THE RELATIONSHIP BETWEEN ACCOUNTING CHOICES AND SHARE PRICES: A STUDY OF SOUTH AFRICAN LISTED COMPANIES

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ABSTRACT

It is widely assumed that the managers of companies behave in a self-interested and opportunistic manner when making the discretionary accounting choices that are applied in the preparation of published financial reports. Empirical research has found evidence for this in the United States, Britain, Spain, France and Australia, amongst other countries. There has, however, been no prior work of a similar nature in a South African context.

The purpose of this study is to extend this body of work by examining the relationship between a number of potentially opportunistic (profit-increasing, income-smoothing and solvency-improving) accounting choices made by the managers of South African listed companies, and growth rates in the share prices of those companies.

Data in respect of thirty-nine medium-sized South African listed companies are analysed for evidence of the expected positive relationship between opportunistic accounting choices and share price growth. No evidence is found for this relationship. This may be due to limitations in the research design, inadequacies in the interpretation of the agency theory from which the hypotheses are developed, or a combination of both. Refinements in the research design or a re-interpretation of the theory may be successful in addressing these matters as part of future research efforts.

Key words: accounting choice, managerial opportunism.

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CHAPTER 1
INTRODUCTION

1.1 Research context

During its financial year ended 31 March 2008, British Airways plc increased the depreciation period for its RB211 engines (used in 747 and 767 aircraft) from 54 months to 78 months. This reduced its depreciation expense for the year by £32,5 million (British Airways, 2008: 100).

The effect on the company's consolidated income statement was considerable (a 3,8% improvement in profit before tax, to £883 million). Another significant effect of the depreciation change was the subject of critical commentary on the Financial Times website:

> … business has been in dire straits for some time now. The much-lauded 10 per cent operating profit margin—barely achieved last fiscal-year [ended March 2008] and used as a benchmark to restart dividend payments—was helped along by a clever accounting trick, not a genuine improvement in business levels.
>
> The airline changed the depreciation period for their RB211 engines, generating a £32.5m decrease in annual depreciation charges, et voila, CEO Willie Walsh gets his 10 per cent margin despite the fiasco that was Terminal 5's opening and rising fuel costs (Financial Times, 2008).

The cynicism of the Financial Times report reflects a widespread belief that company managers behave in a self-interested and opportunistic fashion. This belief has persisted for many years. It certainly predates, and is independent of, the global financial crisis that

began manifesting its full extent in 2008. For example, in a prescient speech delivered before a different financial disaster materialised (this time, the bursting of the "dot com" bubble in 2001), the then chairman of the Securities and Exchange Commission in the United States used some strong language, referring to "corporate managers [who] are participants in a game of nods and winks", the fact that "accounting is being perverted" and that "earnings reports reflect the desires of management rather than the underlying financial performance of the company" (Levitt, 1998).

It is sometimes startling to observe the longevity of the belief that accounting is nothing much more than a convenient instrument of misrepresentation, to be used at will by unscrupulous managers. The following newspaper editorial, for example, could have been referring to the recent actions of British Airways management, except that it was written more than thirty years earlier:

> A lot of executives apparently believe that if they can figure out a way to boost reported earnings their stock price will go up even if the higher earnings do not represent any underlying economic change. In other words, the executives think they are smart and the market is dumb (The Wall Street Journal, 1 October 1974, in Watts and Zimmerman, 1986: 75).

A final example comes from Paton and Littleton's book on corporate accounting, viewed by many as an important early foundation for modern accounting practice. They refer to a concern arising from the separation of ownership and management in companies: "the interests of various classes of investors may not receive the balanced consideration they deserve. In particular cases there may be a strong urge to increase immediate profits in any possible manner" (Paton and Littleton, 1940: 1).

The "clever accounting trick", "game of nods and winks" and allegations that managers' actions are based on the belief that "the market is dumb" (Paton and Littleton are more polite) would not have been possible if the managers of companies did not have a degree

of freedom in the way they calculate profits. Putting this another way, implicit in the belief that accounting can be used to misrepresent an underlying economic reality is the understanding that managers are able to make choices in accounting for their companies' various transactions, events and circumstances.

One example of such a choice is referred to in the Financial Times commentary: British Airways management were able and willing to alter the useful lives of certain assets. (They were able in the sense that accounting rules did not prevent them from doing so, and willing in the sense that, for whatever motivation, they wished to do so.) The lines of causality arising from this management decision are interesting to consider. The accounting change could certainly have no effect on the economic reality of the expected lifespan of aircraft engines. As for the reverse causality, the company's financial report makes no mention of a technological discovery about the engines, or a changed maintenance process affecting them, that would justify the change in accounting for them. In the absence of direct and clear logical links between the engines and the way in which they are accounted for, it is hardly surprising that the effect of the accounting change on a relatively unrelated headline accounting figure (profit for the year) stands out very clearly indeed in the eyes of commentators, cynical or otherwise.

The accounting choices made by the managers of companies have attracted the close attention of accounting researchers for many years. A key early intellectual antecedent for modern research on this topic is Gordon's (1964) paper, which argues that a company's management will "within the limits of its power, i.e., the latitude allowed by accounting rules, smooth reported income" (Gordon, 1964: 262). This hypothesis was based on the assumptions that (1) managers make those accounting choices that will maximise their own utility, (2) management utility increases with job security and level of income, (3) the job security and high income goals are in turn dependent on shareholder satisfaction, and (4) the satisfaction of shareholders increases with the rate of return on their capital, and the stability of the company's income.

By the late 1970s, Gordon's smoothing hypothesis remained essentially unconfirmed.

Problems in the specification of subsequent empirical tests may have contributed to this, but Watts and Zimmerman (1978) suggest that, in addition, "certain aspects of the Gordon model contribute to the model's lack of confirmation" (Watts and Zimmerman, 1978: 114).

In 1979, Watts and Zimmerman proposed an alternative model, grounded in agency theory, in which the company manager is an agent, and the shareholder and bondholder are principals. There are a number of reasons that the agent's interests do not necessarily coincide with those of the principals, including the manager's "incentives to transfer wealth to himself at the expense of both the shareholders and bondholders" (Watts and Zimmerman, 1979: 276). One way in which managers seek to achieve such wealth transfers is through profit manipulation, and profit manipulation is, in turn, achievable by means of exercising whatever accounting choices are available. Watts and Zimmerman conclude their analysis in dramatic fashion: "the only accounting theory that will provide a set of predictions that are consistent with observed phenomena is one based on self-interest" (Watts and Zimmerman, 1979: 301).

There has been a very rich vein of subsequent related research, that continues to this day. Most of this work has been concentrated in the United States (see, for example, Pincus and Wasley (1994), Balsam (1998), Heflin, Kwon and Wild (2002), Beatty and Weber (2006) and Zhang, Bartol, Smith, Pfarrer and Khanin (2008)). However, researchers have also studied opportunistic accounting choices by managers in Europe (for example, Switzerland: Missonier-Piera (2004), Spain: de Albornoz and Illueca (2005) and France: Lambert and Sponem (2005)), the United Kingdom (for example, Beattie, Brown, Ewers, John, Manson, Thomas and Turner (1994) and Shah (1998)) and Australia (for example, Wilson and Shailer (2007)).

There has been no similar work on opportunistic accounting choices by company managers in a South African context.

1.2 Research objective

The objective of this research is to establish whether there is a relationship between potentially opportunistic accounting choices made by the managers of South African companies and share prices for those companies. Specifically, evidence will be sought as to whether there is a positive association between the number of profit-increasing, income-smoothing and solvency-improving accounting choices made by the managers of companies, and growth rates in the share prices of the companies.

1.3 Research methodology

The annual reports of all companies listed on South Africa's only formal equities exchange, The JSE Ltd, are publicly available. The 2006 annual reports for a number of JSE-listed companies were scrutinised for information about significant accounting choices made by the companies' directors. This included such information as the depreciation rates used for property, plant and equipment, and the actuarial assumptions used in accounting for defined benefit funds. The results of this process were recorded, individually for each company, in the research instrument reproduced in Appendix E.

The accounting choices made by each company were then sorted into three schedules based on the effect of each choice on one or more of the company's profitability, income volatility and solvency. From these schedules, the number of profit-increasing, income-smoothing and solvency-improving accounting choices made by each company was determined.

Year end share price data for each company for the financial years 2003 to 2006 were obtained from published investor handbooks. From these data, the average growth rate for each share during this three year period was calculated.

Finally, correlation coefficients were calculated in order to facilitate an analysis of the strength and direction of the relationships between the number of profit-increasing,

income-smoothing and solvency-improving accounting choices made and share price growth.

1.4 Structure of the thesis

The remaining chapters of this thesis are structured as follows.

Chapter 2 presents a review of the literature, with a concurrent development of the profit-increasing, solvency-improving and volatility-reducing hypotheses of this thesis.

Chapter 3 sets out the accounting choices, arising from the application of accounting rules, that are available to the managers of South African companies. These choices are discussed in the context of their relationships with the hypotheses set out in Chapter 2.

In Chapter 4, the data are presented. The company selection criteria, and way in which the data were collected, are described. Descriptive statistics are provided, followed by detailed correlation calculations. The results of the research are interpreted, and its limitations are discussed. In addition, a number of opportunities for future research are identified.

Chapter 5 concludes the thesis with a summary of its aims, findings and implications.

CHAPTER 2
LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Introduction

Companies exist for a variety of reasons, such as relative ease of ownership transfer, limited liability, economies of scale arising from pooled resources, and the separation of ownership and management. It is this last benefit of the corporate structure that is of particular interest and focus in this thesis: an owner of a business who is not also its manager has the freedom to own, or part-own, a number of businesses, allowing for portfolio diversification. On the other hand, a manager may be well-equipped with appropriate skills, but lack sufficient wealth to become the owner of a company. Seen in this context, therefore, companies provide utility (wealth) maximising opportunities for owners and managers.

These opportunities, however, come at a cost. It is the inevitable tension between owners and managers in terms of who bears this cost (or rather, the greater part of the total cost) that gives rise to the considerations of agency theory.

2.2 Agency theory

Jensen and Meckling (1976) apply a positive approach to agency theory. Prior to this paper, most of the literature deals with normative aspects of the agency problem, concentrating on the prescription of appropriate terms and structures for agency contracts, in order to achieve an equitable distribution of costs and benefits.

Jensen and Meckling (1976: 308) define an agency relationship as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent." In the context of this thesis, the principals are the owners of the company, and the agent is the company manager.

Under an agency contract, the agent, as a rational utility maximiser, has incentives to act in a self-interested manner, which may be to the detriment of the principal. The principal, who is also a utility maximiser, can limit such actions on the part of the agent by "establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit the aberrant activities of the agent. In addition in some situations it will pay the agent to expend resources (bonding costs) to guarantee that he will not take certain actions which will harm the principal" (Jensen and Meckling, 1976: 308).

While it is clearly rational for a principal to incur monitoring costs, the reasons why an agent would accept bonding costs are less obvious. Watts and Zimmerman (1986) refer to the following examples of incentives for the managers of companies to enter into contracts that restrict their own actions: competition in the labour market (which causes professional managers in competition for scarce positions to agree to new contracts that are more restrictive than existing contracts) and reputational risk issues (which cause managers to accept restrictions because they in any case intend to behave in a manner that will not tarnish their reputations).

Agency costs are the sum of monitoring costs, bonding costs and a residual loss. The residual loss arises because of the impossibility of reaching a perfectly optimal agency arrangement (ie there will always be at least "some divergence between the agent's decisions and those decisions which would maximize the welfare of the principal" (Jensen and Meckling, 1976: 308)).

