyse these ratios by geographic location and class of business in order to detect trends in profitability which would indicate good or poor performance relative to other insurance companies. There is surprisingly little comment on the extent to which loss ratios may reflect reserve deterioration.
Underwriting Margins

The underwriting margin as the product of the expense ratio and loss ratio, is commonly utilised as a headline ratio in assessing comparative performance. Overall this ratio is utilised both as an absolute measure in comparison to another insurance company, and also as a measure over time that indicates an improving or worsening trend in performance.

Return on Equity

The return on equity is defined as the profit after tax divided by shareholders' funds. It gives an assessment of the overall performance of an insurance company relative to the capital resources at management's disposal. As such it is useful to the investment analyst in terms of measuring relative performance on all aspects of an insurance company's results.

OTHER RATIOS

"Dividend yield"
"Solvency margin"
"Net assets/technical reserves"

Dividend Yield

The dividend yield is defined as the gross dividend divided by the share price. The yield is an important measure for fund managers as they will have requirements not only to generate capital growth but also an income stream. When investing they will look to dividend yields to balance their income generating portfolios. Prospective dividend yields as an indicator of growth in the income streams are of great importance to them in making their investment decisions.

Solvency Margin

Investment analysts appear to spend considerable time, judging from their circulars, monitoring the solvency margins of insurance companies, and usually develop their own methods for calculating solvency margins to assist in comparability between insurance companies. This has become more important recently as companies have begun to use different definitions of shareholders funds when publishing solvency margins themselves. The investment analyst generally favours a higher margin but only to give a broad indication of financial strength. Thus there can be a conflict with a desire for maximising the return on equity. Investment analysts concerns when a company has a low solvency margin are that it will be forced to adopt a risk averse investment portfolio ie investing in less volatile capital instruments such as bonds, and therefore not able to invest in volatile but arguably higher yielding securities such as equities. A low solvency margin would also indicate that
the company may have low capacity for growth in premiums and this would not be perceived favourably if the insurance cycle was turning and the company was regarded as being unable to take advantage of firmer rates. This would give an indication that future comparative performance might not be as good as another insurance company, and accordingly the investor would look to invest in another company more able to partake in any upturn. Weaker solvency ratios also raise investor concerns regarding potential rights issues.

**Net assets/technical reserves**

The Net assets to technical reserves ratio gives an indication of the financial strength of the insurance company. As reserves are often the largest and most subjective component of a company's balance sheet, investors find this ratio useful inter alia as it gives an indication of the susceptibility of net assets/shareholders funds to a deterioration in reserves. The higher the ratio, the better able a company can withstand reserve deterioration and continue to pay dividends. The year on year trend can also be analysed to provide information on the diminution of shareholders' funds and the growth in reserves.

**Share Price to Net Asset Value**

The share price to net asset value ratio is often used as a barometer to test an insurance company’s share price. Until recently the share price was typically at a discount to net asset values for the shares contained in the FT-SE quoted composite insurance index, reflecting poor results during the bottom of the insurance cycle. The last few years have seen the ratio rise to stand at a premium to net assets (depending inter alia on the value placed on life subsidiaries) with the exception of Royal Insurance. Investment analysts tend to measure this premium/discount as an indicator of the goodwill attributed to a company’s business, management and structure. It implies stock market confidence that a company can achieve an insurance profit or an above average investment return. A premium in excess of all the other companies may indicate that a particular share is over-valued or that other shares are under-valued and hence it is time to switch shares.

**Investment gearing**

This refers to the ratio of a type of investment (eg equities) to net assets. This is particularly useful to some analysts who regard insurance companies as investment trusts with some underwriting capacity, as they will be able to calculate the responsiveness of the net assets of the insurance company to Stock Exchange movements. This gearing effect can obviously work in both ways, but knowledge of the ratio can prove most useful.

**PE Ratios**

Unusually the utilisation of PE ratios does not feature in the comparative performance of insurance company shares principally owing to their volatility ie they have been negative
for the composite insurance sector for the past two years. The PE ratio cannot adequately
cope with the investment gearing effect of insurance companies asset portfolios and the
range of practises utilised by insurance companies in reporting their profits.

Other non-ratio techniques

In assessing the potential of an insurance company for future growth the investment analyst
will also have regard to other factors such as:

- the strategy of the company
- the quality of management
- the quality of operations
- the exposure to risks such as Domestic Mortgage Indemnity, Pollution etc
- the geographic exposure to other markets which are entering a down cycle
- the ability to partake in an up cycle

Each investment analyst would form their own view in assessing such factors as the quality
and strategy of management. As discussed above these would all be utilised in assessing
comparative performance. The investor is only switching between insurance shares, and
not out of them. The investor wants to know who is going to do well in the short term in
order invest in a share that will out-perform the others.

