University of Cape Town
M. Com in Financial Accounting

The Manipulation of Headline Earnings by Companies Listed on the JSE Securities Exchange South Africa

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SYNOPSIS

Creative accounting refers to the various practices management use to manipulate financial statements to ensure that the users of these financial statements draw the desired conclusions. The literature reveals that creative accounting is practised in various forms in a number of countries, including South Africa.

Headline earnings per share (HEPS) is an earnings measure that was developed to measure a company's trading performance and is a mandatory reporting requirement for companies listed on the JSE Securities Exchange South Africa (JSE). Companies may be motivated to manipulate this figure as a result of the emphasis placed on it by the financial press, investment analysts and other users of financial statements. Instances of manipulation have been noted by the GAAP Monitoring Panel in South Africa. Therefore, this study examines the extent to which creative accounting practices are employed by companies in reporting HEPS.

A sample of JSE-listed companies was selected and their HEPS figures analysed in order to achieve this objective. In total, the sample consisted of 173 companies. This sample included 89 of the largest JSE-listed companies and 84 of the smallest JSE-listed companies. These companies' annual financial statements for the financial year ending in the 2004 calendar year were obtained and analysed to identify HEPS manipulations. A HEPS manipulation was defined as a contravention of the requirements of Circular 7/2002 *Headline Earnings* (Circular 7/2002), which governs the reporting of HEPS in South Africa. Data relating to each company's characteristics was also obtained from various sources in order to identify factors influencing HEPS manipulation.

It was found that 47% of the sample manipulated HEPS. Approximately one-third of these manipulations were in a downwards direction and the remaining two-thirds were in an upwards direction. The descriptive statistics therefore provide evidence of HEPS manipulation by the sample companies. However, the statistical testing to extend this evidence to the population of JSE-listed companies was inconclusive.

The forms of HEPS manipulation employed by companies were also analysed. Overall, 38% of HEPS manipulators failed to adjust for items required to be adjusted for in terms of Circular 7/2002.

41% of HEPS manipulators adjusted for invalid items in terms of the circular and the remaining 21% of HEPS manipulators used a combination of these techniques. The most frequently unadjusted items were the release of a foreign currency translation reserve to the income statement upon the disposal of a foreign entity and the profit or loss on the disposal of property, plant and equipment. The most frequently identified invalid adjustments related to financial instruments and the amortisation of intangible assets.

HEPS manipulations were then analysed across broad industry classifications. Although statistical testing proved inconclusive, evidence of varying levels of HEPS manipulation between different industries was detected. The general industrials industry classification was identified as exhibiting the greatest extent and magnitude of HEPS manipulation.

Lastly, multiple regression analysis was used to identify factors associated with a company's propensity to engage in HEPS manipulation. It was hypothesised that the following factors would be associated with HEPS manipulation:

- Share price fluctuations
- Earnings growth
- Debt structure
- Company size
- Auditor identity
- Level of non-audit services provided by the auditor
- Corporate governance mechanisms

The multiple regression analysis did not yield any meaningful statistically significant associations. However, there were significant correlations between HEPS manipulations and certain of the variables above. Further statistical testing was thus performed. This statistical testing indicated that large companies are more likely to engage in downwards HEPS manipulation and small companies are more likely to engage in upwards HEPS manipulation. Furthermore, there was also statistical evidence supporting the view that companies audited by a Big 4 audit firm engage in less HEPS manipulation than companies not audited by a Big 4 audit firm.

In conclusion, there are JSE-listed companies in the sample of companies analysed that engage in

HEPS manipulation and these companies employ various techniques to do so. Company size and auditor identity appear to be factors influencing a company's propensity to engage in HEPS manipulation.

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Chapter 1: introduction

1.1 Subject and Background

"Every set of accounts is based on books which have been gently cooked or completely roasted."

Griffiths (1995: 1)

The manipulation of reported accounting figures, known as creative accounting, has received considerable attention in global financial markets. The means used and motivations for creative accounting are numerous and varied and the existence of creative accounting has been documented by numerous researchers in different environments.

A unique reporting requirement exists in South Africa for listed companies to report headline earnings per share. This figure is considered important by analysts and other users of financial performance as it excludes items of a capital nature and therefore provides an indication of a company's trading performance.

It is submitted that the emphasis placed on the headline earnings figure by market participants motivates companies to manipulate this figure. The GAAP Monitoring Panel in South Africa has already identified instances of such manipulation.

This study seeks to evaluate the extent to which listed South African companies engage in the manipulation of headline earnings.

1.2 Objectives

The objectives of this research are to:

- Determine whether or not companies listed on the JSE Securities Exchange South Africa (JSE) engage in the manipulation of headline earnings per share (HEPS).
- Identify the practices used by these companies to engage in HEPS manipulation.

- Compare the incidence of HEPS manipulation among various industries.
- Examine possible associations between the propensity of a company to engage in HEPS and specified factors.
- Draw conclusions as to the prevalence of HEPS manipulation by JSE-listed companies and the factors associated with this prevalence.

1.3 Scope and Limitations

The examination of HEPS was performed for a sample of the largest and smallest companies listed on the JSE as at 31 December 2004. However, this sample was considered to contain a sufficient variety of company characteristics to allow for a meaningful analysis.

Furthermore, the HEPS manipulations analysed were limited to those which could be identified from the company's annual financial statements.

1.4 Plan of Development

This report is structured in 12 chapters, including this first introductory chapter.

Chapters 2 and 3 contain a literature review on creative accounting and headline earnings respectively. These chapters examine prior research and findings as well as general literature in order to establish the background for this particular study.

Chapter 4 presents and substantiates the research hypotheses for this study. Chapter 5 details the research approach adopted to test these hypotheses.

The empirical results are then presented and discussed in chapters 6 to 8. Findings relating to the overall HEPS manipulations detected and the techniques used for these manipulations are considered in Chapter 6. An analysis of the HEPS manipulations identified within specified industry classifications is presented in Chapter 7. Chapter 8 contains an overall examination of the association between HEPS manipulations and specified company characteristics.

Finally, conclusions are drawn in Chapter 10. Chapters 11 and 12 contain the references used in this report and the bibliography.

CHAPTER 2: a review of the creative accounting literature

This chapter contains a review of the relevant literature on creative accounting. The literature review is necessary to understand the relevant research conducted in this area to date and to provide context for the hypotheses, design and conduct of the research documented in this report. The chapter begins by defining the term creative accounting and then proceeds to highlight the relevance of this topic by examining evidence of the existence of creative accounting. This is followed by an examination of the factors that motivate management to engage in creative accounting practices and additional factors that are associated with these practices. Finally, a discussion of the various creative accounting techniques employed in practice is presented.

2.1 Creative Accounting Defined

The term "creative accounting" is often used in two different contexts. Creative accounting is used to refer to the accounting practices developed by entities in accounting for new situations that are not yet dealt with in existing accounting standards. Alternatively, creative accounting is used to refer to various means of manipulating financial statements. The term "creative accounting", as used in this report, is used in the latter context.

The literature contains various definitions of creative accounting. The following are two of the more comprehensive definitions:

Jameson (1988: 20):

> "It is essentially a process of using the rules, the flexibility provided by them and the omissions within them, to make financial statements look somewhat different from what was intended by the rule. It consists of rule-bending and loophole-seeking."

Naser (1993: 59):

> "Creative accounting may be defined as (1) the process of manipulating accounting figures by taking advantage of the loopholes in accounting rules and the choices of measurement and disclosure practices in them to transform financial statements from what they should be, to what preparers would prefer to see reported and (2) the process by which transactions are structured so as to produce the required accounting results rather than reporting transactions in a neutral and consistent way."

Healy and Whalen (1999) emphasise that creative accounting transpires from the exercise of judgement by management in the structuring and financial reporting of transactions.

Thus, creative accounting refers to the various practices management use to manipulate financial statements. The objective of creative accounting is to ensure that users of the financial statements draw the conclusions desired by management. This is achieved by structuring transactions or by exercising judgement in the preparation of financial statements to achieve the desired effect on the financial statements.

Breton and Stolowy (2000) elaborate on the basic definition of creative accounting by classifying various forms of creative accounting practices, as illustrated in Figure 1:

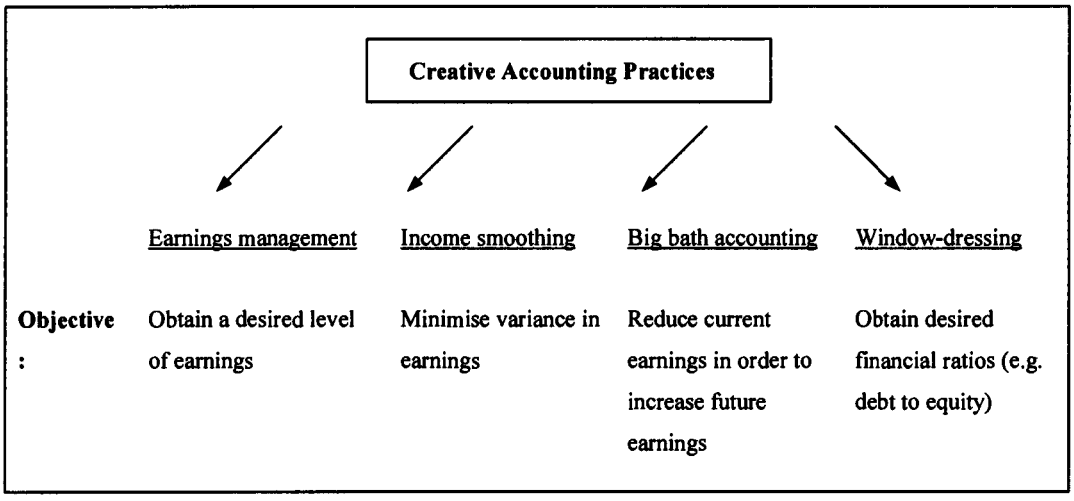

Figure 1: Classification of creative accounting practices

2.2 Evidence of the Existence of Creative Accounting

Healy and Whalen (1999) note that, despite the widespread belief that creative accounting exists, researchers have struggled to conclusively prove its existence. This struggle stems from the difficulty involved in estimating what the financial statements of a company would look like without the effect of creative accounting practices. However, a number of researchers, using a variety of methods, have been able to find evidence supporting the existence of creative accounting practices in a number of countries.

Selected evidence of creative accounting in various countries, including South Africa, is summarised in Table 1 on the following page. This is followed by a detailed discussion of the relevant studies identified.

Table 1: Evidence of creative accounting practices in various countries

Country	Area of Creative Accounting	Authors
Australia	Income smoothing Big bath accounting	Craig and Walsh (1989) Godfrey, Mather and Ramsay (2003)
Canada	Change in accounting policy	Saudagaran and Sepe (1996)
Finland	Earnings management	Kasanen, Kinnunen and Niskanen (1996)
Singapore	Income smoothing	Ashari, Koh, Tan and Wong (1994)
South Africa	Income smoothing	Prinsloo, Ramsay-Slogrove and Rowlands (1996); Seelenbinder (1995); McQueen (2000)
Spain	General creative accounting	Blake and Amat (1996)
United Kingdom	Foreign exchange Misclassification of extraordinary and exceptional items	Brayshaw and Eldin (1989) Beattie, Brown, Ewers, John, Manson, Thomas and Turner (1994)
United States of America	Change in accounting policy Income smoothing Big bath accounting	Pincus and Wasley (1994) Copeland (1968) Pourciau (1993)

2.2.1 Australia

Craig and Walsh (1989) selected a random sample of 230 companies listed on the Sydney Stock Exchange and examined these companies' financial statements for the year ending in 1985. The authors specified extraordinary item adjustments as the income smoothing technique to be studied. The authors identified 84 companies in the original sample that had reported extraordinary items in the relevant period. The authors then used statistical methods to analyse the trends in these companies' net profit figures and found strong substantive evidence of the use of extraordinary items to smooth net profit.

Godfrey, Mather and Ramsay (2003) examined the financial reports of 63 Australian listed companies that changed chief executive officers (CEOs) during the period 1992 to 1998. The authors hypothesise that there will be downwards earnings management (i.e. big bath accounting) in the reporting period of the CEO change. The authors support this hypothesis with the argument that such a strategy establishes an initial low benchmark. This low benchmark increases the ability of the new CEO to subsequently manage earnings upwards, thereby increasing the perception of his/her performance as CEO. The authors tested this hypothesis by examining the negative unexpected accruals reported by the sample companies in the reporting period of the CEO change and found some evidence of big bath accounting in this period.

2.2.2 Canada

Saudagaran and Sepe (1996) examined Canadian companies' use of accounting changes as an income smoothing technique. The authors selected a sample of 20 Canadian companies that reported voluntary accounting changes in the 1983 – 1986 period. Regression analysis was used to identify the factors that led these companies to make use of accounting changes. It was concluded that the companies employed this creative accounting technique in order to adjust the level of earnings and reduce earnings variability.

2.2.3 Finland

Kasanen, Kinnunen and Niskanen (1996) characterised the Finnish economic and regulatory

environment as debt-denominated with a concentrated ownership structure. In this context, the authors hypothesised that Finnish companies manipulate earnings upwards in order to report a level of earnings high enough to pay out a stable dividend to shareholders. The authors selected a sample of 37 companies listed on the Helsinki Stock Exchange and examined their financial statements over the period 1970 – 1989. The requirements of International Accounting Standards were used to recalculate these companies' reported earnings figures. This figure was used as a proxy for unmanaged earnings and compared to actual reported earnings to identify earnings management. The authors concluded that Finnish companies engage in earnings management motivated by dividend-based target earnings.

2.2.4 Singapore

Ashari, Koh, Tan and Wong (1994) selected a sample of 153 companies listed on the Stock Exchange of Singapore during the period 1980 to 1990. The authors used an income smoothing index formulated by Eckel (1981) and were able to identify evidence of income smoothing.

2.2.5 South Africa

Research on creative accounting by South African companies is fairly limited. Prinsloo, Ramsay-Slogrove and Rowlands (1996) investigated whether or not companies listed on the industrial sector of the JSE practise income smoothing. They distinguished between detectable and non-detectable artificial income smoothing (where artificial income smoothing refers to accounting manipulations) and real income smoothing (i.e. transaction structuring) and investigated the use of each of these techniques.

Prinsloo, Ramsay-Slogrove and Rowlands conducted a Delphi study to obtain experts' views on income smoothing in South Africa. The Delphi panel comprised external auditors, academics, financial statements users and ex-preparers of financial statements. The panel concluded that the managements of JSE companies, especially those listed in the industrial sector, are motivated to smooth income.

Prinsloo, Ramsay-Slogrove and Rowlands also performed a questionnaire-based experiment with financial directors of JSE industrial companies. They concluded that income smoothing is practised and that income smoothing is more likely to be present when companies exhibit low variability in reported earnings. They also concluded that all three forms of income smoothing (namely, detectable artificial techniques, non-detectable artificial techniques and real techniques) are widely used.

Seelenbinder (1995) investigated income smoothing by 28 South African listed companies from 1988 to 1994. He specified the misclassification of extraordinary items (based on the old AC 103 definition of extraordinary items) as the smoothing variable. He found that 9 of the 28 companies examined (i.e. 32%) used extraordinary items to smooth income.

McQueen (2000) examined South African banks over the period 1988 to 1999 and concluded that South African banks smooth income through the use of bad debts provisions.

2.2.6 Spain

Blake and Amat (1996) adopted a survey approach to establish the existence of creative accounting in Spain. A questionnaire was sent to partners in Spanish audit firms. 64% of the respondents viewed creative accounting as a serious problem in Spain, while 37% of the respondents indicated that creative accounting was becoming increasingly popular in Spain.

2.2.7 United Kingdom

Brayshaw and Eldin (1989) based their choice of an income smoothing technique to investigate on the accounting standards applicable to UK companies prior to 1983. These accounting standards permitted companies to report exchange differences either as part of ordinary income or as an extraordinary item. The authors selected a sample of 40 UK companies that reported exchange differences during the period 1975 – 1980. It was found that foreign exchange differences increased the volatility of these companies' reported income figures. Therefore, these companies classified these exchange differences as extraordinary items in order to smooth the volatility of ordinary income.

Beattie, Brown, Ewers, John, Manson, Thomas and Turner (1994) based their research on the assumption that the target of income smoothing practices is a company's reported profit after tax, but before extraordinary items. The income smoothing technique examined on this basis was therefore the classification of items as either above the line (i.e. exceptional items) or below the line (i.e. extraordinary items). The authors selected a sample of over 200 UK companies that published financial statements in 1989 – 1990. Evidence was found that in the presence of volatile earnings, companies engage in the specified smoothing behaviour.

Thus, the relevant literature provides considerable evidence that creative accounting is practised, both locally and internationally.

2.2.8 United States of America

Pincus and Wasley (1994) investigated the changes to accounting policies made by US companies over the period 1969 to 1988. The authors identified 6 920 accounting changes made by US companies over this period. These accounting changes were classified as either mandatory or voluntary and analysed further. Their research showed that, on average, voluntary accounting changes tend to be income-increasing. Furthermore, the authors found that companies are more likely to be early adopters of mandatory accounting changes if the change will increase the company's earnings.

Copeland (1968) selected a sample of 19 firms listed on the New York Stock Exchange. He identified two components of net income as variables containing income smoothing potential. Each firm in the sample was then classified as a smoother or non-smoother on the basis of these variables, over time periods of 2, 4, 6 and 8 years. Copeland identified a significant number of income smoothers within the sample of firms.

Pourciau (1993) argues that when a company has had a change in CEO, the new CEO has a strong incentive to manage earnings downwards initially in order to manage expectations and set achievable performance goals. Pourciau examined the earnings, accruals, cash flows and special items and write-offs reported by a sample of 73 US companies that had a change in CEO over the period 1985 to 1988. Pourciau identified certain difficulties and limitations of the research design, but nevertheless found weak evidence that these

companies engaged in big bath accounting in the initial reporting period following a CEO change.