Agency costs reduce the total pool of wealth that a company generates. Therefore, the principals (owners) and agent (management) "collectively … have incentives to minimize agency costs" (Christie and Zimmerman, 1994: 541). Jensen and Meckling (1976) note that the reduction of agency costs for companies is generally achieved by the owners imposing, and management accepting, methods such as audits, internal controls, budget restrictions and compensation arrangements that more closely identify the interests of management with those of the owners. As long as the marginal cost of these activities is less than the marginal reduction in the cost of self-interested behaviour by

management, total agency costs are reduced.

In companies, the methods used to reduce agency costs are typically based on contracts which use accounting numbers as points of reference (see, for example, Holthausen and Leftwich (1983), Christie and Zimmerman (1994) and Fields, Lys and Vincent (2001)). The determination of these accounting numbers "for use in [agency] contracts is typically required to be in accordance with generally accepted accounting principles. Yet, there is discretion, or latitude, in how managers select and apply accounting [methods] within the confines of acceptable principles … Managers [therefore] select and apply accounting methods as a means to mitigate contractual restrictions on their behavior" (Heflin et al, 2002: 1047).

Watts and Zimmerman (1990) note that rational owners are aware of the potential for such behaviour on the part of managers, and therefore expected managerial opportunism is *ex ante* priced into agency contracts. The price protection of owners is, however, imperfect. Christie and Zimmerman (1994) point out that owners are exposed to the risk of unexpected (excess) opportunism. This risk cannot always be accurately priced at contract inception because, for example, "(1) circumstances [may] change such that some firms' control systems allow managers to enrich themselves more than expected, or (2) mistakes are made in writing the initial contracts" (Christie and Zimmerman, 1994: 541).

Management opportunism in the selection and application of accounting methods is generally that which attempts to "increase management's wealth via increases in share price [or] via increases in incentive cash bonuses" (Watts and Zimmerman, 1978: 114). The second of these mechanisms is really a subset of the first, in that cash bonuses can be expected to be maximised when shareholder returns (a significant proportion of which include share price changes) are maximised.

In the absence of cash bonuses, the link between management's wealth and the company's share price arises from the existence of share-based compensation plans, in which management is granted outright share ownership, or derivatives such as share

options or share appreciation rights. The fact that management posits the existence of an additional link between opportunistic accounting methods and the company's share price means that they believe that "investors respond to accounting numbers per se, and do not discriminate among accounting numbers produced by different accounting measurement rules" (Holthausen and Leftwich, 1983: 81). In other words, and as noted in Chapter 1, managers seem to think that the market is stupid.

This belief runs contrary to a significant body of theory and research on the efficiency of markets. This has it that, because of the efficiency of the market's absorption of all relevant information about a company, managers cannot systematically mislead the market for their company's shares through the selective application of opportunistic accounting methods. Therefore, "earnings manipulation may be fun, but its profitability is doubtful" (Kaplan and Roll, 1972: 245). As Shah (1998: 84) puts it: "if analysts are able to 'see through' creative accounting devices as is suggested in the efficient markets literature, why is it that companies continue to practice them?"

2.3 The efficient market hypothesis

Fama (1970) describes a general notion of market efficiency. In an efficient market, "investors can choose among the securities that represent ownership of firms' activities under the assumption that security prices at any time 'fully reflect' all available information" (Fama, 1970: 383). In order to generate empirically testable implications from this (somewhat extreme) assertion, Fama divides the universe of all available information into information sets, and proposes a relationship between the expected price of a security, the market rate of return and a given information set, as follows:

$$E(p_{j,t+1} | \Phi_t) = [1 + E(r_{j,t+1} | \Phi_t)]\, p_{j,t}$$

where $p_{j,t}$ is the price of security j at time t, $p_{j,t+1}$ is its price at time t + 1 and $E(r_{j,t+1} | \Phi_t)$ is the market's risk-adjusted expected rate of return, given information set Φ_t (Fama, 1970: 384). This implies that "the information in Φ_t is fully utilized in determining

equilibrium expected returns … [and] this is the sense in which Φ_t is 'fully reflected' in the formation of price $p_{j,t}$" (Fama, 1970: 384).

Jensen (1978: 96) has a usefully succinct alternative description of Fama's hypothesis: "a market is efficient with respect to information set θ_t if it is impossible to make economic profits by trading on the basis of information set θ_t". (As the term is used by Jensen, "economic profits" are profits in excess of the market risk-adjusted rate of return. They are sometimes referred to as abnormal or excess profits.)

Empirical research on the efficient market hypothesis is usually classified on the same basis as Fama applies in his 1970 paper, with reference to the nature of the information set used to test market efficiency. In weak form tests, the information set is past price or return histories. In semi-strong form tests, the responsiveness of security prices to all obviously publicly available information (such as annual financial statements and media reports) is tested. Finally, in strong form tests, the information set includes the previous two, as well as relevant information that is monopolistically (privately) held, such as management's inside information (Fama, 1970: 388).

Empirical evidence has consistently been found for weak form tests. Commentators' interpretations of tests of the strong form of the efficient market hypothesis range from "irrefutable" evidence against it (Levy, 1996: 432) to the statement that "there is evidence inconsistent with the strong form, but that evidence is surprisingly scarce" (Watts and Zimmerman, 1986: 19). In general, however, "we do not expect markets to be strong form efficient … it would not be surprising if insiders were able to make superior profits trading in their firms' stock" (Bodie, Kane and Marcus, 2003: 278).

Evidence for, or against, semi-strong form tests is far more equivocal. Levy (1996: 429), for example, cites nine equity market studies, split 5 : 4 between supporting and rejecting the hypothesis that markets are semi-strong form efficient. This suggests that a semi-strong efficiency continuum exists, ranging from completely inefficient to completely efficient, and the placing of the equity market in this continuum is uncertain (and may,

indeed, vary over time and between different equity markets).

Bearing in mind the fact that semi-strong tests of equity markets examine the responsiveness of the market to the same accounting numbers that are the subject of potential manipulation by opportunistic company managers, the possibility of the existence of at least a degree of market inefficiency has the important implication that it is rational for managers to expect that accounting manipulation can, at least sometimes, be successful.

2.4 The accepted set of accounting rules

Accounting method choices, opportunistic or otherwise, are available to a company's management only if the accepted set of accounting rules or standards permits such choices. In general, the accepted set "of accounting procedures within which managers have discretion" (Watts and Zimmerman, 1990: 136) is established by the regulatory authorities of the country in which the company is domiciled.

In a South African context, all companies listed on the country's only formal equities exchange, the JSE Ltd, are required to comply with International Financial Reporting Standards (IFRSs) published by the International Accounting Standards Board (IASB). In terms of the JSE's rules, this has been a requirement for each listed company with effect from its first financial year starting on or after 1 January 2005 (The JSE Ltd, 2008: 8.3).

There are two broad categories of accounting choices that arise from the application of IFRSs, and that are therefore available to the managers of South African companies. These are accounting policy choices, and choices in making estimates.

Accounting policies are "the specific principles, bases, conventions, rules and practices [established by IFRSs and] applied by an entity in preparing and presenting financial statements" (IASB, 1993a: 5).

In its Preface to IFRSs, the IASB states that it is its objective to "require like transactions and events to be accounted for in a like way … Consequently, the IASB intends not to permit choices in accounting [policies] … [and it] will continue to reconsider those transactions and events for which [its standards] permit a choice of accounting [policies], with the objective of reducing the number of those choices" (IASB, 2002: 13). This is a curiously self-contradictory statement. However, the IASB is in this awkward situation for reasons that are largely political in nature, and outside the scope of interest of this thesis. It is sufficient to note that, although the IASB opposes accounting policy choices, they nevertheless exist in its standards. Relevant examples are discussed in Chapter 3.

As far as estimates are concerned, the IASB notes that "as a result of the uncertainties inherent in business activities, [it is inevitable that] many items in financial statements cannot be measured with precision but can only be estimated" (IASB, 1993a: 32).

Therefore, in contrast with choices in accounting policy, which are allowed by standard setters for political reasons, choices in making estimates are an unavoidable part of accounting for phenomena that occur in a real-world economic milieu. The process of making estimates when preparing financial statements will neither necessarily nor automatically undermine their reliability, as long as the judgements upon which the estimates are based are sound, and free from any kind of management bias:

> If financial reports are to convey managers' information on their firms' performance, standards must permit managers to exercise judgment … Managers can then use their knowledge about the business and its opportunities to [make estimates] that match the firms' business economics, potentially increasing the value of accounting as a form of communication. However, because auditing is imperfect, management's use of judgment also creates opportunities for 'earnings management', in which managers choose reporting methods and estimates that do not accurately reflect their firms' underlying economics (Healy and Wahlen,

1999: 366).

Relevant examples of choices in making estimates are discussed in Chapter 3.

2.5 Hypothesis development

2.5.1 Introduction

The preceding discussion has established the motive for accounting manipulation by company managers (direct management interest in an increased share price because of cash bonuses or share-based compensation plans), as well as the opportunity (the availability of accounting choice, in the context of the reasonable expectation that accounting choices matter because of the possibility of the existence of some semi-strong equity market inefficiency). This section discusses the means by which accounting choice may be used to increase share prices, and develops appropriate hypotheses.

Fields et al (2001: 275) note that "managers' choice of accounting methods, consistent with the goal of influencing stock [share] prices, can take several forms; managers may maximise earnings in a given period, smooth earnings over time, avoid losses, or avoid earnings declines (among other strategies)." The first, third and fourth of these may be regarded as having the common objective of increasing profit (in order to increase share prices), and are treated as a single strategy in this thesis. In addition to the profit-increasing and income-smoothing strategies referred to by Fields et al (2001), a strategy of improving solvency is also considered in this thesis.

2.5.2 The profit-increasing strategy

In accordance with the observation by Fields et al (2001) that the profit-increasing strategy has the aim of increasing income in a *given period*, this strategy is regarded in this thesis as including profit-accelerating activities. This approach is supported by de Albornoz and Alcarria (2003 : 446), who note that "poor current firm performance could

lead to a manager being dismissed … [and therefore] managers will try to shift earnings from the future to the current period when current performance is poor", and Young (1998: 132) who observes that "managers are hypothesised to employ accounting procedures that shift reported earnings from future to current periods in an attempt to maximise their current period income".

Support for the proposition that share prices can be increased by means of increasing (or accelerating) reported profit is first documented in an article that, according to Watts and Zimmerman (1986: 37) "initially popularized positive research in accounting". Ball and Brown (1968) investigate the association between accounting profits and share prices, and predict that an unexpected increase in a company's reported profit will result in a positive abnormal rate of return in respect of that company's shares. They find evidence that the accounting number has useful information content, and therefore also has value-relevance to share prices.

Subsequent research has found similar evidence. Perry and Williams (1994), for example, find evidence for earnings manipulation in companies in the period prior to management buyout offers. Their results indicated that managers of such companies can be expected to decrease profits, thereby attempting to reduce share prices (and the cost of the buyout).

Erickson and Wang (1999) hypothesise that firms involved in acquisitions, where the medium of exchange is the acquirer's own shares, will increase earnings in an attempt to increase the value of the shares (and thereby reduce the number of shares that will have to be exchanged). They find evidence consistent with this expectation.

Beatty and Weber (2006) examine managers' choices in accounting for goodwill impairments. They find evidence that indicates (Beatty and Weber, 2006: 284) "that firms' equity market considerations [including share price] affect their preferences" for the accounting treatment of goodwill, and that in general, such considerations mean that firms attempt to increase earnings by avoiding goodwill impairment charges.

2.5.3 The income-smoothing strategy

The income-smoothing strategy may be "characterised as the propensity of managers to choose accounting policies that increase (decrease) reported earnings when current-period pre-managed earnings (i.e. before being manipulated) are below (above) a certain target" (de Albornoz and Alcarria, 2003: 445).

In an early study, Gordon (1964) argues that managers seek to smooth income because a stable earning series results in higher dividends and a higher share price. Later research linked reduced volatility with reduced risk, reduced cost of capital and a consequently higher share price. For example, "managers' accounting discretion is driven by their desire to reduce reported fluctuations around some predetermined level owing to the association of the unpredictability of earnings with risk measures" (de Albornoz and Alcarria, 2003: 445).

