

**EARNINGS QUALITY AND EQUITY RETURNS:
EVIDENCE OF THE ACCRUAL ANOMALY
FROM THE SOUTH AFRICAN EQUITY MARKET**

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Abstract

A key incentive for accounting research is to provide evidence on the usefulness of earnings in making economic decisions. Of particular interest over the last two decades is the issue of the quality of financial reporting, specifically the quality of earnings, given the number of global financial scandals reported during that period. The quality of earnings is driven by the choices, estimates and judgments that the accounting standards make available to managers in order to portray the firm's economic position and performance in a timely and credible manner. However, this leeway in financial reporting also creates opportunities for earnings management.

The objective of this thesis is firstly to establish whether earnings manipulation has had the ability to predict cross-sectional returns in South Africa during the 2007-2014 period. In other words, the purpose of this thesis is to find evidence whether the market reacts to earnings management practices, as measured by accruals, and rewards high earnings quality companies with higher equity returns (a process known as the accrual anomaly). The timeframe selected for the research encompasses the global financial crisis, a period in which accounting manipulation incentives are likely to be strong. Secondly, this study attempts to establish the presence of the accrual anomaly amongst growth and value firms. The motivations for earnings management of the former are expected to be strong.

Securities are allocated to portfolios according to accruals and the subsequent equity returns are analysed cross-sectionally to establish the existence of the accrual anomaly and hence assessing the usefulness of earnings manipulation in predicting equity returns. To provide evidence for the presence of the accrual anomaly amongst growth and value shares, securities are independently allocated to portfolios according to their book-to-market ratio and accruals and a cross-sectional analysis is performed on their subsequent equity returns. In order to increase the robustness of the tests, two measures of accruals are used: a balance sheet approach and a cash flow measure.

Evidence is provided for the presence of the accrual anomaly among South African listed companies for the balance sheet measure of accruals but not the cash flow approach. Whilst the accrual anomaly is significantly present in a growth-neutral-value construct, statistical significance is not established when growth and value shares are considered individually.

Key words: Earnings quality, earnings management, accrual anomaly, equity returns

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Chapter One

INTRODUCTION

1.1 Research context

Driven mostly by the alarming number of global corporate scandals and the speech of Arthur Levitt, the “Numbers Game” (Levitt, 1998), there has been a drastic growth in earnings quality research (see for example, the review articles of DeFond, 2010; Dechow, Ge and Schrand, 2010; Dechow, Hutton, Kim and Sloan, 2012). In the short span of time that followed the disgrace of Enron, Worldcom and Xerox, many more accounting scandals were unveiled in various countries around the world resulting in serious damage to the global economy. South Africa has unfortunately not been immune to such economically ravaging events. The after-effects of the Masterbond scandal of the 1980s and the collapses of Regal Treasury Bank, LeisureNet and more recently African Bank in 2014 have raised serious questions about the quality of financial reporting.

The International Accounting Standards Board (2014, p.A6), whose International Financial Reporting Standards (IFRS) are the governing accounting standards applicable in South Africa, requires that financial reporting should consist of “high quality, transparent, and comparable information in financial statements...to help investors...make economic decisions”. However, as Watrin and Ullmann (2012) note, accounting standards are unlikely to be the sole determinant of earnings quality. Accounting standards do not address the level of detail that is required by companies and their implementation mostly requires judgement from the preparers of financial statements (see for example, Ball, Kothari and Robin, 2000 and Burgstahler, Hail and Leuz, 2006). Consequently, similar companies within the same accounting environment may use discretionary items to report financial earnings of significantly different quality to the users of financial statements. In this academic context, poor earnings quality is therefore considered a consequence of manipulation, not the accounting system.

The manipulation dimension finds its origins in the seminal study of Healy (1985) which examines the effects of managerial bonus schemes using total accruals on the accounting policies adopted by companies and reports that managers are incentivised by these schemes to select those accounting procedures that maximise their private monetary awards. Jones

(1991) consolidates and makes a significant contribution to the subsequent literature by providing a debateable but generally accepted proxy for earnings quality by applying a so-called “abnormal accruals” model. The model attempts to separate total accruals into discretionary and non-discretionary components, the former is the most widely used proxy for earnings management as they are believed to be the result of managerial discretion. DeFond (2010) further notes that the current earnings quality determinants literature consists primarily of modified versions of the model in Jones (1991) which generally consists of researchers’ attempts at improving the model (see DeFond and Jambalvo, 1994; Dechow, Sloan and Sweeney, 1995; Hribar and Collins, 2002; Kothari, Leone and Wasley, 2005). These studies provide an extensive literature review on the determinants of earnings quality and generally deal with the identification of earnings management. Earnings management is therefore the dependant variable in these studies.

On the other hand, subsequent literature generally consider earnings quality as an independent variable (the consequences literature) and is grounded in Dechow and Schrand’s (2004) relationship between earnings quality and equity returns, or similarly, the examination of the responsiveness of investors to perceptions of earnings quality, as postulated by Dechow et al. (2010). This ability of earnings manipulation, when measured through accruals, to predict cross-sectional equity returns has been widely documented in the literature and is more commonly referred to as the accrual anomaly; portfolios with high accruals (assumed to be highly managed firms) earn negative abnormal returns in the year following portfolio formation.

Investors are interested in such anomalies because they potentially provide them with an opportunity to enhance portfolio returns. Sloan (1996) demonstrates that through a hedge portfolio of annually buying firms in the bottom decile of total accruals, and selling firms in the top decile of total accruals, a positive return of over ten percent is earned in the year following portfolio formation. Similarly, Penman and Zhang (2002), Chan, Chan, Jegadeesh and Lakonishok (2006), Huang, Zhang, Deis and Moffit (2009) and Bender and Nielsen (2013) provide support for a positive association between earnings quality and subsequent firm performance.

The global financial crisis of 2007-2008 provides a fertile ground to analyse the effects of earnings management and the accrual anomaly, a period in which Ze-To (2012) and Trombetta and Imperatore (2014) establish that accounting manipulation incentives for

company managers are likely to be particularly strong. Ze-To (2012) provides evidence that during a recession, users of financial statements are generally pessimistic about the upcoming earnings prospects of companies. They are likely to hastily search for firms maintaining a high level of accounting earnings that could ordinarily be attained by using higher accruals earnings, such as increasing accounts receivable and inventory as to attract investors. However, earnings made up primarily of accruals (low earnings quality) cannot be sustained in the year of the recession and quickly deteriorate in the following years.

Researchers have typically examined samples of firms where motivations for earnings management are expected to be strong in order to increase the power of their tests (for instance, periods surrounding equity market transactions) and focus on overall measures of earnings management such as total accruals. The recent corporate scandals have taught users of financial statements (mostly the hard way) that when shares returns grow at extraordinary rates, investors are advised to increase their scrutiny of accounting numbers. Growth shares, as such, provide a rich ground for earnings quality research. The combination of spectacular growth, a number of earnings quality incidents and the interpretive leeway which the accounting framework provides make growth securities' earnings quality an issue which investors should not neglect. An opportunity thus exists to contribute to the body of work relevant to this subject.

A great deal of academic effort has been expended in the earnings quality literature in the context of developed capital markets. For instance, Dechow et al. (2010) review more than 350 papers. However, no published work, to the author's best knowledge, exists in a South African context in either the detection of earnings quality or the consequences of earnings quality. In so doing, a contribution can be made to the earnings quality and accrual anomaly literature adding to the growing literature on the information content of stock prices in the earnings management study.

1.2 Research objectives

This research has the goal of extending the earnings quality consequences literature by investigating the relationship between earnings quality and equity returns in a South African context. More specifically, the purpose of this thesis is to find evidence that the market reacts to earnings management practices, as measured by accruals, and rewards high earnings quality securities with higher equity returns (a process known as the accrual anomaly) in South Africa during the 2007-2014 period. In other words, this research sets out to establish whether earnings manipulation has the ability to predict cross-sectional returns. The timeframe encompasses the global financial crisis of 2007-2008, a period in which accounting manipulation incentives for company managers are likely to be particularly strong.

Secondly, this research sets out to establish the presence of the accrual anomaly within the value-growth-neutral spectrum and more specifically among growth securities. A similar analysis is performed for value securities.

1.3 Thesis structure

This chapter introduces the research topic of this thesis, briefly describing the overlapping concepts of earnings management and earnings quality. The two objectives of this research are also described.

Chapter Two describes the importance of earnings, as the primary accounting information, and the accrual process, which are the foundation to the studies of earnings management, earnings quality and the accrual anomaly. The chapter also presents an overview of the accounting standards and earnings management studies in South Africa.

Chapter Three discusses the various proxies of earnings quality in the literature, focusing on accrual quality as a measure, in an attempt to select an appropriate measure for this study. The chapter also outlines the consequences of earnings quality, highlighting its influence on subsequent performance.

Chapter Four presents the methods and data used in order to first establish whether the market reacts to earnings management practices and rewards high quality firms with higher equity returns in South Africa between 2007 and 2014, and second, to establish the presence of the accrual anomaly amongst growth and value securities

Chapter Five outlines the findings of the tests described in the previous chapter and provides an analysis and discussion of the results for the presence of the accrual anomaly among South African listed companies. The chapter also describes the contextual relationships between accruals, when separated into growth shares and value shares, and equity returns.

Chapter Six concludes this thesis with a summary of the results for the presence of the accrual anomaly in South Africa and presents the limitations of this study and recommendations for future research.

Chapter Two

EARNINGS QUALITY, EARNINGS MANAGEMENT AND THE ACCRUAL ANOMALY

2.1 Introduction

The previous chapter sets out the research context and the subsequently derived research objectives. Chapter Two outlines the importance of earnings and the accrual process. The chapter also introduces the overlapping concepts of earnings management and earnings quality, and proceeds to examine the motivations and methods used to engage in earnings management practices. The accrual anomaly (the empirical fact that the current level of accruals is negatively related to returns in the following year) is subsequently presented together with a review of the accounting practices and earnings management studies in South Africa.

2.2 The importance of earnings

Financial reports consist of balance sheets, income statements and cash flow statements, amongst numerous components, so it is of particular interest that financial reporting quality studies nearly all focus on earnings manipulation. In other words, a single number from a single accounting statement is targeted for attention: earnings.

At first glance, earnings are important because readers of financial statements are instinctively trained to regard bottom-line earnings (the primary piece of accounting information) as the ultimate performance measure. The traditional view on the value of accounting information, as Ronen and Yaari (2008) argue, is that such information has a dual role: valuation and stewardship. The valuation role arises from investors' demand for information to be used to predict future cash flows and to assess their risk. Francis, Schipper and Vincent (2003) find evidence for the valuation role by demonstrating an association between earnings and share prices, concluding that reported earnings numbers are more closely associated with share prices than cash flows, sales, and other financial statement data. Ronen and Yaari (2008) suggest that the stewardship role of accounting comes from the separation between ownership and management in public firms, which puts the manager in the position of agent to shareholders. Since managers act as self-interested individuals, as

Jensen and Meckling (1976) examine in their seminal paper on agency theory, goal convergence between shareholders and managers is no longer assured. For shareholders, the remedy is to demand information to monitor the actions of the manager after he has acted, and to provide him with incentives that align his interests with their own, before he next acts. As Watts and Zimmerman (1978, p.113) state, “one function of financial reporting is to constrain management to act in the shareholders’ interest”. Ronen and Yaari (2008) conclude that this dual role of accounting information provides a partial explanation to the prominence of earnings.

Users of financial statements – analysts, shareholders, creditors, managers, tax authorities and economists – require an earnings figure that is relevant to the measurement of value. Williams (1938), commonly cited as the seminal paper on determining share price as determined by intrinsic value, proposes that the value of a share is the present value of all dividends ever to be paid on it. According to Williams (1938), therefore, the relevant earnings metric is dividends. Gordon and Shapiro (1956) and Gordon (1959) confirm this with their dividend discount model, which is regarded as the traditional approach to firm valuation. The dividend discount model estimates share price as the present value of expected future dividends discounted at their risk-adjusted expected rate of return. The general expression for the dividend discount model is given as Equation 2.1.

Equation 2.1: The dividend discount model (DDM)

$$V_0 = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \frac{D_3}{(1+r)^3} + \dots + \frac{D_t}{(1+r)^t}$$

where

V_0 is the share price,

D_t are the expected future dividends, and

r are the risk adjusted expected rate of return

Modigliani and Miller (1958) and more recently Tareq (2012), however, note some of the disadvantages of the dividend discount model. For example, dividends are often arbitrarily determined and many firms do not pay dividends. As a result, market participants tend to focus on other accounting information, especially on earnings. Peasnell (1982) demonstrates

one early and tentative link of dividends to fundamental accounting measurements such as the book value of equity and earnings. The link shows that a discounted cash-flow stream can be replaced by a stream of discounted earnings, where earning is defined as the “excess of accounting profit over (a measure of) the opportunity cost of capital invested in the business” (Peasnell, 1982, p.365). Ohlson (1995) adds rigor to the Peasnell (1982) construct, establishing the prominence of the so-called residual income or abnormal earnings model.

The link between the dividend discount model and the residual income model is demonstrated as follows. Ohlson’s (1995) model uses two attributes of accounting, both of which reflect specific assumptions about how dividends affect book values and earnings, to yield an equation that focuses on accounting numbers (in particular, book values and earnings). First, the model assumes a clean surplus accounting; that is, the book value changes only as a result of dividends and earnings. Second, the model assumes that dividend payments directly reduce the book value of assets retained in the firm but do not influence the income earned in the year. Given these assumptions, the book value from one period to the next is equal to earnings minus dividends:

Equation 2.2: The clean surplus assumption

$$B_t = B_{t-1} + E_t - D_t$$

where

B is the book value,

E_t is the reported earnings in period t, and

D_t is the reported dividends in period t

By rearranging the clean surplus relation, the dividend amount for each period is shown in Equation 2.3 as being equivalent to earnings minus the increase in book value.

Equation 2.3: Restated clean surplus assumption

$$D_t = E_t - (B_t - B_{t-1}) = E_t + B_{t-1} - B_t$$

where

D_t , E_t and B have the same meaning as Equation 2.2

Substituting $E_t + B_{t-1} - B_t$ for D_t in the expression for V_0 in Equation 2.1, results in Equation 2.4a:

Equation 2.4a: DDM in terms of book value and earnings

$$V_0 = \frac{E_1 + B_0 - B_1}{(1+r)^1} + \frac{E_2 + B_1 - B_2}{(1+r)^2} + \frac{E_3 + B_2 - B_3}{(1+r)^3} + \dots + \frac{E_t + B_{t-1} - B_t}{(1+r)^t}$$

This equation can be rewritten as follows:

Equation 2.4b: DDM in terms of book value and earnings

$$V_0 = B_0 + \frac{E_1 - rB_0}{(1+r)^1} + \frac{E_2 - rB_1}{(1+r)^2} + \frac{E_3 - rB_2}{(1+r)^3} + \dots + \frac{E_t - rB_{t-1}}{(1+r)^t}$$

where

V_0 , D_t , E_t , B and r have the same meaning as Equations 2.1 and 2.2

Residual income, as defined in Ohlson (1995), is regular earnings (E_t) minus a charge for equity employed (rB_{t-1}). Dechow and Schrand (2004, p.9) describe this term as “the company’s earnings in excess of the rate of capital that is required for the company to earn its cost of capital”. Equation 2.5 is identical to Equation 2.4b and is the usual formulation of Ohlson’s (1995) residual income model:

Equation 2.5: Residual income model

$$V_0 = B_0 + \sum_{t=1}^{\infty} \frac{E_t - rB_{t-1}}{(1+r)^t}$$

where

V_0 , E_t , B and r have the same meaning as Equations 2.1 and 2.2

The Ohlson (1995) residual income model is hence shown to be equivalent to the standard dividend discount model. Therefore, both the dividend discount model and residual income model yield identical value estimates if the clean surplus relation holds.

Dechow, Hutton and Sloan (1999) observe that existing empirical studies have generally provided support for the residual income model on three fronts. First, the model predicts and explains share price better than the models based on discounting short-term forecasts of dividends and cash flows, as described in Penman and Sougiannis (1998). Kothari (2001, p.178) also notes that “the dividend discounting model value estimates do a much poorer job of explaining cross-sectional variation in market values than earnings capitalisation models”. Second, Frankel and Lee (1998) find that the residual income model provides a more complete valuation approach than popular alternatives. Despite being subject to the same theoretical limitations of the dividend discount model, the residual income model provides a framework for analysing the relationship between accounting numbers and firm value. Lastly, Ohlson (1995) notes that the model satisfies some of the Modigliani and Miller (1958 and 1961) model properties as it separates the creation of wealth from the distribution of wealth so that dividend payment irrelevancy applies. Ohlson (1995, p.662) further observes that, “given the importance one generally attaches to the Modigliani and Miller properties in valuation analysis, the requirement that dividends reduce book value but not current earnings enhances the economic significance of owners’ equity accounting”.

Given the importance of earnings in a valuation context, it is clear that investors require an earnings figure that has integrity. Earnings should not be the product of manipulations, purely intended to increase the reported profit of a company. Bernstein and Siegel (1979) additionally note that earnings figures should be reliable, in the sense that they must be an indication of the quality of earnings and future earnings. Equally, in light of increased financial frauds and failures, new and increased emphasis has been placed on the importance of the overlapping concepts of earnings quality and earnings management.

2.3 The accrual process and its potential for manipulation

Accruals arise when there is a discrepancy between the timing of cash flows and the timing of the accounting recognition of a transaction. A common example involves the recognition of sales. Revenues from sales may be recognised in the financial statements before total collection from customers is secured. Figure 2.1 describes this process. Over the company's lifespan, reported accumulated revenues must theoretically equal accumulated cash inflows, and cumulative accruals must equal zero; in other words, accrued balances of assets and liabilities must eventually reverse. Theoretically, the purpose of accrual accounting is to report cash flows over time in a meaningful and valuable manner.

Figure 2.1: The accrual process

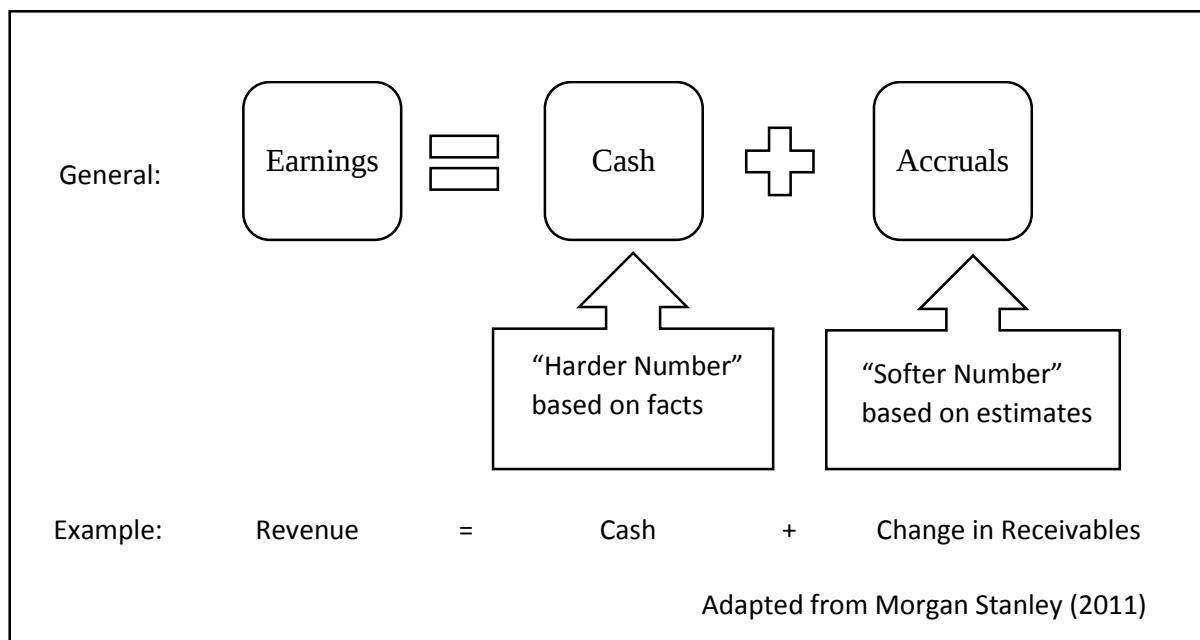
Period	1	2
Event	Customer buys goods on credit	Customer settles accounts
Cash flows	None	Inflow of payment
Accounting recognition of revenue	Recording of revenues	None
Accruals	Increase in accounts receivable	Decrease in accounts receivable

Generally, the responsibility for preparing and publishing external accounting information lies with the firm's managers. Managers use their knowledge of the firm's current state and business circumstances to prepare this information, thus giving - in theory - a true and fair view of the firm's financial state and performance. The accrual process is accordingly designed to enable financial statements to portray the differences in a firm's economics and performance in a timely and credible manner. If financial statements are to convey managers' private information on their firm's performance, accounting standards (such as IFRS) have to permit managers to exercise judgement in financial reporting. As Jooste (2009) indicates, managers can then use their knowledge about the business to select reporting methods and estimates that match the realities of the firm's business economics. In theory, this establishes the value of accounting as a form of communication. However, because auditing is imperfect, management's use of judgement also creates opportunities for "earnings management", in which managers choose reporting methods and estimates that do not adequately reflect their firms' underlying economics.

As a result of the accruals process, accounting earnings consist of accrual and cash flow elements (see Figure 2.2 below). Sloan (1996), Dechow and Schrand (2004) and Morgan

Stanley (2011) argue that while cash is more or less a hard number (thus more difficult to manipulate), the quality of accruals depends on the overall quality of the accounting framework (IFRS) and the choices and estimates made by the preparers of the financial statements. As mentioned before, accrual accounting involves estimates of future cash flows and those estimates can be of high or low quality. Therefore, low quality accrual estimates can impact negatively on earnings.

Figure 2.2: The components of earnings



The accrual concept is examined by Dechow (1994) who concludes, somewhat unexpectedly, that cash flows and earnings have similar explanatory power for equity returns over longer timeframes. Accruals, on the other hand, have lower explanatory power as Dechow (1994) and Sloan (1996) show that most unexplained differences over similar timeframes relate to management's discretion in developing estimates that affect earnings through the accrual component of earnings, but not its cash flows component.

Dechow and Schrand (2004) demonstrate the manner in which managers use the accrual process to opportunistically manage earnings based on the various forecasts, estimations and judgements that go into the process of preparing financial statements. Since managers can implement accrual-based earnings management even after the end of the fiscal year, the greater the discretion relating to an accrual, the greater the opportunity is to manage earnings. Dechow and Schrand (2004) rank accruals from high discretion to low discretion

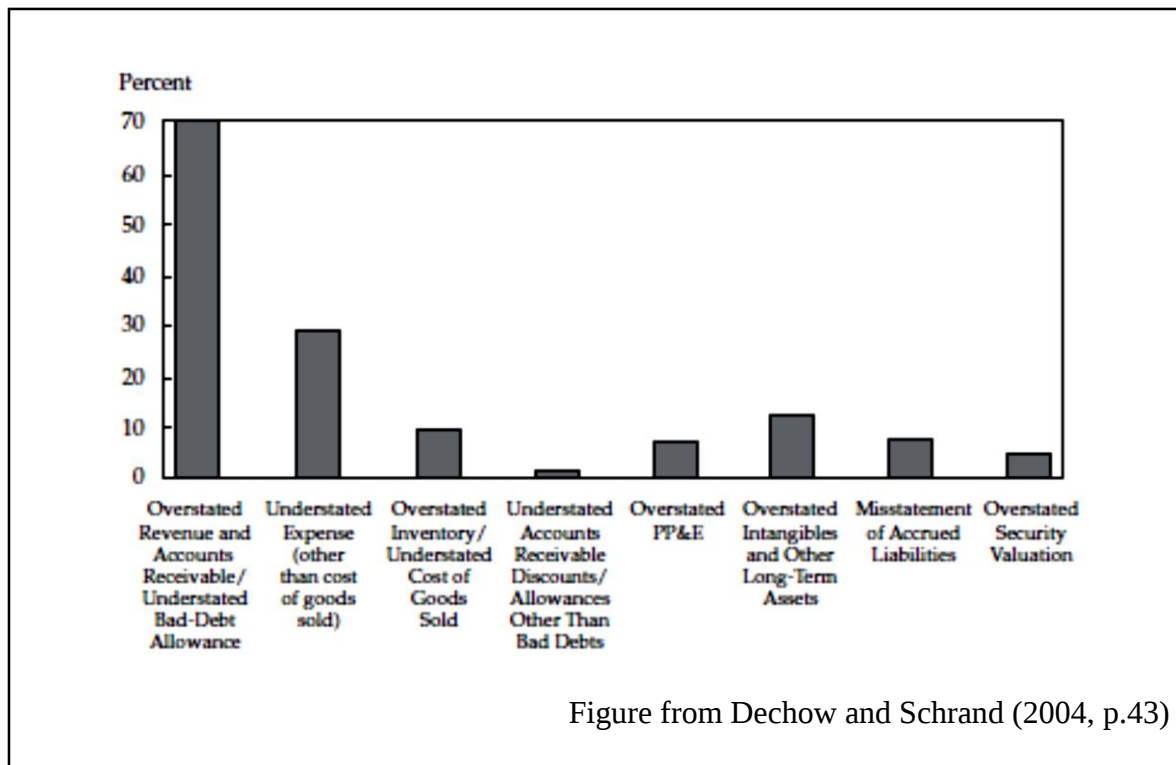
in their ability to manage earnings, finding that accounts receivable, inventory, other receivables, property, plant and equipment, and pension liabilities offer the most opportunities to manage earnings. Accounts payables and long-term debts are, on the other hand, more difficult to manage. Chan et al. (2006) further indicate that accruals represent opportunistic manipulation by managers and traces of manipulation are more likely to exist when accruals are high than otherwise.

