



Gordon Institute of Business Science

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THE RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND THE FINANCIAL PERFORMANCE OF THE FIRM

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Master of Business Administration

by

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Abstract

Corporate finance literature suggests that the capital structure decision has played a pivotal role over the years in driving the establishment and growth of firms. There is also a body of evidence that financial markets take a keen interest in firm performance, especially for those listed on the stock exchange. There is no empirical evidence that there is a causal relationship between capital structure and the firm's performance despite the importance of the two concepts in corporate finance.

This study uses the debt/equity ratio as a proxy for capital structure and a selected few financial ratios to represent attributes of firm performance (e.g. profitability and shareholder value) in investigating the relationship between the two in the South African context.

The results based on stock exchange data as input are inconclusive but they lay a foundation for potential future research. Interesting insights are drawn from using some limitations identified in the literature to try and explain why the results are the way that they are.

KEYWORDS: Capital Structure, Financial Performance, EVA®, Profit, Shareholder Value

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Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University.

Cunning Gangeni

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CHAPTER 1 – THE RESEARCH PROBLEM

1.1. Introduction

For many years, the link between capital structure and the financial performance of the firm has been the subject of intense global debate and research and yet there is insufficient empirical evidence to support the argument in the South African context.

Investors in South Africa look forward to the publication of annual performance rankings of firms with shares listed on the JSE Securities Exchange, based on how the firms generated returns for their shareholders in the previous 5 years. One such source of performance rankings information is the Business Times, a supplement to the local weekly Sunday Times newspaper, which releases its assessment during the fourth calendar quarter of the year. According to these rankings, the higher the firm is positioned on the list, the higher the return for each rand invested for the 5-year period.

The South African investors' expectation of returns is universal and is corroborated by Firer, Ross, Westerfield and Jordan (2004) who wrote that investors in firms expect a return for bearing the risk during the period that they own the shares while foregoing a risk-free return in government treasury bonds. Such returns are in the form of future dividend flows as well as capital appreciation as reflected by an expected increase in the share price. To



illustrate that the capital markets yield higher returns Firer *et al* (2004, p. 368) show that during the period 1900-2002, the average return on the stock market was over two times the risk-free return on government bonds. Also, because the investors have little control over the daily operations of the firm they expect to maximise their returns else they would sell the shares and move their money to a portfolio that promises higher returns.

This paper analyses how South African firms listed on the JSE Securities Exchange vary shareholders' equity and debt in their quest to maximise returns i.e. is there any substance to the statement that some level of debt is good for the firm (Modigliani and Miller,1958 and 1963) and improves the shareholders' returns?

1.2. The Research Aim

The main objective of the research is to investigate the notion that more debt is good for the firm, with a particular focus on the South African environment. This paper aims to explore the relationship between capital structure and the financial performance of the firm using data for companies listed on the JSE Securities Exchange. This comparison will use the debt/equity ratio as a proxy for the capital structure and analyse its relationship with financial performance that will be represented by the standard accounting measures of operating profit margin, return on assets, return on equity, earnings per share, price/earnings ratio as well as the economic value added.



The research problem will be examined for each firm by analysing the extent to which the constructs above vary during the 5 year period from 2000 - 2004; their change relative to each other as well as in comparison to their respective industry-specific arithmetic means.

The aim is to establish trends, gain insights and draw conclusions on the relationships between firm capital structure and financial performance.



CHAPTER 2 – THEORY BASE AND LITERATURE REVIEW

There is a wide range of documented literature and theory in the respective areas of capital structure and financial performance. What is not abundant is literature that effectively joins the two constructs in a broad and systematic way. This research will attempt to focus on a narrow part of the two spheres and establish the linkages where possible.

An effort will be made to highlight the significance of each construct by reviewing available relevant supporting literature, while balancing the view with any contrasting views indicating the limitations to the applicability of the construct. Various aspects of capital structure theory will be dealt with in this section, emphasising how the literature elements are linked to each other and how they relate to the aim of the study.

The write-up below addresses theories relating to various phenomena that influence capital structure and the behaviour of the debt/equity ratio of the firm.

2.1. Capital Structure

An appropriate definition of capital structure can be drawn from Myers (2001, p.81) who states that 'The study of capital structure attempts to explain the mix of securities and financing sources used by corporations to finance real investment'. The firm needs to make the investments in order to at least remain in business, let alone display some growth.



There is a wide variety of literature on the capital structure of the firm and it is predominantly based on the pioneering work of Modigliani and Miller (1958) (MM I) whose research controversially concluded that capital structure does not matter. Their thesis was controversial in the sense that it was based on the efficient market hypothesis – an ideal environment in which the markets are frictionless i.e. taxes, inflation and transaction costs do not exist. After some peer criticism questioning the validity of their thesis, Modigliani and Miller (1963) issued a 'correction' in which they argued that although the value of the firm does not change with changes in the debt/equity ratio, there are two major points to note when taxes and other transaction costs are brought into consideration. These are summarised by Firer *et al* (2004, p. 540) as follows:

- the firm's weighted average cost of capital (WACC) decreases with increasing debt/equity ratio because the required return on equity is higher than the cost of debt
- the firm's cost of equity increases with increasing debt/equity ratio because the shareholders have to bear a higher business risk due to the corresponding increased probability of the bankruptcy of the firm.

A major factor in the validity of this argument is the tax shield that firms enjoy on the cost of debt as it effectively reduces the cash flow out of the firm by an amount equivalent to the tax on the interest paid.



The 'correction' by Modigliani and Miller (1963) (MM II) leads to the conclusion that capital structure does matter in the real world of taxes, inflation and bankruptcy costs.

An interesting addition to this debate that has been raging for over forty years is that a lot still needs to be understood. As recently as the early eighties, Myers (1984, p. 575) made the statement that, 'We do not know how firms choose debt, equity or hybrid securities they issue. We have only recently discovered that capital structure changes convey information to investors'. In a way, this was an admission that despite the general acceptance of MM I & II, there was still scope to understand how capital structure decisions are made and how they, in turn, affect stock market returns – an element of the financial performance of the firm. This study is a contribution towards the debate around capital structure and its relationship with a few dimensions of the financial performance of the firm.

2.2. Optimal Capital Structure

Corporate finance literature states that for each firm there is a target capital structure. Such optimal capital structure theoretically is the point at which, all things being equal, the debt/equity ratio leads to the maximisation of firm performance and shareholder returns. Firer *et al* (2004, p.533) say that not only does such an optimal capital structure exist, but can be computed easily as a firm's cost of capital is a positive linear function of its capital structure.



To illustrate this point, some proponents of this concept suggest that views on the target capital only differ to the extent that they place emphasis on the interpretation of the Modigliani and Miller (1958) theory of capital structure in a world of frictionless markets (Myers, 2001). Myers (2001, p.82) observes that with inflation and taxes, 'the trade off theory emphasises taxes, the pecking order theory accentuates differences in information, and the free cash flow theory highlights agency costs'. Each of these theories will be reviewed in subsequent sub-sections.

Schwartz and Aronson's (1967) research concluded that the capital structures of firms in different industry sectors were significantly different from each other. They used this as surrogate evidence to infer that firms in a particular industry class develop an ideal financial structure that is informed by their operational risks and asset structure. They also noted that it was also common for such industry sector specific capital structures to change over time. In other words, they have observed that the capital structure of firms can be dynamic as it moves to a position where it is likely to maximise firm value. Such position is either a calculated optimal capital structure or is determined simply by firms copying what their competitors in the same sector are doing. For listed entities, the process of changing to the optimal capital structure might take long due to the relatively higher costs of retiring existing debt and issuing new debt or equity.

The work of Welch (2004) cautions belief in the existence of a target capital structure by highlighting that managers do not issue shares or debt in



response to changes in the share prices of the firm but only worry about the debt/equity ratio at the time that they are active in the capital market. This evidence is contrary to the managers' assertions on the ground i.e. they do not issue equity or debt with the sole objective of maintaining the target optimal structure.

To some extent the 'stickiness' of the optimal capital structure of a firm is supported by some empirical evidence. Cai and Ghosh (2003) assert that the firm's optimal capital structure is not a single value but lies in a range with a lower bound of zero and a higher bound equal to the mean capital structure of the industry sector to which the firm belongs. The firm will adjust its capital structure when it reaches levels outside the industry average.

This observation of the existence of a dynamic capital structure that is related to the prevailing market conditions ties in with Myers's (2004) conclusion that capital structure matters – and it is impacted by the interpretation of the impact of taxes, agency costs and access to information.

2.3. Trade-off Theory

The trade-off theory predicts that firm profitability is enhanced by maximising the benefits of the tax shield offered by debt.

According to Myers (2001, p. 81) the trade-off theory places significance on taxes and argues that firms 'seek debt levels that balance the tax advantages of additional debt against the costs of possible financial distress'. This argument does not contradict the pioneering work of Modigliani and Miller



(1958, 1963) that was based on the thesis that capital structure does not matter (MM I & II). Their theory was true for a specific set of frictionless conditions i.e. with no inflation and no taxes. Myers is extending the concept to take into account the prevailing conditions in the real world. Miller (1988) actually subscribes to the same view in a paper released thirty years after the initial theory was released.

It is interesting to note that as years go by other researchers are continuing to use the Modigliani and Miller theory as a base to launch further analysis – with some not even agreeing with the applicability of the propositions under current global economic conditions. Glickman (1998) is a case in point; he argues that there are other factors that need to be brought into the mix e.g. the role of lenders in influencing the financing decision typically through their behaviour at the lower and upper ends of the debt/equity ratio.

Frank and Goyal (2004) argue that firms trade off the benefits of debt such as tax savings and mitigation against agency problems against the actual cost of debt and bankruptcy risks. In their view, the theory implies that highly profitable firms should have higher debt levels in order to protect the profits from tax – a fact that they observe is not supported by empirical evidence. An extension to this point is that there is a limit to what the firm can borrow as the actual cost of debt leads to lower profitability of the firm – in turn reducing the effectiveness of the tax shield.

In fact, Myers (2001) goes on to criticise the trade-off theory, arguing that the most profitable companies on a given industry tend to borrow the least, thus



this theory cannot explain the observed correlation between high profitability and low debt ratios.

This study will attempt to establish insights as to how the results compare with these arguments.

2.4. Agency Costs Theory

As outlined earlier in this paper, capital structure is influenced by the firm managers' financing decisions. Whether in the realm of financial strategy or in the domain of financial tactics where taxes, information asymmetry and market efficiency are key, Myers (2001) concludes that such decisions tend to have long term effects on the capital structure of the firm.

Deshmukh (2005) quotes the work conducted by Rozeff and Easterbrook (1982). They express a view that the agency costs of monitoring managers and their risk-aversion is sometimes exacerbated by compensation structures as managers are only rewarded for success, and there are penalties for failure. In situations like this, the managers have a moral dilemma in that they tend to prioritise their own needs ahead of those of the shareholders. Agency costs would be reduced if the firm paid higher dividends and therefore the managers would operate more transparently as they would have to source funding from the capital markets on a regular basis.

Benston and Evan (2006) suggest that a mitigating mechanism for the agency costs between employees and shareholders is to align their mutual interests by offering the employees share options as well as performance based incentive



contracts. This would be achieved through the transfer of the risk to holders of the firm's debt.

In the same paper, Benston and Evan (2006) also point out that their results show that the unintended consequence of the stock option ownership is that it leads to the managers entrenching their position and not transferring the risk to the external debt holders. Short-term incentive bonuses are found to be a more effective mechanism of risk shifting. In any event, the potential conflict of interest between the two investor categories representing the two sources of capital (debt and equity) would arise when there is a risk of bankruptcy.

2.5. Free Cash Flow Hypothesis

If there is any validity in the hypothesis that increasing the debt/equity ratio increases firm performance then managers' decisions on the level of debt the firm can take on also influence firm performance.

The free cash flow hypothesis, an extension of the agency costs theory, emphasises the conflicts between shareholders' interests and managerial incentives in relation to the optimal size of the firm and how much cash should be paid to shareholders. Research by Jenson (1986) shows that these agency problems are more pronounced in firms that generate large free cash flows, and provides confirmation that debt plays a positive role in managing the agency costs.

The free cash flow theory postulates the role played by debt in reducing agency conflicts between managers and shareholders. Novaes (2004) argues



that on the positive side, debt increases efficiency by minimising managers' ability to finance unprofitable projects while on the negative side debt may prevent investment in some profitable opportunities. From this perspective, it is argued that the fact that the manager still gets to choose the type of debt poses an agency problem that this theory fails to highlight. The implication here is that the managers will tend to choose the type and quantum of debt that constrains their discretion the least. They are unlikely, for instance, to subject themselves to external market scrutiny by approaching suppliers of debt for unprofitable projects. Such projects are only likely to be embarked upon by firms with positive free cash flows where the managers have higher discretion in making investment decisions.

2.6. Pecking Order Theory

The pecking order hypothesis postulates that firms prefer spending retained earnings first before resorting to debt and eventually issuing equity. This is driven partly by the general view that retained earnings are cash that belongs to the shareholders and it is not earning as much a return as it could be if invested elsewhere.



Paraphrasing Myers (2001) gives the following summary of the pecking order theory of capital structure:

- Firms prefer internal to external finance as they have greater discretion in deciding where to invest it
- Dividend cuts are not used to finance capital investments, resulting in net cash flow changes being reflected as changes in external financing
- When external financing is required firms will issue debt before equity. According to the Capital Asset Pricing Model (CAPM), this makes sense, as debt is indeed cheaper than equity
- The debt ratio of the firm is a reflection of the firm's cumulative requirement for external financing.

The hierarchy above partly explains the low debt levels of profitable firms as they use the excess cash flow they generate to fund investment projects while less profitable firms tend to have to borrow more from the external market as they do not generate enough cash to cater for their investment projects. This goes some way towards explaining why the bulk of external financing is from debt.

The pecking order theory is criticised in that it assumes that managers act in the best interests of the shareholders – Myers (2001) advances the perspective that the managers' decisions could be influenced by other factors because their incentive packages do not distinguish between debt and equity financing decisions. As is demonstrated by the agency costs theory, it is possible for the managers' interests not to be aligned with those of the shareholders.



2.7. Asymmetric Information Theory

This asymmetric information hypothesis dwells on the availability of information to the potential investor. The argument here is that management will only issue debt or equity if there are not enough internal resources to finance the desired investments or the risk is not in line with the anticipated returns. In this study, the emphasis will be on identifying what trends in the type, level and reliability of the information supplied.

Deshmukh (2005) states that in their quest to accumulate reserves over time, management use asymmetric information. They do this through only declaring dividends to the extent that there is excess cash not required for investment purposes. The justification for this approach is that this minimises transaction costs for the firm, also known as the agency costs of external equity.

It can also be argued that managers release forecast information on earnings and cash flows in order to gain the trust of a sceptical investor community, especially in the light of the recent Enron and similar corporate scandals in the United States. The objective in this case could also be a case of the agency costs hypothesis in the even that the information is meant to manipulate the share price.

An interesting extension of the asymmetric information hypothesis is advanced by Kochhar (1997, p.23) where he draws on the resource based view of the firm. He argues that a firm's strategic assets (defined as being firm specific) must be financed with equity as they 'provide the firm with a source of steady



stream of rents so that it gains a sustained competitive advantage over its rivals'. This stance is advanced from the point of view that the shareholders have more information on the potential of returns from the strategic assets than external debt suppliers do. According to this view, such a choice would maximise the flow of rents to the shareholders. However, through further analysis, Kochhar (1997) establishes that financing decisions are a necessary but not sufficient condition for firms to obtain a sustainable competitive advantage. This is consistent with the theory that equity costs more than debt (MM I & II) – capital structure decisions help the firm realise the value present in its strategic assets.

Raju and Roy (2000) established that the value of available information as measured on its impact on firm profitability is higher for larger companies on the one hand and is higher in industry sectors where there is intense competition. What this implies is that the release of credible information by managers affects the performance of the firm and has an impact on the perceptions held by the external market about the firm.