A number of studies have found evidence for income-smoothing behaviour by managers. Beattie et al (1994: 796) find evidence that "wealth-maximising managers [are] anxious to smooth accounting earnings in order to maximise firm value". DeFond and Park (1997) demonstrate that managers shift earnings from the future for use in the current period when current earnings are poor and expected future earnings are good, and vice versa. Young (1998:142) studies "the determinants of managerial accounting discretion for a heterogeneous sample of UK industrial and commercial firms [and finds that] income smoothing considerations appear to dominate in the cross section". Wilson and Shailer (2007: 265) find "clear evidence" of consistent income smoothing over a 55-year period by a large Australian brewing company.

2.5.4 The solvency-improving strategy

The accounting choices considered in this thesis are not limited to those that affect earnings and, consequently, the income statement. As Missonier-Piera (2004: 120) notes, "most of the empirical studies focus almost exclusively on the effect on income when investigating managers' accounting choice. Very few formulate hypotheses in terms of

the effect on leverage ratios … [However,] there is no *a priori* reason to assume that managers will prefer to alter the income statement over the balance sheet". The general scramble by companies to "deleverage" their balance sheets (ie improve solvency) which began in 2008 in response to the global financial crisis attests to the plausibility of this assertion.

Apart from accounting choices that generally strengthen the balance sheet, companies have been found to adopt accounting strategies that help them avoid debt covenant violations, and the resultant reduction in share price. Kuo (1993), for example, investigates inventory accounting choices made by companies, and finds that "the greater the amount of debt relative to equity in the company's capital structure, the greater the chance the company uses an [accounting] method to avoid covenant violation" (Kuo, 1993: 381). Sweeney (1994) finds a relationship between firms approaching debt covenant default and specific ameliorating accounting choices. Missonier-Piera (2004: 122) hypothesises that "the more the firm relies on financial debt the more likely its managers will choose accounting methods that … decrease leverage ratios" and finds significant support for this.

2.5.5 Hypotheses

In the presence of appropriate compensation-based motivation, the availability of choice within the accepted set of accounting rules, and in the context of the possibility of the existence of some semi-strong equity market inefficiency, company managers can be expected to select those accounting policies and make those accounting estimates that maximise their wealth through increases in share price. Therefore, the following hypotheses are advanced:

There is a positive relationship between

H_1: the number of profit-increasing accounting choices
H_2: the number of income-smoothing accounting choices
H_3: the number of solvency-improving accounting choices
H_4: the total number of profit-increasing, income-smoothing and solvency-improving accounting choices

made by the managers of South African listed companies and the growth rates in share prices for those companies.

2.6 Conclusion

This chapter establishes the logical link between the accounting choices made by company managers and the share prices of companies, and develops the hypotheses that will be tested later in this thesis.

In the next chapter, the relevant accounting choices that are available to managers of listed South African companies are discussed. In addition, the mechanisms by which each accounting choice achieves profit-increasing, income-smoothing or solvency-improving objectives are explained.

CHAPTER 3
THE ACCOUNTING CHOICES

3.1 Introduction

The previous chapter argues that, under specific conditions, company managers can be expected to select those accounting policies and make those accounting estimates that maximise their wealth through increases in share price. This chapter sets out a number of accounting policy choices and choices in making estimates that arise from the application of IFRSs, and that are therefore available to the managers of listed South African companies.

The accounting choices discussed in this chapter, and selected for study in this thesis, fulfill the following criteria. Firstly, they all have an effect on one or more of a company's profits, income volatility or solvency. Therefore, as discussed in Chapter 2, the potential for opportunism is attached to them, in that they can all be expected to have an effect on a company's share price. Secondly, they are all discernible from publicly available information (ie a listed company's published annual financial statements).

For each choice, this chapter provides an explanation of the accounting mechanisms by which profit-increasing, income-smoothing or solvency-improving objectives may be achieved.

3.2 Technical context

In 2007, the IASB published revised versions of IAS 1 *Presentation of Financial Statements* and IAS 23 *Borrowing Costs.* The revised IAS 1 substantially changes the structure and presentation of a number of financial statements, and renames almost all of them. For example, the balance sheet becomes the statement of financial position, and the income statement (significantly restructured) becomes the statement of comprehensive income. The revised IAS 23 eliminates the choice (see 3.3.3) of

capitalising borrowing costs, or treating them as an expense of the period in which they are incurred. Capitalisation of qualifying costs is now compulsory.

Both of these revised standards are applicable to financial statements that report on financial periods beginning on or after 1 January 2009. This thesis addresses financial periods that ended on, or prior to, 31 December 2006, and therefore the discussion that follows should be considered in the context of the previous versions of IAS 1 (published in September 1997) and IAS 23 (published in December 1993).

3.3 Accounting policy choices

3.3.1 Property, plant and equipment

Companies have a choice in measuring items of property, plant and equipment (PPE) under either the cost model or the revaluation model of IAS 16 *Property, Plant and Equipment* (IASB, 1993b: 30 - 31). The only limitation on the general availability of this choice is that each category of PPE must be measured under the same model. This means that the company must, for example, revalue all (or none) of its machinery: it cannot revalue one machine and not another. On the other hand, the company is free to revalue all of its machinery, and carry all of its property under the cost model, or vice versa.

In both models, PPE items are depreciated (and, if necessary, impairment losses against the asset are recognised). The key difference between them is that under the cost model, the item is measured at historic cost (less allocations for depreciation and impairments), while application of the revaluation model results in the item being measured at an amount that approximates its current fair value.

In the generally inflationary South African economic environment, therefore, application of the revaluation model results in a higher carrying (measured) amount for a particular PPE item than the cost model. This higher carrying amount increases the total assets of the company (and therefore improves its solvency ratios), but, because depreciation of

PPE items is calculated on this higher carrying amount, the company's profits in a given period during the lifetime of the PPE item are decreased.

In summary:

Measurement of PPE	Profit-increasing choice	Income-smoothing choice	Solvency-improving choice
Cost model	Yes	NA*	No
Revaluation model	No	NA	Yes

* No effect on income volatility

3.3.2 Actuarial gains and losses

In measuring the asset or liability to include in its balance sheet in respect of any defined benefit pension fund or other post-retirement defined benefit plan, a company is required by IAS 19 *Employee Benefits* to apply a specific valuation methodology. This involves the use of actuarial assumptions in order to estimate the appropriate quantities for the defined benefit valuation model inputs (IASB, 1998a: 50). Actuarial assumptions are estimates about matters that will occur in the (sometimes distant) future, such as employee turnover, human mortality, inflation rates and expectations of returns on any fund assets. It is therefore unavoidable that, with the passage of time, many estimates will be found to have been inaccurate. These inaccuracies are referred to as actuarial gains and losses (IASB, 1998a: 7).

IAS 19 contains a number of accounting choices for a company that has actuarial gains and losses (IASB, 1998a: 92 - 93A). In addition to the option of immediately recognising such losses and gains in the income statement, there are methods that permit part or all of a company's cumulative actuarial gains and losses to remain unrecognised (ie kept out of the income statement) for a period of time. For convenience, these are referred to in this thesis as "slow" methods.

The main slow method involves the use of a kind of virtual corridor: only those

cumulative actuarial gains and losses that exceed the absolute value of this corridor are recognised, and then only gradually, over the average remaining working lives of the relevant employees. The existence of any cumulative unrecognised actuarial losses will reduce the liability (or increase the asset) recognised in respect of a company's defined benefit plan. In addition, if actuarial losses are not recognised (or only partially recognised) in a given year, the company's profits are increased. Finally, the use of the corridor offers a company the opportunity to reduce the volatility of its profits over time, because a significant proportion of the actuarial gains and losses that arise each year are excluded from the income statement.

As another alternative, IAS 19 offers a faster method, sometimes referred to as the "direct to equity" method. Under this method, there are no unrecognised actuarial gains or losses: these are all recognised immediately, in the financial year in which they occur. However, the actuarial gains and losses are not recognised in the income statement (and therefore do not affect the company's profits); they are instead transferred directly to the company's balance sheet via the statement of changes in equity. Therefore, the direct to equity method offers the same profit-increasing and volatility-reducing opportunities as the corridor method. However, when there are cumulative unrecognised actuarial losses, this method has balance sheet disadvantages, in that it results in a greater carrying amount for the defined benefit liability (or a lesser amount for the asset).

Actuarial gains and losses	Profit-increasing choice*	Income-smoothing choice	Solvency-improving choice*
Corridor method	Yes	Yes	Yes
Direct to equity method	Yes	Yes	No

* If there are cumulative unrecognised actuarial losses.

3.3.3 Borrowing costs

Borrowing costs (interest expense and related costs arising from borrowed funds) that are "directly attributable to the acquisition, construction or production" of certain assets may, in terms of a choice offered by IAS23 *Borrowing Costs*, be treated as an expense of the

period in which they are incurred, or capitalised as part of the cost of the asset (IASB, 1993c: 4, 7 and 10).

In nearly all cases, the capitalisation of borrowing costs results in the acceleration of profits, but no change in a company's total profits measured over the life spans of the assets involved: the early profit increase will (in nominal pre-tax terms) eventually exactly offset the subsequent total profit reductions over the period for which the asset is on the company's balance sheet.[1]

For example, borrowing costs capitalised as part of the cost of a depreciable PPE item will result in increased profits before depreciation starts, and, in nominal pre-tax terms, an equivalent total amount of reduced profits in subsequent financial periods. A similar principle applies to non-depreciable investment property measured using the fair value model: profits are increased before fair valuation of the property starts, and subsequently reduced by an equivalent amount in the first year of the property's use.

In addition, capitalisation of borrowing costs results in an improvement in a company's solvency ratios. This effect endures over the entire life span of depreciable and non-depreciable PPE items and intangible assets, and for that portion of the life span of a fair value model investment property prior to the commencement of the fair valuation process.

Borrowing costs	Profit-accelerating choice	Income-smoothing choice	Solvency-improving choice
Capitalise	Yes	NA*	Yes
Treat as period expense	No	NA	No

* No effect on income volatility

[1] The exceptions to this principle include borrowing costs capitalised to an intangible asset with an indefinite useful life, or to land, neither of which are depreciated. In either case, if the asset is never sold by the company and is never impaired, then the early increase in profits will never be offset by a later reduction.

3.3.4 Investments designated as available-for-sale

A company's equity and bond investments and other non-derivative financial assets may be designated as available-for-sale financial assets, or not: in terms of IAS 39 *Financial Instruments: Recognition and Measurement*, the choice is a completely free one (IASB, 1999: 9). If an investment is designated as an available-for-sale financial asset, any gains and losses arising from changes in its fair value are not recognised in the income statement; they are instead transferred directly to the company's balance sheet via the statement of changes in equity (IASB, 1999: 55). In the absence of the sale or impairment of a designated investment, the company's profits are never affected.

In the context of volatile financial markets, it is implausible that a company could draw any advance conclusions about the effects on its profit or solvency measures of a decision to designate its investments as available-for-sale. However, the exclusion of changes in investment fair values from its income statement, in light of the same market volatility, would be a potentially attractive volatility-reducing choice.

Investment designation	Profit-increasing choice	Income-smoothing choice	Solvency-improving choice
As available-for-sale	No	Yes	No
Not designated	No	No	No

3.3.5 Investment property

Investment property held by a company may be measured under either the cost model or the fair value model of IAS 40 *Investment Property* (IASB, 2000: 30). Under the cost model, the investment property is depreciated (or rather, the buildings component of the property is depreciated and the land component is normally not), and if necessary, any impairment losses are recognised against it. Under the fair value model, the property is neither depreciated nor impaired: it is measured at its fair value at each balance sheet date, with changes in fair value being recognised in the income statement (IASB, 2000: 33, 35 and 56).

