

# The Investment Analysts Journal

Number 13 April 1979

# Die Beleggings- Navorsers Tydskrif

Nommer 13 April 1979

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# Die Beleggings- Navorsers Tydskrif

Nommer 13 April 1979

Inhoud

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## This issue in brief

### **Standards of accounting practice and the objectives of financial reporting**

Information is the raw material of investment analysis. Without it, no proper judgement can be formed of investment values and it is, therefore, on information, its quality and appraisal, that stock market efficiency depends. However, it has always been a problem of stock markets that information is not made available timeously or presented in a manner that is meaningful to investors concerned not only with the isolated investigation of individual securities but also of making comparisons between one security and another. In this paper by W. A. A. Maguire of Cape Town University, attention is given to the specific matter of accounting information and the standards that govern its presentation in South Africa. He concludes that much needs to be done in the way of establishing a conceptual framework for financial reporting before the development of standards takes place in a logically consistent manner.

### **Some results of an empirical study of ratio analysis in South Africa**

This paper by A. D. Boy of Natal University is concerned with an empirical investigation of ratio analysis in South Africa. To what extent is ratio analysis used by corporate investigators concerned with capital budgeting decisions and to what extent are there gaps between the theory and practice of financial management techniques? These are questions to which Mr Boy addresses himself. Not surprisingly he reports that there is a positive connection between the use of ratio analysis and the size of firms in this country and that most firms who use it, do so in a manner which suggests that the gap between theory and practice here is not large. But clearly there are many smaller firms which apply it only to a limited extent and do not do so correctly.

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### **The influence of financial policy on the growth of profitability and size of firms**

The matter of gearing has for a long time fascinated those interested in the theory and practice of corporate finance. In what circumstances and to what extent is the use of loan capital justified? Is it possible to conceive of an optimum capital structure? How does the capital structure of a firm affect its cost of finance? What is the effect of debt financing on growth? It is with questions of this kind that Dr Bethlehem is concerned. However, he also gives attention to the related matter of the retention of earnings and the correlation it has, if any, with growth and performance. The basis of Dr Bethlehem's paper is an empirical investigation he undertook of 280 companies listed on the JSE.

### **The relationship between portfolio theory and the efficient market hypothesis**

The matter of market efficiency is intriguing in itself but it also forms the basis of portfolio theory as developed by Markowitz, Sharpe and others over the last two decades. In this paper Prof Seneque deals in detail with both subjects and explains the link between them. Inevitably much stress is placed on risk and return and how concern with the trade-off between them works to guide investor behaviour.

### **Net asset value**

Mr Du Toit's paper is the fourth in our series entitled 'Investment basics' and deals with the importance of the assessment of net asset value to the determination of the fundamental value of a share. In terms of the fundamentalist ethic, shares with an intrinsic value higher than their ruling price should be bought while shares with an intrinsic value less than ruling price should be sold, but intrinsic value is something that defies objective determination. Because of this a knowledge of asset value may be very important.



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# The Investment Analysts Journal

# Die Beleggingsnavorsers Tydskrif

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Thirteenth issue

April 1979

In recent issues of this Journal we have published a number of articles on the subject of stock market efficiency mainly because of its importance to practising investment analysts and portfolio managers. The subject, however, has an importance which ranges beyond the esoteric interest of such persons and it may, therefore, serve a purpose here to place it in a wider perspective. Stock market efficiency is not a matter than can be separated from the matter of general economic efficiency, nor are the characteristics of stock market price changes unique. What is true of them is true also, to a greater or lesser degree, of bond market price changes, money market price changes, changes in currency values and changes in the prices of commodities. The markets for shares, debt instruments, currencies and commodities are all concerned with the trading of relatively homogeneous and highly divisible assets, and in all of them speculation on the part of well informed profit-maximisers has developed to a substantial degree. It should surprise nobody, least of all investment analysts, that prices, in whatever market is being considered, should reflect new information very quickly. Investment analysts may have made the mistake until now of underrating the quality of competition in such markets, but with the evidence now available, it is not a mistake they should repeat in the future.

The focus of attention on market efficiency must be seen also as an aspect of a new respect for the market place on the part of policy makers. In the U.S. and in other industrialised countries, but in South Africa also, governments are losing confidence in their ability properly both to control the direction of economic events and to determine correctly the order of economic priorities. To interfere with the free interaction of demand and supply is to risk not only economic distortion, it is to risk making mistakes of policy and being turned out of office for disregarding basic realities. The market is being seen increasingly as an objective barometer of economic conditions, and barometers are not things with whose functioning one tampers if it is the truth that one seeks.

Whatever the validity of this view, and it is important to note that there are those who will take issue with it, it is a fact that it is a view that is gaining increasing support in South Africa, and particularly in Government circles. A day hardly passes without some official spokesman proclaiming the virtue of the free market economy or of the need for persuading blacks, as well as whites, of its merits. Indeed, it is fair to say that the Government's acceptance of the De Kock Commission's recommenda-

Dertiende uitgawe

April 1979

In onlangse uitgawes van hierdie Tydskrif het ons 'n paar artikels gepubliseer oor die onderwerp van effektemarkdoeltreffendheid, hoofsaaklik as gevolg van die belangrikheid daarvan vir praktiserende beleggingsnavorsers en portefeuljbestuurders. Die belang van die onderwerp strek egter verder as die esoteriese belangstellers van dié persone, en dit kan dus nuttig wees om dit hier in 'n breër perspektief te plaas. Effektemarkdoeltreffendheid is nie 'n aangeleentheid wat geskei kan word van die aangeleentheid van ekonomiese doeltreffendheid nie, en die eienskappe van effektemarkprysveranderings is ook nie uniek nie. Wat geld vir effektemarkprysveranderings, geld in mindere of meerdere mate ook vir obligasiemarkprysveranderings, geldmarkprysveranderings, veranderinge in deviesewaardes en veranderinge in die pryse van handelsartikels. Die markte vir aandele, skuldaktes, geldmiddelle en handelsartikels is almal betrokke by die verhandeling van betreklik gelyksoortige en hoogs verdeelbare bates, en by almal van hulle het spekulاسie van die kant van goed ingeligte winsmaksimaliseerders in 'n aansienlike mate ontwikkel. Dit behoort allermins vir beleggingsnavorsers verbasend te wees dat pryse, in watter mark ook al, nuwe inligting baie gou behoort te weerspieël. Beleggingsnavorsers het tot dusver miskien die fout begaan om die gehalte van mededinging in dié markte te onderskat, maar met die bewyse wat tans beskikbaar is, is dit nie 'n fout wat hulle in die toekoms behoort te herhaal nie.

Die verhoogde belangstelling in markdoeltreffendheid moet ook gesien word as 'n aspek van 'n nuwe ontsag vir die mark van die kant van beleidsvormers. In die V.S.A. en in ander geïndustrialiseerde lande, maar ook in Suid-Afrika, verloor regerings vertroue in hulle vermoë om die verloop van ekonomiese gebeure behoorlik te beheer, asook om die volgorde van ekonomiese voorrang op 'n juiste wyse vas te stel. Om met die vrye wisselwerking van vraag en aanbod in te meng, bring nie net die risiko van ekonomiese verwringing mee nie, maar ook die risiko van beleidsfoute en van ampsonthefing as gevolg van die verontagsaming van basiese werklikhede. Die mark word al hoe meer as 'n objektiewe barometer van ekonomiese toestande beskou, en as 'n mens die waarheid nastreef, peuter jy nie aan die werking van barometers nie.

Hoe geldig dié siening ook al mag wees, en dit is belangrik om daarop te let dat daar diegene is wat daarmee sal verskil, is dit 'n feit dat dit 'n siening is wat al hoe meer steun werf in Suid-Afrika, en veral in Regeringskringe. Daar gaan skaars 'n dag om, of een of

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tions amounts to a clear confirmation of official recognition of the wisdom as well as authority of the exchange market, and its acceptance of the recommendations of Wiehahn, to confirmation that even in the sphere of labour, the dictates of market forces cannot be disregarded.

THE EDITOR

ander amptelike woordvoerder wys op die doeltreffendheid van die vrye markeconomie of die nodigheid daarvan om die swart bevolkingsgroep, sowel as die blanke bevolkingsgroep, van die voordele daarvan te oortuig. Daar kan inderdaad met eerlikheid gesê word dat die Regering se aanvaarding van die De Kock-kommissie se aanbevelings neerkom op 'n duidelike bevestiging van amptelike erkenning van die wysheid sowel as die gesaghebbendheid van die deviesemark, en sy aanvaarding van die aanbevelings van Wiehahn, op bevestiging dat selfs op die gebied van arbeid die voorskrifte van markkragte nie verontagsaam kan word nie.

DIE REDAKTEUR

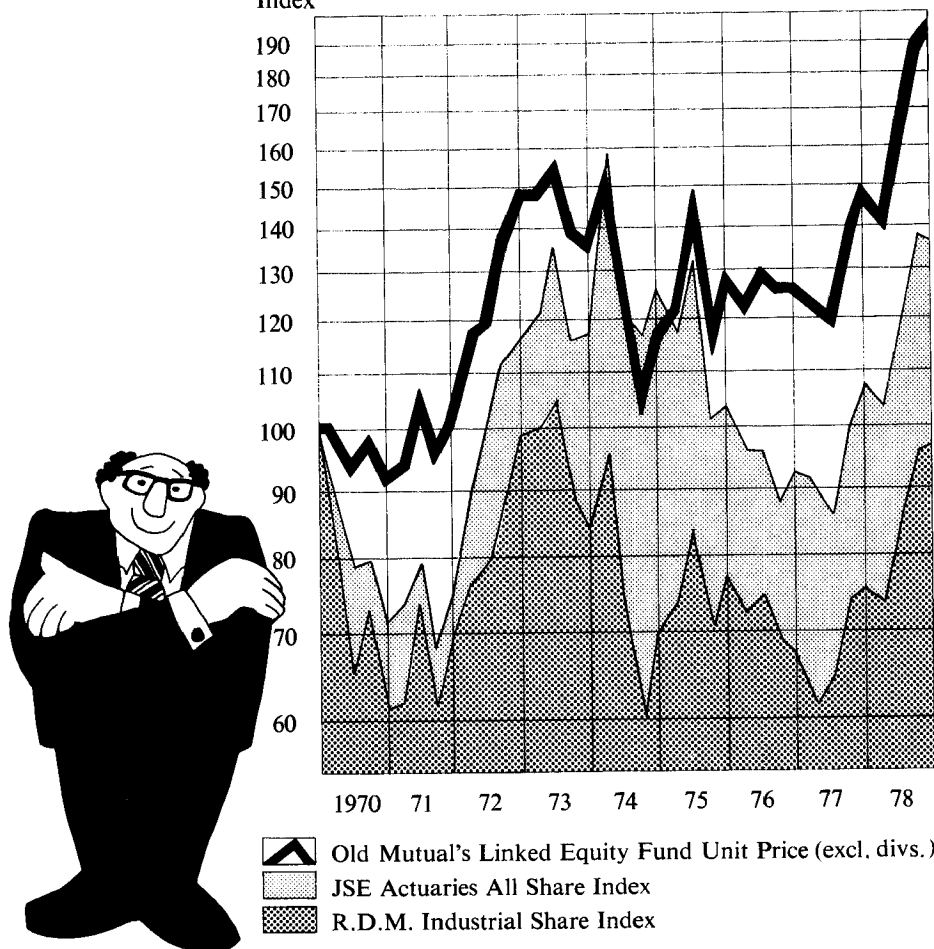
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# Is the JSE an efficient market?

... "the market prices of shares listed on the JSE at any time fully reflect all available information and it is unlikely that the efforts of chartists and fundamental analysts will be rewarded with consistently superior investment performance."

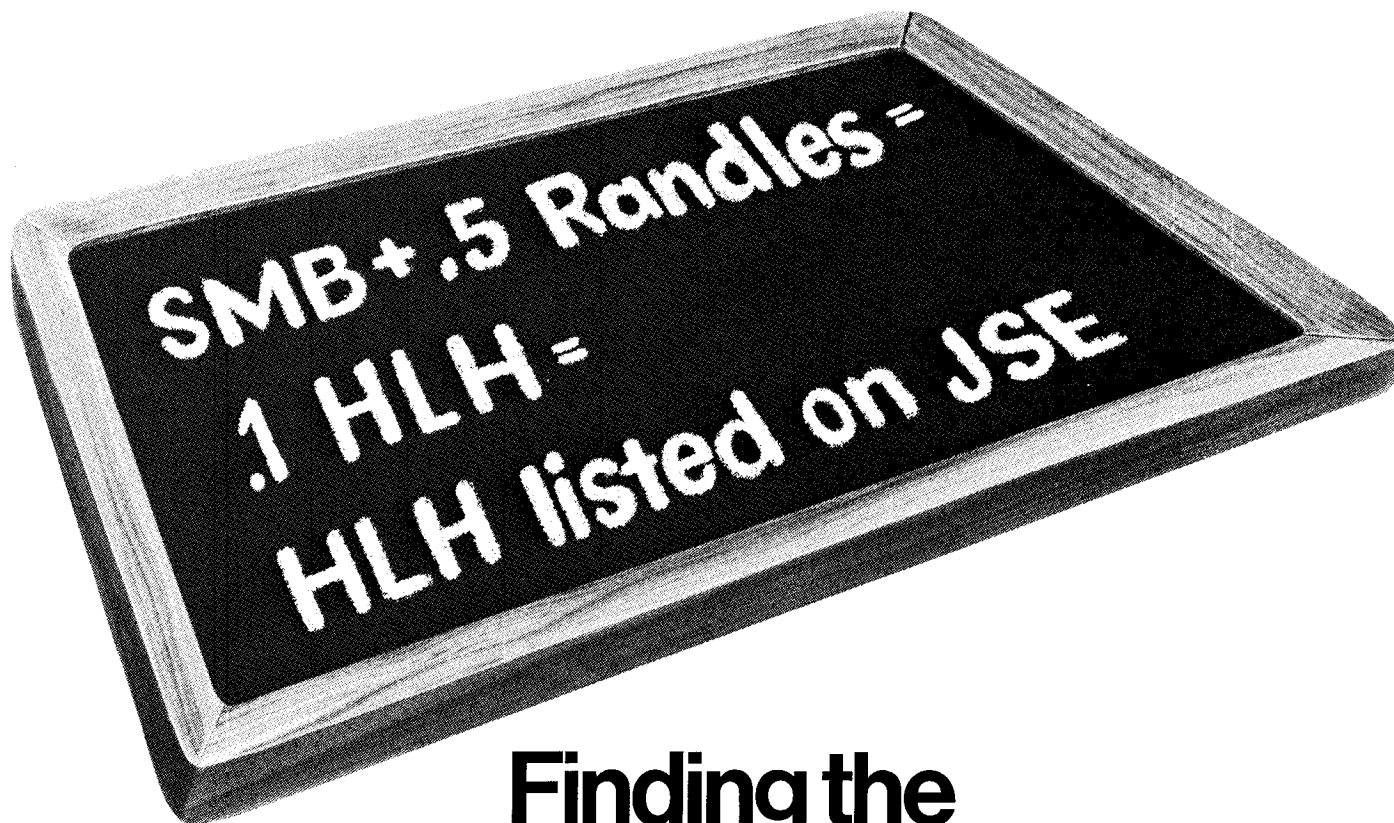
Messrs Gilbertson & Roux, Investment Analysts Journal, April 1978, page 30.