Accounts receivable require estimates about collectability whilst deferred tax assets require estimates about the firm's capacity for future tax deductions and on the other hand, depreciation expense requires a choice of depreciation method as well as estimates about the useful lives of assets and their residual values. Furthermore, inventory allows for different costs and valuations models. As such, accruals and their underlying estimates, while not the only lever to influence investor perception about the quality of earnings, are a good place to start looking for signs of earnings management.

As Dechow and Schrand (2004) note, however, accruals management only temporarily affects the timing of earnings. An overstatement of earnings in a period will result in an understatement of earnings in another. For instance, deflating of the provision for bad debts in one year (inflating earnings) will cause a higher write-off of receivables in excess of the provision (reducing earnings) in subsequent years.

High accruals are a well-known signal for potential earnings management. Dechow, Sloan and Sweeney (1996) observe that companies subject to enforcement actions (such as regulator-imposed restatements) have higher accruals than other companies. Similarly, Richardson, Tuna and Wu (2003) present evidence that companies that restate their earnings tend to have higher accruals before the restatement. Dechow and Schrand (2004) investigate which specific transactions are more commonly subject to manipulation and present the results summarised in Figure 2.3. For the 294 companies tested in their research, 426 different accruals display evidence of manipulation. Inflating revenue and accounts receivables (by understating provisions for bad debts) is the most common form of accrual manipulation, with 70 percent of the cases involving such transactions. Understating expenses (to increase earnings) is a distant second at 30 percent.

Figure 2.3: Types and frequency of accruals manipulations



Nelson, Elliott and Tarpley (2003) adopt a different approach in establishing which accruals are most managed. In comparing the attempts at earnings management, from records obtained from the auditors of one of the “Big Four” accounting firms, they find that 53 percent of the attempts were made to increase earnings. The predominant means of achieving this was by deferring or capitalising expenses in order to decrease costs. The second most prevalent type of earnings management was prematurely recognising sales before financial year end, by recording “bill-and-hold” sales and prematurely accounting for sales with a right of return. Nelson, Elliott and Tarpley (2003) also present evidence that the write-off of inventories, asset impairments or provisions are frequently recorded as ‘special items’ in the calculation of profits in an attempt to create inappropriate (hidden) reserves.

As discussed earlier, accruals typically involve estimates about future events. For instance, the amount recognised as accounts receivable is based on estimates about the collectability of cash corresponding to previously made sales. If all goes as planned, the accounts receivable recorded in the previous period disappear from the balance sheet and a corresponding amount of cash appears instead. The accruals reverse normally; there is no impact on earnings. If, however, the original estimates of collectability were too optimistic,

the result is a shortfall in the cash collected. The corresponding accounts receivable originally recorded is written off as bad debts, affecting earnings in a subsequent period. Over-optimistic estimates of inventories and property, plant and equipment have identical effects on earnings.

Allen, Larson and Sloan (2013) attribute the valuation relevance of accruals to the fact that extreme accruals exhibit a high frequency of subsequent reversals with an impact on future earnings. In other words, if accruals are disproportionately large versus an appropriately chosen benchmark, earnings are more likely to have been artificially increased. As a result, a subsequent reversal that affects earnings is more likely.

2.4 Earnings quality

Although there appears to be little consensus in the literature on a single definition of earnings quality, for the purpose of this thesis it is regarded as being the degree to which earnings capture a firm's economic reality. As Healy and Wahlen (1999) explain, for example, financial statements will be less useful, leading to inefficient resources allocation, when the reported accounting earnings reflect only poorly the economic reality of the firm's financial activity throughout the reporting period. This is a state of low earnings quality.

Schipper and Vincent (2003, p.98) define earnings quality as "the extent to which reported earnings faithfully represent Hicksian income, where representational faithfulness means correspondence or agreement between a measure or description and the phenomenon that it purports to represent". (Hicksian income is the income a firm can consume during a period without being worse off; it is the maximum sustainable consumption.) Dechow and Schrand (2004), on the other hand, define earnings quality as earnings that should reflect the firm's current operating performance, be a good indicator of future operating performance and also be a useful summary measure for assessing firm value. In other words, the objective of earnings quality is to enable the users of the financial statements to assess the extent to which a company's past and present reported financial statements provide a sound basis for forecasting its future performance. High earnings quality, as Lo (2008) points out, reflects the sustainability, unbiasedness or neutrality of the earnings figure and of the accounting policies and estimates used to generate those earnings.

Earnings management (discussed in detail in the section below) is closely related to earnings quality: highly managed earnings have low quality. However, as Lo (2008) argues, the lack of earnings management is necessary but not sufficient to guarantee high-quality earnings (or high-quality accounting numbers more generally), because other factors contribute to the quality of earnings. For example, accountants who constantly follow a poor set of accounting standards will generate low quality financial statements. Nevertheless, Lo (2008) concludes that if those other contributing factors are taken as constant, then a closer connection can be drawn between earnings management and earnings quality. The different measures of earnings quality are presented in Chapter Three.

According to Schipper and Vincent (2003), the importance of earnings quality can be observed from three perspectives; namely the investment perspective, financial information perspective, and accounting standard setting perspective. From the investment perspective, earnings quality provides a signal for resource allocation. A poor quality of reported earnings is undesirable and inefficient as it reduces economic growth by causing capital to be misallocated. From a financial information perspective, earnings are normally used in compensation arrangements and in debt agreements. Overstated earnings, that are used as an indicator of managers' performance, will result in inflated compensation paid to managers. In addition, overstated earnings might mask deteriorating solvency, causing lenders to mistakenly continue lending. Finally, accounting standard setters seek feedback on whether the accounting standards are effective and they tend to focus on accounting outputs, including reported earnings.

Morgan Stanley (2011) notes, in its article about the earnings quality in emerging markets, the usefulness of earnings quality in uncovering three general signs of manipulation. Firstly, it can expose very high operating margins or rapid sales growth relative to the industry – both of which, where high barriers to entry are absent, are typically unsustainable in the long-run. Secondly, it can reveal a growing divergence between reported earnings and cash flows. Lastly, it can unearth excessive capitalisation of costs. An incorrectly interpreted low quality earnings can give investors a false impression of momentum or sustainability, where instead a sharp reversion may be just imminent.

2.5 Earnings management

As argued in the previous section, low earnings quality may result from underlying causes other than earnings management. However, it seems to be a convincing proposition that information asymmetry between managers and owners provides managers with the opportunity to use their discretion in preparing financial statements to their own advantage. Although managerial discretion is limited both by accounting standards (such as IFRS in South Africa) and by independent auditors, Jooste (2011) notes that there is significant recent evidence which suggests that managers manipulate accounting numbers to achieve private gains.

According to Healy and Wallen (1999, p.368), “earnings management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers”. Judgment, in this definition, relates to the ability of managers to make choices of accounting policies, estimates, or their timing or selection of operating decisions. Furthermore, managers’ actions are often related to a number of their incentives or motivations as is discussed in section 2.6.

Belkaoui (2004) argues that various definitions have been offered to define earnings management as a special form of “designed” rather than “principled” accounting. Earnings management may be seen as a purposeful intervention in the external reporting process with the intent of obtaining some private gain by either a selection of accounting methods within IFRS or by applying the given accounting methods in particular ways aimed at achieving the specific private gain objective.

As Jooste (2011) notes, not all forms earnings management are prohibited and many are within the manager’s prerogatives. The question, from an ethical point of view, is whether it is the right thing to do. Merchant and Rockness (1994) are of the opinion that although a manager’s moral code should prevent them from manipulating earnings, it does not always do so. Rather than breaching a moral code, the managers engaging in such behaviour are simply acting in a socially unacceptable way.

Additionally, Jooste (2011) reports that many individuals view ethics simply as a set of rules. In terms of this view, managers think that if a practice is not specifically prohibited, there is

no need to worry about ethics. In other words, earnings management actions are not regarded by managers as problematic if no rules are broken by engaging in them.

Earnings management activities include accounting-based activities (mostly accrual-based) or operating-based activities (commonly referred to as real earnings management). As an example of an accounting-based method, a manager may excessively overestimate depreciation expense thereby changing income. On the other hand, when a manager postpones discretionary expenses, for example research and development, into the future in order to improve current income, it is an example of an operating-based method.

2.6 Motivations for earnings management

The importance of motive is generally evident in the earnings management literature. Healy and Wahlen (1999, p.370), for example, suggest that

“despite the popular wisdom that earnings management exists, it has been remarkably difficult for researchers to convincingly document it. This problem arises primarily because, to identify whether earnings have been managed, researchers first have to estimate earnings before the effects of earnings management. One common approach is to first identify conditions in which manager’s incentives to manage earnings are likely to be strong”.

Healy and Wahlen (1999) and Dechow and Schrand (2004) both apply a tripartite taxonomy to the analysis of motives for earnings management: (i) motives related to capital market expectations and valuation; (ii) motives related to contracts that are written in terms of accounting numbers (covenants); and (iii) motives related to anti-trust (mergers regulations) or other government regulations.

2.6.1 Capital market motivations

In their review of earnings management literature, Healy and Wahlen (1999) note that the extensive use of accounting information by external stakeholders to value securities can create an incentive for managers to manipulate earnings in an attempt increase short-term share price performance. Moreover, Healy and Wahlen (1999) provide a summary of the recent papers on capital market incentives, as summarised below.

Beneish (1997) finds evidence that the incentive to manipulate earnings increases for firms with declining share prices. Beneish (1997) argues that when managers view their firms' recent poor performance as indicative of either temporary or permanent problems, they have incentives to manipulate earnings. A temporary problem, remedied via an IFRS violation, makes the company less likely to be caught and may facilitate recovery. A permanent problem increases the likelihood of being caught, but the motivation to manipulate IFRS remains. As Beneish (1997) suggests, perhaps, no punishments subsequent to discovery are sufficient to discourage managers from distorting earnings.

2.6.1.1 Motivations relating to management buyouts

DeAngelo (1988, p.7) examines earnings manipulation preceding management buyouts and reports that "earnings information is important for valuations in management buyouts" and hypothesises that "managers of buyout firms have an incentive to understate earnings", but finds little evidence of earnings management by buyout firms from an examination of changes in accruals. Perry and Williams (1994), however, disagree and find evidence of unexpected negative accruals (income-decreasing) when controlling for changes in revenue and depreciable capital prior to a management buyout. Chan et al. (2004) also notes that managers have an incentive to decrease the firm's share price during management buyouts in order to reduce the buyout price.

2.6.1.2 Motivations relating to equity offers

Several studies have also established a pattern of managers overstating earnings in periods leading to equity offers. Beneish (1997) reports that many companies that would end up becoming the subject of an enforcement action, do so in the context of an initial public offering (IPO) or as a result of financial statement manipulations shortly after IPOs. Teoh, Welch and Wong (1998a) find that companies report positive unexpected (income-increasing) accruals prior to seasoned equity offers. Teoh, Wong and Rao (1998b) report a similar scenario prior to IPOs as do Erikson and Wang (1998) with share-financed acquisitions. In their study, Teoh et al. (1998a) interpret unexpected accruals as the changes in current assets and current liabilities that are not related to changes in sales and property, plant and equipment. Teoh et al. (1998b) and Erikson and Wang (1998) respectively find evidence of those unexpected accruals reversing following the IPOs and the share-financed

acquisitions, implying that the market is misled by earnings management practices. Investors are disillusioned by the managed earnings are disappointed when those accruals reverse and result in poor earnings performance. This may explain (at least in part) the general underperformance of IPOs found by Beneish (1997).

2.6.1.3 Motivations relating to mergers

Mergers also attract significant earnings management as both the acquirer and the target firm have an incentive to show their firm at its best. Christie and Zimmerman (1994) find that target companies use inventory and depreciation methods that are income-increasing. Erikson and Wang (1998), in analysing share-for-share mergers between 1985 and 1990, find evidence of similar income-increasing earnings management by acquiring firms. Easterwood (1998), in contrast, shows evidence that takeover targets use accruals to increase their earnings during the periods before and following a hostile takeover.

2.6.1.4 Motivations to meet or break forecasts

Merchand and Rockness (1994) observe that managers also have a tendency to decrease earnings when earnings are extreme in either direction. Kasznik (1999) reveals that managers are more likely to alter earnings towards their own earnings forecasts while Burgstahler and Eames (2006) also demonstrate that managers manipulate earnings in order to meet analysts' expectations, especially to avoid reporting earnings that are lower than forecasts. As Healy and Wahlen (1999, p.371) report, these situations are consistent with companies "in danger of falling short of a management earnings forecast using unexpected accruals to manage earnings upwards".

Bushee (1998) finds evidence of earnings management used to influence expectations of specific types of investors. He reports that firms with lower percentages of institutional ownership, with momentum trading strategies and high portfolio turnover, tend to cut research and development expenses in order to avoid a drop in reported earnings. Growth companies (firms that are growing at a rapid pace compared to their peers), as opposed to value firms, are believed to be more pertinent for manipulating earnings. While this is an open empirical question that the present research tries to answer, causal evidence that the share price drop is dramatic for growth firms is earlier found in Fridson (1991, p.7) who states: "almost invariably, companies try to dispel the impression that their growth is

decelerating since the perception can be so costly to them”. Dechow and Schrand (2004) further note that high-growth companies are more prone to manage earnings since they are hit particularly hard when they miss forecasts. As such, establishing the presence of earnings manipulations in growth shares provides a rich ground for earnings management research.

Abarbanell and Lehavy (2003), on the other hand, use analysts’ share recommendations (buy, sell or hold) to foretell the direction of earnings management. They establish that firms who receive a “buy” recommendation are more likely to be the object of earnings management in order to meet expectations, while firms that receive a “sell” recommendation are more likely to show negative unexpected accruals.

2.6.1.5 Methods used to attain capital market motivations

As emphasised above, the majority of the studies published so far have used accruals as a proxy for earnings management. Some papers have tried to establish which accounting methods or specific accruals are used for earnings management for capital market motivations. Teoh et al. (1998b) survey depreciation and the provision for bad debts in periods surrounding IPOs and find evidence that these firms are more likely to have earnings-increasing bad debt allowances and depreciation policies in the IPO year relative to non-IPO firms.

Several studies have also tried to identify which specific accruals finance companies (mainly banking and insurance) take advantage of to manage earnings. As Healy and Wahlen (1999, p.372) report, “loan loss reserves of banks and claim loss reserves of insurers are directly related to their most critical assets and liabilities, are typically very large relative to net income and equity book values, and are highly dependent on management’s judgement”. Moyer (1990) and Collins, Shackelford and Wahlen (1995) find compelling evidence of this type of earnings management. These studies also find evidence that banks strategically time the realisation of gains and losses on investment securities. The incentive to manipulate earnings further increases when managers who have previously made income-increasing accruals either attempt to avoid accruals reversals or run out of ways to increase earnings.

Deferred tax allowances have also provided a fruitful ground for research on which specific accruals are used to manipulate earnings. Ayers (1998) tested this hypothesis but found little evidence that managers misuse their judgements to manage those allowances. Healy and

Wahlen (1999) however point out that the tests used in Ayers (1998) may lack power since they were not tested relative to strong capital market activities (such as buyouts and IPOs).

2.6.2 Contracting motivations

Another reason for the manipulation of earnings and other accounting information is often related to the negotiations of contracts between a firm and its various stakeholders. Examples of such contracts are lending contracts and management compensation contracts. The former is necessary to limit managers' actions at the expense of external stakeholders such as creditors while the latter is frequently used to align the interests of managers to the owners. Watts and Zimmerman (1978) suggest that these contracts create incentives for earnings management, as it is costly for creditors and compensation committees to undo these types of earnings management. Healy and Wahlen (1999) further note that altering accounting information for contracting motives can lead not only to misleading financial statements but also create inaccurate resource allocation since debt investors also use these statements.

2.6.2.1 Motivations relating to lending contracts

Holthausen (1981) focuses his study on whether firms change their depreciation method to straight line depreciation when they are close to their dividend constraint. Healy and Palepu (1990) and DeAngelo, DeAngelo and Skinner (1994), on the other hand, investigate whether firms manage earnings when they are close to their lending covenants. Specifically, they examine if companies close to their dividend constraints alter accounting methods, estimates or accruals in order to decrease dividends. Little evidence of earnings management was found in all three studies but all concluded that firms in financial distress tend to cut dividend payments and also restructure their operations and contractual relations. Interest coverage and debt-equity ratios are harder for managers to manipulate since a fixed rate is often attached to most debts. Beneish (1997) adds that the incentives to manipulate earnings increases with higher degrees of leverage if managers seek to get less costly access to capital or possibly avoid debt covenant violation.

2.6.2.2 Motivations relating to compensation contracts

There is considerable evidence that managers use compensation contracts to manipulate earnings. Healy and Palepu (1995) find that managers that have upper limits on bonus payments are more likely to report accruals that decrease earnings when a cap is reached than firms with no bonus cap. Guidry, Leone and Rock (1999) further report that managers are likely to delay the recognition of income to the following year if their earnings targets are unlikely to be met in the current year.

Other studies have tested whether earnings manipulations increase when the job security of managers is threatened or when their tenure are coming to an end. DeAngelo (1988) show that managers increase earnings during proxy contests and Dechow and Sloan (1991) report that managers tend to decrease expenditure on research and development during their final years in office in a possible attempt to boost earnings. Furthermore, Healy and Palepu (1995) find that changes in accounting methods, from first-in-first-out to last-in-last-out or from accelerated depreciation to straight line depreciation, have little effect on management's compensation contracts. Defeo, Lambert and Larcker (1989) when analysing gains on reported equity-for-debts swaps found similar results.

2.6.3 Regulatory motivations

The question can be posed whether regulatory measures are successful in preventing earnings management. Healy and Wahlen (1999) report that the earnings management literature has explored the effects on three forms of regulations: industry-specific regulation, anti-trust regulation and, to a lesser extent, tax incentive qualification.

Most industries are regulated to some degree. The South African Reserve Bank, for example, requires banks to satisfy certain capital adequacy requirements that are expressed in terms of accounting numbers. Moyer (1990) and Collins et al. (1995) find evidence of banks overstating their loan loss provisions, understating their loan write-off and recognising additional abnormal realised gains on portfolios when they are close to their minimum capital requirements.

Healy and Wahlen (1999, p.377) further note that insurers are also tied to minimum financial health regulations in the United States, and firms in the utility sector are likewise subject to limits on their profitability and further point out that "it is frequently asserted that such

regulations create incentives to manage the income statement and balance sheet variables of interest to regulators”. Petroni (1992) finds evidence that insurance firms in financial distress understate their claim loss reserves while Adiel (1996) reports that these companies often engage in reinsurance transactions.

Watts and Zimmerman (1978) report that firms that are susceptible to anti-trust (breaking competition) rules, penalties or adverse political consequences, have incentives to increase accruals in order to appear to be less profitable. Healy and Wahlen (1999) also claim that firms seeking government subsidies or protections have similar objectives. Proof of such earnings management transactions was found in several studies. Of which, Jones (1991) shows that firms in industries seeking import relief tend to delay income recognition in the year of application and Cahan (1992) finds that firms increase their income-decreasing accruals in the investigation years in order to avoid anti-trust violations.

Dechow and Schrand (2004) report that several studies have established the presence of earnings management for tax-related incentives. They report that in the mid-1980s, some companies would time revenue and expense recognition in order to take advantage of prevailing lower tax rates at the time and other companies would shift the recognition of revenues and expenses in order to decrease tax expenses.

2.7 The accrual anomaly

As previously established, high accruals, suggesting low earnings quality, are warning signs of earnings manipulation by managers. In an efficient market, share prices respond in an unbiased and instantaneous manner to new accounting information. Sloan (1996), in the seminal study into the accrual anomaly, however finds that share prices do not properly reflect the information about future earnings contained in current earnings. Her results suggest that investors fail to understand that the accruals component of earnings is less persistent than the cash flow component of earnings. The anomaly is that investors do not seem to consider this difference. Investors tend to fixate on the current (inflated) earnings with more focus placed on the accruals than the cash flows, resulting in the observation that high accrual (low earnings quality) firms tend to exhibit poor performance in the future. In particular, Sloan (1996) demonstrates (for a large sample of firms over the 1962-1991 period) that taking a long (short) position in a portfolio strategy in which firms are reporting

low (high) levels of operating accruals relative to cash flow generates a size-adjusted abnormal returns of 10.4% on an annual basis in the year following portfolio formation.

All this suggests, as Bender and Nielsen (2013) indicate, that the financial health of companies with high accruals is often overstated because higher accruals typically stem from factors that are less likely to persist (for example, slower customer collection period, lower recognition of estimated provisions). Future earnings are then likely to be lower than current earnings.

Researchers have proposed that high accruals may reflect deliberate earnings management. In fact, Pincus, Rajgopal, and Venkatachalam (2007) find (using international data of 20 countries to study the accrual anomaly found by Sloan, 1996) that accruals-based earnings management is the primary reason behind the accrual anomaly. The basic idea, as Bender and Nielsen (2013) provide evidence for, is that shares with high accruals tend to have low earnings quality (measured as a high ratio of accruals to total assets), while shares with low accruals tend to have high earnings quality (measured as a low ratio of accruals to total assets). In other words, companies whose current earnings consist of lower levels of accruals and more cash flows experience stronger future earnings and higher share returns.

Following Sloan's (1996) seminal work, other studies including Xie (2000), Hribar and Collins (2002), Desai, Rajgopal and Venkatachalam (2004), Mashruwala, Rajgopal and Shevlin (2006) have investigated the reasons behind the accrual anomaly. The accruals anomaly is robust to different specifications such as the use of investing and financing accruals (Richardson, Sloan, Soliman and Tuna, 2005), different countries (Pincus et al., 2007), and the use of quarterly data (Hribar and Collins, 2002), among others. Overall, the results are strong and consistent with Sloan's (1996) findings and suggest that the future share returns could be predicted due to investors' overreaction to the persistence of the accruals component of earnings. Sloan (1996) therefore addresses the question that forms the basis of this study: whether earnings quality is a predictor of future earnings (and hence share price) performance. The determinants of earnings quality are discussed in the following chapter.

Healy and Wahlen (1999) and Li, Niu, Zhang and Largay (2011) stress the importance of studying whether investors can see through earnings management practices and proceed to discount firms' earnings management with lower share returns. Similarly, this study

investigates whether high earnings quality (low accruals) firms are rewarded with higher equity returns than highly managed (high accruals) firms.

2.8 Earnings management in a South African context

The financial fraud and failure cases of Worldcom and Enron received global publicity, including in South Africa. However, South Africa has not been immune to earnings management as revealed by the high profile corporate scandals of Leisurennet, Regal Bank, Fidentia and, more recently, African Bank in 2014, hence demonstrating the growing need for transparency in financial reporting. The South African Directorate of Market Abuse (previously called the Insider Trading Directorate) has closed investigations on 175 companies into possible insider trading since 2010, thirteen cases of market manipulations and false statements, and is currently investigating many more (Financial Services Board (FSB), 2014). Market abuse is a reality that every financial market has to deal with. South Africa has legislated to prohibit, through sections 73, 75 and 76 of the Securities Services Act, 36 of 2004, the major forms of market abuse. These major offenses are insider trading, prohibited trading practices (market manipulation) and the publication of false, misleading and or deceptive statements relating to listed companies (FSB, 2014).

The Financial Reporting Investigation Panel (FRIP) (previously called the GAAP Monitoring Panel) was formed in 2002 by the Johannesburg Securities Exchange (JSE) Limited as a joint venture with the South African Institute of Chartered Accountants (SAICA) as an advisory body to the JSE Limited to enhance financial statement compliance with IFRS. The role of the panel is to investigate and advise the JSE Limited on alleged cases of non-compliance with financial reporting standards. It comprises of a panel of 16 IFRS experts and has considered 49 separate cases until the end of 2013, and plays a major role in improving financial reporting in South Africa. A summary of the matters considered by the FRIP is found in Table 2.1.

Table 2.1: Matters considered by FRIP

Matters referred	• Entire financial statements (annual or interim)	12
	• Prospectus financial information	1
	• Specific policies or line items in interim, provisional or annual financial statements	34
	• Compliance with JSE Listing Requirements	2
		49
Result of Financial Reporting Investigation Panel (Panel) recommendations and JSE action		
✓	Annual financial statements withdrawn and re-issued	3
✓	Companies suspended (other JSE problems also present)	4
✓	Revised results announcement made	12
✓	Announced impact and made impact in the next set of results	2
✓	Reference to issues identified by the Panel made in next interim results and full disclosure made in annual report	4
✓	Correction made in next set of results	8
✓	Results revised before distribution to shareholders	3
✓	Other companies also adopting the policy advised to comply in the future, for this company changed for future financial reports or draft publications of results changed before final publications of results	4
✓	Listing Requirements not met, hence listing not granted or action taken in terms of Listings Requirements	3
✓	No action taken	5
✓	Pending	1
		49

Source: FRIP (2014)

The JSE Limited Listing Requirements (2014) were comprehensively updated in 2003 to require companies to comply with the recommendations contained in the King Reports on corporate governance, or to otherwise explain their lack of compliance (paragraph 8.63 of the Listing Requirements). Barrier (2003) notes that the primary objective of the King Report is to promote the highest standards of corporate governance in South Africa by advocating an integrated approach to governance in the interest of a wide range of stakeholders. Fama and French (1992) and Kim, Park and Wier (2012) demonstrate that companies with high corporate governance engage in less earnings management.

The JSE Limited Listing Requirements (2014) also requires listed companies to use IFRSs, rather than the now defunct SA GAAP, with effect from January 2005 as is explained further in the sub-section that follows. The World Economic Forum's Global Competitiveness Index (2014) has ranked, for the fifth consecutive year, the JSE Limited first among 144 nations for the effectiveness of regulation and supervision in 2014. South Africa also topped the rankings in the strength of auditing and reporting standards category, came second in the protection of minority shareholders' interests, third in the efficiency of corporate boards and tenth in strength of investor protection.