In the generally inflationary South African property market, therefore, application of the fair value model results in a higher carrying amount for an investment property than the cost model. In addition, in such a market the fair value model also results in higher profits: there is no depreciation expense, and annual fair valuation increases are added to each year's profits.

Investment property	Profit-increasing choice	Solvency-improving choice
Cost model	No	No
Fair value model	Yes	Yes

3.4 Choices in making estimates

3.4.1 Useful life estimates for property, plant and equipment

The depreciation expense charged to the income statement in respect of a particular PPE item is inversely proportional to that item's estimated useful life. Putting this another way, the higher the estimate made by a company in respect of the useful life of a depreciable asset, the lower the depreciation expense, and the higher the company's profit in a given period during the useful life of the asset. If, as is required under certain circumstances by IFRSs, the depreciation charge is included in the cost of another asset (such as inventories) instead of being recognised in the income statement, this principle still holds true. It simply occurs on a delayed basis, when the asset to which depreciation has been allocated is sold, remeasured to fair value through the income statement, impaired, or is itself depreciated. A high bias in estimating useful life also results in a higher carrying amount for the asset at any given stage during its useful life.

In an "adding up constraint" (Bagnoli and Watts, 2005: 788) similar to that arising from the capitalisation of borrowing costs, a high bias in estimating useful life results in an acceleration of profits, but no change in a company's total profits measured over the life span of the asset involved. If the asset is held by the company for its entire useful life, the total depreciation expense measured in nominal pre-tax terms is the same, regardless

of the useful life estimate. If the asset is sold before the end of its useful life, the gain (loss) on sale will be lower (higher) with a high useful life bias, and the adding-up rule will still apply. Therefore:

PPE useful life	Profit-accelerating choice	Solvency-improving choice
Overstated (high bias)	Yes	Yes
Understated (low bias)	No	No

3.4.2 Actuarial assumptions

As explained in 3.3.2, a company is obliged to make estimates (referred to in this context as actuarial assumptions) when it measures its defined benefit liability or asset. The defined benefit valuation model variables which must be estimated include discount rates, inflation rates and expectations of returns on any fund assets, amongst others.

It is inherent in the (usually) long term nature of a company's defined benefit obligations that any estimation bias on the part of the company has the potential to cause significant distortions in the amount of the related expense and liability (or asset). This capacity for distortion is amplified by what commentators have referred to as the "broken" nature of pension fund accounting under the IASB's rules (see, for example, The Economist, 2004). In particular, it is the IAS 19 corridor that is controversial, because of the income-smoothing opportunities it offers.

The mechanisms by which defined benefit accounting can be manipulated through the use of biased estimates are highly complex, and a detailed explanation of these is outside the scope of this thesis. Putting the matter simplistically (but nevertheless correctly), the higher the rate used to discount any future cash payment obligation, the lower the present value of the related liability. Similarly, under the requirements of IAS 19 (and somewhat counter-intuitively), it can be shown that the higher the discount rate, the lower the interest expense, which is a component of defined benefit expense.

In respect of estimates about the future rate of return on any plan assets, higher estimates have the effect of lowering the defined benefit expense as well as the defined benefit liability. Finally, a low inflation estimate lowers both the related expense and liability.

Actuarial assumptions	Profit-accelerating choice[2]	Solvency-improving choice
Discount rate overstated (high bias)	Yes	Yes
Expected return overstated (high bias)	Yes	Yes
Expected inflation understated (low bias)	Yes	Yes

3.4.3 Impairment testing

Impairment testing of a company's assets under the requirements of IAS 36 *Impairment of Assets* is based on the premise that the amount at which an asset is carried in the company's balance sheet must not exceed the amount of economic benefits that will be recovered from the future use of that asset by the company. If the asset's carrying amount exceeds its recoverable amount, the asset is impaired, and it has to be written down, usually via an impairment loss recognised in the income statement (IASB, 1998b: 59 - 60).

Measurement of the recoverable amount of any asset under the requirements of IAS 36 normally involves a calculation of the asset's value in use, which is the present value of the future cash flows expected to be derived from the asset (IASB, 1998b: 6). This means that the lower the rate used by the company in discounting its estimated future cash flows, the higher the asset's value in use, and also the higher its recoverable amount. Because of the relationship between recoverable amount and carrying amount, a high bias in measuring recoverable amount will reduce the possibility of having to recognise an impairment loss.

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[2] Although the periods involved are often very long, it can be shown that, in the end, the adding-up rule applies to any estimates made for defined benefit accounting. The choices are therefore profit-accelerating rather than -increasing.

In a similar fashion, the estimates of future cash flows can themselves be biased: the higher the estimated growth rate in these cash flows, the higher the resulting recoverable amount.

Impairment test assumptions	Profit-accelerating choice	Solvency-improving choice
Discount rate understated (low bias)	Yes	Yes
Growth rate overstated (high bias)	Yes	Yes

3.4.4 Reversal of unused provisions

Under the requirements of IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*, a company may not create fictitious provisions: a provision may only be recognised in situations where a current obligation genuinely exists, and the company is in compliance with a set of specific requirements (IASB, 1998c: 14 - 26).

The use of imaginary provisions facilitates the practice of "hidden reserve" accounting. Hidden reserves provide income-smoothing opportunities: in a year of higher than expected profits, the recognition of a fictitious provision creates a reserve which can be released to the income statement in a future year when profits are lower than expected.

Although the recognition requirements of IAS 37 do not permit the creation of such provisions, the choices made by a company in estimating the amount at which to measure a valid provision may well be biased towards higher valuations in good years and lower valuations in bad years. In addition, a company is free to (indeed, is required to) reverse a provision if it assesses at balance sheet date that "it is no longer probable that an outflow of resources embodying economic benefits will be required to settle the obligation" (IASB, 1998d: 59).

The reversal of an unused provision, or part of it (debit balance sheet, credit income statement) results in an increase in profits and a decrease in liabilities, and provides opportunities for income-smoothing.

Provision accounting	Profit-increasing choice	Income-smoothing choice	Solvency-improving choice
Unused amounts reversed	Yes	Yes	Yes
No reversals	No	No	No

3.4.5 Indefinite useful life intangible assets

In its assessment of the length of an intangible asset's useful life, a company is permitted by IAS38 *Intangible Assets* to conclude that this is indefinite (IASB, 1998d: 88). If an intangible asset is considered by the company to have an indefinite useful life, it is not amortised. This is in contrast with an intangible asset that is assessed as having a finite useful life, which must be amortised over its estimated useful life, and carried in the balance sheet at an amount from which accumulated amortisation has been deducted (IASB, 1998d: 74, 97 and 107).

Amortisation expense is recognised in the income statement. Therefore, treating any intangible asset as having an indefinite useful life will increase or accelerate profits, and increase the carrying amount of the company's total assets. (The adding-up rule will apply only if the intangible asset is eventually sold. If it is never sold, there will be a net increase in profits over the entire existence of the company.)

Intangible assets	Profit-increasing choice	Solvency-improving choice
Indefinite useful life	Yes	Yes
Finite useful life	No	No

3.5 Conclusion

This chapter sets out the mechanisms by which a number of accounting policy and estimate choices have an effect on the amount or timing of a company's profits, income volatility or solvency.

All of the choices selected for analysis in this thesis are discernible from the published annual financial statements of listed companies. Accordingly, the next chapter describes the selection of a number of South African listed companies, and the collection of accounting data from their financial statements. Various analyses of this data are then carried out, and possible interpretations of the results are discussed.

CHAPTER 4
RESEARCH METHOD, DATA AND RESULTS

4.1 Introduction

The previous chapter illustrates the mechanisms by which a number of accounting choices can be used by company managers to achieve profit-increasing, income-smoothing and solvency-improving strategies. This chapter explains the criteria in terms of which a set of South African listed companies were selected for analysis, and describes the methods used to collect data about accounting choices and share prices in respect of these companies. Following this, the data are analysed in order to test the hypotheses developed in Chapter 2. Finally, the results of the analyses are discussed.

4.2 The mid cap companies

The hypotheses of this thesis are tested in the setting of the group of medium-sized South African listed companies known as the "mid cap" companies. It is common for equity exchanges or fund managers to classify companies on the basis of their size (which is usually established with reference to a company's market capitalisation). In the United States, for example, mid cap companies are considered to be those with a market capitalisation in the range of approximately $2 billion to $10 billion (with some variations in this range between different fund managers).

In South Africa, the JSE has a formal definition for mid cap companies: "the 60 companies which are constituents of the FTSE/JSE Africa All Share Index ranked 41 - 100 by full market capitalisation" (FTSE, 2007: 6). This is not a static group: every three months (in March, June, September and December), the market capitalisations of companies listed on the JSE are recalculated as the companies' share prices change. The quarterly review also takes into account any new listings and delistings. The companies are then reordered by size, for membership of the appropriate index group for the next three months.

At the date of selection of the companies for analysis in this thesis (see 4.3), the market capitalisation of the JSE mid cap companies ranged from R1,9 billion (Rainbow Chicken Ltd) to R20,2 billion (Aveng Ltd). The total market capitalisation of this group of companies was R573,1 billion, with a mean of R9,6 billion (FTSE/JSE Advisory Committee, 2007).

The mid cap companies are selected as an appropriate group for analysis for three reasons. Firstly, many investors and fund managers have an interest in mid cap companies as a group because they view them as the "Goldilocks" choice of the investment world: in their opinion, mid cap companies offer a balanced, "just right" mix of the best qualities of larger companies (such as stability) and smaller companies (such as growth potential).

Secondly, and with reference to the point made in Chapter 2 about the equivocal nature of evidence for or against the semi-strong form of the efficient market hypothesis, this is particularly the case with mid cap companies. For example, "pointing at the wide dispersion of returns between top and bottom quartile managers [of mid cap funds], Yale University's endowment fund star manager David Swensen shows that mid cap stocks constitute an inherently inefficient market. The inefficiency of mid cap stocks comes from many well known factors: relatively reduced scrutiny from investors and brokers, less readily available information and the more fragmented nature of the market itself" (Sarkis, 2007: 82). Although semi-strong market inefficiency is not assumed in testing the hypotheses of this thesis, the possibility of its existence in mid cap companies nevertheless suggests a potentially advantageous environment for opportunistic behaviour by company managers.

Thirdly, the 60 JSE mid cap companies represent an appropriate number of companies in the context of the company selection criteria, manual data collection techniques (see 4.4) and analytical methods (see 4.6) applied in this thesis.

4.3 Company selection criteria

The source of data about accounting choices is each mid cap company's financial statements for its financial year ended during the period 1 January 2006 to 31 December 2006. This period was selected for the reason that it represents a recent and complete data set at the time of the analysis. Under South African legislation, companies are required to produce annual reports at their annual general meetings, which must occur no later than nine months after year end (South Africa, 1973: 179 and 286). Six of the selected companies have 31 December year ends. Therefore, in order to identify the mid cap companies consistently with the latest date by which their 2006 annual reports were required to have been published (30 September 2007), the FTSE/JSE September 2007 Index Series quarterly review is used (FTSE/JSE Advisory Committee, 2007). The identification of the companies from the September 2007 quarterly review also means that sufficient time is allowed for the information contained in all 2006 annual reports to be reflected in share price movements.

The accounting choices of companies in a number of industries are constrained by industry-specific financial reporting requirements in IFRSs, South African legislation or the JSE's listing requirements. Therefore, mid cap companies in the JSE's financial services, insurance or resources super-sectors are excluded. They are listed in the following sectors: real estate, including property unit trusts (8 mid cap companies), mining (5), general financial (4) and insurance (3). In addition, one industrial metals company, Hulamin Ltd, is excluded because it was listed for the first time in 2007. A total of 21 companies are excluded.

The remaining 39 mid cap companies that are included in the analysis are listed in JSE sectors such as general retailers (8 companies), food producers (5) and construction, food retailers, industrial transportation and media (3 each). Appendix A contains a complete list of the sectors represented by these companies.