Performance of Old Mutual's Linked Equity Fund compared to the JSE Actuaries All Share and R.D.M. Industrial Indices (Base: Dec. 1969 = 100).  
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 **OLD MUTUAL INVESTMENTS**



## Finding the right solution.

The answers to the problems of corporate finance are seldom clear cut. Circumstances and market conditions require unique and often imaginative solutions to achieve the desired objective. The listing of HLH is a case in point. Here, as the equation illustrates, SMB purchased the controlling shareholding in Randles and then reversed the interests of HLH into the company by the issue of new shares. At the same time, SMB negotiated the disposal of Randles' assets, so the reversal effectively raised new equity for HLH. Our solution broke new ground. The result is a successful listing of an industrial concern on The Johannesburg Stock Exchange.



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# Standards of accounting practice and the objectives of financial reporting

\*Senior Lecturer in Accounting, University of Cape Town

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## *—A focus on Statement of Generally Accepted Accounting Practice 1.003 (Extraordinary Items and Prior year Adjustments)*

The accounting profession in several countries devotes considerable resources, including time and effort, to the setting of standards of accounting practice. South Africa is one of these countries. The stated purpose of such activity is to improve the quality of accounting information provided by the managements in discharging their responsibility to report to the users of that information. It has been suggested that those standards have been largely ineffective as they have not been drawn up in accordance with a conceptual framework for financial reporting. In the United States of America, in particular, political pressures have had a significant influence on the setting of standards.

This provides the background to the consideration of the setting of standards of accounting practice in South Africa. In order to evaluate the contribution of accounting standards to the improvement of accounting information, Statement of Generally Accepted Accounting Practice 1.003 is analysed in terms of suggested reporting objectives. Statement 1.003 stipulates the standard accounting practice for extraordinary items and prior year adjustments.

## **THE RESPONSIBILITY OF MANAGEMENT AND THE ROLE OF THE AUDITOR**

Management's obligation to report to the shareholder has arisen through the split between ownership and control which characterises the modern limited liability company. Thus, from its inception, there has been conflict of interest in the financial reporting process. Management has been called upon to give an honest account of its *own* performance. It is logical that an independent third party, the auditor, should be called upon to report on the reliability of management's reporting.

Statute has, in some countries more than in others, regulated the reporting process. However, it became apparent that the flexibility permitted in accounting measurement and reporting left managements with a free hand to manipulate these reports to their advantage. This diversity was not limited by the presence of the auditor per se, as a wide range of reporting practices were accepted as warranting an unqualified audit report. Some limitations on the range of permissible reporting practices was required. The rationale for the setting of accounting standards has accordingly been variously expressed in terms of the need for uniformity, harmonisation, the elimination of alternative practices or the narrowing of differences in reporting.

## **THE SETTING OF ACCOUNTING STANDARDS**

The accounting profession has for many years regarded the setting of accounting standards as essential for the improvement of the quality of accounting information. For example, Zeff<sup>1</sup> records the involvement of the American Institute of Certified Public Accountants (AICPA) in this area as early as 1917. In 1939 standard setting was pursued by the AICPA's Committee on Accounting Procedure, which was succeeded by the Accounting Principles Board (APB; USA) and by the Financial Accounting Standards Board (FASB) in 1959 and 1972 respectively. South Africa is included in those countries which have followed this trend, with the establishment of the Accounting Practices Board (APB)<sup>2</sup> in the early 1970's. With the advent of the International Accounting Standards Committee in 1973, the apparatus was established for the setting of accounting standards on an international basis.

The setting of standards does not appear to have resulted in the improvement which was expected by the accounting profession. It is instructive to consider the relatively long history of standard setting in the United States, as this serves to highlight the influences which have been brought to bear on the standard-setting process.

The changes in the vehicles for the formulation of accounting standards in the USA were not the result of a natural evolution. In each case, the failure of the relevant body to make progress in the general acceptance of standards led to the formation of a new, more broadly based body. Marshall S. Armstrong,<sup>3</sup> chairman of the FASB since its inception, traces the developments leading to the formation of standard-setting through the action of vested interests. Opposition has been based not on sound conceptual reasons but on the basis of the possible adverse effect on the reported results of the entities affected by such standards. Such opposition continues against the pronouncements of the more broadly based FASB.

The setting of authoritative standards has, as indicated above, a short history in this country. The APB has issued only four statements of generally accepted accounting practice.<sup>4</sup> The evidence of political pressures experienced in formulating these standards is not as clear as that in the USA, but resistance has been expressed through the acceptance of qualified audit reports by certain quoted companies in preference to complying with one or other of the standards. Examples are Abercom Investments (1976: statement 1.002) and AECL (1977: statement 1.004). The opposition expressed against exposure draft 18 (depreciation) by the property investment companies gives an indication of what may be in store.

It has been observed that "the elimination of alternative practices should not be the primary goal (of the setting

of accounting standards), since the elimination of practices does not necessarily result in the best ones surviving".<sup>5</sup> In apparent recognition of this, Vieler<sup>6</sup> has stated that the APB, "where it is faced with a choice of practices, must choose the one which it believes will best serve the purpose of fair presentation in normal circumstances."

However, what constitutes the 'best practice' can hardly be determined without reference to the objectives of financial reporting.

### THE OBJECTIVES OF FINANCIAL REPORTING

The absence of a conceptual framework for financial reporting has been acknowledged for many years as a major reason for the relative failure of accounting standards to promote an improvement in financial reporting. Efforts to formulate such a conceptual framework are perhaps most noticeable in the United States,<sup>7</sup> the most recent development being the issue by the FASB of its exposure draft entitled "Objectives of Financial Reporting and Elements of Financial Statements of Business Enterprises" (December 1977). This exposure draft is the first of a series aimed at reaching consensus on a conceptual framework. The research project which gave rise to this was sponsored by the AICPA; the committee was chaired by Robert M. Trueblood and it reported in 1973.<sup>8</sup> The Trueblood Report suggested that "the basic objective of financial statements is to provide information useful for making economic decisions".<sup>9</sup> In elaborating on this basic objective, the report stated eleven supporting objectives, each of which relates to a specific aspect of financial reporting.

The FASB exposure draft, while accepting, in broad terms, the statement of objectives offered by the Trueblood Report, has focused on the information needs of investors and creditors and has recommended that the other recommendations of the report be researched further. In substance, however, the objectives stated in the exposure draft are entirely consistent with those stated in the Trueblood Report.

One of the supporting objectives stated in the Trueblood Report relates specifically to the income statement, viz that an objective of financial reporting is to provide "a statement of periodic earnings useful for predicting, comparing and evaluating enterprise earning power".<sup>10</sup> There is some evidence that the APB is concerned with regulating the measurement and reporting of income flows. The fundamental concepts set out in statement 1.001<sup>11</sup> govern income measurement to a large extent in practice. Statement 1.003, in covering extraordinary items and prior year adjustments, is concerned with a particular aspect of the reporting of income. It therefore seems logical to expect that statement 1.003 would promote the objectives of income measurement and reporting.

Statement 1.003 will be examined below in an attempt to evaluate the APB's success in selecting the best practice in this particular case. This will be done in the context of the objectives of financial reporting and the influence of political pressure. While the influence of the latter may not have been obvious, it has certainly affected overseas standards to which the APB has made reference.

### THE MEASUREMENT AND REPORTING OF INCOME

The issue of a standard which prescribes the treatment of extraordinary items and prior year adjustments presupposes the adoption of a definition of income and the statement of the objective of measuring that income.

A widely accepted definition of income is that stated by Sir John Hicks, who expressed the income of an individual as "the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning."<sup>12</sup> The Sandilands Report restated this definition, in the context of a company, as "the maximum amount which the company can distribute during the year, and still expect to be as well off at the end of the year as it was at the beginning".<sup>13</sup> As the terms 'income', 'net income' and 'profit' assume a number of different meanings dependent on the context or the country in which they are used, the term 'disposable wealth' will be used. In the writer's view, this is the essence of the Hicksian definition and the adaptation thereof quoted above.

Accountants have not rejected the Hicksian definition, but they have not found it possible to express it accurately in accounting terms, principally on account of the difficulty involved in measuring well-offness. Several different concepts of wealth and of disposable wealth have been advanced as approximations of the Hicksian definition.<sup>14</sup>

The conventional accounting model relates to the adapted Hicksian definition above by defining well-offness (or wealth) as the shareholders' interest in the company, and this is measured in money terms. As statement 1.003 has been formulated within the constraints of the conventional accounting model, it is evaluated within these constraints, i.e. no attempt is made to evaluate the conventional model's approximation of the Hicksian definition. The paper attempts, rather, to assess the extent to which statement 1.003 facilitates the conventional model's approximation of disposable wealth.

It is suggested here that the objective of determining disposable wealth is two-fold:

- the measurement of disposable wealth for the purpose of predicting future cash flows (either in the form of dividend distributions or in the form of the proceeds on sale of the security);
- the measurement of disposable wealth for the period under review for the purpose of assessing management's discharge of the stewardship function, the amount available for distribution and/or the acceptability of management's dividend policy.

Statement 1.003 refers to two views on the determination of net income:

View 1: "main emphasis in the income statement should be placed on the normal recurring activities of the business" (paragraph .10).

View 2: "all transactions affecting the net increase or decrease in shareholders' interest in capital and reserves (except for unrealised surpluses on revaluation of non-current assets and changes in share capital) should be included in net income" (paragraph .11).

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View 1 is generally referred to as the current operating performance concept while View 2 is referred to as the all-inclusive concept of income. Views 1 and 2 are similar to but not identical to the first and second aspects, respectively, of the objective referred to above. Views 1 and 2 are presented as mutually exclusive, while, it is submitted, the two aspects of the disposable wealth objective are not.

Paragraph .06 of statement 1.003 reads "... the income statement for the year should (where applicable) disclose at least the following elements:

- .06.1 Net income before extraordinary items;
- .06.2 Extraordinary items (less taxation and amounts attributable to outside interests);
- .06.3 Net income;
- .06.4 Prior year adjustments (less taxation and amounts attributable to outside interests)."

The relevant definitions and the suggested disclosure will be considered later in this paper; however, the explanatory note contained in paragraph .12 of the statement, which reads as follows, should be noted at this stage:

"The accounting practice set out as standard in this statement reconciles the two views outlined above (paragraph .10 and .11) by requiring both extraordinary items and prior year adjustments to be segregated and disclosed in the income statement separately from the results of normal operations."

'Normal operations' and 'normal recurring operations' are not synonymous terms. This is confirmed by the consideration of the definition of extraordinary items which follows. In view of this one cannot accept the assertion that the standard reconciles the current operating performance concept and the all-inclusive concept by segregating extraordinary items and prior year adjustments from the results of normal operations. It is submitted that statement 1.003, in attempting to reconcile the two views stated in paragraphs .10 and .11, has failed in promoting the two-fold objective of disposable wealth measurement and reporting stated above. In support of this, a detailed consideration of the statement follows.

### EXTRAORDINARY ITEMS

The definition of extraordinary items is given by paragraph .07 of the statement. It is reproduced below in an altered format and with the emphasis added for clarity. "Extraordinary items are those items of *income and expense* which derive from events or transactions – *outside the ordinary activities of the business* and which are *both*

- *material*
- and
- *not expected to recur frequently or regularly.*"

The paragraph places emphasis on the criterion 'outside the ordinary activities of the business' by specifically excluding from extraordinary items "those items which, though abnormal in size and infrequent in occurrence (and which may, therefore, require separate disclosure) derive from the ordinary activities of the business". This definition closely follows those adopted in the United States<sup>15</sup> and in the United Kingdom.<sup>16</sup>

The definition clearly aims to exclude from 'net income before extraordinary items' all those items which are outside the ordinary activities of the business and which are large enough to distort the user's view of the financial results of such ordinary activities. Conceptually, the definition satisfactorily distinguishes extraordinary items for this aim to be met. In practical terms, those preparing (management) and those attesting (auditors) the report are required to apply their judgement in deciding whether or not an item is extraordinary. This is confirmed by paragraph .13 in that "whether an item is to be classified as extraordinary will depend on the circumstances; what is extraordinary in one business will not necessarily be extraordinary in another". Although the paragraph attempts to give guidance by providing specific examples of items which may be classified as extraordinary, they need not be, depending on the circumstances.

The statement introduces no new difficulties in assessing the materiality criterion; the consideration of materiality in deciding on adequate disclosure is fundamental to accounting and would thus be a consideration even if it were not specifically mentioned in statement 1.003. Thus, although materiality and frequency or regularity of occurrence are criteria to be considered (see quote from paragraph .07 above), the emphasis lies on establishing what is outside the ordinary activities of the business. The key issues in the adequate application of this definition are the integrity of the management in fulfilling their reporting obligation and the ability, on the part of those attesting these reports, to resist the pressures of management where they wish to take advantage of the reporting process.

Once an item has been classified as extraordinary, the standard requires that it be disclosed net of taxation and net of amounts attributable to outside interests where applicable (paragraph .06.2). The applicable taxation is deducted so that the results from ordinary activities are not distorted by the inclusion in the amount opposite the caption 'taxation' of a tax effect attributable to the extraordinary item. Clearly, the failure to make the appropriate allocation would distort the measurement of net income before extraordinary items.

It may be claimed that the existence of the standard has narrowed the range of items which fall within the category 'extraordinary'. A survey of published financial statements since statement 1.003 was issued and where reporters and attestors are in harmony in applying it, is likely to confirm this.<sup>17</sup>

However, whether or not the statement has been successful in promoting conformity in the reporting of extraordinary items, the user must ask the question "In what way has the income statement been made more useful than it was previously?"<sup>18</sup>

In the writer's view, the attempt to compromise between the current operating performance concept and the all-inclusive concept is tending towards a meaningless middle road. The statement restricts the range of items which may be reported as extraordinary. It requires that the tax effects be allocated and that an adjustment for outside interests be made. Implicit in these requirements is the assumption that the user is unable to make either the classification or the adjustments referred to. Abnormal items must, however, be brought to account in determining net income before extraordinary items.

Although they should be disclosed because of their materiality and infrequency of occurrence, there is no requirement that the applicable taxation be shown separately.<sup>19</sup>

It is doubtful that the requirements of statement 1.003 relating to extraordinary items or the distinction it draws between these and abnormal items are of significant assistance in arriving at sustainable disposable wealth as an aid to the prediction of future cash flows.

### PRIOR YEAR ADJUSTMENTS

The definition of prior year adjustments is given by paragraph .08 of statement 1.003. It is reproduced below in an altered format and with emphasis added for clarity.

"Prior year adjustments are those material adjustments of net income applicable to prior years arising either from

- *changes in accounting policies*  
or from
- *the correction of fundamental errors.*

#### They do not include

- normal recurring corrections  
and
- adjustments of accounting estimates made in prior years."

A consideration of this definition is facilitated by reference to that originally adopted by the United States<sup>20</sup> and which is that still applied by the Canadian Institute<sup>21</sup>, i.e.

Prior period adjustments are 'those material adjustments' which –

- 1 can be specifically identified with and directly related to the business activities of particular prior periods, and
- 2 are not attributable to economic events occurring subsequent to the date of the financial statements for the prior period, and
- 3 depend primarily on determination by persons other than management, and
- 4 were not susceptible to reasonable estimation prior to such determination.

On first reading, this definition suggests undue flexibility in the classification of items as prior year adjustments; it certainly appears to be far broader than the definition given in statement 1.003. However, as in the case of extraordinary items, it is the writer's view that, provided management reports with integrity, and provided the interests of the user are supported by those attesting such reports, the criteria stated above will result in the classification of items as prior period adjustment only when they should *not* be regarded as affecting the results of the current year. In particular, the proper application of criteria 3 and 4 should effectively limit management's ability to manipulate the results to its advantage while criterion 4 ensures that changes in estimates cannot be classified as prior period adjustments. Criterion 4 also prevents a change in accounting policy from being treated as a prior year adjustment.