2.8.1 The ruling accounting standards in South Africa

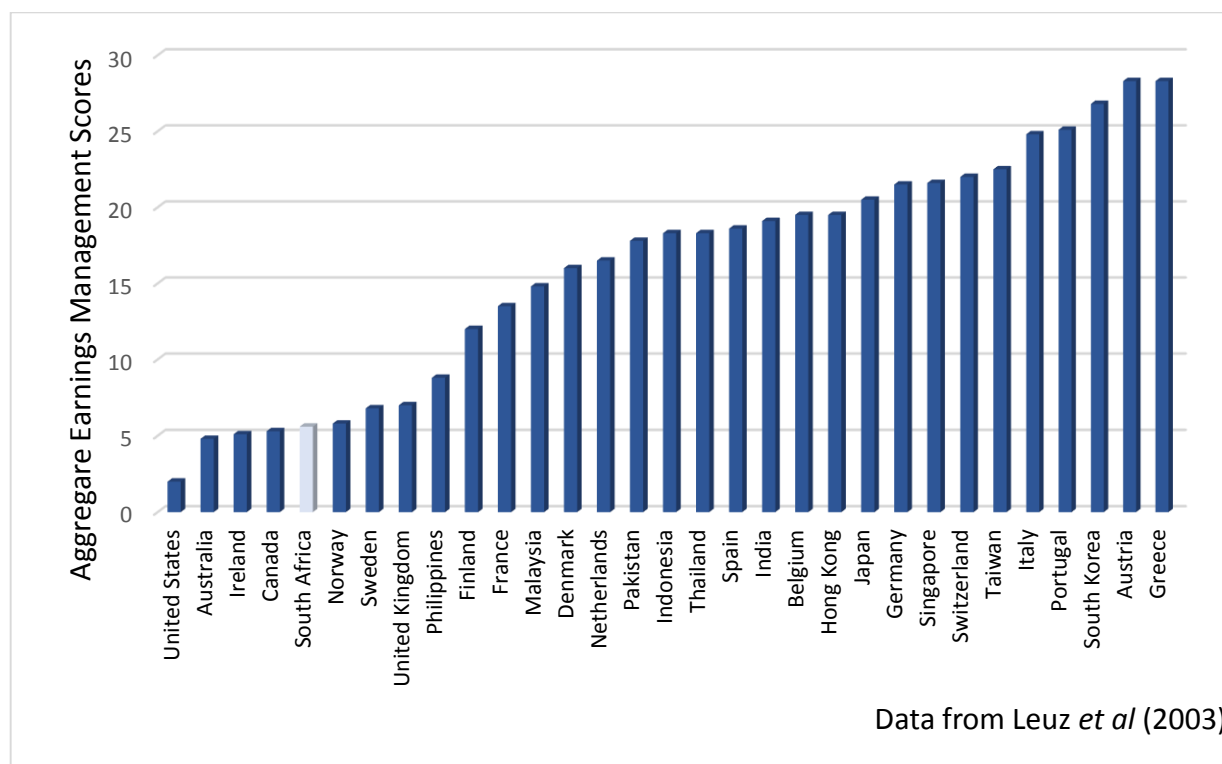
SAICA, the national professional organisation of Chartered Accountants in South Africa, along with other relevant business bodies formed the Accounting Practices Board (APB) in 1973 to develop generally accepted accounting practices and issue the South African Generally Accepted Accounting Practice (SA GAAP). The APB, in 1995, decided to harmonise SA GAAP with IFRSs and since 2003, the APB has issued IFRS as SA GAAP without amendments. The IFRS Foundation (2013) further discloses that, from 2003, all companies in South Africa (listed, unlisted, and private companies) were using SA GAAP. The JSE Limited's Listing Requirements were subsequently amended to require all listed companies to use IFRSs (rather than the harmonised SA GAAP) with effect from 1 January 2005. The Companies Act, 71 of 2008, which was adopted in 2011, permits the use of either IFRS, the IFRS for SMEs or SA GAAP in specific instances. However, the IFRS Foundation (2013) points out that, since SA GAAP was identical to IFRS, SA GAAP was withdrawn for years commencing on and after 1 December 2012.

2.8.2 South African related studies on earnings management

Leuz, Nanda and Wysocki (2003) rank South Africa fifth in having the lowest earnings management scores out of 31 countries based on four different country-level measures of earnings management, just behind the United States, Australia, Ireland and Canada but ahead of the United Kingdom and Japan, as illustrated in Figure 2.4. Leuz, Nanda and Wysocki (2003) provide evidence that earnings management is less pervasive in common-law countries characterised by developed equity markets, dispersed ownership structures, strong investor rights, and legal enforcement. South Africa, as previously reported, has been

highly recognised in each category by the World Economic Forum's Global Competitiveness Index (2014).

Figure 2.4: Earnings management scores around the World



Jooste (2011) performs a survey on earnings management practices in South Africa amongst students and businesses and finds that respondents are more concerned about earnings management since the publication of the Kings Reports on corporate governance. Morgan Stanley (2011) show that while the BRICS countries (Brazil, Russia, India, China and South Africa) have higher earnings quality scores than other developing countries, South Africa has the highest earnings quality score among BRICS countries and is almost indistinguishable from developed countries at a national level.

Chebaane and Othman (2013), on the other hand, investigate the effect of the adoption of IFRS on the frequency of earnings management to reflect small positive profits on 330 South African companies and find that mandatory adoption of IFRSs is not associated with a reduction in earnings management towards small profits in emerging markets but note that South Africa, as a common law country, is less subject to earnings management practices

when compared to Turkey, a code law country. No directly relevant studies have been published in South Africa on the relationship between earnings quality and equity returns.

2.9 Conclusion

This chapter examines the importance of earnings as the primary accounting information, demonstrating how Ohlson's (1995) transformation of the standard dividend discount model via a clean surplus assumption leads to equity valuation models in which valuation accuracy is demonstrably enhanced by a higher quality earnings number.

The chapter also explains how managers use the discretion of the accrual process to choose reporting methods and estimates that do not adequately reflect the firm's underlying economics in order to achieve private gains. In this regard, the definition of earnings quality used in this study is the degree to which earnings capture a firm's economic reality.

It is noted that low earnings quality may result from underlying causes other than earnings management such as the quality of the accounting system. In this academic context, however, earnings quality is considered a consequence of manipulation and not the accounting system. As such, high accruals, suggesting low earnings quality, are warning signs of earnings manipulations. The concept of the accrual anomaly is subsequently introduced, where securities whose current earnings consist of lower levels of accruals and higher levels of cash flows experience stronger future earnings and hence higher share price performance. In other words, the market penalises highly managed firms with lower share price performance.

A review of the methods and motivations behind earnings manipulations is presented. Motivations include transactions involving management buyouts, equity offers, mergers, contract covenants, industry-specific regulations and anti-trust regulations. The accounting practices and a review of the earnings management studies in South Africa follow. Although South Africa is recognised for its strength in reporting standards, auditing and investor protection, the FSB and the FRIP have reported numerous cases of earnings management.

The next chapter outlines the comprehensive attempts to measure earnings quality in the literature. An appropriate measure of earnings management for this study is then selected. The documented consequences of earnings quality are also outlined.

Chapter Three

DETERMINANTS AND CONSEQUENCES OF EARNINGS QUALITY

3.1 Introduction

The previous chapter reviews the earnings management and earnings quality literature, describing theory as well as evidence from prior studies. The purpose of this chapter is to examine the various specific proxies and determinants that have previously been applied to measure earnings quality/management, and in so doing, to propose an earnings quality measurement that is most suitable for application in the context of this study. The consequences of earnings quality are also discussed.

3.2 Proxies and determinants of earnings management

Since earnings management is inherently designed, by definition, to deceive, it is an intrinsically unobservable process. Proxies are, therefore, required to make inferences. Early research on the detection of earnings management, such as Watts and Zimmerman (1978), concentrates on the analysis of changes in accounting methods that are usually observable to outside stakeholders (for an overview of the early research on earnings management, see Watts (1998)). Therefore, it is unsurprising that these studies are generally unsuccessful in finding the assumed manipulation.

The proxies for earnings management have taken many forms in the literature. Francis, LaFond, Olsson and Schipper (2004) and Dechow et al. (2010) apply eight measures of earnings quality, referred to as earnings attributes. These earnings attributes are categorised into a taxonomy of “accounting-based” or “market-based” measures depending on the assumptions made about the function of financial reporting. The accounting-based measures are accrual quality, persistence, predictability and smoothness. The market-based attributes are conservatism, timeliness, relevance and reliability.

The accounting-based measures apply earnings or accruals (or any other measures that can be derived from these, such as cash flows) as a starting point and are estimated using accounting data only. The market-based measures use share prices as the reference construct

and rely on both accounting information and security returns for their estimation. Specifically, as Francis et al. (2004) note, the accounting-based earnings quality measures assume that the function of earnings is to allocate cash flows to reporting periods through accruals whilst the market-based earnings quality measures assume that the function of earnings is to reflect economic income as represented by share returns.

The review of earnings quality measures which follows focuses on the accounting-based attributes, and more specifically on accrual quality, as these have been the most widely applied measures in the earnings management literature. This is followed by with a short presentation on the alternative earnings management methods that have also been used in prior studies. Finally, an appropriate measure is selected for the present study.

3.2.1 Accrual quality as a determinant of earnings management

As discussed in the previous chapter, earnings consist of “harder” numbers - cash flows - and “softer” numbers - accruals - and accruals are generally divided into two components in the earnings management literature: discretionary (or abnormal) accruals and non-discretionary accruals. It is the former that is the most often used proxy for earnings management since they are assumed to be the result of managerial discretion. Schipper (1989) and Dechow (1994), however, note the difficulty involved in separating accruals into discretionary and non-discretionary components.

It is the nature of the assumed constructs of the earnings management process that discretionary accruals cannot be observed directly from the underlying financial statements. They have to be estimated using some kind of model. These models are generally postulated on an expectation of the level of non-discretionary accruals and any deviation from the expected level is assumed to consist of discretionary accruals. Non-discretionary accruals are generally estimated, in early models, from the firm’s past accrual levels during periods when no systematic earnings management is assumed: this is called an estimation period. Healy's (1985) seminal study analyses earnings management incentives in the context of managerial compensation using this approach. DeFond and Jiambalvo (1994) note that an alternative starting point is to use a cross-sectional approach where a firm’s normal level of accruals in a period is given by a comparable firm’s accruals during the same period. The period in which earnings management is assumed is called the event period. The problem

remains, however, that in both the time-series and cross-sectional approaches, accruals change due to business circumstances. Nonetheless, as pointed out by Spohr (2005) and this chapter, the more recent models try to correct for these changes with parameters that supposedly adjust the expected accruals to changes in business conditions.

Healy's (1985) model starts with total working capital accruals (total accruals) estimated from period-to-period changes in the balance sheet and the current year income statement as shown in Equation 3.1. Chan et al. (2006) use a similar measure of total accruals.

Equation 3.1: Healy's (1985) measure of total accruals

$$TA_{i,t} = \frac{(\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dep_t)}{A_{t-1}}$$

where

$TA_{i,t}$ are the total accruals for firm i in period t ,

ΔCA_t is the change in current assets from $t-1$ to t ,

ΔCL_t is the change in current liabilities from $t-1$ to t ,

$\Delta Cash_t$ is the change in cash and cash equivalents from $t-1$ to t ,

ΔSTD_t is the change in short-term debts included in current liabilities from $t-1$ to t ,

Dep_t is the depreciation and amortisation expense in period t , and

A_{t-1} is the lagged total assets

Healy (1985) assumes that systematic earnings management occurs in every period and proceeds to test his hypothesis by arranging the observations in sample groups based on their hypothesised earnings management levels (whether earnings are managed upwards or downwards). The non-discretionary accruals are then estimated as the mean total accruals from the estimation period as shown in Equation 3.2.

Equation 3.2: Healy's (1985) measure of non-discretionary accruals

$$NDA_{i,\tau} = \frac{\sum_t TA_{i,t}}{T}$$

where

$NDA_{i,\tau}$ is the estimated non-discretionary accruals for firm i ,

τ is a year subscript indicating a year in the event period,

$TA_{i,t}$ is the total accruals scaled by lagged total assets for firm i , and

t is given as $1, 2, \dots, T$ is a year subscript for years included in the estimation period

The difference between the total accruals estimated in Equation 3.1 and the non-discretionary accruals estimated in Equation 3.2 reveals the discretionary accruals. In other words, any deviation from the average is seen as earnings management.

DeAngelo (1986) extends the Healy (1985) model by estimating a firm's non-discretionary accruals from its previous period total accruals. The DeAngelo (1986) measure is therefore a time-series version of the Healy (1985) model, where total accruals are only dependent on the previous year's total accruals instead of the average of the years in the estimation period. The DeAngelo (1986) measure of discretionary accruals is presented in Equation 3.3.

Equation 3.3: DeAngelo's (1986) measure of discretionary accruals

$$NDA_{i,t} = \frac{TA_{i,t-1}}{A_{i,t-1}}$$

$$DAC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - NDA_{i,t}$$

where

$DAC_{i,t}$ is discretionary accruals for firm i , and

$NDA_{i,t}$, $TA_{i,t}$, and $A_{i,t}$ have the same meaning as Equations 3.1 and 3.2

A common feature of the Healy (1985) and DeAngelo (1986) models is the use of total accruals as proxy for earnings management. It seems unlikely that accruals remain constant over time, due to the nature of the accrual process. As Dechow et al. (1995) note, the two models estimate non-discretionary accruals without error only if non-discretionary accruals are constant over time and discretionary accruals have a mean of zero. This is an unlikely proposition, and therefore a key disadvantage of both previous methodologies is that changes in business conditions that affect accruals are not taken into account.

Friedlan (1994) was the first to relax the assumption that non-discretionary accruals remain the same across business circumstances. By scaling accruals to sales, Friedlan (1994) assumes non-discretionary accruals to be proportional to operating activity as measured by sales or revenues. One of the major advantages of this methodology, which has become known as the modified DeAngelo model, is that it does not require as much data as the original DeAngelo (1986) model. In addition, in contrast to other simple models, it allows non-discretionary accruals to fluctuate between periods due to changes in business conditions. In the modified DeAngelo model, non-discretionary accruals and discretionary accruals are produced from the following equation:

Equation 3.4: Friedlan's (1994) (modified DeAngelo) measure of discretionary accruals

$$NDA_{i,t} = \frac{TA_{i,t-1}}{Rev_{i,t-1}}$$

$$DAC_{i,t} = \frac{TA_{i,t}}{Rev_{i,t-1}} - NDA_{i,t}$$

where

$Rev_{i,t-1}$ is the lagged revenues or sales, and

$DAC_{i,t}$, $NDA_{i,t}$, TA_i , and A_i have the same meaning as Equations 3.1, 3.2 and 3.3

Notwithstanding the Friedlan (1994) extension of the DeAngelo (1986) measure, the most widely cited accrual estimation model in the earnings management literature is Jones (1991). This model relaxes the assumption that non-discretionary accruals are constant. Non-

discretionary accruals are estimated using ordinary least squared regressions with changes in sales and the level of property, plant and equipment as explanatory variables. Jones (1991) estimates the regression parameters using data varying between 14 and 32 years per firm in the estimation period. Non-discretionary accruals (scaled by lagged total assets) from the model are then estimated as follows in Equation 3.5:

Equation 3.5: Jones's (1991) measure of non-discretionary accruals

$$\frac{NDA_{i,t}}{A_{i,t-1}} = \beta_{0,i} \frac{1}{A_{i,t-1}} + \beta_{1,i} \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \beta_{2,i} \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where

$\Delta Rev_{i,t}$ is the change in credit sales from period t-1 to t for firm i,

$PPE_{i,t}$ is the gross property, plant and equipment,

$\beta_0, \beta_1, \beta_2$ are the firm-specific parameters,

$\varepsilon_{i,t}$ is the error term for firm i in year t, and

$NDA_{i,t}$ and A_i have the same meaning as Equations 3.1 and 3.2

The parameter estimates from Equation 3.5 are then combined with data from the event period to generate the discretionary accruals in Equation 3.6:

Equation 3.6: Jones's (1991) measure of discretionary accruals

$$DAC_{i,t} = \frac{NDA_{i,t}}{A_{i,t-1}} - \left[\beta_{0,i} \frac{1}{A_{i,t-1}} + \beta_{1,i} \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \beta_{2,i} \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \right]$$

where

$DAC_{i,t}, NDA_{i,t}, A_i, \Delta Rev_{i,t}, PPE_{i,t}, \beta_0, \beta_1, \beta_2$ and $\varepsilon_{i,t}$ have the same meaning as Equations 3.1, 3.2 and 3.5

Since Jones (1991), numerous attempts have been made to enhance the model. One of which has been made by Dechow et al. (1995) who argue that sales are often subject to earnings management through inflated receivables. As such, the second parameter of the Jones's (1991) model is improved by the inclusion of changes in account receivables. Dechow et al. (1995) suggest that it is easier to manage earnings by exercising discretion over the recognition of revenue on credit sales rather than manage earnings by exercising discretion over the recognition of revenue on cash sales. This model is more commonly known as the modified Jones model and is presented in Equation 3.7:

Equation 3.7: Modified Jones measure of discretionary accruals

$$\frac{NDA_{i,t}}{A_{i,t-1}} = \beta_{0,i} \frac{1}{A_{i,t-1}} + \beta_{1,i} \frac{\Delta Rev_{i,t} - \Delta Rec_{i,t}}{A_{i,t-1}} + \beta_{2,i} \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

$$DAC_{i,t} = \frac{NDA_{i,t}}{A_{i,t-1}} - \left[\beta_{0,i} \frac{1}{A_{i,t-1}} + \beta_{1,i} \frac{\Delta Rev_{i,t} - \Delta Rec_{i,t}}{A_{i,t-1}} + \beta_{2,i} \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \right]$$

where

$\Delta Rec_{i,t}$ is the net receivables in year t less receivables in year t-1 and,

$DAC_{i,t}$, $NDA_{i,t}$, A_i , $\Delta Rev_{i,t}$, $PPE_{i,t}$, β_0 , β_1 , β_2 and $\varepsilon_{i,t}$ have the same meaning as Equations 3.1, 3.2 and 3.5

Kang and Sivaramakrishnan (1995) also propose a suggested enhancement to the Jones (1991) model called the “instrumental variable model”. This model estimates non-discretionary accruals by using cost of sales and other expenses in addition to the other explanatory variables in the Jones (1991) model. However, instead of the ordinary least squared regression used by Jones (1991), it applies an instrumental variable approach (a method used to control for confounding and measurement error in ordinary least squares) to obtain the parameter estimates. Although Kang and Sivaramakrishnan (1995) estimate that the model yields more robust and powerful results of earnings management than the Jones (1991) model, its use has been predominantly limited due to its extensive data requirements and complexity. Kothari et al. (2005) also advocate abandoning the linear ordinary least squared regressions model.

Further developments to the Jones (1991) model were made by Teoh et al. (1998a), Kasznik (1999), Dechow, Richardson and Tuna (2003) and Kothari et al. (2005). Teoh et al. (1998a) propose that the depreciation expense included in the calculation of total accruals may be unsuitable for earnings management, which has led many academics to use the Jones (1991) model based on current accruals by eliminating the parameter of property, plant and equipment. Kasznik (1999), on the other hand, includes a parameter for changes in cash flows, while Kothari et al. (2005) use a version with a parameter of lagged return on assets to control for the effect that performance has on accruals.

The forward-looking model, developed by Dechow et al. (2003), innovates on the Jones (1991) model in three ways. First, it treats a portion of credit sales as non-discretionary. The parameter “k” in Equation 3.8, measures the sensitivity of the change in non-discretionary accounts receivables to sales. Hence, “k” is 0 if all the changes in accounts receivables are discretionary and “k” equals 1 if all the changes are non-discretionary. McNichols (2000) additionally notes that accruals of growth firms, which are often characterised by high growth in sales and high normal accruals, may be incorrectly classified as discretionary accruals. As such, the inclusion of the parameter “k” counters this issue. The second improvement is the addition of lagged accruals in the regression as past accrual controls for reversals in the current period. Beneish (1997, p.296) states that “the evidence thus far indicates that... the accruals model’s ability could be enhanced by adding lagged total accruals”. Dechow et al. (2003) show that this innovation increases the adjusted R^2 of the model from 9.3% to 17.2%. Lastly, the model shows that some discretionary accruals arise from changes in business decisions. An example would be if management expects an increase in sales, they are likely to build up inventory in anticipation. This would in turn increase non-discretionary accruals. Ronen and Yaari (2008) report that the failure to recognise the demand for higher levels of inventory would lead to erroneously classifying non-discretionary accruals as discretionary accruals. Hence, Dechow et al. (2003) control for the growth in sales. The inclusion of the third innovation further increases R^2 to 20%. The non-discretionary accruals of the forward-looking model are given in Equation 3.8.

Equation 3.8: The forward-looking model

$$\frac{NDA_{i,t}}{A_{i,t-1}} = \beta_{0,i} \frac{1}{A_{i,t-1}} + \beta_{1,i}(1+k) \frac{\Delta Rev_{i,t} - \Delta Rec_{i,t}}{A_{i,t-1}} + \beta_{2,i} \frac{PPE_{i,t}}{A_{i,t-1}} + \beta_{3,i} \frac{TA_{i,t-1}}{A_{i,t-1}} + \beta_{4,i} \frac{GR_Rev_{i,t+1}}{Rev_{i,t}}$$

where

k is the slope coefficient from the regression of ΔAR on ΔRev ,

$GR_Rev_{i,t}$ is the change in firm i 's sales / revenues from year t to $t+1$,

$Rev_{i,t}$ is firm i 's sales / revenues for year t , and

$TA_{i,t}$, $NDA_{i,t}$, A_i , $\Delta Rec_{i,t}$, $PPE_{i,t}$, β_0 , β_1 , β_2 , β_3 , β_4 and $\varepsilon_{i,t}$ have the same meaning as Equations 3.1, 3.2 and 3.6

This multitude of different models for estimating discretionary accruals gives an indication of the difficulties that arise when estimating parameters that cannot be verified. Dechow et al. (1995), Guay, Kothari and Watts (1996), McNichols (2000), Peasnell, Pope and Young (2000) provide evidence that these earnings management models lack the power to find earnings management and are also often wrongly specified.

In their review of earnings management methods, Dechow et al. (1995) test the time series version of the Jones (1991) model on a sample where they have artificially induced earnings management and report that the model is able to detect earnings management in less than 30% of the scenarios. In testing the cross-sectional version of the Jones (1991) model, Peasnell et al. (2000) state that the detection can be as high as 40% of the cases.

Spohr (2005, p.19) notes that, “the fact that discretionary accruals models are incorrectly specified means that discretionary accruals are wrongly estimated and if these errors in estimation are connected to the partitioning variable that predicts the earnings management direction, the conclusion regarding earnings management may be wrong”. Young (1999) finds that the error in estimating discretionary (or non-discretionary) accruals estimates to be least correlated to earnings, cash flows, sales growth and fixed asset structure. Spohr (2005) concludes, however, that as long as the attributes introducing the bias to discretionary

accruals exists in both the firms tested for earnings management and the control sample, the evidence obtained of earnings management is not necessarily misleading. It simply further points out that if the test sample differs from its benchmark with regard to the characteristics that systematically produce errors in discretionary accruals estimates, the results are then likely to be biased.

3.2.2 Alternative measures to estimate earnings quality

The earnings management literature has considered many non-accrual approaches to estimate earnings quality. Ronen and Yaari (2008) identify three prominent ones: a single-statement item, examining the distribution of firms' earnings, and examining the distribution of the second digit of the decimal in the earnings per share (EPS) calculation. Other alternative measures of earnings quality are also discussed.

The analysis of a single account focuses on the examination of a particular income statement line item. Generally, for a specific line item to be chosen its manipulation must have a material impact on earnings and managers must legally be able to alter the line item within the boundaries of accounting standards. Ronen and Yaari (2008) further note that the examination of a single account (rather than total accruals) can be advantageous as the analyst understands the accounting model and can easily estimate what the unmanaged expense ought to be. Daley and Vigeland (1983) and Aboody and Lev (1998) compare the treatment of research and development (capitalising or expensing) to companies' dividend restrictions. Strong and Meyer (1987) and Cohen, Dey and Lys (2005) examine inventory write-offs whilst McNichols and Wilson (1988) investigate bad debt expense and Roychowdhury (2006) analyses the loss reserves of property and casualty insurance companies. Stubben (2010) investigates earnings management using a discretionary revenue measure (more specifically premature revenue recognition) and finds that the revenue model is more likely to detect revenue and expense manipulation than an accruals model. However, examining a single accounting item at a time gives a limited picture of a firm's earnings management practices.

The distributional approach is supported by Burgstahler and Dichev (1997). The approach assumes that unmanaged earnings follow a Gaussian (more commonly known as normal) distribution, and the evidence for earnings management is the deviation of observed earnings

from the distribution. Studies that have used this approach, for example Jacob and Jorgensen (2007), show that there is a kink in the distribution function of the earnings management object around the benchmark.

Thomas (1989) considers the “rounding EPS” approach. In this approach, firms express their EPS as a decimal, with two digits after the point: $xx.yz$. Thomas (1989) considers that firms can alter EPS by changing z so that the EPS amount can be rounded up or down depending on whether they wish to increase or decrease EPS. Researchers test the distribution of z by comparing the actual object of earnings management with the hypothesised distribution free of earnings management. Das and Zhang (2003) and Kinnunen and Koskela (2003) consider similar methodologies using United States firms and on an international basis respectively. Das and Zhang (2003) find, after examining the first digit after the decimal point y , that firms adjust y by more or less four digits.