2.3 Incentives to Engage in Creative Accounting Practices

Incentives are the reason for the existence of creative accounting. Without the existence of incentives, management would prepare financial statements with the objective of presenting users with a true and fair view of the entity. An examination of the incentives to engage in creative accounting practices is therefore crucial in understanding creative accounting.

Duncan (2001) discusses the pressures to influence reported results from a practical perspective. He suggests that such pressures arise from one of three factors: factors outside of the firm (external factors), conditions or programmes within the firm (internal factors) or the motivational factors of individuals (personal factors). He then provides a comprehensive list of twenty such pressures, based on this classification.

Table 2: Twenty pressures to influence reported results

External Factors	Internal Factors	Personal Factors
• Analysts' forecasts	• Merger attractiveness	• Personal bonuses
• Access to debt markets	• Management compensation	• Promotion
• Competition	• Short-term focus	• Focus on team
• Contractual obligations	• Unrealistic plans and budgets	• Job retention
• Rising stock prices	• Period-end requests from superiors	• Desire to be seen as a hero or turnaround specialist
• New financial transactions	• Excessive profit followed by fear of decline	• Low regard for auditors
• Market disregard of big charges	• Concealing unlawful transactions	

Empirical research in this area has focused on three areas of incentives, namely contractual

incentives, capital market incentives and regulatory incentives. Relevant research in these three areas is discussed below.

2.3.1 Contractual Incentives

Contractual incentives arise when an entity enters into a contract, the outcome of which is based on the accounting figures reported by the entity. The two main types of contracts relevant in this area are those relating to management compensation and debt covenant violation.

- **Management compensation**

Healy (1985) proposes that managers receiving bonus awards based on the firm's earnings will engage in earnings management to maximise their bonuses. Healy describes a bonus scheme whereby earnings below a certain level (the bogey) will result in no bonus. Thereafter the bonus amount increases as earnings increase, until a certain level of earnings (the cap) is reached, after which the bonus remains constant. He then argues that managers will manage earnings downwards when earnings are either below the bogey or above the cap, thereby increasing the probability of receiving a bonus in subsequent years. When earnings are between the bogey and the cap managers will manage earnings upwards so as to increase the bonus in the current year. Healy selected a sample of 94 of the largest industrial corporations in the US in 1980 and used contingency tables to examine the relationship between discretionary accruals and accounting procedures and the characteristics of these companies' bonus plans. Healy found evidence of the use of accruals to manage earnings in the manner described.

McNichols and Wilson (1988) found evidence supporting Healy's argument. They investigated the use of bad debt provisions to manage earnings and found evidence of downwards earnings management when earnings are excessively high and when earnings are excessively low. Guidry, Leone and Rock (1999) found that US business unit managers manipulate earnings in the manner described by Healy.

Holthausen, Larcker and Sloan (1995) found slightly contradictory evidence. Although, they found evidence of downwards earnings management when earnings are above the cap, they

found no evidence of downwards earnings management when earnings are below the bogey. However, it should be noted that their methodology differed from that used by Healy.

The importance of the compensation incentive for engaging in creative accounting practices is emphasised by Shah's (1998) findings. He argues that one of the key motivators of creative accounting in the United Kingdom is the use of accounting numbers as performance indicators.

Cheng and Warfield (2005) hypothesize that there is a positive relationship between earnings management and the equity incentives, such as shares and share options, received by mangers. The motivation for earnings management is to increase share value in order to receive greater proceeds on the eventual sale of the shares earned through equity incentive schemes. The authors examined data relating to US firms over the period 1993 – 2000 and conclude that managers receiving high equity incentives are more likely to engage in earnings management in order to meet or just beat analysts' forecasts, compared to managers with low equity incentives.

- **Debt covenant violation**

Debt covenants are frequently based on accounting numbers and/or ratios derived from these numbers (e.g. interest coverage or debt equity ratios). It follows that entities nearing debt covenant violation will use creative accounting to prevent default. Alternatively, entities that have already violated such covenants may use creative accounting to aid future negotiations.

DeFond and Jiambalvo (1994) examined a sample of 94 US companies that had violated debt covenants from 1985 through to 1988. They hypothesised that these companies would have engaged in creative accounting practices in the year prior to the debt covenant violation. This hypothesis was tested by using time-series and cross-sectional models of normal accruals to identify abnormal accruals in the year preceding the debt covenant violations. The authors found significant positive accruals in the year prior to violation, leading to the conclusion that creative accounting is used in the year preceding the violation.

Sweeney (1994) conducted similar research by selecting a sample of 130 US firms that were first-time debt covenant violators in the period from 1980 to 1989. In addition, Sweeney also selected a sample of control firms within the same industry classifications as the violators. The firms' accounting choices were then investigated to identify the accounting responses of management to debt covenant violations. The study concludes that managers of firms approaching default engage in income-increasing accounting changes.

DeAngelo, DeAngelo and Skinner (1994) were unable to find evidence of such income-increasing accounting changes in an examination of the accounting choices of 76 firms listed on the New York Stock Exchange. However, sample selection was not based on debt covenant violations. Instead, the sample consisted of firms that had experienced a minimum of three annual losses in the period 1980 to 1985 and that had reduced cash dividends during this period. Firms reporting losses are less likely to have managed earnings upwards than firms reporting profits. The sample selection criterion of selecting firms experiencing losses was therefore biased towards selecting firms with low levels of unusual accruals.

2.3.2 Capital Market Incentives

Capital market incentives arise when managers believe that the company's market value is directly related to the figures reported in the financial statements.

- **Initial public offerings (IPOs)**

A company's set of financial statements is one of the most important inputs into the pricing of its initial public offering (Titman and Trueman, 1986; Krinsky and Rotenbery, 1989). Investors place more reliance on accounting-based information due to the absence of a market-determined price and a general lack of information about the company.

Neill, Pourciau and Schaefer (1995) found a significant positive correlation between the proceeds of an IPO and accounting methods that increase earnings and asset values. They concluded that issuers have incentives to engage in creative accounting in order to increase the initial offering price.

Friedlan (1994) found evidence that IPO issuers manage earnings upwards in the financial

statements released prior to the offering.

- **Earnings forecasts and growth**

Another reason for engaging in creative accounting is to meet the expectations of financial analysts. Former SEC chairman Arthur Levitt (1998), in his speech, "The Numbers Game" blamed this incentive for the prevalence of earnings management in the US. Collingwood (2001: 65) refers to this incentive as the "earnings game", which he describes as follows:

> "The players of this game include analysts, investors, accounting firms, and companies themselves, all of whom have a great deal riding on the quarterly earnings number. Good earnings news can light a fire under a company's stock, but if the company misses its number by even a penny, its stock is likely to get hammered."

Burgstahler and Dichev (1997) examined the change in earnings reported by a sample of US companies over the period 1976 to 1994. An analysis of the cross-sectional distributions of earnings changes revealed low frequencies of small earnings decreases and high frequencies of small earnings increases, as well as low frequencies of small losses and high frequencies of small positive earnings. The findings of the study lead to the conclusion that companies manage earnings to avoid earnings decreases and losses and to meet forecasts.

Nelson, Elliott and Tarpley (2002) surveyed a sample of US auditors to determine their beliefs about managers' incentives for earnings management. The pressure to meet analysts' expectations emerged as the leading perceived incentive.

2.3.3 Regulatory Incentives

Regulatory incentives arise when reported accounting figures influence the actions of regulators or government officials and/or influence the impact of enacted regulations on the entity.

- **Income tax**

When a company's income tax charge is based on its accounting earnings this may induce earnings management to minimise the company's income tax.

Guenther (1994) found that firms use income-decreasing accruals in the year prior to a decrease in the statutory tax rate in order to defer the taxation of income to the following period, in which the tax rate is lower. Scholes, Wilson and Wolfson (1992) examined US firms during the 1986 – 1988 period, when statutory tax rates were decreased from 46% to 34%. They found that firms deferred revenue recognition and/or accelerated expense recognition in the year prior to the tax rate reduction.

- **Industry regulation**

Healy and Wahlen (1999) in their review of the earnings management literature suggest that industry-specific regulations create incentives for companies to use creative accounting to manipulate the accounting figures that receive regulators' attention.

An example of such an industry-specific regulation is the capital adequacy requirements imposed by banking regulators. Moyer (1990) found evidence of creative accounting by banks nearing minimum capital adequacy requirements.

- **Official examination**

Following allegations of misconduct in a certain sector, companies in that sector may use creative accounting to portray a lower level of profitability in order to avoid official examination. This is done because excessively high profits may support allegations of misconduct (e.g. monopolistic behaviour or illegal actions) or over-emphasise a company's ability to pay damages.

Hall and Stammerjohan (1997) found that managers of oil firms facing litigation with potentially large damage awards managed earnings downwards.

2.4 Other Factors Associated with Creative Accounting

In addition to the existence of incentives to engage in creative accounting techniques, there

are also factors that have been found to be indicative of an entity's propensity to engage in these techniques. This section examines a number of these factors.

2.4.1 Company Size and Industry Classification

Beasley, Carcello, Hermanson and Lapides (2000) investigated financial statement manipulations by US companies over the period 1987 to 1997. Their findings indicate that, on average, financial statement manipulators are relatively small (as measured by total assets). Beneish's (1999) examination of US earnings manipulators also found these companies to be smaller (in terms of total assets) than non-manipulators. Craig and Walsh (1989) arrived at the same conclusion in respect of Australian companies.

Beasley, Carcello, Hermanson and Lapides also state that prior research points towards a concentration of financial statement manipulations within certain industries. The authors' findings support prior research as it was found that selected manipulation techniques are more prevalent in certain industry classifications. The authors categorised the various forms of financial statement manipulations and examined the use of these manipulation techniques within three industries: technology, health care and financial services. It was found that technology companies most commonly engaged in revenue recognition manipulation.

Ashari, Koh, Tan and Wong (1994) found evidence of industry classification influencing the income smoothing engaged in by Singaporean companies. The authors found income smoothing to be more common amongst companies in the hotels and property sector and least common amongst companies in the industrial and commercial sector.

2.4.2 The Role of Auditors

Prior to the consolidation of audit firms and the fall of Arthur Andersen, the auditing profession was dominated by the "Big 6" firms (i.e. Arthur Andersen, Coopers & Lybrand, Ernst & Young, Deloitte & Touche, KPMG Peat Marwick and Price Waterhouse) (Krishnan, 2003). Changes to the industry have resulted in the profession now being dominated by the "Big 4" firms (i.e. Ernst & Young, Deloitte, KPMG and PriceWaterhouseCoopers).

Research conducted on the role of auditors and their possible association with the prevalence of earnings management indicates that clients of the "Big 4" audit firms are less likely to engage in earnings management for the following reasons (Krishnan, 2003):

- These audit firms have the necessary resources and industry-specific expertise to detect earnings management practices.
- There is more incentive for the "Big 4" audit firms to detect and report earnings management in order to protect their reputation.

Dickins and Higgs (2005) state that an auditor's independence may be impaired by a high ratio of non-audit to audit services. This, in turn, may lead to an increased likelihood of compromise on financial reporting issues. A survey of US investors conducted by Hodge (2003) suggests that investors view a decrease in auditors' independence as negatively impacting the reliability of financial information.

Research conducted by Frankel, Johnson and Nelson (2002) indicates that there is a positive correlation between the level of fees for non-audit services and the level of a company's discretionary accruals (used as a measure of earnings management).

2.4.3 Financial Statement Indicators

Beneish (1999) examined the financial statements of US companies that had been identified by the SEC or the news media as earnings manipulators. He then attempted to construct a model for predicting earnings manipulation on the basis of accounting data.

Beneish's model predicts that earnings manipulators will have the following characteristics:

- Large increases in the number of days' sales in accounts receivables;
- Deterioration in gross margin;
- Deterioration in asset quality (defined as the ratio of non-current assets, other than property, plant and equipment, to total assets);
- High growth in sales; and
- Large accounting accruals.

Doumpos, Spathis and Zopounidis (2002) conducted a similar study on a sample of Greek firms to identify financial ratios that are possible indicators of falsified financial statements. Falsified financial statements were defined as those financial statements with qualified audit

reports. The authors identified a sample of 76 Greek firms. 38 of these firms had falsified financial statements and the remaining 38 had non-falsified financial statements. The authors then applied various financial ratios to the financial statements of the firms included in the sample and tested the significance of these financial ratios as identifiers of financial statement manipulations. The table on the following page contains the significant financial ratios identified by the authors, together with explanations supporting their significance.

Table 3: Financial ratios used by Doumpos, Spathis and Zopounidis to identify falsified financial statements

Financial Ratio	Explanation
Ratio of total debt to total assets	A high debt structure increases the likelihood of fraudulent financial statements because additional risk is borne by debt owners (as opposed to managers and equity owners).
Inventories to sales ratio	Management may manipulate inventories by not matching sales to cost of goods sold or by failing to impair obsolete inventory.
Net profit to sales ratio	Managers may be motivated to manipulate net profit and/or sales in order to maintain or improve past levels of profitability.
Sales to total assets ratio	

2.4.4 Corporate Governance Mechanisms

Researchers have argued that weaker corporate governance mechanisms create opportunities for managers to engage in creative accounting as their actions are not closely monitored.

Beasley, Carcello, Hermanson and Lapides (2000) compared the corporate governance mechanisms of financial statement manipulators and non-manipulators. A sample of 300 US companies involved in alleged instances of fraudulent financial reporting was selected. Benchmark data on corporate governance mechanisms was then obtained from a sample of 300 no-fraud companies. The authors found that financial statement manipulators, in comparison to non-manipulators, exhibit the following:

- Fewer independent directors on the board of directors;
- Audit committees that are less independent; and
- Audit committees that meet less frequently.

2.5 Forms of Creative Accounting

Forms of creative accounting are numerous and varied. The creative accounting practices used by a particular entity will depend largely on the flexibility allowed by the accounting standards governing its financial reporting, as well as the specific objective(s) it is trying to achieve through the use of creative accounting. A detailed analysis of all possible creative accounting practices is thus impractical. Therefore, this section merely provides a broad overview of a select number of creative accounting practices.

Schilit (1993: 2) refers to creative accounting practices as "financial shenanigans" and identifies the following seven "shenanigans":

- Recording revenue too soon;
- Recording bogus revenues;
- Boosting income with one-time gains;
- Shifting current expenses to a later period;
- Failing to record or disclose all liabilities;
- Shifting current income to a later period; and
- Shifting future expenses to the current period.

A broader perspective is provided in Table 4 on the following page, which details the various creative accounting practices discussed by a number of researchers.

Table 4: Creative accounting schemes

	Tweedie and Whittington (1990)	Naser (1993)	Smith (1996)
Off-Balance Sheet Financing:			
• Leases	✓	✓	✓
• Controlled non-subsidiaries	✓	✓	✓
• Contingent contracts	✓		
Business Combinations:			
• Pooling method vs purchasing method	✓	✓	
• Fair value adjustments	✓		✓
• Reorganisation expenses	✓		
• Treatment of goodwill subsequent to recognition	✓		
Equity accounting	✓		
Complex capital issues	✓		✓
Contingent liabilities			✓
Capitalisation of interest and other costs			✓
Brands	✓		✓
Pension contribution holiday			✓
Irregular valuations	✓	✓	
Creating profit via asset disposal		✓	✓
Misclassification of extraordinary and exceptional items			✓
Change in depreciation policy			✓
Change in accounting policy		✓	

Table 4 illustrates that creative accounting practices include structuring transactions so as to

avoid inclusion on the balance sheet, hidden costs, classification issues and accounting policy manipulations.

Nelson, Elliott and Tarpley (2002) surveyed a sample of US auditors to determine the most common forms of earnings management found in practice. The top three forms of earnings management were found to be in the areas of the manipulation of reserves, revenue recognition and business combinations.

Harris (2002) suggests that the most predominant areas of creative accounting in South Africa include deferred expenses, contingent liabilities, intangible assets and foreign currency translations.

The vast amount of research on creative accounting indicates that the manipulation of accounting figures takes place in many countries, including South Africa. However, it is acknowledged that the South African research in this area is limited. The means of creative accounting are diverse and researchers have found evidence of various motivators for engaging in creative accounting. The literature review justifies additional research into creative accounting practices in South Africa. The following chapter focuses on the literature relating to a specific area of potential South African creative accounting, namely: headline earnings.

CHAPTER 3: The Development of Headline Earnings

This chapter serves as a basis for describing the concept of headline earnings (i.e. the specific area for potential creative accounting identified for research in this report). The chapter begins by describing the extent to which accounting information and, in particular, the earnings measure are considered useful by financial market participants. The chapter then proceeds to highlight the characteristics of a high quality earnings figure and how these characteristics lead to the development of the headline earnings concept. The development of the concept in the UK, South Africa and the US is then described.

3.1 The Usefulness of Accounting Information

The Framework for the Preparation and Presentation of Financial Statements issued by the International Accounting Standards Board (1989: paragraph 12) states,

> "The objective of financial statements is to provide information about the financial position, performance and changes in financial position of an entity that is useful to a wide range of users in making economic decisions."

Although, this may be the stated objective of financial statements, it is necessary to consider whether or not financial market participants consider this objective to be fulfilled.

Various studies have examined the relevance of financial statements to various groups of market participants in various countries. Chang, Most and Brain (1983) surveyed a number of individual investors, institutional investors and financial analysts in the US, the UK and New Zealand. They reported that all three groups of investors in all three countries regard financial statements as useful in making investment decisions.

Pike, Meerjanssen and Chadwick (1993) investigated the various information sources employed by investment analysts in Germany and Britain. Both groups of analysts viewed annual/interim reports as one of the top three sources of information. Gniewosz (1990) found the annual report to be one of the most important sources of information for Australian institutional investors.