Statement 1.003 once again provides evidence of the standard setters attempting to police management through standards rather than promoting the objectives of financial reporting. The South African definition is identical to that adopted by the profession in the United Kingdom, and the United States has now similarly narrowed its criteria. It has been suggested that the very restrictive definition has been framed in order to prevent the classification of changes in estimates as prior period adjustments. However, as is pointed out above, the original American criteria exclude changes in estimates in any event, and these are specifically excluded by statement 1.003. In the writer's view, therefore, this cannot be advanced as a reason for limiting prior year adjustments to fundamental errors and changes in accounting policies.

In order to predict future levels of disposable wealth, the user would set aside all items which relate to prior periods unless they are expected to recur. In the absence of evidence that they will recur, damages received or paid during the current period as a result of litigation instituted some years ago, a change in accounting policy and even a change in estimates would be excluded from this calculation. In contrast, statement 1.003 stipulates that any item falling outside of its definition must be reflected either as an abnormal item or an extraordinary item, should it be sufficiently material while meeting the other relevant criteria. The statement thus forces these items above the line, further distorting the measure of sustainable disposable wealth. A particularly interesting example of this potential distortion may be noted in providing for deferred taxation.

Statement 1.002 allows a choice to be made between the deferred method and the liability method of providing for deferred taxation. The liability method requires that a retrospective adjustment be made for any change in the tax rate. Where there is such a change, the reporting company would be precluded from treating the effect thereof as a prior period adjustment. In fact, paragraph .14 of statement 1.003 cites this as an example of an abnormal item. From a commonsense viewpoint, such retrospective adjustment does not feature in the prediction of future disposable wealth levels, nor does the stipulated treatment promote uniformity, as companies opting for the deferred method would report no comparable adjustment.

It is submitted, on the basis of the above, that while prior year adjustments may be rare occurrences, statement 1.003 does little to promote the interests of users in this regard.

### SPECIAL CASES

Paragraph .18 of statement 1.003 deals with "those special instances where items of a revenue or expense nature are permitted or required, either by law or by a company's constitution, to be taken direct to reserves". This paragraph asserts that "to take items of expense or revenue direct to reserves is in conflict with the standard of accounting practice set out in this statement" and that such items should therefore be dealt with in the income statement in arriving at net income before extraordinary items, or where appropriate, as extraordinary items and that a transfer of net income should be made to or from reserves to comply with statute or the company's constitution.

The paragraph quotes the use of the share premium account as an example of one such 'special instance'. It is quite clear then that the share premium account is to be regarded as a reserve. It is submitted that the share premium account is closer in nature to share capital than to reserves. Indeed, it arises through the contribution of capital to the company. In the writer's view, any share issue expenses are properly chargeable against share premium account as they do not affect the determination of disposable wealth; essentially this item is a reduction of the proceeds of any issue.<sup>22</sup>

Regarding the same point, consider the issue of no par value shares where issue expenses are charged against stated capital account. This is comparable to the instance given above, yet it is highly unlikely that reporters would regard the stated capital account as a reserve and so provide comparable disclosure. Paragraph .08, apart from supporting the view that the statement does little to promote the objectives of income determination, far from ensuring uniformity in reporting, appears here to promote non-comparable treatment of identical items.

### DISCLOSURE

An illustration to the recommended disclosure is given below. Comments on this recommended disclosure accompany the illustration. This is not intended to be comprehensive, but is designed to bring out the points made in the paper.

Income statement – year ended 30 June 1978		R
Operating income	200 000	
Goodwill written off (change in estimate) <sup>1</sup>	20 000	
Damages paid (legal action 1974, judgement 1978) <sup>2</sup>	24 000	
Income before taxation and extraordinary items <sup>3</sup>	156 000	
Taxation <sup>4</sup>	75 250	
Net income before extraordinary items <sup>5</sup>	80 750	
Extraordinary item (expropriation award)	39 250	
Net income	120 000	
Dividends	40 000	
Retained income for the year	80 000	
Prior year adjustment (change in policy for inventory valuation) <sup>6</sup>	10 000	
	70 000	
Prior year adjustment (fundamental error)	15 000	
	<u>R55 000</u>	

### COMMENTS

- 1 The definition of extraordinary items forces this item above the line to prevent management from glossing over its errors of judgement. However, to the extent that it is not expected to recur, it should not be brought into account in predicting future disposable wealth levels.
- 2 The damages paid may not be treated as a prior period adjustment in terms of the definition. As in the case of 1, it is not relevant for prediction.

Although there is a tax effect in this case, the user is not provided with the information required in order to reclassify the item.

- 3 In view of the points made above, this subtotal is of limited significance.
- 4 In the case of a change in the tax rate during the year, any deferred tax adjustment on the liability method would be included here, although the amount would be disclosed in a note elsewhere.
- 5 Refer to comment 3 above.
- 6 Although a change in accounting policy is defined as a prior period adjustment, paragraph .16 recommends the above treatment. It is the writer's view that treatment of the item in the income statement should conform with the way in which it has been defined. As it is defined as a prior year adjustment, its effect should be shown as an adjustment to retained earnings. The appendix to SSAP No. 6 (United Kingdom; identical definition) does in fact adjust beginning retained earnings. Statement 1.003's disclosure is closer to that required in the USA. (APB (USA) Opinion No. 20) which in any event does not define a change in accounting policy as a prior year adjustment.

### CONCLUSION

It appears, then, that the implementation of statement 1.003, while possibly bringing about greater uniformity in the reporting of certain items, is unlikely to have brought about a significant improvement in the quality of information provided. The absence of a clear statement of objectives is largely responsible for this, compounded by an attempt to circumscribe management's discretion by rigid definitions and prescriptions. It is submitted that the user should be entitled to rely on the report of the auditor as reassurance that accounting standards have been properly applied. It is not the role of accounting standards to govern the reporting behaviour of management through the provision of detailed rules; rather, standards should be consistent with and promote the objectives of financial reporting in such a way as to provide guidelines to preparers and attestors. The auditor (attestor) should then apply his judgment to the report rendered by management, express his opinion thereon, and where there is disagreement, use his influence to the benefit of preparer and user alike. There has been an alarming tendency for the auditor to follow accounting standards as a defensive measure irrespective of whether they promote the objectives of financial reporting.

In setting standards it is necessary to decide on what is relevant to the user and on what level of understanding is expected of the user. The outcome of these decisions would determine whether the preparers and attestors are to inform users on disposable wealth measurement or whether they are expected to make their own measurement. Whichever is the case, this paper has suggested that an accounting standard on extraordinary items and prior year adjustments should facilitate the objective of income determination stated at the outset. If the standard is to cater for the unsophisticated user it should encourage income statements which reflect point estimates indicating sustainable disposable

wealth levels and disposable wealth for the current period. If it is to cater for the sophisticated user, it should provide comprehensive information which will allow independent computations to be made. It is submitted that statement 1.003 does neither.

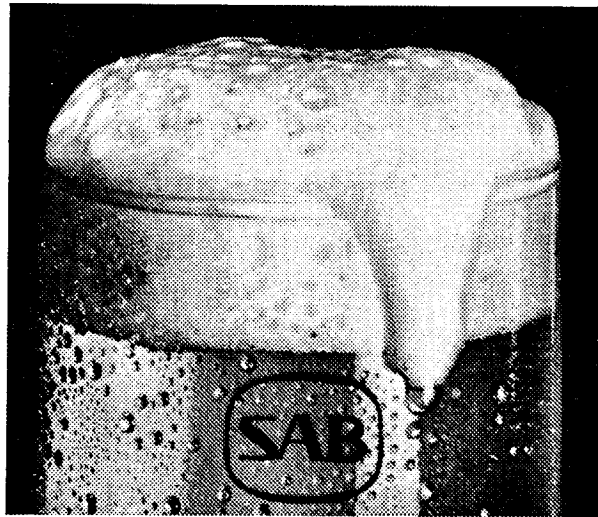
In South Africa, the absence of a conceptual framework is compounded by the fact that standards are formulated by reference to standards already published by overseas countries. While this is a sensible procedure in that it conserves resources, care should be taken to make the necessary changes. Statement 1.003 provides an example of inherent conflict in its requirement that a change in accounting policy be defined as a prior year adjustment while it is not to be disclosed as such (see illustration, page 14).

The questions raised above can be resolved only by a research programme which seeks to establish a conceptual framework for financial reporting, commencing at the identity of the users of financial information in the South African environment and their information needs. Such research could establish the degree of sophistication of such users and the extent to which they need to be protected from management by the enforcement of point-estimates which frustrate the objectives of reporting. Only within such a conceptual framework will the development of standards take place in a logically consistent manner.

### Footnotes

- 1 Zeff, Stephen A. "Developing Accounting Principles", *Journal of Contemporary Business*, Spring 1973, reprinted in *The Accounting Sampler* ed. Burns, T. J., and Hendrickson, H. S., pp. 5-11.
- 2 The Accounting Practices Board was established on the recommendation of the National Council of Chartered Accountants in 1972. It consists of representatives of the Association of Chambers of Commerce of South Africa, the Public Accountants' and Auditors' Board, the South African Federated Chamber of Industries, the Steel and Engineering Industries Federation of South Africa, The Afrikaans Business Association, The Institute of Cost and Management Accountants (South African Council), The Johannesburg Stock Exchange, The National Council of Chartered Accountants (S.A.), and the Southern African Institute of Chartered Secretaries and Administrators.
- 3 Armstrong, Marshall S. "The Politics of Establishing Accounting Standards," *The Government Accountants Journal*, Summer 1976, reprinted in *The Accountants' Digest*, June 1977, pp. 193-197.
- 4 These are:
  - 1.001 The disclosure of accounting policies
  - 1.002 Taxation in the financial statements of companies
  - 1.003 Extraordinary items and prior year adjustments
  - 1.004 Earnings per share.
- 5 Catlett, George R. "*Better Objectives Needed to Improve Accounting Principles*," Arthur Andersen and Company, July 1969, p. 1.
- 6 Vieler, D. E. G. "The development of generally accepted accounting standards, nationally and internationally". *The South African Chartered Accountant*, May 1977, p. 157.
- 7 Similar studies have, however, been conducted elsewhere, e.g. United Kingdom and Australia.
- 8 Report of the Study Group on the Objectives of Financial Statements, AICPA 1973.
- 9 Ibid. p. 13.
- 10 Ibid. p. 37.
- 11 In particular, the concepts 'matching' and 'prudence'.
- 12 Hicks, J. R. "Value and Capital" 2nd edition, Oxford University Press 1946, p. 172.
- 13 "Inflation Accounting", report of the inflation accounting committee, HMSO London 1975, p. 29.
- 14 The Sandilands Report condenses these to five different concepts, but acknowledges that variations thereon result in a multiplicity of disposable wealth measurements.
- 15 Opinions of the Accounting Principles Board, No. 9. This definition has, however, been considerably narrowed by APB (USA) Opinion No. 30.
- 16 Accounting Standards Committee, statement of standard accounting practice No. 6.
- 17 See, for example, the report of South African Breweries Limited for 1976 (before the advent of statement 1.003) and the subsequent reports of this company.
- 18 Note that in the United States, APB opinion No. 30 and subsequent statements (e.g. FASB on foreign currency translation) have steadily narrowed the range of items which may be classified as extraordinary.
- 19 It is interesting that APB (USA) opinion No. 9 prohibits the separate disclosure of taxation in these cases, on the grounds that such disclosure may create the impression that the item is actually an extraordinary item.
- 20 Opinions of the Accounting Principles Board, No. 9.
- 21 Canadian Institute of Chartered Accountants, CICA handbook, section 3600.
- 22 See also *ibid.* section 3610.

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It's a demonstrable fact that when you make and market a better product, you can repeat the process in other industries.

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It's amazing where a good head can lead you.





# The relationship between portfolio theory and the efficient market hypothesis

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## INTRODUCTION

Recent issues of *The Investment Analysts Journal* have dealt independently with portfolio theory and the efficient market theory.<sup>2</sup> Portfolio theory and the efficient market hypothesis are not unrelated although of independent origin. In this paper the relationship which exists, the interdependence and compatibility, of these two important areas of study, is briefly discussed.

## THE NATURE AND ORIGINS OF THE EFFICIENT MARKET HYPOTHESIS

The origins of portfolio theory are to be found in the concepts of probability, risk and utility. Inasmuch as modern developments in these concepts, such as the work of Von Neumann and Morgenstern,<sup>3</sup> owe a great deal to the famous treatise by Bernoulli,<sup>4</sup> so modern developments in the concept of efficient markets owes much to an equally significant work by Bachelier.<sup>5</sup>

Louis Bachelier's study of commodity prices led him to the conclusion that they followed a 'random walk', although he did not use this specific term. He presented convincing evidence that commodity speculation in France was a 'fair game' in that neither buyers nor sellers could expect to show a profit. In other words, the current price of a commodity is an unbiased estimate of its future price. As has been so aptly stated — "Bachelier's earlier work was pregnant with meaning for investors, but the gestation period was one of the longest on record".<sup>6</sup>

It was not until 1958, fifty-eight years later, with the presentation of Osborne's paper,<sup>7</sup> that modern work on the 'random walk' theory appears, although during that period the independent works of Kendall and Working writing in another context had some bearing on the topic.<sup>8</sup>

Osborne, a physicist, examined the numbers representing share prices and compared their movements with those that characterise the movements of tiny particles suspended in solution—known as 'Brownian motion'. As he stated:

"It is the purpose of this paper to show that the logarithms of common-stock prices can be regarded as an ensemble of decisions in a statistical steady state, and that this ensemble of logarithms of prices, each varying with the time, has a close analogy with the ensemble of co-ordinates of a large number of molecules. We wish to show that the methods of statistical mechanics, normally applied to the latter problem, may also be applied to the former."<sup>9</sup>

Osborne concludes that his paper "shows the essence of risk-taking consequent to the expectation of a gain, how the gain should be measured, and the symmetrical properties of the stock market as a market both for stocks and money, as a fair meeting ground between buyers and sellers."<sup>10</sup>

One year later, 1959, an article by Roberts represents another work in the modern development of the theory.<sup>11</sup> Roberts in his article gives credit for the

earlier works by Kendall and Working and gives as the main reason for his paper "a call to the attention of financial analysts' empirical results that seem to have been ignored in the past, for whatever reason, and to point out some methodological implications".<sup>12</sup> He discusses what he terms 'The Chance Model' as developed by Kendall and concludes that stock price patterns familiar in 'technical analysis' could be generated by using random numbers. In other words he, like Osborne, suggested that movements or changes in stock prices were random. The work by Osborne and Roberts stimulated academics to test empirically this 'random walk' theory of stock market behaviour and papers published in the early sixties by Moore (1962),<sup>13</sup> Granger and Morgenstern (1963),<sup>14</sup> Fama (1965),<sup>15</sup> and others,<sup>16</sup> substantiated their findings.

Only insignificant departures from randomness were found. This significant and controversial development was largely ignored by the practitioners in the financial community despite the 'call to their attention' by Roberts, endorsed by the others cited. These early investigations provided evidence that successive price changes, in securities, are substantially independent. They were tests of the so-called 'weak-form' of the random-walk hypothesis. A hypothesis which was a direct denial of the validity of chartism or technical analysis, and a direct, but more complex, challenge to fundamental analysis which is probably why practitioners chose to ignore it. As Fama so succinctly put it in his conclusion:

"In sum the theory of random walks in stock market prices presents important challenges to both the chartist and the proponent of fundamental analysis. For the chartist, the challenge is straightforward. If the random walk model is a valid description of reality, the work of the chartist, like that of the astrologer, is of no real value in stock market analysis. The empirical evidence to date provides strong support for the random walk model. In this light the only way the chartist can vindicate his position is to show that he can consistently use his techniques to make better than chance predictions of stock prices. It is not enough for him to talk mystically about patterns that he sees in the data. He must show that he can consistently use those patterns to make meaningful predictions of future prices.