Table 1 below lists the 39 mid cap companies included in the analysis, together with each

company's JSE short name, which is used for reference purposes in subsequent tables and analyses. Table 2 lists the excluded companies.

Table 1: Included companies

	Company name	JSE short name	JSE sector
1	AECI Ltd	AECI	Chemicals
2	African Oxygen Ltd	AFROX	Chemicals
3	Allied Electronics Corporation Ltd	ALTRON	Electronic & electrical equipment
4	Allied Technologies Ltd	ALTECH	Mobile telecommunications
5	Aspen Pharmacare Holdings Ltd	ASPEN	Pharmaceuticals
6	Astral Foods Ltd	ASTRAL	Food producers
7	Aveng Ltd	AVENG	Construction & materials
8	AVI Ltd	A-V-I	Food producers
9	Caxton and CTP Ltd	CAXTON	Media
10	Datatec Ltd	DATATEC	Software & computer services
11	Dimension Data Holdings Plc	DIDATA	Software & computer services
12	Ellerine Holdings Ltd	ELLERINE	General retailers
13	Foschini Ltd	FOSCHINI	General retailers
14	Gold Reef Resorts Ltd	GOLDREEF	Travel & leisure
15	Grindrod Ltd	GRINDROD	Industrial transportation
16	Group Five Ltd	GROUP 5	Construction & materials
17	Highveld Steel And Vanadium Ltd	HIVELD	Industrial metals
18	Illovo Sugar Ltd	ILLOVO	Food producers
19	JD Group Ltd	JDGROUP	General retailers
20	Johnnic Communications Ltd	JOHNCOM	Media
21	Lewis Group Ltd	LEWIS	General retailers
22	Massmart Holdings Ltd	MASSMART	General retailers
23	Medi-Clinic Corporation Ltd	MEDCLIN	Health care equipment & services
24	Mr Price Group Ltd	MRPRICE	General retailers
25	Mvelaphanda Group Ltd	MVELAGRP	Support services
26	Nampak Ltd	NAMPAK	General industrials
27	New Clicks Holdings Ltd	NUCLICKS	General retailers
28	Pick 'n Pay Stores Ltd	PICKNPAY	Food & drug retailers
29	Primedia Ltd	PRIMEDIA	Media
30	Rainbow Chicken Ltd	RAINBOW	Food producers
31	Reunert Ltd	REUNERT	Electronic & electrical equipment
32	Shoprite Holdings Ltd	SHOPRIT	Food & drug retailers
33	Sun International Ltd	SUNINT	Travel & leisure
34	Super Group Ltd	SUPRGRP	Industrial transportation
35	The Spar Group Ltd	SPAR	Food & drug retailers
36	Tongaat-Hulett Group Ltd	TONGAAT	Food producers
37	Trencor Ltd	TRENCOR	Industrial transportation
38	Truworths International Ltd	TRUWTHS	General retailers
39	Wilson Bayly Holmes-Ovcon Ltd	WBHO	Construction & materials

Table 2: Excluded companies

	Company name	JSE short name	JSE sector
1	African Bank Investments Ltd	ABIL	General financials
2	ApexHi Properties Ltd	APEXHI	Real estate
3	Discovery Holdings Ltd	DISCOVERY	Life insurance
4	Eland Platinum Holdings Ltd	ELAND	Mining
5	Emira Property Fund	EMIRA	Real estate
6	Fountainhead Property Trust Ltd	FPT	Real estate
7	Growthpoint Properties Ltd	GROWPNT	Real estate
8	Hulamin Ltd	HULAMIN	Industrial metals (but listed 2007)
9	Hyprop Investments Ltd	HYPROP	Real estate
10	JSE Ltd	JSE	General financial
11	Metorex Ltd	METOREX	Mining
12	Metropolitan Holdings Ltd	METLTD	Life insurance
13	Mvelaphanda Resources Ltd	MVELA RES	Mining
14	Northam Platinum Ltd	NORTHAM	Mining
15	Pangbourne Properties Ltd	PANPROP	Real estate
16	Peregrine Holdings Ltd	PERGRIN	General financial
17	PSG Group Ltd	PSG	General financial
18	Redefine Income Fund Ltd	REDEFINE	Real estate
19	SA Corporate Real Estate Fund Ltd	SA CORP	Real estate
20	Santam Ltd	SANTAM	Nonlife insurance
21	Wesizwe Platinum Ltd	WESIZWE	Mining

4.4 Data collection

4.4.1 Introduction

The required level of detail about accounting policy and estimate choices is not available from electronic databases. Therefore, the data were collected manually from each company's 2006 published annual report. The research instrument reproduced in Appendix E was used for this purpose. The following details were recorded for each company:

- year ends, name of auditor, whether the audit report was qualified or unqualified, total assets at year end and (after tax) profit for the year

- whether the company has a performance bonus plan for its executive directors[3]
- data in respect of the accounting choices discussed in Chapter 3:
  - cost or revaluation model for property, plant and equipment
  - depreciation rates
  - treatment of actuarial gains and losses
  - actuarial assumptions
  - borrowing costs capitalised or not
  - discount and growth rates for impairment testing
  - reversal of unused provisions
  - existence of indefinite useful life intangible assets
  - investments designated as available-for-sale
  - cost or fair value model for investment property.

4.4.2 Year ends, audit reports, assets and profit

As required by the research design, the annual reports that were scrutinised were for each company's financial year end that occurred during the 2006 calendar year. The most common year end was 30 June (13 companies) followed by 31 March (7), 30 September and 31 December (6 each), 28 February (4) and 31 August (3).

The majority (34) of the companies were audited by "big four" auditing firms, with Deloitte appointed by 13 companies, PricewaterhouseCoopers by 10, KPMG by 8, and Ernst & Young somewhat under-represented in this group with 3 audits. The remaining companies were audited by mid-tier firms: PKF (3), Grant Thornton and BDO Spencer Steward (1 each). All audit reports were unqualified, with two direct implications. Firstly, the auditors were in agreement with the accounting policies and estimates of the companies' directors. Secondly (and presuming approximately equivalent audit quality across all companies), all companies were under approximately equivalent constraints on the accounting choices made.

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[3] The appropriate level of management for testing the hypotheses of this thesis is the board of executive directors. In the remainder of the thesis, the terms "manager" and "director" are used interchangeably.

The total assets as recorded in the companies' 2006 balance sheets ranged from R1,68 billion (Primedia) to R12,44 billion (Nampak), with a mean of R5,66 billion. None of the companies made a loss for the 2006 financial year. The lowest after tax profit was recorded by Group 5 (R148 million), and the highest by JD Group at R1 457 million. The mean profit was R659 million.

4.4.3 Performance bonus plan for directors

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In Chapter 2, it is noted that it is the presence of appropriate compensation-based motivation, in the form of cash bonuses or share-based compensation plans, that creates the incentive for directors to make opportunistic accounting choices.

All of the companies included in the analysis had such compensation arrangements in place in the 2006 financial year. 29 companies had share option plans for directors, and 3 had share appreciation rights plans. The remainder had mixed plans: 4 offered a combination of options and share appreciation rights, 2 offered option and cash bonus plans, and 1 company had a share trust in combination with a cash bonus plan.

4.4.4 The accounting choices

The remainder of the research instrument was used to record data about the accounting choices. In most cases (see exceptions in next paragraph), this was a straightforward process of recording the response to a binary closed-ended question (eg "were unused provisions reversed during the year: yes or no?", or "which model was used for property, plant and equipment: cost or revaluation?"). All of these matters were established with reference to the information contained in each company's accounting policy or other notes to the financial statements. The results were sorted into profit-increasing, income-smoothing and solvency-improving categories, and then recorded in the separate schedules shown in Tables 3, 4 and 5 below.

Table 3: Profit-increasing choices

	Cost model for PPE	Corridor for actuarial gains and losses	Direct-to-equity for actuarial gains and losses	Borrowing costs capitalised	Fair value model for investment property	High bias for PPE useful life	Bias in actuarial assumptions	Bias in impairment tests	Unused provisions reversed	Indefinite useful life intangible assets	Total profit increasing choices made
AECI	Y	Y	N	Y	NA	Y	N	Y	Y	N	6
AFROX	Y	Y	N	Y	NA	Y	Y	N	N	N	5
ALTRON	Y	Y	N	Y	NA	N	Y	Y	N	Y	6
ALTECH	Y	Y	N	N	NA	N	Y	Y	N	Y	5
ASPEN	Y	N	N	Y	Y	N	N	Y	N	N	4
ASTRAL	Y	Y	N	Y	NA	Y	Y	N	N	N	5
AVENG	Y	Y	N	N	NA	N	N	N	N	N	2
A-V-I	Y	Y	N	Y	NA	Y	N	Y	N	Y	6
CAXTON	N	NA	NA	N	NA	Y	N	Y	NS	Y	4
DATATEC	Y	NA	NA	N	NA	N	N	Y	Y	N	3
DIDATA	Y	NA	NA	Y	NA	N	N	Y	N	N	3
ELLERINE	Y	N	N	N	Y	N	Y	Y	N	Y	5
FOSCHINI	Y	N	N	N	NA	N	Y	Y	N	N	3
GOLDREEF	Y	NA	NA	Y	NA	Y	N	Y	N	N	4
GRINDROD	Y	N	N	Y	NA	N	N	Y	N	Y	4
GROUP 5	Y	N	N	Y	Y	Y	Y	Y	Y	N	7
HIVELD	Y	N	Y	Y	NA	N	N	Y	Y	N	5
ILLOVO	Y	Y	N	Y	NA	Y	N	Y	N	N	5
JDGROUP	Y	Y	N	Y	NA	N	N	N	N	N	3
JOHNCOM	Y	N	N	Y	NA	N	N	Y	N	N	3
LEWIS	Y	Y	N	N	NA	N	Y	Y	NS	N	5
MASSMART	Y	N	N	N	NA	Y	Y	N	N	N	3
MEDCLIN	Y	N	N	N	NA	Y	N	Y	N	N	3
MRPRICE	Y	Y	N	N	NA	N	N	Y	Y	N	4
MVELAGRP	Y	NA	NA	N	NA	N	N	Y	N	Y	3
NAMPAK	Y	N	Y	Y	N	N	Y	N	Y	N	5
NUCLICKS	Y	N	N	N	Y	Y	N	Y	Y	Y	6
PICKNPAY	Y	Y	N	N	NA	N	Y	Y	NS	Y	6
PRIMEDIA	Y	N	N	N	NA	Y	N	N	Y	Y	4
RAINBOW	Y	Y	N	N	NA	Y	Y	N	N	N	4
REUNERT	Y	Y	N	N	NA	Y	Y	N	Y	N	5
SHOPRIT	Y	N	N	N	NA	N	N	N	Y	N	2
SUNINT	Y	N	N	Y	NA	Y	N	Y	NS	Y	6
SUPRGRP	N	NA	NA	Y	NA	N	N	Y	NS	Y	4
SPAR	Y	Y	N	N	NA	N	N	N	N	N	2
TONGAAT	Y	N	N	N	NA	Y	N	Y	N	N	3
TRENCOR	Y	N	N	N	NA	Y	Y	Y	N	Y	5
TRUWTHS	Y	Y	N	N	NA	N	N	N	N	N	2
WBHO	Y	Y	N	Y	NA	Y	Y	N	Y	N	6

NA: Company does not have a defined benefit plan, or company does not have investment property.

NS: Not stated in annual report.