In the South African context, Flynn (1987) reported that institutional investors regard company announcements and reports as the most important source of information in the decision-making process. Dewar's (2000) survey of South African sell-side/brokers' analysts found that this group of users regards financial statements as the second most valuable source of information in making investment decisions.

Therefore, there is empirical evidence that accounting information is considered useful, both in South Africa and internationally. In practice, however, there is one aspect of accounting information that is focussed on, namely reported earnings. This is evidenced by coverage provided in the financial press, earnings forecasts prepared by investment analysts and the emphasis placed on this figure by companies themselves (e.g. in directors' reports). It is therefore necessary to specifically consider the relevance of a company's reported earnings figure.

3.2 The Relevance of the Earnings Figure

An entity's reported earnings figure is the net financial result of the firm's activities during the financial period, calculated in accordance with the applicable accounting standards. Nichols and Wahlen (2004: 263) define earnings as follows:

> "A firm's earnings number represents an accounting measure of the change in the value of the firm to common equity shareholders during a period (apart from the effects of direct transactions with shareholders, such as paying dividends or issuing shares)."

A key indicator of the extent to which accounting information influences investors' decisions is the extent to which share prices move in response to the release of accounting information. An important figure in this context is a company's reported earnings figure.

The seminal paper in this regard is Ball and Brown (1968). These authors successfully showed that abnormal security returns were experienced by companies whose reported earnings were higher or lower than that expected by the market.

As discussed by Foster (1986), the Ball and Brown study opened a research area which has seen numerous subsequent event studies and research papers. Foster's discussion of the

research conducted into the association between accounting earnings and share price returns indicates that a strong association has been observed by many researchers and has been detected for companies listed in the US and outside of the US.

It is therefore evident that market participants rely on the information embodied in a company's reported earnings figure. It is now necessary to consider why the earnings figure is considered relevant, together with the characteristics of the earnings figures that result in this relevance.

3.3 The Quality of the Earnings Figure

Beaver (1998) argues that the association between accounting earnings and share returns exists because of the following links:

- A firm's current earnings figure is used as a basis for predicting future earnings.
- Predicted future earnings are used to develop expectations of future dividend payments.
- A firm's share value is the present value of expected future dividend payments. (This is the classical approach to equity valuation posited by finance theory.)

Therefore, from an equity valuation perspective, it follows that the quality of the earnings figure may be defined as its usefulness in predicting a firm's future earning power. It should be noted that this is not the only perspective on equity valuations. For example, equity valuations are often also based on free cash flow models. However, irrespective of the validity of these alternative perspectives, they have not been discussed here as they are considered irrelevant to this study.

Cornell and Landsman (2003: 23) argue that for an earnings measure to be useful in valuation exercises, the measure must effectively capture the "persistent component" of earnings. The authors argue that once-off accounting charges or write-offs create idiosyncratic variations in earnings that distort the predictive ability of this figure.

Schipper and Vincent (2003) relate the quality of the earnings figure to its general decision usefulness. In this context, they consider various earnings quality constructs and measures, including persistence and predictability. The persistence construct is based on the premise

that high quality earnings are sustainable. The predictability construct contends that high quality earnings improve the ability of the users of financial statements to make relevant forecasts.

The bottom-line earnings figure report by companies is all-encompassing and by its nature may not therefore satisfy the persistence and predictability criteria described above. It is this shortcoming of the bottom-line earnings figure that lead to the development of the concept of headline earnings.

3.4 The Development of the Headline Earnings Concept in Various Countries

The need to present an earnings figure that satisfies the decision-usefulness criterion lead to the development of variations on the basic earnings figure. These variations, as developed in three different countries (i.e. the United Kingdom, South Africa and the United States of America), are discussed below.

3.4.1 United Kingdom

The concept of headline earnings originated in the United Kingdom and was developed by the Institute of Investment Management and Research in the United Kingdom, IIMR (now the United Kingdom Society of Investment Professionals, UKSIP).

IIMR issued *Statement of Investment Practice No. 1 "The Definition of Headline Earnings"* (SIP 1) in September 2003. IIMR recognised the impossibility of defining a single earnings figure that satisfies the requirements of all financial statement users. Instead, IIMR focussed on the assumption that most users employ the earnings figure for the following purposes (as stated in paragraph iv of the statement):

> "(a) A measure of the company's maintainable earning capacity, suitable in particular as a basis for forecasts and for inter-year comparisons, and for use on a per share basis in the calculation of the price/earnings ratio.
> (b) A factual 'headline' figure for historic earnings which can be a benchmark figure for the trading outcome for the year."

Furthermore, IIMR also recognised that the calculation of a maintainable earnings figure requires the elimination of non-continuing items, which in turn requires a large amount of estimation and judgement. Paragraph vi of the statement accepts that, as a result,

> "the calculation of maintainable earnings figures cannot be put on a standardised basis."

Despite this limitation, paragraph vii of the statement highlights the desirability and usefulness of an earnings figure with the following characteristics:

> "calculated on a standard basis, which can be used as an unambiguous reference point - between users, the press, the statistical companies etc."

SIP 1 defines headline earnings on the basis of these characteristics. The main features of this definition are as follows:

- All trading profits and losses are included.
- Profits and losses arising from discontinued operations or businesses acquired during the financial year are included. However, profits and losses attributable to disposal or termination of discontinued operations are excluded.
- Profits and losses on the disposal of fixed assets, as well as fixed asset impairments, are excluded.

On the basis of this definition, it is evident that headline earnings excludes items of a capital nature and, as such, serves as a measure of a company's trading performance.

3.4.2 South Africa

The development of the headline earnings concept in South Africa was driven by the developments in the United Kingdom. Following the issuance of SIP 1 in the United Kingdom, the South African Institute of Chartered Accountants (SAICA) published an Accounting Issues Task Force Opinion, AC 306 "*Headline Earnings – Effect of the issue of AC 103 (revised) on the calculation and disclosure of earnings per share.*" The requirements of this opinion mirrored the requirements of SIP 1 (Everingham and Watson, 2001).

A JSE listings requirement, effected on 30 August 2000, made it compulsory for all

companies listed on the JSE (the primary stock exchange in South Africa) to disclose a headline earnings per share figure calculated in terms of AC 306 (Everingham and Watson, 2001).

In December 2002, AC 306 was replaced by SAICA Circular 7/2002 *Headline Earnings* (Circular 7/2002). This document was developed by UKSIP in conjunction with various professional bodies in South Africa. The principles embodied in this circular are identical to SIP 1 (which is included as an appendix to the circular), but it provides more detailed guidance on the calculation of the headline earnings figure. This circular was effective from December 2002 and still governs the headline earnings calculations of JSE-listed companies.

3.4.3 United States of America

Over recent years, many American companies have included a pro-forma earnings figure in earnings releases (Cornell and Landsman, 2003). Pro-forma earnings figures are intended to provide a better indication of a company's true earning power by excluding items such as the amortisation of goodwill and other intangibles. However, pro-forma earnings figures are a non-GAAP earnings figure. As such, the calculation of this figure is not controlled and calculations vary between different companies. The pro-forma earnings figure is therefore not a transparent, comparable measure of a company's performance.

In response to this problem, Standard and Poor's (2002: 5), a leading publisher of corporate financial data in the US, developed the concept of core earnings, defined as follows:

> "Core Earnings focus on a company's ongoing operations."

Standard and Poor's therefore developed a framework of specific items that should be included and excluded when calculating core earnings (as show in Table 5 on the following page).

Table 5: Items included in and excluded from Standard and Poor's core earnings

Included in Core Earnings	Excluded from Core Earnings
• Employee stock option grant expense • Restructuring charges from ongoing operations • Write-downs of depreciable or amortisable operating assets • Pension costs • Purchased research and development expenses	• Goodwill impairment charges • Gains/losses from asset sales • Pension gains • Unrealised gains/losses from hedging activities • Merger/acquisition related expenses • Litigation or insurance settlements and proceeds

3.5 The Usefulness of the Headline Earnings Figure

Lin and Walker (2000) investigated the usefulness of the headline earnings figure in explaining UK share prices. The authors constructed an accounting-based valuation model with basic earnings per share, headline earnings per share and book value per share as the independent variables. The model was applied to a sample of companies listed on the London Stock Exchange in 1994. The results of the statistical analysis indicated that headline earnings per share was the most statistically significant explanatory variable in the model. This provides evidence of the usefulness of the headline earnings figure to financial market participants.

It appears that research in this area is very limited. It was not possible to locate similar studies performed in South Africa or similar studies covering the core earnings figure reported in the US.

It is therefore evident that the headline earnings concept was developed to address a specific need of users of financial statements. Furthermore, the widespread usage of this figure by the financial press indicates that this figure is considered useful by individuals and entities that use financial statements for various purposes. From the specific nature and usefulness of headline earnings it follows that this figure may be subject to manipulation to ensure that

users of the financial statements draw desired conclusions. This is developed into formal research hypotheses in the following chapter.

CHAPTER 4: hypotheses

In order to achieve the objectives of this report, three hypotheses were formulated for testing based on the background information obtained from the literature review contained in Chapters 2 and 3. These hypotheses are presented below:

H_1: Companies listed on the JSE manipulate their HEPS figure by deviating from the standard setters' requirements for the calculation of this figure.

The literature review contained in Chapter 2 summarises evidence of creative accounting in various countries, including South Africa. The literature review provides evidence that companies may manipulate their earnings both upwards and downwards (i.e. big bath accounting).

All companies listed on the JSE are required to present an HEPS figure that has been calculated in accordance with the requirements of Circular 7/2002. This is required by paragraph 8.63(c) of the JSE Listings Requirements.

The GAAP Monitoring Panel in South Africa is responsible for monitoring the compliance of JSE-listed companies' annual reports with Statements of Generally Accepted Accounting Practice, the Companies Act and JSE Listings Requirements. In a report on deficiencies over the period September 2002 to April 2005, the panel noted that there are companies that do not calculate headline earnings in accordance with the standard setters' requirements. Furthermore, analysts, the financial press and the companies themselves place emphasis on the reported HEPS figures.

It is therefore hypothesised that HEPS is an additional area of potential creative accounting by South Africa companies, whereby these companies manage HEPS upwards or downwards to ensure that users of the financial statements draw certain conclusions desired by management.

H_2: The level of HEPS manipulation differs between companies in different industries.

Companies within the same industry exhibit similar characteristics and engage in similar activities. Therefore, it would be expected that the financial statements of these companies would contain similar items. Furthermore, it is assumed that companies in the same industry face similar pressures. It would therefore be expected that companies in different industries would engage in varying levels of HEPS manipulation.

As mentioned in Chapter 2, research conducted by Ashari, Koh, Tan and Wong (1994) and Beasley, Carcello, Hermanson and Lapides (2000) supports the notion of an industry classification effect.

H_3: The extent to which a company manipulates its headline earnings is associated with seven factors:

(i) Share price fluctuations
(ii) Earnings growth
(iii) Debt structure
(iv) Company size
(v) Auditor identity
(vi) Level of non-audit services provided by the auditor
(vii) Corporate governance mechanisms

The above-mentioned factors have been extracted from the review of the creative accounting literature contained in Chapter 2. The rationale behind the inclusion of each factor is explained below. References to prior research confirming the explanatory power of each variable are also provided.

- **Share price fluctuations and earnings growth**

The desire to meet analysts' forecasts is a capital market incentive to engage in creative accounting (Burgstahler and Dichev, 1997; Collingwood, 2001; Levitt, 1998; Nelson, Elliott

and Tarpley, 2002). This incentive may be intensified by a poor share price as greater earnings are required to improve investors' expectations.

- **Debt structure**

Debt covenant violation is a contractual incentive to engage in creative accounting (DeFond and Jiambalvo, 1994; Sweeney, 1994). Furthermore, companies with excessive debt may manage earnings upwards to create the impression that they are capable of meeting debt obligations (Doumpos, Spathis and Zopounidis, 2002).

It is acknowledged that various authors have debated the applicability of the debt structure argument in the absence of specific contractual information on an entity's actual debt covenants. Mohrman (1993) examined the debt covenant effect of an exposure draft issued by the Financial Accounting Standards Board for a sample of oil and gas firms in the US. Mohrman concludes that the leverage variable for the sample companies' does not encompass the contractual realities of the debt covenants and is therefore an inadequate proxy for use in analysing the link between debt structures and accounting policy choices. Smith (1993) argues that the association assumption underlying the debt hypothesis may be flawed. Companies for which a particular set of accounting techniques is efficient may also be those companies for which high leverage is efficient. Smith also argues that there are limitations to a cross-sectional analysis, which may be addressed by benchmarking a company's leverage against industry averages.

Despite the limitations acknowledged above, it is still considered useful to include debt structure as a potential variable impacting the extent to which a company engages in headline earnings manipulation. However, caution will be exercised in the conclusions drawn on this variable.

- **Company size**

The financial statements of smaller companies are not as widely read and as closely scrutinized as those of larger companies. Therefore, it would be expected that smaller companies would engage in earnings management more frequently (Beasley, Carcello,

Hermanson and Lapides, 2000).

An alternative view argues that high growth companies are more likely to engage in earnings management. Small companies have more growth prospects than larger companies and would thus be expected to engage in more earnings management (Beneish, 1999).

- **Auditor identity**

It is hypothesised that a company that is audited by one of the "Big 4" audit firms is less likely to engage in earnings management (Krishnan, 2003). The "Big 4" firms have the necessary resources and expertise to detect earnings management. These firms are also more motivated to prevent earnings management in order to protect their reputation.

- **Level of non-audit services provided by the auditor**

An auditor's independence may be impaired by the provision of non-audit services to an audit client. This could result in the auditor permitting earnings management practices (Dickins and Higgs, 2005; Frankel, Johnson and Nelson, 2002; Hodge, 2003).

- **Corporate governance mechanisms**

It is hypothesised that managers of companies with weak corporate governance mechanisms are more likely to engage in earnings management as their actions are not closely monitored (Beasley, Carcello, Hermanson and Lapides, 2000).

It is acknowledged that limitations exist in analysing the relationship between HEPS manipulation and the following factors: company size, auditor identity and corporate governance mechanisms.

Demsetz (1993) considers the consequences of the separation of ownership and control of a company. Demsetz is of the view that a company's monitoring mechanisms (i.e. corporate governance structures and appointment of auditors) are determined by endogenous factors linked to the company's operating structure (including the company's size) and its financing arrangements.

Hermalin and Weisbach (2003) consider the research on companies' boards of directors. Hermalin and Weisbach review the factors that affect the makeup of a company's board of directors. However, the authors acknowledge the complexities of such an analysis as a result of endogeneity issues and are reluctant to reach concrete conclusions on causality.

The statistical testing used for the purposes of this research does not address the endogeneity issues highlighted by the above-mentioned authors. However, the objective of the research is not to establish directional causal relationships, but rather to identify associations between HEPS manipulation and the previously mentioned factors.

The following chapter addresses the approach developed to test the three specified hypotheses.

CHAPTER 5: RESEARCH design and APPROACH

This chapter provides detail on the design and application of the approach adopted in collecting and analysing the required data. The chapter begins with an overview of the research design, which is followed by a description of the sample design and the criteria used in the sample selection. This is followed by a discussion of the data collection design and the means used to gather the data necessary to test the hypotheses presented in Chapter 4.

5.1 Research Design

The research design for the purposes of this report took the form of a data study. This design was considered to be the most appropriate means of collecting relevant information for the purposes of analysis. The detail of this research design was then established in terms of sampling design and data collection design. These elements of the research design are addressed in sections 5.2 and 5.3, respectively.

5.2 Sample Design and Selection

The presentation of headline earnings is a JSE Listings Requirement and is therefore only a compulsory reporting requirement for companies that are listed on the JSE. The population for the purposes of this research therefore comprised all JSE-listed companies. The initial sample was therefore selected from companies listed on the JSE as at 31 December 2004, as reflected on a listing provided by the JSE.

One of the hypothesised factors influencing a company's propensity to engage in headline earnings manipulation is company size. To ensure that the sample covered a range of company sizes, the sampling process took a non-probability approach and the initial sample was specified based on company market capitalisation[1] as at 31 December 2004. The initial sample therefore consisted of the largest 100 and the smallest 100 JSE-listed companies, based on market capitalisation as at 31 December 2004.

Each sample company's annual report for its financial year ending in the 2004 calendar year was obtained from the McGregor BFA Word Database. This initial phase of data collection

[1] A company's market capitalisation is calculated as the product its number of shares in issue and its share price.

yielded an insufficient number of annual reports for companies with a small market capitalisation. This was attributable to a number of these companies not having annual reports available as a result of having been placed under liquidation or trading being suspended on these companies' shares. The sample was therefore extended to include the smallest 150 JSE-listed companies, based on market capitalisation as at 31 December 2004.

Throughout the entire sample, companies were excluded for one of the following reasons:

i) The company's annual report was not available on McGregor BFA Word Database; or

ii) The company is dual-listed on a foreign stock exchange, does not prepare its financial statements in terms of South African Statements of Generally Accepted Accounting Practice ("SA GAAP") and did not present a headline earnings figure in its 2004 annual report; or

iii) The company has more than one class of shares listed on the JSE and, as a result, appears twice in the sample of companies selected. In this scenario, the second appearance of the company in the sample has been excluded.

Appendix I contains the names and market capitalisations of the extended sample of companies. The companies which were eliminated, for the reasons previously mentioned, have been highlighted.

The final sample therefore consisted of 173 companies, comprising the following:

- 89 of the largest 100 JSE-listed companies as at 31 December 2004 (hereafter referred to as large companies); and
- 84 of the smallest 150 JSE-listed companies listed as at 31 December 2004 (hereafter referred to as small companies).

5.3 Data Collection: Company Characteristics

The variables used in the analysis of the factors mentioned in the second and third hypotheses, together with the information sources used to quantify these variables are discussed below.