The challenge of the theory of random walks to the proponent of fundamental analysis, however, is more involved. If the random walk theory is valid and if security exchanges are 'efficient' markets, then stock prices at any point in time will represent good estimates of intrinsic or fundamental values. Thus, additional fundamental analysis is of value only when the analyst has new information which was not fully considered in forming current market prices, or has new insights concerning the effects of generally available information which are not already implicit in current prices.

If the analyst has neither better insights nor new information, he may as well forget about fundamental analysis and choose securities by some random selection procedure."<sup>17</sup>

What was the significance of the research and evidence offered that successive share price changes were

†All references appear at the conclusion of this paper.

substantially independent? The significance lies not in the findings themselves but in the question that they raised as to the nature of the economic process which produced such results.

The answer to the question was found in the characteristics of the market itself, in effect, in the market-making mechanism which operated. It was found, in the first place, that the New York Stock Exchange was an efficient market. Subsequent studies indicated that The London Stock Exchange and the Tokyo Stock Exchange were also efficient. As is evidenced by the recent publication of research findings in South Africa, there is considerable evidence favouring the efficiency of The Johannesburg Stock Exchange,<sup>18</sup> although some qualifications may be necessary.<sup>19</sup>

There are three forms of market efficiency:

Firstly, there is the 'weak form' which is directly derived from the random walk theory and which states that current share prices fully reflect the information implied by the historical sequence of past prices. In other words, a knowledge of past share price movements cannot be used to predict future price changes. This means that technical analysis or charting cannot lead to superior portfolio performance.

The second form is that termed the 'semi-strong' form of the efficient market hypothesis and holds that current share prices fully reflect *all publicly available* information. This implies that an investor cannot earn superior returns on using information which is generally available. This is the situation referred to by Fama in the second paragraph of his conclusion quoted above.

Finally, there is the 'strong' form which states that *all* information, not only publicly available information, is impounded in security prices. This means that there is no opportunity for any investor to earn superior returns based on inside information.

It is generally accepted by economists that empirical studies have provided sufficient evidence to accept the weak and semi-strong forms of the efficient market hypothesis.<sup>20</sup> It is in this sense that in this paper any reference to efficient markets is made. The strong form is, at this stage, considered unproven. As Beaver states: "Empirical evidence indicates that prices react quickly and in an unbiased fashion to a variety of events, including announcements of stock splits, stock dividends, secondary offerings and rights issues, as well as both annual and interim earnings announcements. This finding is exactly what one would expect in a market where the security prices at any point in time fully reflect the information released."<sup>21</sup>

### PORTFOLIOS IN EFFICIENT MARKETS

Portfolio analysis and selection is followed by the evaluation of portfolio performance and, where necessary, the revision of a portfolio structure in accordance with an investor's utility preferences. These last two stages, evaluation and revision, may be termed portfolio management since they represent *ex post* evaluation of analysis and selection. The effectiveness and efficiency of the analytical and selection models can only be measured through this *ex post* process.

In the extensive literature on capital markets the development of the capital asset pricing model of Sharpe,<sup>22</sup> and Lintner,<sup>23</sup> is discussed within the constraints of rigorous assumptions. It is obvious that all existing features of capital market theory do not inherently correspond to reality very well. What the

proponents do assume however, is that there is sufficient correspondence between reality and the extent of capital market theory exposed to warrant the attention of financial analysts. Similarly, the requirements for a perfectly efficient market are as rigorous; furthermore an equilibrium state of an efficient market model describes the equilibrium state of efficient capital markets. The requirements are that all new information is immediately and costlessly available to all interested parties, that there is no inflation, there are zero transaction costs and taxes, and all interested parties have the same time horizons and homogeneous expectations with regard to prices.

These conditions cannot of course be found in the 'real' world. But as Fama has pointed out,<sup>24</sup> the necessary conditions for efficiency are not quite so stringent.

As long as transaction costs are not prohibitive, information is readily available to a sufficient number of interested parties and there is no evidence of consistently superior or inferior participation by investors then efficiency will prevail. As Vasicek and McQuown have stated: "The theory of efficient markets represents the best description of capital markets available at present, and probably the only one that considers explicitly uncertainty and risk."<sup>25</sup>

This is the link between portfolio theory and efficient markets, in that the common area of study or interest is the behaviour of security prices (and hence returns) under conditions of risk and uncertainty. In fact, it is claimed that the capital asset pricing model is the most significant part of the efficient market model of capital market theory.<sup>26</sup>

The basic mathematical formulation of the model which Fama terms the 'expected-returns' model, may be stated as:

$$E_p = R_f + \frac{(ER_m - R_f)}{\sigma_m} \sigma_p \quad (1)$$

where  $E_p$  is the expected return on the portfolio,  $R_f$  is the pure interest rate,  $ER_m$  is the expected return on the market portfolio,  $\sigma_m$  is the standard deviation of return on the market portfolio and  $\sigma_p$  is the standard deviation of return on the portfolio.

This is the model for an efficient portfolio on the Capital Market Line in risk-return space. The equation for individual securities may be stated as:<sup>27</sup>

$$ER_i - R_f = \frac{(ER_m - R_f)}{\sigma_m^2} \sigma_{im} \quad (2)$$

where  $ER_i$  is the expected return on security  $i$ ,  $\sigma_m^2$  is the variance of return on the market portfolio,  $\sigma_{im}$  is the covariance between the individual security and the market portfolio and all other terms are as before.

Equation 2 can be restated by introducing the beta coefficient into the equation and this then gives the following relationship:

$$ER_i - R_f = B_i (ER_m - R_f) \quad (3)$$

where all terms are as before and  $B_i$  is the beta coefficient on investment  $j$ .

In other words, in an efficient market the expected return on each investment (or security) in excess of the risk-free rate is related only to its beta. This representation is a prescriptive model, it predicts how an efficient market would appear if the assumptions of the model are fulfilled. As such the model can therefore be tested empirically.

One study dealing with the empirical validation of the efficient market model is the work by Black, Jensen and Scholes.<sup>28</sup> The principal conclusion to be drawn from this study is that although the relationship between expected excess return of a security or portfolio and its systematic risk is linear, it is not directly proportional. The empirically derived Security Market Line (SML) exhibits a positive intercept, and a slope that is flatter than that predicted by Equation 1. The model appears to conform to the following form:

$$ER_i - R_f = \gamma + B_i (ER_m - R_f - \gamma) \quad (4)$$

where  $\gamma$  is a positive quantity.

Thus Equation 4 can be restated ex post in a more familiar regression form:

$$R - R_f = A + B (R_m - R_f) + C \quad (5)$$

As before, the values of the regression coefficients, A and B, can be estimated. A is the alpha coefficient and B the beta coefficient, and C is a random variable with an expected value of zero and a variance of  $Q_i$ .

The findings of Black et al imply that securities and portfolios with systematic risk (beta) lower than that of the market portfolio exhibit a positive abnormal return, whereas securities and portfolios with beta higher than that of the market show negative abnormal returns. That is to say, high risk securities are observed to return less than what is predicted by the simple model (Equation 1), and the converse for low risk securities. This is termed the 'beta twist'. Furthermore the higher the beta the lower the alpha and vice versa. This result is termed the 'alpha effect'. Once again it is noted that the results are in conflict with the simple capital asset pricing model.

In another study Black investigated the market equilibrium under the assumption there is no risk-free asset, thereby excluding both borrowing and lending at a risk-free rate.<sup>29</sup> Black shows that ideally every investor holds a linear combination of the market portfolio and another portfolio which, although risky, possesses no market risk.

This latter portfolio, which he terms a zero-beta portfolio, consists of long and short holdings in risky assets in such proportions that the systematic risk, or beta, is zero. The zero-beta portfolio takes on the role previously played by the risk-free asset. The expected rate of return on a security is still a linear function of the security's beta and the intercept of this relationship is the expected rate of return on the zero-beta portfolio. The SML can thus be described by the equation:

$$ER_i = ER_z + B_i (ER_m - ER_z) \quad (6)$$

where  $ER_z$  is the expected return on the zero-beta portfolio and all other terms are as before. This equilibrium equation is of the form in Equation 4 and therefore consistent with empirical results.

Some studies yield contrary evidence in regard to the expected returns model.<sup>30</sup> Nevertheless it is interesting to note Fama's view that: "in short, the evidence in support of efficient markets model is extensive, and (somewhat uniquely in economics) contradictory evidence is sparse".<sup>31</sup> And, as Vasicek and McQuown point out:

"If the efficient market model is to be applicable to *real* capital markets, and not idealised ones, it must be able to explain actual observed price changes. The beta coefficient in the model has been estimated by numerous investigators and found to be usefully stable and to be related in the predicted way to rate of return: the higher the beta, the higher the observed rate of return. This fact alone is sufficient to place the efficient market model in that rare class of theories that can be usefully employed."<sup>32</sup>

## IMPLICATIONS FOR PORTFOLIO MANAGEMENT

What are the implications of an efficient market for portfolio management? In so far as security analysis is concerned the efficient market hypothesis clearly suggests that neither technical analysis nor fundamental analysis is worthwhile, unless, as Lorie and Hamilton point out, the magnitude of investable funds is sufficient or if there is sound originality in the process of analysis.<sup>33</sup> The process of portfolio management is fairly easy to describe. The entire process is sufficiently straightforward to permit the writing of a computer programme to reproduce almost exactly the portfolio which a professional manager selected.<sup>34</sup>

Believers in efficient markets will change the process of professional portfolio management.

Black, for example, presents an extreme but cogent case for a 'passive' strategy of portfolio management.<sup>35</sup> "If an investor does this, then he won't try to outguess turns in the market. He won't try to pick individual stocks that he thinks will do better than other stocks. He will buy a well diversified portfolio, and hold on to it. He will generally sell only to establish tax losses, or when he needs the money. He may borrow against his portfolio when he needs money, instead of selling, to avoid realising capital gains. He will minimise investment expenses, brokerage costs, and taxes".<sup>36</sup> As Black quite correctly points out, a passive portfolio strategy does not imply the random purchase of securities; it does imply choosing a well diversified portfolio in accordance with the investor's utility towards risk. In other words, there still remains the need for estimates of the contributions which individual securities make to the riskiness of diversified portfolios.

If riskiness could be judged by reference to historical data then the task would be made much easier. A study by Blume indicates that riskiness tends to change only slowly through time so that historic measures of risk provide the basis for fairly good objective estimates of future risk.<sup>37</sup>

It seems evident therefore that although portfolio theory taken together with the concept of efficient markets has important implications for portfolio management, a knowledge and understanding of the important relationships between risk and return, and the partitioning of risk into systematic and unsystematic risk, are extremely important in successful portfolio management. Furthermore, it is suggested that in the light of efficient markets and portfolio theories, individual securities cannot be priced upon the basis of their risk considered in isolation from other securities. The function

of the security analyst is rather to estimate security return, risk and covariance with other securities or a market index, so that the portfolio manager is no longer provided with a buy, hold or sell recommendation, but rather with an estimate of the parameters of the distribution of security returns.

Two assumptions underlying capital market theory are liquidity and divisibility. This implies that each investor can change the composition of a portfolio of assets at any time when either his requirements or his perceptions of the characteristics of the assets change. The sensitivity of capital markets to information affecting the return-risk characteristics of individual investments is fundamental to the concept of efficient markets. Therefore it is in the interests of each investor to acquire information about the securities traded in capital markets. "Such information allows the investor to evaluate the prospects of each investment opportunity, and therefore to invest in the portfolio with the most promising performance. The demand for this information generates the existence of various information channels expected to provide the investor with pertinent knowledge, such as periodic income statements, balance sheets of companies, stock prices and volumes."<sup>38</sup> However, the reliability of some of such disseminated information is currently under challenge and this matter must be considered as a separate issue.

### CONCLUSION

It has been the aim of this brief paper to show the close relationship which exists between portfolio theory and the efficient market hypothesis. Furthermore, it is suggested that these two theories will have important conceptual effects on security analysis in practice. The current role of the security analyst may well have to be revised as the theories discussed gain greater acceptance by the financial community.

### ACKNOWLEDGEMENT

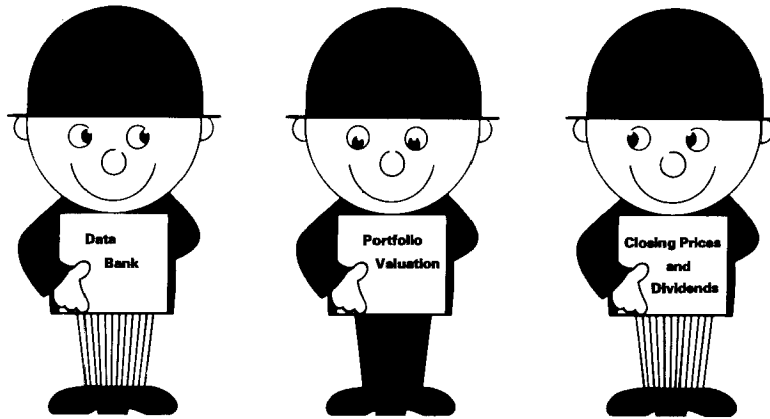
The author gratefully acknowledges the comments made on the draft of this paper by his colleague Professor I. R. Woods, Head of the Department of Business Administration, University of Natal, Pietermaritzburg. However, full responsibility for any shortcomings rests with the author.

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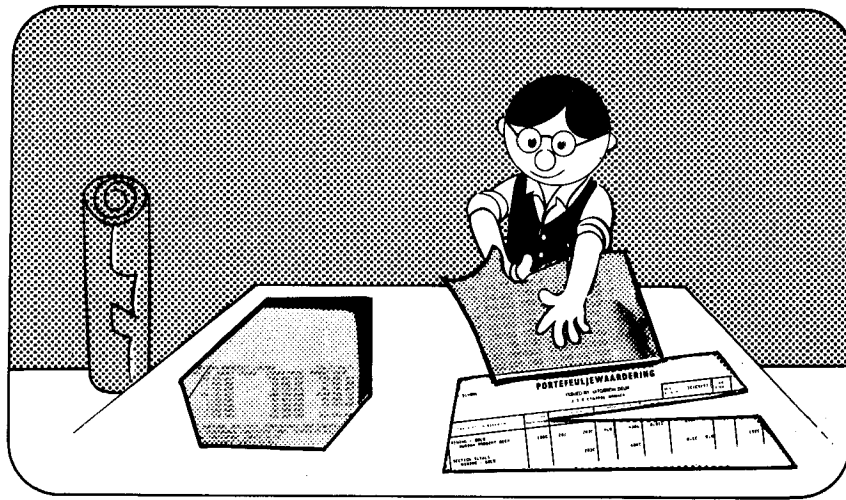
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  - (c) Fama, E. F., Fisher, L., Jensen, M. C. and Roll, R. The adjustment of stock prices to new information. *International Economic Review*, Vol. 10, No. 2, February 1969, p. 1-21.
  - (d) Fama, E. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, Vol. 25, No. 2, May 1970, p. 383-417.