Liu (2006) on the other hand established that monitoring of the firm by lenders increases as the size of external financing increases – and this serves as a mitigating factor against the challenges of information asymmetry. This goes some way in explaining why managers prefer to use internal sources of funds before raising funds in the capital markets, as stipulated in the pecking order theory.



2.8. The Market Timing Hypothesis

Taking into account the target capital structure referred to earlier and the dynamic nature of a firm's need to investment capital coupled with the desire for firms to minimise the weighted average cost of capital, is it possible that managers will choose between debt and equity depending on the relative cost between the two?

An extension of the information asymmetry theory implies that managers will use equity finance when they believe it is overvalued and use debt when they believe equity is undervalued. This is based on the premise that they believe they have information that the firm is positioned to generate better performance in the future than the market currently believes. To illustrate further the belief that the equity is undervalued, the managers will go to the extent of repurchasing the firm's own shares.

Hovakimian (2006, p.223) corroborates this view and expresses it technically by saying, '... firms with a higher weighted average of past market-to-book ratios are more likely to issue equity in the current period, while firms with a lower weighted average of past market-to-book ratios are more likely to issue debt in the current period.'

In their draft publication, Baker and Wurgler (2001) support this assertion in their study by concluding that capital structure is a cumulative outcome of previous attempts made by managers to time the market. Using this argument, they surmised that unlevered firms tend to be those that raised financing when



their valuations were high and levered firms tend to be those that raised financing when their valuations were low.

It is prudent to caution against using just the market-to-book ratio as a basis for determining the decision to issue debt or equity as firms with similar such ratios could have different capital structures. Hand *et al* (2005) support this view by emphasising that ratio analysis should not be seen as an end in itself, but merely a way of beginning to look at business performance – primarily because the ratios are usually calculated from imperfect data.

Capital structures could also be driven by the firms' susceptibility to the impact of the external economic environment, their internal processes as well as their capacity to successfully execute the projects for which they need the investment capital. This note is made in the light of the limitation of the Baker and Wurgler (2001) study that, by their own admission, only focused on the historical market-to-book ratios and produced results at variance with the pecking order theory.

2.9. The Transaction Cost Theory

As was mentioned earlier, the work of Schwartz and Aronson (1967) concluded that the capital structures of firms in the same industry sector are similar and they change over time. The transaction cost theory helps partly explain the slow pace of capital structure change to the identified target structure for value maximisation has to be weighed against the transaction costs.



David and Han (2004), have provided corroboration for this assertion and have said that a narrow interpretation of the transaction cost theory's basis is that transactions will be handled in a manner that minimises the cost of carrying them out. Transaction cost theory, further stipulates that depending on the governance model of the transaction, there is opportunity for bargaining of the costs between the parties involved.

2.10. Life Stage Theory

Frielinghaus, Mostert and Firer (2005, p.9) state that the 'basic premise of organisational life stage theory is that firms – in a similar fashion to living organisms – progress through a set of life stages that starts at birth and ends in death'. Their research confirmed a relationship between capital structure and the life stage of the firm. They went on to establish that firms tend to have more debt during their early and late life stages than in their prime.

In this paper, an attempt will be made to establish if the life stage theory can be used to explain any differences in the debt levels as represented by the debt/equity ratio within a particular industry sector.

At the centre of the life stage theory is a notion that is illustrated by the example that, early life stage firms should have low debt levels to compensate for the higher business risk of failure. The research by Frielinghaus *et al* (2005) does not find any evidence to support this and concludes that business risk is not a significant factor in the capital structure decision.



2.11. Literature Summary

The literature review above summarises the theory on capital structure, optimal capital structure, trade-off theory, agency costs theory, free cash flow hypothesis, pecking order theory, information asymmetry hypothesis, market timing theory, transaction cost hypothesis and the life stage theory. It indicates that there is a case for further examination of the what informs capital structure decisions and what consequences they lead to as shown by the changes, if any, on the financial performance of the firm.



CHAPTER 3 – RESEARCH PROPOSITIONS

The research propositions below are based on accounting concepts and ratios as defined by Hand, Isaaks and Sanderson (2005) as well as Firer *et al* (2004).

Profitability ratios give an indication of how the profit of the firm relates to specified items on the balance sheet.

Gearing ratios relate to the capital structure of the firm – the extent to which firm is dependent on shareholder and external debt financing i.e. they give an indication of the financing mix of the firm.

Investment ratios give an external indication of the performance of the firm and are therefore of interest not only to managers but to external stakeholders like debt providers and shareholders as well.

Using the debt/equity (D/E) ratio as a proxy for the capital structure of the firm, the research propositions that will be explored are as follows:

- a) Proposition 1: Increasing the D/E ratio increases the profitability of the firm. Profitability will be measured in terms of return on assets (ROA), the return on equity (ROE) and the profit margin.
- b) Proposition 2: Increasing D/E ratio increases the riskiness of the firm. Measuring the variability of the firm's ROA will give an indication the riskiness of the firm.



c) *Proposition 3:* Increasing the D/E ratio increases the shareholder value of the firm as indicated by the economic value added (EVA®).

According to Wood (2000), the spread, which is the difference between the return on capital employed (ROCE) and the weighted average value of capital (WACC) and it measures the value of EVA® generated relative to other shares. Wood (2006) postulates that the higher the value of the spread, the higher the quality for the company.

 d) Proposition 4: Increasing the D/E ratio increases the market value of the firm. Capital market performance will be measured in terms of the changes in earnings per share (EPS) and the price / earnings (PE) ratio.



CHAPTER 4 – RESEARCH METHODOLOGY

The research method used was based on the analysis of secondary data obtained from information relating to the firms' performance as indicated in the financial statements data provided by online sources Sharenet and McGregor BFA.

4.1. Unit of Analysis and Population of Relevance

Secondary financial stock exchange data obtained from Sharenet and MacGregor BFA was used in the analysis. Data for the Top 100 companies (based on share price growth) was targeted for analysis. The sample represents 100 out of a population of less than 500 companies listed on the main board of the JSE Securities Exchange.

Porter (2004, p. 3) argues that the key aspect of the firm's economic environment is the industry in which it competes – which is why the firm was selected as the unit of analysis and the sample was stratified by industry sector. With this in mind, the stock exchange data for the selected firms was categorised by industry sector after which it was established that the financial reports as held by the selected online data sources for financial services and mining counters had a different format. For example, they did not have EVA and debt/equity ratio values readily available, so they were eliminated from the sample. Finally, companies that were not listed on the JSE Securities Exchange for the duration of the 5-year period from 2000-2004 and therefore did not have a full set of data were also left out.



At the end of this elimination process, 64 firms were left in the sample for further analysis. The selected counters and their corresponding industry sectors are listed in Appendix A.

It is acknowledged that the selection did not result in a representative sample. The approach adopted in selecting the unit of analysis and target population of relevance was based on a cohort design that is suitable for instances where a representative sample is not available. The cohort research design is based on the principle of following up on the members of the selected target sample – called an 'intact group' – and measuring their behaviour in respect of the same dependent variables over a period (Welman and Kruger, 2001, p. 88). The intact group in this study comprised the 64 firms whose annual performance was tracked for the period from 2000 to 2004.

4.2. Data Analysis

The theory as outlined in the literature review was used to guide the analysis of the data, with capital structure as the independent variable and profitability, growth, market value and shareholder value as the dependent variables.

Statistical analysis techniques were used to provide descriptive statistics to determine the change and variability of each construct variable for each firm. These statistics were used to compare the company values against the industry sector values in order to draw insights from the results. Regression analysis was used to determine the relationship between the capital structure and each of the financial performance variables and multivariate analysis to



establish the existence of any inter-dependencies among the dependent variables.

As mentioned earlier, Porter (2004, p. 3) postulates that the key aspect of the firm's economic environment is the industry in which it competes, hence the focus on analysing the firm's data relative to the industry sector to which it belongs.

When interpreted correctly, financial ratios provide insights into the high-level overview of the trends that reflect the performance of the firm because they aid in summarising the information shown in the balance sheets and income statements.

Hall and Geyser (2004) highlight that financial ratios used to assess financial performance fall into five broad categories that encompass profitability, solvency, liquidity, financial efficiency and debt repayment capacity. These factors in turn influence the market value of the firm as they are used in the determination of the share price.

The following paragraphs give some theoretical background on the relevance of the financial ratios that were used as an attribute of the financial performance of the firm. Where possible, the limitations of the applicability of the ratio are highlighted in order to give a balanced view.



4.2.1. Debt / Equity (D/E) Ratio

The debt/equity ratio is a measure of the proportion of borrowings from external institutions to shareholder equity on the liability side of the balance sheet. The debt/equity ratio can also be seen as a measure of the company's capacity to borrow and repay capital. Debt has the advantage that despite coming with a commitment for repayment at a defined time in the future, the interest payments are tax deductible – potentially providing some relief for the outflow of cash from the firm (White, Sondhi and Fried, 1997). The caution to take note of here is that the higher the debt relative to equity, the higher the likelihood of firm bankruptcy.

4.2.2. Operating Profit Margin

The operating profit margin indicates the profitability of sales before any other costs of running the business are taken into account. It can also be viewed as a measure of the efficiency of the firm (Firer *et al*, 2004).

4.2.3. Return on Assets (ROA)

The return on assets (ROA) is a measure of the effectiveness of the firm in generating profits relative to the assets on the balance sheet i.e. how effectively the firm sweats the assets to generate value. It reports the total return to all capital, irrespective of source (Firer *et al*, 2004).



4.2.4. Return on Equity (ROE)

The return on equity (ROE) measures the benefit that the shareholders' enjoy from their investment on the firm. It is a function of a combination of the profitability, asset utilisation efficiency as well as the level of gearing (as reflected by the D/E ratio) of the firm (Firer *et al*, 2004).

The flaw in the value of ROE emanates from the dependency on the need for the equity on the balance sheet to be adjusted to better approximate the true market value. Any changes in the capital structure of the firm also have a significant impact on ROE, which might not be a true reflection of the firm's performance (De Wet, 2004).

4.2.5.EPS and P/E Ratio

Earnings per share (EPS) is a common accounting measure for performance. It should, however, be used with caution as it inherits a flaw from the determination of the earnings from which it is calculated as it does not take into account the size of the assets on the balance sheet i.e. it is an absolute value that does not take into account how efficiently the assets are being used (De Wet, 2004).

As an example, retained earnings (which belong to the shareholders in the first place) could have been the reason for the increased the assets and yet the firm would show a higher EPS, even if actual performance has remained static or declined in some instances for that matter.



EPS could also be misleading in the case of a merger or acquisition that is financed through the issue of the acquiring firm's shares. In such a scenario, the EPS discussion needs to consider the price/earnings (P/E) ratio as well. The P/E ratio gives an indication of the market's perception of the quality of the future earnings of the firm (Stern, 1970).

4.2.6. Financial Distress

According to Firer *et al* (2004), the amount of debt a firm can use is constrained by potential insolvency costs. This is because as the debt/equity ratio rises, the probability that the firm will not be able to meet its debt repayment obligations. Technically, a firm is said to be insolvent when the value of its assets equals the value of its debt – and the value of equity is reduced to zero. This partly explains why the theoretically ideal 100% debt capital structure for a firm is not likely to be attainable in reality.

4.2.7. Economic Value Added (EVA®)

A relatively new financial performance metric that has not yet been universally adopted by all the firms is Economic Value Added (EVA®) that was developed and patented by Stern Stewart and Company. EVA® measures the difference between the net operating profit after tax (NOPAT) and the cost of the capital used to generate this profit (Firer *et al*, 2004, p. 478).

Economic Value Added (EVA®) was popularised by Stern Stewart and company and it measures the firm's ability to exploit its assets in order to



create value for its shareholders. EVA®'s distinction from the other measures of financial performance is that the cost of equity is also taken into consideration through the use of the weighted average cost of capital (WACC) in the calculation. Strange as it might sound, this is also regarded as a setback for the EVA® argument as the determination of WACC is fairly complex, especially in firms with relatively unsophisticated accounting systems.

Some organisations also use EVA® as a decision making tool in the elk of net present value (NPV) as it creates a systematic way of focusing management's attention on value creation for the firm. Another benefit of the adoption of EVA® is that it provides a measurement that can be used for the linking of value creation to management performance incentive schemes.

EVA® has sometimes also been criticised (Wood, 2000) for its short-term focus i.e. because it emphasises performance in a single-period, it favours short-term projects over those executed in longer-term as it does not take into account the future value generated by the projects. Firms that have successfully implemented EVA® do not rely on it as the sole measurement mechanism but use it in conjunction with other non-financial and financial decision-making tools like net present value (NPV).

It is prudent to point out the caution that was highlighted by De Wet (2004, p. 14) that there is a low correlation between the popular accounting measures like earnings growth, dividends, and return on equity etc as measures of firm performance as none of them correlate well with the changes in the share prices of the selected companies. In an addition to this, De Wet (2004) quotes



the research done by Rappaport (2004, p.48) in which the comment is made that, 'Undue focus on reported earnings can lead to acceptance of strategies that reduce value and rejection of strategies that increase value'. EVA® is one such measure that helps drive focus towards value creation.

This serves to emphasise the need to use a combination of financial measures when making decisions that impact the performance of the firm.

4.3. Regression Analysis

Statisticians use the term regression to describe how one variable is related to other variables. Regression analysis is a statistical technique that is used to predict the value of the independent variable based on the dependent variables.

It is important to note that the method only helps to determine the existence of a relationship through measuring the variation in the dependent variable that is explained by the variation in the independent variable i.e. an association exists between the variation of one variable and another. It does not predict the existence of a cause-and-effect relationship. A causal relationship needs to be justified by additional theoretical justification (Keller and Warrack, 2003).

Using a statistical package, an initial test of the normality of the residuals is used to determine what correlation coefficient to apply – Pearson when data is normally distributed; else, the Spearman's Rank correlation coefficient is used. The correlation coefficient measures the proportion of the variance that can be explained by fitting the regression equation and is therefore a fraction whose


value lies in the range -1 and +1. The positive or negative sign of the correlation coefficient reflects the nature of the relationship between the variables – with zero indicating no observed dependence.

Multiple regression analysis reduces the bias of the variables by reducing the residual variance and narrowing confidence intervals (Wonnacott and Wonnacott, 1990). This is achieved by adopting the ordinary lease squares (OLS) approach that derives its name from the criterion used to draw the best fit regression line: a line such that the sum of the squared deviations of the distances of all the points to the line is minimized.

In summary, regression analysis involves the mathematical modelling of the relationship between the dependent variable and the independent variables. The technique also measures the sensitivity of the variation of the dependent variable to variations in the independent variables. In this study, the regression analysis was used to model the relationship between the capital structure and each of the independent variables.

4.4. Multivariate Analysis

Multivariate analysis (MVA) is an extension of the regression technique that addresses multicollinearity, a condition that exists where the independent variables are correlated with one another (Keller and Warrack, 2003). Such intercorrelation typically leads to regression coefficients with large sampling errors.



Although this aspect of the techniques is not used in this study, part of what MVA achieves is that it allows for simpler graphical representation of complex multidimensional tables.

Multivariate analysis facilitates the identification of the dominant independent variables through 'normalisation'. The cut-off point of the independent variables to include is that they must have an eigenvalue equal to one or greater. These selected independent variables are then combined into 'factors' that represent dimensions of their intercorrelation.

The relationship between the dependent variable (capital structure) was subsequently analysed against each of new independent variables as represented by these resulting dimensions (factors).



CHAPTER 5 – RESULTS

5.1. Analysis of Results

The results are presented in the form of tables and an attempt is made to explain the inferences that are drawn from the data.

5.2. Proposition 1: D/E Ratio and Profitability

The results for profitability are not consistent with the outcomes predicted by most of the literature. Except for the healthcare sector that had a positive correlation between the debt/equity ratio and profitability, the results ranged from a negative correlation to no significant correlation for the rest of the industry sectors.