- **Industry classification**

The different industry classifications used to group the companies included in the sample were derived from the various sectors of the Main Board of the JSE.
On this basis, the following 10 broad industry classifications were used:

- Basic industries
- Cyclical consumer goods
- Cyclical services
- Financials
- General industrials
- Information technology
- Non-cyclical consumer goods
- Non-cyclical services
- Real estate
- Resources

The sample of companies selected included companies listed on the Alt X, Development Capital Market Board and Venture Capital Market Board[2]. These companies are not categorised into sectors and it was therefore necessary to classify them into the broad industries described above on the basis of the nature of the companies' operations.

- **Share price fluctuations**

The variable used to measure the fluctuation in a company's share price is the percentage movement in the company's closing share price between the beginning and end of the accounting period. Companies' annual reports are released subsequent to the end of the accounting period. It is therefore submitted that management would use the annual report to manage adverse share fluctuations during this period.

The closing share prices were obtained from the JSE website (http://www.jse.co.za).

- **Earnings growth**

Earnings growth is measured as the percentage movement in a company's consolidated HEPS from the prior period to the current period (as disclosed in the annual report). Where

[2] These boards provide an alternative means for companies to list in terms of less stringent listing requirements.

the current period is less than a year, this percentage is annualised.

- **Debt structure**

Debt structure is measured in terms of the ratio of total consolidated liabilities to equity (as shown in the group's balance sheet). During the financial period covered in this research, existing financial reporting standards considered outside shareholders to be neither debt nor equity. Instead, outside shareholders were required to be presented as a separate mezzanine category on the balance sheet. Therefore, the balance attributable to outside shareholders was excluded from both the debt and equity figures used to calculate the debt to equity ratio.

- **Company size**

Company size is measured in terms of market capitalisation (in Rands) as at 31 December 2004, as reflected on a listing obtained from the JSE.

- **Auditor identity**

The identity of each company's auditor was identified from the audit report included in the annual report. In this respect the "Big 4" auditors are considered to be Deloitte, Ernst & Young, KPMG and PricewaterhouseCoopers.

- **Level of non-audit services provided by the auditor**

The Companies Act in South Africa requires a company to disclose in its financial statements the amount paid to the auditors, distinguishing between remuneration for the audit, for other specified services and for expenses. This required disclosure was used to calculate the ratio of non-audit fees to audit fees. Amounts paid for expenses are included in audit fees when calculating this ratio.

- **Corporate governance mechanisms**

The King Report on Corporate Governance for South Africa – 2002 (King Code) provides guidance on corporate governance for South African companies. The application section of this report specifically states that all companies listed on the JSE are required to comply with the code.

The requirements of the King Code were considered and the variables by which to measure the strength of a company's corporate governance mechanisms were identified on this basis. This is shown in the table on the following page.

Table 6: Corporate governance mechanisms

Requirements of the King Code	Variables used to measure compliance
The board of directors should consist of a balance of executive and non-executive directors, with a majority of non-executive directors. A sufficient number of non-executive directors should be independent of management.	• Number of directors as a percentage of total directors that are non-executive.[3]
The chairperson of the board of directors should be an independent non-executive director.	• Is the chairperson a non-executive director?[3]
Each board of directors is required to have an audit committee.	• Does the board of directors have an audit committee? • Number of meetings held by the audit committee during the accounting period.

The JSE Listings Requirements require a company to disclose the extent to which the company has complied with the King Code, together with a narrative description of how the principles embodied in the King Code have been implemented. This disclosure, as provided in companies' annual reports, was used to measure the previously specified variables.

It should be noted that the disclosures mentioned above are not provided within a company's financial statements, but rather elsewhere within the annual report. This information is therefore not audited. However, the disclosure is still considered reliable because of the requirements of South African auditing standards in respect of such information. The specific auditing standard that deals with such information, SAAS 720 *Other information in documents containing audited statements*, requires the auditor to review other information that is published with the audited financial statements to ensure that it is not inconsistent with the audited financial statements and does not contain a misstatement of fact.

[3] Although, the King code also specifies independence as a requirement, this has not been included in the variable as a result of an insufficient number of companies in the sample disclosing information relating to the independence of their directors.

5.4 Sample Characteristics

Industry representation within the selected sample of companies is shown in the table below.

Table 7: Industry classification of sample companies

Industry	No. of companies	Percentage
Basic industries	15	9%
Cyclical consumer goods	38	22%
Cyclical services	5	3%
Financials	40	23%
General industrials	8	5%
Information technology	14	8%
Non-cyclical consumer goods	13	7%
Non-cyclical services	9	5%
Real estate	8	5%
Resources	23	13%
Total	**173**	**100%**

The table below contrasts the characteristics of the some of the other variables previously defined for the large companies and small companies within the sample.

Table 8: Overview of sample characteristics

Variable	Large companies	Small companies
Average growth in share price	42%	27%
Average growth in HEPS	98%	-124%
Average debt: equity ratio	6.09	3.72
Average market capitalisation	R18.6 billion	R29.2 million
Percentage of companies audited by one of the "Big 4" audit firms	93%	38%
Average ratio of non-audit fees to audit fees	0.30	0.36
Percentage of companies with an audit committee	99%	71%
Percentage of companies with a majority of non-executive directors on the board of directors	92%	48%

The previous table indicates an average decline in HEPS of 124% for small companies. Approximately 45% of the small companies included in the sample exhibited a decline in HEPS, with the average decline for these companies equaling 466%. It should be noted that this average is largely impacted by outliers, with the greatest decline amounting to 3 978%. The remaining 55% of the small companies exhibited an increase in HEPS, with the average increase equaling 159%.

It should also be noted that the average absolute HEPS reported by small companies in 2003 amounts to 24.56c, compared to an average of 377.89 for large companies. Furthermore, the companies included in the sample were selected on the basis of market capitalisation. On the basis of the equity valuation principles discussed in Chapter 3, companies with declining earnings are likely to have declining share prices. The selection criteria applied to selecting small companies is therefore biased towards selecting companies with declining earnings.

Table 8 also indicates that the large companies in the sample have an average debt to equity ratio of 6.09, compared to a ratio of 3.72 for small companies. The large debt to equity ratio for large companies is attributable to the following:

- The large debt to equity ratio of financial companies; and
- An outlying debt to equity ratio of more than 200 for Growthpoint Properties Ltd (a property company with a large balance of debentures treated as debt).

The average debt to equity ratio of all financial companies included in the sample amounts to 6.46 and arises as a result of the nature of the companies' operations. The Standard Bank Group, for example, had liabilities in excess of R577 billion as at 31 December 2004, compared to equity of approximately R32 billion, resulting in a debt to equity ratio of 18. The sample of large companies includes 21 financial companies, which has a large upwards effect on the average debt to equity ratio for large companies.

After excluding all financial companies and Growthpoint Properties Ltd from the sample of large companies the average debt to equity ratio for the remaining companies is 1.31.

5.5 Data Collection: HEPS Manipulations

For the purposes of this study, a HEPS manipulation is defined as a violation of the requirements of Circular 7/2002 in calculating HEPS that is detectable in the manners described in this section. Such a violation may occur under the following two circumstances:

i) The company fails to adjust for items that are required to be excluded from headline earnings in terms of Circular 7/2002 (hereafter referred to as "unadjusted HEPS items"; and/or

ii) The company adjusts for items that are not required to be excluded from headline earnings in terms of Circular 7/2002 (hereafter referred to as "invalid HEPS adjustments").

It should be noted that the data collection in respect of HEPS manipulations was performed on the consolidated figures presented by the companies in the sample.

The manner in which these two forms of HEPS manipulations were detected is discussed below.

5.5.1 Required HEPS Adjustments

The requirements of Circular 7/2002 were analysed to identify items that this circular requires to be excluded from headline earnings. These items have been defined separately for identification purposes and are detailed in the table on the following page, together with a reference to the relevant paragraph in Circular 7/2002.

Table 9: HEPS adjustments required in terms of Circular 7/2002

No.	Item to be excluded from headline earnings	Circular 7/2002 reference
1.	Profit or loss on the sale or discontinuance of discontinued operations	Paragraph 21
2.	Profit or loss on the sale of property, plant and equipment	Paragraph 22
3.	Profit or loss on the sale of intangible assets	Paragraph 22
4.	Profit or loss on the sale of investment property	Paragraph 22
5.	Profit or loss on the sale of an associate or a subsidiary	Paragraph 22
6.	Impairment loss or the reversal of an impairment loss relating to property, plant and equipment	Paragraph 22
7.	Impairment loss or the reversal of an impairment loss relating to intangible assets	Paragraph 22
8.	Impairment loss or the reversal of an impairment loss relating to investment property	Paragraph 22
9.	Fair value gain/loss recognised in relation to investment property and included in the income statement in terms of the fair value model	Paragraph 22
10.	Fair value adjustments of available-for-sale financial instruments initially recognised in equity, but recycled through the income statement on disposal of these financial instruments	Paragraph 22A
11.	Any amortisation charge, impairment loss or reversal of impairment loss relating to goodwill	Paragraph 26
12.	The release of a foreign currency translation reserve to the income statement as a result of a foreign entity being disposed	Paragraph 22
13.	Profits and losses arising from the reorganisation or redemption of long term debt	Paragraph 23
14.	The recognition of the transitional liability relating to employee benefits through the income statement, as permitted in terms of AC 116 *Employee Benefits*	Paragraph 27
15.	Impairment loss or the reversal of an impairment loss relating to an associate	Paragraph 22

5.5.2 Identification of Required HEPS Adjustments

It was possible to identify the presence of the above-mentioned items as a result of SA GAAP disclosure requirements, as described below in respect of each HEPS adjustment:

- **All HEPS adjustments**

  AC 118 *Cash Flow Statements* requires a reconciliation of net profit before taxation per the income statement and cash generated from operations per the cash flow statement, disclosing adjustments for non-cash items. The nature of most of the required HEPS adjustment items would necessitate the separate disclosure of these items within this reconciliation.

  Paragraph 15 of AC 103 *Net Profit or Loss for the Period, Fundamental Errors and Changes in Accounting Policies* requires separate disclosure of the nature and amount of income and expense items included in operating profit that "are of such size, nature or incidence that their disclosure is relevant to explain the performance of the enterprise for the period". The nature of most of the required HEPS adjustment items results in companies providing this separate disclosure for such items.

- **HEPS adjustment no. 1**

  AC 117 *Discontinuing Operations* requires separate disclosure of any gain or loss recognised on the disposal of assets or settlement of liabilities attributable to a discontinuing operation, as defined in the standard.

- **HEPS adjustment no. 6**

  The disclosure requirements of AC 123 *Property, Plant and Equipment* (AC 123) include a reconciliation of the carrying amount of property, plant and equipment at the beginning and the end of the accounting period. This reconciliation is required to present impairment losses and the reversal of impairment losses recognised during the period separately.

- **HEPS adjustment no. 7**

AC 129 *Intangible Assets* requires the disclosure of a reconciliation of the carrying amount of intangible assets at the beginning and the end of the accounting period. Impairment losses and the reversal of impairment losses recognised during the period are required to be presented separately within this reconciliation.

- **HEPS adjustments no. 8 and no. 9**

  AC 135 *Investment Property* permits an entity to apply either the cost model or the fair value model in measuring investment property. If an entity applies the cost model, it is required to present a reconciliation of the carrying amount of investment property at the beginning and end of the period, with impairment losses shown separately in this reconciliation. If an entity applies the fair value model, it is also required to present a reconciliation of the carrying amount of investment property at the beginning and end of the period, with fair value adjustments shown separately in this reconciliation.

- **HEPS adjustment no. 10**

  In respect of available-for-sale financial assets for which fair value adjustments are taken directly to equity, AC 133 *Financial Instruments: Recognition and Measurement* requires separate disclosure of amounts removed from equity and reported in the income statement during the period.

- **HEPS adjustment no. 11**

  AC 131 *Business Combinations* requires the disclosure of a reconciliation of the carrying amount of goodwill at the beginning and end of the accounting period. Amortisation charges, impairment losses and the reversal of impairment losses are required to be shown separately within this reconciliation.

- **HEPS adjustment no. 12**

  AC 112 *The Effects of Changes in Foreign Exchange Differences* requires a reconciliation of foreign exchange differences classified as a separate component of equity.

- **HEPS adjustment no. 14**

In terms of the disclosure requirements of AC 116 *Employee Benefits*, an entity is required to reconcile the net liability or asset in respect of defined benefit plans at the beginning and end of the period.

5.5.3 Identification of Actual HEPS Adjustments

AC 104 *Earnings per Share* (AC 104) is the South African accounting standard which addresses the disclosure requirements relating to earnings per share figures. In terms of this standard, where an entity discloses an earnings per share figure that is not required by AC 104, such as headline earnings, the entity is required to reconcile the numerator used to calculate this figure to a component of the income statement.

Furthermore, paragraph 8.62(c) of the JSE Listings Requirements requires companies to present "an itemised reconciliation between headline earnings and the earnings used in the calculation of earnings per share".

This reconciliation therefore provides details of all adjustments that have actually been made in arriving at the company's headline earnings figure.

5.5.4 Unadjusted HEPS Items

Each company's consolidated annual financial statements were analysed to identify items required to be adjusted for in the company's HEPS calculations. The identified items were then compared to the actual adjustments made, as reflected in the required reconciliation of headline earnings. In this way it was possible to identify and quantify items required to be adjusted for that had not been adjusted for in the calculation of the group's headline earnings.

The following limitations on the identification and quantification of unadjusted items should be noted:

- Circular 7/2002 requires adjustments to headline earnings to be made after taking into account the effects of outside shareholders and taxation. The disclosures through which required HEPS adjustments were identified do not provide this detail. Therefore, the

effects of outside shareholders and taxation were not taken into account. However, it is submitted that these effects would not have a significant impact since the income tax rate in South Africa is 30% and outside shareholders would probably not exceed a maximum of 50%.

- Circular 7/2002 also requires the previously mentioned HEPS adjustments to be made in respect of associates (i.e. where such amounts are included in equity accounted earnings from associates). Companies are not required to provide detailed disclosure in respect of associates that would allow for the identification of such items. Therefore, it was not possible to identify unadjusted HEPS adjustment items in respect of associates' earnings.

5.5.5 Invalid HEPS Adjustments

The reconciliation of headline earnings to basic earnings required in terms of AC 104 and the JSE Listings Requirements was further examined to identify items that had been adjusted for, but did not require adjustment in terms of Circular 7/2002. The itemised reconciliation allowed for the quantification and identification of the nature of these adjustments.

5.6 Statistical Analyses

Statistical analyses were used to achieve the objectives of this report as follows:

- Descriptive statistics were produced for identified HEPS manipulations.
- A one-sample t-test was used to conclude as to HEPS manipulations by the population of JSE-listed companies.
- Descriptive statistics were produced to analyse the types of HEPS manipulations.
- An analysis of variance was employed to analyse differences in HEPS manipulations by industry classification.
- Multiple regression analysis was used to establish whether or not the hypothesised factors influence a company's propensity to engage in HEPS manipulations.
- Two sample t-tests were used to further analyse the effect of the hypothesised factors.

The findings from the application of this research approach to the identified sample are

detailed in the following chapters.

CHAPTER 6: INCIDENCE AND TYPES OF HEPS manipulations

This chapter addresses the following hypothesis:

H_1:	Companies listed on the JSE manipulate their HEPS figure by deviating from the standard setters' requirements for the calculation of this figure.

The chapter begins by describing the overall incidence of HEPS manipulations in the sample of JSE-listed companies selected for testing. This is followed by a statistical analysis of the level of HEPS manipulations reported by the sample companies. Lastly, the various HEPS manipulation techniques employed by the sample companies are examined.

6.1 Overall HEPS Manipulations

Within the sample of 173 companies, 82 companies (i.e. 47% of the sample) were found to have manipulated their HEPS figure and are classified as "HEPS manipulators".

The HEPS manipulators were further analysed to determine if these companies had manipulated their HEPS figure upwards or downwards. The pie chart below divides the total sample of companies into downwards HEPS manipulators, upwards HEPS manipulators and companies that did not manipulate their HEPS figures (i.e. non-manipulators).

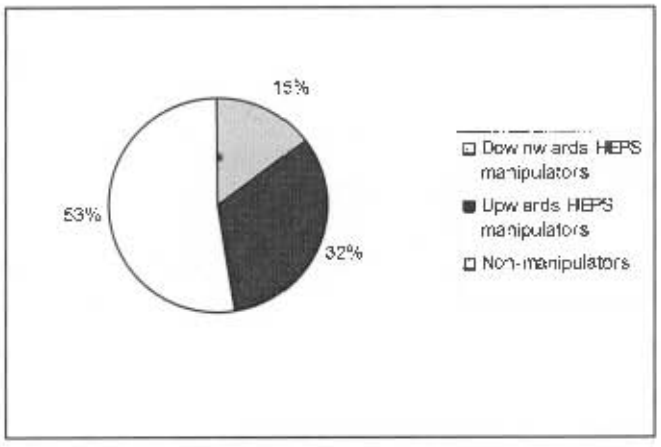

Figure 2: HEPS manipulators and non-manipulators detected in the sample

As indicated by the above figure, 56 companies (i.e. 32% of the sample) manipulated their HEPS figure upwards and 26 companies (i.e. 15% of the sample) manipulated their HEPS figure downwards.

The literature review in Chapter 2 supports both concepts of companies manipulating earnings upwards and companies manipulating earnings downwards. The motivators supporting both concepts are summarised in the table below.