Table 4: Income-smoothing choices

	Corridor for actuarial gains and losses	Direct-to-equity for actuarial gains and losses	Investments designated as available-for-sale	Unused provisions reversed	Total volatility reducing choices made
AECI	Y	N	Y	Y	3
AFROX	Y	N	N	N	1
ALTRON	Y	N	Y	N	2
ALTECH	Y	N	Y	N	2
ASPEN	N	N	Y	N	1
ASTRAL	Y	N	NS	N	2
AVENG	Y	N	Y	N	2
A-V-I	Y	N	Y	N	2
CAXTON	NA	NA	Y	NS	2
DATATEC	NA	NA	N	Y	1
DIDATA	NA	NA	Y	N	1
ELLERINE	N	N	N	N	0
FOSCHINI	N	N	Y	N	1
GOLDREEF	NA	NA	Y	N	1
GRINDROD	N	N	N	N	0
GROUP 5	N	N	N	Y	1
HIVELD	N	Y	Y	Y	3
ILLOVO	Y	N	Y	N	2
JDGROUP	Y	N	Y	N	2
JOHNCOM	N	N	N	N	0
LEWIS	Y	N	Y	NS	3
MASSMART	N	N	N	N	0
MEDCLIN	N	N	Y	N	1
MRPRICE	Y	N	NA	Y	2
MVELAGRP	NA	NA	N	N	0
NAMPAK	N	Y	N	Y	2
NUCLICKS	N	N	N	Y	1
PICKNPAY	Y	N	Y	NS	3
PRIMEDIA	N	N	N	Y	1
RAINBOW	Y	N	N	N	1
REUNERT	Y	N	N	Y	2
SHOPRIT	N	N	Y	Y	2
SUNINT	N	N	Y	NS	2
SUPRGRP	NA	NA	N	NS	1
SPAR	Y	N	N	N	1
TONGAAT	N	N	N	N	0
TRENCOR	N	N	Y	N	1
TRUWTHS	Y	N	N	N	1
WBHO	Y	N	N	Y	2

NA: Company does not have a defined benefit plan, or company does not have investments (financial assets).

NS: Not stated in annual report.

Table 5: Solvency-improving choices

	Revalua-tion model for PPE	Corridor for actuarial gains and losses	Borrowing costs capitalised	Fair value model for investment property	High bias for PPE useful life	Bias in actuarial assump-tions	Bias in impair-ment tests	Unused provisions reversed	Indefinite useful life intangible assets	Total solvency improving choices made
AECI	N	Y	Y	NA	Y	N	Y	Y	N	5
AFROX	N	Y	Y	NA	Y	Y	N	N	N	4
ALTRON	N	Y	Y	NA	N	Y	Y	N	Y	5
ALTECH	N	Y	N	NA	N	Y	Y	N	Y	4
ASPEN	N	N	Y	Y	N	N	Y	N	N	3
ASTRAL	N	Y	Y	NA	Y	Y	N	N	N	4
AVENG	N	Y	N	NA	N	N	N	N	N	1
A-V-I	N	Y	Y	NA	Y	N	Y	N	Y	5
CAXTON	Y	NA	N	NA	Y	N	Y	NS	Y	5
DATATEC	N	NA	N	NA	N	N	Y	Y	N	2
DIDATA	N	NA	Y	NA	N	N	Y	N	N	2
ELLERINE	N	N	N	Y	N	Y	Y	N	Y	4
FOSCHINI	N	N	N	NA	N	Y	Y	N	N	2
GOLDREEF	N	NA	Y	NA	Y	N	Y	N	N	3
GRINDROD	N	N	Y	NA	N	N	Y	N	Y	3
GROUP 5	N	N	Y	Y	Y	Y	Y	Y	N	6
HIVELD	N	N	Y	NA	N	N	Y	Y	N	3
ILLOVO	N	Y	Y	NA	Y	N	Y	N	N	4
JDGROUP	N	Y	Y	NA	N	N	N	N	N	2
JOHNCOM	N	N	Y	NA	N	N	Y	N	N	2
LEWIS	N	Y	N	NA	N	Y	Y	NS	N	4
MASSMART	N	N	N	NA	Y	Y	N	N	N	2
MEDCLIN	N	N	N	NA	Y	N	Y	N	N	2
MRPRICE	N	Y	N	NA	N	N	Y	Y	N	3
MVELAGRP	N	NA	N	NA	N	N	Y	N	Y	2
NAMPAK	N	N	Y	N	N	Y	N	Y	N	3
NUCLICKS	N	N	N	Y	Y	N	Y	Y	Y	5
PICKNPAY	N	Y	N	NA	N	Y	Y	NS	Y	5
PRIMEDIA	N	N	N	NA	Y	N	N	Y	Y	3
RAINBOW	N	Y	N	NA	Y	Y	N	N	N	3
REUNERT	N	Y	N	NA	Y	Y	N	Y	N	4
SHOPRIT	N	N	N	NA	N	N	N	Y	N	1
SUNINT	N	N	Y	NA	Y	N	Y	NS	Y	5
SUPRGRP	Y	NA	Y	NA	N	N	Y	NS	Y	5
SPAR	N	Y	N	NA	N	N	N	N	N	1
TONGAAT	N	N	N	NA	Y	N	Y	N	N	2
TRENCOR	N	N	N	NA	Y	Y	Y	N	Y	4
TRUWTHS	N	Y	N	NA	N	N	N	N	N	1
WBHO	N	Y	Y	NA	Y	Y	N	Y	N	5

NA: Company does not have a defined benefit plan, or company does not have investment property.

NS: Not stated in annual report.

Data in three categories (depreciation rates, actuarial assumptions and the estimates used in impairment testing) were subjected to further analysis in order to determine whether profit-increasing or solvency-improving choices had been made. (None of these three matters could be expected to have any directly discernible effect on income-smoothing.)

For depreciation rates, data relating to four commonly-held categories of property, plant and equipment are recorded in the schedule shown in Appendix B: buildings, plant, computer equipment and vehicles. The mean depreciation rate in each category was calculated, and any depreciation rate for a given asset category for a given company that was less than this mean was treated as one incident of a high bias estimate for useful life (bearing in mind the inverse relationship between depreciation rate and useful life). The count of biased estimates for each company was then converted into a response to a binary question ("generally high bias for the useful life of property, plant and equipment: yes or no?") by calculating the mean number of biased estimates for the 39 companies (2,2) and treating any company with more than this number of biased estimates (ie 3 or 4) as having a generally high bias. These responses were then carried to the appropriate column in each of Tables 3 and 5.

A similar methodology was applied to determine the existence, or otherwise, of profit-increasing or solvency-improving biases in actuarial assumptions and impairment test estimates (see Appendices C and D). In all cases, where a situation was not applicable to a company (eg it does not have plant, or it does not have a defined benefit plan), it was recorded as being not applicable (NA) and was counted as an unbiased estimate. On the other hand, where a company, in direct contravention of the disclosure requirements of IFRSs, simply omitted information, this was recorded as "not stated" (NS) and was treated as an incident of a biased estimate.

4.4.5 Share price data

Year end share prices for listed companies are typically recorded in stock exchange investors' handbooks, and for the purposes of this study were obtained from these sources

(Profile Media, 2003 and 2007). For each company, the share price at the financial year end in each of 2003, 2004, 2005 and 2006 is recorded in Table 6. Total growth and the average growth rate in share price for each company for the three-year interval were calculated. The three-year review period, ending in the same period as the annual reports that were scrutinised, was selected because it provides a sufficiently substantial period in which to determine average growth rates in share prices.

In this thesis, therefore, the relationship that is used to test the hypotheses is that between the accounting choices made in companies' 2006 annual reports, and their historical share price growth for the three-year period ending in 2006. The decision to investigate this particular relationship is justified largely on pragmatic grounds, in light of the prohibitive effort that would be required to establish (using manual techniques) those accounting choices that were applied by each company in each of their 2003, 2004, 2005 and 2006 financial years. This decision has the obvious consequence that the research design assumes a substantive constancy in accounting choices for the period 2003 - 2006. Possible implications of this assumption are discussed below (see 4.6).

In addition, at least two years' of each company's share price data relates to the period prior to the JSE's 1 January 2005 formal transition date to IFRSs referred to in Chapter 2 (see 2.4). However, this is of less concern than the matter discussed in the previous paragraph, because the independent development of unique standards in South Africa effectively ended in the early 1990s. South African Statements of Generally Accepted Accounting Practice have been identical, or near-identical, copies of the relevant IASB publication since that time.

Table 6: Share prices

	2003	2004	2005	2006	Total growth 2003 - 2006 (%)	Mean annual growth 2003 - 2006 (%)
AECI	3400	3900	5300	6825	100.7	26.5
AFROX	1610	1940	2330	2950	83.2	22.4
ALTRON	820	1105	1555	2550	211.0	46.5
ALTECH	2108	3225	4350	5150	144.3	35.4
ASPEN	775	1270	2380	3650	371.0	68.2
ASTRAL	2395	4071	7100	8650	261.2	55.4
AVENG	880	740	1235	2145	143.8	41.6
A-V-I	1525	1810	1320	1380	-9.5	-1.3
CAXTON	595	820	1085	1499	151.9	36.1
DATATEC	500	1480	959	2200	340.0	96.7
DIDATA	301	361	425	508	68.8	19.1
ELLERINE	2700	3689	6100	6700	148.1	37.3
FOSCHINI	1070	1995	3555	5826	444.5	76.2
GOLDREEF	601	1265	1470	2060	242.8	55.6
GRINDROD	238	790	1275	1560	555.5	105.2
GROUP 5	520	1100	1539	2875	452.9	79.4
HIVELD	1530	4800	8480	7799	409.7	94.1
ILLOVO	687	800	810	1660	141.6	40.9
JDGROUP	3161	4550	7400	6660	110.7	32.2
JOHNCOM	1378	2062	3730	6099	342.6	64.7
LEWIS	NYL	NYL	3351	6160	83.8	83.8
MASSMART	2100	3270	4477	4700	123.8	32.5
MEDCLIN	750	1200	1530	2065	175.3	40.8
MRPRICE	460	795	1145	2140	365.2	67.9
MVELAGRP	670	750	640	760	13.4	5.3
NAMPAK	1230	1410	1589	1820	48.0	14.0
NUCLICKS	665	770	810	1035	55.6	16.3
PICKNPAY	1245	1760	2310	3030	143.4	34.6
PRIMEDIA	440	940	1150	1630	270.5	59.2
RAINBOW	325	545	650	950	192.3	44.4
REUNERT	1710	2790	4230	6814	298.5	58.6
SHOPRIT	640	940	1465	2540	296.9	58.7
SUNINT	2913	4050	6185	8360	187.0	42.3
SUPRGRP	560	1070	1040	1200	114.3	34.6
SPAR	NYL	NYL	3090	3635	17.6	17.6
TONGAAT	3350	5404	8150	11200	234.3	49.9
TRENCOR	1020	1451	2100	3050	199.0	44.1
TRUWTHS	730	1011	1740	2150	194.5	44.7
WBHO	1000	1900	2980	5200	420.0	73.8

NYL: Company not yet listed.

Share prices are in cents.

4.5 Descriptive statistics

Table 7 lists the number of companies making each of the accounting choices discussed in Chapter 3.

Table 7: The individual accounting choices

	Accounting choice	Alternative 1 *	Alternative 2 *
1	Measurement model for PPE	Cost: 37 (94,9%)	Revaluation: 2 (5,1%)
2	Actuarial gains and losses corridor[1]	Yes: 17 (51,5%)	No: 16 (48,5%)
3	Actuarial gains and losses direct to equity[2]	Yes: 2 (12,5%)	No: 14 (87,5%)
4	Borrowing costs	Capitalise: 18 (46,2%)	Expense: 21 (53,8%)
5	Investments designated as available for sale	Yes: 19 (48,7%)	No: 20 (51,3%)
6	Measurement model for investment property[3]	Cost: 1 (20,0%)	Fair value: 4 (80,0%)
7	Useful life estimate for PPE	High bias: 18 (46,2%)	Low bias: 21 (53,8%)
8	Actuarial assumptions[1]	Biased: 15 (45,5%)	Unbiased: 18 (54,5%)
9	Impairment test assumptions	Biased: 26 (66,7%)	Unbiased: 13 (33,3%)
10	Unused provisions reversed	Yes: 16 (41,0%)	No: 23 (59,0%)
11	Indefinite useful life intangible assets	Yes: 13 (33,3%)	No: 26 (66,7%)

* These columns show the number (percentage) of companies choosing that option
[1] Excluding 6 companies without defined benefit plans
[2] Excluding 6 companies without defined benefit plans and 17 that apply the corridor approach
[3] Excluding 34 companies without investment property

In three cases (measurement model for property, plant and equipment, adoption of the direct to equity method for actuarial gains and losses, and measurement model for investment property), one option is heavily favoured over the other.