Normality tests – D/E and Profitability Overall

The table below gives the results of the normality test on the sample data. The normality test assesses the skewness of the data i.e. it determines whether residuals of the variables are normally distributed. In this case, the data is not normally distributed for each of the variables so the Spearman's Rank correlation coefficient is used.

This principle is applied to all the normality tests that are applied to the sample data before attempting to assess the level of correlation between the capital structure and each of the dependent variables.



	Skewness Test			Kurtosis Test			- Omnil		
Variable	Value	z	Probability	Value	z	Probability	K2	Probability	Var Normal?
D/E	6.38	17.05	0.0000	69.07	11.81	0.0000	430.26	0.0000	No
Margin	1.23	7.26	0.0000	5.42	4.66	0.0000	74.37	0.0000	No
ROA	3.56	13.53	0.0000	27.77	10.21	0.0000	287.28	0.0000	No
ROE	10.28	20.14	0.0000	156.43	12.95	0.0000	573.51	0.0000	No

Table 1: Normality tests – D/E and Profitability Overall

Correlation table – D/E and Profitability Overall

As was outlined in the methodology section, only complete data was included in the sample. For the period of five years, each firm had an entry value for each year that it was listed on the JSE Securities Exchange. Given that there are 64 firms in the sample, it follows that the maximum number of entries (n) for each variable is 320 (64 * 5).

The inference is driven by the value of the Spearman Rank correlation coefficient in the table and the sign determines the direction of the nature of the relationship e.g. a negative correlation coefficient indicates an inverse relationship.

<u>Return on Assets</u>: At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and ROA. That is, an increase in D/E ratio is associated with a decrease in ROA



<u>Profit Margin</u>: At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and Margin. That is, an increase in D/E ratio is associated with a decrease in Margin

<u>Return on Equity</u>: At a significance level, $\alpha = 5\%$, there is a significant negative correlation between D/E ratio and ROE. That is, an increase in D/E ratio is associated with a decrease in ROE.

Table 2: Correlation Table – D/E and Profitability Overall

Variable	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
ROA	316	-0.362834	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROA. That is, an increase in D/E ratio is associated with a <i>decrease</i> in ROA
Margin	308	-0.456978	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and Margin. That is, an increase in D/E ratio is associated with a <i>decrease</i> in Margin
ROE	316	-0.112494	0.0457	At a significance level, $\alpha = 5\%$, there is a significant negative correlation between D/E ratio and ROE. That is, an increase in D/E ratio is associated with a decrease in ROE

Correlation Table per Industry – D/E and Profitability (ROA)

The analysis by industry sector uses the same sample but with the firm data stratified by industry sector. This is to try to establish correlation trends at industry level in line with the literature that says firm performance is a function of the performance of the industry in which it competes (Porter, 2003).



<u>Return on Assets for Sector 0001: Oils and Fuels</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.

<u>Return on Assets for Sector 1000: Basic Materials</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.

<u>Return on Assets for Sector 2000: Industrials:</u> At a significance level, $\alpha = 5\%$, there is a significant negative correlation between D/E ratio and ROA in this industry.

<u>Return on Assets for Sector 3000: Consumer Goods:</u> At a significance level, α = 5%, there is no significant correlation between D/E ratio and ROA in this industry.

<u>Return on Assets for Sector 4000: Healthcare:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.

<u>Return on Assets for Sector 5000: Consumer Services:</u> At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and ROA in this industry.

<u>Return on Assets for Sector 9000: Technology:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.



Table 3: Correlation Table per Industry – D/E and Profitability (ROA)

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
	1	5	-0.5000	0.3910	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.
	1000	20	-0.5169	0.0196*	At a significance level, $\alpha = 5\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROA in this industry.
	2000	110	-0.5616	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROA in this industry.
ROA	3000	51	0.0566	0.6934	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.
	4000	15	0.4844	0.0673	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.
	5000	100	-0.3655	0.0002**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROA in this industry.
	9000	15	0.1821	0.5159	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.

Significant at $\alpha = 5\%$ Significant at $\alpha = 1\%$ **



Correlation Table per Industry – D/E and Profitability (Margin)

<u>Return on Assets for Sector 0001: Oils and Fuels</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.

<u>Return on Assets for Sector 1000: Basic Materials</u>: At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and margin in this industry.

<u>Return on Assets for Sector 2000: Industrials:</u> At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and margin in this industry.

<u>Return on Assets for Sector 3000: Consumer Goods:</u> At a significance level, α = 5%, there is no significant correlation between D/E ratio and margin in this industry.

<u>Return on Assets for Sector 4000: Healthcare:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and margin in this industry.

Return on Assets for Sector 5000: Consumer Services: At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and margin in this industry.

<u>Return on Assets for Sector 9000: Technology:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and margin in this industry.



Table 4: Correlation Table per Industry – D/E and Profitability (Margin)

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
	1	5	0.1000	0.8729	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA in this industry.
	1000	20	-0.6938	0.0007**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and Margin in this industry.
	2000	110	-0.5334	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and Margin in this industry.
Margin	3000	50	0.0553	0.7030	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Margin in this industry.
	4000	15	0.4361	0.1041	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Margin in this industry.
	5000	93	-0.4482	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and Margin in this industry.
	9000	15	0.2071	0.4588	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Margin in this industry.

* Significant at $\alpha = 5\%$ Significant at $\alpha = 1\%$

**



Correlation Table per Industry – D/E and Profitability (ROE)

<u>Return on Assets for Sector 0001: Oils and Fuels</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROE in this industry.

<u>Return on Assets for Sector 1000: Basic Materials</u>: At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and ROE in this industry.

<u>Return on Assets for Sector 2000: Industrials:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROE in this industry.

<u>Return on Assets for Sector 3000: Consumer Goods:</u> At a significance level, α = 5%, there is no significant correlation between D/E ratio and ROE in this industry.

<u>Return on Assets for Sector 4000: Healthcare:</u> At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and ROE in this industry.

<u>Return on Assets for Sector 5000: Consumer Services:</u> At a significance level, $\alpha = 1\%$, there is no significant correlation between D/E ratio and ROE in this industry.

<u>Return on Assets for Sector 9000: Technology</u>: At a significance level, $\alpha = 5\%$, there is a significant negative correlation between D/E ratio and ROE in this industry.



Table 5: Correlation Table per Industry – D/E and Profitability (ROE)

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
	1	5	0.3000	0.6238	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROE in this industry.
	1000	20	-0.6742	0.0011**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROE in this industry.
	2000	110	-0.1215	0.2060	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROE in this industry.
ROE	3000	51	-0.0164	0.9089	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROE in this industry.
	4000	15	0.8186	0.0002**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and ROE in this industry.
	5000	100	-0.1048	0.2994	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROE in this industry.
	9000	15	-0.6464	0.0092**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROE in this industry.

Significant at $\alpha = 5\%$

Significant at $\alpha = 1\%$

5.3. Proposition 2: D/E Ratio and Riskiness

At the overall sample level, the established correlation showed that an increase in the debt/equity ratio was associated with a decrease in the riskiness of the firm as measured by the variability of the return on assets (represented by the standard deviation).

A closer look at the results by industry sector shows that there was a negative correlation between the debt/equity ratio and the riskiness of the firm for the industrials and consumer goods sectors. Other than healthcare that showed a



positive correlation, all the other sectors displayed no significant correlation between the debt/equity ratio and the riskiness of the firm.

The healthcare sector again displayed results consistent with the theory that increasing the debt/equity ratio leads to an increase in the riskiness of the firm.

Table 6: Normality tests – D/E and Riskiness

	Skewness Test			Kurtosis Test			- Omnik		
Variable	Value	Z	Probability	Value	Z	Probability	K2	Probability	Var Normal?
D/E	6.38	17.05	0.0000	69.07	11.81	0.0000	430.26	0.0000	No
ROA Variability	2.97	12.43	0.0000	12.57	8.16	0.0000	221.15	0.0000	No

Correlation Table per Industry – D/E and Riskiness

<u>Return on Assets for Sector 0001: Oils and Fuels</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and riskiness in this industry.

<u>Return on Assets for Sector 1000: Basic Materials</u>: At a significance level, $\alpha = 1\%$, there is no significant correlation between D/E ratio and riskiness in this industry.

<u>Return on Assets for Sector 2000: Industrials:</u> At a significance level, $\alpha = 5\%$, there is significant negative correlation between D/E ratio and riskiness in this industry.

Return on Assets for Sector 3000: Consumer Goods: At a significance level, α = 5%, there is significant negative correlation between D/E ratio and riskiness in this industry.



<u>Return on Assets for Sector 4000: Healthcare:</u> At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and ROE in this industry.

<u>Return on Assets for Sector 5000: Consumer Services:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and riskiness in this industry.

<u>Return on Assets for Sector 9000</u>: Technology: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and riskiness in this industry.

Table 7: Correlation table - D/E and Riskiness Overall

Variable	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
ROA Variability	316	-0.130753	0.0201**	At a significance level, $\alpha = 5\%$, there is a significant negative correlation between D/E ratio and ROA Variability. That is, an increase in D/E ratio is associated with a decrease in the riskiness of the firm.



Table 8: Correlation Table per Industry - D/E and Riskiness

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
	1	5	0.0000	1.0000	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA Variability in this industry.
	1000	20	-0.1591	0.5028	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA Variability in this industry.
	2000	110	-0.2148	0.0242**	At a significance level, $\alpha = 5\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROA Variability in this industry.
ROA Variability	3000	51	-0.5808	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and ROA Variability in this industry.
	4000	15	0.9458	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and ROA Variability in this industry.
	5000	100	0.0477	0.6371	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA Variability in this industry.
	9000	15	0.3024	0.2734	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and ROA Variability in this industry.

* Significant at $\alpha = 5\%$

Significant at $\alpha = 1\%$

5.4. Proposition 3: D/E Ratio and Shareholder Value (EVA®)

Correlation Table per Industry – D/E and Shareholder Value (EVA ®)

<u>Return on Assets for Sector 0001: Oils and Fuels</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and EVA® spread in this industry

<u>Return on Assets for Sector 1000: Basic Materials</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and EVA® spread in this industry.



<u>Return on Assets for Sector 2000: Industrials:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and EVA® spread in this industry.

Return on Assets for Sector 3000: Consumer Goods: At a significance level, α = 5%, there is no significant correlation between D/E ratio and EVA® spread in this industry.

<u>Return on Assets for Sector 4000: Healthcare:</u> At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and EVA® spread in this industry.

<u>Return on Assets for Sector 5000: Consumer Services</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and EVA® spread d in this industry.

<u>Return on Assets for Sector 9000: Technology:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and EVA® spread in this industry.

-					•	1 /			
	Skewness Test			Kurtosis Test			- Omnik		
Variable	Value	Value Z Probability		Value Z Probability		K2	Probability	Var Normal?	
D/E	6.38	17.05	0.0000	69.07	11.81	0.0000	430.26	0.0000	No
Spread	10.11	20.04	0.0000	141.90	12.84	0.0000	566.42	0.0000	No

Table 9: Normality	tests – D/E and	Shareholder	Value (Spread)
rubio of morniancy		onaronaon	raido (Oproad)



Table 10: Correlation table – D/E and Shareholder Value (Spread) Overall

Variable	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
Spread	316	-0.022643	0.688441	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Spread. That is, an increase in D/E ratio is not associated with either an increase or a decrease in the shareholder value of the firm.

Table 11: Correlation Table per Industry – D/E and Shareholder Value (Spread)

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
	1	5	0.1000	0.8729	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Spread in this industry.
	1000	20	-0.2092	0.3761	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Spread in this industry.
	2000	110	-0.1803	0.0594	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Spread in this industry.
Spread	3000	51	0.0340	0.8128	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Spread in this industry.
	4000	15	0.7203	0.0025**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Spread in this industry.
	5000	100	0.1143	0.2574	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Spread in this industry.
	9000	15	-0.1143	0.6851	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Spread in this industry.

Significant at $\alpha = 5\%$ Significant at $\alpha = 1\%$ **



5.5. Proposition 4: D/E Ratio and Market Value

At the overall level, the data from the sample indicated that an increase in the debt/equity ratio leads to lower market value as measured by the price/earnings ratio, while the year-on-year change in the earnings per share displayed no statistically significant correlation with the debt/equity ratio.

Correlation Table per Industry – D/E and Market Value (EPS Change)

<u>Return on Assets for Sector 0001: Oils and Fuels</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.

<u>Return on Assets for Sector 1000: Basic Materials</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry

<u>Return on Assets for Sector 2000: Industrials:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry

<u>Return on Assets for Sector 3000: Consumer Goods</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.



<u>Return on Assets for Sector 4000: Healthcare:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.

<u>Return on Assets for Sector 5000: Consumer Services</u>: At a significance level, $\alpha =$ 5%, there is no significant correlation between D/E ratio and change in EPS in this industry

<u>Return on Assets for Sector 9000: Technology:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.



Table 12: Normality tests – D/E and Market Value

	Skewness Test			Kurtosis Test			- Omnibus Test -		
Variable	Value	z	Probability	Value	Z	Probability	K2	Probability	Var Normal?
D/E	6.38	17.05	0.0000	69.07	11.81	0.0000	430.26	0.0000	No
Y-on-Y change in EPS	-0.57	-3.60	0.0003	40.36	10.03	0.0000	113.50	0.0000	No
P/E	-	-	0.0000	213.5	13.27	0.0000	642.61	0.0000	No
	13.01	21.60		1					

Table 13: Correlation table – D/E and Market Value Overall

Variable	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
Y-on-Y change in EPS	251	-0.035140	0.579502	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS. That is, an increase in D/E ratio is not associated with either an increase or a decrease in the market value of the firm.
P/E	315	-0.093165	0.098835	At a significance level, $\alpha = 10\%$, there is a significant negative correlation between D/E ratio and Price/earnings ratio. That is, an increase in D/E ratio is associated with a decrease in the market value of the firm.



Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
	1	4	0.4000	0.6000	At a significance level, $\alpha = 5\%$, the significant correlation between D/E change in EPS in this industry.
					At a significance level, $\alpha = 5\%$, the

Table 14: Correlation Table per Industry– D/E and Market Value (EPS Change)

Y-on-Y change in EPS	1	4	0.4000	0.6000	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.
	1000	16	-0.2664	0.3187	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.
	2000	87	87 -0.0075 0.9450		At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.
	3000	40	-0.0947	0.5611	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.
	4000	12	0.5569	0.0600	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.
	5000	80	0.0632	0.5778	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.
	9000	12	-0.2797	0.3786	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and change in EPS in this industry.

*

Significant at $\alpha = 5\%$ Significant at $\alpha = 1\%$ **



Correlation Table per Industry – D/E and Market Value (P/E Ratio)

<u>Return on Assets for Sector 0001: Oils and Fuels</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.

<u>Return on Assets for Sector 1000: Basic Materials</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.

<u>Return on Assets for Sector 2000: Industrials:</u> At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and Price/earnings ratio in this industry.

<u>Return on Assets for Sector 3000: Consumer Goods</u>: At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Price/earnings ratio in this industry.

<u>Return on Assets for Sector 4000: Healthcare:</u> At a significance level, $\alpha = 5\%$, there is a significant positive correlation between D/E ratio and Price/earnings ratio in this industry.

<u>Return on Assets for Sector 5000: Consumer Services</u>: At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.



<u>Return on Assets for Sector 9000: Technology:</u> At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
	1	5	0.0000	1.0000	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.
	1000	20	0.1339	0.5735	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.
	2000	110	-0.2744	0.0037**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and Price/earnings ratio in this industry.
Price/ Earnings	3000	51	0.4212	0.0021**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Price/earnings ratio in this industry.
	4000	15	0.6148	0.0147*	At a significance level, $\alpha = 5\%$, there is a significant positive correlation between D/E ratio and Price/earnings ratio in this industry.
	5000	99	-0.0619	0.5425	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.
	9000	15	0.1893	0.4993	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Price/earnings ratio in this industry.