Table 10: Motivators for upwards and downwards HEPS manipulation

Motivators supporting upwards HEPS manipulation	**Motivators supporting downwards HEPS manipulation**
Management compensation Management may receive bonuses dependant on the company achieving a specified level of HEPS. Where the HEPS figure is below this level, management may manage HEPS upwards in order to achieve the set target.	Management compensation Where the HEPS figure is above the target level required to achieve a bonus, management may manage HEPS downwards in order to increase HEPS in future periods. This is in accordance with the theory hypothesised by Healy (1985). Furthermore, where there has been a CEO change, there may be big bath accounting to improve the CEO's performance (and compensation) in subsequent periods.
Debt covenant violations Management may manage a company's HEPS figure upwards in order to achieve HEPS-related conditions imposed by the company's providers of debt or to create the impression that the company is capable of meeting its obligations.	Official examination Companies in a specific sector may manage HEPS downwards in order to avoid official examination spurred by excessive profits.

Earnings forecasts and growth	Earnings forecasts and growth
In order to achieve HEPS figures predicted by analysts, management may manage a company's HEPS figure upwards.	Where a company's HEPS figure exceeds the figure predicted by analysts, management may manage HEPS downwards in order to avoid the prediction of unrealistically high future HEPS figures.

Therefore, the upwards and downwards HEPS manipulations detected in the sample of companies is in line with the existing literature and research on creative accounting.

6.2 Statistical Analysis of HEPS Manipulations

The following formula was used to quantify a company's HEPS manipulation:

$$\text{HEPS manipulation (\%)} = \left[\frac{\text{Unadjusted HEPS items} + \text{Invalid HEPS adjustments}}{\text{Reported headline earnings}}\right] \times 100$$

6.2.1 Descriptive Statistics

The table below reports summary statistics of the HEPS manipulations for the entire sample of 173 companies (i.e. including those companies identified as non-manipulators).

Table 11: Descriptive statistics of HEPS manipulations for entire sample

Number of companies	173
Range	-1 009.44% to 3 063.59%
Mean	26.85%
Absolute mean	41.32%
Median	0.00%
Standard deviation	261.72%
95% confidence interval	-12.15% to 65.85%

The median HEPS manipulation for the sample is 0.00%. This is expected as the majority of companies (i.e. 53%) were classified as non-manipulators. The mean HEPS manipulation of 26.85% supports the observation that more companies were identified as upwards HEPS manipulators than downwards HEPS manipulators. The absolute mean HEPS manipulation of 41.32% indicates the absolute average extent of upwards and downwards HEPS manipulation across the sample. The range of HEPS manipulations also indicates that the absolute maximum upwards HEPS manipulation (i.e. 3 063.59%) exceeds the absolute maximum downwards HEPS manipulation (i.e. 1 009.44%).

The large range of HEPS manipulations, together with the large standard deviation are indicative of the large dispersion of HEPS manipulations detected in the sample. The dispersion of HEPS manipulations is further illustrated in the following table and figure.

Table 12: Range of HEPS manipulations

	Range	**No. of companies**
Range 1	< -50%	1
Range 2	< -20% and >= -50%	5
Range 3	< -10% and >= -20%	2
Range 4	< -5% and >= -10%	2
Range 5	< -2% and >= -5%	6
Range 6	< 0% and >= -2%	10
Range 7	> 0% and <= 2%	14
Range 8	> 2% and <= 5%	6
Range 9	> 5% and <= 10%	8
Range 10	> 10% and <= 20%	13
Range 11	> 20% and <= 50%	6
Range 12	> 50%	9

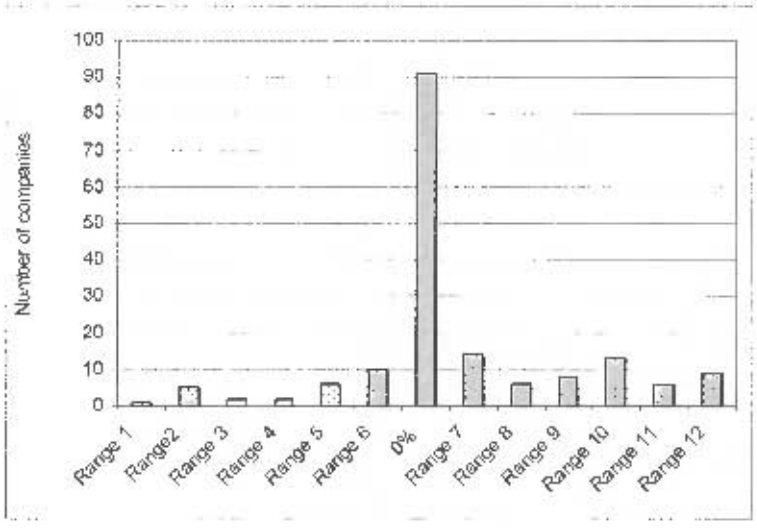

Figure 3: Range of HEPS manipulations

The 9 outliers that manipulated their HEPS by more than 50% warrant further examination. These companies were all from the sub-sample of small companies. The high percentage HEPS manipulation by these companies results largely from the small HEPS figures reported by these companies. The average HEPS reported by these 9 companies was 15.44c. Therefore, HEPS manipulations that were small on an absolute basis became large when considered on a percentage basis. For example, King Consolidated Holdings Ltd reported HEPS of 0.3c. Manipulations resulting in an over-statement of HEPS by 65c were identified in respect of this company. Although, this is small on an absolute basis, it converts to 217% on a percentage basis.

Furthermore, it appears that upwards HEPS manipulators manipulate their HEPS figure to a greater extent than downwards HEPS manipulators. The majority of downwards HEPS manipulators (i.e. 62%) manipulated their HEPS figure within the range of 0% to -5%. In contrast, 50% of upwards HEPS manipulators manipulated their HEPS figure by more than

10%. This incongruity between upwards and downwards HEPS manipulators is further analysed by producing separate descriptive statistics for HEPS manipulations overall, upwards HEPS manipulations and downwards HEPS manipulations.

Table 13: Descriptive statistics of HEPS manipulations by manipulators

	No. of companies	**Range**	**Mean**	**Median**	**Standard deviation**
HEPS manipulators	82	-1 009.44% to 3 063.59%	56.65%	2.48%	379.14%
Upwards HEPS manipulators	56	0.04% to 3 063.59%	105.30%	9.68%	431.91%
Downwards HEPS manipulators	26	-1 009.44% to -0.06%	-48.12%	-3.43%	196.50%

As shown above, the absolute value of the median and mean upwards HEPS manipulations exceed the absolute value of the median and mean downwards HEPS manipulations. The standard deviation and range of upwards HEPS manipulations also exceed those of downwards HEPS manipulations. This provides further evidence of the greater dispersion and greater extent of upwards HEPS manipulations.

6.2.2 Statistical Testing

A one-sample t-test was performed to determine if the population mean HEPS manipulation differs significantly from zero. The hypothesis for testing and the alternative hypothesis are presented below:

H_0: $\mu = 0$

H_A: $\mu \neq 0$

Where: μ is the population mean HEPS manipulation.

The results of the t-test conducted in accordance with these hypotheses and the sample data collected yield a test statistic of 1.3495 and a p-value of 0.1772. This indicates that H_0 is only rejected at a significance level of 17.72%. This high significance level results in a failure to reject H_0. The descriptive statistics provide evidence of HEPS manipulation by the sample companies. However, the statistical testing in this regard is inconclusive.

6.3 Types of HEPS Manipulations

Two classes of HEPS manipulations have been defined in Chapter 5, namely unadjusted HEPS items and invalid HEPS adjustments. The figure below illustrates the extent to which each class of manipulation was used by the HEPS manipulators identified in the sample.

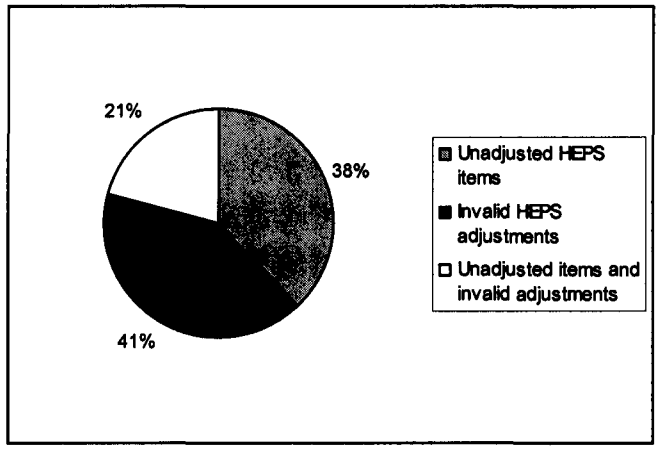

Figure 4: Classes of manipulation used by HEPS manipulators

The largest percentage of manipulators (i.e. 41%) used invalid HEPS adjustments to manipulate their HEPS figures. This is closely followed by unadjusted HEPS items used by 38% of manipulators to manipulate their HEPS figures. Only 21% of manipulators used a combination of these techniques.

6.3.1 Unadjusted HEPS Items

The items that are required to be adjusted for in arriving at headline earnings (as specified in Circular 7/2002) have been listed and labelled in Table 9 contained in Chapter 5.

The table below displays data relating to the incidence of these items being reported by companies and the extent to which companies contravened the requirements of Circular 7/2002 to adjust for these items.

Table 14: Unadjusted HEPS items identified in the sample

HEPS adjustment	No. of companies reflecting item	Companies failing to adjust for item correctly		Direction of resulting HEPS manipulation	
		No.	Percentage	Upwards	Downwards
No. 1	22	1	4.6%	100.0%	0.0%
No. 2	120	38	31.7%	71.1%	29.0%
No. 3	7	2	28.6%	0.0%	100.0%
No. 4	8	0	0.0%	0.0%	0.0%
No. 5	39	5	12.8%	100.0%	0.0%
No. 6	42	3	7.1%	33.3%	66.7%
No. 7	17	3	17.7%	0.0%	100.0%
No. 8	2	0	0.0%	0.0%	0.0%
No. 9	14	4	28.6%	75.0%	25.0%
No. 10	15	2	13.3%	100.0%	0.0%
No. 11	111	5	4.5%	20.0%	80.0%
No. 12	7	3	42.9%	100.0%	0.0%
No. 13	2	0	0.0%	0.0%	0.0%
No. 14	4	0	0.0%	0.0%	0.0%
No. 15	12	3	25.0%	66.7%	33.3%
Total	**422**	**69**	**16.4%**	**65.2%**	**34.8%**

The 5 most commonly unadjusted HEPS items, as identified in the previous table are:

- HEPS adjustment no. 12 (i.e. the release of a foreign currency translation reserve to the income statement as a result of a foreign entity being disposed);
- HEPS adjustment no. 2 (i.e. profit or loss on the sale of property, plant and equipment);
- HEPS adjustment no. 3 (i.e. profit or loss on the sale of intangible assets);
- HEPS adjustment no. 9 (i.e. fair value gain/loss recognised in the income statement on investment property); and
- HEPS adjustment no. 15 (i.e. impairment loss or the reversal of an impairment loss relating to an associate).

With the exception of item no. 3, in the majority of cases the effect of not adjusting for these items resulted in an upward manipulation of HEPS.
It is also noted that 38 of the 69 total unadjusted items are profit or loss on the sale of property, plant and equipment (i.e. item no. 2). Super Group Ltd is an example of a company that manipulated its HEPS in this manner. It is evident from the group cash flow statement that a profit of R41.6 million on the sale of operating vehicles and equipment was realised in 2004. However, this is not adjusted for in the HEPS calculation, resulting in an 11% over-statement in the group's HEPS.

120 companies reported a profit or loss on the sale of property, plant and equipment. The large number of instances of this item is a contributing factor to the large number of manipulations. However, it is of relevance to compare the manipulation of this item to item no. 11 (i.e. any amortisation charge, impairment loss or reversal of impairment loss relating to goodwill). 111 companies reported item no. 11, but only 5 of these companies failed to adjust for this item correctly. Therefore, although both items are commonly reported, only item no. 2 is commonly manipulated. It is submitted that this discrepancy arises because failure to adjust for item no. 2 more commonly results in an upwards HEPS misstatement than failure to adjust for item no. 11.

In contrast to the commonly non-adjusted items, the following items were adjusted for correctly by all companies reporting such items:

- HEPS adjustment no. 4 (i.e. profit or loss on the sale of investment property);

- HEPS adjustment no. 8 (i.e. impairment loss or the reversal of an impairment loss relating to investment property);
- HEPS adjustment no. 13 (i.e. profits and losses arising from the reorganisation or redemption of long term debt); and
- HEPS adjustment no. 14 (i.e. the recognition a transitional liability relating to employee benefits).

6.3.2 Invalid HEPS Adjustments

The invalid HEPS adjustment used to manipulate HEPS downwards are listed in the table below. This is followed by explanations of why these adjustments are invalid in terms of Circular 7/2002.

Table 15: Invalid HEPS adjustments used to manipulate HEPS downwards

Description of downwards HEPS manipulation technique	**No. of companies using technique**
Reversal of impairment of financial instruments	5
Profit on disposal of financial instruments	17
Other: • Lease cancellation receipts • Recovery of onerous contract costs	2

Paragraph 22A of Circular 7/2002 specifically states the following:

> "Adjustments to the carrying amounts of financial instruments (whether the result of revaluation, impairment or amortisation) and gains on losses on the realisation thereof should be dealt with in accordance with the accounting treatment in the financial statements. If an adjustment or gain or loss is included in the income statement, it should be included in Headline Earnings, but otherwise excluded."

The only exclusion from the paragraph mentioned above is amounts relating to available-for-sale financial instruments previously recognised in equity.

Therefore, adjustments made in respect of the reversal of impairment losses on financial

instruments and profits on the disposal of financial instruments are in contravention of the specific requirement of Circular 7/2002 to include such items in headline earnings.

The other adjustments used to manipulate HEPS downwards are not specifically addressed by Circular 7/2002. However, they do not satisfy the general requirement of Circular 7/2002 to only adjust for capital items since these items are not capital in nature.

The invalid HEPS adjustment used to manipulate HEPS upwards are listed in the table on the following page, followed by explanations of why these are invalid in terms of Circular 7/2002.

Table 16: Invalid HEPS adjustments used to manipulate HEPS upwards

Description of upwards HEPS manipulation technique	**No. of companies using technique**
Impairment of financial instruments	11
Loss on disposal of financial instruments	7
Amortisation of intangible assets (other than goodwill)	13
Loss on discontinued operations	2
Provisions	2

Other: • Estate closure costs • Subsidiary's prior year losses • Listing expenses • Research and development costs • Retrenchment costs • Exchange losses • Arbitration settlement • Legal expenses • Expenditure on aborted projects	9

As previously mentioned, the adjustments relating to financial instruments are in contravention of the specific requirement of paragraph 22A of Circular 7/2002 to include such items in headline earnings.

The other items which are specifically addressed by Circular 7/2002 are as follows:

- Paragraph 26A specifically requires the amortisation of intangible assets to be included in headline earnings.
- Paragraph 21 states that profits and losses arising from discontinued operations should be included in headline earnings.
- The income statement effect of recognising provisions is required to be included in headline earnings in terms of paragraph 25 of the circular.

The remaining items contained in Table 16 are not addressed by the circular specifically, but do not satisfy the general criterion of being of a capital nature.

It is interesting to note the number of companies that adjusted incorrectly for the amortisation of intangible assets other than goodwill. Despite the specific requirement of Circular 7/2002 to not adjust for this item, it appears that these companies are attempting to treat all intangible assets (i.e. goodwill as well as other intangible assets) in the same manner for HEPS purposes. An example of such a company is Command Holdings Ltd. This company adjusted its headline earnings for the amortisation of trademarks amounting to R213 000, resulting in a 5% over-statement of HEPS. This adjustment to headline earnings

is even described as "Amortisation of goodwill" in the headline earnings reconciliation to mask this manipulation.

With respect to invalid HEPS adjustments used to manipulate HEPS both upwards and downwards, the most common manipulation technique relates to financial instruments. It appears that companies consider these items to be capital in nature and adjust headline earnings accordingly, similarly to amounts arising from the impairment and disposal of property, plant and equipment. This is despite the specific requirement of Circular 7/2002 to not adjust headline earnings for these items.

A number of companies calculated their HEPS by adjusting basic earnings for all items that had been classified as "exceptional". In the majority of cases, companies that are not financial in nature classify amounts relating to financial instruments as "exceptional". The proposition that amounts relating to financial instruments are adjusted for as a result of being considered capital in nature is substantiated by this observation.

An example of a company that followed this practice is Mvelaphanda Group Ltd. An impairment loss on a loan account of R238 000 recognised in 2004 was classified as an exceptional item in the 2004 financial statements and headline earnings adjusted accordingly.

In summary, this chapter contains the findings of the testing of H_1. These findings provide evidence of both upwards and downwards HEPS manipulation by companies in the sample. Although, the statistical evidence to extend this finding to the population of JSE-listed companies is inconclusive. Furthermore, the findings indicate that the sample companies used various means to achieve HEPS manipulation. The existence of HEPS manipulation by the sample companies warrants further consideration of whether there is industry concentration of HEPS manipulation and the characteristics of HEPS manipulators. The following two chapters address this by describing the findings of the testing of H_2 and H_3.

CHAPTER 7: INDUSTRY CONCENTRATION OF HEPS manipulations

This chapter addresses the hypothesis shown below.

H_2:	The level of HEPS manipulation differs between companies in different industries.

The chapter begins by analysing the incidence of HEPS manipulations detected within the various defined industry classifications. This is followed by a statistical analysis of the levels of HEPS manipulations identified within these industry classifications.

7.1 Incidence of HEPS Manipulations within Industry Classifications

The companies included in the sample were examined within the 10 broad industry classifications defined in Chapter 5. The results of this analysis are described in the table below.