Beneish (1997) formulates a probit model designed to detect firms falling victim to earnings management by distinguishing manipulated from non-manipulated earnings using 1989 companies during the 1987-1993 period. The Beneish (1997) model is based on variables assessing the likelihood of detection and variables that are used as proxies for their ability and incentive to violate accounting standards. The variables assessing the likelihood of detection are: days’ sales in receivables, gross profit margin, asset quality, depreciation, sales, general and administration expense, and total accruals to total assets. The variables used as proxies for their ability and incentive to violate accounting standards are: capital structure, prior market performance, time listed, sales growth and a dummy variable for accrual and declining cash sales. Morgan Stanley (2011) uses a similar methodology to develop an earnings quality score.

Skinner (2008), on the other hand, uses dividend information to test the quality of earnings. Dividend theory would suggest that part of the basis for a firm’s dividend declaration is an evaluation of how sustainable its earnings will be. Because high quality earnings would exhibit high persistence, it would follow that dividend policy should have a good correlation with earnings quality. Skinner (2008) finds that firms that pay dividends have a stronger relationship between current and future earnings than firms that do not. The size of the dividends is also important; firms that tend to pay large dividends are inclined to have higher earnings quality. Furthermore, Skinner (2008) also provides evidence of a size effect; large

firms that pay high dividends have better earnings quality than smaller companies that pay high dividends.

DeFond (2010) provides a potentially attractive alternative to accruals as a proxy for earnings quality: earnings restatement and accounting, and auditing enforcement release. DeFond (2010, p.404) argue that an advantage of using companies subject to regulatory-imposed restatements is that they are direct proxies of earnings management since they are “actual events, rather than error terms from a statistical method that cannot be validated”. However, the disadvantage of this method is that it only captures poor earnings quality that has both been discovered and judged to merit restatement from governing bodies.

Lastly, Dichev, Graham, Harvey and Rajgopal (2013, p.2) use a different approach to evaluate earnings quality since “archival research cannot satisfactorily parse out the portion of managed earnings from the portion resulting from the fundamental earnings process”. The authors provide insights, through surveys and interviews from the direct producers of earnings quality, such as Chief Financial Officers (CFOs), investment managers and analysts. Dichev et al. (2013) show that CFOs consider that most earnings management occurs in an attempt to sway share prices in order to meet earnings benchmarks or to influence their compensation contracts. But they point out that about half of the factors responsible for earnings quality are beyond management control, for example business models, industry, and macro-economic conditions. Dichev et al. (2013, p.1) also find evidence that roughly 60 percent of earnings management is income-increasing and the remainder is income-decreasing.

3.2.3 Selecting an appropriate measure of earnings management

Under the conventional interpretation, high accruals - suggesting low earnings quality - are redolent of earnings manipulations by managers. The preceding sections, however, have demonstrated how discretionary accruals have been shown to be “noisy” proxies for earnings management. Nonetheless, Teoh et al. (1998a) conclude that they remain the most accurate and acceptable measures in the earnings management literature to establish an overall picture of the earnings management practices of a firm and to predict future returns in this context. The alternatives measures noted in section 3.2.2, while more effective at discovering earnings management, only offer a limited picture of the earnings management practices of

a firm and provide an attractive alternative for future research in evaluating specific earnings management practices in a South African context.

This study follows the methodologies of Chan et al. (2006) and Bender and Nielsen (2013) and uses total accruals to measure earnings management for two reasons. Firstly, due to the inherent difficulty and imprecision observed in the above sections in separating discretionary accruals from total accruals. Secondly, because Xie (2001) and Dechow et al. (2003) demonstrate that the cross-sectional correlation between estimated discretionary accruals (from total accruals) and total accruals is very high, ranging from 0.75 and 0.89.

In order to improve the robustness of conclusions, this study uses two measures of total accruals: a balance sheet method, using consecutive changes in the balance sheet items, and a cash flow method, using data items from the statement of cash flows. The two approaches are presented in Equations 3.9 and 3.11.

The balance sheet approach to estimating accruals ($\text{Accruals}_{\text{BS}}$) finds its origins in the early works of Healy (1985) as indicated earlier in this chapter. Subsequently, a large body of research has used this definition that focuses on estimating deviations in working capital accruals; see for example, Dechow et al. (1995), Sloan (1996), Chan et al. (2006). $\text{Accruals}_{\text{BS}}$ (Equation 3.9) is estimated using information from period-to-period changes in the balance sheet and the current period income statement.

Equation 3.9: Balance sheet measure of accruals ($Accruals_{BS}$)

$$\begin{aligned} Accruals_{BS} &= (\Delta CA) - (\Delta CL) - Dep \\ &= (\Delta AR + \Delta Inv + \Delta OCA) - (\Delta AP + \Delta OCL) - Dep \end{aligned}$$

where

ΔCA is the change in non-cash current assets from t_{-1} to t ,

ΔCL is the change in current liabilities excluding short-term debt and taxes payables from t_{-1} to t , and

Dep is depreciation and amortisation expense in t

The components are further defined as

ΔAR is the change in accounts receivables from t_{-1} to t ,

ΔINV is the change in inventories from t_{-1} to t ,

ΔOCA is the change in other noncash current assets from t_{-1} to t ,

ΔAP is the change in accounts payables from t_{-1} to t , and

ΔOCL is the change in other current liabilities, excluding tax payable and short-term debt, from t_{-1} to t

As the magnitudes of all the items in Equation 3.9 vary with the overall size of the firm's balance sheet, this study follows the accounting literature and scales each item by average total assets (see Equation 3.10).

Since the definition of earnings used in this study does not include a charge for interest expense (section 4.2.2.2), total assets is an appropriate book measure of the investment base used to generate earnings. Sloan (1996) considers other deflators such as market value of equity and the book value of the net assets generating the accruals. However, each of these deflators introduces complications. Fama and French (1992) find that market values are systematically associated with subsequent stock returns, and so deflating by market value may itself induce an association with subsequent returns. Sloan (1996) notes that the book value of net assets is problematic because it can take values that are negative, producing economically meaningless figures.

Equation 3.10: Average total assets (ATA)

$$ATA = \frac{total\ assets_{t-1} + total\ assets_t}{2}$$

where

ATA is the average total assets,

$total\ assets_{t-1}$ are the total assets at the beginning of the financial year, and

$total\ assets_t$ are the total assets at the end of the financial year

Hribar and Collins (2002) indicate that total accruals can be calculated using information from consecutive balance sheets or from the statement of cash flows. While most prior research has concentrated on estimating accruals from the balance sheet, Hribar and Collins (2002) argue that the cash flow method is preferred because of events such as mergers and acquisitions bypassing the income statement. Hribar and Collins (2002) estimate accruals as follows in Equation 3.11. Dechow and Ge (2006) adopt a similar model.

Equation 3.11: Hribar and Collins's (2002) cash flow measure of accruals

$$TA_{i,t} = \frac{(EBXI_{i,t} - CFO_{i,t})}{A_{i,t-1}}$$

where

$TA_{i,t}$ are the total accruals for firm i in period t ,

$EBXI_{i,t}$ is the earnings before extraordinary items and discontinued operations for firm i in period t ,

$CFO_{i,t}$ is the operating cash flows for firm i in period t , and

$A_{i,t-1}$ are the lagged total assets

As with the balance sheet approach, earnings and cash flows are both standardised by average total assets (Equation 3.10) to enhance cross-sectional comparability. While conceptually equivalent, the two approaches will not generate the same amounts, mainly due

to gains and losses from sales of non-current assets (property, plant and equipment) and investments and other funds from operations.

3.3 Consequences of the quality of earnings

Dechow et al. (2010), among others, have investigated the consequences of the quality of earnings in various categories, including performance, audit opinions, labour market outcomes, executive compensation and corporate governance. A summary is presented below.

3.3.1 Earnings quality and firm performance

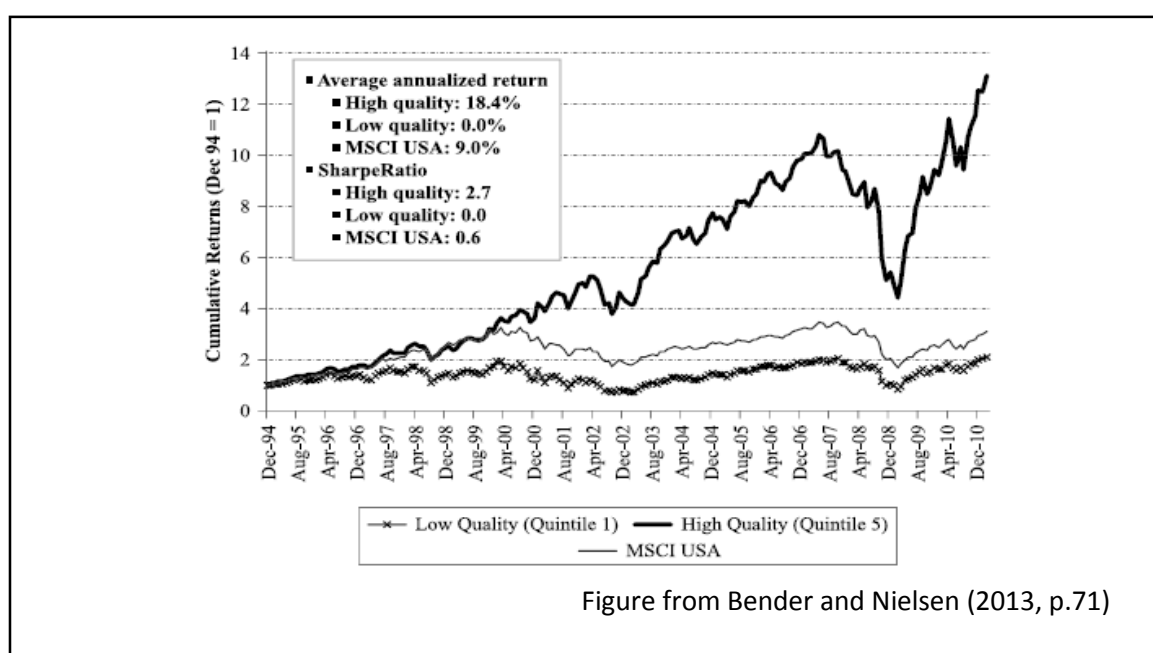
Empirical evidence suggests that earnings quality is related to firm performance; see for example, Lipe (1986), Collins and Kothari (1989), Imhoff Jr. (1992), Sloan (1996), Penman and Zhang (2002), Chan et al. (2006), Huang et al. (2009) and Bender and Nielsen (2013). Lipe (1986) analyses the relationship between components of earnings and performance and finds that the persistence measure of earnings is positively associated with firm performance. Similarly, Ou and Penman (1989), Bernard and Thomas (1990) and Sloan (1996) show that the low persistence of accruals translates into low persistence in earnings, resulting in lower share returns than firms whose earnings consist of more cash flows and fewer accruals. Penman and Zhang (2002), on the other hand, use abnormal returns as a measure of firm performance and conclude that earnings quality is positively rewarded by the market. Equally, Chan et al. (2006) find a positive and reliable association between future stock returns and earnings quality and Huang et al. (2009) estimate that lower levels of earnings quality decreases firm performance.

Bender and Nielsen (2013) present recent evidence to confirm that the high earnings quality portfolios outperform low earnings quality portfolios in the United States. Using the ratio of accruals to total assets as a measure of earnings quality, Bender and Nielsen (2003) rank shares quarterly and form decile portfolios based on these rankings. The authors demonstrate, as shown in Figure 3.1, that high quality portfolios exhibit strong long-run performance, with an average annualized return of 18.4 percent from December 1994 to March 2011, while low quality portfolios earn an average annualized return of zero percent during the same period. Additionally, the Sharpe ratio is 2.7 for the high quality portfolio, reflecting relatively low levels of volatility. Figure 3.1 shows the cumulative returns of the

top and bottom earnings quality deciles (monthly returns from December 1994 to March 2011).

The present study also aims to estimate whether high earnings quality South African listed companies, estimated by total accruals scaled by total assets, perform better (measured through equity returns) than low earnings quality firms in the 2007-2014 return period. In other words, the goal of this study is to establish the presence of the accrual anomaly in a South African context.

Figure 3.1: Bender and Nielsen's (2013) cumulative portfolio returns



3.3.2 Earnings quality and corporate governance

Fama and French (1992) suggest that higher standards of corporate governance increase investors' confidence as there is a decreased risk of corporate mismanagement. Kim et al. (2012) agree and report that firms with higher levels of corporate social responsibility tend to constrain earnings management by behaving in a more responsible manner and subsequently deliver more reliable and transparent accounting information to external stakeholders. Furthermore, Kim et al. (2012) establish that companies with high governance standards engage in less earnings management (both through accrual manipulation and real operating activities) and are less likely to be subject to investigations by regulators.

3.3.3 Earnings quality and other consequences

Dechow et al. (2010) consider nine further consequences of earnings quality, many of which were mentioned in the previous chapter. These consequences are namely: litigation propensity, audit opinions, market valuations, executive compensations, labour market outcomes, the firm's cost of equity capital and cost of debt capital and lastly, analyst forecast accuracy. The association of earnings quality with each consequence is presented as follows.

Francis and Krishnan (1999) find evidence that firms with high accruals are more likely to get modified audit opinions. Palmrose and Scholz (2004) use restatements as a measure of earnings quality and conclude that restatements increase the likelihood of a subsequent litigation. Additionally, Dechow et al. (2010) note that companies with high abnormal accruals, as a result of earnings management, also enjoy a negative relationship between earnings quality and litigation propensity.

Francis et al. (2004) find that the predictability and smoothness properties of earnings are positively related to the cost of equity capital while earnings persistence is not. Empirical research has also demonstrated that the cost of debt seems to be higher when the earnings quality of firms is lower. Furthermore, Francis, LaFond, Olsson and Schipper (2005) discern that firms with lower earnings quality have inferior interest cover ratios and similarly, lower Standard and Poor credit ratings. Myers, Myers and Skinner (2007) estimate that firms that meet or beat earning targets are rewarded with higher valuations, despite the fact that earnings management might be the reason for beating the targets.

Dechow et al. (2010) add that empirical research has also found an association between different earnings quality proxies and investment efficiency. For example, Biddle and Hilary (2006) point out that high earnings quality reduces information asymmetry between managers and outside stakeholders and thus improves investment efficiency. Nwaeze, Yand and Yin (2006) find that pay-for-performance sensitivities in estimating executive compensation are positively related to various measures of earnings persistence. Desai, Hogan and Wilkins (2006) suggest that there are significant labour market consequences for executives at firms with low earnings quality. Cheng and Farber (2008), on the other hand, suggest that earnings quality, measured by timeliness and restatements, are associated with compensation contract design and ex post re-contracting.

3.4 Conclusion

This chapter reviews the proxies and determinants used in evaluating earnings quality and earnings management. Proxies are categorised in the literature as either accounting-based or market-based measures. The review of earnings quality measures focuses on the accounting-based attributes, and more specifically on accrual quality, as these have been the most widely applied measures in the earnings management literature.

Accruals consist of two components: discretionary accruals and non-discretionary accruals. It is the former that is the most widely used proxy for earnings management as they are assumed to be the result of management's discretion. Early models focused on total accruals as a proxy for discretionary accruals until the Jones (1991) model was developed. The Jones (1991) model is the most widely cited measure of earnings management but is subject to numerous limitations as emphasised by the many derivations that attempt to improve the model. Examples of such models are the modified Jones model, the forward-looking model, the instrumental variable model.

Alternative measures of earnings quality are also presented such as the analysis of a single income statement line item, the distributional approach, the "rounding EPS" approach, dividend information, earnings restatement and accounting, and auditing enforcement release. While being highly effective at detecting earnings management, these models provide a restricted overview of the earnings manipulations of a firm.

Consequently, this study selects total accruals as its measure of earnings quality. Total accruals are highly correlated with discretionary accruals and provide a complete picture of the earnings management practices of a firm. In order to increase the robustness of the tests, two measures of total accruals are employed: a balance sheet approach and a cash flow method.

The consequences of earnings quality, with an emphasis placed on performance, are also discussed. Empirical studies (mostly in developed markets) have found a positive association between earnings quality and subsequent returns. Earnings quality also vary with the level of corporate governance of companies. Other consequences of earnings quality include litigation propensity, audit opinions, market valuations, executive compensations, labour market outcomes, the firm's cost of equity capital and cost of debt capital.

The next chapter outlines the methodology used to find evidence for the following: firstly, that the South African market reacts to the earnings management practices of listed companies and rewards high earnings quality securities with higher future equity returns, and secondly to establish whether the accrual anomaly is present amongst both growth and value securities.

Chapter Four

METHODOLOGY AND DATA

4.1 Introduction

Chapter Three describes the proxies and determinants used in the literature in evaluating earnings quality and earnings management, and in so doing, an appropriate measure of earnings quality is selected for this study. The consequences of earnings quality, with an emphasis placed on performance, are also presented.

This chapter outlines the research approach and the empirical methods and data used in this study to test the relationship between future equity returns and earnings quality, with current period accruals as a proxy. Specifically, this chapter describes the methodology used to find evidence that the market reacts to the earnings management practices of South African listed companies and punishes highly managed firms with lower future equity returns in the 2007-2014 return period. This chapter also presents the methodology used to establish the presence of the accrual anomaly in both growth shares and value securities. It is postulated that the former are most at risk of earnings manipulation during the global financial crisis.

Section 4.2 explains how equity returns are evaluated, cross-sectionally, on portfolios of shares sorted by accruals to establish whether the accrual anomaly can be observed during the 2007-2014 period. It also sets out the criteria for securities to qualify for inclusion in this study. The two measures of accruals selected in the previous chapter in order to estimate earnings management are further explained.

Section 4.3 demonstrates how firms are sorted by growth and value into portfolios of shares, in order to establish whether the accrual anomaly can be observed among both growth and value shares.

Sections 4.4 describes how returns differences are estimated among portfolios to establish the presence of the accrual anomaly.

4.2 Method used to find evidence of the ability of earnings manipulation to predict cross-sectional returns: the accrual anomaly

The present research adopts an empirical paradigm and consequently uses a quantitative approach to investigate the phenomena identified in the goals of the research. The method applied in carrying out the research are dealt with as follows below:

1. the collection of data;
2. the ranking and division of securities into ten sub-groups (deciles) according to:
 - i. balance sheet accruals, and
 - ii. cash flow accruals, in order to separate companies into different levels of earnings quality;
3. the filtering of companies; and
4. the measurement of company and portfolio returns

4.2.1 The collection of data

This study is conducted on all companies listed on the Main Board of the JSE Limited and its alternative exchange, AltX, which qualify for inclusion in portfolios, as is subsequently outlined in this chapter. As is common for research in a South African context, financial statement information, share prices, dividends and corporate events are obtained from the online database of McGregor BFA (McGregor).

4.2.2 The division of each portfolio by accruals

Earnings are considered to be of higher quality when they exhibit persistence, for instance, when the reported level of earnings can be sustained. Following Sloan (1996), Chan et al. (2006) and Bender and Nielsen (2013), this study focuses on accounting accruals, which has gained attention as an important indicator of earnings quality. As explained in the previous chapter, this study examines total accruals and not discretionary accruals.

The relationship between accruals and future returns has been widely documented in the literature and is more commonly referred to as the accrual anomaly (see section 2.7). The accrual anomaly, as introduced by Sloan (1996), refers to the empirical fact that current level of accruals are negatively related to returns over the following year, suggesting that the market fails to contemplate that the accrual component of earnings is less persistent than its

cash flow component. Consequently, the market appears to overreact to earnings that contain a large accrual component. The over-reaction is subsequently reversed when earnings are reported in the following year when the market learns that the earnings of the previous period are not sustainable.

In order to increase the robustness of conclusions, this study uses two approaches for generating accruals: a balance sheet method, using consecutive changes in balance sheet items, and a cash flow method, using data items from the statement of cash flows.

4.2.2.1 Balance sheet approach to accruals

The balance sheet approach to estimating accruals ($\text{Accruals}_{\text{BS}}$) finds its origins in the early works of Healy (1985) and has since been adopted by Dechow et al. (1995), Sloan (1996) and Chan et al. (2006). $\text{Accruals}_{\text{BS}}$, from Equation 3.9, is reproduced below as Equation 4.1 for ease of reference. As previously noted, each item is scaled by average total assets (Equation 3.10).

McGregor (2014) discloses total assets (line item 01010040) as the sum of all assets employed by a company or group, with the exclusion of intangible assets and cost of control of subsidiaries. The online service uses this figure in their estimates of ratios. As a result, this study uses line item 01010040 from the online database as its measure of total assets.

Equation 4.1: Balance sheet accrual measure ($Accruals_{BS}$)

$$\begin{aligned} Accruals_{BS} &= (\Delta CA) - (\Delta CL) - Dep \\ &= (\Delta AR + \Delta Inv + \Delta OCA) - (\Delta AP + \Delta OCL) - Dep \end{aligned}$$

where

ΔCA is the change in non-cash current assets from t_{-1} to t

ΔCL is the change in current liabilities excluding short-term debts and tax payable from t_{-1} to t and,

Dep is the depreciation and amortisation expense in t

The components are further defined as

ΔAR is the change in accounts receivables from t_{-1} to t

ΔINV is the change in inventories from t_{-1} to t

ΔOCA is the change in other non-cash current assets from t_{-1} to t

ΔAP is the change in accounts payables from t_{-1} to t and,

ΔOCL is the change in other current liabilities, excluding tax payable and short-term debt, from t_{-1} to t

The components of current assets, as required in Equation 4.1, are individually reported by McGregor (2014). Inventories are recorded as total stock (line item 01010026) and comprise of the sum of all inventories on hand, including raw materials, finished goods, merchandise, consumables goods, works in progress and contracts in progress. McGregor (2014) supplies enough information to allow a split of the inventory categories, but since prior studies in the earnings management literature do not make the distinction, this study considers the overall amount. In order to obtain the change in inventory (ΔINV), the inventory amount of the previous year ($t-1$) is subtracted from the current year (t).

McGregor (2014) reports accounts receivable as debtors (line item 01010027) on its online database. Debtors include the total of all outstanding receivables at balance sheet date, including hire purchase debtors. The Companies Act, 71 of 2008 does not require hire purchase debtors to be recorded separately and, as such, McGregor (2014) explains that

many companies do not make the distinction. The debtors are shown net of all provisions for bad debts and unearned finance charges. Accordingly, ΔAR (in Equation 4.1) is estimated as the difference in debtors (line item 01010027) in consecutive years.

The online database also records short-term loans advanced (line item 01010028) among current assets. These are “investments made with the intention to convert into cash within the ensuing twelve-months from the balance sheet date... [and] include, *inter alia*, short-term loans to officers or employees of the Group and also loans, which... fall due for redemption within the next twelve months from balance sheet date” (McGregor, 2014, p.13). Together with cash at bank (line item 01010029), short-term loans are omitted from current assets in Equation 4.1 as they are deemed to be cash and cash equivalents.

Other current assets (line item 01010030), as disclosed by McGregor (2014), include all items that represent a current asset but have not been included as part of the other components above. As with inventories and accounts receivables, ΔOCA is reported as the difference between other current assets between successive years.

McGregor (2014) does not disclose current liabilities as separate line items but instead reports individual items that would normally comply with the definition of current liabilities: short term borrowing (line item 01010032), creditors (line item 0101033), bank overdraft (line item 01010034), provision for taxation (line item 01010035) and provision for distributions (line item 01010036).

The creditors (line item 0101033) include, *inter alia*, all trade payables, other creditors, payments received in advance, and provisions for short-term liabilities (excluding provisions for taxation and dividends). McGregor (2014) also publishes separately trade payables but, as prior literature makes no distinction in the categories of payables qualifying for inclusion, this study considers the overall amount. ΔTP is recorded as the difference in creditors between period-to-period balance sheets.

Sloan (1996) omits debts from current liabilities (short term debts and currently maturing portions of long-term debts) in the estimation of accruals because they relate to financing decisions as opposed to operating transactions. Furthermore, earnings, used in $Accruals_{CF}$, also exclude interest expense, indicating that interest payable should be excluded from accruals. Income tax payable is similarly omitted from accruals for consistency with the definition of earnings employed in the subsequent empirical tests.

Consequently, short-term borrowing (line item 01010032), bank overdraft (line item 01010034), provision for taxation (line item 01010035) and provision for distributions (line item 01010036) are excluded from the estimation of current liabilities. Since McGregor (2014) does not disclose any other current liability, ΔOCL in Equation 4.1, is assumed to be zero.

The depreciation expense is published on the face of the statement of profit or loss and other comprehensive income. McGregor (2014) reports depreciation separately for land and buildings and other non-current assets. As such, depreciation (in Equation 4.1) is calculated as the sum of line items 01020065: depreciation for the period on other fixed assets and 01020066: depreciation for the period on land and buildings.

4.2.2.2 Cash flow approach to accruals

As previously noted, Hribar and Collins (2002) estimate accruals with information taken directly from the statement of cash flows as they are of the opinion that the balance sheet approach is often tainted when companies are involved in merger and acquisition transactions. $Accruals_{CF}$ is presented in Equation 4.2:

Equation 4.2: Cash flow accrual measure ($Accruals_{CF}$)

$$Accruals_{CF} = Earnings_t - Cash\ Flow_t$$

where

$Earnings_t$ is the adjusted net income for year t, and

$Cash\ Flow_t$ is the cash flow from operations for year t

As with $Accruals_{BS}$, all line items are standardised by average total assets (Equation 3.10) to enhance cross-sectional comparability.

Hribar and Collins (2002) define earnings, used in $Accruals_{CF}$, as earnings from continuing operations before extraordinary items but after depreciation expense. Earnings from continuing operations before extraordinary items are measured before interest expense and taxation expense in terms of US Generally Accepted Accounting Practices (US GAAP). McGregor (2014, p.57) reports line item 01020073 as profit before interest and taxation as

the “net profit for the year including realised profits and all losses of an extraordinary nature, but before deducting interest paid on borrowed funds and before providing for taxation for the year”. Paragraph 43(a) of the Companies Act, 71 of 2008, requires firms to report separately all items of an extraordinary or non-recurring nature in the financial statements. However, extraordinary items do not exist under IFRS and consequently no adjustments are made in this regard. Accordingly, earnings used (in Equation 4.2) in this study is calculated as profit before interest and taxation (01020073).