Table 15: Correlation Table per Industry– D/E and Market Value (P/E)

Significant at $\alpha = 5\%$ **

Significant at $\alpha = 1\%$



5.6. Multivariate Analysis

Principal Components Report

This section of the statistical analysis deals with the multivariate analysis that is used for identifying the multicollinearity among the independent variables. It also can be viewed as a mechanism of representing the grouping of the interdependence of the variables in dimensions on the same plane.

Only those independent variables with eigenvalues greater than 1 were included and they contribute 67.73% to the variability in the capital structure that can be explained in terms if the correlation with them.

Table 16: Eigenvalues after Varimax Rotation

No.	Eigenvalue	Individual Percent	Cumulative Percent	Scree Plot
1	2.462318	35.18	35.18	
2	1.249180	17.85	53.02	
3	1.022823	14.61	67.63	
4	0.839383	11.99	79.62	
5	0.727570	10.39	90.02	III
6	0.591010	8.44	98.46	II.
7	0.107716	1.54	100.00	Î

Table 17: Factor Loadings after Varimax Rotation

	Factors		
Variables	Factor1	Factor2	Factor3
Margin	0.803909	-0.019266	0.166645
ROE	0.125586	0.721460	0.103842
ROA	0.948313	-0.037881	0.109804
P/E	0.051448	0.031229	0.972153
Spread	0.767334	0.022692	-0.102321
EPS Change	0.166941	-0.710272	0.040936
ROA Variability	0.530718	0.469992	-0.122412



Table 18: Bar Chart of Absolute Factor Loadings after Varimax Rotation

	Factors		
Variables	Factor1	Factor2	Factor3
Margin			
ROE			
ROA			III
P_E			
Spread			
EPS Change			
ROA Variability			

Table 19: Bar Chart of Communalities after Varimax Rotation

	Factors			
Variables	Factor1	Factor2	Factor3	Communality
Margin				
ROE				
ROA		1		
P/E		Ì		
Spread	İIIIIIIII	Ì		
EPS Change		İIIIIIII	İ	
ROA Variability	İIIII		İ	

Table 20: Factor Structure Summary after Varimax Rotation

	Factors	
Factor1	Factor2	Factor3
ROA	ROE	P/E
Margin	EPS Change	
Spread	ROA Variability	
ROA Variability	-	

The factor structure summary above shows that:

- Factor1 is associated with high Margin, ROA, Spread and ROA Variability,
- Factor2 is associated with high ROE and ROA Variability, but low EPS Change, and
- Factor3 is essentially the Price/Earnings ratio.



Each of these factors represent dimensions on a plane along which the combination of the constituent independent variables is associated with capital structure.

The tables below show that the data is still not normally distributed, even when approached from a factor perspective.

The results also show a level of consistency with theory for factor2 in that an increase in the debt/equity ratio is associated with an increase in profitability, shareholder value and Riskiness of the firm.

At industry sector level, the results are pretty much in line with those from the earlier assessment at independent variable level i.e. inconsistent with the theory.



Table 21: Normality tests

	Skewness Test			Kurtosis Test			- Omnibus Test -		
Variable	Value	z	Probability	Value	z	Probability	K2	Probability	Var Normal?
D/E	6.38	17.05	0.0000	69.07	11.81	0.0000	430.26	0.0000	No
Factor 1	-2.99	-11.06	0.0000	22.05	8.73	0.0000	198.57	0.0000	No
Factor 2	2.17	9.34	0.0000	28.00	9.22	0.0000	172.36	0.0000	No
Factor 3	-13.07	-19.24	0.0000	190.90	11.89	0.0000	511.53	0.0000	No

Table 22: Correlation table – Overall

Variable	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
Factor 1	246	-0.435934	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and Factor 1. That is, an increase in D/E ratio is associated with a decrease in
Factor 2	246	0.229619	0.0003**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Factor 2. That is, an increase in D/E ratio is associated with an increase in
Factor 3	246	-0.268936	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant negative correlation between D/E ratio and Factor 3. That is, an increase in D/E ratio is associated with a decrease in Price/earnings ratio.



Table 23: Correlation Table per Industry – Factor1

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
Factor 1	1	4	-0.4000	0.6000	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 1 in this industry.
	1000	16	0.8418	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Factor 1 in this industry.
	2000	87	0.5897	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Factor 1 in this industry.
	3000	40	0.0305	0.8518	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 1 in this industry.
	4000	12	-0.6025	0.0382*	At a significance level, $\alpha = 5\%$, there is a significant <i>negative</i> correlation between D/E ratio and Factor 1 in this industry.
	5000	75	0.3267	0.0042**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Factor 1 in this industry.
	9000	12	-0.0559	0.8629	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 1 in this industry.

 Table 24: Correlation Table per Industry – Factor2

Variable	Industry	Sample size, n	Spearman's Rank Corr coefficient with D/E	Probability	Inference
Factor 2	1	4	-0.4000	0.6000	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 2 in this industry.
	1000	16	0.0221	0.9353	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 2 in this industry.
	2000	87	0.0871	0.4224	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 2 in this industry.
	3000	40	-0.0104	0.9491	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 2 in this industry.
	4000	12	0.8722	0.0002**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Factor 1 in this industry.
	5000	75	0.3456	0.0024**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Factor 1 in this industry.
	9000	12	0.6084	0.0358*	At a significance level, $\alpha = 5\%$, there is a significant positive correlation between D/E ratio and Factor 1 in this industry.

* Significant at $\alpha = 5\%$ ** Significant at $\alpha = 1\%$



Table 25: Correlation Table per Industry – Factor3

Variable	Industry	Sample size, n	Spearman's Rank Correlation coefficient with D/E	Probability	Inference
Factor 3	1	4	0.4000	0.6000	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 3 in this industry.
	1000	16	-0.0132	0.9612	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 3 in this industry.
	2000	87	-0.2484	0.0203*	At a significance level, $\alpha = 5\%$, there is a significant negative correlation between D/E ratio and Factor 1 in this industry.
	3000	40	0.4992	0.0010**	At a significance level, $\alpha = 1\%$, there is a significant positive correlation between D/E ratio and Factor 1 in this industry.
	4000	12	0.4168	0.1777	At a significance level, $\alpha = 5\%$, there is no significant correlation between D/E ratio and Factor 3 in this industry.
	5000	75	-0.4939	0.0000**	At a significance level, $\alpha = 1\%$, there is a significant <i>negative</i> correlation between D/E ratio and Factor 1 in this industry.
	9000	12	-0.6084	0.0358*	At a significance level, $\alpha = 5\%$, there is a significant negative correlation between D/E ratio and Factor 1 in this industry.

* Significant at $\alpha = 5\%$

** Significant at $\alpha = 1\%$



CHAPTER 6 – INTERPRETATION OF RESULTS

Overall, the results of the study were inconclusive and this can be attributed to a combination of factors, chief among which are the questionable statistical validity of the sample and the validity of the underlying assumptions of the literature to the extent that it applies to the South African market. For example, the efficient market hypothesis (EMH) as an important underlying assumption is challenged by Fama (1981) who argued that financial and economic fundamentals were not the primary movers of stock values and that a substantial portion of stock price movements cannot be explained by macroeconomic news.

As was acknowledged earlier, the sample was not purported to be representative but was selected for displaying particular characteristics i.e. superior share price growth during the targeted period. The statistical unsuitability of the sample was exacerbated further by stratification by industry sector in order to satisfy the requirements of the literature that says a firm's performance is a function of the industry segment in which it competes (Porter, 2003). This resulted in samples by industry with a wide range in size from Oil and Gas that had only one player (Sasol) to Industrials that had 22 - a situation that lends itself to distortions in the results.

With this background, the chapter aims to make sense of the results by drawing on the relevant previous research to try to explain the observations as well as any deviations from the established literature.



This was achieved by detailing the interpretation of the results for each of the industry sectors in line with research that asserts that firm performance is a function of the industry in which it competes (Porter, 2004) as outlined earlier.

Using multivariate analysis, an attempt was also made to establish the extent to which the different dependent variables collectively influenced the independent variable (D/E ratio). Subsequently, the relationship between the debt/equity ratio and the resulting significant groupings of dependent variables – also called factors – was analysed.

6.1. Summary Overview for the Overall Sample

6.1.1.D/E Ratio and Profitability

At the overall level, the data from the sample indicated that an increase in the debt/equity ratio leads to lower profitability as measured by the return on assets, the operating profit margin as well as the return on equity.

This is inconsistent with the Modigliani and Miller (1958) views on capital structure and the optimal capital structure theory that postulates that the return on equity in particular should be enhanced by increasing the level of indebtedness of the firm. The underlying assumption for all this to hold true is that the firms operate in efficient market environment, and this might not necessarily be the case with the JSE Securities Exchange.

On the other hand, what might be relevant is a review of the results of the work done by Welch (2004) in which he concludes that managers consider the debt/equity ratio only at the time they are active in the capital market. What this



implies is that the prevailing capital structure might not always be ideal for the projects the firm is executing at the time.

This ties up with Myers's (2004) observation that the capital structure of a firm not only matters, but is also related to management's interpretation of the impact of taxes, agency costs and the asymmetry of information. There is a possibility that only when they are engaged in capital market activity do the managers make an effort to assess the impact of taxes, agency costs and information asymmetry. For this argument to be valid this, in turn, would imply that some or all of these contingent factors were dominant during the 5-year period of the study.

The paragraphs below give a detailed examination of the observed results and relate them to the literature.

For healthcare, the results for the return on equity (ROE) are in line with the predictions of the literature. What is different about this industry sector is that it has a long-term product life cycle (White et al, 1997, p. 187) and typically, there is legislative protection on the form of patents and licensing requirements. Consequently, the firms have a significant portion of the balance sheet in the form of intangible assets. They also have some goodwill as an asset on their balance sheet due to the consolidation of the industry through corporate mergers and acquisitions.

In South Africa, the healthcare industry is also regulated at the retail level. Intuitively this might sound negative but it could also be providing a captive



market for the sector, with the price regulation creating another barrier to entry for potential competitors.

What is also interesting is that there are significant barriers to entry and exit into/from the industry in the form of capital outlays with long investment return cycles in addition to the regulation. This phenomenon in the pharmaceutical industry in South Africa is consistent with what White *et al* (1997, p. 189) describe as 'monopoly' profits.

6.1.2. D/E Ratio and Riskiness

It also so happens that the combined sample sizes for the two sectors with the negative correlation were about ten times bigger than the only sector with a positive correlation between the two variables – the rest of the sample displayed no significant correlation. This could have contributed to skewing the overall result towards the negative correlation.

6.1.3. D/E Ratio and Shareholder Value

At the overall level, the data from the sample indicated that an increase in the debt/equity ratio leads to lower profitability as measured by the return on assets, the operating profit margin as well as the return on equity.

While this is not in line with the literature that was reviewed, there could be factors that help to explain the apparent anomalies and this will be addressed later in the report.



Stern (1970) for example highlighted that there was a range within which the debt tax shield was effective for a given tax regime. In this study no provision was made for the potential impact this could have on the effectiveness of using debt as an instrument for enhancing shareholder value.

6.1.4.D/E Ratio and Market Value

The results from this section were also inconsistent with theory as generally an increase in the debt/equity ratio was associated with a decrease in the market value of the firm. The only exception was the healthcare sector that produced results in line with the theory.

This in some way shows that the pricing of shares on the stock exchange is determined by factors other than the CAPM and the dividend discount approach as articulated by Firer *et al* (2003).

6.2. Application of Theory to the Results

Myers (2002) made the fundamental observation that there is no universal theory of capital structure as each factor identified in the literature, as a determinant of capital structure could be dominant for some firms under particular conditions and yet have little impact on other firms. In a way this can be used as a basis for justifying the validity of the results of this study that are by and large not consistent with the bulk of the available capital structure theory.



6.2.1. Capital Structure

Fluctuations in the capital structure of the firms were influenced not only by a conscious effort by managers to meet particular objectives, but by some external factors as well. An element of support for this comes from Welch (2004) who extends the dynamic capital structure theory to argue that over a long period, the performance of the firm's share price affects its capital structure.

In line with the agency costs theory and information asymmetry hypothesis, the market favours firms that issue debt as they are viewed as more transparent and the issuers of debt believe they have move control over them. Typically, this translates to better share price performance and therefore could have an impact on the capital structure of the firm.

Frank and Goyal (2004) asserted that when inflation is expected to be high, firms tend to have high leverage. Given that inflation expectations were high at some point during the period – with the local currency exchange rate reaching its lowest levels ever – this might have contributed to higher debt/equity ratios.

The observation that the capital structures of firms in different industry sectors are significantly different from each other (Schwartz and Aronson, 1967) is partially corroborated by the results of the healthcare sector that consistently stands out as being consistent with what the literature predicts while the rest of the other sectors produced results to the contrary.

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As if this debate is not complicated enough as it is, the research by Frielinghaus *et al* (2005) highlights that the firm's life stage also has an influence on the capital structure and this brings in an additional dimension to the factors for consideration in taking capital structure decisions.

The life stage theory ties in with the results of the work done by Baker and Wurgler (2001) on the market timing hypothesis that concluded that capital structure is a cumulative outcome of previous attempts made by managers to time the market.

6.2.2. Profitability

Debt translates into higher fixed costs as it must still be paid even if demand declines. At low levels of demand, the fixed costs are spread over a smaller base, depressing profitability (White, Sondhi and Fried (1997, p. 169)).

This point could help explain why an increase in the debt/equity ratio led to a decline in profitability – it is possible that the corresponding change in sales volumes did not compensate for the increase in fixed costs.

Further on in the same book White *et al* (1997, p. 185) disaggregate return on equity and return on assets to show in a single equation the relationship between the two ratios. This is consistent with the findings of this study where the healthcare sector consistently conforms to the predictions of the literature while the other industries are also consistent in their deviations from the literature.



An empirical study by Frank and Goyal (2004) found evidence that firms with high profitability tend to have less debt – a fact that goes against the view that profitable firms have more to gain by exploiting the benefits of the tax shield offered by interest-bearing debt. In this study, with the exception of the healthcare sector, higher debt levels were consistent with lower profitability.

This evidence can be linked back to the asymmetric information theory in that the managers of the firm will issue debt when they know that the future prospects of the firm are not as rosy as they could be, else they would issue equity. Assuming, of course, that their interests and those of the shareholders are aligned and the agency costs theory does not apply.

6.2.3. Riskiness

The variability of ROA is a measure of the riskiness of the firm is, which is also interpreted in terms of the beta coefficient of the firm.

Part of the reason why the correlation between the debt/equity ratio and the riskiness of the firm were not consistent with theory could be driven by the ownership structure of the firms and the role played by the dominant investment vehicles on the stock exchange.

The information asymmetry hypothesis provides a partial explanation of the inconsistency of the results from this study. The issuers of debt are comfortable with firms that source more capital from the market as it is argued that they tend to be more transparent in their dealings. In addition, the providers of debt have a greater say in determining the direction of the firm.


Due to this, the demand for the firm's shares in such a situation would rise, pushing the price up in the process.

6.2.4. Shareholder Value

This study shows that for all industries no correlation overall between capital structure and shareholder value as measured by Eva® spread, except for the healthcare sector. While most of the firms reflected a positive EVA®, the spread corrects for such factors as firm size as it normalises the data by looking at EVA® relative to the return on capital employed to generate it. If these results are indeed valid, it raises the question as to why so many firms in South Africa are joining the cause and implementing EVA® as a performance measure.

Paulo (2002) questions the validity of the EVA® concept in an EMH world, arguing that the market would price EVA® into the share price of the firm. In the non-EMH real world, Paulo (2002) asserts that EVA® cannot be used as a proxy for shareholder value as it is calculated from the beta coefficient that Fama and French (1996) have shown to have a poor correlation with stock market returns.

Consoling as this theory might be for the majority of the industry sectors in this study, the proposition that there is a positive correlation between capital structure and EVA® still held true for the healthcare industry – a finding consistent with existing literature.