- 21 Beaver, W. H. What should be the F.A.S.B's objectives? *Journal of Accountancy*, August 1973, p. 51.
- 22 Sharpe, W. F. Capital asset prices: a theory of market equilibrium under conditions of risk. *The Journal of Finance*, Vol. 19, No. 3, September 1964, p. 425-447.
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- 24 Fama, E. Efficient capital markets, op.cit.
- 25 Vasicek, O. A. and McQuown, J. A. The efficient market model. *The Financial Analysts Journal*, Vol. 28, No. 5, September-October 1972, p. 72.
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- 27 The development of these models are discussed in the author's unpublished paper "An Introduction to Capital Markets Theory".
- 28 Black, F., Jensen, M. C. and Scholes, M. The capital asset pricing model: some empirical tests, in *Studies in the Theory of Capital Markets* edited by Michael C. Jensen, New York: Praeger, 1972.
- 29 Black, F. Capital market equilibrium with restricted borrowing. *Journal of Business*, Vol. 45, No. 3, July 1972, p. 444-455.
- 30 Examples of such studies include:
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  - (b) Cheng, P. L. and Deets, M. K. Portfolio returns and the random walk theory, *Journal of Finance*, Vol. 26, No. 1, March 1971, p. 1-10.
- 31 Fama, Efficient capital markets, op.cit. p. 143.
- 32 Vasicek and McQuown, op.cit. p. 83.
- 33 Lorie and Hamilton, op.cit. p. 104.
- 34 Clarkson, G. P. and Meltzer, B. H. Portfolio selection: a heuristic approach. *Journal of Finance*, Vol. 15, No. 4, December 1960 as reprinted in *Elements of Investment* edited by Hsiu-Kwang Wu and Alan J. Zakon, New York: Holt Rinehart, 1965, p. 312-326.
- 35 Black, F. Implications of the Random Walk Hypothesis for portfolio management. *Financial Analysts Journal*, Vol. 27, No. 2, March-April 1971, p. 16-22, reprinted in *Modern Developments in Investment Management* edited by James Lorie and Richard Brealey, New York: Praeger 1972, p. 449-458.
- 36 Ibid., p. 457.
- 37 Blume, M. E. On the assessment of risk. *The Journal of Finance*, Vol. 26, No. 1, March 1971, p. 1-10, reprinted in *Modern Developments in Investment Management* edited by James Lorie and Richard Brealey, New York: Praeger, p. 459-468.
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# The influence of financial policy on the growth profitability and size of firms

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## INTRODUCTION

A considerable portion of the development of the theory of finance over the past two decades has been devoted to the subject of debt financing, corporate debt capacity, the retention of earnings and the nature of their influence on the growth, profitability and size of firms. It is to these issues that an empirical study, undertaken by the author, of 280 companies listed on The Johannesburg Stock Exchange, addressed itself. This paper is a report on the study in question.

## DEBT FINANCING

In the vast array of managerial texts on the subject, debt and capital structure are amongst the most widely discussed topics. Indeed, the researcher in the area will detect an almost excessive preoccupation with the benefits of debt financing as a cure for all corporate ills to the exclusion, as the present paper will show, of an adequate evaluation of the role played by leverage in the financing of the firm in the real world.

A critical appraisal of the various approaches to the debt financing problem was given by Donaldson with his publication of *Corporate Debt Capacity*.<sup>1</sup> Wary of the current approach towards debt policy which he felt had received inadequate attention in the literature,<sup>2</sup> Donaldson's stated objective was to stimulate dissatisfaction with the then prevailing conventions regarding debt capacity. That he succeeded beyond doubt is attested by the numerous references to this thought-provoking topic in the subsequent literature. While scope of the present paper does not allow a full consideration of this important subject, a brief review of the literature will serve as a useful background to the subsequent discussion.<sup>3</sup>

A most striking example advocating debt financing as the key to competitive success is given in *Corporate Growth Strategies*, a publication of the Boston Consulting Group.<sup>4</sup> The latter were strong advocates of growth as an overriding objective of the firm, and the use of debt financing as the means of attaining that growth conspicuously emerges in the publication referred to.

For example:

If the firm were to introduce debt financing in its capital structure, its position would improve on a compound basis. Not only would leverage funds increase the amounts of investable capital, but also would allow the firm to pursue an aggressive pricing policy.<sup>5</sup>

Alternatively consider the subject of corporate strategy, which is essentially an integrative study dealing with long-run strategic planning but embodying the various disciplines of applied business economics. Lund notes that:

The current preoccupation with performance and highly levered earnings provides a great pressure for the use of debt. Indeed use of a reasonable amount of debt can be highly beneficial to the firm . . . The pressure for earnings growth by means of inordinate amounts of debt should be resisted, however.<sup>6</sup>

The above citations then are fairly representative of a vast, normative managerial literature which in general advocates debt financing for 'forward looking, aggressive management'. However, the extensive and protracted analysis of debt financing on which the present paper is based strongly questions its strategic importance. The role of debt financing in the South African study was examined on three levels and each stage of the investigation confirmed the previous findings.

## THE FINDINGS

The initial method relying on a contingency analysis explored the differences attaching to the return on shareholders' funds and the financial structures of firms.<sup>7</sup> With the exception of one industry the results were negative, that is, no significant difference was found between high and low profitability with respect to gearing. As the contingency study ignored quantitative differences between companies which made up the industry, regression analysis was employed. A bivariate regression of profitability on debt financing, however, scarcely improved on the results of the contingency analysis. In the regression analysis, two sectors showed a significant correlation between the return on shareholders' funds and leverage. In one industry debt financing was positively associated with rate of return, while an inverse relationship was found between the two variables in the second. The lack of significant results was disturbing, but the inverse relationship though unexpected, could be explained in terms of the combined use of retained profits and borrowed funds to finance the firms in this sector. (This is discussed further below.)

The low overall correlations found in the bivariate analysis suggested that other hidden factors might influence the return on shareholders' funds. The third level of enquiry, therefore, employed multiple regression analysis which facilitated an examination of the interaction between the independent variables, growth and retentions, and their joint effect on the dependent variable, profitability. However, this too failed to show up any meaningful or statistically significant results.<sup>8</sup>

Inasmuch as there is justification for criticism of a confused application of debt financing,<sup>9</sup> it will be shown that growth does not necessarily follow the retention of profits.

## RETAINED PROFITS AND GROWTH OF THE FIRM

Managerial 'conventional wisdom' advocates a retention of profits as a means of assuring the success of the enterprise. For example:

With the 'givens' on investment and capital structure, management can choose either to (a) pay higher dividends at the expense of lower growth in earnings per share or (b) restrain its dividend policy in favour of higher earnings per share.<sup>10</sup>



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Though the importance of retained earnings to the firm was carefully noted in the South African study, the general supposition that retained earnings are profitably employed to the benefit of shareholders was recognised. Indeed the logical use of retained profits as opposed to paying these out in the form of dividends has long been noted by writers in the area.<sup>11</sup> Thus, according to the residual funds theory of dividend policy, investors would prefer that earnings be reinvested rather than paid out, given that the returns on the reinvested funds exceed the rate of return the investor can obtain on alternative investment opportunities. In other words, as long as the firm reinvests at a rate exceeding its cost of capital the shareholders of the company will not be prejudiced. Once again the question of dividend policy comes back to economic rather than managerial considerations, which tend to favour retentions of funds, that in fact belong to shareholders, without a careful evaluation of their cost. In this regard it is interesting to note that dividend policy and the use of borrowed funds are frequently combined in order that dividends may continue to be paid by the firm. This observation emerges in the literature and has been confirmed in empirical studies. For instance both Sihler<sup>12</sup> and Meyer and Kuh<sup>13</sup> have found that it is common to combine the analysis of the dividend decision with either the debt or the investment question. This was also found to be the case in the South African study.

The results of the empirical analysis of the study negate the role of the financial policy variables, debt financing and retained earnings, in influencing growth. The study analysed data over the period 1962 to 1972 as well as during three similar intermediate time periods corresponding to the business cycle.

In all the analyses that were conducted, no consistent relationship was found to exist between growth of the firm and its level of gearing, though in three of the eight industrial sectors examined, the use of leverage was significantly associated with growth. The regression studies of growth and retentions were even less satisfactory. In all the time periods examined, no consistent systematic relationship between growth and retentions was found to exist. The weight of evidence strongly suggests that the positive contribution of retained earnings to the growth of the firms occurs almost randomly. Indeed, it could be inferred that growth rates do not appear to be influenced by particular sources of financing. The implications of these findings for the economist, investor and management are far reaching, and are discussed below.

### THE ROLE OF SIZE

To what extent has size been of importance in the earnings of profits and the growth of firms? The evidence of the study suggests that 'bigness in business' is not associated with 'bigness' in profitability. Indeed the tentative finding is that profitability declines with size but this requires further investigation. The lack of relationship between growth and size found in the original research, discounts the importance of the size factor, which also has little bearing on the financial policy variables. If it is true that growth results from the chance operation of a number of factors which affect each other, leverage and retentions are unlikely to be influenced by the size of the firm.<sup>14</sup> In fact, no systematic variation was found to occur between size and the

financial policy variables. There was, therefore, no indication that larger companies relied to a greater extent on debt financing, or retained a greater proportion of their profits to finance growth. It is interesting to note that in an earlier study, Natrass found that though there were differences in the patterns of new equity financing as between large and small firms, there was no appreciable difference in the growth rates of the firms concerned.

### SUMMARY AND CONCLUSIONS

The present paper has reviewed the role of debt financing and retained earnings in the financing of the firm, and has examined how these variables affect corporate performance. The prominence attaching to financial policy variables in the literature was also surveyed.

The research on which the present paper is based strongly suggests that the emphasis on debt financing and the notion of corporate debt capacity in the managerial literature, is largely misplaced. Regarding the role of debt in explaining growth, there is no reason to believe that faster growing companies have higher debt:equity ratios than other firms. Neither do the findings support the view that leverage is necessarily exploited to take advantage of favourable investment opportunities or that faster growing companies employ a higher than average degree of debt. The role of the debt:equity ratio in explaining the return on shareholders' funds is also of considerable interest. Statistically, the variation in the return on shareholders' funds explained by debt financing is so small that leverage as a strategic variable in financial policy must also be doubted.

It would be expected that above average rates of growth would be associated with a policy of high retentions of profit. Yet the weight of evidence strongly suggests that the contribution of retained earnings to the growth of firms occurs randomly. Indeed, it would appear that growth rates are not necessarily influenced by particular sources of financing.

The role of size was also considered in the study, where its significance was largely discounted as an explanatory variable. No systematic relationship was found between growth of the firm, its size, or the financial policy variable, debt financing and retained earnings.

Perhaps the most important observation regarding the financial policies of companies stems from the suggestion that retained earnings tend to be invested at rates of return below the firm's cost of capital. Since there is evidence of an increasing dependency by companies on internally generated funds (in the past over 50% of financing has come from these sources)<sup>15</sup>, and that these funds are considered to be cost free by management, investments subsequently made are not evaluated strictly according to criteria such as would occur were management to compete for required funds on capital markets. This of course calls into question the allocative efficiency of capital markets, whose function it is to transform the savings of the economy into capital formation according to the desired degree of risk and return of investors.

The divorce of ownership from control and the theory of managerial capitalism with which the former concept is associated, predicts that increasing use of retained earnings to finance the corporate sector, will result in

greater concentration allowing firms to bypass the capital markets thus removing the discipline imposed by competition. Whether or not companies are indeed circumventing the capital market, by pursuing defensive strategies of high retentions, is not entirely clear at this stage, though the possibility exists and is posed as an hypothesis for further research.

However, the findings of the present study, strongly supported as they are by the work of Baumol,<sup>16</sup> Little and Rayner<sup>17</sup> do suggest that management is not judicious in its use of internally generated funds. It might be thought that questioning the allocative function of the capital market is perhaps going too far, but this hypothesis with the view that growth is a random variable, does cast doubt on the role of the rate of return on investment in the allocation of resources. It is worthwhile, therefore, to conclude with a quote from Little and Rayner who have stated that "the yield structure established by the market does not appear to perform a beneficial social purpose".

### Footnotes

- 1 Donaldson, G., *Corporate Debt Capacity*, Harvard University Press, 1961.
- 2 This assertion, however, was not entirely correct. Numerous articles had appeared in the literature prior to 1961, and indeed as early as 1952 Durand had published what today is still regarded as one of the foundation works on the question of the costs of debt and equity funds for business. (Durand, D., Cost of Debt and Equity Funds for Business: Trends and Problems of Measurement, *Conference on Research in Business Finance*, New York, 1952.)
- 3 Cf. Bethlehem, G., *The Financial Policies of South African Industrial Companies*, unpublished doctoral thesis, University of Pretoria, 1977.
- 4 *Growth and Financial Strategies*, The Boston Consulting Group, 1968.
- 5 *Ibid.*, p. 23.
- 6 Lund, H. A., Corporate Financial Strategy, in *Corporate Growth Strategies*, Stemp, I., Ed., American Management Association, 1970, p. 318.
- 7 All the firms were classified according to high and low profitability and high and low debt using the median as the cut off point.
- 8 The quantitative results are reported in the *South African Journal of Economics*, Vol. 46(3), 1978, in an article by the writer entitled "Debt, Debt Capacity and Financial Performance".
- 9 Compare Gordon, M. J., *The Investment, Financing and Valuation of the Corporation*, Irwin, 1962. Gordon found that profitable companies do not appear to make use of leverage in order to take advantage of investment opportunities, and that unprofitable companies resort to leverage in an attempt to show respectable profits or to obtain otherwise unavailable funds.
- 10 Sihler, W. W., Framework for Financial Decisions, *Harvard Business Review*, March/April 1971.
- 11 Although Rubner has noted that the debate whether profits should be paid out or retained cuts across managerial and academic thought. Cf. Rubner, A., *The Ensnared Shareholder*, Pelican, 1966, p. 108.
- 12 Sihler, W. W., *op.cit.*
- 13 Meyer, R. and Kuh E., *The Investment Decision*, Harvard University Press, 1959.
- 14 Hart, P., and Prais, S. J., The Analysis of Business Concentration: A Statistical Approach, *Journal of the Royal Statistical Association*, Series A, 119, 1956, pp. 150-181. Compare also, Samuels, J. M. and Chesher, A. D., Growth, Survival and the Size of Companies, 1960-1969 in *Market Structure and Corporate Behaviour*, edited by Cowling, K., Gray Mills Publishing Ltd., 1972, pp. 39-60.
- 15 Sources of company finance have been analysed in Bethlehem, G., *The Financial Policies of South African Industrial Companies*, *op.cit.*, chapter 9.
- 16 Baumol, W. J., Heim, P., et.al., Earnings, Retentions, New Capital and the Growth of the Firm, *The Review of Economics and Statistics*, 52, 4, 1970, pp. 345-355.
- 17 Little, I. M. D., and Rayner, A., *Higgledy Piggledy Growth Again*, Blackwell, Oxford, 1966, p. 94.