Hribar and Collins (2002) use cash flow from operating activities (CFO) from continuing activities as reported on the face of cash flow statement in their derivation of accruals. McGregor (2014) reports line item 01030711, cash ex operating activities, as operating profit/loss adjusted for depreciation expense and other non-cash items plus interest income and other income and less (plus) any increase (decrease) in working capital. Included in other income, line item 01030705, is income published in the cash flow statement not of an operating nature and consists mainly of income of extraordinary nature not elsewhere disclosed. Since IFRS does not make any distinction for extraordinary items, line item 01030711 is not adjusted. McGregor (2014) publishes cash ex operating activity before adjustments for interest, taxation and dividends. IFRS and US GAAP differ in their treatment of interests and dividends in the statement of cash flows. For example, IFRS allows dividends to be included under either cash flows from operations or cash flows from financing activities while US GAAP only allows for its inclusion in the latter. In order to allow comparisons with international studies, this study uses the unadjusted cash ex operating activities (also referred to as cash generated from operations).

Cash flows (used in Equation 4.2) are hence measured as cash ex operating activity (line item 01030711).

4.2.2.3 Division of portfolio by accruals

As in Sloan (1996), Chan et al. (2006) and Bender and Nielsen (2013), securities are ranked annually and assigned in equal numbers to ten portfolios. If the number of securities in a specific year was not exactly divisible by ten, the remainder was split equally among the middle portfolios. The portfolio with the lowest accruals (the top decile) is Acc_1 and the portfolio with the highest accruals (the bottom decile) is Acc_{10} . Since there are two measures of accruals, the process is performed twice every year for each approach.

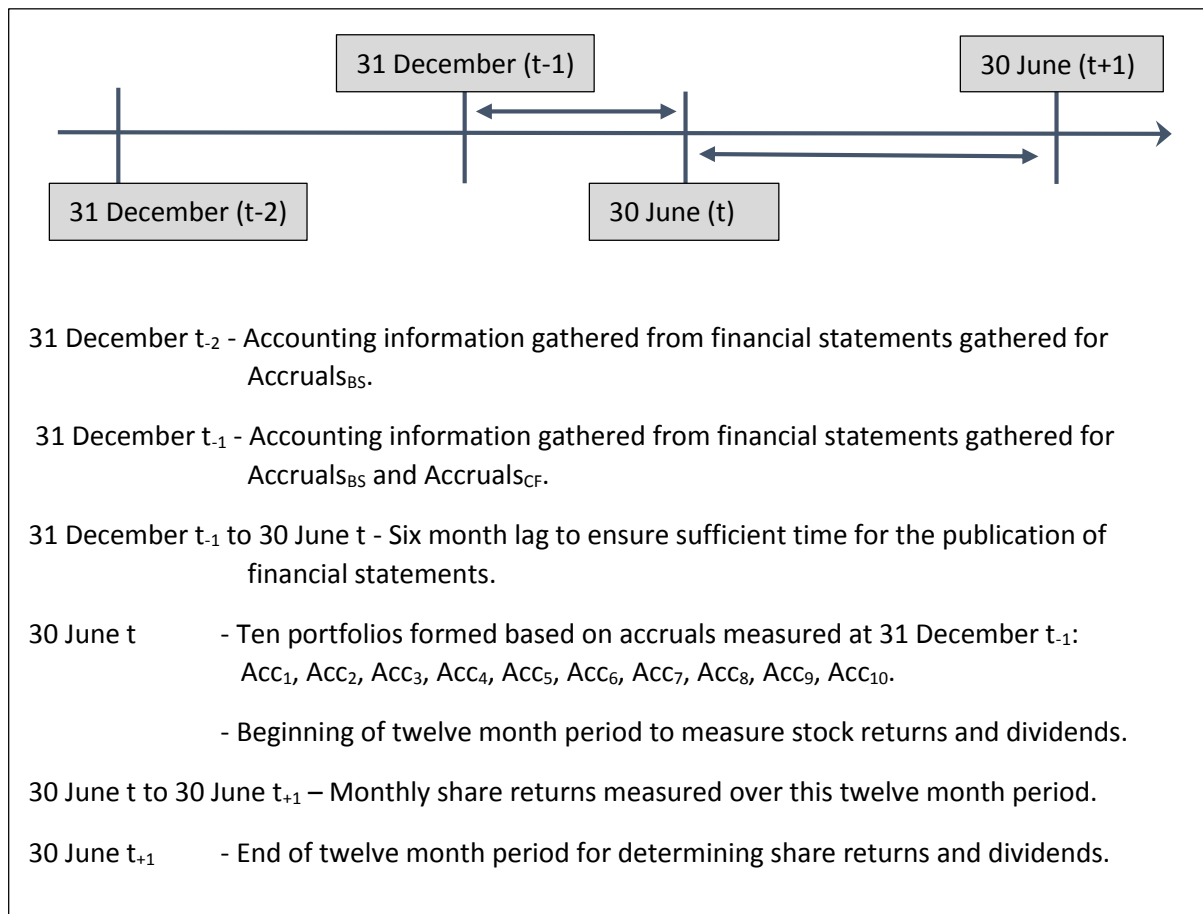
Portfolios are formed from 2007 to 2014, at 30 June (t) using financial statement information from 31 December (t-1) and before (depending on the financial year-end of each company), allowing a six month lag for the publication of financial statements. Monthly returns are measured from 1 July (t) to 30 June (t+1) in the same manner. In this regard, portfolios are formed in 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014 (8 years). The composition of portfolios may change annually with new companies qualifying for inclusion and others no longer suitable for consideration. Companies may also move across portfolios if their levels of accruals no longer suit a particular portfolio. Table 4.1 shows the ten portfolios.

Table 4.1: The accrual deciles

Accruals	Low									High
Portfolios	Acc ₁	Acc ₂	Acc ₃	Acc ₄	Acc ₅	Acc ₆	Acc ₇	Acc ₈	Acc ₉	Acc ₁₀
	High earnings quality								Low earnings quality	

The Acc₁ portfolio, for example, consists of securities in the bottom ten percent of accruals, and Acc₁₀ includes securities in the top ten percent of accruals. Portfolio Acc₁ is thus considered to be the least managed (highest quality) portfolio and Portfolio Acc₁₀ the most managed one (lowest quality). The portfolio formation and return measurement process for the decile portfolios are indicated in Figure 4.1.

Figure 4.1: Portfolio formation and return measurement process (Decile portfolios)



4.2.3 The filtering of companies qualifying for inclusion

This study begins by considering all firms listed on the Main Board of the JSE Limited and its alternative exchange, AltX. McGregor (2014) has standardised financial statement records from 1971 and price data of companies from 1990. However, the JSE Limited listing requirements only required listed companies to comply with IFRS from January 1st of 2005. As such, this study considers firms for financial years ending from 2005 to December 2012 at the latest (depending on financial year end) and the subsequent equity returns from July 2007 to June 2014, allowing for a lag of six months for the financial statements to be published (Figure 4.1), with all data obtained from McGregor.

The online service discloses various types of equity shares: voting ordinary shares (class A share capital), minimal or non-voting ordinary shares, preference shares (classes B, C and N share capital), real estate investment trusts, linked units. Following Barnard and Bunting (2014, p.7), only ordinary shares with full voting rights (class A share capital) are included

in the empirical tests of this study as “the other instruments are considered to have economic characteristics that are fundamentally different from ordinary equity securities”.

Following prior earnings management papers, see for example Sloan (1996), Chan et al., (2006), Dechow and Ge (2006), this study excludes financial organisations (banks, financial services, insurance, real estate) from the analysis, given that the distinction between operating and investing activities is not always clear in these firms and due to the difficulty involved in interpreting accruals in such companies. This is primarily a concern for the accrual measures. Mining companies are also omitted from this study as there seems to be, as of yet, no formalised generally accepted accounting practices applicable to those entities in South Africa. All remaining sectors are considered for inclusion: basic materials, consumer goods and services, health care, industrials, oil and gas, technology, telecommunications, and utilities. Information regarding sectors is collated to establish whether a particular sector appears predominantly in a specific portfolio and hence to investigate the possibility of an industry bias among portfolios.

In order to qualify for inclusion in a period, each firm must have been listed for at least two consecutive years ($t-2$ and $t-1$) with published profit or loss statements, balance sheets and statement of cash flows, followed by reported twelve monthly returns (t). Specifically, companies are included if they report accounting information required in the derivation of total assets, $\text{Accruals}_{\text{BS}}$, $\text{Accruals}_{\text{SCF}}$ (Equations 4.1 and 4.2), monthly closing share prices and dividends (if any) during the qualifying period. In cases where the required information is not available from McGregor (2014), the company concerned is excluded for that specific year but not for future periods if all relevant information becomes subsequently available.

In the instance of a name change, McGregor (2014) retrospectively applies the company's new name to its pre-change financial records. New listings are included once they have the information required in the empirical tests of this study. Delisted firms are reported by McGregor (2014) and are included in qualifying periods prior to delisting to avoid survivorship bias. The measurement of returns for such firms is further explained in the next section.

$\text{Accruals}_{\text{BS}}$ are measured under Sloan's (1996) approach as changes in the working capital accounts from the balance sheet. Firms that have undergone a merger or acquisition are thus most likely to be categorized in portfolios with extreme accruals. Since the subsequent stock

returns of firms involved in mergers and acquisitions tend to be below average, high accruals may be associated with poor future returns on this account. When these events occur, there is no articulation between the changes in working capital balance sheet accounts and the accrual components of earnings. To circumvent this problem, Hribar and Collins (2002) exclude firms that were involved in mergers and acquisitions in the year leading up to such corporate action. Mergers and acquisitions are, however, a rare occurrence in South Africa and companies involved into those transactions are most likely to be outliers (which are excluded as further explained), and subsequently no exclusions similar to that of Hribar and Collins (2002) are made. McGregor (2014) reports 52 companies involved in unbundling transactions during the 2005-2014 period. Unbundled companies (if listed) are included in portfolios when they have the information required by the empirical tests. On the other hand, the unbundling company is excluded in the year leading to the unbundling and the three years following the unbundling (until three years of clean financial statements are available for the accrual measures).

Badenhorst (2013) reports that McGregor (2014) adjusts share prices and takes into account the effects of share splits, stock consolidations, cash and special dividends, and capital distributions. As such, no adjustments are required for those transactions in deriving equity returns for the present research. McGregor (2014) does, however, not adjust share prices for capitalisation (bonus) issues. As such, these issues are identified and the return in the month in which the capitalisation occurred is removed. Following Barnard and Bunting (2014), no adjustments are made for new issues of shares, rights issues, claw backs and share repurchases. Even though these equity transactions “alter the total equity of the company, the effect on book value of equity is materially consistent with that of the market value of equity, and accordingly, no exclusions are required for specific equity transactions” (Barnard and Bunting, 2014, p.8).

In an attempt to avoid outlier companies, this study eliminates securities based on specific criteria. Firstly, any security whose accruals (divided by total assets) from Equations 4.1 and 4.2 were greater than 1 or less than -1 are removed for the affected year. Secondly, if the monthly return of a security was greater than 200% or less -200%, the affected month is eliminated for the specific security.

4.2.4 The measurement of company and portfolio returns

This study uses equity returns as its measure of performance, which is similar to the buy and hold returns used in prior earnings quality literature, for example in Sloan (1996), Xie (2001), Richardson et al. 2005, and Chan et al. (2006). The frequency of measurements varied from annual, as used by Sloan (1996), to quarterly, as used by Hribar and Collins (2002), to monthly. Fama and French (1993) explain that annual returns can produce mispriced returns due to unexpected fluctuations in stock prices at close date. In order to counter instabilities in the calculation of returns, this study uses monthly returns. Equity returns have proven to be particularly useful for comparing returns between investments held over different periods, for instance, companies having different financial year-ends. The calculation of monthly equity returns is demonstrated in Equation 4.3:

Equation 4.3: Monthly equity return

$$r_n = \frac{(P_n - P_{n-1}) + D_n}{P_n}$$

where

r_n is the return for month n,

P_n is the closing share price for month n,

P_{n-1} is the the opening share price for month n, and

D_n is the dividends for month n

Monthly equity returns are estimated, for each qualifying company, for the months July 2007 to June 2014 (inclusive), a total of 96 months. Equal-weighted monthly returns are calculated for each portfolio for the period 1 July (t) to 30 June (t+1). Dividends are deducted in the month in which they are paid. Ali, Huang and Trombley (2000) find that the association of accruals and future returns does not depend on the measures of transaction costs while Barnard and Bunting (2014) consider transaction costs immaterial. As such, no adjustments are made to account for transaction costs.

Delisting companies may prove problematic in the estimation of returns. If a security delists during a particular year as a result of either a liquidation or a forced delisting by the JSE

Limited, the delisting return is coded as missing by McGregor (2014). This study follows Barnard and Bunting (2014) and assumes a delisting return of -50%. This assumption is more robust than the alternative procedures of (1) eliminating these securities from the sample, which would result in look-ahead bias (2) assuming a delisting return of -100 % (an approach used by Sloan (1996)) and (3) assuming a delisting return of zero, which would also result in look-ahead bias.

Table 4.2 shows the number of monthly equity returns included in each year:

Table 4.2: The number of monthly equity returns qualifying for inclusions

	2007	2008	2009	2010	2011	2012	2013	2014
Total monthly equity returns available	4188	4296	4752	4680	4608	4620	4476	4404
(less) Exclusions	2225	2411	2892	2630	2326	2066	1960	2064
Financials	948	924	924	936	912	876	852	900
Mining	588	636	696	696	684	708	684	672
Unbundling transactions	36	84	96	84	84	60	60	48
Capitalisation issues	1	1	2	1	1	0	0	1
Insufficient History: Accruals _{BS}	227	108	108	72	72	96	84	72
Incomplete Financial Data: Accruals _{BS}	336	575	1032	768	516	252	192	264
Insufficient History: Accruals _{CF}	36	0	0	0	0	0	0	0
Incomplete Financial Data: Accruals _{CF}	0	12	0	0	12	12	0	0
Return Outliers	8	0	2	2	0	4	7	1
Delisting	45	46	20	27	9	46	69	106
Accrual Outliers	0	25	12	44	36	12	12	0
Number of monthly equity returns qualifying for inclusions in portfolios	1963	1885	1860	2050	2282	2554	2516	2340

4.3 Method used to find evidence of the accrual anomaly among growth and value securities

The collection of data, measurement of accruals (both under the balance method and the cash flow method), initial filtering of securities and measurement of portfolio equity returns remain the same as in the previous section.

The additional methods applied are dealt with below:

1. the ranking and division of companies into tertiles based on the book-to-market ratio in order to separate securities into growth, neutral and value categories;
2. the ranking and division of companies into tertiles based on:
 - i. balance sheet accruals, and
 - ii. cash flow accruals, in order to create a 3 x 3 matrix of portfolios; and
3. the further filtering of companies

4.3.1 The ranking and division of companies into growth, value and neutral portfolios

Lakonishok, Scliefer and Vishny (1994) argue that investors extrapolate the past strong growth of growth firms too far in the future, and as a result, stock prices tend to reverse for such firms. More troublesome are the situations in which companies, under pressure to maintain a perception of ever-growing earnings, start actively using the leeway that the accounting framework provides to make results look better than they are. Fairfield, Whisenant, and Yohn (2003) and Desai et al. (2004) argue that the accrual anomaly is related to the value-growth anomaly in the finance literature, suggesting that high accrual companies are likely to be growth firms and low accrual firms are likely to be value firms, as measured by the cash-to-price ratio.

In order to test for the presence of the accrual anomaly among the securities, companies are split in three groups: value, neutral and growth. A number of ratios are available to classify shares into growth shares or value shares. Examples are price-to-earnings ratio (McWilliams, 1966), book-to-market ratio (Fama and French, 1992; Lakonishok et al., 1994; Barnard and Bunting, 2014), cash-to-price (Lakonishok et al., 1994; Fama and French, 1998; Desai et al., 2004). Growth shares are defined as those that have lower fundamental to price ratios; for example, a high price to earnings ratio, low book-to-market ratio and high price to cash flow ratio. Fama and French (1992) note that the book-to-market ratio captures most of the variability of stock returns. This study uses the book-to-market ratio to divide companies into tertiles: growth (bottom 33⅓ %), neutral (middle 33⅓ %) and value (top 33⅓ %).

4.3.1.1 The book value of equity

McGregor (2014, p.7) defines ordinary shareholder interest (OSI), standardised balance sheet line item 01010006, as “ordinary share capital paid, plus the distributable and non-distributable reserves, less the cost of control of subsidiaries and intangible assets. It represents the equity of the ordinary shareholders of the Company in the total assets of the Group, with the exclusion of the cost of control and the intangible assets”.

This definition of the book value of equity has many differences to its US counterparts with regard to investments tax credits, deferred tax, cost of control (goodwill) and intangible assets. Barnard and Bunting (2014) provide a lucid explanation for each. South African tax legislation does not require companies to account for tax credits and as such, no adjustments

are necessary in this regard. McGregor (2014) correctly excludes deferred tax from its estimation of equity as both IFRS and US GAAP recommend that they be recognised as liabilities. With regard to the recognition of intangible assets, Barnard and Bunting (2014, p.10) argue that, “[these are] far more restrictive under US GAAP than IFRS, and therefore the McGregor (2014) deduction of such items is a source of convergence between the two definitions of book value of equity, rather than a divergence”. As a result, this study uses McGregor’s (2014) unadjusted OSI number, line item 01010006, as the measure of book value to equity in Equation 4.4.

McGregor (2014) translates all foreign financial statements into South African Rand and in this regard, no translation is necessary.

4.3.1.2 The market value of equity

The market value of equity is estimated by McGregor (2014), on a given date, as the product of the number of shares in issue and the closing share price on that date, measured in cents. The last closing price is given as the last day the share was traded in such period. McGregor (2014) publishes the market value of equity in South African Rand.

Equation 4.4 Book-to-Market Ratio

$$BM = \frac{\text{Book value of equity}_{t-1}}{\text{Market value of equity}_{t-1}}$$

where

book value of equity_{t-1} is obtained at financial year end (t-1), and

market value of equity_{t-1} is measured at 31 December (t-1)

4.3.1.3 The ranking and division of companies in tertiles

The book-to-market ratio is estimated, as per Equation 4.4, each year from 2007 to 2014. Companies are ranked according to their book-to-market ratio and are divided into tertiles. The highest tertile includes the companies with the highest book-to-market ratio: value shares (V), the lowest tertile comprises of the companies with the lowest book-to-market ratio: growth shares (G) and the middle tertile includes neutral companies (N).

4.3.2 Division of portfolios by accruals

Securities are separated into three groups: growth shares (G), neutral shares (N) and value shares (V). The securities are subsequently independently divided into tertiles based on accruals: high accruals (H), medium accruals (M), low accruals (L), with higher earnings quality firms recorded in low accruals portfolios. The intersection of the three book-to-market groups and three earnings quality groups forms a matrix of nine portfolios.

Since there are two measures of accruals, the process is performed twice every year for each accrual measure. The nine portfolios are expressed as follows:

1. GH – Growth companies with high accruals (low quality growth firms)
2. GM – Growth companies with medium accruals (medium quality growth firms)
3. GL – Growth companies with low accruals (high quality growth firms)
4. NH – Neutral companies with high accruals (low quality neutral firms)
5. NM – Neutral companies with medium accruals (medium quality neutral firms)
6. NL – Neutral companies with low accruals (high quality neutral firms)
7. VH – Value companies with high accruals (low quality value firms)
8. VM – Value companies with medium accruals (medium quality value firms)
9. VL – Value companies with low accruals (high quality value firms)

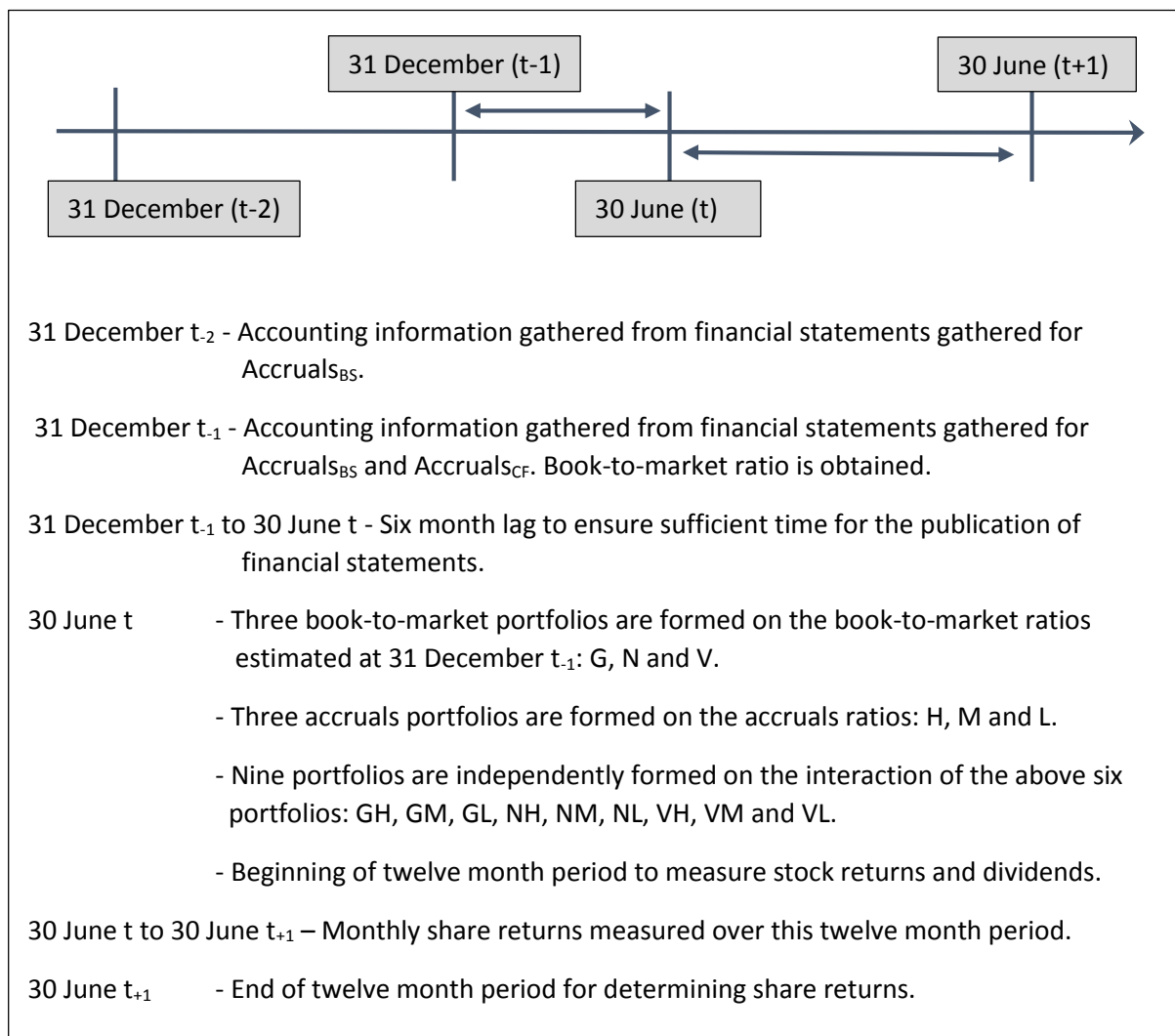
Portfolios are formed from 2007 to 2014, at 30 June (t) using financial statement information from 31 December (t-1) and before (depending on financial year-end), allowing a six month lag for the publication of financial statements. Monthly returns are measured from 1 July (t) to 30 June (t+1) in the same manner as the previous section. In this regard, portfolios are formed in 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014 (8 years). The composition of portfolios may change annually with new companies qualifying for inclusion and others no longer suitable for consideration. Companies may also move across portfolios if their book-to-market ratio and accrual measures no longer suit a particular portfolio. Table 4.3 shows the 3 x 3 portfolio matrix.

Table 4.3: The 3 x 3 portfolio matrix

		Accruals			
		Highest tertile	Middle tertile	Lowest tertile	Total
Book-to-market	Lowest tertile	GH	GM	GL	Total growth
	Middle tertile	NH	NM	NL	Total neutral
	Highest tertile	VH	VM	VL	Total value
Total		Total low earnings quality	Total medium earnings quality	Total high earnings quality	Total securities included

The GL portfolio, for example, contains securities in the lowest 33⅓% of book-to-market ratio and the lowest 33⅓ of total estimated accruals and the VH portfolio includes securities in the highest 33⅓% of book-to-market ratio and the highest 33⅓ of total estimated accruals. Figure 4.2 shows the portfolio formation and return measurement process for the nine portfolios.