In the case of the measurement model for property, plant and equipment, the revaluation model finds very little favour. Although, as noted in Chapter 3, revaluation accounting is a solvency-improving choice, it comes at the cost of an increased depreciation charge, which puts pressure on profitability measures. It is notable that a large majority of companies choose the profit-increasing option over the solvency-improving option when there is a trade-off.

The direct to equity method for actuarial gains and losses offers both profit-increasing

and income-smoothing opportunities, so it is interesting that relatively few companies have adopted it. This may be due to the fact that the availability of this approach arises from a relatively recent modification to IAS 19 *Employee Benefits*. Companies adopting the direct to equity option for financial years beginning before 1 January 2006 are subject to a complex set of transitional provisions (IASB, 1998a: 159C), and many of them may therefore have chosen to avoid potential difficulties arising from early adoption.

Finally, the highly restrictive definition in IAS 40 *Investment Property* means that very few companies have property that meets the required criteria. However, of the five companies that do have investment property, a significant majority have chosen the profit-increasing option, and adopted the fair value model.

Table 8 below summarises the key data which are used in the hypothesis testing (see 4.6): the number of accounting choices made by each company in each category, the total number of accounting choices made, and the mean annual growth rate in each company's share price for the three-year period from the 2003 financial year end to the 2006 year end. These data are derived from Tables 3, 4, 5 and 6. To add to the informativeness of the table, it is ranked in descending order of the total number of accounting choices made (primary key) and mean annual growth rate (secondary key).

Table 8: Company ranking by total number of choices made

	Profit-increasing choices	Income-smoothing choices	Solvency-improving choices	Total choices	Mean annual growth in share price 2003 - 2006 (%)
GROUP 5	7	1	6	14	79.4
PICKNPAY	6	3	5	14	34.6
AECI	6	3	5	14	26.5
WBHO	6	2	5	13	73.8
ALTRON	6	2	5	13	46.5
SUNINT	6	2	5	13	42.3
A-V-I	6	2	5	13	-1.3
LEWIS	5	3	4	12	83.8
NUCLICKS	6	1	5	12	16.3
HIVELD	5	3	3	11	94.1
REUNERT	5	2	4	11	58.6
ASTRAL	5	2	4	11	55.4
ILLOVO	5	2	4	11	40.9
CAXTON	4	2	5	11	36.1
ALTECH	5	2	4	11	35.4
TRENCOR	5	1	4	10	44.1
SUPRGRP	4	1	5	10	34.6
AFROX	5	1	4	10	22.4
NAMPAK	5	2	3	10	14.0
MRPRICE	4	2	3	9	67.9
ELLERINE	5	0	4	9	37.3
ASPEN	4	1	3	8	68.2
PRIMEDIA	4	1	3	8	59.2
GOLDREEF	4	1	3	8	55.6
RAINBOW	4	1	3	8	44.4
GRINDROD	4	0	3	7	105.2
JDGROUP	3	2	2	7	32.2
DATATEC	3	1	2	6	96.7
FOSCHINI	3	1	2	6	76.2
MEDCLIN	3	1	2	6	40.8
DIDATA	3	1	2	6	19.1
JOHNCOM	3	0	2	5	64.7
SHOPRIT	2	2	1	5	58.7
TONGAAT	3	0	2	5	49.9
AVENG	2	2	1	5	41.6
MASSMART	3	0	2	5	32.5
MVELAGRP	3	0	2	5	5.3
TRUWTHS	2	1	1	4	44.7
SPAR	2	1	1	4	17.6

No clear trends in the data are visible from the sorting arrangement applied in Table 8. For example, the arithmetic mean growth rate for 2003 - 2006 for the group of companies that made 14 relevant choices each is 46,8%. For the group that made 10 choices each, the arithmetic mean is 28,8%, and for those with 6 choices the mean is 58,2%. Similarly, the highest growth rate is recorded by Grindrod (105% mean annual growth), with 7 relevant choices, and the lowest by A-V-I (negative 1% growth) with 13 choices. These results and related issues are discussed in the next section.

In addition to the total available choices in each category, Table 9 indicates the mean, kurtosis and skewness of the accounting choice data contained in Table 8.

Table 9: Accounting choices by category: mean, kurtosis and skewness

	Total available choices	Mean number of choices made	Kurtosis	Skewness
Profit-increasing choices	10	4,3	-0,94	-0,02
Income-smoothing choices	4	1,4	-0,61	0,04
Solvency-improving choices	9	3,3	-1,10	-0,04
Total choices[1]	23	9,0	-1,30	0,00

[1] Choices that achieve multiple strategies are counted multiple times.

It is noticeable from the relatively low mean numbers of choices made in each category that the general levels of apparent enthusiasm of company managers for adopting profit-increasing, income-smoothing or solvency-improving accounting strategies appear to be somewhat muted. The companies are taking, on average, only 43% of the total available profit-increasing options, 35% of the income-smoothing options and 37% of the solvency-improving options. Even allowing for the existence of trade-offs in accounting choices made (such as between profitability and income volatility), these results are somewhat unexpected. The matter is further analysed and discussed in the next section.

The negative kurtoses in Table 9, at approximately -1 in each category, indicate relatively

tailless, semicircular distributions for all accounting choice data categories. This represents a technical violation of the normal distribution assumption for the correlation calculations carried out in the next section. However, its significance is not considered to be sufficient to invalidate the general findings, or to require the logarithmic or other transformation of the data. The low skewness measures (approximately 0 in each case) indicate that the data distributions are symmetrical about the mean, and are therefore not problematic.

The kurtosis of the mean annual growth rate data (not shown in Table 9) is low enough (-0,17) to indicate a normal distribution, and although this data set is skewed to the right (positive skewness of 0,37, with the mean at 47,6% greater than the median at 44,1%), the technical failure of the symmetry assumption is also not considered to be sufficiently substantive to invalidate the findings or to require data transformation.

4.6 Analysis and discussion

All four hypotheses of this thesis are tested using Pearson product-moment correlation analysis, carried out with the original (untransformed) data. Table 10 below (last row) reports the relevant correlations in this regard: between the mean annual growth rates for the companies ("Growth rate") and the number of profit-increasing accounting choices ("Profit"), income-smoothing choices ("Smoothing"), solvency-improving choices ("Solvency") and the total number of choices ("Total").

The other rows of Table 10 report the correlations between the number of choices made in each category. The high correlations between the profit-increasing, solvency-improving and total choices are of little interest. However, the lower correlations between the income-smoothing choices on the one hand, and the profit-increasing and solvency-improving choices on the other, serve to illustrate and confirm the expected trade-off between these accounting choice categories. This matter is discussed further below.

Table 10: Correlation matrix

	Profit	Smoothing	Solvency	Total	Growth rate
Profit	1,00				
Smoothing	0,42	1,00			
Solvency	0,93	0,37	1,00		
Total	0,96	0,62	0,94	1,00	
Growth rate	-0,013	0,029	-0,060	-0,024	1,00

Hypothesis 1 predicts a positive relationship between the number of profit-increasing accounting choices made by companies and the growth rate in the share prices of companies. The very low correlation (-0,013) between Growth rate and Profit in Table 10 provides no support for this prediction. Similarly low correlations between Growth rate and Smoothing, Solvency and Total also provide no support for Hypothesis 2 (a positive relationship between the number of income-smoothing choices and share price growth rates), Hypothesis 3 (referring to solvency-improving choices) or Hypothesis 4 (total number of choices). (In light of the very low absolute values of all four of the correlations related to the hypothesis tests, the negative sign of three of them has no separate or additional significance.)

This lack of correlation may be due to the research design rather than the theory. In other words, before a final conclusion can be reached that, contrary to the expectations arising from the theory discussed in Chapter 2, there is no link between the number of profit-increasing, income-smoothing or solvency-improving choices made by a company's management and the company's share price, possible limitations arising from the specification of the hypotheses should be considered. One major concern is the fact that it is a simplistic count of accounting choices that is used as a variable in each case, rather than a proportionate measure based on, for example, the monetary amount of the effect of a given choice expressed as a percentage of the company's assets, profit or market capitalisation.

The research design of this thesis is based on the extraction of data from IFRS-compliant annual reports, which (in the context of the requirements of this research) provide only limited relevant information. Any attempt to establish the monetary effects of the alternative accounting choices from these sources would inevitably meet with only mixed success. It would, for example, be very easy to determine the amounts involved if a company capitalised its borrowing costs rather than treating them as a period expense. In contrast, it would be impossible (from annual reports alone) to quantify the monetary effect of depreciating each category of property, plant and equipment at the mean depreciation rate for all South African mid cap companies rather than at the actual rate for that company.

Possible responses to this particular limitation could include requests addressed to the companies for the provision of the required (private) information, or in the event that such approaches meet with no success, an attempt to set some kind of normative weightings to the choices, perhaps based on perceptions of the relative importance or potential effectiveness of each choice. Either or both of these possibilities may indicate a fruitful direction for future research.

Another limitation in the research design arises from the use of year-end share prices to determine the growth rates in share prices. While such information is relatively easily obtained from published stock exchange investors' handbooks, such prices are probably not representative of average share prices over the preceding year. The attempt, in this thesis, to reduce the effect of this inconvenient reality by using a three-year interval of like-for-like comparisons may not have been adequate. Future research could address this deficiency by making more accurate calculations of share price growth rates.

It is implicit in the research methodology that each category of accounting choice is assumed to have an approximately equivalent effect on share prices. This means that, for example, profit-increasing strategies are assumed to have as powerful an influence on share price growth as solvency-improving strategies. In addition, the trade-off effect, in terms of which a profit-reducing or solvency-worsening choice may considered to be

acceptable (or even desirable) by managers because it has an income-smoothing effect, is not taken into account in the research design. Further research could attempt to quantify (or at least rank) the relative effects of the accounting choice categories, as well as disentangle the trade-off effect.

Finally, further research could take into account such matters as the dividend payment histories of the companies (in addition to share price movements, to determine total return data); accounting policy and estimate disclosures in the annual reports of the companies for all years in the review period (to determine what changes in accounting choices have occurred, which will address the limitation referred to in 4.4.5); and differences in the economic circumstances affecting different JSE sectors (to determine the extent to which changes in economic conditions are obscuring the effects of accounting choices).

The lack of correlation between share price growth rates and the number of profit-increasing, income-smoothing and solvency-improving accounting choices may also be due to inadequacies in the theory, rather than (or as well as) limitations in the research design. There may be "a selection bias in the literature [from which the theory is derived] in that findings which support the existence of a connection between the variables [such as share price growth rates] and the accounting choices may be seen as more interesting, and more publishable, than research which does not find such a connection" (Arnold, 1994: 876). Similarly, Lambert and Sponem (2005: 726) suggest that "despite the popular wisdom that earnings management exists, it has been remarkably difficult for researchers to convincingly document it".

The main potential inadequacy in the theory appears to be the emphasis placed on the apparent importance of accounting choices, whilst ignoring or downplaying the relevance of other kinds of decisions that opportunistic managers may make. For example, managers may perceive that self-serving decisions made on an operating, financing or tax-effect basis (without regard to the accounting consequences) are far more relevant to their personal utility than the manipulation of relatively obscure accounting numbers

reported in documents to which little attention is paid by investors.