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6.2.5. Market Value

EPS growth rates can be distorted by the dividend policies of the firm e.g. a lower dividend payout ratio leads to a higher EPS ratio (White *et al*, 1997). To illustrate this point, a firm that does not declare a dividend in one financial period has more capital available for projects in the following period and therefore has the potential to generate more revenue.

Stern (1970) highlights that there is a positive correlation between capital structure and EPS only when the reciprocal of the price/earnings ratio is less than the after tax cost of debt. Beyond this point, the correlation between the two is negative. A closer analysis of the differences between the earnings/price ratios in the different industry sectors and the corresponding after tax cost of debt might help explain why the healthcare sector behaved differently from the other industries in the sample.

Another interesting dimension to the share price debate is that profitability and dividend policy are viewed as a reflection of firm past performance. Firer *et al* (2004) argue that from an investor's perspective, dividends are not critical from a shareholder value perspective, as long as there is capital appreciation on the equity. One of the world's greatest companies, Microsoft, only started paying dividends in recent years, as their argument was that they provided shareholder value through share price capital appreciation. This is corroborated by Frank and Goyal (2004) who observe that since the 1980s equity markets are willing to fund currently unprofitable firms for as long as they have high growth prospects.



6.2.6. Multivariate Analysis Output

The multivariate analysis (MVA) confirmed that the capital structure decision is reached after taking a combination of factors into account. The MVA showed that the debt/equity ratio influenced profitability, riskiness shareholder value and to a lesser extent the price/earnings ratio.

The literature says that when there is intercorrelation among the independent variables, further analysis of the correlation coefficients indicates small t-statistics. This leads to the inference that there is no linear relationship between the selected independent variable and the dependent variable – a wrong conclusion in some instances (Keller and Warrack, 2003).

The writing by White et al (1997) on financial ratios confirms this view by looking at the inter-relationships between the various financial ratios.



CHAPTER 7 – SUMMARY OF FINDINGS

7.1. Conclusion

The multivariate analysis shows that the capital structure decision is influenced not by any one factor in isolation but by a combination of factors. This observation came through despite the various shortcomings of the sample as articulated in previous sections. The capital structure decision is indeed complex to take and Myers (2004) summed it up well in his research with the conclusion that the decision is influenced by management's interpretation of the impact of taxes, agency costs and the asymmetry of information. Such interpretation brings up a plethora of combinations and permutations of attributes that have to be taken into consideration when deciding on matters that affect the capital structure.

White et al (1997) lend credence to this view by stressing that it is the analysis of three interrelationships among financial ratios that leads to comprehensive financial analysis, of which capital structure is a part, viz.;

Economic relationships e.g. higher sales are generated through higher investment in working capital

Overlap of components – due to the mathematical nature of ratios, some of them share a common term in the numerator or denominator e.g. a change in one such term leads to changes to several ratios on the same direction



Ratios as composites of other ratios e.g. ROA is a product of income/sales and sales/assets – meaning that a change in one of the component ratios will change the ROA too.

While there is literature to suggest that more debt is good for the firm's ability to generate higher shareholder returns, the result of this study is inconclusive except for the healthcare sector where the outcome was in line with the literature. In addition, the results of the factor analysis support the assertion that capital structure decisions are driven by a combination of factors and yet, again, the healthcare industry sector bucks the trend. This sector only shows a negative correlation for factor1 at alpha equal to 5%, a positive correlation for factor2 at alpha equal to 1% and no significant correlation for factor3 at alpha equal to 5%. What is it about the South African healthcare sector that is different?

Ratio analysis on its own is fraught with limitations and should only be used as an entry point into a comprehensive analysis of the performance of the firm (Hand et al, 2005). This is particularly relevant in the study of capital structure, as research has shown that the external environment and the firm's internal processes, including its capacity to execute projects successfully, also affect the capital structure (Baker and Wurgler, 2001).

While this study was not conclusive, it lays some foundation for extended future research. Such research could be approached in two phases – initially to test the validity of all the theories addressed in the literature review and formulate propositions as well as identify dependent variables based on the

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observed outcomes, and then subsequently to investigate the relationship between capital structure with the chosen dependent variables.

Given the inter relationships between the various variables and their observed impact on capital structure when taken in combination, correspondence analysis in general, and factor analysis in particular, could be a more effective statistical technique for analysing the data.

Sampling all firms listed on the JSE Securities Exchange could mitigate the limitations associated with sample size, as there would be a higher number of firms in each industry sector. The research done by Abor (2005) with a sample size of 22 produced results consistent with the theory –with firm size and sales growth included as control variables. What is also interesting about Abor's (2005) research is that it was carried out with data from a developing market – the Ghana Stock Exchange.

7.2. Limitations of the Study and Suggested Future Research

The analysed data covers a period in which the external economic climate may vary over time e.g. differences in government policy, prevailing global market conditions, corporate tax rates, gross domestic product (GDP) growth rate, foreign exchange rate volatility, inflation and Treasury bond rate could all affect the financial performance of the firm. This is mitigated to some extent by stratifying the data by industry sector.

For the capital structure construct, debt was assumed to be of the same type and yet Abor's (2005) work disaggregated the capital structure into long-term



and short-term debt and obtained results that showed that there is a difference between the extent to which each type of debt impacts the dependent variable (profitability in this case).

The capital structure of firms in some industry sectors is impacted by legislation e.g. black economic empowerment (BEE) and the adoption is at varying rates – with some using debt on their balance sheets to fund the transactions, therefore potentially distorting capital structure variation within the industry sector.

For EVA® as a performance measurement metric, some firms have not yet taken up the EVA® approach and the concept was adopted at different times by the various firms. Due to the complexity of implementation, the early adopters of EVA® might battle with a longer learning curve and yet they could benefit from exploiting the upside of their experience curve.

Focus is limited to the top 100 firms listed on the JSE Securities Exchange during a specified period and is skewed towards the larger companies which might be in the mature stage of their life cycle. Frielinghaus *et al* (2005) observed that there was a relationship between capital structure and a firm's life stage. In addition, some counters are tightly held, with low trading volumes – impacting share price movements more than in shares with high trading volumes i.e. tightly held shares attract a liquidity premium (De Wet, 2004).

Ownership structure also plays a part in share price movements especially in South Africa where a few pension funds dominate the market as they might



have a long term strategy to hold on to the assets irrespective of the counter's prevailing fundamentals.

White *et al* (1997, p. 182) say that financial ratio differences can highlight the economic characteristics of firms in different countries. The insight to draw from this is that revenue denominated in different currencies impacts the profitability of the firm. Because of this, firms in the same industry but targeting different market segments could potentially have divergent profitability trends.

In addition, Frank and Goyal (2004) observed that large firms tend to have high leverage – a fact could mean that the higher level of indebtedness is a reflection of higher working capital needs and does not necessarily translate into higher profits.



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APPENDIX A: LIST OF ANALYSED FIRMS

COUNTER POSITION	ISSUER CODE	DESCRIPTION	*INDUSTRY	*SECTOR	***SUB SECTOR
35	SOL	Sasol Limited	1	530	537
45	AFE	AECI Limited	1000	1350	1357
97	AFX	African Oxygen Limited	1000	1350	1357
27	HVL	Highveld Steel and Vanadium Corporation Limited	1000	1750	1757
2	MLA	Mittal Steel South Africa Limited	1000	1750	1757
63	CRM	Ceramic Industries Limited	2000	2350	2353
6	DAW	Distribution and Warehousing Network Limited	2000	2350	2353
95	DLV	Dorbyl Limited	2000	2350	2353
15	PPC	Pretoria Portland Cement Company Limited	2000	2350	2353
84	AEG	Aveng Limited	2000	2350	2357
61	ELR	ELB Group Limited	2000	2350	2357
7	GRF	Group Five Limited	2000	2350	2357
28	MUR	Murray & Roberts Holdings Limited	2000	2350	2357
11	WBO	Wilson Bayly Holmes - Ovcon Limited	2000	2350	2357
21	APK	Astrapak Limited	2000	2720	2723
32	BCF	Bowler Metcalf Limited	2000	2720	2723
78	BAW	Barloworld Limited	2000	2720	2727
55	ATN	Allied Electronics Corporation Limited	2000	2730	2733
42	RLO	Reunert Limited	2000	2730	2733
13	DGC	Digicore Holdings Limited	2000	2730	2737
25	HDC	Hudaco Industries Limited	2000	2750	2757
20	IVT	Invicta Holdings Limited	2000	2750	2757
1	GND	Grindrod Limited	2000	2770	2773
94	IPL	Imperial Holdings Limited	2000	2770	2777
29	TRE	Trencor Limited	2000	2770	2777
3	ILA	Iliad Africa Limited	2000	2790	2797
26	ENV	Enviroserv Holdings Limited	2000	2790	2799
8	MTA	Metair Investments Limited	3000	3350	3355
88	TIW	Tiger Wheels Limited	3000	3350	3355
85	SAB	SABMiller Plc	3000	3530	3533
37	DST	Distell Group Limited	3000	3530	3535
59	KWV	KWV Beleggings Beperk	3000	3530	3535
72	AFR	Afgri Limited	3000	3570	3573
92	OCE	Oceana Group Limited	3000	3570	3573
23	RBW	Rainbow Chicken Limited	3000	3570	3573
62	TBS	Tiger Brands Limited	3000	3570	3577
71	SHF	Steinhoff International Holdings Limited	3000	3720	3726
68	SER	Seardel Investment Corporation Limited	3000	3760	3763
48	MDC	Medi-Clinic Corporation Limited	4000	4530	4533
17	NTC	Network Healthcare Holdings Limited	4000	4530	4533



COUNTER POSITION	ISSUER CODE	DESCRIPTION	*INDUSTRY	*SECTOR	***SUB SECTOR
31	APN	Aspen Pharmacare Holdings Limited	4000	4570	4577
73	PWK	Pick n Pay Holdings Limited	5000	5330	5337
96	SHP	Shoprite Holdings Limited	5000	5330	5337
9	ECO	Edgars Consolidated Stores Limited	5000	5370	5371
39	FOS	Foschini Limited	5000	5370	5371
89	MPC	Mr Price Group Limited	5000	5370	5371
44	TRU	Truworths International Limited	5000	5370	5371
4	BRC	Brandcorp Holdings Limited	5000	5370	5373
41	MSM	Massmart Holdings Limited	5000	5370	5373
36	WHL	Woolworths Holdings Limited	5000	5370	5373
87	ELH	Ellerine Holdings Limited	5000	5370	5375
33	ITE	Italtile Limited	5000	5370	5375
16	KGM	Kagiso Media Limted	5000	5550	5553
79	PMA	Primedia Limited	5000	5550	5555
76	CAT	Caxton and CTP Publishers and Printers Limited	5000	5550	5557
93	JCM	Johnnic Communications Limited	5000	5550	5557
10	GDF	Gold Reef Resorts Limited	5000	5750	5752
100	SUI	Sun International Limited	5000	5750	5752
24	CLH	City Lodge Hotels Limited	5000	5750	5753
51	SUR	Spur Corporation Limited	5000	5750	5757
14	TRT	Tourism Investment Corporation Limited	5000	5750	5759
91	BTG	Bytes Technology Group Limited	9000	9530	9533
90	DCT	Datacentrix Holdings Limited	9000	9530	9533
46	MST	Mustek Limited	9000	9570	9572

Source: ** Business Times - 13/11/2005

Source: '*** http://www.sharenet.co.za/free/jsenames.phtml Accessed 06/09/2006

Source: Share ratio data http://www.sharenet.co.za/snet/ Accessed 17/10/2006



APPENDIX B: INDUSTRY SECTOR CODE DESCRIPTIONS

Industry	Super-Sector	Sector	Sub-Sector
0001 Oil & Gas	0500 Oil & Gas	0530 Oil & Gas	0533 Exploration & Production
		Producers	0537 Integrated Oil & Gas
		0570 Oil Equipment &	0573 Oil Equipment &
		Services	Services
			0577 Pipelines
1000 Basic	1300 Chemicals	1350 Chemicals	1353 Commodity Chemicals
Materials			1357 Specialty Chemicals
	1700 Basic	1730 Forestry & Paper	1733 Forestry
	Resources		1737 Paper
		1750 Industrial Metals	1753 Aluminium
			1755 Nonferrous Metals
			1757 Steel
		1770 Mining	1771 Coal
			1773 Diamonds & Gemstones
			1775 General Mining
			1777 Gold Mining
			1779 Platinum & Precious
			Metals
2000 Industrials	2300 Construction &	2350 Construction &	2353 Building Materials &
	Materials	Materials	Fixtures
			2357 Heavy Construction
	2700 Industrial	2710 Aerospace &	2713 Aerospace
	Goods & Services	Defence	2717 Defence
		2720 General Industrials	2723 Containers & Packaging
			2727 Diversified Industrials
		2730 Electronic &	2733 Electrical Components &
		Electrical Equipment	Equipment
		0750 1. 1	2737 Electronic Equipment
		2750 Industrial	2753 Commercial Venicles &
		Engineening	2757 Industrial Machinery
		2770 Industrial	
		Transportation	2773 Marine Transportation
		ranoportation	2775 Pailroads
			2777 Transportation Sorvices
			2770 Trucking
		2700 Support Sorvices	2701 Rusings
		2790 Support Services	Services
			2793 Business Training &
			Employment Agencies
			2795 Financial Administration
			2797 Industrial Suppliers
			2799 Waste & Disposal
			Services



Industry	Super-Sector	Sector	Sub-Sector
3000 Consumer	3300 Automobiles &	3350 Automobiles &	3353 Automobiles
Goods	Parts	Parts	3355 Auto Parts
			3357 Tires
	3500 Food &	3530 Beverages	3533 Brewers
	Beverage		3535 Distillers & Vintners
	-		3537 Soft Drinks
		3570 Food Producers	3573 Farming & Fishing
			3577 Food Products
	3700 Personal &	3720 Household Goods	3722 Durable Household
	Household Goods		Products
			3724 Nondurable Household
			Products
			3726 Furnishings
			3728 Home Construction
		3740 Leisure Goods	3743 Consumer Electronics
			3745 Recreational Products
			3747 Toys
		3760 Personal Goods	3763 Clothing & Accessories
			3765 Footwear
			3767 Personal Products
		3780 Tobacco	3785 Tobacco
4000 Health Care	4500 Healthcare	4530 Health Care	4533 Health Care Providers
		Equipment & Services	4535 Medical Equipment
			4537 Medical Supplies
		4570 Pharmaceuticals &	4573 Biotechnology
		Biotechnology	4577 Pharmaceuticals
5000 Consumer	5300 Retail	5330 Food & Drug	5333 Drug Retailers
Services		Retailers	5337 Food Retailers &
			Wholesalers
		5370 General Retailers	5371 Apparel Retailers
			5373 Broad Line Retailers
			5375 Home Improvement
			Retailers
			5377 Specialized Consumer
	5500 M		5379 Specialty Retailers
	5500 Media	5550 Media	5553 Broadcasting &
			Entertainment
			5555 Media Agencies
	EZOO Troval 8	EZED Troyal 9 Lajouro	
		5750 Travel & Leisure	5751 Allilles
			5755 Decreational Comission
			5755 Recreational Services
			5/5/ Restaurants & Bars
			5759 Travel & Tourism