Figure 4.2: Portfolio formation and return measurement process (Portfolio matrix)



4.3.3 The filtering of companies qualifying for inclusion

The initial filtering process emphasised in the previous section remains the same. Furthermore, as is customary in the literature on the accrual anomaly involving the value-growth anomaly, (see for example Cheng and Thomas (2006) and Zhang (2007)), firms with a negative book-to-market ratio are excluded to avoid economically insignificant data. Badenhorst (2013) recommends the omission of the top and bottom one percent of sample firms for the book-to-market ratio in the research models. However, given the limited number of companies in portfolios and in an attempt to avoid excluding economically sound companies, this study eliminates securities with book-to-market ratio higher than ten during the specific year as they are considered to be outliers. Table 4.4 shows the number of monthly equity returns included in each year:

Table 4.4: The number of monthly equity returns qualifying for inclusion

	2007	2008	2009	2010	2011	2012	2013	2014
Total monthly equity returns available	4188	4296	4752	4680	4608	4620	4476	4404
(less) Exclusions	2399	2597	3060	2894	2565	2286	2231	2319
Financials	948	924	924	936	912	876	852	900
Mining	588	636	696	696	684	708	684	672
Unbundling transactions	36	84	96	84	84	60	60	48
Capitalisation issues	1	1	2	1	1	0	0	1
Insufficient history: Accruals _{BS}	227	108	108	72	72	96	84	72
Incomplete financial Data: Accruals _{BS}	336	575	1032	768	516	252	192	264
Insufficient history: Accruals _{CF}	36	0	0	0	0	0	0	0
Incomplete financial data: Accruals _{CF}	0	12	0	0	12	12	0	0
Negative book-to-market ratio	144	204	156	240	263	228	276	276
Book-to-market ratio outliers	36	12	24	36	12	12	12	0
Return outliers	6	0	2	2	0	3	3	1
Delisting	41	28	20	27	9	39	68	73
Accrual outliers	0	13	0	32	0	0	0	12
Number of monthly equity returns qualifying for inclusions in portfolios	1789	1699	1692	1786	2043	2334	2245	2085

4.4 Evidence of the relationship between earnings quality and equity returns

In order to estimate the relationship between earnings quality, with accruals as a proxy, and future equity returns, differences in the returns of selected portfolios must be determined. Sloan (1996) argues that securities with lower levels of accruals (higher earnings quality) are associated with higher returns than firms with higher levels of accruals (lower earnings quality). To test this theory, returns are derived as the difference between the returns in the portfolio with the highest assumed earnings quality (Acc_1) and the returns from the portfolio with the lowest assumed earnings quality (Acc_{10}) as presented in Equation 4.5. This process is completed for each accrual method.

Equation 4.5: Return difference of top and bottom earnings quality deciles

$$r_{Acc_1 - Acc_{10}} = r_{Acc_1} - r_{Acc_{10}}$$

where

$r_{Acc_1 - Acc_{10}}$ is the difference between highest earnings quality decile and lowest earnings quality decile, and

r_{Acc_1} and $r_{Acc_{10}}$ are the equally weighted returns from the Acc_1 and Acc_{10}

Assuming statistical significance (see below), a positive value for $r_{Acc_1-Acc_{10}}$ provides evidence that the returns of the highest quality shares are greater than the returns of the lowest quality securities. Such a result would also establish the presence of the accrual anomaly in a South African context, demonstrating that investors fail to recognise the lower persistence of accruals in earnings. Cash flows are assumed to be a better measure of earnings quality, as such, $r_{Acc_1-Acc_{10}}$ is calculated for both accruals measures, $Accruals_{BS}$ and $Accruals_{CF}$, in order to establish which approach has greater significance in measuring the predictability of cross-sectional returns from earnings manipulations.

One-tailed t-tests are used to measure the statistical significance of returns. These tests indicate whether the mean of the series of 96 monthly portfolio returns is significantly different from zero. It is submitted that one-tailed t-tests are valid measures of the significance of returns for this research providing normality is not assumed, the sample size is large (greater than 30) and the variance of the population is unknown.

The relationship between earnings quality and future equity returns is further analysed to establish the presence of the accrual anomaly in a growth-neutral-value spectrum. To test this theory, a return is derived as the difference between the unweighted mean of the high earnings quality portfolios (GL, NL and VL) returns and the low earnings quality portfolios (GH, NH, VH) returns as presented in Equation 4.6.

Equation 4.6: Return difference of top and bottom earnings quality portfolios in a growth-neutral-value context

$$r_{L-H} = \frac{r_{GL} + r_{NL} + r_{VL}}{3} - \frac{r_{GH} + r_{NH} + r_{VH}}{3}$$

where

r_{L-H} is the difference in returns between high earnings quality portfolios and low earnings portfolios, and

$r_{GL}, r_{NL}, r_{VL}, r_{GH}, r_{NH}, r_{VH}$ are the equally weighted returns from the relevant portfolios

A positive r_{L-H} provides evidence that the returns of higher quality shares, when split into growth, neutral and value securities, are, on average, greater than the returns of lower quality

securities and establishes the presence of the accrual anomaly in a value-neutral-growth setting. This process is repeated for each accrual method.

Further monthly return differences are estimated to find the accrual anomaly within the growth portfolios and the value portfolios. Growth shares provide a rich ground for establishing the presence of the accrual anomaly as they are believed to be easy targets for manipulations. A similar analysis is performed for value shares. Equation 4.7 estimates the difference between high earnings quality growth shares and low earnings quality growth shares (in an attempt to establish the accrual anomaly in a growth context), while Equation 4.8 calculates the difference between high earnings quality value firms and low earnings quality value firms (in an attempt to establish the accrual anomaly in a value context). Once again, positive return differences would provide evidence in support of the existence of the positive relationship between earnings quality and equity returns when securities are split into growth securities and value securities.

Equation 4.7: Return difference to establish the accrual anomaly in a growth context

$$r_{GL-GH} = r_{GL} - r_{GH}$$

Equation 4.8: Return difference to establish the accrual anomaly in a value context

$$r_{VL-VH} = r_{VL} - r_{VH}$$

where

r_{GL-GH} is the return difference between high quality growth firms and low quality growth ones,

r_{VL-VH} is the difference between high quality value firms and low quality value ones, and

$r_{GL}, r_{GH}, r_{VL}, r_{VH}$ are the equally weighted returns from the relevant portfolios

4.5 Conclusion

First, this chapter presents the methodology to find evidence of the ability of earnings manipulation to predict cross-sectional returns. Information relating to companies listed on the Main Board of the JSE Limited and its Alternative Exchange, AltX, and financial statement data is obtained from the online records of McGregor (2014). The securities are ranked and divided into deciles according to the (i) balance sheet measure of accruals and (ii) cash flow methods of accruals, in order to separate companies in different levels of earnings quality. As such, the Acc_1 portfolio consists of the companies in the lowest ten percent of accruals (highest quality) and the Acc_{10} portfolio includes companies with the highest ten percent of accruals (lowest quality). The filtering of companies consists of the exclusions of financials and mining companies. Capitalisation, unbundling and delisting issues, among others, are also considered.

Second, the method used to find evidence of the accrual anomaly amongst growth and value shares is outlined. Securities are independently ranked and divided into growth, neutral and value shares according to their book-to-market ratio and accruals levels (separately for the balance sheet measure and cash flow approach). In so doing, a matrix of nine portfolios is obtained consisting of growth, neutral and value portfolios of varying levels of earnings quality (low, medium and high).

Portfolios are formed from 2007 to 2014 at 30 June (t) from financial statement information obtained at 31 December (t-1) in order to allow a six-month lag for financial statements to be published. Monthly returns are measured from 1 July (t) to 30 June (t+1). In order to establish the relationship between earnings quality and equity returns, return differences are estimated as the difference between high quality portfolios and low quality portfolios. One-tailed t-tests are used to determine statistical significance. The following chapter sets out the outcome of these procedures.

Chapter Five

RESULTS, ANALYSIS AND DISCUSSION

5.1 Introduction

The previous chapter describes the methods used to test for the presence of the accrual anomaly. Specifically, the method used to find the relationship between accruals, as a measure of earnings management, and equity returns is presented in order to establish whether the market reacts to earnings management practices and penalises highly managed firms with lower future equity returns in South Africa during the 2007-2014 return period. The method used to separate shares into growth, neutral and value categories in an attempt to investigate the presence of the accrual anomaly among growth and value shares is also discussed.

This chapter outlines the findings of the tests described in the previous chapter and provides an analysis and discussion of the results. The chapter begins by presenting an analysis of accruals and the contrasting evidence for the presence of the accrual anomaly in respect of South African listed firms in terms of the two accrual methods. A discussion of the contextual relationships between accruals, when separated into value and growth shares, and equity returns is also presented.

5.2 Analysis of accruals

As indicated in the section discussing the methods used in this research, companies listed on the JSE Limited and AltX are ranked according to their accruals. The accruals are measured using two methods: a balance sheet approach ($\text{Accrual}_{\text{BS}}$) and a cash flow measure ($\text{Accrual}_{\text{CF}}$). The equations used were developed in Chapter Three and are reproduced below, this time providing the specific line item codes obtained from McGregor (2014).

Equation 5.1: Balance sheet measure of accruals (Accruals_{BS})

$$Accruals_{BS} = \left(\frac{[AR_{t-1} + INV_{t-1} + OCA_{t-1} - AP_{t-1}]}{\frac{1}{2}(ATA_{t-2} + ATA_{t-1})} \right) - \left(\frac{[AR_{t-2} + INV_{t-2} + OCA_{t-2} - AP_{t-2}]}{\frac{1}{2}(ATA_{t-3} + ATA_{t-2})} \right) - \frac{DEP_{t-1}}{\frac{1}{2}(ATA_{t-2} + ATA_{t-1})}$$

Equation 5.2: Cash flow measure of accruals (Accruals_{CF})

$$Accruals_{CF} = \frac{Earnings_{t-1} - CFO_{t-1}}{\frac{1}{2}(ATA_{t-2} + ATA_{t-1})}$$

where

AR are debtors – line item 01010027,

INV are total inventories – line item 01010026,

OCA are other current assets – line item 01010030,

AP are creditors – line item 01010033,

ATA are the average total assets – line item 01010040,

DEP is the depreciation expense – line item 01020065 plus line item 01020066,

Earnings is the profit before interest and taxation – line item 01020073,

CFO is the cash generated from operations - line item 01030711, and

t is the time period

After both accrual methods have been independently applied for each of this study's qualifying securities, the securities are ranked and then divided into ten equal portfolios. If the total number of securities in a specific year were not exactly divisible by ten, the remainder was allocated equally to the middle portfolios. The portfolio with the lowest ten percent of accruals (and thus the highest earnings quality) is Acc₁, while the securities with the ten percent highest accruals (and lowest earnings quality) are in the Acc₁₀ portfolio. Table 5.1 shows the number of monthly returns (from Table 4.2) and companies included in each of the ten portfolios for both accrual methods. Each security is present for a maximum

of twelve monthly returns in each year. Some companies may have less than twelve monthly returns if they were delisted during a specific year, made a capitalisation issue during the year, or had specific months excluded on the basis of the monthly return being an outlier. The criteria for returns to qualify as outliers are presented in sections 4.2.3 and 4.3.3. Over the full eight-year return period of this study (2007 – 2014), the number of monthly returns ranged from 1860 in 2009 to 2554 in 2012. The number of companies which met all the inclusion criteria was highest in 2012 (217 companies) and lowest in 2009 (157 companies). While the two accrual methods have the same number of securities in each portfolio, the composition of each portfolio is different across the two measures.

Table 5.1: Accruals portfolios: monthly returns and company allocations (for both accrual methods)

Year Portfolio		2007	2008	2009	2010	2011	2012	2013	2014
Acc ₁	R	191	192	180	204	228	237	252	219
	Co	16	16	15	17	19	21	21	20
Acc ₂	R	204	192	192	203	228	264	239	220
	Co	17	16	16	17	19	22	21	20
Acc ₃	R	204	192	188	204	228	259	240	239
	Co	17	16	16	17	19	22	22	20
Acc ₄	R	202	178	190	193	228	259	264	242
	Co	17	16	16	17	19	22	22	21
Acc ₅	R	202	184	192	209	240	259	264	243
	Co	17	16	16	18	20	22	22	21
Acc ₆	R	194	184	192	216	219	262	264	242
	Co	17	16	16	18	19	22	22	21
Acc ₇	R	189	192	183	216	228	264	253	242
	Co	17	16	16	18	19	22	22	21
Acc ₈	R	204	192	183	204	228	263	258	239
	Co	17	16	16	17	19	22	22	20
Acc ₉	R	192	192	180	204	228	245	247	230
	Co	17	16	15	17	19	21	21	20
Acc ₁₀	R	181	187	180	197	227	242	235	224
	Co	16	16	15	17	19	21	21	20
Total monthly returns		1963	1885	1860	2050	2282	2554	2516	2340
Total companies		168	160	157	173	191	217	216	204
R – The number of monthly returns Co – The number of companies Acc _n – Portfolio n, with Acc ₁ being the portfolio with the highest estimated earnings quality Year – Twelve month period ending 30 June									

The portfolios are further analysed in Tables 5.2 and 5.3 below in order to indicate the industry composition for the extreme accruals portfolios (Acc₁ and Acc₁₀) using both accruals methods. McGregor (2014) separates industries into different categories according to the industry classification benchmark as follows: basic materials, consumer goods, consumer services, health care, industrials, oil, gas and utilities, technology and telecommunications. For example, of the 20 companies in Acc₁ in the 2014 return year, two (10%) were from the basic materials sector, five (25%) were from the consumer goods sector, and so on.

As Chan et al. (2006) point out, working capital requirements vary across industries. In industries where inventories and receivables represent a small portion of total assets, the levels of accruals are likely to be low, and therefore this issue might be a source of bias in that these industries might to a large extent be part of the low accruals portfolios. Chan et al. (2006), for example, classify construction (McGregor's industrials) and recreational products (McGregor's consumer goods) as being industries with larger working capital levels and consumer services, utilities and transportation as lines of business with low working capital levels.

Scrutiny of the industry distributions in Tables 5.2 and 5.3 indicates some cross-sectional variability between the two extreme portfolios, Acc_1 and Acc_{10} , as well as temporal distributional shifts between 2007 and 2014. However, it can be noted that, in general, consumer goods (high working capital), consumer services (low working capital), industrials (indeterminate working capital levels) and technology and telecommunications (average level of working capital) sectors dominate all portfolios both cross-sectionally and temporally.

Therefore, for the purpose of this research the industry-bias issue is assumed to be materially reduced through diversification, and is left as a suggestion for future research.

Table 5.2: The distribution of industries among extreme Accruals_{SBS} portfolios

Year Portfolio & Industry		2007	2008	2009	2010	2011	2012	2013	2014
Acc ₁	BM	6%	13%	7%	12%	11%	10%	19%	10%
	CG	13%	13%	0%	18%	16%	14%	14%	25%
	CS	19%	25%	33%	18%	21%	5%	0%	5%
	HC	0%	6%	0%	0%	16%	5%	0%	10%
	IN	38%	25%	20%	29%	21%	33%	48%	45%
	OU	0%	6%	0%	6%	0%	14%	0%	5%
	TT	25%	13%	40%	18%	16%	19%	19%	0%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
Acc ₁₀	BM	0%	0%	7%	12%	0%	10%	5%	10%
	CG	19%	19%	20%	12%	16%	14%	24%	10%
	CS	19%	31%	27%	12%	21%	14%	14%	15%
	HC	0%	0%	0%	12%	0%	5%	0%	0%
	IN	38%	44%	33%	41%	47%	29%	33%	45%
	OU	0%	0%	0%	0%	5%	0%	10%	0%
	TT	25%	6%	13%	12%	11%	29%	14%	20%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
BM – Basic materials, CG – Consumer goods, CS – Consumer services, HC – Health care, IN – Industrials, OU – Oil, gas and utilities, TT – Technology and telecommunications Year – Twelve month period ending 30 June									

Table 5.3: The distribution of industries among extreme Accruals_{CF} portfolios

Year Portfolio & Industry		2007	2008	2009	2010	2011	2012	2013	2014
Acc ₁	BM	19%	13%	13%	18%	11%	19%	24%	15%
	CG	13%	13%	7%	6%	16%	10%	14%	20%
	CS	25%	44%	13%	18%	11%	19%	5%	10%
	HC	0%	6%	7%	0%	11%	0%	0%	5%
	IN	31%	19%	33%	47%	37%	33%	43%	35%
	OU	0%	0%	0%	0%	0%	0%	0%	10%
	TT	13%	6%	27%	12%	16%	19%	14%	5%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
Acc ₁₀	BM	6%	0%	7%	0%	0%	10%	5%	10%
	CG	19%	13%	7%	18%	26%	19%	14%	5%
	CS	13%	38%	33%	18%	16%	14%	14%	20%
	HC	0%	0%	0%	6%	0%	5%	0%	0%
	IN	44%	31%	40%	47%	37%	38%	48%	40%
	OU	0%	0%	0%	0%	11%	0%	0%	5%
	TT	19%	19%	13%	12%	11%	14%	19%	20%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
Key – see Table 5.2 above									

Tables 5.4 and 5.5 below provide descriptive statistics on the characteristics of all ten portfolios formed by ranking firms on the magnitude of the accrual component of earnings. The mean levels of accruals in Tables 5.4 are broadly consistent with Sloan (1996), who uses the balance sheet measure of accruals. The mean levels of accruals range from -0.2630 to 0.1677 in the ten portfolios when measured by the balance sheet model. Sloan (1996) finds a range of -0.18 to 0.15 in the United States for his review period, suggesting that South African companies during the review period have more extreme measures of quality, both low and high. Similarly, while the median is -0.2158 in Acc₁ and 0.1242 in Acc₁₀ in this study, Sloan (1996) observes a median of -0.15 in Acc₁ and 0.12 in Acc₁₀.

Table 5.4: Descriptive statistics: Accruals_{BS}

	Acc ₁	Acc ₂	Acc ₃	Acc ₄	Acc ₅	Acc ₆	Acc ₇	Acc ₈	Acc ₉	Acc ₁₀
	Lowest Accruals									Lowest Quality
Mean	-0.2630	-0.1238	-0.0890	-0.0679	-0.0488	-0.0309	-0.0127	0.0090	0.0441	0.1677
Variance	0.0175	0.0005	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0006	0.0167
Standard Deviation	0.1322	0.0221	0.0156	0.0124	0.0107	0.0110	0.0110	0.0154	0.0252	0.1291
Median	-0.2158	-0.1238	-0.0854	-0.0669	-0.0477	-0.0307	-0.0132	0.0056	0.0421	0.1242
Quartile 1	-0.2937	-0.1388	-0.1015	-0.0733	-0.0578	-0.0390	-0.0205	-0.0018	0.0247	0.0901
Quartile 3	-0.1855	-0.1084	-0.0774	-0.0595	-0.0399	-0.0227	-0.0044	0.0175	0.0616	0.2040
Maximum	-0.1278	-0.0815	-0.0600	-0.0418	-0.0290	-0.0092	0.0091	0.0520	0.1038	0.8235
Minimum	-0.7914	-0.1775	-0.1336	-0.1004	-0.0723	-0.0550	-0.0364	-0.0158	0.0030	0.0392
Range	0.6636	0.0960	0.0736	0.0585	0.0433	0.0458	0.0455	0.0678	0.1008	0.7843

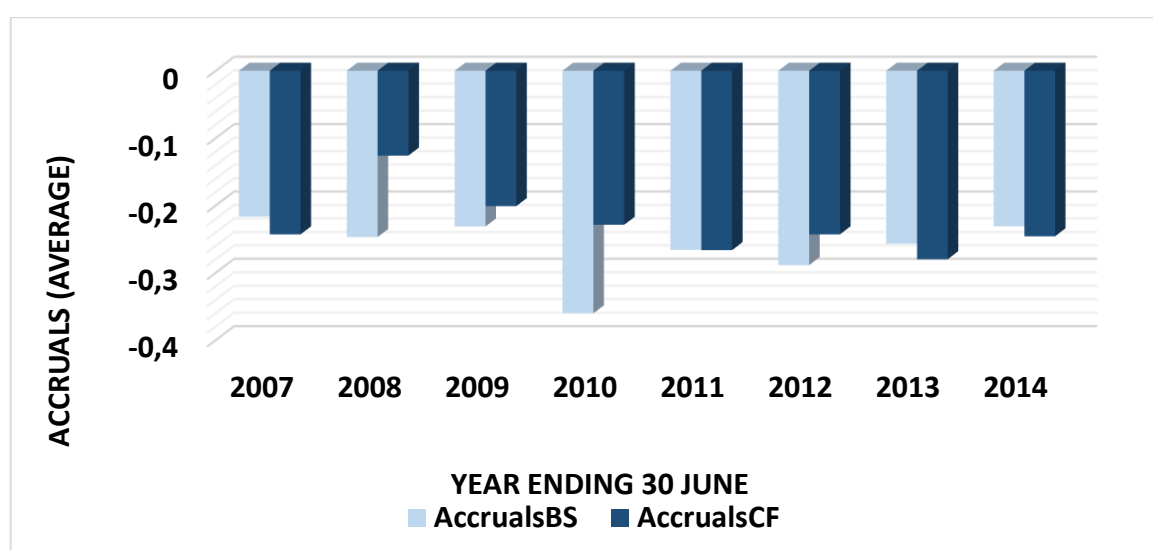
Under the cash flow measure of accruals (see Table 5.5), the range of the accruals is wider, with a mean of -0.2329 in Acc₁ and a mean of 0.2389 in Acc₁₀. Dechow and Ge (2006), who examine the accrual anomaly using a similar cash flow measure of accruals for the 1988-2002 period, find a mean of -0.358 and 0.115 for Acc₁ and Acc₁₀ respectively and -0.279 (Acc₁) and 0.120 (Acc₁₀) after adjusting for special items such as the write-downs of current assets (for example inventories and receivables) and restructuring liabilities. A comparison of the mean level cash-flow base of accruals implies that South African listed companies have higher levels of accruals than American ones. The higher levels of accruals for both measures are consistent with Morgan Stanley (2011) who demonstrates that emerging market companies (South Africa being one of the five countries tested) are significantly more strongly driven by accruals than developed markets.

Table 5.5: Descriptive statistics: Accruals_{CF}

	Acc ₁	Acc ₂	Acc ₃	Acc ₄	Acc ₅	Acc ₆	Acc ₇	Acc ₈	Acc ₉	Acc ₁₀
	Highest Quality									Highest Accruals
Mean	-0.2329	-0.1010	-0.0644	-0.0395	-0.0215	-0.0031	0.0211	0.0501	0.0923	0.2389
Variance	0.0200	0.0006	0.0003	0.0002	0.0003	0.0003	0.0003	0.0004	0.0011	0.0264
Standard Deviation	0.1415	0.0235	0.0186	0.0149	0.0169	0.0169	0.0175	0.0196	0.0336	0.1626
Median	-0.1968	-0.1008	-0.0628	-0.0415	-0.0244	-0.0022	0.0212	0.0504	0.0920	0.1815
Quartile 1	-0.2492	-0.1213	-0.0761	-0.0500	-0.0341	-0.0150	0.0106	0.0338	0.0660	0.1430
Quartile 3	-0.1533	-0.0828	-0.0513	-0.0293	-0.0072	0.0086	0.0353	0.0628	0.1158	0.2666
Maximum	-0.0957	-0.0567	-0.0279	-0.0083	0.0147	0.0324	0.0592	0.1038	0.1645	0.9840
Minimum	-0.9505	-0.1534	-0.1076	-0.0702	-0.0512	-0.0358	-0.0215	0.0040	0.0322	0.0571
Range	0.8548	0.0967	0.0797	0.0620	0.0659	0.0683	0.0807	0.0997	0.1323	0.9269

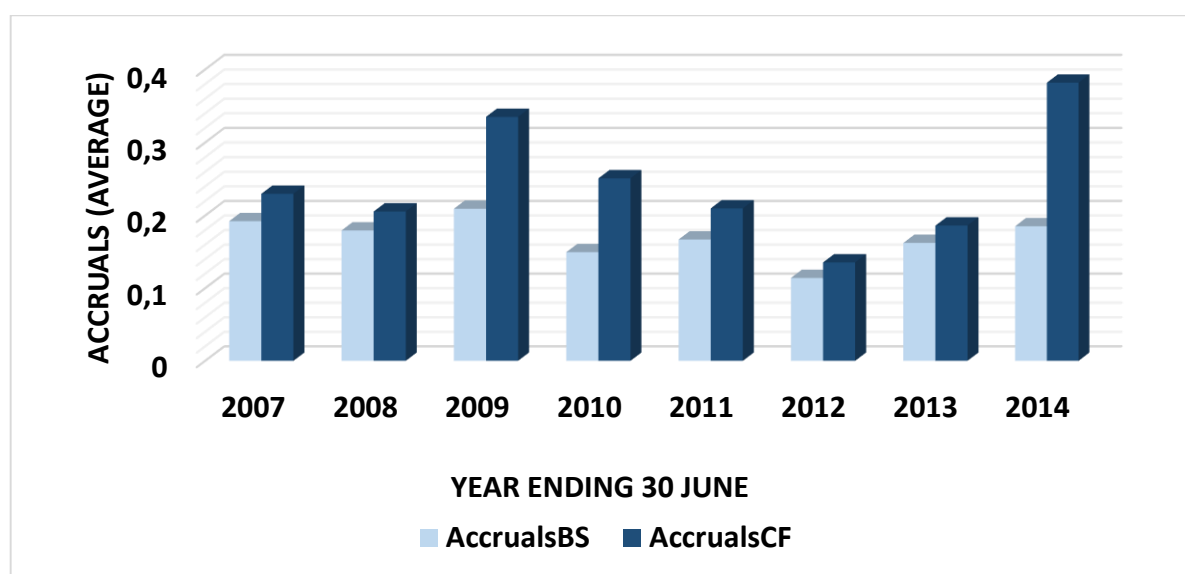
The level of accruals (total accruals divided by total assets) in portfolios Acc₁ and Acc₁₀ are further analysed below, for both the balance sheet and cash flow models. In Figure 5.1, portfolio Acc₁, which is the highest quality decile, has levels of accruals that are both fairly constant at around -0.25 as well as being reasonably comparable between the two measures of accruals. The exception is the 2008-2010 return period. The global financial crisis is a possible explanation for the volatility of accruals levels during this period: as Trombetta and Imperatore (2014) report, managers engage in more earnings manipulation activities during periods of financial distress.

Figure 5.1: Accrual measures: Acc₁ (highest quality portfolio)



In contrast, the low quality portfolio Acc_{10} is somewhat more variable with no evident pattern. However, it is worth noting that in 2009 the balance sheet measure was at its highest level of accruals and the cash flow method was at its second highest, possibly suggesting that accounting quality had declined during the global financial crisis. As with Acc_1 above, Trombetta and Imperatore (2014, p.206) support such an interpretation, noting that “as the financial crisis becomes more intense, we find that managers are more likely to engage in earnings management activities”.