Table 17: Incidence of HEPS manipulation by industry

Industry	HEPS manipulators			Non-manipulators
	Upwards	Downwards	Total	
Basic industries	33.3%	20.0%	53.3%	46.7%
Cyclical consumer goods	31.6%	15.8%	47.4%	52.6%
Cyclical services	20.0%	0.0%	20.0%	80.0%
Financials	32.5%	15.0%	47.5%	52.5%
General industrials	50.0%	12.5%	62.5%	37.5%
Information technology	50.0%	0.0%	50.0%	50.0%
Non-cyclical consumer goods	61.5%	7.7%	69.2%	30.8%
Non-cyclical services	11.1%	44.4%	55.5%	44.5%
Real estate	12.5%	25.0%	37.5%	62.5%
Resources	17.4%	13.0%	30.4%	69.6%

The industries with more than half of the companies classified as HEPS manipulators are

basic industries, general industrials, non-cyclical consumer goods and non-cyclical services. With the exception of non-cyclical services, the majority of HEPS manipulators within these industry classifications manipulated their HEPS figures upwards.

The industries with the smallest percentage of manipulators are cyclical services, resources and real estate.

7.2 Statistical Analysis of HEPS Manipulations within Industry Classifications

Descriptive statistics and detailed statistical testing relating to HEPS manipulation per industry classification are presented separately below.

7.2.1 Descriptive Statistics

Summary statistics of the HEPS manipulations identified for all companies within each industry classification are presented in the table below.

Table 18: Summary statistics of HEPS manipulation by industry

Industry	No. of companies	Mean	Absolute mean	Median	Standard deviation
Basic industries	15	1.2%	4.2%	0.0%	6.9%
Cyclical consumer goods	38	6.8%	11.1%	0.0%	37.0%
Cyclical services	5	6.8%	6.8%	0.0%	15.2%
Financials	40	58.8%	111.7%	0.0%	514.0%
General industrials	8	50.1%	50.5%	3.4%	127.9%
Information technology	14	4.8%	4.8%	0.5%	9.6%
Non-cyclical consumer goods	13	2.8%	2.9%	0.4%	4.4%
Non-cyclical services	9	40.7%	41.8%	0.0%	123.9%
Real estate	8	-2.4%	8.0%	0.0%	17.6%

Resources	23	49.3%	52.7%	0.0%	221.3%

The only industry exhibiting a mean downwards HEPS manipulation is real estate. The remaining industries all exhibit a mean upwards HEPS manipulation.

The largest mean HEPS manipulation on an absolute basis is exhibited by financials. However, this industry also has the largest standard deviation of HEPS manipulations, which is indicative of a large dispersion of manipulations by companies in this industry. As shown in Table 17, 47.5% of the companies within this industry classification were found to be HEPS manipulators.

The financial companies that manipulated their HEPS upwards to the greatest extent include Proper Group Ltd, Zeltis Holdings Ltd and Aquila Growth Ltd. These companies are all from the sub-sample of small companies. Proper Group Ltd and Zeltis Holdings Ltd both achieved these manipulations by invalidly adjusting for items relating to financial instruments. In contrast, Aquila Growth Ltd achieved this manipulation by invalidly adjusting for a foreign exchange loss recognised in the income statement.

The second largest mean HEPS manipulation on a non-absolute basis is exhibited by general industrials. On an absolute basis, this industry exhibits the third largest mean HEPS manipulation. This industry was also identified as having more HEPS manipulators than non-manipulators (as shown in Table 17) and exhibits the highest median HEPS manipulation.

The general industrials companies that manipulated their HEPS upwards to the greatest extent include Monteagle Holdings Société Anonyme, Zaptronix Ltd and Imperial Holdings Ltd. The first 2 companies mentioned are from the sub-sample of small companies and the last company mentioned in from the sub-sample of large companies. Both Monteagle Holdings Société Anonyme, Zaptronix Ltd achieved their HEPS manipulations by invalidly adjusting for items relating to financial instruments. In contrast, Imperial Holdings Ltd achieved its HEPS manipulation by failing to adjust for the impairment and profit on disposal of items of property, plant and equipment. This was substantiated by failing to

classify leasing assets, transport vehicles and vehicles for hire as items of property, plant and equipment and, as a result, not adjusting for items relating to these assets. It is submitted that the assets are misclassified in accordance with the requirements of AC 123 and this has therefore been classified as an HEPS manipulation.
High mean HEPS manipulations are also exhibited by non-cyclical services and resources, with resources exhibiting the second largest mean HEPS manipulation on an absolute basis. However, both industries also exhibit high standard deviations and median HEPS manipulations of zero. This indicates that the high mean is influenced by the existence of outliers.

Low mean HEPS manipulations are exhibited by basic industries, cyclical consumer goods, cyclical consumer services, non-cyclical consumer goods and information technology. These industries also exhibit relatively low standard deviations in comparison to the other industries presented.

The summary statistics provided above, together with the incidence of HEPS manipulation presented in the previous section, point towards a high incidence of HEPS manipulation in the general industrials industry classification, as well as a high mean and median HEPS manipulation by companies within this industry.

7.2.2 Statistical Testing

An analysis of variance (ANOVA) was used to determine whether differences exist among the population mean HEPS manipulation per industry classification.

The hypothesis for testing and the alternative hypothesis are as follows:

H_0: $\mu_B = \mu_{CC} = \mu_{CS} = \mu_F = \mu_G = \mu_I = \mu_{NCC} = \mu_{NCS} = \mu_{RE} = \mu_R$

H_A: *At least 2 means differ*

Where: μ_B is the population mean HEPS manipulation for basic industries;

μ_{CC} is the population mean HEPS manipulation for cyclical consumer goods;

μ_{CS} is the population mean HEPS manipulation for cyclical consumer services;

μ_F is the population mean HEPS manipulation for financials;

μ_G is the population mean HEPS manipulation for general industrials;

μ_I is the population mean HEPS manipulation for information technology;

μ_{NCC} is the population mean HEPS manipulation for non-cyclical consumer goods;

μ_{NCS} is the population mean HEPS manipulation for non-cyclical consumer services;

μ_{RE} is the population mean HEPS manipulation for real estate; and

μ_R is the population mean HEPS manipulation for resources.

The results of the ANOVA test are shown in the table below.

Table 19: ANOVA test of HEPS manipulation between industries

Source of variation	SS	df	MS	F-statistic	p-value
Between groups	10.6813	9	1.1868	0.1657	0.9970
Within groups	1 167.4963	163	7.1626		
Total	1 178.1776	172			

The high p-value results in a failure to reject the null hypothesis. The statistical testing provides very little evidence of HEPS manipulation differing between industries. However, it should be noted that this is largely as a result of the large variances of HEPS manipulations contained within each industry, as reflected by the large sum of squares and mean squares within groups.

In summary, this chapter indicates that HEPS manipulation takes place to a varying degree in the specified industry classifications. Specific conclusions in this regard are drawn in Chapter 9. The following chapter continues with the detail of the findings of the application of the research approach by considering H_3.

CHAPTER 8: HEPS MANIPULATIONS & COMPANY CHARACTERISTICS

This chapter addresses the following hypothesis:

H_3:	The extent to which a company manipulates its headline earnings is associated with seven specified factors.

This analysis begins with an overall examination of all hypothesised factors influencing a company's propensity to engage in HEPS manipulation. This is followed by a detailed statistical analysis of individual factors.

8.1 Association between HEPS Manipulations and Company Characteristics

A multiple regression model was used to test the hypothesis that the extent to which a company engages in HEPS manipulation is determined by specified characteristics of the company.

The multiple regression model used in its general form is as follows:

$$HEPS\_M_i = \alpha_I + \beta_{i1}CAP_i + \beta_{i2}SP_i + \beta_{i3}HEPS_i + \beta_{i4}DEBT_i + \beta_{i5}AUD_i + \beta_{i6}NON\_AUD_i + \beta_{i7}ACOM_i + \beta_{i8}ACOM\_M_i + \beta_{i9}CHMN_i + \beta_{i10}NON\_EXEC_i + \varepsilon_i$$

Where:

$HEPS\_M_i$	=	Percentage HEPS manipulation by company
CAP_i	=	Company's market capitalisation (in Rands) as at 31 December 2004
SP_i	=	Percentage movement in company's closing share price between previous and current balance sheet date
$HEPS_i$	=	Percentage movement in reported HEPS for prior and current year
$DEBT_i$	=	Company's debt equity ratio
AUD_i	=	1 if the company's auditor is one of the Big 4 audit firms and 0 otherwise
NON_AUD_i	=	Ratio of non-audit fees to audit fees
$ACOM_i$	=	1 if the company has an Audit Committee and 0 otherwise

$ACOM\_M_i$	=	Number of meetings held by the Audit Committee during the financial year
$CHMN_i$	=	1 if the company's chairman is a non-executive director and 0 if the company's chairman is an executive director
NON_EXEC_i	=	Percentage of directors that are non-executive
β_{i1-10}	=	Coefficients of variables from 1 to 10
ε_I	=	Residual term

Table 20 on the following page contains the correlation results on the different variables in the regression model.

The percentage HEPS manipulation (HEPS_M) was tested for significant correlation with the independent variables in the model. At the 5% level, HEPS_M is significantly negatively correlated with the following independent variables:

- AUD;
- ACOM; and
- ACOM_M.

This indicates the impact of the identity of a company's auditor and the strength of the company's corporate governance mechanisms on the propensity of a company to engage in HEPS manipulations.

As expected, HEPS_M is negatively correlated with CAP, SP and CHMN and positively correlated with HEPS and DEBT. The correlations with NON_AUD and NON_EXEC are not in the expected directions. However, these correlations are not statistically significant.

It is also interesting to note the positive correlations between CAP and the variables AUD, ACOM, CHMN and NON_EXEC. Statistical testing indicates that these positive correlations are significant at levels of less than 2%. This indicates that larger companies are more likely to be audited by one of the Big 4 firms and appear to have stronger corporate governance mechanisms.

Table 20: Correlation results on regression variables

	HEPS_M	CAP	SP	HEPS	DEBT	AUD	NON_AUD	ACOM	ACOM_M	CHMN	NON_EXEC
HEPS_M	1.000										
CAP	-0.047	1.000									
SP	-0.055	0.051	1.000								
HEPS	0.018	0.098	0.177	1.000							
DEBT	0.006	-0.001	-0.054	0.010	1.000						
AUD	-0.140	0.293	0.078	0.220	0.019	1.000					
NON_AUD	-0.039	0.132	0.065	0.041	-0.018	-0.008	1.000				
ACOM	-0.172	0.175	0.041	0.167	0.040	0.405	0.056	1.000			
ACOM_M	-0.144	0.378	0.096	0.271	-0.009	0.505	0.052	0.476	1.000		
CHMN	-0.073	0.177	0.136	0.044	0.092	0.262	0.003	0.329	0.344	1.000	
NON_EXEC	0.074	0.231	0.019	0.157	0.085	0.245	0.136	0.267	0.311	0.492	1.000

The results of the multiple regression analysis are shown in the table below.

Table 21: Results of multiple regression analysis

Sample size = 173			
Multiple R = 0.266	**R^2 = 0.071**	**Adjusted R^2 = 0.013**	
F-statistic = 1.232	**p-value = 0.274**	**Std error of estimate: 2.600**	
	Coefficient	**t-statistic**	**p-value**
Intercept	0.599	0.790	0.431
CAP	0.000	0.058	0.954
SP	-0.152	-0.474	0.636
HEPS	0.031	0.783	0.435
DEBT	0.000	-0.007	0.995
AUD	-0.466	-0.921	0.358
NON_AUD	-0.164	-0.691	0.490
ACOM	-0.978	-1.461	0.146
ACOM_M	-0.114	-0.852	0.395
CHMN	-0.430	-0.742	0.459
NON_EXEC	2.438	2.054	0.042

The R^2 figure indicates that only 7.1% of the variability in HEPS_M is explained by the variables included in the regression model. The adjusted R^2 figure, which controls for the number of independent variables included in the analysis, is even lower at 1.3%. The p-value associated with the F-statistic is 0.274. This indicates that, although the model does offer some explanatory power, this is not considered significant.

An examination of the individual regression coefficients reveals that only NON_EXEC significant at the 5% level. However, as previously noted, the direction of the relationship of HEPS_M with this variable is opposite to the direction expected.

As a result of the inconclusiveness of the multiple regression model, it was decided to perform the following additional separate statistical analyses:

- The HEPS manipulations of large companies were compared to those of small companies.
- The sample was divided into those companies whose auditors are one of the Big 4 firms and those companies whose auditors are not one of the Big 4 firms. The HEPS manipulations by these two groups of companies were analysed.
- The sample was divided into companies with good corporate governance mechanisms and companies that with weak corporate governance mechanisms. The HEPS manipulations by these two groups of companies were analysed.

These analyses may be found in the following sections.

8.2 Analysis of Company Size Effect

The incidence of upwards HEPS manipulation, downwards HEPS manipulation and non-manipulation was identified separately for small companies and large companies. These are contrasted in the following figure.

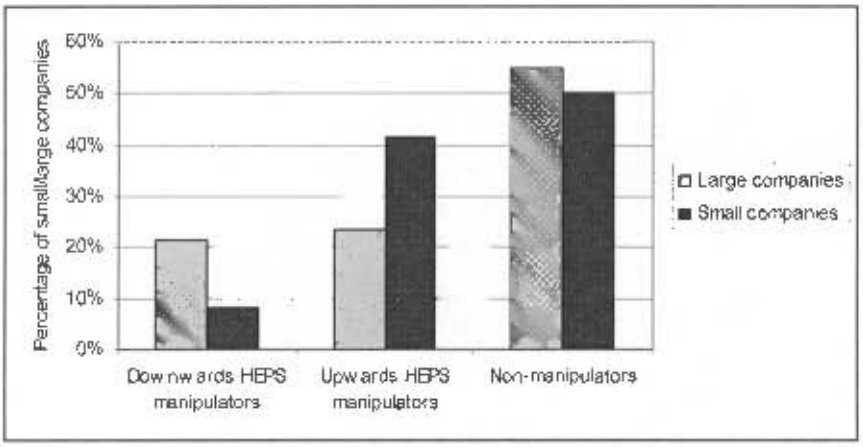

Figure 5: Incidence of HEPS manipulation by small and large companies

As illustrated, in comparison to small companies, a greater percentage of large companies manipulated their HEPS figures downwards or did not manipulate their HEPS at all. In comparison to large companies, a greater percentage of small companies manipulated their HEPS figure upwards.

A two-sample t-test was then used to test the difference in population mean HEPS manipulation for large and small companies. The hypothesis for testing and the alternative hypothesis are as follows:

H_0: $\mu_L = \mu_S$

H_A: $\mu_L < \mu_S$

Where: μ_L is the population mean HEPS manipulation for large companies; and

μ_S is the population mean HEPS manipulation for small companies.

Table 22: Two-sample t-test of mean HEPS manipulation by large and small companies

	Large companies	**Small companies**
Mean	-10.87%	66.82%
Absolute mean	14.19%	70.03%
Standard deviation	107.28%	355.81%
Observations	89	84
Degrees of freedom	97	
t-statistic	-1.9203	
p-value	0.0289	

As a result of the downwards HEPS manipulators identified in the sub-category of large companies, the mean HEPS manipulation by large companies is negative. Similarly, the large number of upwards HEPS manipulators identified in the sub-category of small companies results in a positive mean HEPS manipulation by small companies. The absolute mean HEPS manipulation indicates that the magnitude of HEPS manipulation by small companies is greater than the magnitude of HEPS manipulation by large companies. While both sub-categories exhibit large variations in the level of HEPS manipulation, greater variation is exhibited by small companies.

The p-value generated by the t-test indicates that H_0 is rejected at a significance level of 2.89%. This therefore indicates that there is significant evidence that the population mean HEPS manipulation for large companies is smaller than the population mean HEPS manipulation for small companies.

8.3 Analysis of Auditor Effect

The total sample of companies included 115 companies (i.e. 66%) audited by one of the Big 4 firms. 50 of these companies (i.e. 43%) were identified as HEPS manipulators. Within the sub-category of 58 companies not audited by one of the Big 4 firms, 32 companies (i.e. 55%) were identified as HEPS manipulators.

It has been hypothesised that the identity of a company's auditor may deter the company from engaging in overall earnings management (as discussed in Chapter 4). Auditor identity would therefore be considered to affect upwards and downwards HEPS manipulation to the same extent. It is therefore considered most useful to consider the absolute value of the HEPS manipulations engaged in by these sub-categories of companies.

A two-sample t-test was used to test the difference in population mean absolute HEPS manipulation for companies audited by one of the Big 4 firms and companies not audited by one of the Big 4 firms. The hypothesis for testing and the alternative hypothesis are as follows:

H_0: $\mu_B = \mu_N$

H_A: $\mu_B < \mu_N$

Where: μ_B is the population mean of the absolute HEPS manipulation by companies audited by one of the Big 4 firms; and

μ_N is the population mean of the absolute HEPS manipulation by companies that are not audited by one of the Big 4 firms.

Table 23: Two-sample t-test of absolute mean HEPS manipulation, based on auditor effect

	Companies audited by one of the Big 4 firms	**Companies not audited by one of the Big 4 firms**
Absolute mean	4.36%	114.60%
Standard deviation	10.65%	441.88%
Observations	115	58

Degrees of freedom	57
t-statistic	-1.8998
p-value	0.0313

The mean reflected in the table above for companies that do not have Big 4 auditors is considerably greater than the mean reflected for companies that do have Big 4 auditors. The p-value generated by the t-test indicates that H_0 is rejected at a significance level of 3.13%. This therefore indicates that there is significant statistical evidence of a greater extent of HEPS manipulation by companies that are not audited by one of the Big 4 firms.

The greater standard deviation reflected for companies that are not audited by a Big 4 firms also indicates a greater variability in the HEPS manipulations identified for these companies.

8.4 Analysis of the Effect of Corporate Governance Mechanisms

The sample of companies was subdivided into "companies with strong corporate governance mechanisms" and "companies with weak corporate governance mechanisms". Companies were classified as having strong corporate governance mechanisms if all of the following criteria were satisfied:

- The company has an Audit Committee;
- The company's chairman is a non-executive director; and
- The company's board of directors consists of a majority of non-executive directors.