Industry	Super-Sector	Sector	Sub-Sector
6000	6500	6530 Fixed Line	6535 Fixed Line
Telecommunications	Telecommunications	Telecommunications	Telecommunications
		6570 Mobile	6575 Mobile
		Telecommunications	Telecommunications
7000 Utilities	7500 Utilities	7530 Electricity	7535 Electricity
		7570 Gas, Water &	7573 Gas Distribution
		Multiutilities	7575 Multiutilities
			7577 Water
8000 Financials	8300 Banks	8350 Banks	8355 Banks
	8500 Insurance	8530 Non-life Insurance	8532 Full Line Insurance
			8534 Insurance Brokers
			8536 Property & Casualty
			Insurance
			8538 Reinsurance
		8570 Life Insurance	8575 Life Insurance
	8700 Financial	8730 Real Estate	8733 Real Estate Holding &
	Services		Development
			8737 Real Estate Investment
			Trusts
		8770 General Financial	8771 Asset Managers
			87/3 Consumer Finance
			8775 Specialty Finance
			8777 Investment Services
			8779 Mortgage Finance
	8000 Investment		
	Instruments	8980 Equity Investment Instruments	8985 Equity Investment Instruments
	8901 Instrument		
	Investments	8990 Non-equity	8995 Non-equity Investment
		Investment Instruments	Instruments
9000 Technology	9500 Technology	9530 Software &	9533 Computer Services
		Computer Services	9535 Internet
			9537 Software
		9570 Technology	9572 Computer Hardware
		Hardware & Equipment	9574 Electronic Office
			Equipment
			9576 Semiconductors
			9578 Telecommunications
			Equipment



APPENDIX C: SUMMARY OF DATA USED IN THE STUDY





COUNTER POSITION	ISSUER CODE	DESCRIPTION	FIN YEAR	D:E	OPERATING PROFIT MARGIN	ROE	ROA	EPS	P:E	EVA	SPREAD (ROCE-WACC)	BETA COEFF
35	SOL	Sasol Limited	2000	0.57	25.60	24.06	25.35	727.00	6.44	366.99	1.40	1.1787
35	SOL	Sasol Limited	2001	0.86	25.99	31.62	22.24	1,236.00	6.25	1,796.20	7.30	1.1787
35	SOL	Sasol Limited	2002	0.77	23.78	31.58	23.84	1,544.00	7.11	4,203.38	8.30	1.1787
35	SOL	Sasol Limited	2003	0.76	18.16	23.32	17.61	1,280.00	6.83	6,134.70	9.60	1.1787
35	SOL	Sasol Limited	2004	0.82	15.76	16.96	13.75	934.00	10.66	4,203.13	6.00	1.1787
45	AFE	AECI Limited	2000	0.88	7.39	8.03	9.30	183.00	6.85	-403.28	-8.60	0.6262
45	AFE	AECI Limited	2001	1.67	1.50	-26.06	2.70	243.00	7.00	-182.99	-4.10	0.6262
45	AFE	AECI Limited	2002	1.64	8.43	11.51	13.48	340.00	7.47	154.64	3.40	0.6262
45	AFE	AECI Limited	2003	1.84	8.36	9.58	13.40	356.00	8.91	194.74	4.50	0.6262
45	AFE	AECI Limited	2004	1.48	8.68	9.67	14.36	392.00	9.40	329.84	7.50	0.6262
97	AFX	African Oxygen Limited	2000	1.10	13.40	20.27	17.71	93.90	13.32	-14.50	-0.50	0.3743
97	AFX	African Oxygen Limited	2001	0.80	14.32	21.17	20.99	103.80	11.33	216.09	7.60	0.3743
97	AFX	African Oxygen Limited	2002	0.83	13.60	20.62	20.71	124.80	10.50	228.34	7.00	0.3743
97	AFX	African Oxygen Limited	2003	0.71	14.97	23.32	23.10	166.50	9.76	483.91	11.90	0.3743
97	AFX	African Oxygen Limited	2004	0.60	21.16	23.01	12.86	187.50	10.21	528.52	12.60	0.3743
27	HVL	Highveld Steel and Vanadium Corporation Limited	2000	1.05	3.10	4.66	3.72	118.60	10.83	-642.33	-13.60	0.6815
27	HVL	Highveld Steel and Vanadium Corporation Limited	2001	1.51	-14.10	-33.97	-15.23	25.90	58.38	-207.74	-5.90	0.6815
27	HVL	Highveld Steel and Vanadium Corporation Limited	2002	0.82	9.87	14.56	12.62	258.40	6.84	-230.28	-6.80	0.6815
27	HVL	Highveld Steel and Vanadium Corporation Limited	2003	0.82	2.40	3.98	4.19	55.00	26.56	-136.45	-5.20	0.6815
27	HVL	Highveld Steel and Vanadium Corporation Limited	2004	0.51	21.07	31.88	29.34	880.80	4.93	860.82	30.10	0.6815
2	MLA	Mittal Steel South Africa Limited	2000	0.57	6.78	1.31	3.70	13.30	102.63	-2,042.65	-13.70	1.1920
2	MLA	Mittal Steel South Africa Limited	2001	0.88	0.31	-10.15	-2.11	215.60	13.22	338.98	2.70	1.1920
2	MLA	Mittal Steel South Africa Limited	2002	0.49	18.34	36.87	13.84	139.00	25.47	-1,480.25	-9.10	1.1920
2	MLA	Mittal Steel South Africa Limited	2003	0.26	15.76	22.94	25.46	661.00	3.90	867.12	3.90	1.1920
2	MLA	Mittal Steel South Africa Limited	2004	0.30	31.10	30.37	32.15	1,019.00	6.23	2,280.81	10.80	1.1920
63	CRM	Ceramic Industries Limited	2000	0.36	20.61	26.54	23.78	329.80	10.71	21.71	10.60	0.4284
63	CRM	Ceramic Industries Limited	2001	0.36	24.10	28.20	25.47	479.00	10.81	62.23	25.20	0.4284
63	CRM	Ceramic Industries Limited	2002	0.46	26.30	26.74	24.74	621.90	11.55	68.02	19.60	0.4284
63	CRM	Ceramic Industries Limited	2003	0.41	26.90	24.69	22.93	706.50	8.95	84.08	18.10	0.4284
63	CRM	Ceramic Industries Limited	2004	0.35	24.28	21.63	22.90	754.00	8.86	132.15	21.40	0.4284
6	DAW	Distribution and Warehousing Network Limited	2000	1.61	5.27	26.88	17.77	14.70	3.40	19.98	22.00	0.8977
6	DAW	Distribution and Warehousing Network Limited	2001	1.49	4.18	18.69	13.14	11.80	4.24	23.01	20.90	0.8977
6	DAW	Distribution and Warehousing Network Limited	2002	1.30	3.70	15.88	11.79	6.80	5.59	9.07	6.00	0.8977
6	DAW	Distribution and Warehousing Network Limited	2003	1.97	5.23	32.71	18.08	17.10	5.20	34.96	23.60	0.8977
6	DAW	Distribution and Warehousing Network Limited	2004	1.95	5.99	36.56	21.29	30.50	7.18	26.35	21.20	0.8977
95	DLV	Dorbyl Limited	2000	1.23	3.86	8.60	9.79	313.90	9.52	-24.64	-1.80	0.0898
95	DLV	Dorbyl Limited	2001	1.22	1.57	4.59	4.79	203.20	9.01	43.34	3.40	0.0898
95	DLV	Dorbyl Limited	2002	1.23	2.88	10.48	8.80	334.20	5.51	51.97	4.00	0.0898
95	DLV	Dorbyl Limited	2003	0.89	9.46	33.85	25.39	289.40	5.93	146.81	10.60	0.0898
95	DLV	Dorbyl Limited	2004	0.58	7.23	13.82	16.93	199.30	9.16	82.46	8.20	0.0898



15 F	PPC	Pretoria Portland Cement Company Limited	2000	0.32	18.12	15.06	14.72	500.20	10.29	-76.35	-3.30	0.4354
15 F	PPC	Pretoria Portland Cement Company Limited	2001	0.41	24.93	21.31	20.44	709.70	9.17	207.58	9.10	0.4354
15 F	PPC	Pretoria Portland Cement Company Limited	2002	0.45	34.77	25.98	27.27	829.50	9.41	181.60	7.20	0.4354
15 F	PPC	Pretoria Portland Cement Company Limited	2003	0.51	29.07	29.34	29.02	1,154.00	10.34	633.16	19.30	0.4354
15 F	PPC	Pretoria Portland Cement Company Limited	2004	0.44	34.04	33.60	36.13	1,463.20	12.25	875.95	31.80	0.4354
84 A	AEG	Aveng Limited	2000	1.05	5.63	16.32	11.80	79.30	7.48	-50.77	-2.00	0.5622
84 A	AEG	Aveng Limited	2001	4.20	4.25	14.55	11.87	99.40	7.53	118.86	5.10	0.5622
84 A	AEG	Aveng Limited	2002	3.14	4.85	14.19	11.10	111.20	7.34	163.41	4.00	0.5622
84 A	AEG	Aveng Limited	2003	2.60	6.52	20.80	14.51	118.60	7.45	525.16	10.20	0.5622
84 A	٩EG	Aveng Limited	2004	2.71	2.08	7.67	7.35	56.50	13.45	346.09	6.40	0.5622
61 E	ELR	ELB Group Limited	2000	2.90	-0.27	-13.32	0.84	-40.80	-13.31	-79.76	-17.30	0.7175
61 E	ELR	ELB Group Limited	2001	4.07	2.49	14.45	4.68	138.10	5.99	1.82	0.50	0.7175
61 E	ELR	ELB Group Limited	2002	1.28	4.35	44.26	32.06	68.80	7.57	-20.11	-4.10	0.7175
61 E	ELR	ELB Group Limited	2003	1.70	-0.64	-2.64	1.54	-5.00	-68.20	-17.81	-5.90	0.7175
61 E	ELR	ELB Group Limited	2004	1.53	2.17	7.46	5.19	59.10	7.88	-12.81	-5.50	0.7175
70	GRF	Group Five Limited	2000	2.42	1.46	5.59	4.50	42.10	4.51	-137.33	-19.90	0.6146
7 0	GRF	Group Five Limited	2001	3.36	2.64	14.03	6.91	71.80	4.60	39.53	4.70	0.6146
7 0	GRF	Group Five Limited	2002	4.86	3.18	20.17	5.53	102.90	3.43	-16.81	-2.70	0.6146
7 0	GRF	Group Five Limited	2003	3.50	3.79	21.26	7.65	111.30	4.98	71.87	8.20	0.6146
7 0	GRF	Group Five Limited	2004	3.32	4.35	21.50	7.56	135.10	7.51	87.88	9.20	0.6146
28 N	MUR	Murray & Roberts Holdings Limited	2000	2.00	-3.03	-43.05	-5.79	36.00	8.97	-711.00	-16.90	0.5000
28 N	MUR	Murray & Roberts Holdings Limited	2001	1.68	2.58	12.73	6.63	76.00	7.99	-21.12	-0.80	0.5000
28 N	MUR	Murray & Roberts Holdings Limited	2002	1.28	5.22	19.08	10.21	154.00	5.94	2.63	0.10	0.5000
28 N	MUR	Murray & Roberts Holdings Limited	2003	1.28	5.66	22.06	11.96	175.00	6.57	263.63	7.10	0.5000
28 N	MUR	Murray & Roberts Holdings Limited	2004	1.24	4.95	18.57	9.51	152.00	8.78	-23.24	-0.60	0.5000
11 V	WВО	Wilson Bayly Holmes - Ovcon Limited	2000	1.83	4.10	23.53	10.72	88.00	3.78	17.22	6.60	0.5162
11 V	WBO	Wilson Bayly Holmes - Ovcon Limited	2001	3.41	3.90	20.17	9.01	113.00	5.19	44.47	17.20	0.5162
11 V	WВО	Wilson Bayly Holmes - Ovcon Limited	2002	3.05	3.47	15.90	8.11	144.00	5.10	46.49	12.30	0.5162
11 V	WBO	Wilson Bayly Holmes - Ovcon Limited	2003	2.72	3.84	19.98	9.33	182.00	5.55	74.97	16.80	0.5162
11 V	WBO	Wilson Bayly Holmes - Ovcon Limited	2004	2.53	4.68	24.81	10.45	208.60	8.65	123.33	25.40	0.5162
21 A	APK	Astrapak Limited	2000	2.96	12.54	-158.92	18.86	44.80	5.69	28.34	4.70	0.0638
21 A	APK	Astrapak Limited	2001	2.83	9.86	32.43	16.78	47.10	3.86	42.26	13.30	0.0638
21 A	APK	Astrapak Limited	2002	1.96	10.35	31.44	18.35	59.00	4.05	54.31	16.60	0.0638
21 A	APK	Astrapak Limited	2003	2.91	10.65	30.02	17.52	73.80	5.60	46.18	12.60	0.0638
21 A	APK	Astrapak Limited	2004	1.81	13.34	32.10	20.54	93.00	8.22	148.20	18.80	0.0638
32 E	BCF	Bowler Metcalf Limited	2000	0.13	24.75	24.83	30.23	18.30	6.39	5.05	6.90	0.2027
32 E	BCF	Bowler Metcalf Limited	2001	0.21	26.29	27.67	29.41	25.60	7.73	9.70	14.70	0.2027
32 E	BCF	Bowler Metcalf Limited	2002	0.10	27.27	28.10	33.18	33.00	7.52	18.49	17.80	0.2027
32 E	BCF	Bowler Metcalf Limited	2003	0.37	21.64	30.82	23.69	-	10.71	23.61	19.30	0.2027
32 E	BCF	Bowler Metcalf Limited	2004	0.54	21.14	36.87	35.85	59.20	6.96	21.29	17.40	0.2027
78 E	BAW	Barloworld Limited	2000	1.02	8.38	17.84	13.48	380.40	11.61	-803.93	-7.30	0.7254
78 E	BAW	Barloworld Limited	2001	1.46	4.33	5.40	7.32	499.00	10.20	252.25	2.00	0.7254
78 E	BAW	Barloworld Limited	2002	1.40	6.92	13.42	11.25	621.70	9.44	315.99	1.80	0.7254
78 E	BAW	Barloworld Limited	2003	1.44	6.36	11.92	11.68	592.80	9.88	1,660.96	7.40	0.7254