Figure 5.2: Accrual measures: Acc_{10} (lowest quality portfolio)



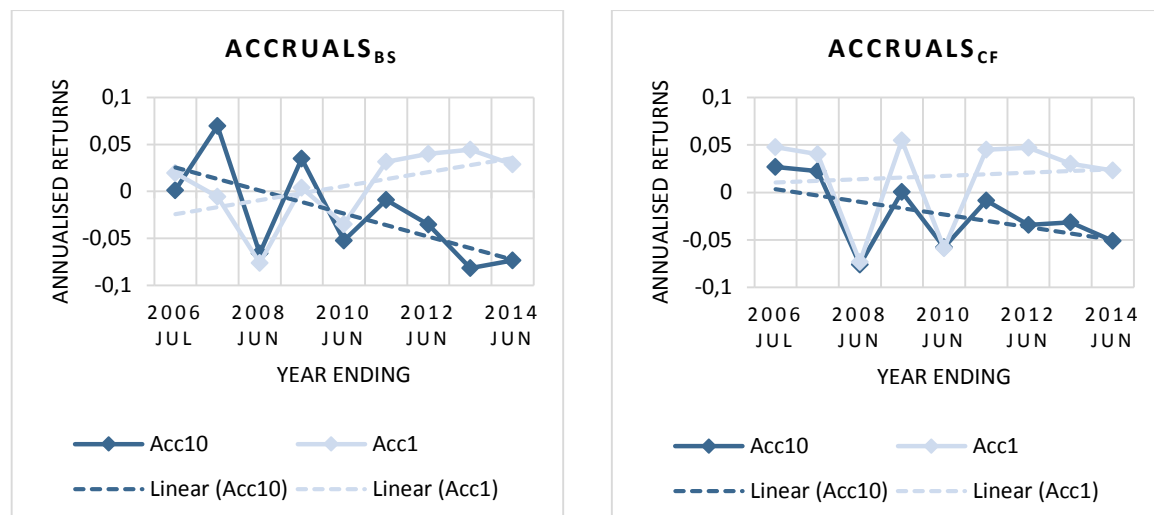
5.3 The general relationship between accruals and equity returns

A major goal of this thesis is to determine whether there is a relationship between earnings quality (as measured by the balance sheet and cash flow accruals ratios), and subsequent equity returns. This line of enquiry commences with an analysis of the fluctuations in annual equity returns.

As seen in Figure 5.3, although annual returns fluctuate widely, both accrual measures demonstrate broadly consistent patterns in expected directions. For $Accruals_{BS}$, the highest quality portfolio outperforms the lowest quality portfolio in six out of nine years, and for $Accruals_{CF}$, this (expected) outperformance occurs in all nine years. In addition, the trend lines for the high- and low-quality portfolios display interesting characteristics. The high-quality portfolio Acc_1 has a positive slope for both $Accruals_{BS}$ and $Accruals_{CF}$ (0.0075 and

0.0017 respectively). The slope for Acc₁, for Accruals_{BS}, is statistically significant at the 5% level (t-statistic 2.6338; critical value 2.364). The same cannot be said for Accruals_{CF} where the t-statistic is only 0.2657. In contrast, the low quality portfolio Acc₁₀ has a negative slope for both Accruals_{BS} and Accruals_{CF} (-0.0122 and -0.0066 respectively). Although neither of these negative slopes are statistically significant, with t-statistics of -0.9714 and -0.8314 for Accruals_{BS} and Accruals_{CF} respectively, Bender and Nielsen (2013) provide a possible explanation for the behaviour of returns after the global financial crisis. They suggest that companies may have been more cautious about accounting manipulations, and hence investors have been more cautious about investing in shares where there is a hint of manipulation, with a consequential negative impact on equity returns.

Figure 5.3: Comparative annual returns: Accruals_{BS} and Accruals_{CF}



The relationship between earnings quality, with total accruals as a proxy, and future equity returns is subjected to further analysis by testing whether securities with higher earnings quality securities are associated with higher equity returns than securities with lower earnings quality, thus providing evidence that earnings manipulations have the ability to predict cross-sectional returns in South Africa. Monthly return differences between the extreme accrual portfolios Acc₁ (high quality) and Acc₁₀ (low quality) are tested for statistical significance using a one tailed t-test. The findings for both accrual methods are presented in Table 5.6.

Table 5.6: Monthly return difference (Acc₁ - Acc₁₀)

	ACCRUALS_{BS}	ACCRUALS_{CF}
Mean monthly difference	1.500%	0.902%
Variance	0.571%	0.707%
Standard deviation	7.555%	8.407%
Number of monthly returns	96	96
Degrees of freedom (one tail)	95	95
Significance level	5%	5%
Critical t-statistic	1.6611	1.6611
Significance level	10%	10%
Critical t-statistic	1.2905	1.2905
Standard error	0.0077	0.0086
Null hypothesis return ≤ 0	0	0
T-statistic	1.9451	1.0507
P value	0.0274	0.1480

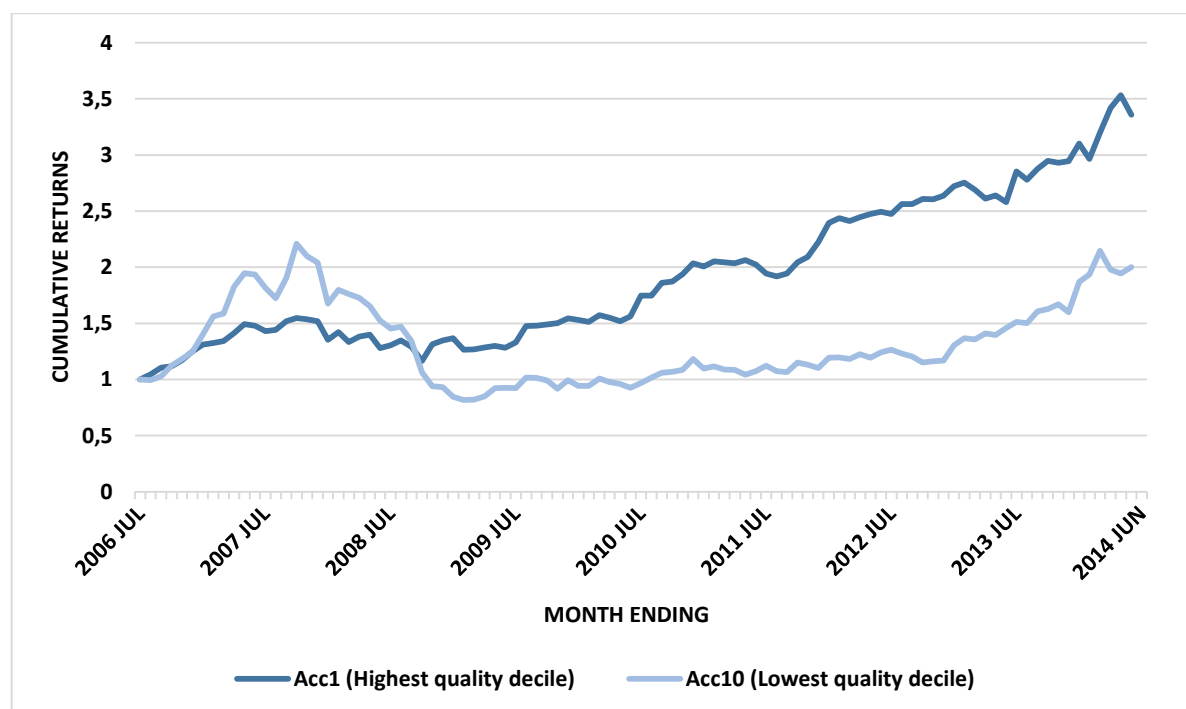
The balance sheet measure and the cash flow approach both show positive mean return differences between the highest quality decile (Acc₁) and the lowest quality decile (Acc₁₀). Accruals_{BS} realise a mean difference in returns of 1.5% while Accruals_{CF} finds a lower mean difference of 0.902%. Both positive returns provide evidence that the returns of highest quality shares are, on average, greater than the returns of the lowest quality shares, and this supports the presence of the accrual anomaly in South Africa. The t-statistic of 1.9451 and the p-value of 0.0274 for Accruals_{BS} indicate that the mean return difference for $r_{Acc1} - r_{Acc10}$ is statistically significant in this context at the 5% level for the balance sheet method. The null hypothesis that return differences are zero is thus rejected for Accruals_{BS}. As previously discussed, this suggests that investors fail to recognise the lower persistence of accruals in earnings and earnings manipulations can be used to predict cross-sectional returns in this regard.

The same tests do not find statistical significance for the cash flow measure at either the 5% or the 10% levels of significance, with an estimated p-value of 0.1480. However, despite not being statistically significant, an investment in Acc₁ still appears to be a more profitable strategy even when accruals are measured using the cash flow method, as shown in Figure 5.4.

Figure 5.4 displays cumulative price relatives, being measures of the aggregate amount that the portfolios have gained or lost over time on the basis that R1 is invested in each portfolio

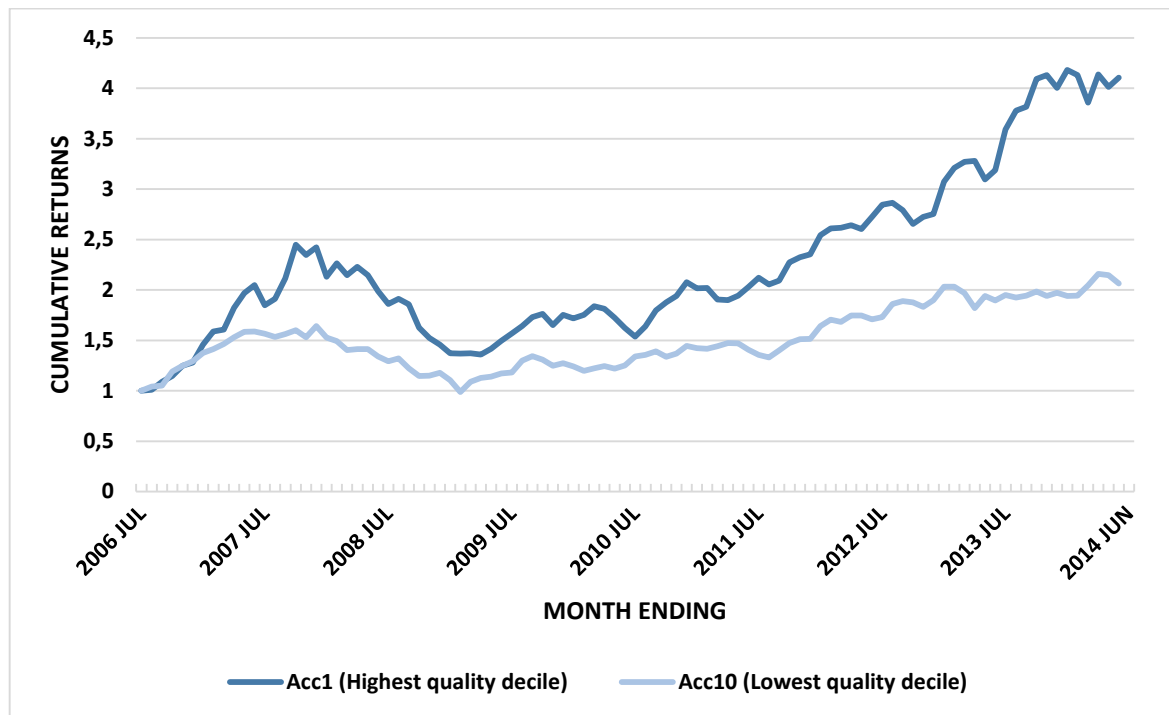
on 1 July 2006. On 30 June 2014, the investment in Acc₁ has a value of R3.36 while the investment in Acc₁₀ is valued at R2.00. Both portfolios decreased in value during the global financial crisis of 2007-2008 with the lowest quality portfolio performing better than the highest quality portfolio during the period. Bender and Nielsen (2013) demonstrate almost identical results, showing that the strong performance of Acc₁ as compared to Acc₁₀ disappeared during the years 2003 to 2008, with 2007 as the year that the high quality decile underperformed the low quality decile the most.

Figure 5.4: Cumulative portfolio returns: Accruals_{CF}



Similarly, under the balance approach of measuring accruals, an investment of R1 in Acc₁ on 1 July 2006 outperforms an investment in Acc₁₀ with the former yielding a value of R4.10 on 30 June 2014 and the latter a value of R2.06 as illustrated in Figure 5.5. Consequently, an investment in the high earnings quality portfolio earns almost twice (99%) as much as an investment in the low earnings quality portfolio under the balance sheet measure of accruals. It is also noted that unlike the cash flow approach the high quality portfolio outperforms the low quality portfolio during the global financial crisis.

Figure 5.5: Cumulative portfolio returns: Accruals_{BS}



5.4 Contextual relationships between accruals and equity returns

As previously defined, growth securities are those that are currently growing at an above-average rate relative to the market, with the potential for continued growth, while value shares are those that are commonly under-priced by the market and have the potential for an increase when the market corrects the price. Fairfield et al. (2003) and Desai et al. (2004) propose that the accrual anomaly is associated with the value-growth anomaly and suggest that high accruals companies are likely to be growth firms and low accruals firms are likely to be value firms. Specifically, growth companies, under pressure to maintain a perception of ever-growing earnings, are considered to be more susceptible to earnings management.

In order to test this proposition, the securities in the present research are independently ranked according to their book-to-market ratio and accruals levels and sorted into the nine portfolios, as previously shown in Table 4.3. The composition of the nine portfolios is presented in Tables 5.7 and 5.8 according to each of the accrual measures.

Table 5.7: Accruals_{BS} portfolios: monthly returns and company allocation

Year Portfolio, Returns and Companies		2007	2008	2009	2010	2011	2012	2013	2014
GH	R	240	216	203	204	216	228	196	244
	Co	20	18	17	17	18	20	17	22
GM	R	162	200	144	156	271	283	252	221
	Co	14	17	12	13	23	24	21	19
GL	R	192	144	207	240	192	251	300	218
	Co	17	12	18	20	16	22	26	19
NH	R	204	192	168	227	264	288	262	263
	Co	17	16	14	19	22	24	24	22
NM	R	216	172	228	204	228	228	277	240
	Co	18	15	19	17	19	19	24	20
NL	R	192	216	185	174	192	276	198	214
	Co	16	18	16	15	16	23	17	18
VH	R	166	156	189	168	204	260	276	176
	Co	14	13	16	14	17	22	23	16
VM	R	222	204	213	234	176	269	240	248
	Co	19	17	18	21	15	23	20	21
VL	R	195	199	155	179	300	251	244	261
	Co	18	17	13	15	25	21	21	23
Total monthly returns		1789	1699	1692	1786	2043	2334	2245	2085
Total companies		153	143	143	151	171	198	193	180
R – The number of monthly returns Co – The number of companies Year – Twelve month period ending 30 June GH, GM, GL, NH, NM, NL, VH, VM, VL are the growth, value and neutral portfolios sorted by high, medium and low accruals									

Table 5.8: Accruals_{CF} portfolios: monthly returns and company allocation

Year Portfolio, Returns and Companies		2007	2008	2009	2010	2011	2012	2013	2014
GH	R	228	252	191	156	228	240	195	223
	Co	19	21	16	13	19	21	17	20
GM	R	173	152	159	216	247	199	220	242
	Co	15	13	14	18	21	17	19	21
GL	R	193	156	204	228	204	323	333	218
	Co	17	13	17	19	17	28	28	19
NH	R	228	180	180	263	276	300	284	261
	Co	19	15	15	22	23	25	26	22
NM	R	180	232	216	192	204	324	303	264
	Co	15	20	18	16	17	27	26	22
NL	R	204	168	185	150	204	168	150	192
	Co	17	14	16	13	17	14	13	16
VH	R	156	128	189	170	180	236	252	191
	Co	13	11	16	15	15	20	21	18
VM	R	250	191	204	197	228	264	238	204
	Co	21	16	17	17	19	22	20	17
VL	R	177	240	167	214	272	280	270	290
	Co	17	20	14	18	23	24	23	25
Total monthly returns		1789	1699	1692	1786	2043	2334	2245	2085
Total companies		153	143	143	151	171	198	193	180
Key - see Table 5.8 above									

The number of companies varies from a minimum of 143 in the 2008-2009 years to a maximum of 198 in 2013. As predicted by Desai et al. (2004), the number of shares in the high accrual companies is slightly inclined (none of which are however significant) towards the growth portfolio (GH). The number of securities in GH is higher (or equal) than its value counterpart (VH) in six of the eight years for both measures of accruals. The number of shares in value portfolios with low accruals (VL) shows contrasting results. The number of companies in VL is higher or equal than GL in all eight years for the cash flow method, but only in half of the timeframe for the balance sheet method. Nevertheless, the securities appear to be evenly distributed in the nine portfolios for the two measures of accruals. As such, any potential bias is reduced through diversification. The distribution by industries is provided in Appendix A for each method.

Tables 5.9 and 5.10 reflect descriptive statistics for the nine portfolios, with an analysis sorted by the two accrual methods. No expected trends are encountered in this analysis. It is observed that, as expected and previously noted, $\text{Accruals}_{\text{CF}}$ has higher accrual measures than $\text{Accruals}_{\text{BS}}$ across all book-to-market portfolios. The higher volatility of the $\text{Accruals}_{\text{CF}}$ measure has also been previously commented on, and also exists across the growth-neutral-value construct.

The most noteworthy aspect is the manner in which the book-to-market ratio differentiates itself on the basis of accruals in each of the value, neutral and growth dimensions. There is no *ex ante* reason to expect differences between book-to-market ratios in, for example, the VH, VM, and VL portfolios (because all are value shares). However, this is exactly what is observed in the value portfolios, although the growth and neutral portfolio groups display far lower variation. This analysis suggests that the value portfolios context may be a rich source of return differentials but falls outside the scope of this study and is left as a suggestion for future research.

Table 5.9: Descriptive statistics, value-growth dimension: $\text{Accruals}_{\text{BS}}$

	GH	GM	GL	NH	NM	NL	VH	VM	VL
Mean	0.0758	-0.0403	-0.1412	0.0603	-0.0385	-0.1429	0.0491	-0.0370	-0.1304
Variance	0.0116	0.0004	0.0098	0.0100	0.0004	0.0109	0.0054	0.0004	0.0061
Standard Deviation	0.1077	0.0196	0.0992	0.1002	0.0192	0.1042	0.0738	0.0199	0.0781
Median	0.0426	-0.0394	-0.1118	0.0304	-0.0387	-0.1065	0.0252	-0.0363	-0.1127
Quartile 1	0.0113	-0.0553	-0.1630	0.0049	-0.0534	-0.1611	0.0022	-0.0513	-0.1516
Quartile 3	0.0928	-0.0263	-0.0835	0.0775	-0.0244	-0.0834	0.0746	-0.0228	-0.0827
Minimum	-0.0228	-0.0894	-0.6839	-0.0205	-0.0851	-0.6975	-0.0193	-0.0869	-0.7914
Maximum	0.7592	-0.0015	-0.0539	0.8235	0.0012	-0.0515	0.5334	0.0003	-0.0514
Range	0.7820	0.0879	0.6301	0.8440	0.0863	0.6460	0.5527	0.0872	0.7400
Mean BM	0.1656	0.1630	0.1631	0.4556	0.4695	0.4715	1.2921	1.5799	1.5311

Table 5.10: Descriptive statistics, value-growth dimension: Accruals_{SCF}

	GH	GM	GL	NH	NM	NL	VH	VM	VL
Mean	0.1136	-0.0110	-0.1109	0.0984	-0.0100	-0.1128	0.1130	-0.0095	-0.1083
Variance	0.0121	0.0006	0.0082	0.0081	0.0005	0.0108	0.0163	0.0006	0.0047
Standard Deviation	0.1101	0.0241	0.0905	0.0899	0.0228	0.1038	0.1276	0.0238	0.0683
Median	0.0792	-0.0126	-0.0853	0.0681	-0.0110	-0.0878	0.0843	-0.0077	-0.0884
Quartile 1	0.0471	-0.0293	-0.1327	0.0473	-0.0270	-0.1232	0.0446	-0.0290	-0.1354
Quartile 3	0.1440	0.0046	-0.0570	0.1271	0.0085	-0.0615	0.1345	0.0092	-0.0578
Minimum	0.0011	-0.0584	-0.7478	0.0002	-0.0562	-0.7580	0.0114	-0.0554	-0.3759
Maximum	0.6876	0.0437	-0.0207	0.7602	0.0426	-0.0279	0.9840	0.0407	-0.0270
Range	0.6865	0.1021	0.7270	0.7600	0.0988	0.7300	0.9726	0.0961	0.3489
Mean BM	0.1659	0.1598	0.1657	0.4707	0.4602	0.4643	1.2966	1.5079	1.5858

The levels of accrual are presented in Figures 5.6 and 5.7 for the GH, GL, VH and VL portfolios for the balance sheet method and the cash flow approach. The high quality portfolios (GL and VL) follow a similar trend with Acc₁, as do the low quality portfolios (GH and VH) with Acc₁₀. Similarly, the cash flow measure is more volatile across the 2007-2014 periods in each of the four portfolios. The high accruals portfolios were at their lowest in 2012 in the aftermath of the global financial crisis and highest in the 2008-2009 periods (notwithstanding the 2014 year) for reasons previously noted. The low accruals groups follow similar patterns for both the accrual methods.

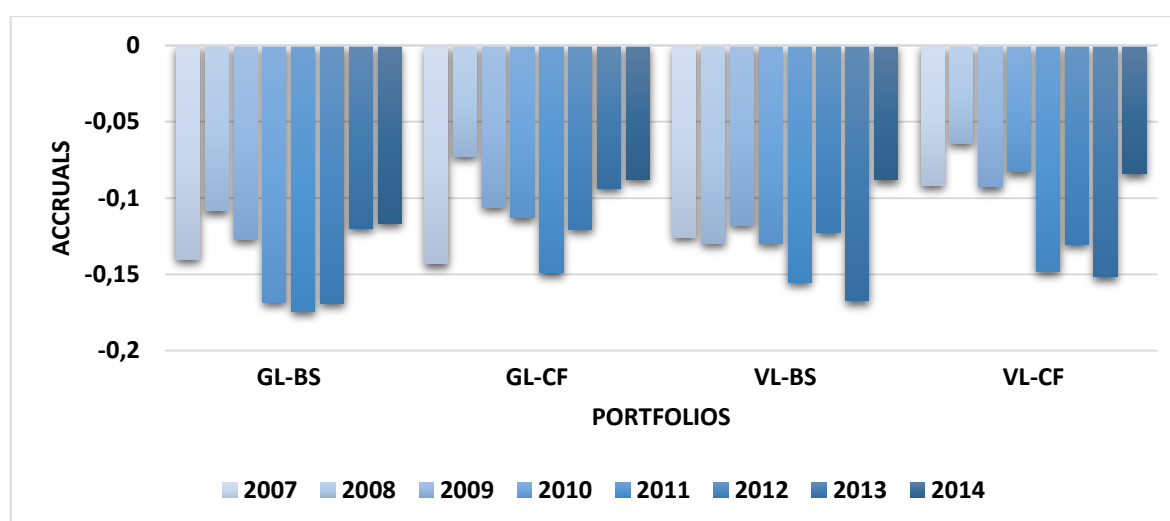
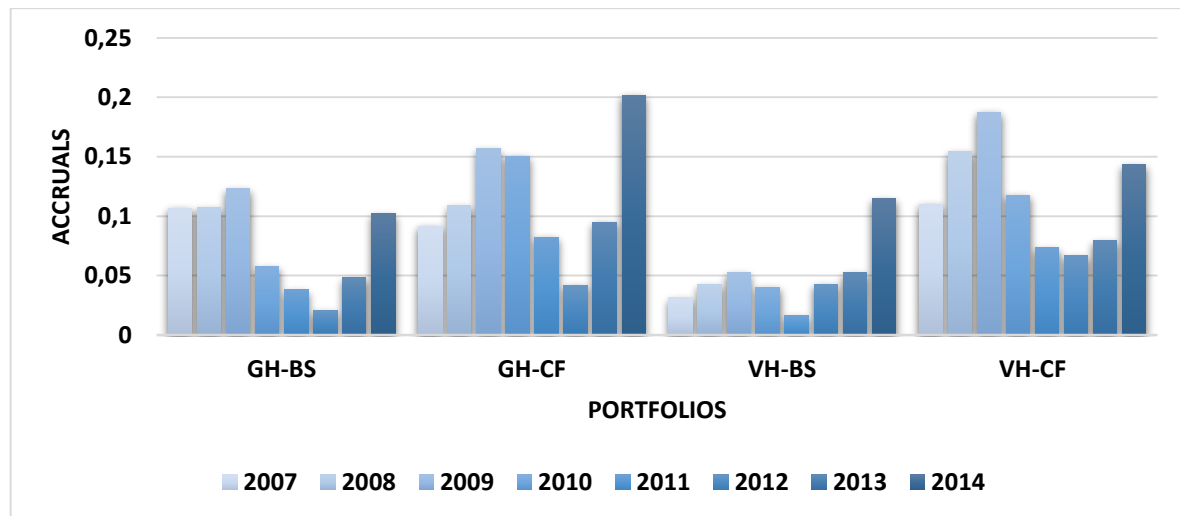
Figure 5.6: Accrual Measures: GL and VL (high quality portfolios) for both Accruals_{BS} and Accruals_{SCF}

Figure 5.7: Accrual Measures: GH and VH (low quality portfolio) for both Accruals_{BS} and Accruals_{CF}



The relationship between earnings quality and future equity returns is further analysed to establish the presence of the accrual anomaly in a value-growth-neutral construct in Tables 5.11 and 5.12. Specifically, the hypothesis is tested by estimating the monthly return difference between lower accruals portfolios and higher accruals portfolios when securities are split into growth, value and neutral securities. A return (R_{L-H}) is derived as the difference between the unweighted mean of high quality portfolios (GL, NL and VL) and the low quality portfolios (GH, NH, VH), as presented in Equation 4.7. R_{L-H} is found to be statistically significant at the 5% level of significance for the balance sheet measure of accruals (t-statistic 2.2512; critical value 1.6611) and at the 10% level of significance for the cash flow method (t-statistic 1.4918; critical value 1.2905). This provides evidence that the returns of higher quality shares among value, growth and neutral securities are, on average, greater than the returns of lower quality securities, confirming the presence of the accrual anomaly in this overall context.