If any of these criteria were not satisfied then the company was classified as having weak corporate governance mechanisms.

On this basis, 102 companies were classified as having strong corporate governance mechanisms. 47% of these companies were classified as HEPS manipulators. 49% of the 71 companies that were classified as having weak corporate governance mechanisms were classified as HEPS manipulators.

It has been hypothesised that weak corporate governance will result in a company being more likely to engage in earnings management (as discussed in Chapter 4). The strength of a company's corporate governance mechanisms would therefore be expected to impact

upwards and downwards HEPS manipulation to the same extent. It is therefore considered most useful to consider the absolute value of the HEPS manipulations engaged in by these sub-categories of companies.

A two-sample t-test was used to test the difference in population mean absolute HEPS manipulation by companies with strong and weak corporate governance mechanisms. The hypothesis for testing and the alternative hypothesis are as follows:

H_0: $\mu_S = \mu_W$

H_A: $\mu_S < \mu_W$

Where: μ_S is the population mean of the absolute HEPS manipulation by companies with strong corporate governance mechanisms; and

μ_W is the population mean of the absolute HEPS manipulation by companies with weak corporate governance mechanisms.

Table 24: Two-sample t-test of absolute HEPS manipulation, based on corporate governance mechanisms

	Companies with strong corporate governance mechanisms	**Companies with weak corporate governance mechanisms**
Absolute mean	17.75%	75.18%
Standard deviation	110.45%	382.49%
Observations	102	71
Degrees of freedom	78	
t-statistic	-1.2300	
p-value	0.1112	

The p-value generated by the t-test indicates that H_0 is rejected only at a significance level of 11.12%. This results in a failure to reject H_0. Although, there does appear to be a relationship between HEPS manipulations and the strength of corporate governance mechanisms, the statistical testing in this regard is inconclusive.

In summary, the multiple regression analysis used to consider the association between HEPS

manipulation and specified company characteristics is detailed in this chapter and found to be statistically inconclusive. On this basis, further testing was conducted on the association between HEPS manipulation and company size, auditor identity and corporate governance mechanisms. The conclusions in this regard, as well as the conclusions on the testing of H_1 and H_2, are described in the following chapter.

CHAPTER 9: CONCLUSIONS

The findings of the testing of the hypotheses specified in Chapter 4, using the research approach specified in Chapter 5, are detailed in the three preceding chapters. Based on these findings, conclusions are drawn in the following areas:

9.1 Incidence of HEPS Manipulations by JSE-listed companies

Within the sample of 173 companies, 82 companies (i.e. 47%) were identified as HEPS manipulators. The descriptive statistics provide evidence that there are JSE-listed companies within the sample that engage in HEPS manipulation. However, the statistical testing to extend this conclusion to the population of JSE-listed companies is inconclusive.

The findings also provide evidence of both upwards and downwards HEPS manipulation. However, the incidence of upwards HEPS manipulation is more prominent and the magnitude of upwards HEPS manipulation is greater than the magnitude of downwards HEPS manipulation.

9.2 Types of HEPS Manipulations

Companies engage in HEPS manipulations by failing to adjust for items that are required to be adjusted for in terms of Circular 7/2002 and/or by making adjustments that are contrary to the requirements of the circular. The findings suggest that none of the techniques are clearly predominant and that both are used to the same extent.

The most frequently unadjusted items are the release of a foreign currency translation reserve to the income statement upon the disposal of a foreign entity and the profit or loss on the disposal of property, plant and equipment. The items in respect of which companies are most likely to make invalid adjustment are financial instruments and the amortisation of intangible assets.

9.3 Differences in HEPS Manipulation by Industry

The percentage of HEPS manipulators identified per industry classification varied across the

various industry classifications. This appears to indicate that there are differences in HEPS manipulation by industry. The general industrials industry classification appears to exhibit the greatest extent and magnitude of HEPS manipulation.
However, the statistical evidence relating to industry differences is inconclusive as a result of the large variation of HEPS manipulation within each industry classification.

9.4 Factors Associated with the Propensity of a Company to Engage in HEPS Manipulation

The multiple regression analysis conducted revealed no meaningful significant associations between HEPS manipulations and specified company characteristics.

However, separate statistical testing revealed significant associations between HEPS manipulations and the following company characteristics:

- Company size; and
- Auditor identity.

Large companies are more likely to engage in downwards HEPS manipulation and small companies are more likely to engage in upwards HEPS manipulation. This is possibly associated with capital market incentives for earnings management. Large companies are most likely to have moved out of their high growth stage and would therefore manipulate HEPS downwards in order to prevent unrealistically high future earnings forecasts. Small companies, in contrast, are most likely to be entering their high growth stage and would therefore manipulate HEPS upwards in order to emphasis future growth capacity.

It is also possible to conclude that companies audited by one of the Big 4 firms are less likely to engage in HEPS manipulation.

Furthermore, descriptive statistics indicate a relationship between the strength of a company's corporate governance mechanisms and HEPS manipulation. However, it is noted that the statistical testing in this regard is inconclusive.

It should be noted that there are strong positive correlations between company size, auditor

identity and the strength of a company's corporate governance mechanisms. This is expected as a result of the endogeneity issues already identified in Chapter 4. Large companies are more likely to be audited by one of the Big 4 firms and are more likely to have strong corporate governance mechanisms than small companies. Therefore, it is not possible to conclude if all three factors influence HEPS manipulation to a similar extent or if there is one leading influential factor.

CHAPTER 10: SUGGESTED AREAS FOR FURTHER RESEARCH

Considering the findings and conclusions of this report, further research in this area could be conducted in the following ways:

- The research could be extended by performing a time-series analysis of HEPS manipulations over a period to establish manipulation patterns.

- Similar research could be conducted on HEPS figures reported by UK companies to compare HEPS manipulations internationally.

- Users of companies' financial statements (e.g. investment analysts) could be surveyed to establish how useful and reliable they consider reported HEPS figures.

CHAPTER 11: references

1. Ashari, N., Koh, H.C., Tan, S.L. and Wong, W.H. 1994. Factors Affecting Income Smoothing Among Listed Companies in Singapore. *Accounting and Business Research* 24(96): 291 – 301.

2. Ball, R. and Brown, P. 1968. An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research* 6(2): 159 – 178.

3. Beasley, M.S., Carcello, J.V., Hermanson, D.R. and Lapides, P.D. 2000. Fraudulent Financial Reporting: Consideration of Industry Traits and Corporate Governance Mechanisms. *Accounting Horizons* 14(4): 441 – 454.

4. Beattie, V., Brown, S., Ewers, D., John, B., Manson, S., Thomas, D. and Turner, M. 1994. Extraordinary Items and Income Smoothing: A Positive Accounting Approach. *Journal of Business, Finance and Accounting* 21(6): 791 – 811.

5. Beaver, W. 1998. *Financial Reporting: An Accounting Revolution.* Third edition. Upper Saddle, NJ: Prentice Hall.

6. Beneish, M.D. 1999. The Detection of Earnings Manipulation. *Financial Analysts Journal* September/October 1999: 24 – 36.

7. Blake, J. and Amat, O. 1996. Creative Accounting is Not Just an English Disease. *Management Accounting* (October): 54 – 55.

8. Brayshaw, R.E. and Eldin, A.E.K. 1989. The Smoothing Hypothesis and the Role of Exchange Differences. *Journal of Business, Finance and Accounting* 16(5): 621 – 633.

9. Breton, G. and Stolowy, H. 2000. *A Framework for the Classification of Accounts Manipulations*. Working paper, HEC School of Management in France.

10. Burgstahler, D. and Dichev, I. 1997. Earnings Management to Avoid Earnings Decreases and Losses. *Journal of Accounting and Economics* 24: 99 – 126.

11. Chang, L.S., Most, K.S. and Brain, C.W. 1983. The Utility of Annual Reports: An International Study. *Journal of International Business Studies* 14(1): 63 – 84.

12. Cheng, Q. and Warfield, T.D. 2005. Equity Incentives and Earnings Management. *The Accounting Review* 80(2): 441 – 476.

13. Collingwood, H. 2001. The Earnings Game. *Harvard Business Review* 79(6): 65 – 72.

14. Companies Act No. 61 of 1973. 2004. Durban: LexisNexis Butterworths.

15. Copeland, R.M. 1968. Income Smoothing. *Journal of Accounting Research, Empirical Research in Accounting, Selected Studies* 6 (Supplement): 101 – 116.

16. Cornell, B. and Landsman, W.R. 2003. Accounting Valuation: Is Earnings Quality an Issue? *Financial Analysts Journal* November/December 2003: 20 – 28.

17. Craig, R. and Walsh, P. 1989. Adjustments for 'Extraordinary Items' in Smoothing Reported Profit of Listed Australian Companies: Some Empirical Evidence. *Journal of Business, Finance and Accounting* 16(2): 229 – 245.

18. DeAngelo, H., DeAngelo, L. and Skinner, J. 1994. Accounting Choice in Troubled Companies. *Journal of Accounting and Economics* 17(1/2): 113 – 143.

19. DeFond, M.L. and Jiambalvo, J. 1994. Debt Covenant Violations and Manipulation of Accruals. *Journal of Accounting and Economics* 17(1/2): 145 – 176.

20. Demsetz, H. 1983. The Structure of Ownership and the Theory of the Firm. *Journal of Law and Economics* 26(2): 375 – 390.

21. Dewar, S. 2000. *South African Sell-Side Analysts as Users: A Survey of Preferred Investment*

Decision-Making Resources. Unpublished UCT B.Com Hons (Financial Accounting) Technical Report.

22. Dickins, D. and Higgs, J. Interpretation and Use of Auditor Fee Disclosures. 2005. *Financial Analysts Journal* 61(3): 96 – 102.

23. Doumpos, M., Spathis, C. and Zopounidis, C. 2002. Detecting falsified financial statements: a comparative study using multicriteria analysis and multivariate statistical techniques. *European Accounting Review* 11(3): 509 – 535.

24. Duncan, J.R. 2001. Twenty Pressures to Manage Earnings. *The CPA Journal* 71(7): 33 – 37.

25. Eckel, N. 1981. The Income Smoothing Hypothesis Revisited. *Abacus* 17(1): 28 – 40.

26. Everingham, G.K. and Watson, A. 2001. *Generally Accepted Accounting Practice – A South African Viewpoint*. Educational Edition. Lansdowne: Juta & Co. Ltd.

27. Flynn, D.K. 1987. Perceptions Regarding the Sources of Financial Information for South African Institutional Investors. *De Ratione* 1(2): 2 – 7.

28. Foster, G. 1986. *Financial Statement Analysis*. Second edition. Prentice-Hall International Editions.

29. Frankel, R.M., Johnson, M.F. and Nelson, K.K. 2002. The Relation between Auditors' Fees for Nonaudit Services and Earnings Management. *The Accounting Review* 77 (Supplement): 71 – 105.

30. Friedlan, J.M. 1994. Accounting Choices of Issuers of Initial Public Offerings. *Contemporary Accounting Research* 11(1): 1 – 31.

31. GAAP Monitoring Panel. 2005. *Omissions and Errors: September 2002 to April 2005.* Available at: http://www.saica.co.za/documents/omissions_and_errors.pdf.

32. Gniewosz, G. 1990. The Share Investment Decision Process and Information Use: An Exploratory Case Study. *Accounting and Business Research* 20(79): 223 – 230.

33. Godfrey, J., Mather, P. and Ramsay, A. 2003. Earnings and Impression Management in Financial Reports: The Case of CEO Changes. *Abacus* 39(1): 95 – 123.

34. Griffiths, I. 1995. *New Creative Accounting.* London: Macmillan.

35. Guenther, D.A. 1994. Earnings Management in Response to Corporate Tax Rate Changes. *The Accounting Review* 69(1): 230 – 243.

36. Guidry, F., Leone, A. and Rock, S. 1999. Earnings-Based Bonus Plans and Earnings Management by Business-Unit Managers. *Journal of Accounting and Economics* 26(1 – 3)(January): 113 – 142.

37. Hall, S.C. and Stammerjohan, W.W. 1997. Damage Awards and Earnings Management in the Oil Industry. *The Accounting Review* 72(1): 47 – 65.

38. Harris, S. 2002. Don't be Duped by Tricks of the Trade. *Finance Week* (12 July): 8 – 10.

39. Healy, P.M. 1985. The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting and Economics* 7 (1 – 3): 85 – 107.

40. Healy, P.M and Wahlen, J.M. 1999. A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons* 13(4): 365 – 383.

41. Hermalin, B.E. and Weisbach, M.S. 2003. Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature. *Federal Reserve Bank of New York Economic Policy Review* (April): 7 – 26.

42. Hodge, F.D. 2003. Investors' Perception of Earnings Quality, Auditor Independence, and the

Usefulness of Audited Financial Information. *Accounting Horizons* Supplement (2003): 37 – 48.

43. Holthausen, R.W., Larcker, D.F. and Sloan, R.G. 1995. Annual Bonus Schemes and the Manipulation of Earnings. *Journal of Accounting and Economics* 19(1): 29 – 74.

44. Institute of Directors. 2002. *King Report on Corporate Governance for South Africa – 2002.* Johannesburg: Institute of Directors.

45. International Accounting Standards Board. 1989. *Framework for the Preparation and Presentation of Financial Statements.* SAICA Electronic Handbook.

46. Jackson, S.B. and Pitman, M.K. 2001. Auditors and Earnings Management. *The CPA Journal* 71(7): 39 – 44.

47. Jameson, M. 1988. *A Practical Guide to Creative Accounting.* London: Kogan Page.

48. JSE Securities Exchange South Africa. 2004. *The JSE Securities Exchange South Africa Listings Requirements.* Second edition. Durban: LexisNexis Butterworths.

49. Kasanen, E., Kinnunen, J. and Niskanen, J. 1996. Dividend-Based Earnings Management: Empirical Evidence from Finland. *Journal of Accounting and Economics* 22(1 – 3): 283 – 312.

50. Krinsky, I. and Rotenberg, W. 1989. The Valuation of Initial Public Offerings. *Contemporary Accounting Research* 5(2): 501 – 515.

51. Krishnan, G.V. 2003. Does Big 6 Auditor Industry Expertise Constrain Earnings Management? *Accounting Horizons* Supplement (2003): 1 – 16.

52. Levitt, A. 1998. *The "Numbers Game".* Speech delivered at the NYU Center for Law and Business, New York, NY, September, 28. Available at: http://www.sec.gov/news/speeches/spch.txt.

53. Lin, S. and Walker, M. 2000. FRS3 Earnings, Headline earnings, and accounting-based valuation models. *Accounting and Business Research* 30(4): 299 – 306.

54. McNichols, M. and Wilson, G.P. 1988. Evidence of Earnings Management from the Provision for Bad Debts. *Journal of Accounting Research* 26(Supplement): 1 – 31.

55. McQueen, S.B. 2000. *An Examination of the Use of Bad Debt Provisions by South African Banks as a Means of Smoothing Income*. Unpublished UCT B.Com Hons (Financial Accounting) Technical Report.

56. Mohrman, M. 1993. Debt Contracts and FAS No. 19: A Test of the Debt Covenant Hypothesis. *The Accounting Review* 68(2): 273 – 288.

57. Moyer, S. 1990. Capital Adequacy Ratio Regulations and Accounting Choices in Commercial Banks. *Journal of Accounting and Economics* 12: 123 – 154.

58. Naser, K.H.M. 1993. *Creative Financial Accounting: Its Nature and Use*. Hemel Hempstead: Prentice Hall.

59. Neill, J.D., Pourciau, S.G. and Schaefer, T.R. 1995. Accounting Method Choice and IPO Valuation. *Accounting Horizons* 9(3): 68 – 80.

60. Nelson, M.W., Elliott, J.A. and Tarpley, R.L. 2002. Evidence from Auditors about Managers' and Auditors' Earnings Management Decisions. *The Accounting Review* 77 (Supplement): 175 – 202.

61. Nichols, D.C. and Wahlen, J.M. 2004. How Do Earnings Numbers Relate to Stock Returns? A Review of Classic Accounting Research and Updated Evidence. *Accounting Horizons* 18(4): 263 – 286.

62. Palmrose, Z. and Scholz, S. 2004. The Circumstances and Legal Consequences of Non-GAAP

Reporting: Evidence from Restatements. *Contemporary Accounting Research* 21(1): 139 – 180.

63. Pike, R., Meerjanssen, J. and Chadwick, L. 1993. The Appraisal of Ordinary Shares by Investment Analysts in the UK and Germany. *Accounting and Business Research* 23(92): 489 – 499.

64. Pincus, M. and Wasley, C. 1994. The Incidence of Accounting Changes and Characteristics of Firms Making Accounting Changes. *Accounting Horizons* 8(2): 1 – 24.

65. Pourciau, S. 1993. Earnings Management and Nonroutine Executive Changes. *Journal of Accounting and Economics* 16: 317 – 336.

66. Prinsloo, F.E., Ramsay-Slogrove, S.D., Rowlands, J.E. 1996. Profit Smoothing in Industrial Companies Listed on the Johannesburg Stock Exchange. *De Ratione* 10(1): 1 – 26.

67. Saudagaran, S.M. and Sepe, J.F. 1996. Replication of Moses' Income Smoothing Tests with Canadian and UK Data: A Note. *Journal of Business, Finance and Accounting* 23(8): 1219 – 1222.

68. Schilit, H.M. 1993. *Financial Shenanigans: How to Detect Accounting Gimmicks and Fraud in Financial Reports*. New York: McGraw-Hill.

69. Schipper, K. and Vincent, L. 2003. Earnings Quality. *Accounting Horizons* Supplement (2003): 97 – 110.

70. Scholes, M.S., Wilson, G.P. and Wolfson, M.A. 1992. Firms' Responses to Anticipated Reductions in Tax Rates: The Tax Reform Act of 1986. *Journal of Accounting Research* 30(Supplement): 161 – 185.