78	BAW	Barloworld Limited	2004	1.65	7.95	13.60	13.04	857.20	8.95	1,305.62	7.10	0.7254
55	ATN	Allied Electronics Corporation Limited	2000	0.78	7.93	-6.01	14.14	85.60	8.67	-154.62	-4.50	0.3993
55	ATN	Allied Electronics Corporation Limited	2001	1.00	7.70	20.22	13.20	101.50	7.68	51.58	1.50	0.3993
55	ATN	Allied Electronics Corporation Limited	2002	1.01	6.86	15.84	11.92	129.50	5.94	-55.51	-1.40	0.3993
55	ATN	Allied Electronics Corporation Limited	2003	0.81	10.09	20.93	22.79	149.40	5.56	323.14	6.60	0.3993
55	ATN	Allied Electronics Corporation Limited	2004	0.79	7.49	13.82	16.20	139.00	8.05	137.24	3.30	0.3993
42	RLO	Reunert Limited	2000	1.26	10.11	35.04	24.65	140.70	8.41	117.66	13.00	0.4696
42	RLO	Reunert Limited	2001	1.88	9.07	44.05	21.04	176.00	9.34	138.23	15.40	0.4696
42	RLO	Reunert Limited	2002	2.56	10.14	34.62	21.86	229.50	8.37	153.90	12.20	0.4696
42	RLO	Reunert Limited	2003	2.37	10.71	25.56	20.01	183.50	9.41	512.37	26.70	0.4696
42	RLO	Reunert Limited	2004	3.17	12.17	51.29	32.65	277.50	10.00	746.33	34.50	0.4696
13	DGC	Digicore Holdings Limited	2000	1.00	3.93	1.50	5.03	0.50	44.00	-7.07	-11.40	0.8315
13	DGC	Digicore Holdings Limited	2001	0.55	11.75	24.96	38.58	10.80	3.33	18.59	19.80	0.8315
13	DGC	Digicore Holdings Limited	2002	0.37	9.20	12.60	20.79	7.20	3.89	0.53	0.60	0.8315
13	DGC	Digicore Holdings Limited	2003	0.20	13.99	14.03	23.33	7.50	3.47	12.81	12.00	0.8315
13	DGC	Digicore Holdings Limited	2004	0.27	14.85	20.02	25.74	12.20	5.41	26.05	22.10	0.8315
25	HDC	Hudaco Industries Limited	2000	0.81	7.99	18.00	15.42	171.10	4.38	-15.81	-4.30	0.4044
25	HDC	Hudaco Industries Limited	2001	0.98	9.10	18.28	15.77	224.10	5.00	6.27	1.70	0.4044
25	HDC	Hudaco Industries Limited	2002	0.99	9.75	16.53	20.72	315.70	5.25	16.16	3.80	0.4044
25	HDC	Hudaco Industries Limited	2003	0.81	11.05	17.81	22.75	365.00	5.96	68.98	14.90	0.4044
25	HDC	Hudaco Industries Limited	2004	0.71	9.93	17.36	18.92	370.60	8.67	57.11	10.90	0.4044
20	IVT	Invicta Holdings Limited	2000	0.48	4.91	13.50	10.95	38.00	6.87	-4.19	-1.50	0.1331
20	IVT	Invicta Holdings Limited	2001	1.01	7.42	15.00	13.67	48.00	5.44	15.19	5.20	0.1331
20	IVT	Invicta Holdings Limited	2002	1.21	8.69	17.11	15.46	62.00	4.98	44.49	10.20	0.1331
20	IVT	Invicta Holdings Limited	2003	1.03	12.19	28.08	24.99	136.00	4.04	98.06	21.40	0.1331
20	IVT	Invicta Holdings Limited	2004	1.03	11.17	31.90	24.81	163.00	5.82	128.85	24.90	0.1331
1	GND	Grindrod Limited	2000	1.99	8.53	13.90	10.12	65.50	4.06	-176.13	-11.80	0.2744
1	GND	Grindrod Limited	2001	1.53	8.11	17.64	9.85	121.30	3.78	-38.74	-2.80	0.2744
1	GND	Grindrod Limited	2002	2.57	9.57	31.72	13.12	174.90	3.70	-43.16	-2.50	0.2744
1	GND	Grindrod Limited	2003	2.27	14.60	39.40	17.65	250.90	4.54	34.81	1.90	0.2744
1	GND	Grindrod Limited	2004	2.05	20.87	62.54	27.25	618.40	6.34	406.75	23.00	0.2744
94	IPL	Imperial Holdings Limited	2000	1.35	8.62	8.87	10.80	444.00	12.16	-265.64	-3.10	0.5271
94	IPL	Imperial Holdings Limited	2001	1.22	8.43	17.23	14.89	535.00	12.21	753.24	6.90	0.5271
94	IPL	Imperial Holdings Limited	2002	1.39	8.27	16.34	13.00	608.80	8.93	518.56	4.20	0.5271
94	IPL	Imperial Holdings Limited	2003	1.42	8.15	18.01	14.06	700.20	7.65	1,101.46	6.70	0.5271
94	IPL	Imperial Holdings Limited	2004	1.45	7.84	18.77	13.46	840.50	8.16	1,551.41	8.90	0.5271
29	TRE	Trencor Limited	2000	2.71	6.65	-4.74	2.47	165.00	1.39	-504.86	-10.40	0.4327
29	TRE	Trencor Limited	2001	2.34	37.53	34.64	16.49	471.90	2.05	-73.76	-1.30	0.4327
29	TRE	Trencor Limited	2002	2.99	-5.59	-21.35	-0.91	-230.30	-3.75	-1,279.92	-11.10	0.4327
29	TRE	Trencor Limited	2003	2.61	9.33	-6.54	2.37	-108.20	-9.35	-745.91	-7.70	0.4327
29	TRE	Trencor Limited	2004	2.93	28.07	3.99	5.35	61.80	21.57	-83.50	-1.10	0.4327
3	ILA	Iliad Africa Limited	2000	1.60	6.86	30.97	18.97	29.90	2.14	14.02	16.70	0.1788
3	ILA	Iliad Africa Limited	2001	1.36	5.91	26.60	17.11	32.30	3.68	24.43	27.70	0.1788
3	ILA	Iliad Africa Limited	2002	1.31	7.72	32.62	21.52	62.00	4.45	28.22	32.10	0.1788



3 ILA	Iliad Africa Limited	2003	1.05	8.24	17.23	15.44	76.40	6.78	11.17	9.70	0.1788
3 ILA	Iliad Africa Limited	2004	1.08	8.70	27.29	22.89	97.40	10.17	82.43	22.50	0.1788
26 ENV	Enviroserv Holdings Limited	2000	0.66	10.56	20.77	12.77	22.10	2.81	16.24	7.90	0.1448
26 ENV	Enviroserv Holdings Limited	2001	1.24	5.91	2.90	8.48	26.20	4.62	41.85	21.20	0.1448
26 ENV	Enviroserv Holdings Limited	2002	1.13	11.37	24.24	12.44	30.60	4.12	24.13	11.20	0.1448
26 ENV	Enviroserv Holdings Limited	2003	0.96	12.53	23.48	13.79	35.70	6.02	47.20	15.10	0.1448
26 ENV	Enviroserv Holdings Limited	2004	0.93	12.66	21.63	13.34	40.70	7.47	60.00	18.00	0.1448
8 MTA	Metair Investments Limited	2000	0.48	10.83	21.23	20.86	1,419.00	2.28	17.14	3.90	0.3848
8 MTA	Metair Investments Limited	2001	0.50	9.02	17.86	16.03	1,588.00	3.67	32.28	6.70	0.3848
8 MTA	Metair Investments Limited	2002	0.68	8.19	15.17	14.87	1,539.00	8.30	54.54	7.90	0.3848
8 MTA	Metair Investments Limited	2003	0.46	10.72	19.80	21.03	2,297.00	5.97	128.21	15.60	0.3848
8 MTA	Metair Investments Limited	2004	0.45	11.56	19.52	20.22	2,704.00	6.58	130.78	15.50	0.3848
88 TIW	Tiger Wheels Limited	2000	1.56	5.79	8.16	7.65	90.10	14.37	-31.04	-4.70	0.5078
88 TIW	Tiger Wheels Limited	2001	1.50	5.24	10.84	7.76	97.60	12.13	45.08	6.30	0.5078
88 TIW	Tiger Wheels Limited	2002	1.51	6.05	12.44	8.23	169.20	7.92	44.99	5.00	0.5078
88 TIW	Tiger Wheels Limited	2003	1.44	7.42	17.86	12.31	215.20	6.21	212.22	16.70	0.5078
88 TIW	Tiger Wheels Limited	2004	1.29	7.25	20.38	13.07	239.90	8.64	143.73	12.10	0.5078
85 SAB	SABMiller Plc	2000	0.87	15.51	33.56	21.22	348.40	14.35	-716.32	-3.30	0.8074
85 SAB	SABMiller Plc	2001	1.26	18.10	5.24	21.35	435.20	12.82	1,218.54	5.60	0.8074
85 SAB	SABMiller Plc	2002	1.98	18.00	20.70	20.38	553.40	14.37	16.84	0.40	0.8074
85 SAB	SABMiller Plc	2003	9.77	12.92	11.85	19.23	414.20	11.80	-103.17	-1.90	0.8074
85 SAB	SABMiller Plc	2004	12.63	15.19	10.46	27.37	485.40	14.84	309.35	2.60	0.8074
37 DST	Distell Group Limited	2000	0.95	14.77	23.13	18.17	118.50	7.44	-70.39	-4.30	0.5904
37 DST	Distell Group Limited	2001	0.91	4.30	-18.06	7.59	106.80	6.67	-27.82	-1.50	0.5904
37 DST	Distell Group Limited	2002	1.01	8.32	11.12	12.16	141.70	9.23	-91.65	-2.70	0.5904
37 DST	Distell Group Limited	2003	0.97	10.14	14.25	13.93	138.90	8.42	27.38	0.70	0.5904
37 DST	Distell Group Limited	2004	0.84	9.93	14.03	13.88	183.30	8.26	89.59	2.20	0.5904
59 KWV	KWV Beleggings Beperk	2000	0.04	-	13.84	13.29	164.20	7.43	-64.65	-12.20	0.5846
59 KWV	KWV Beleggings Beperk	2001	-	-	5.57	5.58	150.00	6.78	-86.93	-14.80	0.5846
59 KWV	KWV Beleggings Beperk	2002	-	-	11.04	11.04	203.20	8.13	-57.20	-9.70	0.5846
59 KWV	KWV Beleggings Beperk	2003	-	-	14.16	14.16	192.70	7.03	-54.76	-8.90	0.5846
59 KWV	KWV Beleggings Beperk	2004	-	-	13.76	13.76	254.30	7.24	-53.33	-7.90	0.5846
72 AFR	Afgri Limited	2000	0.47	8.15	11.10	13.79	76.60	5.03	-8.91	-0.50	0.1939
72 AFR	Afgri Limited	2001	1.59	7.69	16.01	10.88	80.50	7.07	157.12	7.50	0.1939
72 AFR	Afgri Limited	2002	0.79	7.88	16.54	14.79	75.00	6.59	61.45	4.10	0.1939
72 AFR	Afgri Limited	2003	1.63	6.23	20.94	12.97	85.20	5.58	157.49	9.90	0.1939
72 AFR	Afgri Limited	2004	1.06	6.96	19.86	17.57	93.90	6.39	266.47	12.10	0.1939
92 OCE	Oceana Group Limited	2000	1.04	9.51	29.64	23.08	107.30	6.40	33.44	8.70	0.3132
92 OCE	Oceana Group Limited	2001	1.06	9.97	29.04	24.01	127.20	8.29	48.47	13.30	0.3132
92 OCE	Oceana Group Limited	2002	0.73	9.86	27.46	26.16	162.00	9.47	89.15	14.40	0.3132
92 OCE	Oceana Group Limited	2003	0.64	10.33	24.77	24.09	182.40	9.02	121.03	16.40	0.3132
92 OCE	Oceana Group Limited	2004	0.72	9.10	19.40	17.65	143.80	11.06	88.81	10.40	0.3132
23 RBW	Rainbow Chicken Limited	2000	0.55	2.18	2.60	4.22	5.40	15.37	-144.94	-12.00	0.4245
23 RBW	Rainbow Chicken Limited	2001	0.37	4.35	10.18	9.00	44.20	4.00	73.78	6.90	0.4245



23	RBW	Rainbow Chicken Limited	2002	0.46	5.02	17.95	12.63	60.30	4.66	100.61	10.00	0.4245
23	RBW	Rainbow Chicken Limited	2003	0.51	6.16	23.63	14.89	106.20	3.33	186.35	18.90	0.4245
23	RBW	Rainbow Chicken Limited	2004	0.38	7.92	19.26	18.64	85.20	5.92	185.65	15.50	0.4245
62	TBS	Tiger Brands Limited	2000	8.08	9.17	-206.80	23.34	602.00	9.67	715.62	12.20	0.6130
62	TBS	Tiger Brands Limited	2001	4.47	9.85	73.11	22.54	611.00	9.49	758.82	14.50	0.6130
62	TBS	Tiger Brands Limited	2002	2.50	10.18	49.91	25.50	817.00	8.77	956.34	15.70	0.6130
62	TBS	Tiger Brands Limited	2003	2.31	8.36	37.71	24.02	777.00	9.12	1,011.63	15.70	0.6130
62	TBS	Tiger Brands Limited	2004	2.07	8.79	34.45	23.23	927.00	10.33	1,315.76	18.80	0.6130
71	SHF	Steinhoff International Holdings Limited	2000	1.26	10.65	19.31	11.41	51.70	11.51	-5.40	-5.40	0.7194
71	SHF	Steinhoff International Holdings Limited	2001	0.95	12.56	21.37	14.14	67.00	9.60	-2.20	-2.20	0.7194
71	SHF	Steinhoff International Holdings Limited	2002	1.06	9.40	15.03	10.66	93.00	8.57	-2.50	-2.50	0.7194
71	SHF	Steinhoff International Holdings Limited	2003	0.97	10.35	17.67	13.06	105.00	6.55	4.80	4.80	0.7194
71	SHF	Steinhoff International Holdings Limited	2004	1.13	11.24	15.89	11.49	112.00	7.41	3.90	3.90	0.7194
68	SER	Seardel Investment Corporation Limited	2000	1.12	3.34	8.62	9.09	28.90	4.71	-71.62	-9.90	0.4140
68	SER	Seardel Investment Corporation Limited	2001	1.42	4.26	9.89	5.16	37.10	5.74	-32.52	-4.00	0.4140
68	SER	Seardel Investment Corporation Limited	2002	1.36	6.14	17.94	8.65	75.90	3.16	61.86	3.60	0.4140
68	SER	Seardel Investment Corporation Limited	2003	1.17	4.69	13.45	7.54	68.50	4.86	149.90	8.50	0.4140
68	SER	Seardel Investment Corporation Limited	2004	1.01	4.73	13.14	7.66	60.60	3.63	84.69	4.60	0.4140
48	MDC	Medi-Clinic Corporation Limited	2000	0.36	17.44	16.38	20.01	58.30	6.86	-34.65	-2.30	0.1817
48	MDC	Medi-Clinic Corporation Limited	2001	0.24	17.33	16.58	20.46	71.80	8.80	92.54	6.20	0.1817
48	MDC	Medi-Clinic Corporation Limited	2002	0.24	17.86	18.58	22.47	88.70	7.45	123.44	7.30	0.1817
48	MDC	Medi-Clinic Corporation Limited	2003	0.30	16.82	18.98	20.80	107.00	7.06	118.62	6.70	0.1817
48	MDC	Medi-Clinic Corporation Limited	2004	0.32	16.99	19.58	21.55	129.50	9.51	219.91	9.70	0.1817
17	NTC	Network Healthcare Holdings Limited	2000	0.99	16.28	17.01	16.58	20.20	4.41	-15.23	-0.60	0.6886
17	NTC	Network Healthcare Holdings Limited	2001	1.11	15.52	20.70	15.97	27.90	7.35	174.24	6.90	0.6886
17	NTC	Network Healthcare Holdings Limited	2002	0.89	16.35	24.04	21.23	36.70	8.07	354.58	10.80	0.6886
17	NTC	Network Healthcare Holdings Limited	2003	0.81	17.04	21.46	19.54	45.90	9.06	278.71	8.20	0.6886
17	NTC	Network Healthcare Holdings Limited	2004	0.88	14.67	23.32	21.07	45.90	10.59	488.60	10.20	0.6886
31	APN	Aspen Pharmacare Holdings Limited	2000	4.22	22.31	32.76	26.67	33.80	16.98	173.00	17.90	0.4479
31	APN	Aspen Pharmacare Holdings Limited	2001	7.16	26.33	51.10	34.11	48.40	12.46	171.00	27.60	0.4479
31	APN	Aspen Pharmacare Holdings Limited	2002	2.78	28.34	36.12	39.90	64.60	11.55	183.00	24.70	0.4479
31	APN	Aspen Pharmacare Holdings Limited	2003	2.80	23.26	34.36	40.63	79.10	9.86	300.25	29.70	0.4479
31	APN	Aspen Pharmacare Holdings Limited	2004	1.79	25.61	33.34	37.27	103.70	12.00	288.29	25.90	0.4479
73	PWK	Pick n Pay Holdings Limited	2000	0.37	-	76.84	56.09	17.00	25.00	53.66	61.00	0.3904
73	PWK	Pick n Pay Holdings Limited	2001	0.40	-	78.25	55.70	20.90	24.50	74.16	64.80	0.3904
73	PWK	Pick n Pay Holdings Limited	2002	0.01	-	89.40	88.78	21.80	20.28	727.47	520.40	0.3904
73	PWK	Pick n Pay Holdings Limited	2003	0.01	-	111.62	110.83	27.00	19.59	21.00	98.60	0.3904
73	PWK	Pick n Pay Holdings Limited	2004	0.01	-	144.43	143.41	59.30	13.05	169.06	132.50	0.3904
96	SHP	Shoprite Holdings Limited	2000	2.64	1.65	22.73	7.57	57.60	11.84	34.78	2.10	0.4247
96	SHP	Shoprite Holdings Limited	2001	2.33	1.40	16.92	4.73	58.00	10.03	578.28	33.90	0.4247
96	SHP	Shoprite Holdings Limited	2002	2.50	2.23	27.74	8.07	70.70	11.20	599.71	37.90	0.4247
96	SHP	Shoprite Holdings Limited	2003	2.57	1.83	24.19	7.47	57.60	9.98	647.87	38.20	0.4247
96	SHP	Shoprite Holdings Limited	2004	2.59	2.40	26.16	8.83	79.90	11.35	672.52	32.20	0.4247
9	ECO	Edgars Consolidated Stores Limited	2000	0.78	6.68	10.31	10.78	407.90	16.75	-28.57	-1.00	-0.0069