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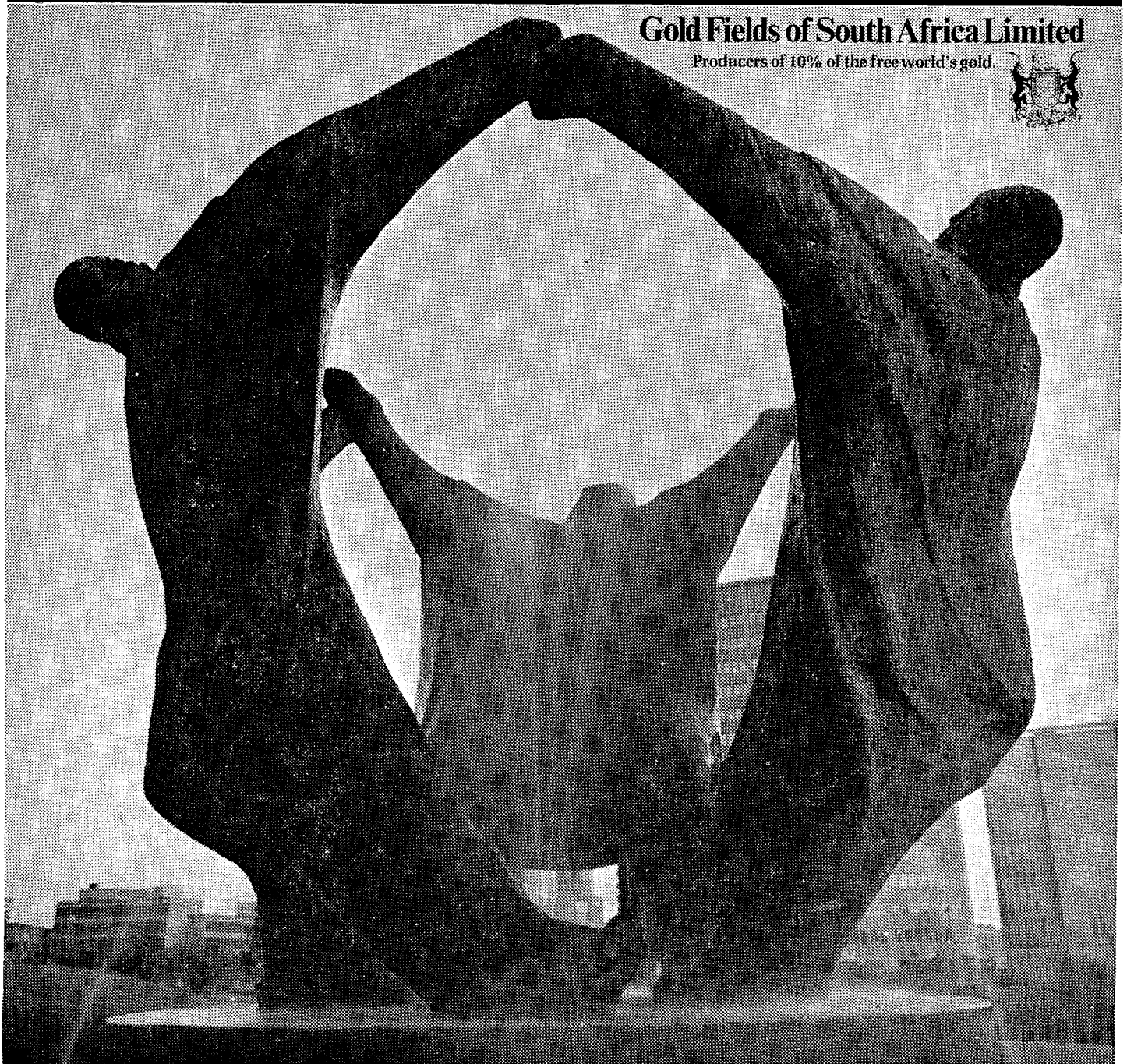
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# Some results of an empirical study of ratio analysis in South Africa

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## INTRODUCTION

A recent empirical study has indicated the existence of a gap between the theory and practice of capital investment decision-making in South Africa.<sup>1</sup>

Recognising a general need for empirical evidence regarding gaps between the theory and practice of financial management techniques, it was decided to survey the extent (depth and breadth) to which financial ratios analysis is used in practice by companies quoted on The Johannesburg Stock Exchange.<sup>2</sup>

The purpose of this paper is to outline briefly the research methodology employed, to state the conclusion of the survey with respect to the existence of a gap between the theory and practice of financial ratio analysis in South Africa, and to present the results of two of the seven specific objectives of the study.

## METHODOLOGY AND PRELIMINARY ANALYSIS

Together with the 30 companies which comprised the pilot sample, a total sample of 300 companies was randomly chosen from the 460 non-mining companies quoted on The Johannesburg Stock Exchange and appearing in the classified index of the Stock Exchange Handbook of 1976.<sup>3</sup> A twelve-page questionnaire was posted to each of these companies.<sup>4</sup>

After reminders had been sent out where necessary, of the total sample of 300 companies, 62 companies eventually completed and returned the questionnaire. Although this represents a disappointingly low response rate of only 21%, the 62 completed returns do nevertheless represent the views of 13,5% of the 460 non-mining companies listed on The Johannesburg Stock Exchange in 1976.

In addition to the 62 companies which completed and returned the questionnaire, a further 42 companies (14% of the total sample of 300 companies) furnished reasons for not completing and returning the questionnaire. Following is a summary of these reasons:

	Number of companies	Percentage
1 Information 'strictly confidential'	6	14
2 Did not use financial ratios	17	40
3 Lacked the necessary resources (time/staff) to complete the questionnaire	19	46
	<u>42</u>	<u>100</u>

In view of the above reasons given by 42 companies for not completing the questionnaire, it can be concluded that the 62 companies which returned the questionnaire would be companies which:

- 1 Lacked concern for the confidentiality aspect.<sup>6</sup>
- 2 Utilised financial ratios fairly extensively.

- 3 Had the necessary resources to complete the questionnaire.<sup>5</sup>

It was felt that these three characteristics were more likely to be met by large companies than by small companies. Large companies would probably have greater resources of manpower to complete the questionnaire than would small companies and, by virtue of their size in their respective markets, they would realise that even if the so-called 'confidential information' which they had divulged did fall into the hands of competitors, they would not be unduly threatened by this. The problem lay with characteristic 2. Although it was felt intuitively that large companies would utilise ratios more extensively than would small companies, no evidence existed to support this belief. In consequence, it was decided to formulate and test the following hypothesis:

*Hypothesis I: There is a positive relationship between the size of the 62 companies in the 'sample' and the total number of ratios which they use.*

If Hypothesis I were not rejected, this would support the belief that the 62 companies were biased in favour of large companies and it would then be possible to test Hypothesis II, formulated as follows:

*Hypothesis II: Proportionately more large companies completed the questionnaire than small companies.*

In order to test Hypothesis I, *rank correlation* was employed to measure the strength of the relationship between the sizes of and the number of ratios used by the 62 companies which returned the questionnaire. A positive relationship ( $r^1 = 0,66$ ), significant at the 0,05 level, was found to exist between these two variables. Consequently, Hypothesis I was validated. Hypothesis II was tested by means of comparing the response rates of small and large companies to the questionnaire.<sup>7</sup> Since the response rate of the latter was more than double that of the former, Hypothesis II was also validated.<sup>8</sup>

Together with the reasons given by 42 companies for not completing the questionnaire, the validation of these two hypotheses lead to the following tentative conclusions:

- 1 That the 238 companies (of which 77% are classified as small) which did not complete the questionnaire, probably did not do so because a large proportion of them did not use financial ratios to a significant extent.
- 2 That large quoted companies in South Africa use more ratios than do small quoted companies. In addition, a detailed analysis of the 62 completed questionnaires (a summarised section of which follows) suggested that large companies were also *more sophisticated* in their use of financial ratios than were small companies.

## RESULTS OF THE ANALYSIS OF QUESTIONNAIRES

A summary of the results of two of the seven specific objectives of the empirical study is presented below. In order to contain the length of this paper, only the *main issues* raised by the replies to this part of the questionnaire are discussed. The two objectives are numbered as they appear in the dissertation cited above.

*Objective 2: To test the extent to which 16 ratios, selected in terms of their popularity in textbooks, are used in practice by internal and external analysts. In addition, to establish the reasons why and manner in which these 16 ratios are used for their various tasks.*

In the questionnaire the 16 ratios were classified into 4 categories – liquidity, solvency, efficiency and profitability ratios. Respondents were asked to indicate which of these 16 ratios they used, to explain the reasons why and manner in which they used a particular ratio, and to state what they considered to be the optimal value (or range of values) for a particular ratio.

### Liquidity ratios

It is clear from Table A that the current ratio was the second most popular of the 16 listed ratios, with 55 of the 62 companies, (i.e. 89%) claiming to use it.

Despite the shortcomings of this ratio,<sup>10</sup> it is evident from this result that the current ratio retains the position established approximately 85 years ago of being the cornerstone of financial ratio-analysis.

In order to obtain an indication of the extent to which companies adhere to *absolute* ratio criteria when using financial ratios, respondents were asked for each of the 16 ratios listed, to fill in the value (or range of values) regarded as being optimal for their particular company. Out of the 55 companies which indicated that they used the current ratio, 49 companies (89%) provided the following optimal values for this ratio :

Number of companies	Optimal value for the current ratio
0	0,0 to 0,9
2	1,0 to 1,4
24	1,5 to 1,9
15	2,0
7	2,1 to 2,5
1	2,6+
<u>49</u>	

Table A:  
The degree to which 16 ratios were used by 62 companies<sup>9</sup>

Ratios	Their usage by the 62 companies			
	Number		Percentage	
	Yes	No	Yes	No
<b>Liquidity ratios</b>				
1 Current ratio	55	7	89	11
2 Quick ratio	36	26	58	42
<b>Solvency ratios</b>				
3 Debt ratio	26	36	42	58
4 Debt/Equity ratio	40	22	65	35
5 Times-interest-earned ratio	19	43	31	69
6 Fixed charge coverage	12	50	19	81
<b>Efficiency ratios</b>				
7 Inventory turnover	46	16	74	26
8 Accounts receivable collection period	46	16	74	26
9 Fixed assets turnover	8	54	13	87
10 Total assets turnover	15	47	24	76
<b>Profitability ratios</b>				
11 Profit margin on sales	50	12	81	19
12 Return on total assets	49	13	79	21
13 Return on net worth	36	26	58	42
14 Earnings per share	58	4	94	6
15 Price/earnings ratio	31	31	50	50
16 Dividend payout ratio	47	15	76	24



These results are noteworthy in two respects:

- 1 A significant number of companies (15) regarded the absolute criterion of 2-to-1 as being the optimal value for the current ratio. This quite substantial use of a ratio standard first advocated approximately 85 years ago, emphasises the question raised by Donaldson, that:

"There is also reason to ask whether this practice may not merely produce a clustering around some historical norm of accepted business practice which may be substantially out of line with the observable present-day evidence on risk and attitudes to risk bearing."<sup>11</sup>

- 2 A majority of the companies (26 out of 49) indicated that they employed *ranges of values* for the current ratio which were below the traditional 2-to-1 value. In an empirical study of companies in the United Kingdom, Kirkman observed that:

"An examination of the current ratios (current assets divided by current liabilities) of quoted companies in the manufacturing and distribution sectors shows a continuous fall from 2,11 in 1960/1 to 1,53 in 1970/1 . . ."<sup>12</sup>

Kirkman attributed this decline in the value of the current ratio largely to the increasingly poor liquidity situation prevalent in the United Kingdom during the latter part of the '60s and the early '70s. In the same way we believe that the present liquidity crisis in South Africa has led to an increased tolerance on the part of companies (and their creditors) of lower current ratio values.

A much smaller number of companies (36 out of 62) indicated that they used the quick ratio. The reason for this was that there were many companies which did not use *both* the current and quick ratios as liquidity measures. Although the current ratio was the overall favourite, where a company held a relatively high proportion of its current assets in the form of inventory, or, as one respondent put it, where ". . . the quality (i.e. realisability) of inventories is markedly low", the company would normally opt for the quick ratio as the better liquidity measure.

Out of the 29 companies which gave optimal values (or a range of values) for the quick ratio, 12 companies (41%) gave the traditional value of 1-to-1. This reinforces the earlier comment that a significant number of companies persisted in adhering to absolute criteria established many decades ago.

By and large, the reasons given by companies for using these two liquidity ratios tended to conform to those offered in conventional textbooks on financial ratio analysis. The very few criticisms which were raised against the use of these two ratios centred on the question of the inclusion of hire-purchase debtors in total debtors. The consensus was that because such debtors were of a term longer than one year, they should be excluded from both the current and quick ratios.

### Solvency ratios

Table A shows that only 19 out of the 62 companies (31%) indicated that they used the times-interest-earned ratio, and that only 12 companies (19%) used the fixed charge coverage ratio. One respondent, a company with total assets of R178 million, said of the fixed charge coverage ratio: "It is likely to become increasingly popular; as yet, however, we have made no use of it." This, apparently, is true of most of the 62 companies.

It appears that it was a lack of understanding of the true nature and purpose of these two income statement-based gearing measures, which inhibited their widespread usage. For example, one company claimed that it did not use the times-interest-earned ratio because its "main concern at the moment is with liquidity and not profit".

The debt ratio (42% utilisation rate) and the debt/equity ratio (65% utilisation rate), both of which are balance sheet-based gearing measures, appeared to be relatively more popular in practice than the two ratios discussed above. Furthermore, the majority of companies which used these two ratios appeared to understand their purpose as well as their limitations.

A wide divergence of opinion exists as to how preference share capital should be treated when calculating the debt ratio and the debt/equity ratio. Out of the 26 companies which indicated that they used the debt ratio, 9 companies (35%) stated that they did not include preference shares in total debt, 11 companies (42%) stated that they did, and 2 companies (8%) replied that their treatment of preference shares "depends on whether preference shares are convertible or redeemable and when". The other 4 companies (15%) did not reply to this part of the question. With the debt/equity ratio, 15 out of 40 companies (38%) stated that they did not include preference shares in total debt, while 19 companies (48%) stated that they did – one of these companies also included deferred tax in total debt. The other 6 companies (15%) did not reply to this part of the question.

Although relatively few of the companies which claimed to use the time-interest-earned and the fixed charge coverage ratios provided optimal values for these two ratios, it was nevertheless interesting to note that of the 21 companies which did do so, 19 companies (90%) indicated that the optimal value for *both* ratios ranged between 3 and 6 times per annum.

Out of the 26 companies which indicated that they used the debt ratio, 19 companies (73%) provided optimal values for this ratio. Eleven of the 19 companies (58%) indicated an optimal value of between 20% and 60%.<sup>13</sup> With the debt/equity ratio, 31 out of 40 companies (78%) provided optimal values for the ratio. Sixteen of these companies (52%) reflected values of between 30% and 100%, with the other 15 companies (48%) giving values of between 100% and 200%.

### Efficiency ratios

From Table A the relatively high utilisation rates of the inventory and accounts receivable ratios are readily apparent. For both ratios this rate was 74%. By contrast, relatively few companies used the fixed assets turnover ratio and the total assets turnover ratio. The utilisation rates for these two ratios were 13% and 24%, respectively.

Analysis of the reasons given by the companies which indicated that they used the first two ratios in this section, shows that all of these companies fully understood the benevolent effect upon a company's liquidity of a rapid inventory turnover and a relatively low accounts receivable collection period. It was clear from the comments made that these two ratios were important control devices in the day-to-day management of most companies.

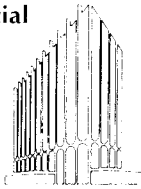


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made Sage a powerful force in the financial services industry. Group assets exceed R100-million and are spread across the fields of insurance, financial planning, computers, investment, property and construction, investment banking and entrepreneurial finance.



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Major operating companies in the group: Sage Holdings Limited; Ned-Equity Insurance Company Limited; The FPS Group; Leo Computer Bureau (Pty) Limited; Sage Fund; Institutional Capital Managers (Pty) Limited; Sage Holdings Finance (Pty) Limited;

Schachat Holdings Limited; Federated Property Trust (Fedfund);

Union & London Investment Trust Limited.



Out of the 46 companies which indicated that they used the inventory turnover ratio, 36 companies (78%) provided optimal values for this ratio. Out of the 46 companies which indicated that they used the average accounts receivable collection period ratio, 37 companies (80%) provided optimal values for this ratio. A feature of the optimal values given for the inventory turnover ratio was that even within a given sector, a wide dispersion of optimal values obtained. For example, in the Iron, Steel and Engineering sector, the 5 companies which replied gave 4 different optimal values for inventory turnover – one indicated that the optimal value should lie between 2 and 4 times per annum, two that it should be between 4 and 5 times per annum, one that it should lie between 5 and 6 times per annum, and the last company, that it should be in excess of 7 times per annum. By contrast, in the same sector, the 7 companies which provided optimal values for the accounts receivable collection period ratio, offered only two ranges of optimal values – 4 companies indicated that the period should be between 30 and 60 days, while the other 3 indicated that it should be between 60 and 90 days.