Table 5.11: Monthly return differences, accrual anomaly, value-growth dimension: Accrual_{SBS}

	R_{L-H}	R_{GL-GH}	R_{VL-VH}
Mean	-1.661%	0.204%	0.331%
Variance	0.522%	0.226%	0.301%
Standard deviation	7.227%	4.758%	5.486%
Number of Monthly Returns	96	96	96
Degrees of freedom (one tail)	95	95	95
Significance level	5%	5%	5%
Critical t-statistic	1.6611	1.6611	1.6611
Significance level	10%	10%	10%
Critical t-statistic	1.2905	1.2905	1.2905
Standard error	0.0074	0.0049	0.0056
Null hypothesis return ≤0	0	0	0
T-statistic	2.2512	0.4197	0.5904
P Value	0.0133	0.3378	0.2782

Table 5.12: Monthly return differences, accrual anomaly, value-growth dimension: Accrual_{CF}

	R_{L-H}	R_{GL-GH}	R_{VL-VH}
Mean	-1.101%	0.611%	0.109%
Variance	0.523%	0.286%	0.302%
Standard deviation	7.229%	5.352%	5.493%
Number of Monthly Returns	96	96	96
Degrees of freedom (one tail)	95	95	95
Significance level	5%	5%	5%
Critical t-statistic	1.6611	1.6611	1.6611
Significance level	10%	10%	10%
Critical t-statistic	1.2905	1.2905	1.2905
Standard error	0.0074	0.0055	0.0056
Null hypothesis return ≤0	0	0	0
T-statistic	1.4918	1.1187	0.1950
P Value	0.0695	0.1330	0.4229

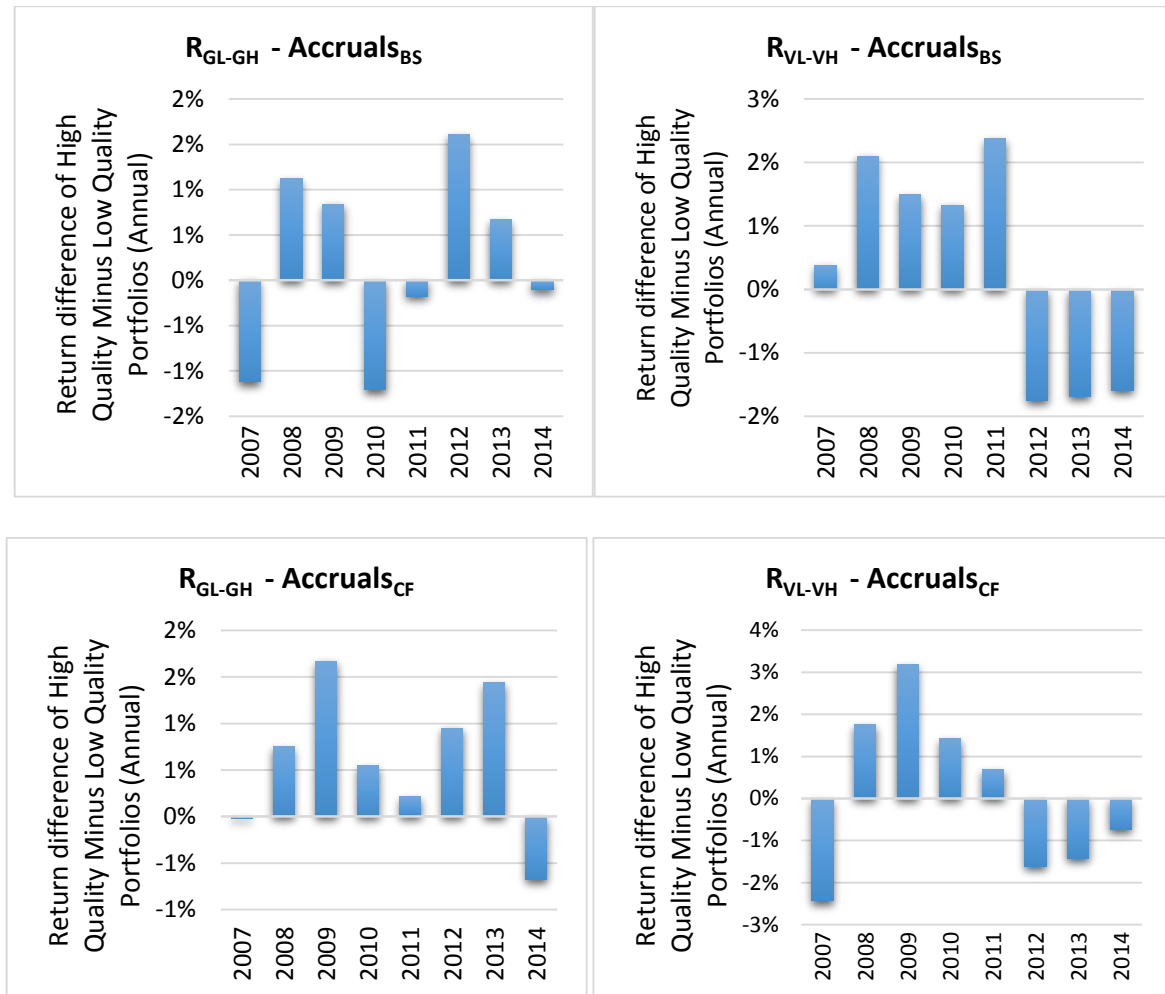
Return differences are additionally assessed to find evidence for the existence of the accrual anomaly within growth securities and value securities. R_{GL-GH} , the accrual anomaly in a growth context and R_{VL-VH} , the accrual anomaly in a value context, are estimated as the return differences between the low accrual growth/value portfolios and the high accrual growth/value portfolios. A positive mean return difference is obtained in both for each accrual method, suggesting that low accrual (high quality) firms perform better than high

accrual (low quality) securities amongst growth and value shares. However, despite the accrual anomaly being established in the growth-neutral-value spectrum, statistical significance is not found when value and growth portfolios are individually assessed for each accrual method.

A plausible reason for the lack of significance can be attributed to the value-growth anomaly, in which value firms generally outperform growth shares. Desai et al. (2004) find similar results, noting that after controlling for cash flow-to-price ratio (in order to separate growth and value securities), the relationship between accruals and future returns is non-existent. An industry bias could also partly explain the lack of significance in the individual value and growth categories as the portfolios are predominantly dominated by specific industries, for example technology firms in growth shares (see Appendix A). Ze-To (2012) notes the variation of the accrual effect at the industry level, finding evidence that the accrual anomaly varies across industries due to contrasting inventory requirements across industries.

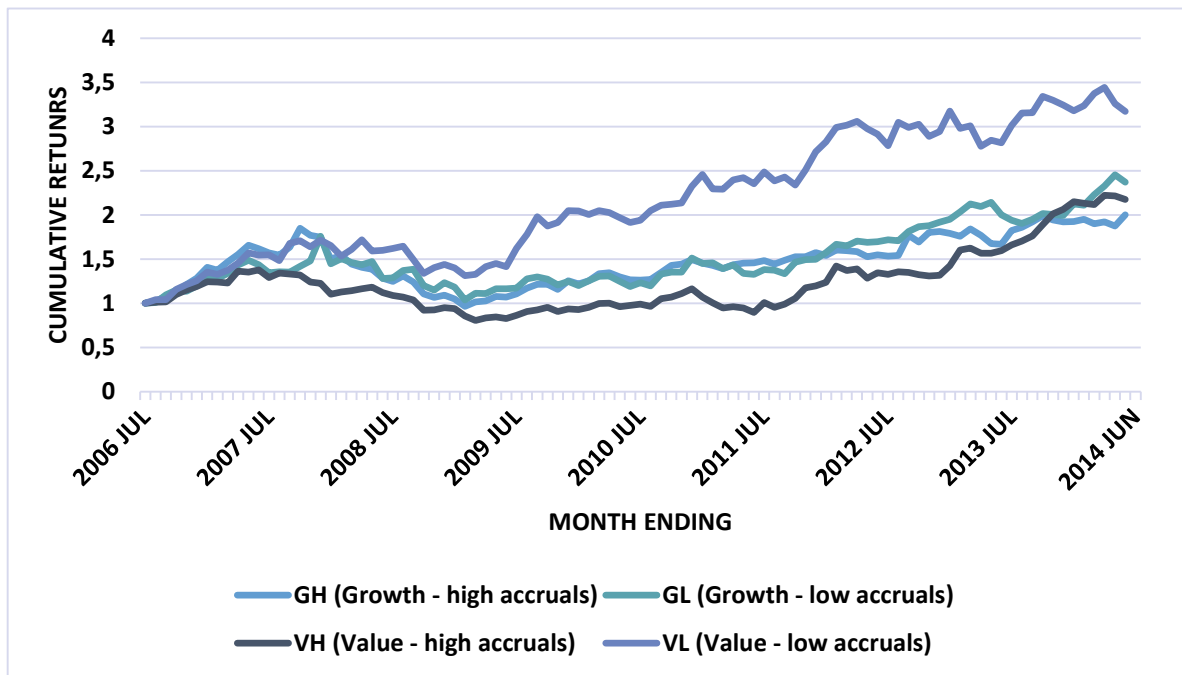
The annual return differences between the high quality portfolios and the low quality portfolios in the value-growth dimension are shown below in Figure 5.8. The strong performance of high earnings quality portfolios has not been consistent over all periods. In fact, the largest positive returns are focused in the earlier part of the sample in the 2008-2011 period. Bender and Nielsen (2013) argue that this period coincided with the popularisation of the accruals strategy in the quantitative management study. Notwithstanding the 2014 return period, it appears that the presence of the accrual anomaly is increasing in the growth portfolios and decreasing in the value portfolios. As presented, the high earnings quality portfolios performed poorly against the low earnings quality in the value portfolios during the years 2012 to 2014.

Figure 5.8: Return difference (annual) of high quality portfolio minus low quality portfolio: value-growth dimension



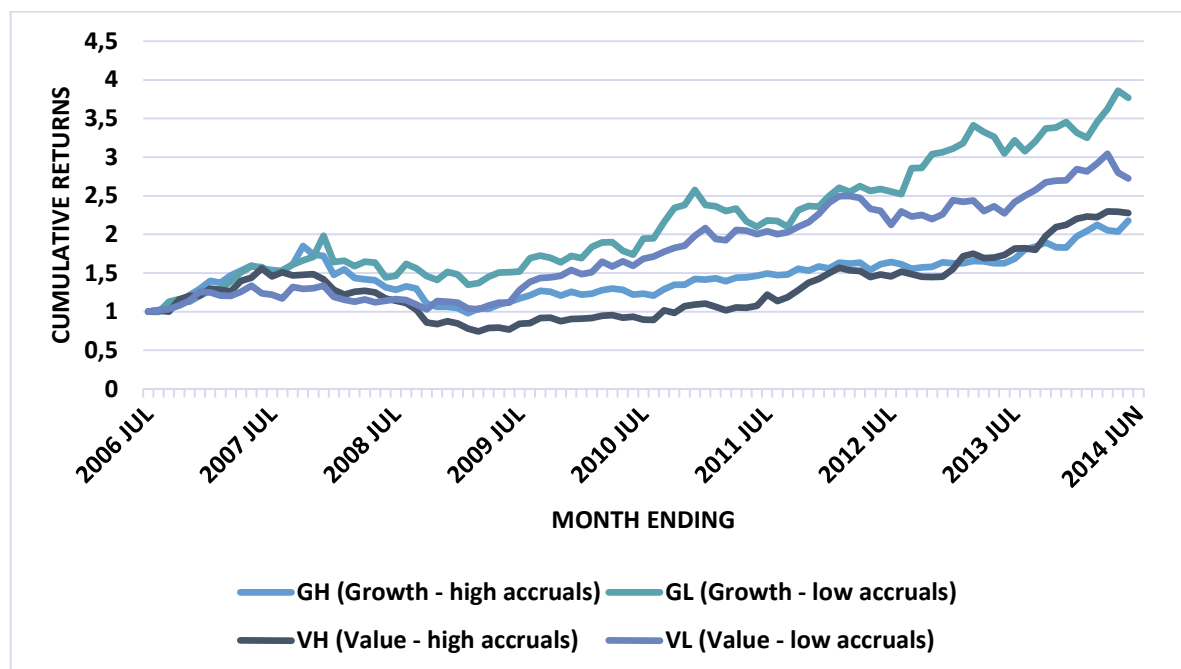
The four portfolios are further investigated to find how profitable an investment of R1 in July 2006 would be worth at the end of June 2014 when accruals are measured under the balance sheet method. Figure 5.9 shows the portfolios in order of profitability: VL, GL, VH and GH. The investment in the VL portfolio appreciates to a value of R3.17, in GL to R2.37, followed by the VH group to R2.17 and lastly, the GH portfolio increases to R1.99.

Figure 5.9: Cumulative portfolio returns of VL, VH, GH and GL (Accruals_{BS})



Under the balance approach of measuring accruals, low accrual portfolios (GL and VL) are performing better than their high accrual counterparts (GH and VH) despite not being statistically significant. In this regard, the value portfolios are also incurring higher returns than the growth equivalents. The process is repeated for the cash flow measure of accruals in Figure 5.10.

Figure 5.10: Cumulative portfolio returns of VL, VH, GH and GL (Accruals_{CF})



The low accrual portfolios continue to outperform the high accruals portfolios when accruals are measured under the cash flow measure. Portfolios GL and VL are worth R3.77 and R2.75 respectively at the end of June 2014, whereas portfolios VH are valued at R2.28 and GH are estimated at R2.18. Despite the absence of statistical significance, it appears that low accrual (high quality) portfolios outperform the high accrual (low quality) portfolios. Both Figures 5.9 and 5.10 indicate that the gap in cumulative returns is increasing among high quality and low quality portfolios in growth shares and decreasing in value shares.

5.5 Conclusion

This chapter presents the outcomes of the application of the methods used to find evidence for the existence of the accrual anomaly in South Africa during the 2007-2014 return period. An analysis of the industry composition of the decile portfolios demonstrates that no industry-bias is present. Moreover, an examination of the level of accruals shows that South African companies have more extreme measures of quality, both high and low, during the review period for the balance sheet method and the cash flow approach when compared to studies in developed markets. The levels of accruals are also found to be more volatile during the global financial crisis.

Under both $\text{Accruals}_{\text{BS}}$ and $\text{Accruals}_{\text{CF}}$, the comparative annual returns show that the highest quality portfolio consistently outperforms the lowest quality portfolio. Both methods display positive mean differences among the extreme accrual portfolios (Acc_1 and Acc_{10}), providing evidence that the returns of highest quality shares are, on average, greater than the returns of the lowest quality shares. However, the result (in support of the accrual anomaly) is only statistically significant for the balance sheet model, demonstrating that earnings manipulations can be used to predict cross-sectional returns in this regard. Nonetheless, a cumulative portfolio returns analysis reveals that an investment in the highest quality portfolio yields a return higher than 68 percent than an investment in the lowest quality portfolio for both accrual measures.

In a growth-neutral-value construct, the outperformance of high quality shares against low quality shares amongst value, growth and neutral securities is found, on average, to be statistically significant, confirming the presence of the accrual anomaly in this overall context. The statistical significance of the positive mean difference between the high quality portfolio and the low quality portfolio is, however, not established when the presence of the accrual anomaly is individually assessed among growth securities and value shares despite each incurring a positive mean return difference. As with Acc_1 and Acc_{10} , a cumulative portfolio returns analysis shows that the low accruals portfolios outperform the high accruals portfolios for both growth shares and value securities (under both accrual measures). The next chapter summarises the research and concludes this study.

Chapter Six

CONCLUSION

6.1 Introduction

Chapter One sets out the research questions for this study:

- to find evidence that the market reacts to earnings management practices, as measured by accruals, and rewards high earnings quality securities with higher equity returns (a process known as the accrual anomaly); and
- to find and establish the presence of the accrual anomaly within growth shares and value shares.

Chapter Two outlines the importance of earnings as the primary accounting information and hence notes how managers use the leeway of the accrual process to mislead users of financial statements. The concepts of earnings quality (the degree to which earnings capture a firm's economic reality), earnings management and the accrual anomaly (the empirical fact that securities with high accrual component of earnings perform poorly over the following year) are subsequently introduced together with a review of the accounting standards and earnings management studies in South Africa.

Chapter Three reviews the determinants of earnings quality in an attempt to select an appropriate proxy of earnings management for this study. Total accruals are chosen because they are highly correlated with discretionary accruals and as they generate an overall picture of the earnings management practices of a firm. Two measures of total accruals are identified in order to increase the robustness of conclusions: a balance sheet method and a cash flow approach. The positive association of earnings quality and performance is outlined in conjunction with the other reported consequences of earnings quality.

In Chapter Four, the methodology and data used to answer the research questions are presented. Securities are ranked and equally divided into deciles according to each accrual measure. The highest quality decile includes shares in lowest ten percent of accrual levels, while the lowest quality decile contains securities in the highest ten percent of accruals levels. Moreover, securities are ranked and independently divided according to their book-to-market ratio and accrual levels into nine portfolios of growth, neutral and value

shares of different levels of quality (high, low or medium). Return differences are estimated to establish the presence of the accrual anomaly and one-tailed t-tests are used to establish statistical significance.

Chapter Five provides an analysis of the results in addressing the research questions. The chapter presents an investigation of industries across portfolios and an examination of the level of accruals among the extreme portfolios. The presence of the accrual anomaly is found under the balance sheet approach and the outperformance of the high quality portfolio is displayed under both methods. Similarly, under growth shares and value shares, the high quality portfolios yield a higher return than the low quality portfolios despite statistical significance not found among the return differences. This chapter presents a summary of the results, discusses the limitations of this study and makes recommendations for future research.

6.2 Summary of results

This study uses two measures of accruals as proxies for earnings quality: a balance sheet approach and a cash flow measure. The presence of the accrual anomaly in South African listed companies during the period July 2006 to June 2014 is shown to be significant when using the balance sheet measure of accruals, providing evidence that the market reacts to the earnings management practices of companies and rewards high quality firms with higher equity returns. In other words, evidence is presented that earnings manipulations, when measured by the balance sheet approach of accruals, have the ability to predict cross-sectional equity returns. A similar analysis does not significantly show the presence of the accrual anomaly when accruals are measured using the cash flow method. It is noted, however, for both accrual measures, that the highest quality decile consistently outperforms the lowest quality decile, with the returns for the former trending upwards and the latter downwards. An investment in the highest quality decile is shown to earn 99% (R4.10 compared to R2.06 for an initial investment of R1) more than an investment in the lowest quality decile under the balance sheet approach and 68% (R3.36 as compared to R2.00 for an initial investment of R1) more under the cash flow method. It is also noted that South African companies exhibit more extreme measures of accruals, both low and high, than companies in developed markets during the review periods. Under both accrual measures, the levels of accruals were at their (or second) highest during the global financial crisis.

The existence of the accrual anomaly is investigated further in a value-growth-neutral spectrum for both measures of accruals. The returns of the high quality portfolios in this context are shown to be greater than the returns in the low quality portfolios. However, statistical significance for the presence of the accrual anomaly is not found when growth and value portfolios are individually assessed for either method despite each demonstrating a positive mean return difference. The value-growth anomaly and an industry bias are possible explanations for the lack of significance.

A cumulative portfolio return analysis, nonetheless, shows that for both growth and value securities, subsequent to the global financial crisis, the high quality portfolios consistently outperform the low quality portfolios. The value portfolios also consistently outperformed the growth portfolios under the balance sheet measure, possibly on account of the value-growth anomaly. In contrast, under the cash flow approach, the value portfolio outperforms the growth portfolio for the low quality portfolio only. Both methods, however, indicate that the gap in cumulative returns is increasing among high quality and low quality portfolios amongst growth shares and decreasing among value shares.

6.3 Recommendations and limitations

This thesis concentrates on accruals quality, specifically on total accruals, as its measure of earnings management to estimate the accrual anomaly. Support for the accrual anomaly using discretionary accruals could be explored as they are the most widely used measure of earnings management. The alternative measures of earnings management also merit more consideration in order to establish which specific earnings management practice is predominantly used in South Africa among managers.

This thesis establishes that users of financial statements do not fall victim to earnings manipulations over the eight year period (2007 - 2014); however, the exact time period it takes users of financial statements to see through earnings management practices (for example, one or two years after the assumed manipulation) is not analysed. Further research could study the actual time-period it takes users of financial statements to respond to earnings management practices.

This research takes place in a timeframe that includes the global financial crisis, a period in which accounting manipulation incentives for company managers were likely to have been

particularly strong. The results do not show support for the accrual anomaly in a value and growth setting in this period. As such, future research could be performed in this context in a period with a more stable market. Lastly, this study looks at the accrual anomaly within growth and value shares, future studies could as an alternative attempt to establish the value-growth premium within a high quality and low quality setting given that the value portfolios contain a rich source of return differential.

Appendix A

The distribution of industries among GH, GL, VH and VL using Accruals_{BF}

Year Portfolio & Industry		2007	2008	2009	2010	2011	2012	2013	2014
GH	BM	15%	0%	0%	0%	6%	10%	6%	5%
	CG	5%	0%	0%	12%	22%	5%	6%	14%
	CS	25%	44%	29%	35%	33%	35%	35%	23%
	HC	0%	11%	0%	0%	6%	5%	12%	14%
	IN	30%	22%	41%	12%	17%	25%	24%	32%
	OU	0%	0%	0%	0%	0%	0%	0%	0%
	TT	25%	22%	29%	41%	17%	20%	18%	14%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
GL	BM	6%	0%	0%	5%	6%	0%	4%	11%
	CG	18%	0%	6%	5%	0%	5%	12%	0%
	CS	18%	42%	39%	15%	25%	23%	42%	53%
	HC	6%	0%	11%	5%	0%	14%	4%	11%
	IN	18%	25%	11%	50%	38%	27%	15%	16%
	OU	0%	0%	0%	5%	0%	0%	0%	0%
	TT	35%	33%	33%	15%	31%	32%	23%	11%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
VH	BM	0%	23%	6%	14%	12%	18%	13%	19%
	CG	50%	38%	25%	21%	18%	23%	4%	25%
	CS	7%	0%	13%	14%	0%	0%	4%	0%
	HC	0%	0%	0%	7%	0%	0%	0%	0%
	IN	43%	38%	44%	43%	53%	45%	61%	44%
	OU	0%	0%	0%	0%	6%	5%	4%	6%
	TT	0%	0%	13%	0%	12%	9%	13%	6%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
VL	BM	17%	0%	8%	13%	16%	5%	0%	8%
	CG	11%	41%	54%	20%	20%	10%	29%	0%
	CS	22%	24%	0%	7%	8%	19%	5%	22%
	HC	0%	0%	0%	0%	0%	0%	0%	0%
	IN	33%	35%	38%	47%	56%	62%	57%	65%
	OU	6%	0%	0%	0%	0%	0%	5%	0%
	TT	11%	0%	0%	13%	0%	5%	5%	4%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
BM – Basic materials, CG – Consumer goods, CS – Consumer services, HC – Health care, IN – Industrials, OU – Oil, gas and utilities, TT – Technology and telecommunications Year – Twelve month period ending 30 June									

The distribution of industries among GH, GL, VH and VL using Accruals_{CF}

Year Portfolio & Industry		2007	2008	2009	2010	2011	2012	2013	2014
GH	BM	16%	5%	0%	0%	11%	10%	6%	0%
	CG	5%	0%	0%	8%	16%	10%	6%	10%
	CS	26%	52%	31%	46%	32%	43%	29%	30%
	HC	0%	5%	6%	0%	5%	14%	18%	10%
	IN	32%	29%	31%	23%	26%	10%	18%	30%
	OU	0%	0%	0%	0%	0%	0%	0%	0%
	TT	21%	10%	31%	23%	11%	14%	24%	20%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
GL	BM	0%	0%	0%	11%	6%	4%	4%	11%
	CG	12%	0%	0%	5%	0%	14%	14%	0%
	CS	29%	46%	53%	37%	24%	29%	46%	53%
	HC	0%	0%	6%	5%	0%	7%	4%	5%
	IN	24%	38%	18%	26%	29%	25%	0%	21%
	OU	0%	0%	0%	5%	6%	0%	18%	0%
	TT	35%	15%	24%	11%	35%	21%	14%	11%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
VH	BM	8%	9%	0%	13%	13%	20%	10%	17%
	CG	31%	27%	25%	33%	13%	10%	14%	28%
	CS	8%	9%	6%	7%	7%	0%	5%	0%
	HC	0%	0%	0%	7%	0%	0%	0%	0%
	IN	38%	55%	56%	40%	60%	55%	52%	44%
	OU	8%	0%	0%	0%	0%	5%	5%	6%
	TT	8%	0%	13%	0%	7%	10%	14%	6%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
VL	BM	12%	15%	14%	17%	22%	4%	4%	12%
	CG	24%	15%	43%	17%	26%	13%	22%	4%
	CS	24%	30%	14%	11%	7%	13%	4%	20%
	HC	0%	0%	0%	0%	0%	0%	0%	0%
	IN	29%	35%	29%	39%	35%	67%	65%	56%
	OU	0%	0%	0%	6%	4%	0%	0%	4%
	TT	12%	5%	0%	11%	4%	4%	4%	4%
	Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>
BM – Basic materials, CG – Consumer goods, CS – Consumer services, HC – Health care, IN – Industrials, OU – Oil, gas and utilities, TT – Technology and telecommunications Year – Twelve month period ending 30 June									

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