9 E	ECO	Edgars Consolidated Stores Limited	2001	0.78	4.66	6.43	7.60	267.50	7.83	-60.58	-1.70	-0.0069
9 E	ECO	Edgars Consolidated Stores Limited	2002	0.73	4.39	7.48	8.13	304.00	8.15	398.21	12.00	-0.0069
9 E	ECO	Edgars Consolidated Stores Limited	2003	0.98	6.63	15.88	15.68	752.60	6.76	516.25	20.30	-0.0069
9 F	ECO	Edgars Consolidated Stores Limited	2004	0.91	9.61	25.52	22.26	1,597.00	8.23	930.16	30.20	-0.0069
39 F	FOS	Foschini Limited	2000	0.32	12.08	13.29	12.65	100.10	14.46	-139.66	-8.30	0.5850
39 F	FOS	Foschini Limited	2001	0.47	6.40	6.30	6.96	50.10	10.52	-180.32	-8.20	0.5850
39 F	FOS	Foschini Limited	2002	0.58	8.32	10.93	12.57	87.90	7.95	-48.71	-1.90	0.5850
39 F	FOS	Foschini Limited	2003	0.55	11.22	17.31	17.32	162.20	6.71	165.22	6.40	0.5850
39 F	FOS	Foschini Limited	2004	0.59	13.37	22.56	21.52	237.10	8.02	249.05	9.40	0.5850
89 N	ИРС	Mr Price Group Limited	2000	0.81	5.69	21.17	14.03	43.50	14.99	11.28	2.70	0.5866
89 N	MPC	Mr Price Group Limited	2001	0.89	3.93	15.92	11.34	38.60	7.10	29.76	4.50	0.5866
89 N	MPC	Mr Price Group Limited	2002	0.86	6.90	20.60	14.32	59.50	7.45	69.59	6.90	0.5866
89 N	MPC	Mr Price Group Limited	2003	0.77	7.75	20.47	16.57	71.50	6.53	132.47	11.40	0.5866
89 N	MPC	Mr Price Group Limited	2004	0.71	8.11	21.15	18.06	89.10	8.36	69.69	5.20	0.5866
44 T	ſRU	Truworths International Limited	2000	0.33	0.27	-1.28	6.27	37.30	14.61	8.51	0.90	0.4243
44 T	ſRU	Truworths International Limited	2001	0.33	13.98	24.69	23.51	44.20	11.81	92.66	10.50	0.4243
44 T	ſRU	Truworths International Limited	2002	0.21	17.73	27.87	32.25	63.50	8.93	205.53	19.20	0.4243
44 T	ſRU	Truworths International Limited	2003	0.29	17.56	29.26	29.85	85.70	8.70	234.05	19.70	0.4243
44 T	ΓRU	Truworths International Limited	2004	0.34	22.63	34.75	37.27	110.00	8.93	379.39	26.90	0.4243
4 E	3RC	Brandcorp Holdings Limited	2000	0.36	7.83	-59.06	15.45	16.50	3.03	3.01	0.90	0.5063
4 E	3RC	Brandcorp Holdings Limited	2001	0.47	8.68	16.52	16.20	19.50	4.00	9.42	5.20	0.5063
4 E	3RC	Brandcorp Holdings Limited	2002	1.10	9.04	25.95	18.72	28.60	4.90	21.52	11.30	0.5063
4 E	3RC	Brandcorp Holdings Limited	2003	0.87	10.26	24.45	22.58	58.20	4.12	35.91	18.70	0.5063
4 E	3RC	Brandcorp Holdings Limited	2004	0.73	12.34	29.14	25.91	80.40	5.88	51.42	24.40	0.5063
41 N	VSM	Massmart Holdings Limited	2000	4.28	1.18	-0.20	7.42	79.50	<u> </u>		6.20	0.7068
41 N	MSM	Massmart Holdings Limited	2001	3.30	1.87	14.92	7.32	109.90	8.18	90.93	11.10	0.7068
41 N	NSM	Massmart Holdings Limited	2002	3.33	3.06	23.17	12.48	183.20	7.49	337.48	20.70	0.7068
41 N	√SM	Massmart Holdings Limited	2003	3.41	3.52	25.56	14.78	242.40	8.79	432.06	24.20	0.7068
41 N	√SM	Massmart Holdings Limited	2004	3.99	3.72	30.39	15.20	318.80	9.77	534.81	24.70	0.7068
36 V	NHL	Woolworths Holdings Limited	2000	0.52	2.08	10.92	11.40	30.60	9.64	-70.56	-3.00	0.3610
36 V	NHL	Woolworths Holdings Limited	2001	0.48	2.53	12.38	12.50	32.30	10.71	152.41	5.60	0.3610
36 V	NHL	Woolworths Holdings Limited	2002	0.59	3.54	11.53	16.22	44.00	9.73	237.07	8.40	0.3610
36 V	NHL	Woolworths Holdings Limited	2003	0.86	3.71	22.79	18.28	64.80	9.12	416.99	13.00	0.3610
36 V	NHL	Woolworths Holdings Limited	2004	0.88	4.81	23.39	18.36	78.60	9.06	471.16	13.60	0.3610
87 E	ELH	Ellerine Holdings Limited	2000	0.47	16.13	17.00	16.69	244.50	11.05	-50.08	-3.30	0.4368
87 E	ELH	Ellerine Holdings Limited	2001	0.38	15.34	16.19	16.65	280.90	7.54	4.20	0.30	0.4368
87 E	ELH	Ellerine Holdings Limited	2002	0.33	14.87	14.71	15.90	287.00	5.14	-77.96	-4.20	0.4368
87 E	ELH	Ellerine Holdings Limited	2003	0.33	15.69	12.35	17.44	340.00	8.00	-26.92	-1.40	0.4368
87 E		Ellerine Holdings Limited	2004	0.62	18.39	17.17	19.90	460.60	7.85	20.08	1.00	0.4368
331	TE	Italtile Limited	2000	0.56	15.41	27.59	24.82	254.80	13.99	17.10	11.70	0.1348
331	TE	Italtile Limited	2001	0.64	16.83	25.74	22.17	317.00	11.70	26.91	14.50	0.1348
331	TE	Italtile Limited	2002	0.66	20.85	29.12	23.97	518.30	8.83	48.86	19.90	0.1348
331	TE	Italtile Limited	2003	0.43	22.46	27.55	27.87	656.60	9.13	72.93	21.30	0.1348
33	IE	Italtile Limited	2004	0.47	26.71	30.18	29.58	856.30	9.03	97.23	22.30	0.1348



16	KGM	Kagiso Media Limted	2000	0.31	20.19	23.21	23.18	34.20	6.67	0.77	0.30	0.2163
16	KGM	Kagiso Media Limted	2001	0.52	16.21	28.20	30.49	34.90	8.40	48.13	29.10	0.2163
16	KGM	Kagiso Media Limted	2002	0.59	29.35	43.12	41.04	42.10	6.22	45.19	38.70	0.2163
16	KGM	Kagiso Media Limted	2003	0.66	32.68	53.57	57.72	58.10	6.90	97.77	81.00	0.2163
16	KGM	Kagiso Media Limted	2004	0.93	33.31	60.55	56.28	70.20	10.71	106.07	115.40	0.2163
79	PMA	Primedia Limited	2000	2.01	8.50	-4.00	8.13	49.00	10.39	48.62	5.50	-0.0435
79	PMA	Primedia Limited	2001	2.79	7.30	-109.87	5.76	9.00	45.44	151.43	20.70	-0.0435
79	PMA	Primedia Limited	2002	1.21	-5.09	-86.28	-11.95	-1.00	-383.00	109.74	17.00	-0.0435
79	PMA	Primedia Limited	2003	1.62	9.88	7.01	16.55	23.00	17.70	332.75	50.10	-0.0435
79	PMA	Primedia Limited	2004	2.42	16.17	42.65	34.01	68.00	12.57	254.11	56.60	-0.0435
76	CAT	Caxton and CTP Publishers and Printers Limited	2000	0.25	8.25	3.40	12.87	398.00	15.06	-87.37	-5.10	0.4838
76	CAT	Caxton and CTP Publishers and Printers Limited	2001	0.22	10.47	11.53	13.89	475.00	11.37	35.45	2.10	0.4838
76	CAT	Caxton and CTP Publishers and Printers Limited	2002	0.24	12.25	11.09	14.72	487.00	10.78	-36.20	-1.80	0.4838
76	CAT	Caxton and CTP Publishers and Printers Limited	2003	0.27	12.69	11.60	16.17	65.60	9.04	28.21	1.30	0.4838
76	CAT	Caxton and CTP Publishers and Printers Limited	2004	0.28	14.38	14.31	16.57	74.70	10.98	73.73	3.20	0.4838
93	JCM	Johnnic Communications Limited	2000	2.81	17.29	-101.56	21.76	351.00	56.97	199.82	7.30	0.2772
93	JCM	Johnnic Communications Limited	2001	4.07	17.44	5.14	20.25	452.00	19.83	-216.13	-3.40	0.2772
93	JCM	Johnnic Communications Limited	2002	0.93	56.34	375.64	106.87	233.00	5.05	33,144.44	160.00	0.2772
93	JCM	Johnnic Communications Limited	2003	0.66	1.96	5.54	13.42	151.00	9.62	-13.97	-0.60	0.2772
93	JCM	Johnnic Communications Limited	2004	0.51	3.51	10.98	11.84	170.00	12.88	-7.47	-0.40	0.2772
10	GDF	Gold Reef Resorts Limited	2000	0.14	-	12.74	15.53	48.00	3.02	-33.34	-7.20	0.4952
10	GDF	Gold Reef Resorts Limited	2001	0.04	-	14.46	17.86	46.70	4.99	-14.89	-2.80	0.4952
10	GDF	Gold Reef Resorts Limited	2002	0.67	29.14	12.23	20.28	50.30	5.69	47.24	8.10	0.4952
10	GDF	Gold Reef Resorts Limited	2003	0.47	29.49	14.77	24.11	65.10	9.23	185.67	15.00	0.4952
10	GDF	Gold Reef Resorts Limited	2004	0.21	33.82	19.96	29.75	95.20	13.08	219.95	20.40	0.4952
100	SUI	Sun International Limited	2000	0.43	11.13	6.81	8.21	266.00	9.39	-504.75	-8.70	0.5332
100	SUI	Sun International Limited	2001	0.62	10.25	-7.88	-0.31	318.00	11.21	-221.59	-3.70	0.5332
100	SUI	Sun International Limited	2002	0.74	4.61	-10.29	0.12	58.00	48.07	-298.42	-4.00	0.5332
100	SUI	Sun International Limited	2003	0.69	16.32	4.09	11.00	-54.00	-55.70	234.79	2.90	0.5332
100	SUI	Sun International Limited	2004	0.78	30.42	24.15	22.47	423.00	9.67	325.62	4.80	0.5332
24	CLH	City Lodge Hotels Limited	2000	1.02	37.31	19.85	19.59	116.80	6.18	2.46	0.60	0.4232
24	CLH	City Lodge Hotels Limited	2001	0.84	36.55	18.77	19.40	135.50	6.24	26.05	8.20	0.4232
24	CLH	City Lodge Hotels Limited	2002	0.31	39.29	18.12	22.19	137.40	8.39	36.86	9.90	0.4232
24	CLH	City Lodge Hotels Limited	2003	0.30	44.44	25.35	29.31	208.50	8.80	67.49	17.10	0.4232
24	CLH	City Lodge Hotels Limited	2004	0.24	45.03	25.61	30.48	240.10	10.61	84.32	20.00	0.4232
51	SUR	Spur Corporation Limited	2000	0.47	30.11	-198.55	31.56	32.60	6.69		76.40	0.3899
51	SUR	Spur Corporation Limited	2001	0.37	30.97	27.08	33.47	35.10	6.47	24.41	69.30	0.3899
51	SUR	Spur Corporation Limited	2002	0.24	32.19	28.78	30.93	41.00	6.80	18.52	39.30	0.3899
51	SUR	Spur Corporation Limited	2003	0.18	23.22	21.58	27.22	29.00	11.28	36.64	50.40	0.3899
51	SUR	Spur Corporation Limited	2004	0.22	27.47	26.82	32.76	39.70	12.57	36.05	48.40	0.3899
14	TRT	Tourism Investment Corporation Limited	2000	1.11	11.90	-212.87	22.13	11.10	3.96	33.72	10.90	0.5120
14	TRT	Tourism Investment Corporation Limited	2001	0.75	12.97	24.18	22.49	13.10	6.18	68.99	20.40	0.5120
14	TRT	Tourism Investment Corporation Limited	2002	0.91	13.11	25.89	22.39	15.80	7.97	81.50	18.80	0.5120
14	TRT	Tourism Investment Corporation Limited	2003	0.78	13.38	27.85	27.36	19.80	8.69	287.02	59.00	0.5120



14	TRT	Tourism Investment Corporation Limited	2004	1.78	9.72	17.56	29.26	5.90	24.24	61.64	19.00	0.5120
91	BTG	Bytes Technology Group Limited	2000	-5.69	-10.82	1,034.13	-40.06	-21.80	-2.20	-326.00	-81.40	0.5405
91	BTG	Bytes Technology Group Limited	2001	2.25	-9.80	-23.72	-8.40	-5.20	-3.08	-17.44	-17.40	0.5405
91	BTG	Bytes Technology Group Limited	2002	2.40	5.09	8.66	11.12	63.40	5.87	-2.17	-0.40	0.5405
91	BTG	Bytes Technology Group Limited	2003	4.67	5.79	5.03	17.82	72.40	5.54	37.19	4.70	0.5405
91	BTG	Bytes Technology Group Limited	2004	23.74	6.65	-8.09	22.84	67.90	8.38	133.07	13.10	0.5405
90	DCT	Datacentrix Holdings Limited	2000	3.14	7.70	-83.00	17.49	11.00	26.73	8.19	17.00	0.1103
90	DCT	Datacentrix Holdings Limited	2001	2.73	5.58	31.32	14.61	11.30	7.96	4.17	6.90	0.1103
90	DCT	Datacentrix Holdings Limited	2002	1.43	6.33	19.48	14.48	16.70	5.39	10.68	11.50	0.1103
90	DCT	Datacentrix Holdings Limited	2003	1.31	7.02	22.59	21.18	21.80	5.92	20.81	17.20	0.1103
90	DCT	Datacentrix Holdings Limited	2004	0.77	6.53	16.38	20.79	20.70	10.58	27.80	15.40	0.1103
46	MST	Mustek Limited	2000	1.79	3.85	7.36	12.93	71.40	4.96	-10.81	-2.70	0.5809
46	MST	Mustek Limited	2001	1.81	5.67	5.66	13.66	56.00	3.02	18.95	2.90	0.5809
46	MST	Mustek Limited	2002	1.98	6.57	17.92	17.27	98.00	3.55	54.58	10.10	0.5809
46	MST	Mustek Limited	2003	1.72	6.61	20.07	18.85	118.70	4.37	131.50	20.80	0.5809
46	MST	Mustek Limited	2004	1.71	3.44	10.86	12.18	72.50	10.28	164.69	22.30	0.5809

** Business Times - 13/11/2005 Source:

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Source:



31.64	31.64	31.64
178.76	178.76	178.76
279.67	279.67	279.67
347.26	347.26	347.26