Data

The data used to arrive at the qualitative and quantitative assessment of comparative
performance and future comparative performance can be obtained from many sources as
follows:

- Published annual accounts
- Quarterly statements
- Half year reports
- Company presentations
- Press releases
- DTI Returns
- Market intelligence and rumours
- Other publicly available information which impinges upon the operations of the
company eg statistics on repossessions for DMI losses, Court decisions in the USA
affecting asbestos and pollution claims

As with all data the reliability and age of the data limits its usefulness. The majority of data
is historic (and unaudited) and can only be used to give a personal view based upon the
information utilised.
Conclusions

The investment analyst is continually looking for reasons why investors hold switch out of one share and into another. Anecdotal evidence indicates shares are held in institutional portfolios for an average period of 3 to 4 years. However, stockbrokers are primarily concerned with those shares which might be traded on a particular day. They are therefore always looking for a new item of news and/or insight and/or interpretation which might change a particular fund manager from being close to dealing in a share (for whatever reasons) to being a current buyer or seller of a share. An item may therefore be of relevance to stockbrokers generally and a small number of fund manager, whilst being viewed as of little significance by the generality of fund managers or investors.

The analyst is seeking to differentiate between companies, in order to determine the relative attractiveness of an investment and not to provide a thorough analyst largely relies on others (DTI in particular) to ensure that the company is generally sound and can be treated as such by investors.

Analysts tend to have differing views to one another as can be gauged from the following quotes from two recent circulars about the same insurance company (from rival analysts): "DMI a problem of the past" and "DMI remains a dominant issue". In a long run the Investment analyst's view is a personal one that focuses on the recent and future comparative performance of insurance companies. For the latter especially, imponderables and quantitative factors may predominate.
The over-riding caveat with all ratios used by management must be that they represent a simplification of underlying data in order to communicate a measurement concept to a wide and divergent audience. Over-reliance on ratios as a measurement tool can hide more significant movements or trends in the underlying data, and can conceal both problem areas and potential opportunities. In control situations, the use of ratios tends to distort processes and behaviours.

Therefore, although ratios do "matter" in the measurement of performance, they cannot be used to the exclusion of other measures.

**Management perspective**

The overall requirement of a company's management, must be the ability to measure and assess progress of the company towards its strategic objectives, taking corrective or updated action whenever necessary.

Longer-term strategic objectives will often be relatively unquantified statements of purpose, which are not easily quantified by ratios. However, this overall purpose can be cut into ever smaller tasks, each in turn subject to a more quantified definition, thus becoming more measurable.

The sub-division of overall strategic objectives can be on a matrix basis. The overall strategy will concentrate on the long-term timescale, and overall company performance.

These can be cut into smaller timeframes, for example, from the strategic horizon through medium term planning, annual budgeting, forecasting, (etc) right down to workflow targets for the following day. This allows the measurement of progress over increasingly shorter timescales. Thus if strategic objectives are defined as cover the "long-term" (ie 5-10 + years) a supporting hierarchy of objectives would then support the assessment of progress towards these goals, covering (perhaps) budgets for the following 2 years, statutory reporting every six months, internal management reporting monthly/quarterly, and perhaps some monitoring of key indicators on a weekly, or even daily, basis.

Another cutting dimension could quantify company objectives into subsidiary targets covering divisions, regions, or functions and/or teams within the company. Still further dimensions could include analysis by product, by channel, etc. Thus, an overall ratio may focus on the loss ratio for the company, which is subsequently analysed down to loss ratios by branch and product.

The foregoing examples cover purely internal measurements. It will also be appropriate to assess one company's performance in relation to both competitor groups, and overall market movements (most obvious examples being market share calculations, relative
This builds a co-ordinated supporting structure of management information underneath the overall strategic objectives. At each level of "cut" from the guiding strategy, different ratios are relevant for measuring performance.

It is not the intention of this paper to define an exhaustive list of all ratios that would fill the above structure. However, the following outlines a framework:

<table>
<thead>
<tr>
<th>User</th>
<th>Long-term</th>
<th>Shorter-term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Board</strong></td>
<td>Overall Company measures, most emphasis on longer-term</td>
<td>Dividend level (dividend/share)</td>
</tr>
<tr>
<td></td>
<td>Shareholder Value (NAV, EPS)</td>
<td>Profitability (% of prevs yr plan)</td>
</tr>
<tr>
<td></td>
<td>Profitability (ROCE, Inv return)</td>
<td>Capital position (solvency)</td>
</tr>
<tr>
<td></td>
<td>Capital position (net assets)</td>
<td>Market position (% share)</td>
</tr>
<tr>
<td></td>
<td>Growth, reputation (surveys)</td>
<td></td>
</tr>
<tr>
<td><strong>Top Mgt</strong></td>
<td>Company split to regions/accounts. Focus on importance rather than timescale.</td>
<td>Variance analyses (to budget/plan)</td>
</tr>
<tr>
<td></td>
<td>Profit trends (growth, op ratios)</td>
<td>Risk exposures (portfolio analysis)</td>
</tr>
<tr>
<td></td>
<td>Growth (product development)</td>
<td>Claims analyses (loss type)</td>
</tr>
<tr>
<td></td>
<td>Claims performance (loss ratios)</td>
<td>Accuracy of estimating (loss/gain)</td>
</tr>
<tr>
<td></td>
<td>Reserving (run-off results)</td>
<td>Investment portfolio</td>
</tr>
<tr>
<td></td>
<td>Investment results (% return)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Capex (infrastructure measures)</td>
<td></td>
</tr>
<tr>
<td><strong>Middle Mgt</strong></td>
<td>Focus on own region, account, function. Shorter time horizon.</td>
<td>Variance analyses</td>
</tr>
<tr>
<td></td>
<td>Loss experience by underwriter/agent, perhaps over 2-3 years.</td>
<td>Profitability (underwriter/agent)</td>
</tr>
<tr>
<td></td>
<td>Growth (competitive ranking)</td>
<td>Targets (% achievement)</td>
</tr>
<tr>
<td></td>
<td>Business process efficiency (ABC measures)</td>
<td>Systems availability (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>downtime</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Claims &quot;leakage&quot; measures</td>
</tr>
<tr>
<td>User</td>
<td>Long-term</td>
<td>Shorter term</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lower Mgt</td>
<td>Focus on own department. Concentration on shorter-term</td>
<td>Meet annual/monthly objectives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Process error level (% corrections)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Efficiency (backlogs, outstandings)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Service levels (% of target)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff attendance levels (illdays/etc)</td>
</tr>
<tr>
<td>External measures</td>
<td>These will tend to be of more interest and relevance to senior manager/Board levels.</td>
<td>Move over previous year/years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Free capital levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brokers’ recommendations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comparative loss ratios</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Losses from major events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R/I costs and availability</td>
</tr>
</tbody>
</table>