4.7 Conclusion

This chapter describes the company selection criteria applied in this thesis, and the methods used to collect the relevant accounting choice and share price data. The chapter then presents an analysis of the data in order to establish the extent to which support exists for the profit-increasing, income-smoothing , solvency-improving and total choice hypotheses of this thesis. Finally, the results of the analyses are discussed, in the context of limitations of the research design and possible directions for any future research effort in this field.

The next, and final, chapter of this thesis concludes the study with a summary of its aims, findings and implications.

CHAPTER 5
CONCLUSION

This thesis set out to establish whether there is a positive relationship between the profit-increasing, income-smoothing and solvency-improving accounting choices made by the managers of South African listed mid cap companies and growth rates in the share prices of those companies.

The expectation of such a relationship arises from agency theory, in terms of which it is argued that company managers will, in the presence of appropriate compensation-based motivation, select those accounting policies and make those accounting estimates that have the highest likelihood of maximising their utility through increases in share price.

The plausibility of such a relationship arises from the availability of a number of accounting choices, within the accepted set of accounting rules, that have the ability to affect reported accounting numbers. In addition, it is rational for managers to expect that accounting choices are significant, because of the possibility of the existence of some equity market inefficiency. Finally, prior empirical research provides evidence of positive relationships between profit-increasing, income-smoothing and solvency-improving strategies and share prices.

In this thesis, thirty-nine mid cap companies are analysed for evidence of the expected relationship between accounting choices and share price growth. The research methodology applied finds no evidence for the hypotheses that the managers of South African listed companies make profit-increasing, income-smoothing or solvency-improving accounting choices in order to influence growth rates in share prices. This may be due to limitations in the research design, inadequacies in the theory, or a combination of both. Refinements in the research design or a re-interpretation of the theory may be successful in addressing these matters as part of future research efforts.

APPENDIX A: THE INCLUDED COMPANIES BY JSE SECTOR

General retailers
Ellerine Holdings Ltd
Foschini Ltd
JD Group Ltd
Lewis Group Ltd
Massmart Holdings Ltd
New Clicks Holdings Ltd
Mr Price Group Ltd
Truworths International Ltd

Food producers
Astral Foods Ltd
AVI Ltd
Illovo Sugar Ltd
Rainbow Chicken Ltd
Tongaat-Hulett Group Ltd

Construction & materials
Aveng Ltd
Group Five Ltd
Wilson Bayly Holmes-Ovcon Ltd

Food & drug retailers
Pick 'n Pay Stores Ltd
Shoprite Holdings Ltd
The Spar Group Ltd

Industrial transportation
Grindrod Ltd
Super Group Ltd
Trencor Ltd

Media
Caxton and CTP Publishers and Printers Ltd
Johnnic Communications Ltd
Primedia Ltd

Chemicals
AECI Ltd
African Oxygen Ltd

Electronic & electrical equipment
Allied Electronics Corporation Ltd
Reunert Ltd

Software & computer services
Datatec Ltd
Dimension Data Holdings Plc

Travel & leisure
Gold Reef Resorts Ltd
Sun International Ltd

General industrial
Nampak Ltd

Health care equipment & services
Medi-Clinic Corporation Ltd

Industrial metals
Highveld Steel And Vanadium Corporation Ltd

Mobile telecommunications
Allied Technologies Ltd

Pharmaceuticals
Aspen Pharmacare Holdings Ltd

Support services
Mvelaphanda Group Ltd

APPENDIX B: DEPRECIATION RATES

	Buildings	Plant	Computers	Vehicles	Number of biased estimates	High bias for PPE useful life
AECI	NS	NS	NS	NS	4	Y
AFROX	2.5	6.7	33.3	15	3	Y
ALTRON	3.5	19.2	31.3	18.8	1	N
ALTECH	3.5	19.2	26.7	25	0	N
ASPEN	6.4	51.7	55	NA	0	N
ASTRAL	4.5	13	15	15	3	Y
AVENG	2	25	21.5	25	2	N
A-V-I	2.3	15	21.7	22.9	3	Y
CAXTON	2	8.3	24	20	4	Y
DATATEC	5	NA	33.5	37.5	0	N
DIDATA	2	NA	23.5	25	2	N
ELLERINE	3.1	NA	41.5	20	2	N
FOSCHINI	5	NA	26.5	22.5	0	N
GOLDREEF	2	13.4	33.4	20	3	Y
GRINDROD	NA	12.5	26.7	21.7	1	N
GROUP 5	2	13.4	33.3	20	3	Y
HIVELD	3.5	26	28.3	28.3	0	N
ILLOVO	NS	NS	NS	NS	4	Y
JDGROUP	4.3	17.5	25	16.3	2	N
JOHNCOM	4.4	19.2	19.2	26.7	1	N
LEWIS	2	NA	21.7	22.5	2	N
MASSMART	2	18.8	22.9	18.8	3	Y
MEDCLIN	1.5	NA	15	17	3	Y
MRPRICE	NA	NA	29.2	17	1	N
MVELAGRP	NA	17.5	33.3	22.5	0	N
NAMPAK	6	27.5	17.5	30	1	N
NUCLICKS	2	NA	23.5	20	4	Y
PICKNPAY	2.5	NA	32	15	2	N
PRIMEDIA	2	15	20.8	22.5	3	Y
RAINBOW	3	6.7	NS	22.9	3	Y
REUNERT	5.3	11.7	21.7	20.9	3	Y
SHOPRIT	5	15	33.3	15	2	N
SUNINT	4.5	7	16	17.5	3	Y
SUPRGRP	2	17.5	33.3	17.5	2	N
SPAR	NA	20.8	21.7	17.5	2	N
TONGAAT	2.7	13.8	21.7	16.7	4	Y
TRENCOR	2	11.1	21.7	22.5	3	Y
TRUWTHS	5.5	NA	20	NS	2	N
WBHO	2	NS	21.7	NS	4	Y
Mean	3.3	17	26.3	21	2.18	

All amounts are percentages.
NA: Asset class not held by company.
NS: Not stated in annual report.

APPENDIX C: ACTUARIAL ASSUMPTIONS

	Discount rate	Expected rate of return	Expected inflation rate	Number of biased estimates	Bias in actuarial assumptions
AECI	8.6	8.6	4.8	1	N
AFROX	9	9.5	5.8	3	Y
ALTRON	7.5	9	4.5	2	Y
ALTECH	7.5	9	4.5	2	Y
ASPEN	7.5	6.25	5.5	1	N
ASTRAL	8.5	NS	5.5	2	Y
AVENG	8.5	8.5	5.5	1	N
A-V-I	8	NA	6	0	N
CAXTON	NA	NA	NA	0	N
DATATEC	NA	NA	NA	0	N
DIDATA	NA	NA	NA	0	N
ELLERINE	NS	NS	NS	3	Y
FOSCHINI	NS	NS	NS	3	Y
GOLDREEF	NA	NA	NA	0	N
GRINDROD	9.6	NA	6.2	1	N
GROUP 5	9.5	9.5	6.8	2	Y
HIVELD	8.6	NA	6.5	0	N
ILLOVO	8.3	8.3	4.5	1	N
JDGROUP	8.5	7.5	4.5	1	N
JOHNCOM	8	NA	6.5	0	N
LEWIS	7.5	9	4.5	2	Y
MASSMART	NS	NS	NS	3	Y
MEDCLIN	7.5	NA	5.5	1	N
MRPRICE	7.5	8.5	5.5	1	N
MVELAGRP	NA	NA	NA	0	N
NAMPAK	9.5	10	5.5	3	Y
NUCLICKS	8	NA	6	0	N
PICKNPAY	10	10	7	2	Y
PRIMEDIA	8	8.5	6	0	N
RAINBOW	15	15	13.5	2	Y
REUNERT	9	10	5.8	3	Y
SHOPRIT	7.5	NA	6.5	0	N
SUNINT	8.5	8.3	5	1	N
SUPRGRP	NA	NA	NA	0	N
SPAR	8.5	NA	5.5	1	N
TONGAAT	8	8	4.8	1	N
TRENCOR	NS	NS	NS	3	Y
TRUWTHS	8.5	8	6.5	0	N
WBHO	9	6	5.8	2	Y
Mean	8.6	8.9	5.9	1.23	

All amounts are percentages.
NA: Company does not have a defined benefit plan.
NS: Not stated in annual report.

APPENDIX D: ESTIMATES USED IN IMPAIRMENT TESTS

	Discount rate	Growth rate	Number of biased estimates	Bias in impairment tests
AECI	NS	NS	2	Y
AFROX	19	19	1	N
ALTRON	NS	NS	2	Y
ALTECH	NS	NS	2	Y
ASPEN	NS	NS	2	Y
ASTRAL	13	5	1	N
AVENG	15	5	0	N
A-V-I	NS	NS	2	Y
CAXTON	NS	NS	2	Y
DATATEC	NS	NS	2	Y
DIDATA	12.6	15	2	Y
ELLERINE	12	12.5	2	Y
FOSCHINI	NS	NS	2	Y
GOLDREEF	9.6	30.2	2	Y
GRINDROD	11	NS	2	Y
GROUP 5	NS	NS	2	Y
HIVELD	NS	NS	2	Y
ILLOVO	NS	NS	2	Y
JDGROUP	17.3	NS	1	N
JOHNCOM	NS	NS	2	Y
LEWIS	NS	NS	2	Y
MASSMART	14	3	0	N
MEDCLIN	NS	NS	2	Y
MRPRICE	NS	NS	2	Y
MVELAGRP	NS	NS	2	Y
NAMPAK	12.1	0	1	N
NUCLICKS	NS	NS	2	Y
PICKNPAY	NS	NS	2	Y
PRIMEDIA	11.4	3	1	N
RAINBOW	12.4	5	1	N
REUNERT	20.2	15	1	N
SHOPRIT	17.1	4.1	0	N
SUNINT	NS	NS	2	Y
SUPRGRP	NS	NS	2	Y
SPAR	10.5	5.5	1	N
TONGAAT	NS	NS	2	Y
TRENCOR	NS	NS	2	Y
TRUWTHS	16.6	NS	0	N
WBHO	14.5	NS	0	N
Mean	14	9.4	1.54	

All amounts are percentages.
NS: Not stated in annual report.

APPENDIX E: ANNUAL REPORT DATA COLLECTION FORM

[Explanations added where necessary, in italics.]

[*Company name*] **Ltd** [*Year end: DD / MM*] **2006**

REF	ISSUE	COMMENT
-	**Auditor / audit report**	*[Name of auditor; was the audit report unqualified?]*
-	**Total assets**	*[In R million per 2006 balance sheet]*
-	**Profit for the year**	*[In R million per 2006 income statement]*
-	**Performance bonus for directors**	*[Does the company have a cash- or share-based bonus plan for its executive directors?]*
IAS16	**Cost or revaluation model for PPE**	
IAS16	**Depreciation methods and rates**	*[Methods and rates recorded for each of the following four PPE categories, where applicable: buildings, plant, computers and vehicles.]*
IAS19	**Actuarial gains and losses**	*[How are these accounted for? (Eg direct to equity, 10% corridor method, or immediately in the income statement.)]*
IAS19	**Actuarial assumptions for defined benefit accounting**	*[The following actuarial assumptions recorded, where applicable: discount rate, expected return on plan assets and expected inflation rate.]*
IAS23	**Borrowing costs**	*[Capitalised or recognised as an expense?]*
IAS36	**Discount and growth rates for impairment testing**	
IAS37	**Reversal of unused provisions**	*[Were any unused provisions (sufficiently material to require separate disclosure) reversed in the 2006 annual report*?]
IAS38	**Indefinite useful life intangible assets**	*[Has the company designated any of its intangible assets as having an indefinite useful life?]*
IAS39	**Investments designated as available for sale**	*[Has the company designated any of its financial assets as available for sale?]*
IAS40	**Cost or fair value model for investment property**	

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