From the replies it was apparent that mainly capital-intensive companies used the fixed assets turnover ratio. Companies in the Motor and Transport and Iron, Steel and Engineering sectors accounted for 5 out of the 8 companies (63%) which claimed to use this ratio. It was also clear that there was no standard value for this ratio – the 7 companies which provided optimal values gave 5 different values, ranging from a turnover of once per annum to 14 times per annum.

The opposite is true of the optimal values given for the total assets turnover ratio. Out of 12 companies which provided optimal values, 5 companies (42%) indicated that the optimal value lay between 2 and 3 times per annum. Of the 12 companies, 9 companies made reference to the fact that the total assets turnover ratio was a "building block" in the du Pont de Nemours ratio system. Five of the 9 companies stated that they used this ratio for the same purpose as did the du Pont de Nemours company, that is, for calculating return on investment (ROI).

### Profitability ratios

From Table A it is clear that a relatively large percentage of the 62 companies used the two ratios, profit margin on sales and return on total assets. The utilisation rates for these two ratios were 81% and 79%, respectively. Of the other four ratios in this category, earnings per share and the dividend payout ratio were used by 94% and 76%, respectively, of the 62 companies, while return on net worth and the price/earnings ratio were used by only 58% and 50%, respectively, of the 62 companies.

Eleven of the 50 companies (22%) which use profit margin on sales indicated that they in fact employed variations on this ratio as it was listed in the questionnaire. Twenty-one of the 49 companies (43%) which use return on total assets also indicated that they employed variations on this ratio as it was listed in the questionnaire. The main variation employed on both of these ratios is the calculation of net profit *before* interest and tax – in the questionnaire, for both of these ratios, net profit was shown on an after-tax basis. The reason given by most of the companies employing this

variation is summarised in the comment by one company which stated that: "... differing capital structures and tax allowances can make inter-company comparisons meaningless; therefore these two ratios *must be before interest and tax*".

Despite the comment of one respondent that the return on net worth was "... probably the most important single indicator of success...", the utilisation rate of this ratio (58%) was low. By contrast, the high utilisation rate of earnings per share (94%) suggests that this ratio was viewed by most companies as being the most important measure of profitability to be reported to shareholders. As one respondent put it:

"Earnings per share is important to show shareholders whether their share capital is being used efficiently or not. A good stock exchange image depends on this ratio."

Of the 31 companies which indicated that they used the price/earnings ratio, most said that they did so in order to "... evaluate relative share price ratings" and/or to "... evaluate any possible takeovers". The reason given by one respondent for using the price/earnings ratio portrayed a relatively good appreciation of the true nature of this ratio, namely, that the price/earnings ratio was used "... to make comparisons with other companies possible; it indicates attitude of *market* regarding risk, return."

Nineteen of the 47 companies (40%) which stated that they used the dividend payout ratio, indicated that they used this ratio (or its reciprocal, the dividend cover ratio) in order to ensure that the company set aside adequate reserves for future growth. Seven of the 19 companies stated that dividends should be covered at least twice by after-tax profits. Eight of the 47 companies (17%) stated that they used a target dividend payout ratio and that they "... attempt to be consistent by stabilising this ratio".

*Objective 4: To compile an inventory of the ratios used by management, creditors and shareholders and to rank these ratios in terms of their importance as perceived by each of these three categories of users.*

Respondents were asked to rank in order of priority the five ratios which they considered to be the most important ratios used by each of the three categories of users – management, creditors and shareholders. Out of the 62 companies which returned the questionnaire, 53 companies (85%) gave their ranking of the five most important ratios used by management, 47 companies (76%) gave their ranking of the five most important ratios used by creditors, and 49 companies (79%) gave their ranking of the five most important ratios used by shareholders. Two companies, although giving their ranking of the five ratios used by creditors and shareholders, refused to give their ranking of the five most important ratios used by management. They argued that from management's point of view all ratios were equally important. A further two companies refused to give their ranking of the ratios for all three of the user-categories; they argued that this particular part of the questionnaire was too theoretical for them. One of the companies stated that the three questions in this section of the questionnaire were "too theoretical for a company of this size" – the company had total assets of R7 million. The balance of the companies (an average of nine companies for each of the three categories) which did not complete this section of the questionnaire, furnished no reasons for not doing so.



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In order to obtain the *overall* ranking of the five most important ratios for each of the three user-categories, some method of aggregating the different rankings made for each of the three user-categories by each of the respondents had to be developed. It was decided that whatever method was employed, two criteria would have to be satisfied: account would have to be taken of both the *absolute popularity* and the *relative popularity* of the ratios listed by the respondents. Absolute popularity was measured by the frequency with which a particular ratio was listed among the five ratios, regardless of its position; relative popularity was measured by the position of a particular ratio relative to the other four ratios in the group.

It was decided that both criteria would be accommodated if a scoring system was employed which allocated one point to each ratio listed, regardless of position (absolute popularity), and from five points down to one point to each ratio listed, according to its relative position in the group (relative popularity). Thus, if a ratio were ranked as number one, it would be allocated 6 points (5 points for relative popularity plus one point for absolute popularity); if it were ranked as number three, it would be allocated four points (three points for relative popularity plus one point for absolute popularity); and if it were ranked as number five, it would be allocated two points (one point for relative popularity plus one point for absolute popularity).

As an illustration of how the scoring worked in practice, it is useful to consider the ratio net profit/sales. In the management-user category, this ratio was listed by a total of 33 companies, being ranked in order of importance as first by 13 companies, as second by seven companies, as third by five companies, as fourth by one company, and as fifth by seven companies. The *absolute popularity score* for this ratio was therefore 33 points (33 x 1), the *relative popularity score* was 117 points ((13 x 5) + (7 x 4) + (5 x 3) + (1 x 2) + (7 x 1)), and the *total score* was 150 points (33 + 117). Accordingly, the five most important ratios used by management, ranked in order of priority, turned out to be as follows:<sup>14</sup>

Ratio	Total score	Rank
Net profit/sales	150	1
Net profit/total assets	139	2
Current ratio	111	3
Accounts receivable collection period	110	4
Inventory turnover	95	5

It is interesting to note from the ranking of these five ratios the greater stress placed by management on profitability measures as opposed to liquidity measures.<sup>15</sup> The ratios which were ranked in the first and second places were both profitability ratios. A liquidity ratio was ranked in the third place, followed by two efficiency ratios (which also served as *supplementary* liquidity measures) ranked in the fourth and fifth places. Solvency ratios were conspicuous by their absence from these five most important ratios used by management.

By contrast with the above, the five most important ratios used by creditors placed a relatively heavy emphasis on liquidity. These ratios were:

Ratio	Total score	Rank
Current ratio	214	1
Total debt/equity	181	2
Quick ratio	97	3
Debt ratio	94	4
Times-interest-earned ratio	62	5

It is clear from the ranking of these five ratios that creditors were, as might have been expected, mostly concerned with the liquidity and solvency of a credit applicant. Two of the above ratios are liquidity measures, while the other three are solvency measures. Less important, from the point of view of creditors, is the profitability of a firm. The highest ranking profitability ratios were net profit/total assets and net profit/sales. These two ratios were ranked in places six and seven, respectively.<sup>16</sup>

Not surprisingly, the five most important ratios used by shareholders were considerably different from those used by management and creditors. These ratios were:<sup>17</sup>

Ratio	Total score	Rank
Dividend payout ratio	151	1
Earnings per share	145	2
Price/earnings ratio	122	3
Total debt/equity	109	4
Net profit after tax/equity	92	5

The ratios indicated as being the five most important used by shareholders, largely coincided with *a priori* expectations. However, it had been expected (even hoped), in view of the fact that net profit after tax/equity (ROE) is conceptually superior to earnings per share, that it would have been accorded the higher ranking of the two ratios. However, this was not the case.<sup>18</sup> 45 out of the 49 companies (92%) which completed the last question in this section of the questionnaire indicated that they held shares of other companies (i.e. that they were shareholders). The fact that collectively they ranked the dividend payout ratio as the most important ratio suggests that some may have listed the five ratios which they *as companies* regarded as important for shareholders, rather than the five ratios which they *as shareholders* regarded as being important. It was decided that valuable information would be provided by a general ranking of the most important ratios used in practice by the 50 companies which completed this section of the questionnaire.<sup>19</sup> It was felt that such a list would be of value to academics involved in the area of financial management, particularly those who lecture on the topic of ratio analysis. The list would also inform those companies (mainly small companies?) which employ ratio analysis to a very limited extent, of the ratios actually used in practice by many South African companies.<sup>20</sup> It was hoped that this information would be of some assistance in narrowing the gap between the theory and practice of ratio analysis in South Africa.

In Table B the 20 most important ratios used by the 50 companies are ranked in order of priority. As may be observed from the table, the score according to which

## Some results of an empirical study of ratio analysis in South Africa

each ratio has been ranked, is given by the sum of the separate scores obtained by that ratio under each of the three categories of management, creditors and shareholders. The score allocated to a particular ratio therefore represents its overall importance as perceived by the 50 companies taken collectively.

It is interesting to note that the two most important ratios comprise a liquidity measure (the current ratio), and a solvency measure (total debt/equity). It is only after these two measures that the profitability measures make their appearance (the first two of these being net profit/total assets and net profit/sales), and then at much lower total scores. Efficiency measures are relatively low down the scale, with the first two (accounts receivable collection period and inventory turnover) being ranked in the eleventh and twelfth places, respectively.<sup>21</sup> In total, the table comprises two liquidity measures, five solvency measures, three efficiency measures and 10 profitability measures.

### SUMMARY AND CONCLUSIONS

In this paper part of the results of a survey of the extent to which financial ratio analysis is employed by companies quoted on The Johannesburg Stock Exchange has been presented. The evidence strongly suggests that the 62 companies which returned the

questionnaire were biased towards large companies and that there was a significant positive relationship between the size of these companies and the number of ratios which they used. Other evidence (some of which has been reviewed in of this paper) suggests that there was also a positive relationship between the size of companies and the degree of sophistication with which they employed ratio analysis.

These results, allied with the reasons supplied by 42 of the 238 companies which did not complete and return the questionnaire sent to them, suggest that a large proportion of companies did not return the questionnaire because they employed ratio analysis to a limited extent only. To the extent that this is true, especially as far as small companies are concerned, it indicates the existence of a considerable gap between the theory and practice of ratio analysis in South Africa.

By contrast, the majority of the 62 companies which returned the questionnaire displayed an overall level of appreciation and insight into the method, purpose, value and limitations of ratio analysis which compared well with that of most conventional textbooks on the topic. It is clear that for the majority of these 62 companies the gap between the theory and practice of ratio analysis was not very large.

**Table B**  
**The 20 most important ratios used by 50 companies, ranked in order of priority**

Ratio	Management		Creditors		Shareholders		Total	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Current ratio	111	3	214	1	58	6	383	1
Total debt/equity	74	6	181	2	109	4	364	2
Net profit/total assets	139	2	44	6	57	7	240	3
Net profit/sales	150	1	31	7	19	10	200	4
Net profit after tax/equity	69	7	20	9	92	5	181	5
Earnings per share	26	12	8	12	145	2	179	6
Quick ratio	52	8	97	3	11	13	160	7
Dividend payout ratio	2	22	7	15	151	1	160	7
Debt ratio	29	10	94	4	27	9	150	9
Price/earnings ratio	5	15	5	16	122	3	132	10
Accounts receivable collection period	110	4	9	10	—	—	119	11
Inventory turnover	95	5	9	10	—	—	104	12
Times-interest-earned ratio	17	13	62	5	10	14	89	13
Dividend/price ratio	—	—	—	—	52	8	52	14
Sales/total assets	46	9	—	—	4	18	50	15
Fixed charge coverage	8	14	22	8	10	14	40	16
Gross profit margin	29	10	—	—	—	—	29	17
Dividend per share	—	—	—	—	15	11	15	18
Long-term debt/equity	—	—	8	12	6	17	14	19
Equity/number of ordinary shares	—	—	2	20	10	14	12	20

## Some results of an empirical study of ratio analysis in South Africa

**Table C:**  
Ratios used by management, ranked in order of importance

Ratio	Absolute popularity Score	Relative popularity Score	Total Score	Rank
Net profit/sales	33	117	150	1
Net profit/total assets	30	109	139	2
Current ratio	28	83	111	3
Accounts receivable collection period	28	82	110	4
Inventory turnover	24	71	95	5
Total debt/equity	19	55	74	6
Net profit after tax/equity	16	53	69	7
Quick ratio	10	42	52	8
Sales/total assets	10	36	46	9
Gross profit margin	5	24	29	10
Debt ratio	5	24	29	10
Earnings per share	8	18	26	12
Times-interest-earned ratio	5	12	17	13
Fixed charge coverage	3	5	8	14
Price/earnings ratio	2	3	5	15
Total expenses/sales	1	4	5	15
Sales/average working capital	1	3	4	17
Debtors/working capital	1	3	4	17
Total expenses/net profit before tax	1	2	3	19
Working capital/average month's sales	1	2	3	19
Sales/fixed assets	1	2	3	19
Dividend payout ratio	1	1	2	22

**Table D:**  
Ratios used by creditors, ranked in order of importance

Ratio	Absolute popularity Score	Relative popularity Score	Total Score	Rank
Current ratio	43	171	214	1
Total debt/equity	37	144	181	2
Quick ratio	20	77	97	3
Debt ratio	20	74	94	4
Times-interest-earned ratio	15	47	62	5
Net profit/total assets	15	29	44	6
Net profit/sales	10	21	31	7
Fixed charge coverage	6	16	22	8
Net profit after tax/equity	5	15	20	9
Inventory turnover	3	6	9	10
Accounts receivable collection period	3	6	9	10
Long-term debt/short-term debt	2	6	8	12
Earnings per share	2	6	8	12
Long-term debt/equity	3	5	8	12
Dividend payout ratio	3	4	7	15
Price/earnings ratio	1	4	5	16
Current year's retained profit/net profit after tax	1	3	4	17
Cash flow/total debt	1	2	3	18
Working capital/average month's sales	1	2	3	18
Equity/number of ordinary shares	1	1	2	20
Sales/fixed assets	1	1	2	20
Cash flow/borrowings ratio	1	1	2	20

## Some results of an empirical study of ratio analysis in South Africa

**Table E:**  
**Ratios used by shareholders, ranked in order of importance**

Ratio	Absolute popularity Score	Relative popularity Score	Total Score	Rank
Dividend payout ratio	37	114	151	1
Earnings per share	28	117	145	2
Price/earnings ratio	26	96	122	3
Total debt/equity	32	77	109	4
Net profit after tax/equity	19	73	92	5
Current ratio	19	39	58	6
Net profit/total assets	16	41	57	7
Dividend/price ratio	11	41	52	8
Debt ratio	7	20	27	9
Net profit/sales	5	14	19	10
Dividend per share	3	12	15	11
Book value of ordinary shares/equity	2	10	12	12
Quick ratio	3	8	11	13
Fixed charge coverage	2	8	10	14
Times-interest-earned ratio	3	7	10	14
Equity/number of ordinary shares	3	7	10	14
Long-term debt/equity	2	4	6	17
Fixed assets/current assets	1	3	4	18
Sales/total assets	1	3	4	18
Retained earnings/number of ordinary shares	1	1	2	20