There are further ratios - not explicitly included above - which will be important to a business on a day-to-day basis. These monitor the immediate crucial health of the company. For example, cash flow, availability of quotations systems, business processing efficiency (measured in backlogs, etc). Although these can be critical, they will often be monitored by relatively junior staff within the organisation.

The adherence to formalised monitoring and reporting criteria should ensure that any deviations are communicated quickly and effectively. The junior staff levels check that the ratios remain within tolerance levels, essentially a precautionary activity. If key monitored ratios deviate outside the acceptable range, the information is quickly passed along the management line, to whoever is empowered to initiate the necessary corrective action.

Within automated reporting procedures - for example comprehensive EIS systems - "hot screens" can be used to highlight all ratios (and other measures) which show deviations from acceptable ranges, and allow immediate access to the detailed underlying data. Within paper-based reporting systems, it may be that only deviations are reported, to prevent recipients becoming inundated with paper which essentially only serves to report that "everything is OK".
The focus of information required will also change depending on the situation (short to medium term) facing an individual company, eg:

- strong growth period
- recessionary economic conditions
- development of new venture
- duration of specific projects

Furthermore, it may be that ratios normally identified as being important for lower levels of management in the above table, may - temporarily - be of greater interest to more senior management. For example, for the duration of specific projects, relatively low level ratios may increase in importance to higher management levels as a means of assessing the impact and progress of the project, both in itself, and in its impact on the underlying company.

These considerations emphasise the need for ratios to be treated flexibly. As with any set of management information reporting, needs of the users will change over time and situation, and the content of the reporting must remain flexible to reflect this.

The foregoing has really only implied that management's main interest has to be on ratios which describe performance that is controllable by them. It will be important to distinguish between information - in the form of monitored ratios or exception reported ratios - which is reported to illustrate the need for short-term action (corrective or otherwise), and information which is only reported essentially to advise of a particular situation, or to provide a context for longer-term action.

**CONCLUSION**

A number of common sense conclusions can be drawn from this:

- Different ratios relevant for different levels of management within a company are needed.
- Management require different, but consistent, ratios to assess performance over different timescales.
- The most critical ratios will be those relating to limiting factors on a business, (which will change through differing business conditions/ownership structures/etc), and those which relate to basic daily running of a company.
- A need for flexibility exists in changing the ratios that are monitored.

There is also a need to ensure, as far as possible, that ratios do not hide changes in underlying data. Ratios are not only needed to help in the evaluation of performance, but
also to critique the data itself. The underwriting ratio may look good until the IBNR is properly analysed or the commission system adjusted to reflect a new distribution agreement.

While this paper focuses on ratios, the art of management in communicating effectively up, down and across an organisation cannot be forgotten.
The table below sets out the more commonly used ratios (under the classification set out in this paper) and gives an indication of which ones are utilised by a selection of 3 rating agencies.

<table>
<thead>
<tr>
<th>1 OVERALL RATIOS</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Solvency</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1.2 Growth in Net Premium</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>1.3 Retention quotient</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 PROFITABILITY RATIOS</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Expense ratio</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2.2 Loss ratio</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2.3 Combined ratio</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2.4 Investment income ratio</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 Investment yield</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2.6 Change in retained reserves</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7 Return on average equity</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
### 3 Liquidity Ratios

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Liabilities to liquid assets</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3.2 Reinsurance recoverable to net assets</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3.3 Survival ratio</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>3.4 Technical reserves to liquid assets</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

### 4 Reserve Ratios

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Technical reserves and shareholders funds to Net Premium</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>4.2 Technical reserves and shareholders funds</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>4.3 Underwriting cover (loss reserves to net premiums earned)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>4.4 Loss development to retained reserves</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>