71. Seelenbinder, M.S. 1995. *Income Smoothing in Business*. Unpublished UCT B.Com Hons (Financial Accounting) Technical Report.

72. Shah, A.K. 1998. Exploring the Influences and Constraints on Creative Accounting in the

United Kingdom. *The European Accounting Review* 7(1): 83 – 104.

73. Smith, C.W. 1993. A Perspective on Accounting-Based Debt Covenant Violations. *The Accounting Review* 68(2): 289 – 303.

74. Smith, T. 1996. *Accounting for Growth: Stripping the Camouflage from Company Accounts.* 2nd edition. London: Century Business Books.

75. South African Institute of Chartered Accountants. 1995. *AC 103 Net Profit or Loss for the Period, Fundamental Errors and Changes in Accounting Policies.* SAICA Electronic Handbook.

76. South African Institute of Chartered Accountants. 1995. *Accounting Opinion – AC 306: Headline Earnings.* SAICA Electronic Handbook.

77. South African Institute of Chartered Accountants. 1996. *AC 118 Cash Flow Statements.* SAICA Electronic Handbook.

78. South African Institute of Chartered Accountants. 1997. *SAAS 720 Other information in documents containing audited statements.* SAICA Electronic Handbook.

79. South African Institute of Chartered Accountants. 1998. *AC 104 Earnings Per Share.* SAICA Electronic Handbook.

80. South African Institute of Chartered Accountants. 1999. *AC 117 Discontinuing Operations.* SAICA Electronic Handbook.

81. South African Institute of Chartered Accountants. 1999. *AC 123 Cash Flow Statements.* SAICA Electronic Handbook.

82. South African Institute of Chartered Accountants. 1999. *AC 129 Intangible Assets.* SAICA Electronic Handbook.

83. South African Institute of Chartered Accountants. 1999. *AC 131 Business Combinations.*

SAICA Electronic Handbook.

84. South African Institute of Chartered Accountants. 2000. *AC 135 Investment Property.* SAICA Electronic Handbook.

85. South African Institute of Chartered Accountants. 2002. *AC 116 Employee Benefits.* SAICA Electronic Handbook.

86. South African Institute of Chartered Accountants. 2002. *AC 133 Financial Instruments: Recognition and Measurement.* SAICA Electronic Handbook.

87. South African Institute of Chartered Accountants. 2002. *Circular 7/2002: Headline Earnings.* SAIC Electronic Handbook.

88. Standard and Poor's (S & P). 2002. Measures of Corporate Earnings. Available at: http://www.standardandpoors.com.

89. Sweeney, A.P. 1994. Debt Covenant Violations and Managers' Accounting Response. *Journal of Accounting and Economics* 17(3): 281 – 308.

90. Titman, S. and Trueman, B. 1986. Information Quality and the Valuation of New Issues. *Journal of Accounting and Economics* 8(2): 159 – 172.

91. Tweedie, D. and Whittington, G. 1990. Financial Reporting: Current Problems and Their Implications for Systematic Reform. *Accounting and Business Research* 21(81): 87 – 102.

92. United Kingdom of Investment Management and Research. 1993. *Statement of Investment Practice No. 1: The Definition of Headline Earnings.* London: IIMR.

CHAPTER 12: bibliography

The following works were consulted, but not specifically referenced:

1. Keller, G. and Warrack, B. 1997. *Statistics for Management and Economics*. 4th edition. Pacific Grove: Duxberry Press.

2. PCU Handbook (1993), UCT publication.

3. Pijper, T. 1993. *Creative Accounting: The Effectiveness of Financial Reporting in the UK.* London: Macmillan.

appendix i: companies included in the sample

Table 25: Largest 100 companies listed on the JSE as at 31 December 2004

Equity Name	Market Capitalisation as at 31/12/2004
Anglo American Plc	R 199 373 508 019
BHP Billiton Plc#	R 162 897 702 132
Richemont Securities DR#	R 98 136 000 000
SAB Miller Plc	R 95 875 522 495
Standard Bank Group Ltd	R 88 968 730 548
Sasol Ltd	R 81 546 428 425
Firstrand Ltd	R 73 108 938 523
MTN Group Ltd	R 72 291 401 202
Old Mutual Plc#	R 55 084 404 818
Telkom SA Ltd	R 54 589 118 262
Anglogold Ashanti Ltd	R 52 630 760 534
ABSA Group Ltd	R 49 777 635 073
Remgro Ltd	R 45 905 540 814
Anglo American Platinum Ltd	R 45 002 937 672
Sanlam Ltd	R 35 978 418 671
Gold Fields Ltd	R 34 193 508 843
Liberty International Plc	R 33 937 587 939
Impala Platinum Holdings Ltd	R 31 957 627 894
Nedcor Ltd	R 30 667 368 936
Ispat Iscor Ltd	R 29 196 764 646
RMB Holdings Ltd	R 25 846 714 483
Bidvest Ltd	R 25 518 679 284
Barloworld Ltd	R 23 696 729 250
Naspers Ltd	R 23 591 152 500
Imperial Holdings Ltd	R 22 829 130 584
Harmony G M Co Ltd	R 20 224 049 561
Sappi Ltd	R 19 842 967 036
Liberty Group Ltd	R 18 421 087 606
Edgars Consol Stores Ltd	R 16 476 202 431
Tiger Brands Ltd	R 16 353 199 623
Pretoria Portland Cement Ltd	R 15 321 953 115
Steinhoff International Holdings Ltd	R 14 297 163 741
Lonmin Plc#	R 14 020 343 469
Investec Plc	R 13 538 561 524
Kumba Resources Ltd	R 13 281 585 284
JD Group Ltd	R 11 729 400 000
Pick 'n Pay Stores Ltd	R 11 278 306 062
Venfin Ltd	R 11 244 640 564

Woolworths Holdings Ltd	R 10 936 382 144
Equity Name	**Market Capitalisation as at 31/12/2004**
Discovery Holdings Ltd	R 10 185 632 145
Nampak Ltd	R 10 046 317 039
Foschini Ltd	R 9 619 929 640
Massmart Holdings Ltd	R 9 021 346 667
African Bank Investments	R 8 731 946 839
Liberty Holdings Ltd	R 8 693 928 778
African Oxygen Ltd	R 8 588 469 754
Network Healthcare Holdings	R 8 518 187 676
Truworths International	R 8 302 632 768
Santam Ltd	R 8 179 528 517
Investec Ltd	R 7 963 914 387
AVI Ltd	R 7 836 719 942
Reunert	R 7 202 231 850
Shoprite Holdings Ltd	R 7 010 885 034
Metropolitan Holdings Ltd	R 6 993 381 259
Aspen Pharmacare Holdings	R 6 870 953 611
Sun International Ltd	R 6 634 395 471
Mutual and Federal Insurance Company Ltd	R 6 061 653 388
Assmang Ltd	R 5 854 539 900
Pick 'n Pay Holdings Ltd	R 5 799 739 902
Dimension Data Holdings Plc#	R 5 638 727 346
Tongaat-Hulett Group Ltd	R 5 525 478 731
African Rainbow Minerals	R 5 416 368 231
Super Group Ltd	R 5 181 991 795
Growthpoint Properties Ltd	R 5 067 604 510
Alexander Forbes Ltd	R 4 997 609 233
Medi-Clinic Corporate Ltd	R 4 988 440 386
Allied Technologies	R 4 909 116 915
Distell Group Ltd	R 4 908 915 900
Aveng Ltd	R 4 753 750 896
Highveld Steel and Vanadium Corporation Ltd	R 4 730 284 704
Metoz Holdings Ltd	R 4 652 755 862
AECI Ltd	R 4 584 283 002
Murray and Roberts Holdings Ltd	R 4 563 523 511
Caxton and CTP Publishers and Printers Ltd	R 4 467 529 659
Ellerine Holdings Ltd	R 4 399 035 200
Allan Gray Property Trust	R 4 103 697 493
Lewis Group Ltd	R 3 900 000 000
The Spar Group Ltd	R 3 629 438 349
Johnnic Holdings Ltd	R 3 620 731 156
Grindrod Ltd	R 3 591 401 304
Johnnic Communications Ltd	R 3 542 436 676
New Clicks Holdings Ltd	R 3 476 071 204

Equity Name	Market Capitalisation as at 31/12/2004
Capital Alliance Holdings Ltd	R 3 399 903 744
Afrox Healthcare Ltd	R 3 257 059 205
United Service Technologies Ltd	R 3 002 053 615
Western Areas Ltd	R 2 963 709 475
Unitrans Ltd	R 2 939 375 604
Mvelephanda Group Ltd	R 2 863 721 245
Mr Price Group Ltd	R 2 803 249 491
Gold Reef Casino Resorts Ltd	R 2 783 033 636
Astral Foods Ltd	R 2 676 038 280
Hosken Consolidated Investments Ltd	R 2 628 378 170
Illovo Sugar Ltd	R 2 600 617 900
Italtile Ltd	R 2 521 433 205
Afgri Ltd	R 2 516 605 000
Sycom Property Fund	R 2 484 477 038
Mvelephanda Resources Ltd	R 2 412 845 530
Peermont Global Ltd	R 2 326 500 000
Hyprop Investments Ltd	R 2 303 460 729
Relyant Retail Ltd	R 2 270 963 918

\# Listed on a foreign stock exchange and does not report in terms of SA GAAP. Excluded from sample because headline earnings not presented in annual report.

2004 annual report not available.

Table 26: Smallest 150 companies listed on the JSE as at 31 December 2004

Equity Name	Market Capitalisation as at 31/12/2004
African Media Entertainment Ltd	R90 597 234
Shawcell Telecomm Ltd	R90 000 000
Monteagle Holdings Société Anonyme	R88 200 000
Retail Apparel Group Ltd	R84 750 000
Kairos Industrial Holdings Ltd	R83 188 181
Rex Trueform Clothing Company Ltd (N-class shares)*	R79 813 570
Spectrum Shipping Ltd	R76 500 000
Pasdec Resources SA Ltd	R75 551 340
Pinnacle Technology Holdings Ltd	R74 563 293
Sallies Ltd	R71 962 492
London Finance and Investment Group Plc*	R71 829 321
Wooltru Ltd (N-class shares)*	R71 784 095
Decillion Ltd	R71 294 647
Compu-Clearing Outsourcing Ltd	R69 666 894
Onelogix Group Ltd	R69 160 830
Sabvest Ltd (N-class shares)*	R65 204 664
Brimstone Investment Corporation Ltd	R61 689 917
Computer Services Holdings Ltd	R61 360 926
Xantium Technology Holdings Ltd	R60 750 000
Gencor Ltd	R59 260 343
Stocks Hotels and Resorts Ltd	R59 000 000
Fairvest Property Holdings Ltd	R58 705 802
John Daniel Holdings Ltd	R58 019 759
Conafex Holdings Société Anonyme	R56 911 596
Basil Read Holdings Ltd	R56 202 000
Wooltru Ltd (Ordinary shares)*	R54 534 832
Leisurenet Ltd	R54 191 628
Enterprise Risk Management Ltd	R52 504 061
Purple Capital Ltd	R52 267 500
African and Overseas Enterprises Ltd (N-class shares)*	R50 687 205
Sub Nigel Gold Mining Company Ltd	R50 589 573
Absolute Holdings Ltd	R50 287 767
Creditvision Holdings Ltd	R48 419 750
Labat Africa Ltd	R46 103 637
Viking Investment and Asset Managers Ltd	R45 458 051
Simmer and Jack Mines Ltd	R44 964 749
Fashion Africa Ltd	R41 858 244
Wankie Collery Ltd (Ordinary shares)	R41 546 420
Trematon Capital Investments Ltd	R39 312 000
Diamond Core Resources Ltd	R38 876 357
Sabvest Ltd (Ordinary shares)*	R38 118 407

Stratcorp Ltd	R37 407 499
York Timber Organisation Ltd	R34 225 540
Equity Name	**Market Capitalisation as at 31/12/2004**
King Consolidated Holdings Ltd	R32 634 877
Nictus Ltd	R32 066 100
Mahoro Group Ltd	R31 610 073
Infowave Holdings Ltd	R31 051 188
Milkworx Ltd	R29 442 124
Faritec Holdings Ltd	R28 977 378
Global Technology Ltd	R28 738 067
Halogen Holdings Société Anonyme	R27 960 390
Alex White Holdings Ltd	R 27 186 921
Indus Credit Company Africa Holding	R 26 833 352
All Joy Foods Ltd	R 26 565 000
Primeserv Group Ltd	R 26 412 548
Cape Empowernent Trust	R 26 014 586
Namibian Sea Products Ltd	R 25 571 817
Venter Leisure and Communications Ltd	R 25 247 547
Eureka Industrial Ltd	R 25 224 000
Insurance Outsourcing Managers Holdings Ltd	R 24 440 166
Don Group Ltd	R 23 558 824
Intertrading Ltd	R 23 000 000
Buildmax Ltd	R 22 993 098
Money Web Holdings Ltd	R 22 950 000
Marshalls Ltd (Ordinary shares)*	R 20 029 152
EC-Holdings Ltd	R 19 767 600
Southern Electricity Company Ltd	R 19 231 860
Exxotel Ltd	R 19 200 000
New Africa Investments Ltd	R 18 388 758
BICC CAPCA Ltd	R 18 360 000
Belce Holdings Ltd	R 16 925 931
Y3K Group Ltd	R 16 721 079
Omega Alpha International	R 15 750 000
Kelgran Ltd	R 15 045 470
Indequity Group Ltd	R 14 604 000
Top Info Technology Holdings	R 13 767 055
Aquila Growth Ltd	R 13 739 365
Rare Earth Extraction Company Ltd	R 13 662 000
Independent Financial Services Ltd	R 13 600 000
Spanjaard Ltd	R 13 395 000
Rex Trueform Clothing Company Ltd*	R 13 221 412
Pals Holdings Ltd	R 12 000 000
W B Holdings Ltd	R 10 810 000
African Dawn Capital Ltd	R 10 604 953
[illegible] Ltd	R 10 520 000
Marshalls Ltd (N-class shares)*	R 10 372 370

Corwill Investments Ltd	R 9 749 580
IMR Investments Ltd	R 9 522 751
Global Village Holdings Ltd	R 9 409 783
Equity Name	**Market Capitalisation as at 31/12/2004**
Command Holdings Ltd	R 9 000 000
Moribo Leisure Ltd	R 8 836 834
Owen Holdings Ltd	R 8 400 894
Incentive Holdings Ltd	R 8 243 973
Amlac Ltd	R 8 190 000
Rentsure Holdings Ltd	R 8 087 586
Square One Solutions Group Ltd	R 7 920 000
Interconnective Solution Ltd	R 7 847 000
Thabex Exploration Ltd	R 7 653 099
Metrofile Holdings Ltd	R 7 407 741
Heritage Collection Holdings Ltd	R 7 113 030
Synergy Holdings Ltd	R 7 073 287
Siltek Ltd	R 6 944 642
Northern Eng. Ind. Africa Ltd	R 6 731 449
DNA Supply Chain Investments Ltd	R 6 642 875
APS Technologies Ltd	R 6 575 000
Whetstone Industrial Holdings Ltd	R 6 435 257
Dynamo Retail Ltd	R 6 321 998
Integrear Ltd	R 6 282 095
African and Overseas Enterprises Ltd*	R 5 937 500
Vesta Technology Holdings	R 5 922 000
Zaptronix Ltd	R 5 792 221
Shoes For Africa Ltd	R 5 769 177
Village Main Reef Gold Mining Company Ltd	R 4 854 756
Dynamic Cables RSA Ltd	R 4 673 425
Stilfontein Gold Mining Company Ltd	R 4 572 022
Stella Vista Technologies Ltd	R 4 200 000
Samrand Development Holding	R 4 084 897
SA Mineral Resources Corporation Ltd	R 3 742 749
Beyet Holdings Ltd	R 3 578 832
Adonis Knitwear Holdings Ltd	R 3 516 250
CCI Holdings Ltd	R 3 475 576
Choice Holdings Ltd	R 3 408 559
Awethu Breweries Ltd	R 3 382 276
Universal Growth Holdings Ltd	R 3 106 156
Proper Group Ltd	R 3 074 617
Millionair Charter Ltd	R 3 019 500
Moulded Medical Supplies Ltd	R 2 887 794
Elexir Technology Holdings Ltd	R 2 862 559
Aludis Ltd	R 2 661 275
Burlington Ind. Ltd	R 2 400 000
Premier Group Ltd	R 2 057 795

Bryant Technology Ltd	R 1 960 000
Bonatla Property Holdings Ltd	R 1 853 469
Chariot Land Ltd	R 1 841 318
Alpica Investments Ltd	R 1 823 385
Equity Name	**Market Capitalisation as at 31/12/2004**
Zeltis Holdings Ltd	R 1 640 882
Centrecity Property Fund	R 1 634 907
Tisec Ltd	R 1 601 585
London Finance and Investment Group Plc*	R 1 552 593
Pacific Holdings Ltd	R 1 448 578
Terrafin Holdings Ltd	R 954 435
Consol. Prop. and Fin. Ltd	R 900 000
Anbeeco Investment Holdings	R 898 682
Cyberhost Ltd	R 838 158
Canning Holdings Ltd	R 768 000
Richway Retail Property Ltd	R 653 021
New Africa Investments Ltd	R 625 262
Advanced Technology Systems Ltd (N-class shares)*	R 593 191
Terexko Ltd	R 493 525
Advanced Technology Systems Ltd (Ordinary shares)*	R 394 739
[illegible] Ltd	R 316 542

* Company has more than one class of shares listed on the JSE and therefore appears twice in the selected sample.

[illegible] 2004 annual report not available.