### Appendix

$$1 \text{ Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$2 \text{ Quick ratio} = \frac{\text{Current assets minus inventory}}{\text{Current liabilities}}$$

$$3 \text{ Debt ratio} = \frac{\text{Total debt}}{\text{Total assets}}$$

$$4 \text{ Debt/equity ratio} = \frac{\text{Total debt}}{\text{Shareholders' equity}}$$

$$5 \text{ Times-interest-earned ratio} = \frac{\text{Net profit after tax plus interest charges}}{\text{Interest charges}}$$

$$6 \text{ Fixed charge coverage} = \frac{\text{Net profit before tax plus interest charges plus lease obligations}}{\text{Interest charges plus lease obligations}}$$

$$7 \text{ Inventory turnover} = \frac{\text{Sales}}{\text{Inventory}}$$

$$8 \text{ Average collection period ratio (for accounts receivable):}$$

$$\text{Step 1: Average sales/day} = \frac{\text{Annual net sales}}{365 \text{ days}}$$

$$\text{Step 2: Average collection period} = \frac{\text{Average balance of accounts receivable}}{\text{Average sales/day (Step 1)}}$$

$$= \frac{\text{Average balance of accounts receivable} \times 365 \text{ days}}{\text{Annual net sales}}$$

$$9 \text{ Fixed assets turnover} = \frac{\text{Sales}}{\text{Net fixed assets}}$$

$$10 \text{ Total assets turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

$$11 \text{ Profit margin on sales} = \frac{\text{Net profit after tax}}{\text{Sales}}$$

$$12 \text{ Return on total assets} = \frac{\text{Net profit after tax}}{\text{Total assets}}$$

$$13 \text{ Return on net worth} = \frac{\text{Net profit after tax}}{\text{Net worth}}$$

$$14 \text{ Earnings per share} = \frac{\text{Net profit after tax}}{\text{Number of ordinary shares issued}}$$

$$15 \text{ Price/earnings ratio} = \frac{\text{Average market price of an ordinary share}}{\text{Earnings per share}}$$

$$16 \text{ Dividend payout ratio} = \frac{\text{Dividends paid out}}{\text{Net profit after tax}}$$

### Footnotes

- 1 Lambrechts, I. J., "The Practice of Capital Investment Decision-making in South Africa", *The Investment Analysts Journal* (August 1976) pp. 27-31.
- 2 Boy, A. D., "The Role of Ratios in Financial Statement Analysis", *Unpublished MCom dissertation*, University of Natal, 1977, pp. 168-245.
- 3 *The Stock Exchange Handbook* (Volume 1, 1976), Flesch Financial Publications, Johannesburg, pp. 43-49.
- 4 Although it was recognised that the personal interview approach would not only have boosted the response rate, but would also have overcome many of the problems of semantics inherent in research via the medium of postal questionnaires, the financial resources necessary to have undertaken such an approach were lacking. A valid criticism of the research methodology used relates to the length of the questionnaire. The decision to employ the questionnaire was a calculated one, and took full cognisance of the inevitable trade-off between greater detail and a lower response rate.
- 5 It must be noted that of the 62 companies which returned the questionnaire, 13 companies (21%) did not complete all of the questions posed in it.
- 6 We attempted to overcome the problem of confidentiality by a guarantee of anonymity to all respondents. This probably accounts for the relative insignificance (14%) of confidentiality as a reason for the 42 companies (discussed above) not completing the questionnaire.
- 7 Small companies were defined as those with total assets of less than R50 million; large companies as those with total assets equal to or in excess of R50 million.
- 8 See: Boy, A. D., "The Role of Ratios . . .", *op.cit.*, pp. 229-234, for details regarding the methods employed in testing these two hypotheses.
- 9 The manner in which each of these 16 ratios is calculated is set out in the appendix to this paper.
- 10 The most serious of these shortcomings are the following:
  - a the susceptibility of the current ratio to window-dressing;
  - b the static, or snapshot, approach of the current ratio to the measurement of liquidity;
  - c the fact that the current ratio does not take into account liabilities not listed in the balance sheet, but for which cash-outflows are nevertheless required.
- 11 Donaldson, G., *Corporate Debt Capacity*, Division of Research, Harvard Business School, Boston, 1961, p. 127.
- 12 Kirkman, P. R. A., "The Management of Trade Debtors", *Unpublished paper* (1975), p. 6.
- 13 It is interesting to note that part of the results of an empirical study by Dickman indicate that for each of the years during the period 1953 to 1973, the *average* debt ratio of all listed non-mining companies in South Africa lay between 45% and 50%. See: Dickman, A. B., "The Financing of Industrial Development in South Africa", *The South African Journal of Economics* (December 1973), pp. 373-392.
- 14 For the complete list of ratios (22) indicated by the respondents as being used by management and ranked in order of priority, see Table C in the appendix to this paper.
- 15 In view of the liquidity crisis which prevailed in the country at the time these questionnaires were sent out for completion (January-February 1977), it had been anticipated that liquidity measures would rank higher in priority than profitability measures.
- 16 For the complete list of ratios (22) indicated by the respondents as being used by creditors and ranked in order of priority, see Table D in the appendix to this paper.
- 17 For the complete list of ratios (20) indicated by the respondents as being used by shareholders and ranked in order of priority, see Table E in the appendix to this paper.
- 18 In order to obtain *conclusive* empirical evidence on the most important ratios used by shareholders, a questionnaire should be sent to institutional *as well as* private shareholders. The sample employed should be split between the two categories according to some criterion, such as the percentage of the value of all shares listed on the JSE held by each category of shareholder.
- 19 The five most important ratios employed by the three user-categories (management, creditors and shareholders) were supplied by 53, 47 and 49 companies, respectively. The figure of 50 companies is the arithmetic mean of these three figures.
- 20 As promised, the 62 companies which returned the questionnaire were each given a summary of the results of the survey, including copies of the various tables and lists of ratios.
- 21 It must be stressed that these two efficiency ratios may also be used as supplementary liquidity measures.



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## Investment basics — IV

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### NET ASSET VALUE

The net asset value of an enterprise is the amount by which total assets exceed total liabilities. In the business world net asset value is used in the assessment of profitability, creditworthiness and solvency. Should total liabilities exceed total assets, the net asset value will be negative, meaning that the undertaking is insolvent.

For a company net asset value represents the value of the assets available to ordinary shareholders after deducting all the debts of the concern, the loan capital and the preference capital, and after providing for any possible rights or obligations in respect of loan stock or preference shareholders. The net asset value per share is then arrived at simply by dividing the value of the net assets by the total number of ordinary shares in issue.

Net asset value may also be quite readily calculated from the liability side of the balance sheet. It is sufficient to add the issued ordinary capital and the various non-distributable and distributable reserves. However, any equity participation rights or premiums or discounts on redemption in respect of preference shareholders and holders of loan stock should be deducted from, or, as the case may be, added to the net equity figure. Also, in calculating the sum, adjustments should be made for the surplus or deficit over book values of the current market values of any investments held.

Intangible assets, such as goodwill or cost of acquisition, trademarks, patents, and development costs, make the calculation of net asset values somewhat ambiguous. At times net asset value may be calculated or reflected to show all the assets listed in the balance sheet, while at other times it may specifically exclude intangible assets. The term 'tangible net asset value' is generally used to indicate that intangible assets have been excluded from the calculation.

The means of measuring the long-term financial structure of the firm is determined by the level of shareholders' funds. Net asset value is an important feature in presenting the company to the business, social and financial communities. It is a denominator according to which profitability and creditworthiness may be determined. The net return on shareholders' funds is an important aspect for investors and analysts, while to management it provides a reflection of business prosperity and show just how effective the assets of the firm are being managed. In situations where the selling price of a product or service of the undertaking is determined largely by an external pricing commission the level of the returns on entrepreneurs' funds is an important aspect. To creditors and the providers of long-term finance the level of profitability of the concern and the ratio of shareholders' funds to total liabilities and debt are crucial in determining financial risk.

### Asset values and market values

While the calculation of net asset value from the balance sheet and the measuring of profitability and creditworthiness are simple enough, their interpretation is complex. The principal difficulty lies in the interpretation of balance sheet value. Some assets may be either overvalued or undervalued, and adjustments (given suitable and agreeable means of valuation) will have to be made. Goodwill and intangible assets are other complicating factors.

For the investor the interpretation of net asset values is complicated further by the fact that the market prices of the vast majority of companies do not reflect a significant relationship to net asset values as shown by the published accounts.

It would seem that many investors pay little attention to net asset values. A high asset value in relation to the price of a share does not necessarily mean that the share is more attractive than one with a low net asset value. There are close relationships between high returns on equity funds and low asset values on the one hand, and high asset values and low returns on the other. A high net asset value in relation to the share price and a low return could suggest inefficient use of the firm's assets (a management problem and probably an attractive acquisition situation) or that the industry in which the company operates has undergone a structural change, with the result that the assets are overvalued. A high return on asset value means a profitable business, a reflection of either good management or being in a fast growing sector of the economy or both.

That market values and book net asset values for most companies have little in common is probably explained by equities being capitalised freely in the market. These capitalisations are determined by collective environmental influences, with the result that equities are quoted at high or low earnings and dividend yields that may be at a premium or a fraction of the net asset value. The divergence between net asset value and market value (capitalisations) is probably best explained by Adam Smith. In 1776 Adam Smith, in writing the 'Wealth of Nations', drew a clear distinction between 'value in use' and 'value in exchange'. A distinction is made between the value of the asset to its owner in use, and the value of that asset in the market. Net asset values represent a form of 'value in use', as these assets are being employed in producing income, while market values represent a form of value in exchange.

So far as equities are concerned, there is a good reason for this divergence between asset and market values. The average market price of a share over a period of time depends mainly on its ability to generate earnings and dividend payments. This value, which is based on future income determinations, usually does not bear any close or reasonably consistent relation to the asset value, for

future income is determined on the 'real' value of the company's assets, which at a given point in time is in effect the current market price of these assets. This means that, so far as published net asset values are concerned, these values are not really representative of present market values. (The accounting profession have in recent years recognised this deficiency and while no uniformity has been reached steps are at least being taken to recognise replacement or current cost values.)

In practice, however, even if reliable and dependable market prices are available for the entire company's assets, the conceptual problem of value in use and value in exchange would still remain, since for a concern that is experiencing boom conditions, the current market value of its assets may exceed the book value by a wide margin. Basically the market places a premium on future growth expectations. This premium over the current market values of the concern's assets is expressed as 'goodwill'. It is quite possible to define goodwill and classify it as another asset of the company, in which case net asset value and market value would be equal. However, in view of the constantly changing circumstances in the business environment and the problems associated with valuing goodwill, such an exercise may be of academic interest only and not solve the problem or 'real' net asset value at all.

The position, if an acceptable basis of valuation can be agreed upon, would become far more meaningful in the case of a situation of high asset value, low returns, and a market value at only a fraction of the published book value. This situation could come about as a result of a more permanent structural change in the fortunes of a business sector. The company's assets would then be valued at market-related values and not book values or replacement costs. The situation is sure to yield a substantial decline in the assets of a company, which is easily adjusted by reducing the liability side of the balance sheet – namely shareholders' funds. Once this adjustment has been made, net asset value and market value should reflect a more coherent picture. In practice such valuations will, owing to their very nature and the opinions of all interested parties, be made on an historical basis, which could mean a substantial adjustment of solvency and debt capacity ratios. Such adjustments would therefore be very contentious and just not acceptable to many parties – as contentious as it would be if a company with high returns and low assets wrote up its 'goodwill factor' and then proceeded to raise debt capital on the increased equity.

### 'Real' net asset value

While the difference between book net asset value and market values is not easily resolved, the real value of the firm does lie somewhere between the two. The traditional way of valuing a company was to take the net assets and add to them an agreed sum for goodwill, which was considered to be a premium paid for income-producing assets. The modern way of determining the value of a company is first to consider earnings, which does not disregard the asset position entirely but merely places greater emphasis on the earning power of the assets. The company is therefore valued on a going-concern basis. There are exceptional circumstances where the assets have the greater potential value, but these are rare occasions and usually clear

exceptions to the rule. The main determinant of value today is the net flow of future earnings.

The real net asset value of a company can therefore be defined in terms of the financial principle that the investment value of a company (or a share) is equal to the 'present worth' of future dividends. In order to arrive at the 'present value', future profitability will have to be projected, which cannot be done without some broadly-based assumptions but which, if attempted on an intelligent basis, can often be reasonably accurate.

### The investor and net asset value

In times gone by the investor paid more than passing interest to asset values in assessing share values. Although the way in which assets were valued and reported on was far less dependable than today, share or market values seemed to bear a closer relationship to asset values. This may have been due to more stable prices and calmer and less volatile business conditions associated with those times. Over the past three decades the means by which assets are measured has become progressively eroded as a result of inordinately high levels of inflation and the decline of currency values. This has resulted in the value of assets being subjected to substantial changes in component values as a result of the return function being severely distorted at times. In more recent times this could be seen clearly from the meaningful differences that existed between the book values, replacement values, and market values of the assets of firms in many sectors.

The substantial variations have resulted in a narrowing of forecasting horizons in the market place today and, together with the economic uncertainty, investors seem to be paying increasingly less attention to net asset values. Investors have found that net asset value is in reality not a meaningful guide to earnings or market price potential. While this may be so and even if the emphasis today is on future earnings potential, net asset values still have some significance if only of a secondary nature. The investor and analyst cannot afford to ignore net asset values completely. Provided their limitations are recognised, net asset values must still be considered in investment evaluation for the following reasons:

- As a measure of security for debt or preferred claims. The security of a debenture and the cover on preference shares will always require a margin of tangible net assets over a preferred claim. This asset cover should not be seen in isolation from the present and potential returns on the assets.
- Net asset value is still important in a take-over situation. The modern way of valuing a company is by looking at the expected net flow of all future earnings and dividends. This does not entirely disregard assets but merely relegates them to a secondary position. However, when it comes to acquisitions, net asset values are not ignored and for a variety of reasons and in a variety of ways are always considered in the terms of purchase. This factor does increase the market value of companies that are quoted at a large discount on net asset value and which are likely merger/acquisition propositions.

- Net asset values and earnings reflect business conditions. Asset values form an integral part of the presentation of a company for, given any amount of earnings, the larger the net worth, the lower the profitability or percentage earned on capital. Such a situation is not a favourable reflection on the company and its management. Such returns should not be seen in isolation, and industry comparisons should first be made before evaluating management performances. The converse, of course, also applies where there is a relatively low net asset value and high returns. While assets may be understated, the returns may suggest abnormal profitability and attract attention to the company in the form of new competition or, where a monopolistic condition prevails, public criticism.
- Net asset value is still a good indicator to both management and investors. A market price substantially below net asset value may suggest to the management of the company that a change is needed in business policies. The combination of present values, net asset values and market values provides a useful guide to investors. Where market values are less than present and net asset values, an undervalued investment situation exists. Should market values exceed net asset values and present values, overvaluation is implied.
- Takeover situations. The purchase of equities at only a small fraction of net asset value has certain speculative possibilities, particularly where there is little or no debt.
- Finally, in spite of the market showing little practical interest in net asset values, investors should be aware of the possible dangerous consequences of ignoring asset values altogether. There are situations in which asset values actually or probably play a significant role in determining market prices. One such situation is the purchase of equities at many times the net asset value in steeply rising markets. This is an important point that investors and analysts should assess carefully. The results of this could be seen in the latter sixties and early seventies when a large number of relatively small companies came to the market. It was then that the discrepancy between market prices and tangible asset values produced its most spectacular and ominous results.

### Conclusion

There is no such thing as an absolute value of a company. Net asset value reflected in the balance sheet as being the extent to which total assets exceed total liabilities is only one facet of the entire value picture. The market today, despite its narrowing forecasting horizon, places greater emphasis on the sum of future earnings and dividend potentials. Net asset values have been relegated to a secondary position. Nevertheless, there are still a number of important reasons for not losing sight of book net asset values in assessing the potential of investments.